

WOOD WORKING FOR BEGINNERS

A collection of carpentry and woodworking tools arranged on a wooden surface. The tools include a hand saw with a wooden handle, several chisels with wooden handles, a paintbrush with a wooden handle, a yellow tape measure, and a tray containing various screws and nails. There are also several pieces of wood and a small block of wood.

WOODWORKING FOR BEGINNERS

A Practical Guide to Understanding Woodworking Basics and Starting Simple Woodworking Projects

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INTRODUCTION

I know you just opened this book up but stop what you're doing and look around you. How many things can you spot that are made out of wood? Personally, I see doors, desks, chairs, bookcases, walls, floors, cabinets, picture frames, stools and my coat rack. And that is only what I see from where I am sitting right this second. How many things did you spot?

We use wood for so many of our creations. From boats to our earliest planes, houses to wagons and beyond, wood is the go-to material for making new things and perfecting the old. Beyond the practical uses, wood also just has a simply beautiful look and texture to it when it has been properly treated. At least that's the only reason I can think of for people applying wood paneling to their station wagons, but that's a whole 'nother issue.

Jokes aside, there is an almost endless amount of possibility when it comes to working with wood. Do you want to make art? You can do it. Furniture? That's easy. Wood can be used to make toys for your kids, gifts for your partner or improvements to your house and life. It is very versatile, you can purchase it new or recycle previously used pieces, and it costs very little to get started, so long as you don't drop yourself off in the deep end when starting out.

But despite all of this, it seems that woodworking has become less popular in recent years. A big reason for this is the indelible grasp of the internet and technology as a whole. Fewer people work with their hands these days and more work with keyboards than ever before. This shouldn't be taken as a bad thing; considering that I'm using a keyboard to write this book, I myself contribute to this statistic. But what it does tell us is that the demand for woodworkers is down and the industry isn't there for it the way it used to be.

This is further reflected when we look at the popularity of brands like IKEA. IKEA offers furniture at hard to beat prices. A hardwood desk might cost you two or three hundred dollars on the low end but you can get an IKEA desk for a fraction of the price. These savings are achieved by using weaker materials. The use of weaker materials means that the furniture won't last as long. Over the course of a lifetime, you'll find yourself spending more through IKEA than you would have if you went with the nicer desk. But that initial cost can be quite intimidating.

Brands like IKEA have only managed to bring up the prices on impressively woodworked furniture. There is less of a demand and so these pieces have become more of a boutique purchase in the home. More often, they are purchased for offices and workspaces where a higher price isn't so intimidating. This kind of sucks, when you think about it. We're caught in a trap.

But there is a way to break free.

By learning how to work with wood yourself, you can make a high-quality desk at a much lower cost. It will take time and effort and money for tools and materials but the process of working with wood pays for itself. You don't just end up with a nice new desk, you end up with the skills to make and sell those desks yourself. Plus the smell of the freshly cut wood and the experience of preparing all the pieces really evokes an almost zen-like feeling of pride and relaxation that just can't be beaten.

Desks are only but one of the many kinds of projects that you could take on with woodworking skills of your own. We'll be looking at a whole bunch of projects in chapter four. But before we get there, we're going to cover the basics. We'll start with the basics of woodworking, such as setting up a workshop, in chapter one. Chapter two will introduce you to the tools of woodwork projects. Chapter three will then finish up with our basic introduction by examining the different kinds of woods we use. Chapter four are those projects, so chapter five looks at how we apply a finish to them. Finally, we close out with chapter six. Chapter six is going to dive into all the safety precautions which you need to follow. It's last in the book but don't you dare start working any wood until you've read it.

By the end of this volume, you'll know the tools, materials and tricks of basic woodworking. You'll have everything you need to undergo your first projects and we'll leave on a note of where to go next. With the knowledge that you'll learn and train throughout, you'll have a new skillset that you can use to relax, be productive or even earn you a solid paycheck. How far you take these skills is entirely up to you.

CHAPTER ONE

WOODWORKING BASICS

Before we can start working with wood, we need to have a woodshop or a workshop. Either term is applicable. A workshop is more likely to have a wider range of tools than a woodshop does but this isn't always the case. Putting together a woodshop takes quite a bit of space and there are important considerations that must be taken into account as far as health is concerned. There are certain areas where you can cut corners when planning your workshop but they will in turn place certain restrictions on your capabilities. Health, corners and tips are up first.

But the most important part of a woodshop is the wood. After all, it accounts for half the word. The second half of this chapter will explore how wood works. This will be a quick but deep lesson on wood. There's more to the stuff than you might've known and it's important to learn about it long before it hits your saw.



Setting Up Your Woodshop

The first step of setting up your woodshop has nothing to do with wood. It's also the most boring part of this whole endeavor, so let's get it outta the way quickly. Before you bother worrying about space, equipment or electricity needs of your woodshop, start by setting a budget for yourself. If you are looking to get started with a few quick and small projects then you won't need a very large budget. If you are looking to purchase all the tools we look at in chapter two then you'll need to set aside a lot of money.

As for my recommendation, I think that it is best to start small. Set your sights on one or two projects to complete first. Of course, if you already know exactly what you want to be making then don't let my recommendations stand in your way. But if you decide to start small then you should start small but with room to expand. Before we can set up a woodshop, we need to have a space for a woodshop. Picking a space that is larger than you need for early projects can leave you with enough room to fit in more equipment later on. If you find you don't want to continue, it's very easy to repurpose the space for other goals like indoor gardening, knitting or other activities. But trying to expand a small space is always more frustrating because it requires you to find a second space and brings you right back to where you started.

To understand how much space you might need, consider the size of the various tools you'd expect to find in a woodshop. A table saw is about four feet by four feet and you need to leave enough space around it to be able to fit in the wood. This is probably the largest piece of equipment that you'll get. So as a neat rule of thumb, plan a space that can fit two table saws and two work tables that are two or three feet wide and five or six feet long. If you can get tables with shelves underneath then you should. The extra storage space may seem irrelevant at first but you'll be amazed how quickly a woodshop starts to get messy. New tools and partly finished projects are just a few of the things that seem to multiply as soon as you have a woodshop.

Beyond the physical dimensions of the room, you should consider if the floors will be damaged. Woodworking is done with lots of sharp tools and splinters can get all over the place. With the amount of mess that a woodshop generates, carpet would only be a detriment but its ability to hide splinters can make it downright dangerous. You should also find a space where you can nail things into the walls. Shelves and hooks quickly prove to be useful additions to the walls of a workshop, as they can hang tools, projects or plans. A wall can be converted to work as plank storage with a few hooks, maximizing your use of the floor space available to you.

You also want to make sure that there is plenty of ventilation in the woodshop. If you are working in an outdoor barn or shed with windows and cracked walls, then you're perfectly fine. If you are working

indoors or in a more securely-built shed then you'll want to spring for a proper system that circulates air from outdoors. There is lots of sawdust when working with wood and finishes can be dangerous to expose yourself to without a mask and decent airflow. While you're considering the openings in the space, take a moment to consider the doors. Will you have problems bringing in wood planks? Will you be able to take that desk out of the room afterward or will you need to take the doors off the hinges? Figuring out these limitations now will save you from frustration later.

You've almost got the perfect space but there's one last issue you need to approve. Does it have enough power outlets and energy? If you're working in an outside shed then you'll probably have an easier time with this one. You can hook up an extension cord to the source and thread it into the shed. But if you are working indoors already then you may find that there are limitations to what can be plugged in at the same time. While you'll want to be able to run multiple tools at once, you don't necessarily need to most of the time. If outlets and power is the only limitation on the space then you should consider how you can adapt your working methods to accommodate that. In general, it is a good idea to unplug tools even when you aren't using them. When they are plugged in, they still complete an electrical current and there is a mild amount of energy being wasted on them even when turned off? Unplugging tools afterward will keep your electricity bill a little lower and it'll reduce the chances of tripping a breaker.

With that, you have what you need for your own woodshop. Figuring out size, ventilation and energy limitations ahead of time will let you know exactly what you can and can't make in your woodshop. Of course, you still need to purchase the tools and the tables but that's the fun part, what all of this planning was for in the first place. If you still aren't sure what tools you might want to purchase then stick around, we'll cover those in chapter two. First, let's look at some tips and tricks for really getting the most out of your first woodshop.



Tips to Maximize Your Woodshop's Layout

This should still be a part of the planning process but it focuses on how you'll handle the space and your tools. You can get started with it before you know what those tools are. But it will be much easier to create a layout if you know the exact specifications of what you will be using. If you don't know the tools, then think about the projects that interest you most. These will help you to determine the following questions and recommendations.

When you first start a project, there is going to be a clear workflow which you will undergo. You will need to purchase wood (if you don't already have it), bring it into the shop and then over to the workbench. Instead of placing your workbench in the far corner, on the other side of the woodshop from where the wood is stored, maybe you should place it more in the middle to make it easier to bring wood into the workshop, get it to the workbench and then you can use the back of the room for finishing. Creating a flow like this will lead to less missing pieces since each section of the woodshop has its own particular purpose.

Speaking of losing tools or pieces, you shouldn't just toss your tools anywhere. If you only ever work on one project at a time then maybe it's fine that the hammer always seems to be left where you last used it. But when you are working multiple projects, or you are working with other people such as younger family members, you want to make sure that tools go back where they belong after they are used. This is a safety precaution but it also works to increase productivity. But just where should those tools go?

Tools can be hung on walls, put in drawers, left on shelves or benches, or tossed into toolboxes. The where of it isn't so important. What is important is that you create some logic to the placement, however. Tools that are similar to each other should be grouped together. Hammers with screwdrivers, knives and cutting tools together. Screws and nails and nuts or bits could all be stored in one area for supplies. Tools could be hung up or each given a drawer. By creating logical groupings, you can minimize the time you spend looking for tools. If you consider the workflow again, you could even group tools in the respective areas where they'll be used the most often. Just don't spread them out far and wide if you're forgetful. Sometimes, especially if you only have a couple of tools, you should keep them together until the need arises to start purchasing more and creating these logical groups.

You should also keep your workbench near a window or the ventilation system. You might think that it makes more sense to put a standing saw here but the kick-off from the saw can quickly lead to clogs. Your workbench is where you'll be sanding or applying a finish to your creations and this kicks up lots of dust particles or nauseating chemical odors. Being close to ventilation will help to keep you from inhaling these, though you will still want to wear a mask.

Make sure that you keep the floors clean. Larger equipment will have wires and plugs which can clutter the floor. It is a good idea to tape these down. One project that could make life easier is to create a small little ramped overpass. You can use your woodshop to build little add-ons for your woodshop like this, it's pretty cool. But because these are dangerous tools, you should always try to keep the floor as clean as possible. Vacuum or sweep after lots of cutting. Don't leave pieces of wood just lying around. Tripping in your woodshop could be the last thing you ever do if you're truly unlucky.

Cleaning is a part of owning a woodshop that many people seem to forget. These places get messy and boy, do they ever get that way quickly. You should make it easier on yourself by investing in a couple of large bins. Get a large bin for wood scraps. Anything that is large enough to be used in another project, but isn't big enough to go back to the wood storage, can be tossed into the scrap bin. These pieces might not have any use at the moment but they become invaluable when you're looking for a small piece of wood so that you won't have to cut into a fresh new board. If you can't invest in a good vacuum then you should get a medium-sized bin for sawdust and the like. There's a lot of it, so a small bin just won't cut it.

If you have children, you should consider getting a lock for the workshop. If they're too young to understand safety, then a lock is a must. While teaching woodworking to children is an absolute blast, not every kid understands the importance of safety. Work with your kids in the shop until you're sure that they're not going to hurt themselves by being careless. If you have an outside workshop in a garage or shed then a lock is a smart idea in general. Electric tools can be pawned for money and smaller tools can be stolen as street-legal weapons. While most workshop owners never encounter stolen goods, prevention is always easier than reaction. Adding a lock to your workshop doesn't take much time or cost much money and so while you don't have to add one, I certainly recommend that you do.



Wondering About Wood

Wood, half of woodworking, comes in many different forms. We'll be talking about it more in chapter three. But in that chapter we will be specifically talking about how those woods relate to woodworking. How well they shape, what projects they are best for. Things like that. Here we'll be looking at what wood is. Yes, wood is trees. That's true. But there's a lot more to it than that.

Most of the wood that we'll end up using in the shop has already been processed quite a bit from where it began. Trees are round after all and planks are rectangles. Trees are grown to be processed into wood, which we call silviculture. Trees are grown to a specific size, cut down and then shaped and treated. We can purchase untreated lumber, which we might want to do on occasion. If you are building a raised garden bed then untreated lumber would be the way to go because the plants grown in the bed are for consumption. But if you are making a candle holder, a piece of furniture or pretty much anything that isn't going to be involved in the growing or storage of food then preserved lumber will be what you use the most. The preserving process helps to strengthen the wood and prevent it from rotting as quickly. Treated woods still rot eventually if they aren't maintained but this is just part of working with an organic product.

When you cut down a tree, there are several different layers to the wood inside. The outside-most layer is the bark. This is removed since we don't need it. It finds use in gardens beds, as pet litters or it can just be left to decompose. The wood on the outermost part of the tree is called sapwood. This part of the tree is alive and it's where all of the nutrients necessary to keep the leaves of the tree healthy move through. As you move inwards towards the core of the tree, you transition from sapwood into heartwood. Heartwood isn't alive anymore. As the tree grows each year, it gains a new ring. When you cut a tree, you can find out how old it is by how many rings it has. The living layer keeps expanding outward to make the tree wider and wider. As the tree gets wider, more of the inside of it becomes heartwood.

Heartwood was once sapwood. Eventually, the tubes in the sapwood that allowed the nutrients to flow through get blocked up or clogged. This part of the tree dies and becomes heartwood but the tree has already formed a new sapwood layer as it is always pushing on the outside so the tree isn't harmed by this loss. Nutrients can continue to push through the new passageways that the sapwood creates. When you cut a tree, you can cut through it horizontally or vertically. Cutting horizontally will give you those rings. But since the passageways for nutrients ran up and down the tree, they are shown when we cut vertically. Cutting a tree in this manner cuts along the grain because the grain is actually the parts of the tree where these nutrient passageways were.

Every now and then you might discover a knot in the wood. These can be a pain to work with but when used properly they can really add flavor to a project. These are caused at the parts of the tree where the branches had grown. We don't use the branches when working with wood, we're after the heartwood and so we want the wood from the inside of the trunk. Branches are removed in processing but they leave behind knots in the wood. Be careful when working with boards that have knots in them, as they can cause a saw to slip. If possible, use the part of the board that doesn't have the knot and cut around it so you can just scrap that part.

Wood comes in two types, hardwood and softwood. Of course, both types are hard. Just try taking a piece of softwood to the face. It ain't any kind of fun and it certainly won't feel soft. Despite this, hardwoods are typically harder than softwoods. The main difference is the trees they've come from. Hardwoods are deciduous trees and softwoods are coniferous. Deciduous trees shed their leaves in the fall but conifers have needles and cones that they hold onto all year long. If you're making a house then you're going to use softwoods, as they tend to grow taller. But if you're looking to do decorative work such as furniture or toys then a hardwood will give a much more rich grain that will really add personality to a piece after the finish is applied.

