

A Sunset Book \$1

How to build Outdoor furniture

Complete plans for:

56 Pieces—

Benches

Chaise longue

Chairs

Serving carts

Tables

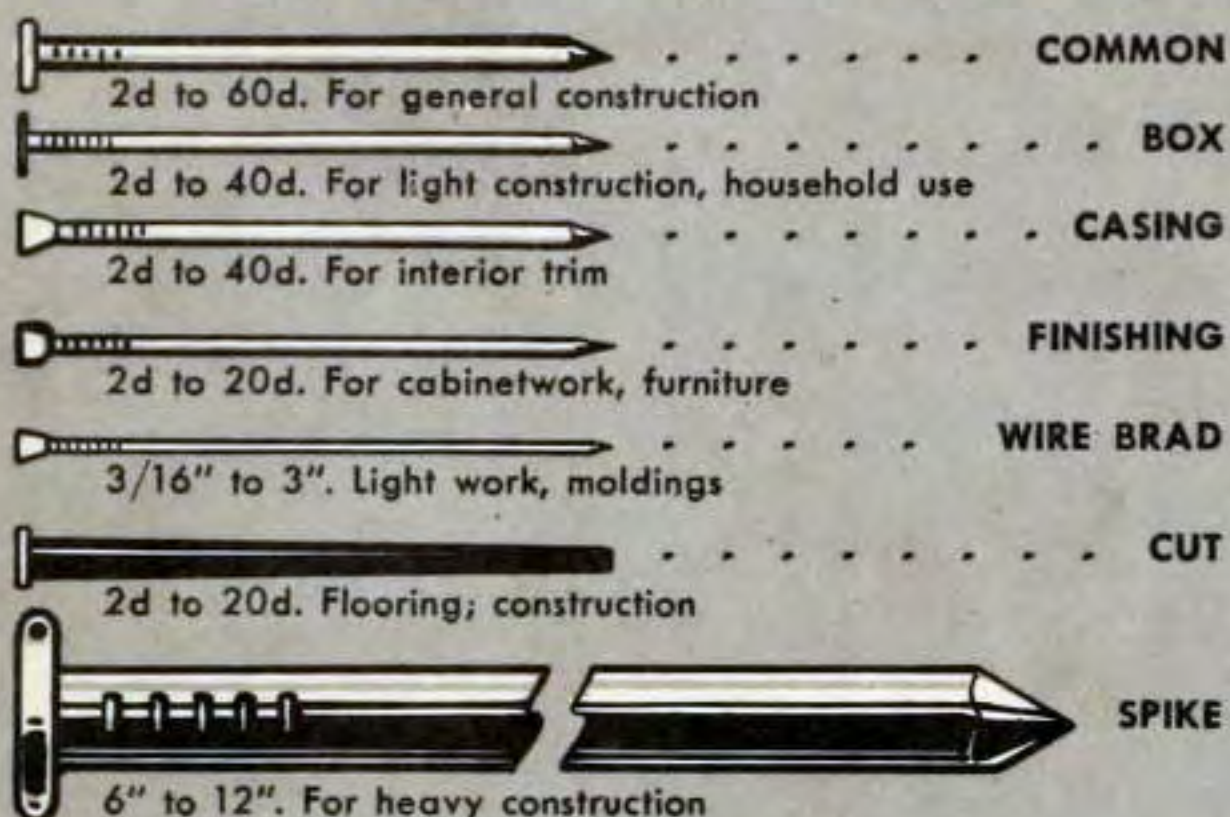
Folding furniture

PLUS instructions on selecting wood and hardware; joining, finishing; making upholstery. Complete bills of materials. Nail, screw, lumber charts.

NAILS, SCREWS, BOLTS—How to use, How to buy

NAILS

Use a nail that is three times as long as the thickness of the board you are nailing. Nails with sharp points hold better than blunt ones, but tend to split wood. Flatten the point with hammer before driving into easily split wood. Use thinner nails for hardwood than for soft. For weather resistance, use copper, aluminum, or galvanized nails. Zinc or cement coatings increase resistance to withdrawal. Barbed nails hold best in green wood. Sizes are indicated by "penny", abbreviated as "d" (example 20-penny nail is known as 20d nail). Always use weatherproof nails with exterior redwood.



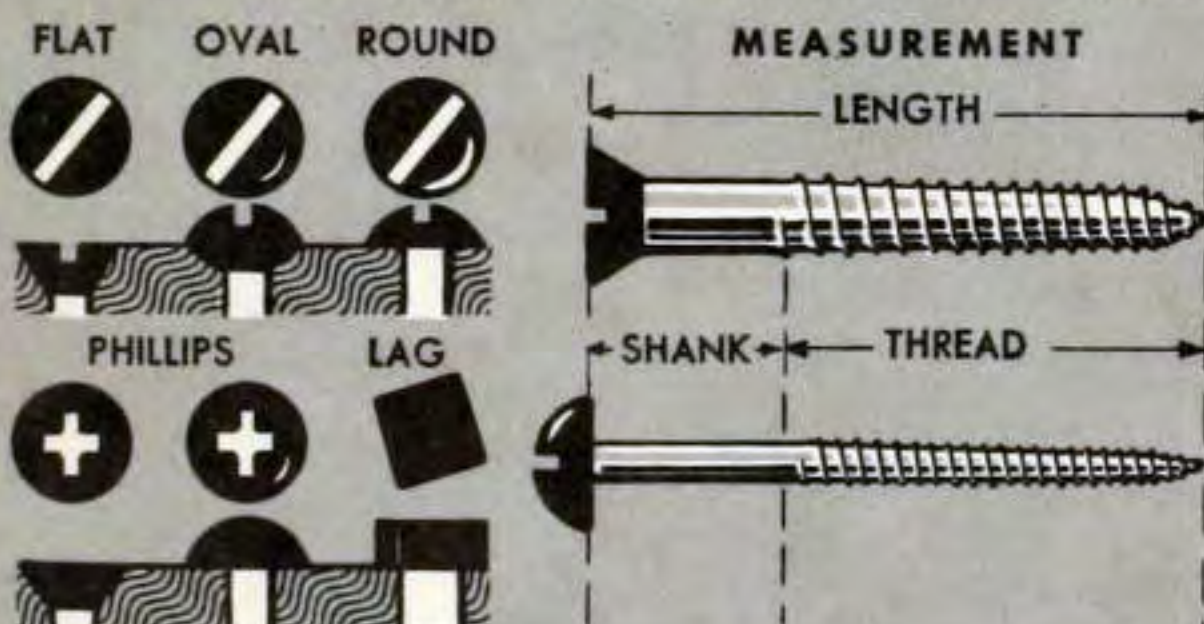
NAIL LENGTHS (Actual Size)