Wood isn't as strong as steel or metal but it is much more flexible. This can let you shape it in ways which metals can't. However, woods are damaged by water whereas metals aren't. A leak can actually do a lot of damage to wood. Certain treatments can be applied to reduce the damage, both at the level of manufacturing the board and after you have finished working with it. One such layer is paint, which acts for a piece of wood in the same way that bark does for a tree.

But one of the best parts of working with wood and the biggest benefit it has is the simple fact that it is biodegradable. You can compost anything that doesn't work out, you can use wood shavings as compost or as a growing medium for mushrooms. Metal can't be composted and chemicals used in its manufacture can be quite harmful, as well as expensive. Once a scrap of metal is useless, there is nothing to do but to dispose of it. Woodworking can be combined with other skills to level them all up. Growing mushrooms, gardening, even animal rearing, all of these are easier when you know how to work with wood.

You hold everything you need to begin leveling up this valuable skill, so let's turn now to the tools necessary for woodworking and continue grinding out that knowledge.

Chapter Summary

- When you first decide to start practicing woodworking, you should begin by setting a budget for yourself. This way you only purchase what you can stand to afford.
- To set up a woodshop, you need a location. It should be large enough to fit boards into without any risk. A lot of woodworking tools are also quite large and you will need to consider.
- Along with tools such as table saws, you will also want to have space for a table or two. If you can drill into your walls then you can use hangers for tools and wood storage.
- Don't pick a space with floors that will be damaged and avoid rooms with carpet.
- Ventilation is extremely important. If you can select a room with a window, do so. You will also want to add a ventilation system for pumping in fresh air or, at the very least, use a fan to help keep the air clearer.
- Power tools take power and so make sure the space you pick has plenty of power. You can always run an extension cord into the room if you need to but keep in mind that this clutters up the floor and increases the likelihood of tripping.
- You should also consider the size of the doors and the direction they open. You want to make sure that you don't make any projects that are too big to get out of the room. You can always remove the door from the hinges if need be but this is a time-consuming task that is better avoided by proper planning.
- It is a smart idea to build a natural workflow in the way you layout your woodshop. Keep fresh wood close by the door, the cutting space in the middle and the finishing space in the back.
- Keep your tools in the same place so that you always know where they are and group similar tools together for ease of access.
- Your workbench should be kept close to the window for the best ventilation.
- Get a lock for your woodshop and always keep the floors clean. This prevents unwanted guests and accidents such as tripping or stepping on a nail.
- When we cut a tree down, there are two types of wood present. Heartwood is the dead, hard wood in the center while the outer wood is called sapwood.
- Sapwood has all sorts of tubes throughout it which allows the tree to move nutrients throughout it. As a tree grows, the sapwood turns into heartwood and these tubes become the grain of the wood.
- Wood might have what are called knots. These are spots, sometimes holes, that were where branches had once grown. Too many knots reduce the integrity of the wood.
- Wood can be hard or soft but the name doesn't actually tell you anything about the strength of the wood. These terms are used to refer to the type of tree the wood came from. While hardwoods do tend to be harder than softwoods, it isn't always true.
- Wood isn't as strong as metal but it makes up for this with its flexibility.
- Wood is biodegradable so you can take any wasted pieces out to a compost pile and let them naturally breakdown without harming the environment.

In the next chapter you will learn about all the fun and varied tools that are used when working with wood. From classics like sandpaper, chisels and mallets to newer inventions like the circular saw or the thickness planer, there are lots of tools to learn and understand.

CHAPTER TWO

BASIC TOOLS NEEDED FOR WOODWORK PROJECTS

When it comes to woodworking, there are a bunch of tools that we use. In fact, we won't even be getting into nearly all of them. It is highly likely that there are some pretty basic ones we miss. For example, we aren't going to be talking about pencils or pens to mark cuts but they technically count as basic tools.

But we will be covering most of them. We'll look at what they do and how useful they are overall. With a form of crafting such as woodworking, there are many tools that have been invented to achieve very specific effects. These can be great for when you're looking to expand a woodshop in the future but they are a bit of a waste of money early on. So we're going to leave out these more advanced tools.



A Basic Toolbox

The first addition to any woodshop should be a basic toolbox. If you don't have a toolbox already then purchase one that comes complete with all the basics. You'll want a hammer, an assortment of different wrenches and screwdrivers. The larger the set you can get, the better.

For a lot of the tools that you get in a toolbox, you'll want to get more as time goes on. For example, a basic kit won't come with nearly enough screwdrivers. This is especially true when you get into complex work or work which requires very tiny screws. While you could always just go out and purchase a screwdriver kit, the benefits of the toolbox is that it will come with tools that you didn't realize you needed. You might not think you need a wrench but then something comes up and it becomes exactly what you need. Plus it's always good to have a wrench around for when the faucets start to leak.

By starting out with a basic kit, you will be setting yourself up to handle most of the smaller work that comes up throughout this book. But while hammers are typically included in a toolbox, they're important enough to get their own mention.

A Claw Hammer

A claw hammer might seem like the most basic tool you could own but it's actually one of the most versatile when it comes to woodworking. Obviously there are pieces of wood to be nailed together but that is the bare minimum that a hammer can do. The claw part is necessary to remove nails but it also serves well for breaking apart wood and joints.

As a blunt instrument, a hammer can be used to help you break pieces of wood or to keep things in place. When you build a chair, a couple of whacks with a hammer can ensure that everything is joined tightly.

While the hammer that comes in a basic toolkit will probably be okay, I think that investing a little extra money into a high-quality hammer is money well spent. You want to make sure that the head and the handle are joined together securely, otherwise you could see the top of the hammer go flying off mid-strike. A high-quality hammer will never do this but lower quality ones are notorious for it.

Tape Measure

Your tape measure is going to be your best friend. Every woodworking project begins not with wood but on paper. Plans are drafted and everything is sized well before cuts are made. Once you have these sizes, your tape measure will be used to measure out each board and then you can make a notation of where to cut.

When it comes to working in a woodshop, I don't think that there is a single session that goes by without the need to measure something. While any tape measure will work, you will want to get a sturdy one that can support itself if you will be primarily working alone. If there is more of one of you then a weaker tape measure will work because you can keep it taut between the two of you.

Other measuring tools that can be useful are a level and a layout square. A layout square is a triangular tool which has lots of measurements on each side. It is used to measure angles like those found in the corner between two walls. A level on the other hand is used to make sure that a shelf isn't slanted. It looks like a ruler with a little air bubble in it. When there is an upwards or downwards slant, the bubble will move to the top or the bottom of the solution it is in. If the level is held perfectly straight then the air bubble will rest in the middle. If you are putting up shelves in your home or in your woodshop then you must-have both a tape measure and a level.

Power Drill

As we start to move into some of the electric tools, there can be no better example than the power drill. Drilling a hole into a piece of wood is terrible the old fashioned way. It really took a lot of strength and commitment. But a power drill will make a hole in a second. Adjustable bit sizes allow you to make a bigger or small hole as is needed. Sometimes you need a hole to let air pass, other times you need them for screws or bolts. Whatever the reason, a good drill will make the job easier.

When choosing a power drill, find one that comes with a few different bits. The variety will make your life easier. As you get more involved with the woodshop, you may find yourself wanting more bits and these can easily be purchased. But most projects can be made with only a few.

There are cordless drills that you can purchase but I've never had so many problems with power tools as I've had with cordless power drills. The batteries always seem to be dead or not charging properly and they don't have the same power that a corded drill has. This lack of power means that the drill bit turns slower and this can make for a lower quality hole with nicks or scratches on the inside. What you lose in portability, you gain in power, utility and quality when working with a corded drill.



Circular Saws, Hand Saws and Table Saws

The circular saw is one of the best ways to cut a piece of wood. It can be used to make smooth cuts in the same manner as a table saw, only in less space. Of course, a table saw has the benefit of offering a table from which the blade protrudes. This means that you will never damage what's underneath the piece of wood. But a circular saw must be used with freestanding pieces. To cut a board with a circular saw, you would want to set the plank onto your work table, push part of the end off the table and then use the circular saw to cut this end. If you use the circular saw used on the piece as it sits on your table then to fully cut through it you would need to cut into the table. If you have metal tables, this could chip the saw blades.

Whether or not you want to get a circular saw is going to depend on whether or not you are planning to get a table saw. A table saw is quite a bit more expensive than a circular saw and it doesn't have the mobility of a circular saw but it offers a self-contained cutting environment. The circular saw requires you to create your own cutting environment and this takes a little bit of work, such as setting up some workhorses to place your wooden planks across. Because of this, a circular saw can be a bit more complicated to use.

But the money that you can save purchasing a circular saw when you are just beginning is very real and very compelling. If you are starting out and aren't sure if you're going to like woodworking, then go with the circular saw.

Or you might even want to try getting a hand saw. A hand saw is going to be quite a bit slower than an electronic saw is and it is going to leave your arm feeling sore but it costs almost nothing to purchase and you're less likely to damage a table when cutting on it with a hand saw, because it requires applied pressure on your part. When you cut through the board, you feel it snap into two pieces and you stop cutting. This is furthered by the fact that a hand saw has a ragged but otherwise straight cutting surface. A circular saw has a circular cutting edge and the part of the board in the middle will be cut through first. If you are starting from the outside edge, as you should, then it is already nearly impossible to use a circular saw on a table while it is very, very easy to do so with a handsaw.

You should probably keep a handsaw around anyway, just to be safe. But while it is a cheap way to get started, it'll leave woodworking feeling like a chore.

A table saw is a big investment but of all the saws, it is by far the most effective. A table saw is typically about four by four feet and you will want enough space around it to be able to feed boards though. If you are cutting horizontally or at an angle then not a lot of space is needed but vertical cuts require upwards of ten feet on either side of the saw.

A Jigsaw

A jigsaw is a really cool type of saw. The jigsaw has a serrated blade that sticks out from the bottom. When it is turned on, the blade moves quickly to cut through whatever material is there. But due to its small size, it can be used to cut circular angles. For example, if you wanted to hollow out a small piece of wood like a barrel, a jigsaw could be used to give you that round shape.

Beyond circles, a jigsaw can be used to create much tighter bends in your cut. If you need to cut out a zig-zag pattern, like a set of stairs might look from a side-on view, then the jigsaw is the go-to tool. However, the small size of the blade makes it pretty useless at cutting through boards quickly. If you need to cut clean through a board then a table saw or circular saw will be much more effective than a jigsaw.

A Surface Planer

A bit of a weird tool, a surface planer kinda looks like a printer. It's got a box shape to it, with multiple slats like where you would insert the ink or the paper into a printer. Planers are about as technologically advanced as printers are, honestly. These tools are really cool. They're used to decrease the thickness of the wood.

Surface planers have adjustable options so that you can remove a little bit or a lot from a piece of wood with a pass. In order for a planer to be effective, it needs to create an even cut. You wouldn't want one part of the board to be down six inches while the rest is five. It is important that you take the time to slowly feed boards into a planer but most are designed to make it easy to do so. A planer should have rollers on the inside that react to the board being fed in. Once it is on the rollers, it is very easy just to push it through to the other side. Some planers have automated rollers that take over the job of intake feeding from you.

Planers are among the loudest tools in the woodshop and they require earplugs or hearing protection. You must also be careful when feeding long boards through a planer. It is best to get additional support so that you are never relying on gravity, as this is a surefire way to get an uneven cut.

As far as equipment goes, the surface planer is on the more advanced end of the scale. You shouldn't need to purchase a surface planer for any of the projects in this book. For most of these, you should be just fine with some sandpaper or a sander.



Sander

A sander is certainly a lot more expensive than just purchasing sandpaper is but it is also much more effective. Sometimes all you need to do is take a little bit off the top. For example, when you are making a table you sometimes will need a sander to get the legs to fit properly. A piece of sandpaper can be used in these cases (and it actually works quite well in cases where the object is round and the paper can be wrapped around it) but a sander can make it go by faster.

Larger projects, such as when you want to reduce the thickness of a piece of wood that is too big for the surface planer, such as a door that you've taken off the hinges, then an electronic sander will prove to be invaluable. Most electronic sanders actually just have a place for you to place a piece of sandpaper. So when you purchase a sander, you usually end up with a bunch of sandpaper anyway. If you purchase a sander that doesn't use sandpaper, then you should purchase some sandpaper anyway. It is always best to have both.

A sander is one of those tools which you might not think is all that important but you'd be surprised. The most used are the saws but second place goes to the sander. It ran a tight race against the power drill but there is hardly a project that isn't improved by smoothing out the edges with the sander. It might not be the main tool for the building process but it's the main tool for applying the finishing touches.

Chisel and Mallet

Returning to our low tech tools, a chisel and a mallet are as versatile as can be. While a hammer is a great choice for a blunt weapon to knock a board loose, if you are looking to make precision strikes then you'll want a mallet. The shape of the mallet will create a more controllable swing.

This is good because you will want to strike the end of the chisel with the head of the mallet. The chisel is a thin blade that can be wedged into corners quite easily. So say that you have two pieces of wood put together at a ninety-degree angle with a couple nails. The nails are put in so tightly that you can't get them out with a claw hammer. Rather than fumbling around and knocking at the corner joint with a hammer, you reach for the chisel and the mallet. The chisel is jammed into the space between the two pieces. If there is no space then it is placed as close as possible to where the two should connect. The chisel is hit and this pushes it into that space. Hit it again and the thinner part of the chisel acts as a slide to push the wood up to the thicker part. This causes the two pieces to start to come apart and it is only a couple more whacks until those nails no longer have any grip.

A chisel can also be used to make notations on boards, such as creating scratches or indentations where it should be cut. This isn't the best idea. In fact, it is 100% better to use a pen or marker. But if your hands are full and the chisel is what you've got, it can handle the task of making quick marks. Just be careful not to hit the wood too hard, as chips in the wood will reduce the overall quality of the products you make.

Chapter Summary

- A pen or pencil should be a part of every woodshop so that you can make notes on where to cut boards after measuring them.
- Purchase a toolbox and basic tool kit for your woodshop. The more pieces, the better, as you'll never know what you need until you don't have it.
- A claw hammer is used to beat nails in and remove them later. It can also be used to knock loose pieces into place securely. Purchase a high-quality claw hammer so that the head never comes off mid-swing.
- A tape measure is used constantly to measure where you should cut your boards. If you are working alone then you'll need a sturdy tape measure which can support its own weight when extended several feet.
- A power drill is used to create holes in your wood. Drilling a hole by hand is a nightmare, so a power drill is a must but you need to stick to a corded unit. A wireless power drill has less power and so it drills less effectively.
- A circular saw can save you money by replacing the need for a table saw, but it shouldn't be used to cut into boards that are on a surface such as your workbench.
- A cheaper alternative to the circular saw is the hand saw. This will tire out your arm much faster since you need to work the saw yourself but it is quite inexpensive and you should get one for your woodshop even if you have an electric saw.
- The best saw for your woodshop is a table saw but these are much more expensive and they require a lot of space.
- A jigsaw is a small handheld saw that is used for making tight turns and circular cuts. This should be one of the early tools you purchase.
- A surface planer is a bit more high end and advanced when compared to the rest of the tools and it shouldn't be anywhere near your initial shopping list but it is used to reduce the thickness of boards.
- Sandpaper is used to create a smooth surface and while it can be done by hand, purchasing a sander can save you hours.
- A chisel and a mallet might seem like very basic tools but they are quite versatile and no woodworker should be without them!