LARGER SIZES					
size	length	No. of nails per pound			
		com.	case	box	finish
20d	4"	31	52	52	62
30d	4 1/2"	24	46	46	
40d	5"	18	35	35	
50d	5 1/2"	14			
60d	6"	11			

No. of nails per pound				SIZE
com.	case	box	finish	
876	1010	1010	1351	2d
568	635	635	807	3d
316	473	473	548	4d
271	406	406	500	5d
181	236	236	309	6d
161	210	210	238	7d
106	145	145	189	8d
96	132	132	172	9d
69	94	94	121	10d
64	88	88	113	12d
49	71	71	90	16d

WOOD SCREWS

HOW TO CHOOSE. Use screw that is long enough so two-thirds (never less than one-half) of its length will enter base in which threads are imbedded. Length should be about 1/8 inch less than combined thickness of boards being joined. Use fine thread for hardwood, coarse for soft. **HOW TO USE.** Always drill lead hole for screw. Hole in top board should be slightly larger than shank, in second board slightly smaller than threaded portion. In soft wood, bore to depth half the length of the thread; in hardwood, bore nearly as deep as length of screw. For lag screw: Drill hole two-thirds its length, drive in with hammer, tighten with wrench. **HOW TO BUY.** Screws are classed by gauge (thickness) and length. Each gauge has a variety of different lengths, as shown on chart. When ordering, specify head shape (e. g., round head), finish (brass), gauge (number 5), and length (1 1/2 inches). Screws may be obtained up to 5 inches in length. Square-headed lag screws come in diameters of 1/4 to 1 inch, lengths of 1 1/2 to 12 inches.

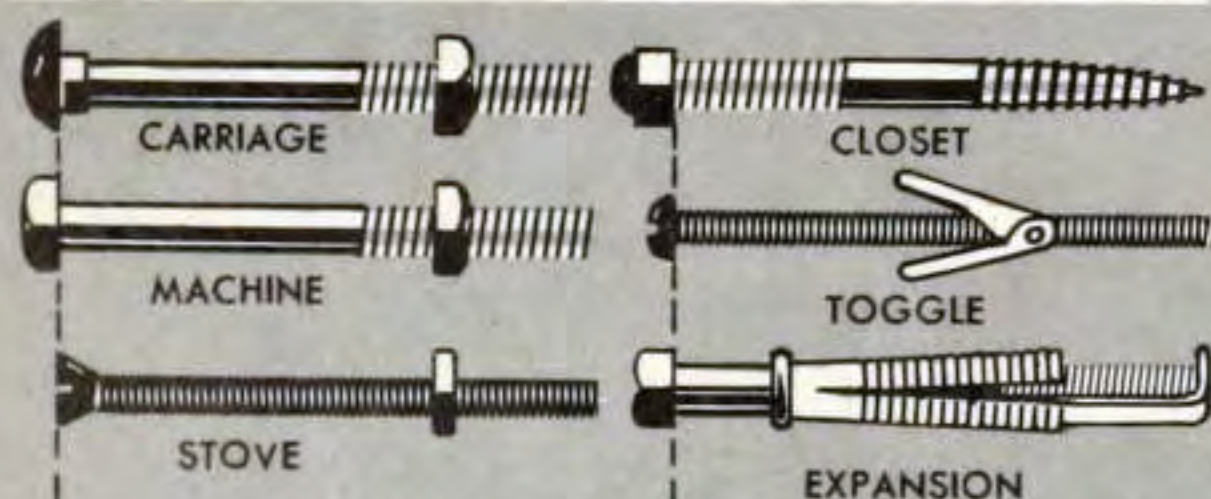


WOOD SCREW SIZES . . . Shortest length in each gauge is shown actual size in silhouette; other lengths indicated by arrow points.

14	12	11	10	9	8	7	6	5	4	3	2	inches
												1/4"
												1/2"
												3/4"
												1"
												1 1/2"
												2"
												2 1/2"
												3"

LARGER SIZES	
Shank diam. actual size	
16	18
1 1/4" to 3"	1 1/2" to 4"
22	24
1 3/4" to 4"	3 1/2" to 4"

BOLTS



HOW TO USE. Length of bolt should be sum of thickness of both pieces of lumber plus 1/2 inch. For lumber up to 2 inches, use 1/4-inch-diameter bolts; for 3-inch lumber, 3/8-inch bolts; for 4-inch lumber, 1/2-inch bolts. Drill hole 1/16 inch larger than diameter of bolt unless snug fit essential. Use washers under head and nut of machine bolts, under nut of carriage bolts. **HOW TO BUY.** Bolts are classed by diameter and length. Come in diameters from 1/4 to 1 1/4 inches, in lengths from 3/4 to 30 inches. Use toggle bolt for attaching fixture to plaster wall; expansion bolt for fastening to masonry. For outdoor exposure use brass or cadmium plated finishes.

MISCELLANEOUS FASTENERS



(1) Hardened drive screw for masonry and cement. (2) Expansion nail for masonry and cement. (3) Roofing nail. (4) Waterproof roofing nail. (5) Escutcheon pin for attaching fixtures where decorative head is required. (6) Come in brass and nickel plated finishes. (7) Upholstery nail, comes in variety of ornamental heads. (8) Brad for fine work. Obtainable in sizes ranging from 1/4" length to 3". (9) Glaziers points for holding glass in place. (10) Corrugated fastener for joining boards in rough work. (11) Cut tack for upholstery, screens. (12) Rounded head wire tack. (13) Common staple for attaching wire to a board, fence post. (14) Square tack for upholstery. (15) Insulated staple for electric wires. (16) Large staple for electric conduit. (17) Rose staple for attaching vines, roses to house or fence.

How to build

Outdoor furniture



A Sunset Book

LANE PUBLISHING CO.

MENLO PARK, CALIFORNIA

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HOW TO BUILD OUTDOOR FURNITURE

Before selecting design or materials for any piece of outdoor furniture, it is suggested that the home craftsman acquaint himself with some of the more important steps in construction.

The following pages contain a step-by-step analysis to assist in the selection of proper materials, fabrics, methods and finishes. It is fundamentally general enough to be applied to any furniture or cabinet-making project.

Due to space limitations, certain construction details are not duplicated in each plan. This section may be used for additional reference when building and finishing.

CHOICE OF MATERIALS

Wood. Patio furniture frames are important both aesthetically and functionally. Beauty must be more than skin deep if the furniture you build is to serve you well.

Redwood is the frame material most used in wooden outdoor furniture. It is easy to work, rugged and attractive. Like other woods intended for prolonged outdoor exposure, redwood is ideally close-grained, resinous stuff, cut from the heart of the tree. Heartwood is so dense that it absorbs little of the moisture to which it is exposed. It does not rot, needs no preservative. There are minor disadvantages to redwood: it turns dark with age, and it must be bolted and braced strongly or joints will loosen with age and use. Be sure to use galvanized, brass or aluminum hardware and nails in redwood to avoid stain when the wood is exposed to weather.

Red cedar is an excellent framing material. It is easy to work, strong and light. No exterior finish is required and exposure turns it light rather than dark in color. Red cedar is available principally in the Northwest. Cypress, like cedar, is a good frame material that bleaches silver with age. It is strong, durable, easy to work and needs no exterior finish. Again, availability is somewhat limited. Pine or fir are good, sturdy woods that work up well as outdoor furniture. A good quality filler and several coats of spar varnish will protect either against the weather. Hardwoods may be used very satisfactorily in outdoor furniture. They are more expensive, harder to work and are considerably heavier than soft woods of similar size.

Plywood. Exterior grade plywood is a somewhat controversial outdoor building material. It has salient advantages: it is light, strong, good looking and easy

to work. Its detractors say that sun or heat may cause cracking and staining, that exposure may result in separation of laminations at edges where it is exposed. Exterior grade plywood comes in 4-foot width, 6-, 8- and 10-foot standard lengths. It can be ordered in lengths up to 16 feet in premium exterior grades, including "marine" plywood. Marine plywood is no longer stocked by most lumber yards. A special 5-by-9-foot, $\frac{5}{8}$ -inch plywood sheet is made and stocked specifically for ping pong tables. You can get exterior plywood with either one or two "good" sides. Check every sheet for "dutchmen" or patches in the exterior ply.

When you use plywood outdoors, protect the edge grain from moisture. Seal all edges (including lapped or butted edges) with three coats of high grade exterior house primer, aluminum paint, heavy lead-and-oil paint, or lacquer-base edge sealer. Get instructions for painting the surfaces of exterior plywood from your lumber yard when you buy.

Bear in mind when ordering lumber that finished width and thickness dimensions will be less than ordered. For instance, a 2 x 4 measures $1\frac{5}{8}$ " x $3\frac{5}{8}$ " and a 1 x 10 measures only $2\frac{5}{8}$ " x $9\frac{1}{2}$ ".

TUBING AND PIPE

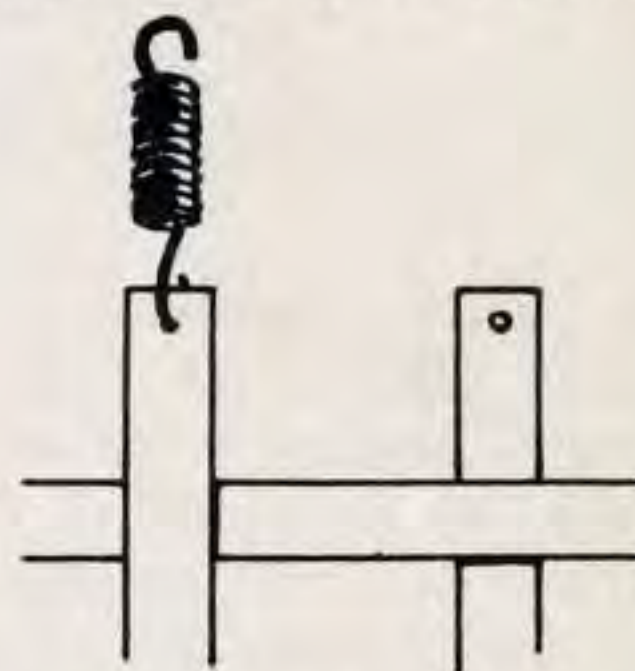
Aluminum tubing or galvanized water pipe can be used for outdoor furniture frames. You can get aluminum tubing at most metal companies, or you can buy it as conduit at electrical supply houses. Three-fourths inch tube of alloy 61 S-T with a .065-inch wall has good aluminum and framing characteristics. Heavy-wall tube in alloys like 24 S-T may make smoother bends, but it takes more strength to handle. Join aluminum tubing with a sleeve of slightly larger tube. If you are using $\frac{3}{4}$ -inch tube, make a sleeve of $\frac{7}{8}$ -inch tube and run bolts through the sleeves an inch from each end to grip the sections together. Bend aluminum with a thin-wall bender available at a metal company or electrical store or with a home-made jig.

Galvanized water pipe or steel electrical conduit can be shaped very easily. You can get pipe bent at most awning shops. Use standard, threaded pipe fittings. Steel electrical conduit should be bent with a thin-wall bender and joined with sleeves or welded.

It is possible to buy prefabricated legs in various heights and thicknesses, thus eliminating the need for heavy bending equipment. These are manufactured ready to install to the wooden member.

SUSPENSION METHODS

Springs and Straps. Springs and substitutes for springs bear strongly on the amount of wear and comfort you will get from your patio furniture. They support cushions or pads and furnish



part of the seat's resiliency. Steel strapping supported by coil springs is a common type of suspension in commercially built outdoor furniture. It is strong and durable. Garden furniture stores carry replacement straps and springs.

Rope. Woven rope springing is an eminently satisfactory spring substitute for patio chaise longues and chairs. It



is inexpensive, tough and easy to install. Three-eighths-inch hemp rope does the best job, though cotton sash cord makes a good substitute. Hemp does not stretch and shrink noticeably. Cotton cord, on the other hand, stretches when it is wet, shrinks when it dries. If you use cotton rope, wet it thoroughly before you insert it and pull it as tight as possible. Drill holes in the frame at 3-inch intervals. Weave rope first across, then the length of the frame.

Webbing. Webbing is suitable as a spring substitute or for use as a direct seating surface without additional padding. Jute webbing of the sort that is used as a spring base for indoor upholstered furniture is not satisfactory outdoors. It rots easily and is a rough surface if used as a seat. The most economical and satisfactory type of webbing is 2-inch woven cotton "carpet binding," available from upholstery shops. It comes in an extremely wide assortment of solid colors and in 2-color

stripes. Cotton webbing holds up fairly well under normal outdoor use.

A more rugged webbing can be made from medium to heavy canvas. Use 8- to 16-ounce duck. You can cut 8-ounce duck into 3-inch strips; hem $\frac{1}{2}$ -inch on each side with a home machine. The resulting 2-inch strips will be much stronger than regular cotton webbing. If you want heavier canvas webbing, get your canvas or awning dealer to cut and hem it for you. Plastic webbing is available at most upholstery shops in 2-inch-wide strips, in either solid or woven plastic. It is relatively expensive. Most outdoor furniture manufacturers who use plastic webbing use woven strips.