In the next chapter you will learn all about the different kinds of wood there are. Each wood is unique and different and will therefore make a better or worse choice depending on what you want to make. From pines to redwoods, cherries to cedars, we cover the most common woods and which are best for beginners next.

CHAPTER THREE

BEST TYPES OF WOOD FOR YOUR PROJECTS

We can't work wood if we don't have any. Don't worry, it's easy enough to get your hands on some. Going out and purchasing planks is the best and easiest way to get started as these are already cut into workable sizes and they have already been treated (unless you are working with untreated woods). Some people will bring home used or scrap woods and begin their projects this way, as it is cheaper than purchasing new. However, I recommend against this.

It is almost always better to go with a fresh and clean board. For one, you can trust that the board has been stored securely so as to eliminate the possibility of early decay or infestation from some kind of pest. But more so than that, you can really make sure that you are using the right kind of wood.

Not every type of wood is the same. There are softwoods and hardwoods, of course, but even within these categories there is lots of room for variation. While wood is broken up based on tree, this doesn't serve to limit our possibilities but rather open them up further. You might decide you want to work with pine but then you will still be able to choose between hardwood pine or softwood pine. However, hard and soft pine will have more in common with each other than not.

All of this variety gives us a lot of leeway when it comes to choosing our woods. In this chapter we'll look at pine, as well as several other kinds of wood, to see what they are best used for and what features you should be aware of before you make your choice.



Pine

While I mentioned above that there are hard pines, the vast majority of pine is softwood. Pine is a global species, found all over the world. It has a light color that borders on off-white. This color changes depending on the particular kind of pine being used but it never ranges far from white or yellow. You may read that and think that pine is a bad choice if you're looking to make a darker piece of furniture but you might be surprised to learn that isn't really the case. Yes, a darker wood will more naturally lend itself to the project at hand but the light color of pine makes it easy to add a dark finish to it or to stain it and make the wood really stand out. This allows you to essentially dye the wood and it opens up the possibilities of making it pretty much any color you want.

Along with the color, pine is a great choice for woodworking generally. It might be softwood but that shouldn't be equated with it being weak. Pine is actually very strong and it is even shock resistant. As pine ages, a thin layer forms on the surface. This patina might be confused for a sign that the wood is aging past its prime but this would be a mistake. Pinewood doesn't become weaker as this patina forms, it is rather an aesthetic concern. But if you are a fan of rustic furniture then you've definitely seen the way that pine looks before. The way it ages is a benefit to this style as it makes the piece look much older than it is. Some people dislike this aged look and they'll find themselves spending a lot more time maintaining their pine furniture when compared to someone who enjoys the appearance.

One of the reasons that pine is a good choice for beginners is the simple fact that it doesn't cost as much as other types of woods do. Pine trees grow fast, so there is less time and maintenance required to plant a crop of pine through to harvesting. Less time to grow means less money to grow and that means less money you need to spend to get started. Pine's lighter color might be a detriment to some but its ability to change color easily during the finishing process is a major benefit. It would cost you more to select a wood that is naturally darker than pine is. It still costs money to purchase the supplies needed for the finishing process but if you purchase them once then they can be used on several projects, making the additional cost irrelevant for additional creations.

Pine isn't the strongest of the woods but it is quite strong. It has the benefit of being quite stiff, which in turn allows it to be much more resilient than other softwoods might be. Yet, surprisingly, it isn't all that

heavy. The lightweight can be a blessing if you make use of it. For example, if you are considering building a wardrobe then it is going to be quite big and bulky. If you use a heavy wood like oak then you'll find it to be a real pain to move. But a lighter wood like pine will be much easier. Plus since pine is shock resistant it can withstand being dropped during a move without any worries of it breaking. Though it must be noted that this only applies to minor drops. If you toss it off the roof then it's still going to break apart when it hits the ground. Pine also doesn't change its size due to temperature in the drastic way that some other woods do. It does still expand and shrink a little but because the overall change in size is so minor you don't need to worry about these changes warping the shape.

Pine has lots of lovely benefits that make it a great choice for your projects but it isn't a perfect wood. If you are concerned about aesthetics and styles then you'll know that while pine fits a rustic look, it doesn't have the same versatility as other woods. You wouldn't select pine for a more modern look, it would only clash. One of the reasons that pine fits the rustic look so well is the fact that signs of wear really stand out. While it is quite strong and resistant, it can dent quite easily. Scratches are also a problem that pine faces. The look of dents and scratches matches the rustic style but some people dislike them. If you aren't into the look then you'll find yourself spending more time maintaining and fixing the wood when compared to another type. Finally, pine is quite prone to knots. When you're building something, like a chair, you can get away with a knot or two. But too many of them and the structural integrity of the piece goes out the window. When selecting pine, you need to be extremely careful not to use too many knots on any given project.

While pine comes with its own weaknesses that can't be ignored, the positives that it offers makes it a great choice for any of your projects that fit a rustic, down-home style look and feel.

Redwood

Redwoods are known for growing over three-hundred feet tall and twelve feet thick. While these are representative of older trees that have been given a chance to grow over decades, it points towards just how much one of these trees can produce. However, because they take such a long time to grow, they aren't particularly cheap. California used to be one of the largest exporters of redwoods but their forests have either been completely harvested or they have been set in reserve to give the trees a chance to grow and flourish without industrialization destroying their natural beauty. Despite this, there is lots of redwood to be purchased. Part of this is due to supplies being in abundance but the other is due to imports from New Zealand where their redwoods grow massive, though they still take fifty years to do so.

Redwood is a softwood and it is quite light, like pine. The grain of a redwood board is much more evenly distributed compared to many other species. This is due to the way that the tubes within the softwood form. As the name suggests, redwood has a red appearance. People often seek out redwood because of its color, as it is easier to make the red of the wood pop through finishing. Pine is often selected because it can change its color in the finishing process but it doesn't have an easy time reddening the same way that redwood does. However, the color is only one of the reasons that redwood is used as often as it is.

Redwood has a natural resistance to insects and decay. It also doesn't shrink much, similar to pine. While the lack of shrinking is nice, these other two features are amazing. Redwood is often selected in carpentry as a wood of choice for the outside of a house or shed. Because it can resist insects, it makes it harder for the tastier woods inside to get infected. Pests would need to eat through the resistant redwood and this isn't easy for them to do. Redwood is a great choice for carpenters because of this but woodworkers should also consider this. If you are making something for outdoor placement, like a teeter-totter or a birdhouse, then redwood should be a strong contender for the wood you select.

Redwood isn't as strong as many other woods are, which means that you'll probably find yourself needing to commit time to maintain it. This is why it is used for the outside of buildings more often than the inside, as you want much stronger woods to serve as your primary supports. Redwood wouldn't make for a good baseball bat but if you're looking to make some outdoor furniture then the natural resistances will be your friend. But if you aren't looking for these natural resistances or the rich red color then you probably won't have redwood high on your shopping list anytime soon.



Cherry

Cherry is a good choice of wood for pretty much any project that doesn't require a tough wood. Baseball bats are out, again. But cherry has a beautiful reddish color to the heartwood. Cherry is one of the best choices for furniture, both because of its beautiful look and the fact that it is easy to work with. Unfortunately, cherry can be quite expensive and it is rarely carried at most home improvement stores. If you're going to be working with cherry, then chances are you'll need to purchase it directly from a lumberyard.

When choosing cherry to work with, you'll want to check for a few different features. The easiest to check is the color. The heartwood of cherry has the reddish color but the sapwood is white. When selecting boards, look at both sides of the board to ensure that it is entirely heartwood. You'll also want to check for gum pockets and knots. Gum pockets present as dark spots or lines throughout the board. One or two of these isn't a big problem but you should aim to minimize the amount present as they lower the overall quality of the board. With high-quality cherry, knots aren't very common but they do still occur. The knots you're likely to encounter will be quite small but even small knots can quickly reduce the integrity of a board or a project if there are too many of them.

Cherry can be a dream to work with. It is important that you cut it slowly with a sharp blade but so long as you feed it into the blade slowly there shouldn't be a problem. One problem that cherry does have is that it can burn easily. This is very important to realize before taking any tool to it. Say you're drilling some holes into it in a tight cluster. The heat from the power drill could actually burn the board around the hole. You'll notice it blacken up and the burn will stand out clearly against the color of the board. Sandpaper is used to remove burn marks, as well as any scratches that happen. Trust me, they will happen, cherry's tight grain makes it more likely to scratch. This can be detrimental if you're looking to create a very clean and even looking product but being prone to scratches is arguably better than being prone to breaking, as some woods are.

If you are looking to make delicate and finely crafted furniture then cherry is a more expensive option but one that is well suited for your needs. As a beginner, however, I would recommend sticking with a more inexpensive wood when first beginning. Beginners are much more likely to make mistakes and ruin boards. This is all part of the learning process and perfectly normal. Accepting that ruined boards are part of your future as a beginner, you should know to select inexpensive materials to reduce the amount of capital spent acquiring the hands-on experience necessary for building skills.

Cedar

Cedar is a softwood, even more so than cherry, with a straight grain. One of the reasons that cedar is deeply loved in the woodworking community is the aromatic flavors it gives off when it is being cut or sanded. Cedar is a commonly used wood, although it should be noted that it comes in several varieties which each have their own unique benefits. We'll look at these each in a moment but one thing they have in common is that they're a great pick for outdoor furniture. While water and moisture will cause wood to rot, it isn't a uniform process. Instead, it changes depending on the wood in question. Cedar, like redwood, is a top pick for any of your outdoor projects.

The most common cedar is the western red cedar. These trees grow from Alaska through to California and they can be found all over the Rockies. Out of the different kinds of cedar there are, it is the western red cedar which is the best fit for the outdoors. Not only is it resistant to moisture but it actually repels water. As a material, western red cedar isn't very dense. It's the lack of density which makes it such a softwood. In carpentry, you'll find cedars used for decks and shingles. It also finds use as siding for buildings. While it is easy to cut, it is important that you only cut cedar in an area with good ventilation. You should also be wearing a mask, as the sawdust is known to cause breathing issues. Rashes and skin irritation are also common when working with western red cedar, so it can be a smart idea to wear long sleeves when working to minimize contact with your skin.

Northern white cedar grows around the bottom of Canada and the northern part of the United States. It is known for being resistant to decay and insects. Like western red cedar, the northern white is used frequently for outdoor projects. In fact, it's decay resistance makes it a great choice for building a canoe and there is a long history of the boats being crafted with northern white cedar. It doesn't have the same reddish color as its western counterpart does and it is actually less dense and more fragile, too. Northern white cedar is known for breaking easily and tearing, so it is important to always cut it with freshly sharpened tools. Maintain the same safety working with northern white cedar as you would western red, as they are linked to the same health issues. If you aren't from the area in which it is naturally grown, it can be hard to find northern white cedar for your projects.

Similarly, eastern red cedar can be hard to find if you're not on the right side of the continent. This cedar has a very, very strong smell, much more so than the others. The wood has natural oils that achieve this effect. Eastern red cedar is often suggested for use with closets or wardrobes and chests. These are used to store goods which could be damaged by insects so it is thought that the aroma of eastern red cedar works as a natural repellent for pests. However, this is nothing more than conjecture. Science has yet to find any sign that this is true. What is true is that those who enjoy intricate woodworking are quite taken with eastern red cedar. For one, it has such a beautiful red tint that is much darker than the western red. Again, safety is important when working with this cedar. It should also be noted that it can be tough applying a finish to eastern red cedar. The resins within the wood can make oil finishes a real hassle, so you'll either need to dedicate time and attention to finishing them properly or you should consider another finish that isn't oil-based.

There are more types of cedars that we could keep exploring but it should be clear that they are low-density woods with high resistances to decay and moisture. However, not every type of cedar is a softwood. Spanish cedar is an example of a hardwood within the cedar family. These trees grow in Central and South America. While more common in these areas, there have been Spanish cedars planted throughout Florida. Spanish cedar is slightly pinker than the eastern red but it also boasts more density. It is still a lightweight wood and this has seen it used for just about everything from furniture to racing boats. The chances that you get your hands-on Spanish cedar is rare and it is by far the most expensive of the cedars listed here.

If you are looking to work with cedar, the western red and the northern white are going to be the most affordable options. Eastern red is a little bit more expensive around \$3-\$4 a foot. If you are looking into other cedars like the Spanish cedar or yellow cedar then you are going to be paying closer to \$6-\$8 per board foot. For beginners, avoid the expensive boards for the time being and work with the cheaper ones. If you are really looking for a beautiful looking color to your project then spend the money on the eastern red and give it a nice finish. The end result will be gorgeous.



Maple

Maple is found in both softwood and hardwood varieties. Regardless of which variety you use, you'll find it to be harder than the other woods we've looked at throughout the chapter. By a long shot. If you decide to work with hardwood maple then you're going to quickly find out that it is really hard to work with the stuff. Softwood maple is easier to work with but it is still harder than pine. Yet despite the difficulty that maple poses, it is known for having a very thin and straight grain. This means that if you're looking for a wood that can last, maple is hard to beat.

You might have a hard time finding maple at a home improvement store but it should be easy to find at a lumberyard. Maple is actually pretty common, as a species and as a wood, so it is surprising that more home improvement centers don't carry it. You might suspect that the stuff would be expensive but it's one of the cheapest options available for hardwoods. While cheaper, it is still among the densest of them. This density makes maple a great choice for carpentry, alongside cherry and oak wood. When it comes to furniture and woodworking, you are better off selecting a softwood maple. The colors of maple wood can be matched with each other to create really beautiful furniture. Remember, the softwood version of maple is still hard and so you won't need to worry about the wood being too weak for the project.

Maple has some issues when it comes to applying a finish and shrinking. Maple doesn't seem to take well to finishing and so you can end up with lots of spots that either don't take to the finish or take too well and have a splotchy appearance. Shrinking occurs due to changes in temperature. If you need to purchase maple and have it brought into your climate then you will need to let it acclimatize before you begin to work with it. Areas in which the temperature fluctuates wildly aren't particularly suited to use maple in their projects.

Recommended Wood for Beginners

With these five woods, we have barely even scratched the surface. There are more than 100 different families of trees which we can select from, some of which have several kinds beneath them. For example, you could choose to work with oak but then you would need to figure out if you wanted to use white oak, English oak or red oak. Three choices might not sound so bad but there are ten types of white oak alone!

To cover each and every type of wood would take far more space than we have available here. But more than that, much of this information would be irrelevant to you at this stage in your woodworking journey. Nobody would ever recommend that a beginner sit down and learn about each of these woods. The better option is to start with one or two woods. Beginning with these lets you get a sense of how the tools work and how to physically work the wood. It'll also give you a sense of the problems and challenges that arise from working with wood, as well as some of the frustrations that can make you want to pull your hair out.