To install webbing, first measure the overall length and width of the area to be webbed. Decide how many strips are necessary to achieve the effect you wish (in open basket weave, leave spaces between strips about the width of the webbing). Run strips one way, then weave in strips in other direction. Leave webbing in one long piece so you can pull it tight and stand on one end of it on the floor to hold it tight while it is being attached. If the strip you are working with is too short to reach the floor, you can pin another to it with upholsterers' pins or a sharpened nail. Tack webbing to the bottom of frames of relatively hard wood allowing 1 inch at each end. Tacks will not hold in soft woods. Fold back 1 inch at end and pre-cut strips to size, insert grommets. Fasten to frame with wood screws if frame is of redwood or other soft wood. In metal frames, bore holes into frame and attach webbing with metal screws.

UPHOLSTERY MATERIALS

Although there are many types of material available for outdoor use, including many new synthetics that are fairly weather resistant, canvas still leads the field and is the common denominator to patio furnishings.

Manufacturers call canvas "cotton duck" and divide it into two basic classes. "Numbered duck" is a stiff, heavy canvas used for decking, roofing, or cargo covers. "Ounce duck" is the lighter, more flexible canvas that is so prominent in the patio. It weighs from 6 to 15 ounces per linear yard 28 to 31 inches wide.

Colors. Canvas comes in a rainbow of colors, solid and striped, in addition to its natural off-white shade. Good colored canvas is either factory-painted or vat-dyed. Factory-painted canvas usually holds its color better than the vat-dyed material.

There is no clear cut division between uses of factory-painted and vat-dyed duck. The factory-painted cloth is superior for shelters and umbrellas. It is also used to some extent as a seat and upholstery cloth. It is softer, less likely to crack, does not feel as hot when exposed to the sun and there is no chance that paint will oxidize and soil clothes.

Shrinkage. You're not likely to find pre-shrunk canvas when you shop. Quality duck shrinks up to 10 per cent, mainly in the lengthwise warp threads of the cloth. Allow 3 inches per linear yard for shrinkage when you make anything of canvas.

Weights. There is also considerable latitude in canvas weights for different patio uses. Here are average recommendations—but adjust your choice to the amount of abuse and exposure your canvas will get:

Use 8-ounce single-filled painted or vat-dyed duck for weight-supporting chair seats and backs. Use two thicknesses of this cloth for seats.

Use 6- or 8-ounce single-filled vat-dyed duck for chaise and chair pads or cushions.

Use 6-ounce single-filled, vat-dyed duck or 6-ounce vat-dyed drill for pillows and occasional cushions.

You can get canvas that is either "proofed" or "resistant" against fire, water or mildew. Chemicals which give the cloth its resistant qualities tend to oxidize or bleach out when exposed to the elements for from six months to a year. Treated canvas is not necessary for standard patio uses. Synthetic fabrics and synthetic coatings for canvas have made remarkable strides in recent years. They hold color well, are long-wearing and light weight. Disadvantages are that most synthetics feel hot or cold to touch, are expensive and may tend to dry out and crack. Nylon and orlon fabrics both burn much more readily than canvas.

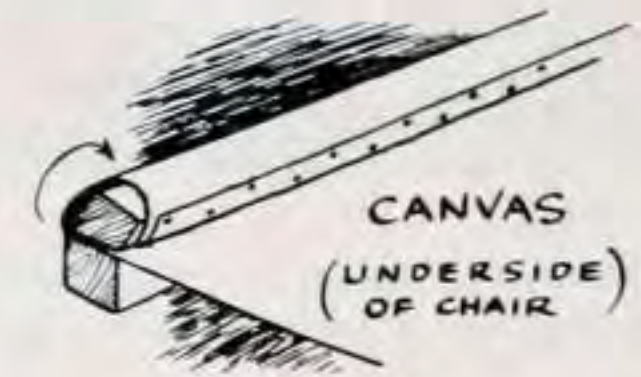
You can buy canvas from local canvas or awning shops, dry goods stores and mail order houses. Prices and qualities vary so widely that it is usually a good idea to talk to a local canvas dealer before you buy if you are planning an extensive installation.

After you buy canvas, you have to put it into place. Ordinarily, you will want to tack or sew it, insert grommets or rivet it.

Tacking. Use number 6 or 8 steel upholstery tacks. Copper, aluminum or galvanized tacks hold up better under exposure. Cut canvas so you will have

room to lap it over once before you tack it. Tack the canvas into place with a few tacks. Space tacks every one or two inches in a zig-zag line. Don't try to tack canvas to redwood or other soft

- ① LAP 1" ALL AROUND AND TACK INTO POSITION WITH 4 TACKS IN CORNERS...



- ② TACK EVERY INCH IN ZIG-ZAG LINE. USE # 6 OR 8 UPHOLSTERERS' TACKS

woods if it is expected to support weight. A more satisfactory method is to insert grommets and attach with $1\frac{1}{2}$ -inch screws.

Sewing. Use the heaviest needle your home machine will take and number 24 or 30 thread. Linen thread is superior to cotton. When material is to support weight, seam all hems twice. Seams should be $\frac{1}{4}$ to $\frac{1}{2}$ inch apart. Most home machines will handle up to 8-ounce canvas satisfactorily. Get your local canvas shop to sew heavy canvas.

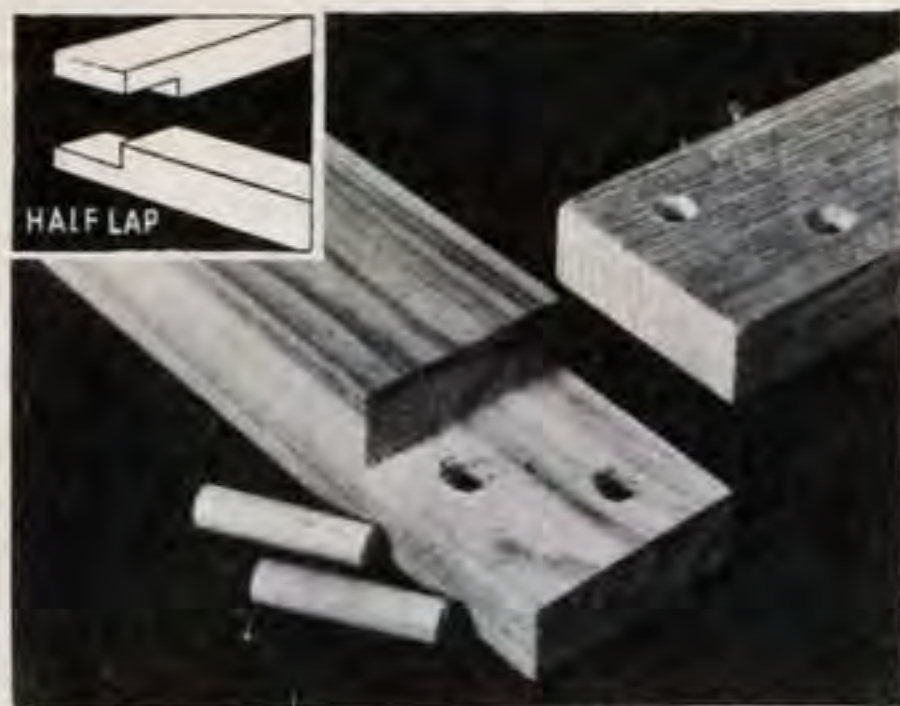
Grommets. Grommets work best in very heavy canvas, say 16-ounce duck. In lighter fabric, they may pull out. You can borrow grommet dies from a canvas or awning dealer. Place grom-



mets 4 to 6 inches apart. Use $\frac{1}{4}$ -inch awning braid to lace grommeted canvas to a frame. Use wood or metal screws to attach directly to a frame.

Rivets. Use solid copper riveting materials. A riveting tool makes for speed and ease of installation. You can successfully use a hammer and heavy piece of metal. Pin canvas into place *before* you rivet it for an even fit.

Care. Keep canvas furniture out of the elements as much as possible. Rain, fog, frost, dew and salty coastal winds are



End half-lap is common form of joining two pieces of lumber, yet retaining thickness of one. Pegs or pins add strength



Tee half-lap is used for stretcher or any other spot where wood is joined other than at corners. Square peg adds strength



Making half-lap joint by hand. Mark carefully and saw with panel or back saw. Strips clamped to saw limit depth of cut

all hard on it. Too much sun exposure fades colors and oxidizes preservatives. It is best to bring pads in at night. If it is impossible or difficult to bring pads in you can get plastic or rubberized covers that tie easily and simply into place for most pieces of outdoor furniture.

Store canvas in the winter and when it is not in use. Put it in a clean, dry place where there is plenty of ventilation. Be sure it is absolutely dry and out of reach of birds and rodents. Don't store it on a concrete or earth floor where it will absorb moisture.

Use canvas paint once a year on any canvas you don't sit on or fold and unfold regularly. Some paints may soil clothes; others gum or form a bond when folded. Canvas paint makes the cloth more mildew-resistant, protects natural oils, softens and renews or changes color. Use a regular canvas paint, available at most paint stores. A quart will cover about 75 square feet. To apply, first dampen the canvas (as damp as clothes before ironing). Then apply the paint according to instructions on the can. If the canvas is badly faded or a striped pattern is to be covered with a solid color, give it two coats: first with aluminum canvas paint and second with regular canvas paint of the desired color. It is also wise to paint metal patio furniture frames once a year. Rusty frames can cause canvas to deteriorate.

Plastic coatings for canvas are still in the development stage, though some are claimed to be excellent as waterproofing, mildew preventative and color preservative.

Pads and Pillows. When you plan to build your own patio furnishings, you may wish to make a boxed pad or cushion. Stick to standard sizes if your furniture size permits. Then, when the cover you make wears out, you can fit your cushion with a ready-made zipper slip cover. (Standard pad sizes are: chaise longue, 24" x 74"; lounge chair, 22" x 48"; ottoman, 18" x 22".)

To make a boxed cushion or pad, cut two pieces of fabric the required size

for top and bottom panels, allowing 1/2 inch on all sides for seams. Cut a long strip of fabric, about 3 1/2 inches wide (width depends upon how deep you want the finished pillow to be). This strip should be long enough to reach around all four sides of the top. Sew this boxing strip between the top and bottom panels, leaving a long opening at the back for stuffing. Upholsterers call this the "open" end. The cushion may be finished plain, or a welting cord or fringe may be stitched into the seams so that it will be on the right side when the pillow is turned.

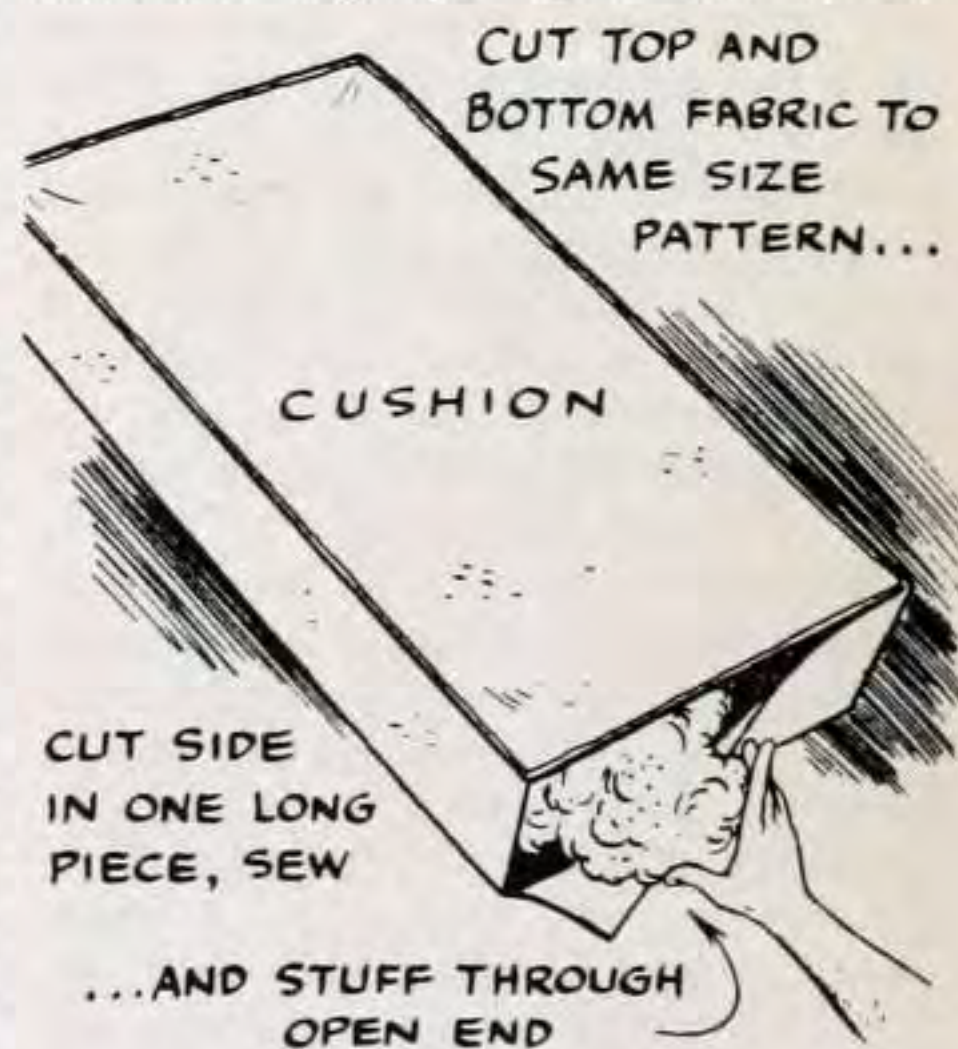
Another decorative touch may be created by binding the seams on the right side with bias tape. Use number 30 linen thread for seams.