I recommend that you begin with pine. It is easy to use and it has lots of appealing features that make it highly attractive. However, pine is most strongly connected to a rustic style. If you enjoy this style then great, you have nothing to worry about. But if you aren't into the rustic look then you should try working with a softwood maple. This is a little bit harder than pine and it will present its own unique challenges. Lots of people suggest poplar but if you are looking at poplar or pine then I would recommend pine. If you're comparing poplar with maple then I will argue for maple, as I believe that the softwood maple serves well to branch the gap between beginner woodworker and intermediate woodworker.

However, ultimately, which you select is going to be determined by the needs of the projects you choose to work on. Let the projects guide you towards whichever wood fits the aesthetic you desire. Remember to balance those aesthetic needs with the difficulty of the wood, as well as its pros and cons. But when starting out, remember to keep the costs low so that you have no reason to get upset over a broken board. There are going to be plenty of mistakes in the beginning, after all.

Chapter Summary

- Pine may come as a hardwood but the majority of pines are softwoods. Pine can be found all over the globe, making it one of the easier woods to get your hands-on.
- Pine is a lightly colored wood. This actually makes it much easier to apply a coat of stain and to darken it up.
- Pine is quite strong and it is resistant to shock. As it ages, it develops a patina over the top. Some people enjoy the way this looks, others don't. But it shouldn't be mistaken as a sign of decay, as it doesn't reduce the structural integrity of the wood.
- Pine is a rather inexpensive wood because of how quickly pine trees grow. If you are looking to get started with woodworking then I suggest you start with pine. It is easy to use and cheap to purchase, making it perfect for early projects that are prone to mistakes.
- Pine is quite resilient and it doesn't change its size due to temperature as drastically as other woods do.
- Redwood is a softwood that has an evenly distributed grain that makes it quite reliable when working with it.
- Redwood has a natural resistance to insects and decay and it doesn't shrink very much. If you are working on a project that will be displayed outside then redwood treated with an anti-moisture finish will be a great choice.
- Redwood is a weaker wood than many of the others listed, which means that it will take more time and effort to maintain it over the years.
- Cherry is a weak wood but one that has a gorgeous color. It is easy to work with but rather expensive.
- When picking boards to use, select those which have the reddish color of heartwood. You want to avoid working with the sapwood of cherry if you can help it.
- Cherry has less knots than many others but the knots that are present can be quite debilitating. If you can, cut around knots.
- Cherry burns easily and it is even known to blacken due to the heat that comes off of your various power tools.
- Cedar is a softwood with a straight grain and a wonderful aroma when cut. There are many types of cedar, most of which are primarily found locally such as the north white cedar, the western red cedar and the eastern red cedar.
- In working with cedar, it can be quite affordable but the price will be set by the type of cedar and so it is possible to only find expensive cedar when you go looking.
- Maple comes in both soft and hardwood varieties but both types are among the hardest of woods. This is hardest both in the sense of the density of the wood and what it is like to work with it.
- Maple is one of the cheaper hardwoods available for purchase and it is a great choice for carpentry but it has issues with finishing and it expands and shrinks easily.
- If you had to pick one wood to begin your woodworking journey then I would recommend that you start with pine.

In the next chapter you will learn how to make all sorts of simple woodworking projects. Shelves for your wall, spice racks, candle holders, benches and toys are just a few of the projects which make woodworking fun for you and the whole family.

CHAPTER FOUR

SIMPLE WOODWORKING PROJECTS

Now that we've gotten the tools and the wood, we can start putting together some great projects. In this chapter, that's exactly what we're going to do. Each of these projects will include instructions, materials and tools so you know exactly what you need to work on them. That's actually why this chapter is so early in the book. You absolutely must read chapter six before you actually start up any of the tools but you can get a clear sense of what tools and how many materials you need to start making some really awesome projects.

We'll start with a couple of basic projects, little pieces of furniture that add charm to your home and experience to your person. From there we'll turn our attention over to some fun toys that can be made for children of all ages. You can make these for your kids or even with your kids, they make for great gifts and a great introduction for children to start learning woodworking.



Project 1: A Wooden Shelf

Shelves are always useful. If you're like me, you're always looking for more because you either have too many movies, books, plants or photos for the space you have available to you. As I write this right this moment, I am eyeballing a spot in my kitchen where a wooden shelf would make life so much easier when I cook. If you look around your home, I'm sure you can see spaces where a shelf would be a wonderful addition.

This is an easy project. You could make a shelf with only a screwdriver, a piece of wood and two wall brackets if necessary. We'll keep the tools to a minimum, so you can get making this project before your woodshop is finished if you want. But we'll also look at how this can be expanded and built upon for more personality.

Tools You'll Need:

1. A tape measure.
2. A screwdriver.
3. A saw.
4. A pencil.
5. Optional but recommended: Sandpaper.
6. Optional but useful: A stud finder.
7. Optional but useful: A level.
8. Optional: Wood glue.

Material You'll Need:

1. A wooden board, 4 x 4 is recommended.
2. Screws.
3. Two brackets.

Instructions

Let's begin with where you want to hang a new shelf. If you have a stud finder, use it to find where the studs in the wall are. For the best support, you want to make sure that you attach the shelf to the stud. Mark the studs and measure the distance between them. This gives you the size of your shelf. Keep in mind that the studs don't need to be the two right next to each other. If you are doing a larger shelf or have studs very close together, you can always skip a stud. The important part is that they offer a solid support for the shelf. If you skip a stud and find the shelf isn't secure, you can attach an additional bracket to the shelf and the stud you skipped over. Use a level and mark the studs so that they are even horizontally.

Take your board and cut it to your measured size with your saw, hand or electric is fine. Use sandpaper to smooth out the edges. For a shelf, you aren't going to want a very thick board. However, a strong wood could be beneficial if you want to use it to store heavy objects. Keep in mind though, the biggest issue with weight on a shelf is the tension it puts on the brackets and not the board itself.

You will probably want to apply finish to the shelf before you do anything else with it. For instructions on how to apply finish, stick around for chapter five where we'll go through the finishing process in depth.

Depending on which is most comfortable, you have two options for attaching your bracket. You can attach them to the wall first or you can attach them to the shelf first. I personally like to attach them to the wall. The shelf can be sat on them then and a heavy book can apply downward pressure so that you can screw up into the board. If possible, though, a second set of hands to hold the shelf in place will make it a thousand times easier.

There you have it, you just made and installed a new shelf. It does look a little plain, though, don't you think? I certainly do with the one in my kitchen now. I want to use it as a spice rack but they look pretty boring just sitting there. But that's the cool thing about these shelves, it's easy to expand and build on them.

To turn mine into a spice rack, all I need to do is measure the dimensions of the board. How long across is it and how wide is it? With these numbers in mind, I'm going to start with the longest piece and use my saw to cut a strip for the front. It's half an inch tall, half an inch thick but it's the entire length of the shelf. Screw this into the shelf from the bottom. Now I measure the width again, this time measuring from the new strip I added rather than the full length of the board. Since both sides are the same, I only need to measure it once but I need to cut two pieces to this length, the same height and width as the front strip. I screw these in from the bottom and I use some wood glue along all the seams to make it tighter. Of course, I will also apply finishing to match the new pieces to the previous style.

Presto, now it looks much more like a spice rack. With a little bit of modification, a boring shelf can be made more interesting. You could make wood designs and screw them into the sides to act as bookends, you could add full sides and a top shelf to create a cube shelf. This is one of those projects which starts as simple as can be but can get more and more complicated as you gain experience and let your creativity fly.



Project 2: Candle Holder

Candle holders are really easy to make also. For a simple candle holder, all you need to do is cut a hole in a board the size of the candle. There you go, a wooden candle holder. Simple. But boring.

Let's make a candle holder with some charm. For this one, we'll select a piece of wood that hasn't been treated. We don't just want the heartwood. We want the sapwood and the bark, too. So we'll want to

start with a log rather than a plank. We could buy a treated log, which would make this a simpler process. But we're going to work from the assumption that you found a nice piece of wood in the wild and you want to make something out of that. This will let us see how we do this for any of our projects using untreated or found wood.

Tools You'll Need:

1. Sandpaper.
2. A tape measure.
3. A Saw.
4. A pencil.
5. An Electric drill with a 1 $\frac{3}{8}$ inch bit.
6. Optional but recommended: A liquid insect repellent.
7. Optional: A cutting blade could be substituted for drill but will prove frustrating.

Material You'll Need:

1. A liquid-form insect repellent.
2. A log.
3. A tea candle.

Instructions

To begin, you need to select your piece of wood. If you can find walnut, it looks really nice because it has a very thick layer of bark. However, it really doesn't matter what type of wood you select. In fact, you might actually want to try finding a few types to see how the effect changes depending on the species.

Next you figure out the dimensions of the cut you are going to be making. The drill bit listed under tools is sized for a tea candle but there are thinner and thicker candles that you may want to hold in this manner. These will require different numbers. So first, measure the circumference of the candle. This will let you know what size drill bit you need. Measure the height of the candle, this will tell you how deep you need to drill into the wood. If your piece isn't long enough then there isn't really anything you can do about it except use a shorter candle.

You could jump to the next step if you purchased treated logs but since we selected them from the wild we are going to need to treat them for insects. Just because there are no signs of insects when you pick it up, that doesn't mean there aren't any. A liquid bug solution for use in the home can be found in any home center. Purchase one that is water-based. This is important because we are making candle holders and that means fire. Water-based ones don't go up in flames. Pick your insect repellent, soak your wood in the stuff before you go to bed. In the morning, the logs will be dry and you can start drilling.

Before drilling, place your candle onto the wood and try to get it as close to the center as you can. Take your pencil and trace around the candle on the wood so you know where you drill. Set your drill bit to the appropriate length and slowly, carefully drill down into the wood. Keep your candle nearby and take breaks often. Brush off the sawdust and put the candle into the hole. If it isn't deep enough then drill a little deeper. You want the top of the candle to be roughly level with the top of the log. It's important that you don't drill so deep into the log as to come out the other side, otherwise your candle holder won't, you know, hold the candle.

These work best with small tea candles as they come with thin metal tins which keep the candle wax mostly stuck in place. For larger candles, wrap the candle in tin foil all the way up the body but leaving the top of the candle unwrapped. When you place the candle in the hole, the tin foil should be hidden by the log. Now, the top of the candle holder will be a bit messy as it melts but the lower wax will be contained within the tin foil. You should be able to remove the candle by removing the tin foil when it becomes visible. If you aren't concerned with the longevity of your candle holder then you can skip the tin foil and make it a one-shot holder for a long candle. Either way, while it can work for longer candles it is best used for shorter ones.



Project 3: Coat Rack

Coat racks are another super easy project for beginners. They're great for practicing cutting, finishing, drilling and measuring. For a simple project, they offer probably the most flexibility of any of the projects we've made so far. With a little bit of creativity, you can come up with thousands of ways to personalize a coat rack. You could use clothes hangers for hooks, action figures, doorknobs or an unlimited number of wooden shapes and designs of your choice.

Beyond changing the hooks, you can always change the dimensions. If you live alone then you'll only need two or three hooks but if you have a big family then you could easily need eight, ten, twelve or more. By increasing the length you can get some more hooks but you could also use a wider board and create two rows of hooks to save wall space. On top of that, you can also paint them any way you like, too.

Tools You'll Need:

1. A saw.
2. A screwdriver.
3. A tape measure.
4. Wood glue.
5. Optional but recommended: Sandpaper.
6. Optional: A stud finder (only needed if you're mounting it yourself).
7. Optional: A level (only needed if you're mounting it yourself).

Material You'll Need:

1. A wooden board, 4 x 4 is recommended.
2. Hooks.
3. Screws.

Instructions

Select your desired wood. A 4/4 board will be a good thickness but it will be a little too wide. If you are going to be hanging this coat rack in your own home then you can find instructions on using a stud and preparing your wall in project #1, so we won't bother going over those again. But for a coat rack, your plank is going to be a little too wide if you are doing a single strip coat hanger.

So once you have the measurement for how long your coat hanger is going to be, you need to cut. If you are making one to sell or gift rather than for your own home, you aren't going to be able to get exact measurements so just stick with a foot long. That should be enough space to hang at least four hooks. If you find that this is too long for you, you can always remove wood much quicker than you can add it.

Use a pencil to mark the length and use your saw to make the cut. Next, measure the width of the board and make a pencil mark half way. Before you make a cut, take your hooks and place them on the board to see how much space they need. If you are using large hooks then you might need three-quarters of the board rather than half. Half is about where you'll find yourself cutting with most hooks though.

With the board cut, it is a good idea to sand it down. While this is optional, nobody is going to want a coat rack that gives them splinters. For a cool look, try sanding down the corners on all the edges of the side that'll have the hooks on it. This will give the wood a tapering effect that looks awesome. Once the board is sanded, decide if you want to apply a finish or paint to it. Let these dry before continuing.

The easiest hooks to go with simply screw into the board from the middle. For the cleanest effect, use a level to ensure that each of the screw holes will be even. Use a measuring tape to ensure that the hooks are all evenly spaced. Use your pencil to make a quick note where the screw will go. Keep the pencil marks small enough that the screw will remove it all. This is your blueprint for screwing in each of the hooks and that's all there is to it. Once they're in, you have a coat rack.

If you are going to gift a coat rack like this, you may want to test it first and make sure that it is sold. If you notice that the weight of a wet coat starts to pull on the hooks a little, try using some wood glue in the cracks to give it a tighter hold.



Project 4: Wooden Bench

A wooden bench is a harder project. You can keep it in your house but it is really made for your

backyard or garden. Because of this, you'll want to match your choice of wood to the needs of its placement. Redwood would be a good choice for an outdoor bench because it naturally resists moisture and insects. But it is also not as strong as some of the other available choices. If you keep your bench small then the legs will be close together and offer more support and so a weaker wood won't be a problem. A longer bench will need more strength.

We're going to make a very simple bench, it's not very expensive and it uses simple designs for a minimal amount of mathematics or measurements. This still results in a beautiful looking bench but a very plain and simple one. As your skills increase, you may want to try making benches with spaced-out boards, backs to rest against or stronger supports along the legs. Each of these will offer new challenges for increasing your skillset by building off of the core project you're building today.

Tools You'll Need:

1. Wood glue.
2. A Measuring tape.
3. Three or four clamps.
4. A saw.
5. A sander and sandpaper.
6. A hammer.
7. A screwdriver.
8. A pencil.

Material You'll Need:

1. 8 boards cut to 2 x 2 x 3.
2. 1-2 boards cut to 1 x 3 x 8.
3. 2 pieces of 2 x 6 wood.
4. 2 pieces of 2 x 4 wood.
5. Nails.
6. Screws.

Instructions

We start by first purchasing our 2 x 2 x 3 boards. All eight of them should be of the same wood. Lay the boards out next to each other. This will be the seat of the bench. Pick the length that you want the seat to be and mark the boards accordingly. Use your saw to cut all eight boards to the same length.

If this is done correctly, all eight boards should be the same length when you lay them down next to each other again. If they are equal or at least close to equal then you can carry on with the next step. If they aren't then you'll want to cut them again to get them a little closer to equal.

Apply wood glue everywhere a board touches another board. The outside of the first board and eighth board don't need to be glued. Instead, apply your clamps to these two boards to keep them tight and together while the glue dries. Remove the clamps and take the seat over for measurement, sanding and cutting.