Stuff your pad with kapok, pre-blown cotton or cotton and linters; or cotton batting and upholstery moss in layers.

Kapok is ordinarily the best all-around stuffing for outdoor pads and cushions. It has a very high water and moisture resistance. Each strand of kapok contains an individual air cell and is heavily coated with a waxy substance that defies moisture so well that kapok is used for navy life preservers. It dries quickly, does not hold moisture so harmful to canvas. Kapok also stays light and fluffy longer than cotton, and when it becomes matted is much more easily revived. Kapok is initially more expensive, but lasts so much longer than cotton that cost in the long run is probably less.

Pre-blown cotton or cotton and linters are good cushion stuffings. Upholstering moss between layers of cotton batting makes a springier cushion than all-cotton stuffing. Synthetic stuffings are sometimes available. Upholsterers point out that most synthetics are hard to handle, may sliver into hands, and are likely to work out through covering materials and irritate the skin. They are, however, light, resilient and highly water-resistant. Foam rubber, rubberized hair pads, upholstery hair and felted cotton are not recommended for outdoor use. Buy stuffing materials at

any upholstering shop. Blowing has the advantage that less stuffing material is needed. You can have kapok, pre-blown cotton or cotton and linters blown into your cushion. Blowing takes 9 pounds of kapok, 18 pounds of pre-blown cotton or cotton and linters to fill an average chaise longue pad. A lounge chair pad will take 5 pounds of kapok, 10 pounds of cotton or cotton and linters. You will need 12 pounds of kapok, 22 pounds of pre-blown cotton or cotton and linters to hand-stuff a chaise pad; 7 pounds of kapok, 13 pounds of pre-blown cotton or cotton and linters for a lounge chair pad. Hand-stuff your cushion through the "open" end. Insert



stuffing material evenly. If you choose to use upholstery moss between layers of cotton batting, form the materials on the floor in the shape of your pad. Roll the pad cover up like a sleeve, then roll it down over the stuffing materials and sew the "open" end closed.

FINISHING

Preparation. Any of the soft woods suggested are easily sanded and prepared for a finishing coat of paint or stain. It is advisable to apply a prime coat to the joints before assembly as this acts as a sealer and will help prevent absorption of moisture and eventual splitting. Opaque paint finishes are recommended when the rustic appearance



Use sharp chisel to remove waste to the depth of half-lap between saw cuts. Work from both sides to prevent splintering

is not important or the grain of the wood is not attractive. Natural finishes have become increasingly popular as they preserve the grain and color of the wood. Exposure of natural finishes to the sun and weather cause both the finish and the wood to change color gradually, requiring more frequent refinishing than with paint or stain.

Pigmented and tinted stains. These preparations are available in a wide range of colors and are ideal for outdoor furniture. If a flat finish is desired use a stain with creosote base which has a deep penetration of the grain. Other carrying agents for stain or tint are available which will give a glossy finish. Any of these is easy to apply, withstands weathering, and preserves the

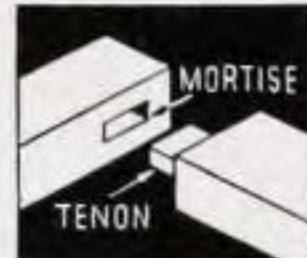
grain and natural beauty of the wood. If a bleached appearance is needed to blend the new furniture with the old, ask your paint dealer for a mixture containing a bleaching agent.

It is important to follow the instructions of the manufacturer to assure good lasting results. When proper thinning and applying instructions are not contained on the label, consult your paint dealer.

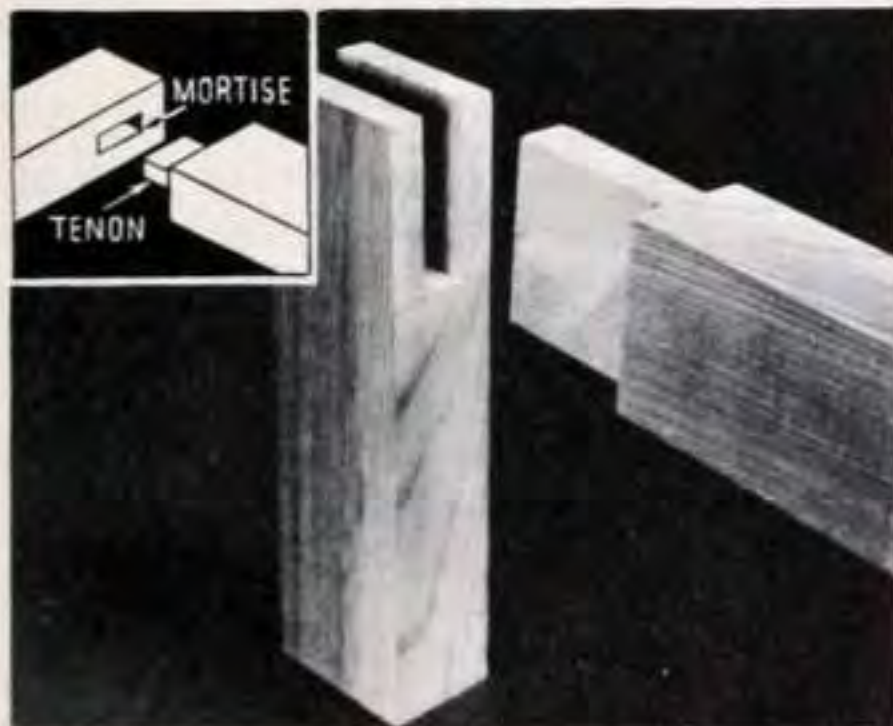
Caution: When nails or screws are countersunk into a surface which is to have a natural or stained finish, apply the first coat before puttying to eliminate discoloration by the oil of the putty.