Sand the top and sides of the seat to create smooth edges. The underside of the seat isn't very important but you don't want to sit on a splinter. Next, measure the sides of the seat. Cut your 1 x 3 x 8 boards accordingly. These pieces will go around the seat and create a frame effect. It will help to keep everything together. Using your clamps to hold them in place, glue the sides on two at a time. Once the glue has dried, hammer a couple nails into them to keep them securely fastened. Sand the pieces again so that the top of the bench is level with the frame. If you don't, then the frame will be very uncomfortable when sitting on the bench.

The legs of the bench are made by attaching a 2 x 4 to a 2 x 6. Begin first by measuring the 2 x 6 to determine how high you want the legs of the bench to be. Cut the wood to the measured height. Using wood glue and screws, attach the top of the leg to a piece of 2 x 4 wood. You want to create a ninety-degree angle by screwing through the flat part of the 2 x 6 into the thin part of the 2 x 4. When done correctly, the two pieces of wood form a ninety-degree angle so that when the leg is standing, the 2 x 4 is pressed flat against the bottom of the bench. Repeat this step twice, making two legs.

Slather wood glue onto the top of the 2 x 4 and onto the bottom of the seat. Position the 2 x 4s at each other so that they point in towards the middle of the bench. Use at least six screws through the bottom of the 2 x 4 into the bottom of the seat to keep it securely fastened. Let the glue dry. When it has, place your bench down and see if it stands. If the legs aren't thick enough, you may have issues. You can get around this by getting two more pieces of 2 x 4 and using them to create a wider base. Use glue and screws to attach the new pieces to the bottom of the bench's legs to hold them in place a little better.

You might find that your bench looks a little plain but don't worry. Add a coat of wood stain to it and you'll have yourself a high-quality looking bench. It might have been easy to make but it'll look natural in both a country or urban setting.



Project 5: Block Slider

Woodworking doesn't just need to be for furniture and things that interest adults. These skills can be used to create toys for kids of all ages. We're going to start young and create our own stacker toy for infants and toddlers. If you've ever looked at a baby's toys then you've seen thousands of stackers by now. They're simple toys which infants use to learn about spatial relationships. Typically made of plastic, they're pretty generic.

But if you make one out of wood, you can create an even higher quality toy that has some meaning behind it. It means something to look back and see that your parents made toys for you. They didn't just go out and purchase them, they spent time thinking about and perfecting them for you to play with. There's nothing but love in that. So give these toys a try to show your kids how much you care. Plus, as your kids get older, there will come a time when they'll join you in learning how to make their own toys. It's a great bonding experience and it helps teach skills that can pay bills.

Tools You'll Need:

1. A saw (a jigsaw is best).
2. An electric drill.
3. Wood glue.
4. Sandpaper.
5. A pencil.
6. Scissors.
7. Optional but helpful: A computer with a scanner and a printer.

Material You'll Need:

1. Some 1 x 8 wood (can be scraps from previous projects or purchased new).
2. 4-8 different wood paints (bright colors work best).
3. A 7/16 x 1 1/2 dowel rod.

Instructions

Make sure that you pick wood without knots, as you want these pieces to all be solid and structurally sound. Because this is a child's toy, you'll also want to stick with a hardwood. It is also best to use bright, colorful paint with a different color for each block you make. This could easily be eight pieces.

Before you begin working with the wood, you need to first decide on the shape you want to make the toy. Each block will have a hole in the middle so that they can properly fit into the slider but beyond that you have limitless possibilities. You could create squares or circles, draw flowers or clouds. As it's a toy for toddlers, it's a good idea to stick to a round design such as circles or flowers. These don't have sharp corners like a square does and so they are safer.

Draw out the design on paper. If you have a computer, scanner and printer then you should scan the drawing into your computer and print it out in different sizes. This will make sure that the dimensions stay in a perfect ratio. Each of these are going to be pieces you cut from your wood. Large pieces are put on

the bottom and each subsequent piece gets smaller and smaller. Print out your properly sized pieces or try to wing it by hand with the original drawing. Either way, you want to cut out the design and trace it on your wood.

When tracing this many, start with the biggest pieces and the alternate with smaller pieces. You'll waste less wood this way. Use your saw to cut out the shapes. Depending on the design, this could be extremely precise work. A jigsaw will give you a much greater level of control over the cut and make doing the round lines much easier. Cut out each of the pieces and then set them on top of each other. If they are sized properly then each new piece is smaller than the last. If it isn't, you might be able to get around it by switching the place of two pieces. If this doesn't work then you'll need to cut an additional piece.

Take the largest piece and set it aside. This is the base piece and will be used later. With the remaining pieces, use a 1/2 inch drill bit to go directly through the middle of each piece. Before you make your first hole, use your pencil to mark where it should go and be extremely careful to make the hole in the same place on each piece.

The base piece requires a 7/16 inch bit. Strap it on your drill and make a hole but be careful not to go all the way through. We want this to be our base piece so the dowel rod will slot into this, not go through it. If your dowel rod is the right size then you should be able to get it through the hole with a little bit of trying. If it takes effort to get the pieces to slide onto the rod then it isn't going to be a lot of fun for children. We want the fit to be nice and loose in the end product. But the end product is also painted and this makes each piece a little bit bigger as well.

There are two options for fixing a tight hole. You can use your drill to make each of the holes a little bit bigger. This will solve your problem but it could also mess up the lining of each piece. The other option is to sand the dowel rod down so that it has a slightly smaller circumference. If you take this one then you should try to avoid sanding the end that slots into the base piece. A tight fit is good here, as we'll actually take aims to make it even tighter. It is only the other pieces that need to be looser, so leave half an inch at the bottom unsanded.

While you're sanding the dowel rod, prepare yourself to sand every other piece of the toy. We want it to be as smooth as possible. We don't want any rough edges or anywhere for splinters to start breaking away. Sand everything down until it is nice and smooth. Also make sure that you sand the top of the dowel rod so that it has a circular top rather than one with sharp corners.

Paint each of the pieces first. Paint the top, bottom, inside and sides of each of the pieces. Paint the sides of the dowel rod and the rounded top but you don't need to paint the bottom. Squeeze some wood glue into the hole in the base piece and slot the dowel in. Once it hardens, you have yourself a bright and colorful toy for your toddler. These can be kept as souvenirs or regifted once your child has outgrown it. They also make for great baby shower or birthday presents because they're made with personal, thoughtful care.



Project 6: Hobby Horse

As your child grows, so will their toys. They'll go from block sliders to all sorts of new things. Despite the fact that we live in a technological wonderland of video games and cellphone games, kids still love to flex their imaginations. They don't need super fancy toys, they just need toys that they can use to escape.

Toy swords and toy guns are popular, considering that their shapes lend easily to woodworking. We made wooden swords and shields when I was young and pretended we were knights and bandits. These are just some ideas for toys for aging children. We're going to stick to a non-violent route and make a hobby horse. This classic kids toy is great for all kids but especially those that love horses or cowboys.

Tools You'll Need:

1. A saw (jigsaw will be best).
2. Clamps.
3. An electric drill.
4. Scissors.
5. A pencil.
6. Sander (or sandpaper).
7. Wood glue.
8. A staple gun.
9. A small paintbrush for details.
10. A large paintbrush for the body.

Material You'll Need:

1. One 2 x 8 x 2 board.
2. A one inch round dowel.
3. One can paint.
4. Some yarn or an old mop.
5. Staples.
6. String.

Instructions

The first step is to draw the shape of the horse's head. It doesn't need to be very accurate. In fact, having less detail is actually one of the ways to make it more universally recognizable as a horse. It seems counterintuitive but it is a well-established concept within the world of art. The simplicity of the design can push the kid's imagination into overdrive. So while you may not feel particularly confident about your art skills, you're going to be okay so long as you can make the rough shape of a horse's head. Draw this on paper and cut it out afterward so you can trace it onto the 2 x 8 x 2 board.

Use your clamp to get a nice tight hold on the board before you start cutting in with the jigsaw. You could use a circular saw if you don't have a jigsaw but it will make for a more involved process. The curves along the front and back of the horse's head will be much easier to make if you use a jigsaw. Don't worry so much about making perfectly rounded edges. When you come to a turn, make a straight diagonal cut to give the impression of roundness at the edge. Regardless of the kind of saw you used, the next step is the same and will take care of any rough edges.

Because this is a kid's toy, we need to sand it extensively. Sand the entire piece, not just the corners. Though you do want to give special attention to the corners to make them nice and dull, the big thing here is not getting splinters. We'll also be painting the wood before the end so it shouldn't be an issue but it always pays to be thorough in all of our projects.

Next, measure the circumference of your dowel. This will be the body of the horse and slot into the bottom of the head. So that the head and flip it upside down and clamp it tightly. Pick a drill bit that will create a hole to equal your dowel. If you are following the instructions exactly then you'll need a one inch bit. Carefully drill in. There's no chance of going through this like there was with the base of the slider toy. Instead, the big issue here is not going deep enough. The head of the hobby horse is much heavier compared to the rest of it. We need to make sure that we have a very tight and secure fit between the dowel and the head or it's going to go flying through a window sometime, mark my words. I've seen it happen. So go three inches deep into the horse when you make the hole.

Before you attach the dowel, consider how long it is. You don't want it to be too long or the child using it will get it caught on the ground a lot or whack things behind them with it by accident. However, making it too short will limit the longevity of the toy by making it easier to outgrow. To compromise, cut the dowel so that it is a little bit longer than the kid needs. Next, fill the hole in the head with wood glue and ram that rod in there. You might want to try fitting it in before you use glue, just to make sure it even fits. The tighter the fit and the harder time you have getting it in there, the harder it'll be to get it out. You may need to give the top of the head a couple of whacks with a hammer to get it all the way down. Let the glue dry before continuing.

Next, you may decide to paint the head of the horse and the body. You might choose to do them both the same color or you may use a mixture of colors. Either is fine. It's even fine without a body coat. But you're going to want some paint for the details. If you add nothing else, add some eyes. Nose holes may also work. With the shape of the horse really starting to become clear, take your yarn or your old mop and cut it to size. You might want to go an extra step and dye the yarn to match the color of the horse. Use a staple gun to attach the mane to the back of the horse's head. You may want to get some pieces of soft felt to fold in half and glue to the side to create two small ears.

You now have a hobby horse for your child but there's something missing. Use a little bit of string to go around the front of the horse, where the mouth would be. Loop the string around the front two or three times. Next, take one end of the string, wrap it horizontally around the vertical string and hold it out to the side. Repeat this with the other end of the string on the other side of the horse. Pull the two ends to the back of the horse's head and tie them around. This will create a rein and really complete the illusion of a horse. With the eyes of a child, it'll be as alive as you or they are.



Project 7: Wooden Scooter

Scooters are a lot of fun but they can be pretty expensive. But one of the best parts of gym class in elementary school was when they brought out the flat little scooters. These don't have the handlebar attached because you're not supposed to stand on them. You're supposed to sit. These scooters are a lot of fun and the same general approach to making one of these can be used to make a stand-up scooter.

To create a stand-up scooter, take what you've learned about working with dowels so far and add one to the scooter. On the top of the dowel, glue a t-joint piece of PVC piping and attach handlebars from there. But for now, let's keep it simple and have some fun on a classic wooden scooter.

Tools You'll Need:

1. A saw (jigsaw or circular is best).
2. Sandpaper.
3. An electric drill.
4. A screwdriver.
5. A measuring tape.
6. A pencil.
7. A can (empty or full, the shape is what matters).

Material You'll Need:

1. A square of 2 x 12 wood.
2. Two handles.
3. Screws.
4. Paint.
5. Four rotating casters with two-inch wheels.

Instructions

If your 2 x 12 wood isn't in a square then start by cutting it into a square. You want it to be the right size for a child's butt so roughly 1 foot by 1 foot should be perfect. We've talked about softening the corners with each of these children's toys so far but this might be the most important time not to skip that step. This is a scooter on wheels. That means there's going to be speed and moving around. You don't want your kid to run the corner of their scooter into another person and take their eye out or anything.

Before we worry about sanding, we're first going to take care of those corners. Take a can of soup (or whatever else) and use it to get the right shape for a rounded corner. Set the can in the corner of the wood in such a way that it touches the edges around the corner without any of the can going over the edge of the wood. This should give you a piece of the corner that is exposed before the can obscures the wood. Trace the can around this corner and then repeat it with each corner. We want to remove these so it's time to get the saw ready.

A jigsaw will give better control for making a round cut but a circular saw should be able to do an admirable job. Once the corners are cut off, it's time to start sanding everything. Once again you'll want to sand the top and the sides and you'll want to make sure that the edges are blunt rather than sharp. While the underside of the scooter shouldn't be seen very often, it's a good idea to just sand the whole scooter. You don't want your kid reaching under the sides while going fast and getting a splinter.

Next, paint the scooter. Bright colors are best here because we're talking about a kid's toy but also because it is a kid's toy with wheels, which makes it hazard when left lying around. Try to avoid green and other natural colors. Go with something that is bright and vibrant and not about to blend in with the front yard or the driveway. You don't want to accidentally step on this thing in the middle of the night and take a fall.

Because the scooter is a square, it doesn't matter which side you choose to attach the handles. You want to give children a place to hold on safely. So pick a side and attach a handle to it. Put a second handle on the opposite side. These should be sticking out horizontally to the side of the scooter and not upwards.

Pick which side of the scooter is going to be the bottom and measure an inch towards the middle from each corner. Use your pencil to mark the location. Line up the center screw of the wheels with the mark you made and then screw them in. A little bit of wood glue can be used between the top of the wheel and the scooter to help keep them in place.

There you have it, a scooter for your kids. You can attach a piece of rope to one of the handles to make it easier to pull. Kids should also be encouraged to paint designs into their scooters to personalize them. It is around this age that you can start to introduce children to the process of woodworking. Don't let them use the saw but you can show them the other steps involved in building their scooter. The act of creation is a magical experience and children are typically enamored with it.

Project 8: Couch Arm Cup Holder

One of the cool things about learning woodworking is the way that it can be used to solve all sorts of little problems around the house. One thing that annoys me to no end is the fact that I have to get up and place my drink somewhere else when I am sitting on my couch. I have a small living room and so there just isn't any space to put a table. I also spend a lot of time writing, both words such as you're reading and plans for future projects. This can also be annoying to do on the couch. Using a book to write on isn't really a great fix.

But with some very simple woodworking skills, this problem can be solved. It only takes a little bit of time and work to build a couch arm cup holder that you can use to write on as well. Not only that but it can be taken off with ease when it isn't needed. It's great if you want to have a beer in front of the TV, take notes when watching a show or have a surface to do crosswords on while the soaps play.

Tools You'll Need:

1. A screwdriver.
2. A tape measure.
3. A couch.
4. Sandpaper.
5. Wood glue.
6. A cup or can.
7. A pencil.
8. A jigsaw.

Material You'll Need:

1. One 2 x 12 board.
2. Screws.

Instructions

Start by measuring the arm of your couch. This holder will slot over the top so you want to primarily get the width. Most arms aren't very wide and so the board should be able to cover it with its own width. Measure the length of the arm to get the length of the board. You want enough space for a cup holder and some surface space for writing notes. Once you have your dimensions, cut the board according to them to create the top piece. Cut out two more pieces. A circular saw will be a good fit for these cuts. These will attach to the top one and dangle on the sides of the couch's arm in order to keep the top secure.

Take your cup or your can and trace around it with your pencil. Make your circle on the top of the board. This will be your cup holder. Use a jigsaw to make the circular cut. Go entirely through until you can punch out a disc of wood. Test the hole with a cup or a can to make sure that it isn't too small.

Join the top piece with one of the arm pieces at a ninety-degree angle. You can use nails or screws to connect these two pieces but you should use wood glue as well to keep it steady. Attach the third piece of wood on the opposite side. This gives you a new couch arm cup holder. But it won't be very pretty. Apply

some wood stain to the arm to give it a much nicer appearance. The benefits of this style are that it's easy to take off or put on, plus all you need to do to make it a birdhouse is all a few more pieces of wood and fill it with birdseed.

Project 9: Balance Board

So far we've made furniture, we've made toys, we've made life more convenient. But one thing we haven't done yet is make anything to help us take care of your bodies. You might think that woodworking and your health don't go together. Or, if they do, that they only go together in a negative fashion such as skin irritation or lung issues from sawdust. But woodworking skills give us the ability to make our own fitness equipment to save money while making our own home gym.

The more complicated the piece of fitness equipment, the harder it will be to make. You can make weights easily. Cut a thick board into the shape of the weight. Hollow out both ends and fill it up with a heavier substance such as a heavy plaster of Paris. But sticking with the tools that we have available, only those found in a woodshop, we'll still be able to make tons of exercise equipment. For this project, we'll make a balance board that can be used to train your agility and your balance.

Tools You'll Need:

1. Wood glue.
2. A saw (jigsaw or circular).
3. A pencil.
4. A screwdriver.
5. A bucket.
6. A tape measure.
7. A sander (or sandpaper).

Material You'll Need:

1. Two 2 x 4 x 10 boards.
2. One 2 x 3 x 13 board.
3. One piece of 3/4 x 13 x 19 plywood.
4. Screws.

Instructions

Begin by placing your bucket onto the first 2 x 4. You want the bottom-most part of the bucket to rest against the edge of the wood so that you can trace a half-circle onto the board. This will be the rocker on the bottom of the balance board, so we want to keep it circular to a degree. When these two pieces are cut out and attached later on, they will hold the board up off the ground and the way they rock back and forth creates the challenge that improves your balance.

When cutting these out, you may want to reach for the circular saw instead of the jigsaw. The jigsaw is normally better for creating a circular shape. The circular saw, on the other hand, will need to create straight lines so that rather than a proper circle there are actually a lot of small, flat surfaces. Both a perfect circle and a circle formed from many straight lines can be used for this project. The key difference is the difficulty of the balance board. The circular saw's small flat sides will make it easier to rest the board in any direction. This still trains your balance but without as much commitment or effort. Perfectly circular rockers will create much more of a challenge and it is really how the balance board is meant to be experienced. However, we'll pretend that you used the circular saw. This will let us continue making an easier balance board but we'll also see how we can modify a beginner board for a proper one.

When cutting your rockers, you want to make them the same size. The larger they are, the higher off the ground the balance board will be and more difficult it will be. The best balance boards should only be three or four inches at best. If you find that your pieces are too large then you can cut them down. Always cut from the widest part of the balance board so that you don't damage the circular part. Without the circular shape, there is no challenge and you merely have a piece of wood to stand on. Remember that if you cut one rocker, you need to cut the other. They must be kept in the exact same ratio.

With your two rockers ready, the next step is to connect them with a support beam. Measure the distance between your feet when they are shoulder-width apart. You want your feet to rest above the two rockers. So with your measurement in place, set the rockers down on either end and measure the distance between them. It is this measurement that we'll use for cutting our support board. Mark the proper cut on the 2 x 3 and take the saw to it. Stand this piece vertically between the two rockers. If it is the right size then it should be at least half an inch shorter than the rockers so that if they were flipped over the rockers would touch the ground but the support beam wouldn't. If you have the right size then use screws and wood glue to attach the rockers to it.

When connecting the rockers to the beam, attach the screws so that they are in the middle of the rocker. You want to make sure that the beam is perfectly centered. This will give it the strongest support for when you're standing on it but, more importantly, it will let the rockers work properly. If the beam is positioned wrong then it can impede the rockers and defeat the purpose of the balance board in the first place. Also, you may want to consider using countersunk screws. These are screws that sink into the wood a little ways. This keeps them hidden from sight and you can use a wood plug or even some paint to hide their placement. That doesn't change the way the balance board works but it does give it a smooth appearance that looks more high-quality than if the screws were showing.

With the bottom of the balance board completed, it's time to make the top. We need to start by first cutting the plywood. Plywood cuts very easily but it is known for being weak. Cut slowly to avoid any major issues from arising. As for the size to cut, you want the balance board to be about twelve inches by fifteen inches. This should be enough that it hangs two or three inches over the sides of the bottom.

Place the top board face down. Cover all of the flat parts of the bottom rockers with wood glue and carefully stick them to the board. This will take time to dry and you may want to hold it securely in place with a clamp on each rocker. Once it is dried you should be able to flip the board over without the pieces falling off. Now you can use a few countersunk screws on the top of the board. These punch through the

board and into the rockers so that, together with the glue, they are kept firm and tight.

The final step is to sand and paint your balance board. We want to sand the whole thing, especially since there is a strong likelihood that it'll be used with bare or socked feet. Splinters would be awful. Plus there is the fact that a wooden balance board just doesn't look quite finished. You might like the look of keeping the rockers their natural wood color but you should paint the standing board.

Speaking of sanding, let's talk more about upgrading our balance board. If we used the circular saw then there are all those flat sides. They should be small enough that they don't particularly impede the board's ability to rock but they should be much easier to balance than round ones. But after a while, you will find this balance board just doesn't offer much. Rather than make a new one, reach for your sander. You can sand the edges off of the rockers to create a smooth circular surface that will require dexterity to balance. Most of the time, I would just recommend sanding this way to begin with but some people can benefit from the easier time balancing.

Chapter Summary

- Rather than summarize each of these projects, let us just summarize the project workflow.
- You begin by picking the project you want to work on. The project itself is what determines the necessary tools and materials that you'll need to purchase.
- The first step to every project is to plan it out on paper. You should draw a simple diagram of what you are going to create. This doesn't need to be overly detailed but it will let you get a sense of the sizes involved.
- On paper, you can see the ratio of the different boards used in the project. Add measurements to the plan that keep these ratios. If you know that you have two boards and one is twice the size of the other then it doesn't matter if you plan them out at 2 feet by 4 feet or 200 feet by 400 feet, so long as it stays the same ratio.
- Measure your boards and cut them to size. Attach them to each other as needed.
- Finish up building a project by sanding it. This reduces splinters and creates a much more appealing look.

In the next chapter you will learn that the difference between a good project and a great project is all in the finish. Applying a coat of finish to your wooden creation boosts it up to the next level. You'll learn about the different finishes and how to apply them next. Just remember not to let anyone see your project until it's finished!

CHAPTER FIVE

FINISHING UP YOUR PROJECTS

Applying a finish to wood is typically the last step of any project. It is entirely optional but I would not recommend that you skip it. We've talked most often about applying a finish as a way of bringing out the beauty of the wood. This is certainly true, a nice finish does really make the difference between a nice piece of furniture and a great one. But the real reason we apply finish is to help the wood stay healthy longer.

A good finish does two things that seem to counter each other. The finish both traps moisture inside and blocks moisture out. Wood rots when exposed to too much moisture but if there isn't enough then it dries out and becomes much easier to crack or break. Changes in moisture also contribute to the swelling and shrinking of the wood in different weather. Sometimes this can be so bad as to make the wooden object useless, such as when a door swells to the point that it can't be properly opened or closed. A layer of finish helps to limit this effect by making sure that the moisture that's already in the wood stays in the wood while it keeps the extra out.

In this chapter, we'll explore what you need to know about applying a finish. There are hazards that you should be aware of well before you open your first can. However, you'll need to be able to use it once that can is open and so we'll walk through applying a layer of finish ourselves. We will also be talking about the many different kinds of finish there are and how multiple coats of finish work. By the time you finish this chapter (see what I did there?) you'll know how to make your projects really stand out.



A Crash Course on Wood Finishes

As mentioned, finishes are used to help keep your wood healthy for longer. Boards that have had a finishing coat will require less repair compared to those that haven't. This is, first and foremost, a chemical process. We will be talking about safety in the next chapter but it deserves to be mentioned. These chemicals can range from those that simply smell bad to those that can be deadly to inhale. Always wear a mask and apply finish in a well-ventilated area. Also, these chemicals are highly flammable. Any brushes or rags that are used for applying them should be considered a fire risk and treated accordingly.

There are many kinds of finishes but they can be divided into two main categories. The ones that we are talking about in this chapter are called surface finishes. These are easy to apply, which makes them great for beginners, but they are also the most commonly used finishes. They are applied to the surface of the wood with a paintbrush at the appropriate step in the project. We'll be applying a wood stain finish in just a moment. But there is also another category for what we call penetrating finishes. These finishes are applied to the wood in the same manner but they then penetrate down into the wood. A layer of wax or sealant is then applied to the wood in order to trap the penetrating finish inside. This wax needs to be maintained much more frequently than a surface finish does.

We often have to use multiple coats of finish to get the job done. For example, when we use a penetrating finish we use the finish itself and the sealant. Both of these would be considered a layer of finish. You might also be surprised to learn that paint is a finish. It's a coat that goes over the boards and it also helps to trap moisture inside while keeping extra moisture out. So whenever you've painted over a piece of wood, you've technically applied a coat of surface finish.

We turn next to applying a coat of wood stain. But keep in mind that this application process can be used with almost any finish with only minor tweaking.

Applying a Wood Stain Finish

There are a lot of different wood stains you could choose from. There are gel stains. There are oil-based stains. But I don't personally recommend these ones. They're less environmentally friendly and more likely to have nauseating fumes. When selecting a wood stain, pick a water-based product. You still need to be cautious and approach the staining process with safety in mind but right off the bat it's going to be a better experience. It's also important to realize that there is a good chance that some of the stuff we make ends up in the garbage or lost in the woods. Toys go missing, furniture gets replaced. It happens. A water-based stain is much better for the environment and won't run the risk of introducing possibly harmful chemicals into the Earth.

Next, prepare your workspace. We didn't go over this when we looked at the projects in the last chapter because it isn't as important when you are just working with the wood itself, cutting and screwing and the like. But once you start bringing in chemicals that put off fumes, your ventilation becomes extremely important. You must wear a mask. You must have a ventilation system or a fan with an open window or two. If you have a backyard, consider applying a finish in the open air. You don't need to wear gloves because it isn't toxic to touch and you'll be using a paintbrush. If you get any on you, simply wash it off with warm water and soap. The big concern with this is inhaling it through your mouth or nose.

Always sand your wood before you stain it. For one, you don't want to be staining a piece that's going every which way and tossing splinters about. But, more importantly, you want to create a rough, even surface. So if you are planning to stain a piece of wood, use a piece of sandpaper with a lower grit number. The higher the number, the softer the sandpaper is. Often as you work on a project you'll start with an 80-grit paper and move up to 120 and then 180-grit. Following this progression prior to staining will leave the wood in the best shape. We want the stained wood to have a nice slick and shiny appearance. This doesn't work if we don't thoroughly sand the wood first.



Brush off any dust or sandpaper residue that is leftover from this. Don't worry about being too thorough at this step because the next thing you need to do is prepare the wood by wetting it first. Wetting it will give it a quick clean to get off any loose dust. But what wetting also does is make the grain in the wood rise. This is going to pretty much destroy that wonderful sanding job you did. So it's time to sand again. But this time you don't need to go through the whole process. Stick to the high end and use sandpaper that has a grit count no smaller than 180. This might seem weird but remember that we're using a liquid to stain the wood. If we didn't apply water to raise the grain then the water-based wood stain we're about to apply would. If you wanted your wood to have a smooth surface you would have to sand it again. Sanding after staining will remove a lot of the stain and you'll have to apply another layer. But by wetting and sanding you save yourself from having to waste any wood stain.

If there are any cracks or holes that you need to fill, you want to do this prior to staining. If you need to attach another piece of wood then you must go through the process of properly sanding it but holes and cracks can be filled with a simple filler solution that you can purchase at any hardware store. Depending on what wood you used, you should then apply a conditioning layer. Conditioner is sold in the same aisle as wood stain because it is necessary for certain woods. Pine and cherry both stain poorly if they are conditioned beforehand. The problem with these woods is that the fibers are set in such a way as to cause the stain to be absorbed in an uneven way. So some parts won't look stained at all while others are just great pools of stain and it looks really amateurish. The conditioner doesn't change the appearance of the wood but it seeps into it and works itself around the fibers which then allows the stainer to be evenly distributed for that wonderful stained wood look.

Finally, it is time to stain the wood. Get your mask on. Turn on the fan, turn on the ventilator or open the window. When you open up the can, you need to stir the wood stain first. Stuck in the can, the ingredients naturally begin to separate from each other a little bit. You might think this step is

unnecessary but there will be a visible difference between a piece done without stirring and one done with.

With most of the woodworking projects we've looked at, you will want to apply a wood stain with a paintbrush. The projects are small and it will give you a much greater level of control over the application. We are also dealing with a lot of nooks and crannies in our pieces. However, there is nothing wrong with using a rag to speed up the process. If you're making a cabinet or a wardrobe then a rag will be the way to go. But for the projects we've created, I recommend sticking to a paintbrush.

Some people like to go across the grain when applying a stainer. Others swear that the only way to apply a wood stain is to go with the grain. Really what this comes down to is your personal choice. Go with the one that you think looks the best. But regardless of whether you go with or against, what is important is that you use lots of the stuff. It takes a lot of wood stain to properly coat a piece of wood.

However, you don't actually want to apply too much wood stain at once. The only way to remove it is to sand it out of the wood and this will quickly ruin your project. When working with wood stainer, treat it like you would treat cutting a board. Since you can't go back and fix what's already been cut so take it slow and make them small. With wood stain, you want to apply thin coats. It's better to apply a coat, let it dry and apply a second coat if the first wasn't enough than it is to apply a thick coat, realize it's too much and be stuck with nothing to do about it.

Brush wood stain over one side of the project at a time. Using a paintbrush, try to only go over a section of the coat once in order to keep the coat even. Don't worry about the excess solution for the time being. Work on first finishing your pass. After you have gotten everything, now is the time to go back and use a rag to wipe any extra solution off of the project. Follow the same path when removing excess solution as you did when applying it. This way you give the last part of the coat enough time to sink in.

With this application we applied, we only used a surface finish. If we were using a penetrating finish then we would have to apply a topcoat sealer. However, just because we didn't use a penetrating finish doesn't mean we might not want to consider it. A topcoat sealer is used to help prevent scratches and other damage to the wood or to the stains. You can get a topcoat sealer in a spray can or a liquid version that you apply with a brush. A topcoat sealer needs to be applied in two to three coats.

In total, you have a water coat used for sanding; a coat of conditioner to prepare for the stain; anywhere from one to five coats of wood stain (or even possibly more!); and two to three coats of topcoat sealer. Each of these coats, apart from the water, needs to be given time to dry before the next step of the process. You might be shocked to discover that the finishing process takes longer than making the thing you're staining did. But that time is worth it when you see the appearance and increase the longevity of these pieces.