JOINERY

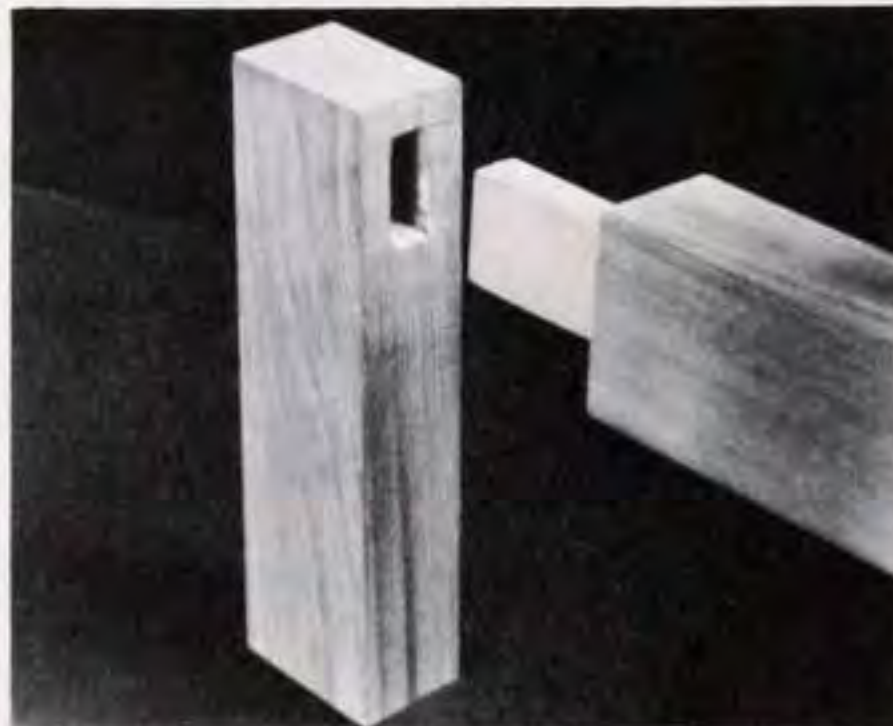
The particular joint a craftsman chooses, or the way he adapts it, depends upon the wood used, and the demands of strength and appearance.



The two most popular methods of joining are illustrated here. "End" half-lap joints are used to join corners or extend the length of wood members. "T" half-lap joints are ideal for stretchers and joints other than corners.



Open mortise and tenon offers a large, hence strong, gluing surface. May be pegged or pinned for additional strength



Through mortise and tenon is used where a sturdy joint is required and the end-grain of tenon showing is not undesirable



tact with wood than a nail of the same length. To have the same friction surface, a nail must be about half again as long. Even then, the screw will have three times the holding power.

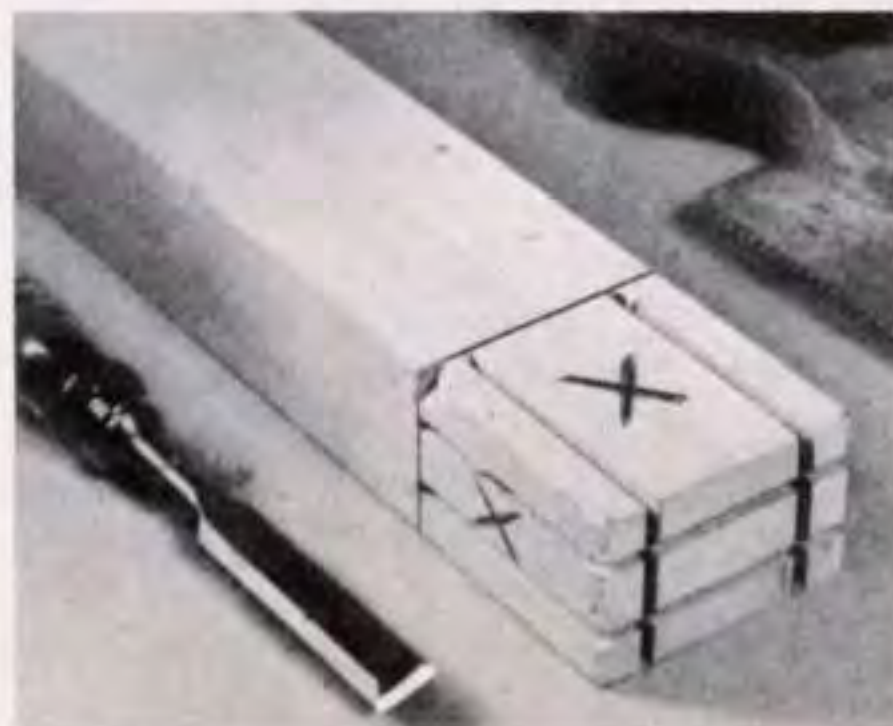
If holes are properly pre-drilled for easy entrance, screws do not split the wood, and fewer are required. Consider also the possible necessity of disman-



When making mortise and tenon joints by hand, first step is careful marking of square shoulders with try-square, pencil



Next, cut cheeks of tenon with panel or back saw. Saw on "waste" side of lines



Shoulder cuts are third step. Note notch made with chisel for easy starting of saw

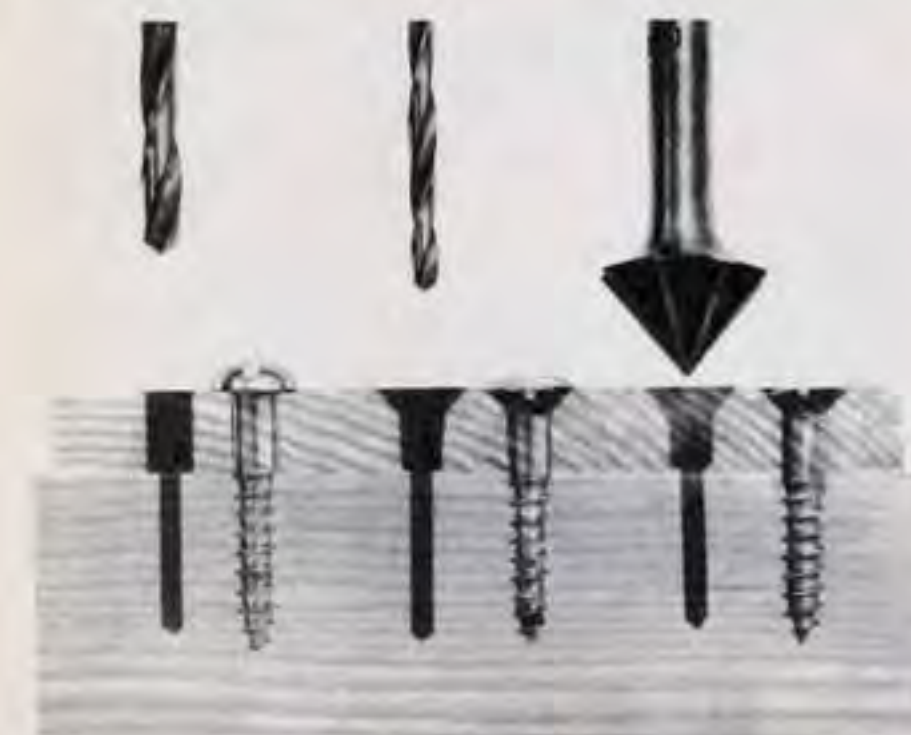


Measure and mark mortise; clear waste with brace and bit, corners with chisel

ting outdoor furniture for winter storage.