The Different Kinds of Finishes

As mentioned before, there are a lot of different kinds of finishes available for use with your projects. We're going to focus on stains, varnishes and those that help to amplify the natural beauty of the wood itself. What we won't be talking about is paint. The primary purpose of paint is to change the color of an object, not to protect it in any way. Just because paint is a finish, don't go reaching for a paint can and think it's going to have the same effect as a wood stain finish.

Dyes: These finishes may subtly change the color of a board's surface but they're used primarily to match the color of the board itself rather than changing it. While there are oil-based wood dyes, I again will recommend sticking with the water-based ones that are better for the environment. Apply dye the same way you would a stain finish. Dyes offer protection for wood that isn't expected to weather the elements.

French Polish: French polish is made up of a mixture of alcohol and shellac, which we'll be looking at later. Rather than being applied with a paintbrush, French polish is applied with an oil-lubricated pad that is then rubbed all over the wood. French polish isn't used for protective purposes but for aesthetic ones. If you want shiny wood then you apply French polish. The stuff is glossy as can be and is perfect for coffee tables, countertops, cabinets or banisters.



Lacquers: This type of finish is most often found in a spray can. They're solvent-based, which actually helps make them an extremely fast-drying finish. One of the solvents that are included in the mixture speeds up the rate of evaporation and this in turn reduces drying time massively. Lacquers will also bring out a glossy appearance in the wood but not anywhere remotely close to the amount that French polish produces. Lacquers are a penetrating finish, as they seep deep into the wood. This means you'll need to follow up the application of lacquer with a sealant.

Oil: While stains and dyes may be water or oil-based, there is actually a type of finish that is simply called an oil finish. These finishes are used for untreated wood. All wood has natural oils inside of it. Sometimes these oils can be beneficial to us, sometimes they can make it annoying to work with the wood. When our wood is treated, we are in turn protecting these. But untreated wood doesn't have any protection and so these natural oils eventually begin to dry out and leave the wood dry and prone to cracking. An oil finish is a penetrating finish that replaces the natural oils in the wood the same way that adding fertilizer replaces the natural nutrients in the soil.

Shellac: This is a wax finish which actually comes from bug poop. That's right, bug poop. But as gross as that might sound, it works. This wax secretion is often mixed with alcohol before being applied as French polish. Shellac has a glossy appearance (which is how French polish does, too) but it can actually be found in several different shades. When applied, it looks very similar to wood stain.

Varnish: A varnish is made up of a few ingredients, a couple we've looked at already. Oil is one of the ingredients. Solvents are as well. On top of this it also combines in some natural resins. Varnishes have a clear appearance, they aren't meant to be seen when they are applied to the wood. This can make the application a bit of pain because varnishes take a long time to dry. Because they don't have a visible sign of their application you can find yourself picking up a board you thought was dry only to get your hands dirty. Varnishes are used to protect wood from the ultraviolet rays of the sun. Varnishes should be applied after a color-changing finish or a dye, never before.

Wood Stain: Wood stain itself does not actually help protect your boards. It is when it is combined with a conditioning coat and a topcoat sealer that you really start to see the protective benefits of your finish. Wood stain is used in order to create that wonderful stained look that gives both a rustic and a timeless look to your projects. Wood stain doesn't have the glossy appearance of shellac or lacquer. However, it does come in several different shades. The darker the shade is, the more it will stand out on your wood. Wood stain doesn't just change the color of your wood, if it did then it would just be paint. It changes the color of your wood in such a way as to make the grains, those bits that were once tubes for nutrients, stand out. Different woods will react differently to staining because of the way their grains are distributed. Experiment with different varieties to find those you think look the best.

Chapter Summary

- The last step of any project is to apply a finish. This might be a stain, a varnish or even a coat of paint.
- Applying a coat of finish will bring out the natural beauty of the wood, as well as offer it protection from the elements, moisture, rot or insects.
- Wood finishes are therefore used for a combination of beauty and practicality.
- Finishes come in two types: surface finishes and penetrating finishes.
- Surface finishes rest on the surface of the wood and create a layer around the wood.
- Penetrating finishes are applied to the surface of the board but they sink into the board to offer protection or visual changes from the inside out.
- It often takes multiple coats of finish in order to complete a project. For example, a penetrating finish must be followed by a layer of wax or sealant to trap it inside of the board.
- To apply a wood stain, you must first choose if you will use a gel, oil or water-based product. I recommend using a water-based one because it is much more environmentally friendly.
- Prepare your workspace by ensuring that the ventilation is working properly. Always wear a mask and avoid inhaling the fumes of the finish.
- Prepare the wood for staining by first sanding it. You want to begin with sandpaper that has a lower-numbered grit count and then increase the grit number between sanding applications.
- Brush off any dust or sandpaper grit left on the wood and then wet it with a rag soaked in water. The water will enter the board and cause the grain within the wood to rise. Sand this grain and brush off the dust again. If you skip this step then the finish will cause the grain to rise and you'll need to sand it and apply another coat of finish, making the first coat pointless.
- Fill any cracks that are present and apply a wood conditioner to prepare it for the staining.
- To stain wood, stir up the can of wood stain and then apply it with a paintbrush or a rag. I prefer using a paintbrush because it offers more control.
- You can apply a stainer either going with or against the grain, this is entirely dependent on what you want the wood to look like.
- Make sure that you use plenty of wood stainer, though you don't want to use too much. You can always apply multiple layers in order to deepen the stained appearance. But we want to use enough to begin with that it coats the wood evenly and thoroughly.
- Wipe off any excess stainer and then let it dry. You may want to put on another coat in a few hours but you won't know for sure what it will look like until the staining is complete.
- If you are using a penetrative finish then remember to apply a sealant afterward.
- Dyes are used to bring out the color of a board but it also helps protect the wood from the elements.
- French polish is a mixture of alcohol and shellac which gives an extremely glossy appearance.
- Lacquers are often found in a spray can and are a solvent-based finish that gives a glossy appearance. Lacquer is a penetrating finish and must be followed with an application of sealant.
- Oil is a finish that is applied to untreated wood in order to help replace the natural oils which seep out over time.
- Shellac is a wax finish that gives a glossy appearance and can be purchased in many different shades.
- Varnish has a clear appearance and is applied to wood in order to protect it from the ultraviolet rays of the sun.
- Wood stain doesn't really protect the wood but it does help to bring out its natural color and the colors of the grain. Wood stain isn't glossy either, so it leaves a more natural and rustic look when compared to other finishes we've looked at.

In the next chapter you will learn all about the safety precautions which you must follow when working with wood. Splinters and blades can do more than just chip fingers. It is possible to lose limbs, eyes or life when we aren't being careful. Always follow the safety precautions in the following chapter when working.

CHAPTER SIX

SAFETY PRECAUTIONS

This is a chapter that could have started the book because of how important it is. But that would have made for a terribly boring beginning. Again, it could have been placed before chapter four but this would slow us down quite a bit. Sticking it at the end might seem to relegate it to the position of an afterthought but I want to be explicit about this: Safety is the most important thing in this whole book. By making this the last chapter, it is my hope that this information will stick with you as you set the book down and get busy woodworking.

Woodworking involves some seriously dangerous tools. To see the reality of this, simply look at how many horror movies use woodworking tools as weapons. From titles like *Driller Killer* to *The Intruder* to the bluntly named *Saw*, these films all highlight the fact that these tools are just downright deadly. Of course, you won't be using your tools in these fashions at all. Or, at least, I sincerely hope you won't be because that would be pretty messed up. But even when these tools are used exclusively for woodworking, they are still dangerous and you risk debilitating injuries when you don't respect this quality and approach them without caution and care.

In this chapter we will be looking at how we minimize these risks. This includes such simple tricks as wearing the proper safety equipment. But instead of just telling you what you should do, I believe that it is important for people to know why. If you tell someone to wear a mask, they might not care. If you tell them to wear a mask because otherwise they are risking their lungs and their lives? Well, suddenly people become some good at listening. So rather than just a list of safety precautions, we will explore these safety precautions to understand them fully. This will also allow us to look at where safety precautions crossover with other good advice such as unplugging tools after use. But we'll get more into that in just a moment.



Wearing Safety Glasses

Safety glasses are a must-have for anyone working with wood. It is important to make a distinction between regular glasses and safety glasses. Regular glasses will offer a level of safety beyond wearing nothing but they aren't nearly enough. Proper safety glasses should have a rim that comes out from the glasses towards your face. When worn, this rim sits against the skin and it makes a seal around the eye to prevent anything from getting in. Don't worry about breaking the bank, though. You only need one pair per person in the woodshop and you can find them for \$5-\$15 on Amazon.

But despite being cheap, these are some of the most important pieces of safety equipment that there is. We have mentioned splinters quite a few times throughout this book. Splinters are awful. They're sharp enough to pierce the skin and they can cause infections. But as awful as a splinter is, getting one in your hand is nothing compared to getting one in your eye. In a famous accident, caused by a lack of safety precautions, cinematographer Armando Nannuzzi lost sight in one of his eyes due to a splinter. However, it must be admitted that this is a rare experience. But there's another reason to wear safety glasses.

When we are cutting or sanding wood, a lot of dust gets kicked up and around the room. Safety glasses will help to keep this dust out of your eyes. This is important for multiple reasons. The first is the obvious fact that this would cause severe irritation of the eye to the point that you will need to wash it. Despite being such small pieces of matter, this can actually cause scratches on the cornea. But what happens when you get something in your eye? It starts to water, you start to blink a lot and it becomes hard to see. When you take into account that this happens when we are using woodworking equipment, it should be clear why a reduction in sight can be so dangerous. On top of that, we often have an instinctual physical response to getting something in our eye. For most of us, this happens without even a thought. Our hands fly up to our eyes and we try to get whatever caused the irritation out. When working a tool, you don't ever want to make a movement without being conscious of it. That is a recipe to accidentally

nicking your fingers in the saw or worse.

Some people don't like to wear safety glasses for the same reason they don't like to wear a bike helmet. They think that they look lame. This might be true but it is better to look lame and stay out of harm's way than it is to look cool and end up blinding yourself.

Wearing a Dust Mask (Even With Proper Ventilation)

When setting up our woodshop in chapter one, we spoke about how important it is to have proper ventilation in our woodshop. This helps to reduce the amount of dust and particles in the air, plus it helps us to reduce the nauseating odors that are associated with applying a finish. However, proper ventilation does not replace the need to wear a dust mask. Instead, it should be thought of as part of your safety precautions but only one part. To truly be able to claim that you are being safe, you need to combine the ventilation and the mask. Why might this be?

For an easy visual reference, imagine a room that is filled with smoke. Not so much that you can't see but enough that it is hanging in the air. Now, add a fan to that room for ventilation. When you turn the fan on, the smoke then begins to be carried away by the air. But not all of it. You'd notice parts of it go the opposite way, some go out to the sides and spread out more. What is happening is that the air in the room is being moved about and so there will be less smoke in any one given place but it doesn't move it out of the room in a uniform fashion.

Now imagine that that smoke is sawdust or dust from sanding that has been kicked up in the air. For the most part it will be pushed away by the fan but it isn't going to be pushed in a uniform manner. Instead, it is going to mostly go that way but particles are still going to go all over the place. This means that while there is a greatly reduced chance of inhaling this dust, it doesn't drop it down to 0% like we would want. Unfortunately, even with a mask we can't get 0% but we can get as low as a 5% risk.

What a dust mask does is cover both your mouth and nose with the mask's fabric (or plastic if you are wearing a gas mask). In the same way that safety glasses create a seal around the eye, a proper dust mask should be stiff around the edges and tight on your face so that it creates a seal around the skin. This prevents particles from getting in the cracks and is one of the ways that a dust mask works more effectively than simply pulling your shirt up over your mouth and nose. Another way that a dust mask offers better protection is in the layering of the material it is made from. A dust mask shouldn't be a single layer of fabric but rather at least two layers. Particles may be able to find a way through the first layer but then the second stops it. Of course, they aren't perfect. No matter how many layers of fabric we use, it is possible for dust particles to get through. Mathematically, we can't eliminate the chances of this no matter what we do. But we reduce the risk as much as humanly possible.

Why is it so important to avoid breathing in dust particles? Obviously they can make you sneeze and this could be dangerous when working with tools but it is the least of our worries. Introducing foreign bodies into ours is never a good idea. Sure, we eat all the time and so we technically bring in foreign substances all the time. But these go down into our stomachs where they can be digested. Breathing them in sucks them into the lungs where the only way for them to get out is through coughing. Often these cause infections or long term lung damage. In very small doses, the body is typically able to treat this as an invader and destroy it but in larger doses it is very dangerous. That said, even a small dose can be deadly if you are unlucky. So rather than bring luck into the equation, set up a ventilation system and wear a dust mask when you are cutting, drilling or sanding in your woodshop.



Wear Hearing Protection

When you are screwing or hammering or sand by hand, you don't need to worry about the sound level. It is going to be perfectly fine exactly where it is. But once you start working with power tools, the noise level jumps up exponentially. A lot of people don't take this into account when they begin woodworking

and so they never bother buying hearing protection. That is, not until they start to notice that their hearing has deteriorated.

Hearing protection isn't expensive in the least. You can purchase a pair of earmuffs that block out sound and create a tight seal around the ears but you don't even need to go that far (though it will be cheaper in the long run). You can find foam earplugs in your local hardware store, dollar store or even music store (as musicians often plug their ears when performing live). These are often sold in packs so that one purchase gets you half a dozen pairs or more. These may seem more affordable when you are first purchasing hearing protection but the problem with these is that they can only be used once. A set of noise-blocking earmuffs can be used time and time again.

Wear Steel-Toed Boots

When I was taking my college courses, I got to take a woodworking class. They had one rule that made some students upset and even led to a few failing. Far from their only rule, it was what they called the golden rule. It stated that you could not even step one foot into the woodshop unless you were wearing steel-toed boots. And while your woodshop is yours to set the rules in, I suggest that you follow this one.

The issue that first comes to mind when talking about foot protection is that of nails and other sharp objects that often go missing in a woodshop. Nails, pieces of sharp wood, screws, all sorts of things that can stab into you have a habit of ending up on the woodshop floor. But these are only part of the issue at hand. These attack feet from the bottom up but we want our toes to be steel in order to protect us from the top down. We're dealing with heavy tools and heavy wood. These could easily shatter your foot into a thousand pieces if they were dropped on it without protection. The steel toe of the boot clearly protects our toes the most but it also helps the boot to keep its shape better. It takes a lot more weight and pressure to make a dropped object dent the boot inwards and crush the foot. To see this in action, take one steel-toed boot and one sneaker and step on them both and see which one loses its shape first.

Wear Protective Gloves

We've now covered many pieces of protective equipment that you should be wearing but there's one more. Protective gloves are great from avoiding splinters but they are also important to wear when cutting wood. However, it depends on what tool you are working with.

Gloves are best worn for use with tools that aren't circular. A circular tool runs the risk of catching the glove during rotation and pulling it into the blade. This is the exact opposite of what we want, clearly. So while protective gloves are important, they should be taken off for these tools. But if the blade isn't circular then they are quite useful.

Protection against splinters is great but a set of high-quality protective gloves will also offer protection against cutting. The material should be hard to cut through so that when a blade hits it you can quickly remove your hand without it going too deep. Most of the tools we use will still cut through them but that extra couple seconds before it goes through your fingers can make all the difference in the world. For the best experience get yourself a pair that has raised bumps over the palm and fingers. These will allow you to grip tools much easier, resulting in less equipment dropped (and potentially harming your legs or feet).

Always Sweep Before Leaving the Woodshop

This one might seem more like cleaning advice rather than safety advice but the fact of the matter is that they are both the same thing. The messier our woodshop is, the more likely that we will step on nails or splinters. The messier it is, the more likely it is that we will trip or fall. And I don't need to tell you how dangerous it can be to trip in a room filled with power tools.

You should sweep the floor before you leave, every single time you use your woodshop. In fact, I would go so far as to recommend sweeping up between using one tool and the next. Many people consider this to be too much work but I stand by it. If you sweep up when you leave then you'll know that the shop is clean for the next time. However, the floor may get extremely messy during any particular session in the shop. If you are moving from one tool to the next without cleaning then you still run the risk of tripping. Only this time you run the risk while also actively using a tool. This makes it even more dangerous.

Keep a broom in the shop and use it often. You don't need to sweep up the mess until the end but you can use the broom to push it all into a pile away from where you will be walking or working. Then at the end of the session simply pull out the dustpan and dispose of it accordingly.

Unplug Machinery After Using It

You would be shocked at how many people leave their tools plugged in after use. It might be simpler to

just let them be, especially if the plugs are hard to get at. But if they are hard to get at then you should purchase a short extension cord to make it easier. Just remember to keep it taped down and out of the walkway as much as possible.

The problem with leaving your tools plugged in for safety reasons is pretty simple. When you turn off a tool, you might think that it is no longer a safety threat. But all it takes to turn many back on is to hit the trigger or push a button. There are plenty of reports of people who have been injured due to accidentally leaving a tool plugged in. Some trip and activate them, others are moving a heavy object and back up into them. Whatever the cause, this threat can be eliminated entirely by simply plugging in only those tools that you are immediately using. Considering that we only have two hands, this is likely to be only one tool at a time.

There is an added benefit to this safety precaution. Our electricity bill is based on how much power we use in a given time period. When we are working with power tools, we know that we are using electricity and bringing up our bill. But did you know that tools and appliances still use electricity if they are plugged in and turned off. A mild amount of electricity will continue to flow through the outlet into the tool and this will raise your power bill. So by following this safety precaution, you actually save money. For the most savings, apply this to appliances outside of the woodshop as well.



Avoid Loose Clothing

This might seem to go against the common image of hardworking men with their lumberjack shirts and long sleeves. While it is a good idea to have long sleeves, they should always be tight fitting. If they aren't then you should know how to use safety pins to bunch them up and prevent them from dangling all over the place.

Sleeves help to prevent splinters or cuts to our arms but when they are too loose they present a major hazard. Sleeves can get caught in equipment and this is dangerous. If this happens and you are lucky then the equipment will merely tear or cut through the sleeve and all you lose out on is your shirt. But it is possible for tools to catch sleeves in such a way as to pull them inwards rather than cut through them. When this happens, your arm will be pulled towards the blade, sander, drill or what have you. If you don't get your arm out of the sleeve or turn the tool off quickly enough then this can lead to serious injury. I don't want to come across as too graphic but people have legitimately lost limbs this way.

Never Clean or Fix Machinery That's Turned On

This is another straightforward safety precaution that is constantly ignored and I can't understand why for the life of me. There is no reality in which it is a good idea to try to clean a dangerous tool while it is still in action. Yet it happens all the time. Now, to be fair, people don't go about oiling or wiping down their saw blades when they are spinning. But they do use their hands to brush sawdust off of their table saws without turning them off.

It might not sound like it is that big of a deal but all it takes is a distraction or a little bit of clumsiness for your hand to slip into the blade. If you must brush off a tool before you are done using it then turn it off, brush it off and turn it back on to continue using. In total you will lose roughly thirty seconds to take this extra step but that thirty seconds can be the difference between life and death.

To build on this one a little more, avoid using compressed air to clean off your tools as well. This will kick up sawdust and send it flying throughout the room. Some people have turned to compressed air to allow them to clean moving equipment but this is a lot of money to waste only to gain half a minute from it.

Never Allow Children In the Woodshop Without Supervision

This might fall into the category of parenting advice but it needs to be mentioned. Pretty much every tool in your woodshop could cause bodily harm to a young child. Those that are especially young may even try to eat the wood shavings they find on the floor. Again, this is one of those ideas that seems ridiculous but it has actually been a source of injury for a lot of people. If you can, I suggest that you keep your woodshop locked at all times. Lock it when you aren't using it so that kids can't get in but also lock it when you are working in it alone. As mentioned, these tools are rather loud and so you may not hear somebody entering into the woodshop while you are working on something. All it takes is a quick turn while holding a piece of wood and you can give your kid a whack alongside the head and a black eye to boot.

With that said, I am an advocate for teaching these skills to your children. Woodworking can be used to make new furniture and toys, as well as fixing up a house and increasing the property value. Of course, this leans a little more towards carpentry but the biggest difference between carpentry and woodworking is simply that carpentry focuses on building structures where woodworking focuses on furniture and smaller objects. The skillset for one can be carried into and applied to the other.

I also believe that teaching kids while they are young is a good idea. I would start to teach a child when they are between the ages of eight to twelve. I set a wide range because it will ultimately depend on how mature and careful your child is. If they listen to your safety rules then you can start younger. One of the reasons for starting young is to really drill this safety advice into their heads. When kids become teenagers, they have a tendency to think that they are invincible and they are actually more likely to ignore safety precautions when compared to a younger child. But if you get these precautions into their heads early, it is much more likely that they will continue to abide by them as a teenager.

Just make sure that you are always with and supervising your child when they are in the shop. You should also set rules around which tools they are and aren't allowed to use. Most children will be eager to use the bigger tools but don't start with these. Begin with handheld tools, then move to handheld power tools and then to the bigger tools. Starting slow like this will give them plenty of time to watch you use the bigger tools and you can use this to drive in the importance of safety.

Leave Distractions Outside the Woodshop

Don't bring your phone into the workshop. Don't bring a book and try to read and work at the same time. Don't bring in a TV and try to watch it while you work. Bring in a radio if you need music but don't dance to it. Anything that can be a distraction should be removed from the woodshop.

Distractions aren't dangerous in and of themselves. In fact, most of us get distracted a thousand or more times a day. We hear a sound and look to see what it was or we remember something we wanted to tell someone or someone shoots us a message and we get distracted from our work and respond. Whatever the distraction is, we want them to remain outside of the woodshop.

When we get distracted inside the woodshop, we are getting distracted around dangerous equipment. Nine times out of ten, this won't matter and you'll be perfectly fine. But it is that tenth time that we need to worry about. When working with tools like this we need all of our attention to be placed on it. This is another reason to lock the door to the woodshop while you are working too. Let your partner, children or roommates know that you aren't to be disturbed while working in the woodshop. If you explain to them that this is for safety reasons, they will understand.

Never Work While Intoxicated

Another safety precaution that should be a given but somehow isn't. Working while intoxicated is a great way to lose some fingers. The problem with this particular rule is that you need to keep it in mind while you are intoxicated and this can be hard to do because, you know, the fact that you're plastered.

Being intoxicated reduces your motor skills, so it is more likely that you will trip or that your hand will accidentally slip and hit a blade. Depending on the substance being used it might even make this cut more dangerous. For example, alcohol thins the blood because it makes it harder for blood vessels to stick together to clot. When we cut ourselves, it bleeds until it stops but if you look at it you will still see what looks like blood to be there. This is because your blood clots around the wound to prevent further loss. But when you are drunk your blood has a much harder time of clotting and so any wounds you take are going to be even more dangerous. Hitting a finger or a vein in your arm is an absolute nightmare in the best of situations but it can mean your life if you are drunk.

If you have a problem with alcohol, hide or give someone you trust the key to the woodshop before you drink. Some drugs aren't going to be nearly as dangerous in this regard but you should still avoid working while intoxicated. It should be common sense but unfortunately it isn't. So make it a rule in your woodshop that you never work intoxicated but also that you never allow anyone else into the shop while they're messed up.

Chapter Summary

- It cannot be stressed enough how important it is to maintain proper safety precautions when working in your woodshop. These are dangerous tools that are known for causing grievous injury when they aren't treated with respect and caution.
- Regular seeing eyeglasses or sunglasses are not a replacement for safety glasses. Proper safety glasses make a protective seal around the eye to prevent small particles from getting through and into the eyes.
- Getting a splinter in your eye can quickly blind you. Sawdust is less likely to blind but it has been known to scratch the cornea.
- Getting something in your eye isn't always going to injure your eye but there is an instinctual physical response when this happens. Because it is instinctual, we often react without thinking and this can be extremely dangerous when working with active tools.
- Proper ventilation is a must for your woodshop. There is lots of dust that is kicked up when working with wood but the odors from wood stain, paints and other finishes can be nauseating or even toxic.
- Ventilation will help to reduce the amount of sawdust in the air but it doesn't remove it entirely. This means that it is still possible, and even easy, to breath in and inhale dust particles that can irritate the lungs or even lead to life-threatening infections.
- Wearing a dust mask will not reduce the risk entirely but it will make it much, much harder to accidentally inhale harmful substances.
- Power tools are loud as can be and they can even cause damage to your hearing if you aren't wearing protection. Always wear earplugs or noise-canceling earmuffs. I suggest purchasing the earmuffs. They will be more expensive at first but they can be used again and again without replacement.
- Steel-toed boots are important for protecting your feet against nails or sharp objects on the floor but they also offer protection against falling objects that could crush and break your foot. You should never enter your woodshop without first putting on a pair.
- Protective gloves will protect your hands from splinters, as well as from cuts. However, you should not wear gloves when working with circular blades that could catch them.
- Sweeping up the floor of your woodshop reduces the amount of mess that you may trip on. While you should without a doubt sweep after every session, I recommend sweeping every time you switch tools.
- Just because machinery is off doesn't mean it isn't dangerous. A saw turned off can easily be turned on again by accident. Unplug your tools after use to eliminate this risk and enjoy the added benefit of reducing your electricity bill.
- Loose clothing should not be worn in the woodshop. It can catch on tools and rip and tear. If you are lucky. It is also common for a piece of clothing to get caught and to pull the arm into the tool in question.
- Machinery should always be turned off (and preferably unplugged) before you clean or fix it. Many people think it is okay to brush sawdust off of or away from the tool in question while it is on but you should always turn it off beforehand.
- Woodworking is a great skill to teach your children but you should never allow them to work in your woodshop without you present.
- It is also a good idea to lock the door to the woodshop so that children don't enter when you are working with loud equipment. It is easy to accidentally knock into and injure a child that you didn't know was there.
- Distractions are deadly in a woodshop. Forget what you are doing for a second and you could easily end up with a life-threatening injury. Leave distractions at the door and always stay mindful of the task at hand.
- Never work while intoxicated. You are more clumsy, you are less thoughtful and less mindful and you may even bleed a lot more when you are injured because alcohol thins the blood. If you really have to have a beer in the evening, wait until after you finish in the woodshop and never during.

FINAL WORDS

So there you have it, everything you need to start your own woodshop and begin making projects out of wood. But a book like this can only take you so far. It would be great if you could read this and then be a master but the reality of woodworking is that it is going to take time, effort and attention in order to improve and become an expert.

To this end, there are several important steps that you need to take before you can leave behind the moniker of beginner. In chapter one, we looked at the basics of woodworking and how to set up your own woodshop. Before you can begin to use the rest of the information in this book, you need to have a space you can work in. Remember to keep it clean, to keep children out and to make sure that there is plenty of ventilation so that you don't damage your lungs in the process of making a bench, scooter or candleholder.

In chapter two we took a look at some of the many tools that are used in woodworking. Each of these tools is going to take time to learn and master. Plus there are many that we didn't even get into in this book because they are well past the realm of the beginner. As you begin to purchase tools, make sure that you are using them often. You don't want to purchase a tool that you don't need or won't use. Start by purchasing the bare minimum you need and getting lots of hands-on experience working with them. As you work with them, you will find that there are limitations that can only be overcome by purchasing a new tool. Encountering these limitations is a sign that it is time to buy that new tool. This way you buy them as you need them and don't waste a lot of money pointlessly.

In chapter three we covered the next step, that of understanding the wood that we are working with. We looked at half a dozen types of wood but looking isn't the same as working with them. As suggested, you should begin by working with pine as it is a relatively easy one for beginners. But if you want to become an expert then you need to work with different types of wood to get a sense of how they function. Some are harder than others, both physically and in a working sense, but as you come to understand them better it will open you up to many more projects and customization.

In chapter four we looked at a bunch of projects that you can get started on. These ranged from simple ones like making a shelf to more complicated ones such as making benches or scooters. These projects are great for beginners to get a sense of the workflow of the woodshop. We could only look at a handful of these because there is an unlimited amount of projects that you could conceive of and make with a little bit of creativity. While this chapter laid out steps on how to make these, it should be noted that you won't need to follow the instructions as much once you gain more experience. Woodworking is one of those skills which you can develop into a level of innate understanding. With a little bit of experience, you will be able to look at a project and understand what steps need to be taken without ever consulting a guide. Of course I don't recommend this at your level but it is a promise of what the future holds if you stick with woodworking.

After we finish making our projects, we then apply a finish to them. We looked at this in chapter five and saw that there are all sorts of different finishes that we can apply. Some of these are applied and stick to the outside of the wood to protect it. Others are applied so that they sink into the wood and work through the inside of it. Regardless of which you choose, the choice should be based on a combination of the look it will give the wood and the protection that your project needs. Indoor furniture will have different finishing needs when compared to furniture that will have to brave the elements outside. But for the most part, the finishing of a project is picked for the look.

To close out the book we looked at a bunch of safety precautions which you should always follow when working in your woodshop. These safety precautions may slow down your workflow but they will help to ensure that you can continue working. It's hard to work with wood when you've lost an eye or sliced off a finger. I hope that you never have to experience any kind of injury like this in your woodshop but they are common occurrences when safety isn't followed and respected, so I don't want you to ever fall into this trap.

As you work in your woodshop, be prepared to make mistakes. Be prepared to mess up projects and have to start over. These experiences are frustrating but they are lessons to be learned. Skill is only gained through experience and if you stop when you mess up then you never learn from the mistake. Edison famously tried over 3,000 times to make the electric lightbulb before he succeeded. When asked how it felt to fail so often, Edison replied that he hadn't failed 3,000 times. He had merely found 3,000 ways that didn't work. Take this attitude towards mistakes into the woodshop with you and you'll be able to look at your early mistakes as lessons in how to work with wood.

Remember, all it takes to be an expert is time, attention and experience and only you can give these to yourself. But I know in my heart that if you've gotten this far through the book, you're going to bring some amazing projects to life. I invite you to share these projects with others or even in reviews for this book. Seeing the way that my words have inspired others is a gift that words can't describe.

Stay safe, stay working and have fun.