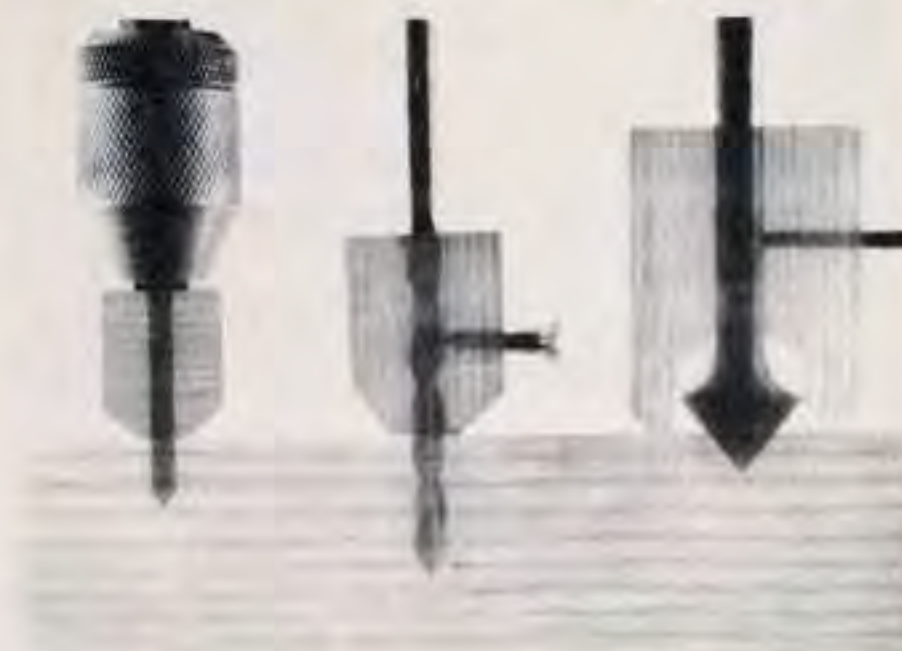
Oval head, flat head, and round head screws (shown in this order, left to right) are the most common. Phillips head screws (at right, above) are especially easy to handle because the screwdriver doesn't slip out of the slot and the four-point pressure tends to drive the screw in straight. Lag screws, square-headed (at left, above), driven in with a hammer and tightened with wrenches, are used extensively in outdoor furniture construction. Holes must be drilled for lag screws, to prevent splitting.



Two or three pre-drilling processes will help prevent splitting the wood and will make for a neater appearance. One hole should be drilled the right depth to allow easy passage of the screw shank (the smooth, unthreaded portion). For an oval head or flat head screw, use a countersink to bevel the edges so the heads fit flush with surface.

The deeper hole to accommodate the screw thread should be slightly smaller than the core (the diameter, measured across the middle of the threaded portion from "valley" to "valley"). In soft woods, the diameter of this lead hole should be 70 per cent of the core size; in hardwoods, about 90 per cent.

A guide block keeps the drill from going too deep. You can make one for each job, or you can make an adjustable one of hardwood with a screw to tighten it on the drill. A guide block also helps keep your drill plumb. But for a more useful guide, set a try square on its wooden edge and keep your drill aligned



with the metal blade. There is also a commercial bit gauge on the market which might be worthwhile to have in your tool kit if you need to do much of this kind of drilling.

Sometimes, when you put a screw into the end of a board, the end grain doesn't hold. Bore through the board near the end and insert a dowel to give the screw threads something more solid to bite into.

How to Select Screws. Screws come in sizes from the short kinds for fastening on light hinges to those long enough to hold a 2 by 4 board in place. Standard wood screws range in length from 1/4 to 5 inches. In diameter, they run from 0 gauge (.058 inch) to 24 gauge (.373 inch). A large gauge number



indicates a large diameter, measured through the smooth unthreaded part of the screw. Each length is available in several different gauges. For example, the 5-inch screw is made in gauges from number 14 to 24.

There are only two rough rules for choosing the right screw for the job. Get it long enough so that about two-thirds of its length will enter the base in which threads are imbedded, and thick enough to resist any shearing strain which might tend to snap it off. Where holding power is unusually important, choose one with rough, unpolished surface, a shallow slot in the head, thin, sharp threads, and the largest gauge available in that length.

Steel screws are both the cheapest and strongest. They are best used where they aren't likely to rust and where they

aren't visible, or where looks don't matter. They come in dull, bright, nickel plated, cadmium plated, zinc, and blue finishes.

Brass and bronze screws are more ornamental and are rust proof. But brass screws are softer than steel. In harder woods often it is advisable to first sink a steel screw because the brass twists off easily and the imbedded portion is almost impossible to remove without mutilating the wood.

Appearance also determines the type of head the screw should have. A flat head is usual when it has to be flush with or below the surface. Either round head or oval head, which is more slightly rounded, is better when it cannot or need not be concealed.

In purchasing screws, the "give-me-a-dozen-of-these" approach is direct and dependable. For larger or special orders you may need to give more detail. Following is the usual order of specifications when asking for them: Round head (head shape), brass (finish), number 5 (gauge), 1 1/4 inch (length).

Nails and Bolts. For information about selecting the proper size nail or bolt, see the chart on the inside of the front cover.

WHEELS AND AXLES

Many pieces of outdoor furniture are heavy and unwieldy because of their sturdy construction. If they are to be shifted around, they can more easily be moved if they have a pair of wheels attached.

Wooden wheels are not difficult to make if you have a jigsaw for cutting the circle. They can be cut from a single piece of 2 by 8 or two pieces of 2 by 4, which should be glued and doweled or cleated together. Some form of bracing is advisable, because they have a tendency to split under stress. If you do not want to make your own wheels, you can buy them readymade in many furniture stores.

Dowels make satisfactory axles, but you should not use a smaller size than 1-inch round.

Rubber-tired, steel wheels with steel axles can also be bought in sport shops, hardware stores, or mail order stores. Most common size is a 9-inch, rubber-tired wheel attached to an 18-inch axle.

WHICH PIECES ARE EASIEST TO BUILD?

Almost any piece of furniture in this book can be built by a craftsman with reasonable skill. If you wish to venture into designing your own pieces, however, you are strongly advised to start out with tables, benches, and carts before tackling a chair. Chairs present the designer with formidable problems in engineering and aesthetics, because of the weight that their relatively frail construction must carry.

PLAN 1.

ROLL-AROUND CHAIR

This redwood chair is a comfortable addition to any patio furniture grouping and blends well with the chaise longue and patio couch shown on other pages in this book. It is a good combination of pleasing appearance and simple, rugged construction which will offer years of hard use.

The frame is secured with lag and carriage bolts which should be of rust-proof metal so that they will not darken the wood when exposed to damp weather.

The rear axle is made from a 1-inch dowel which is pegged after the wheels are attached, making an adequate but simple assembly.

This particular design calls for springs and straps on the seat and back to support the cushion although it is possible to drill holes in the frame at 3-inch intervals, then rope may be used instead.

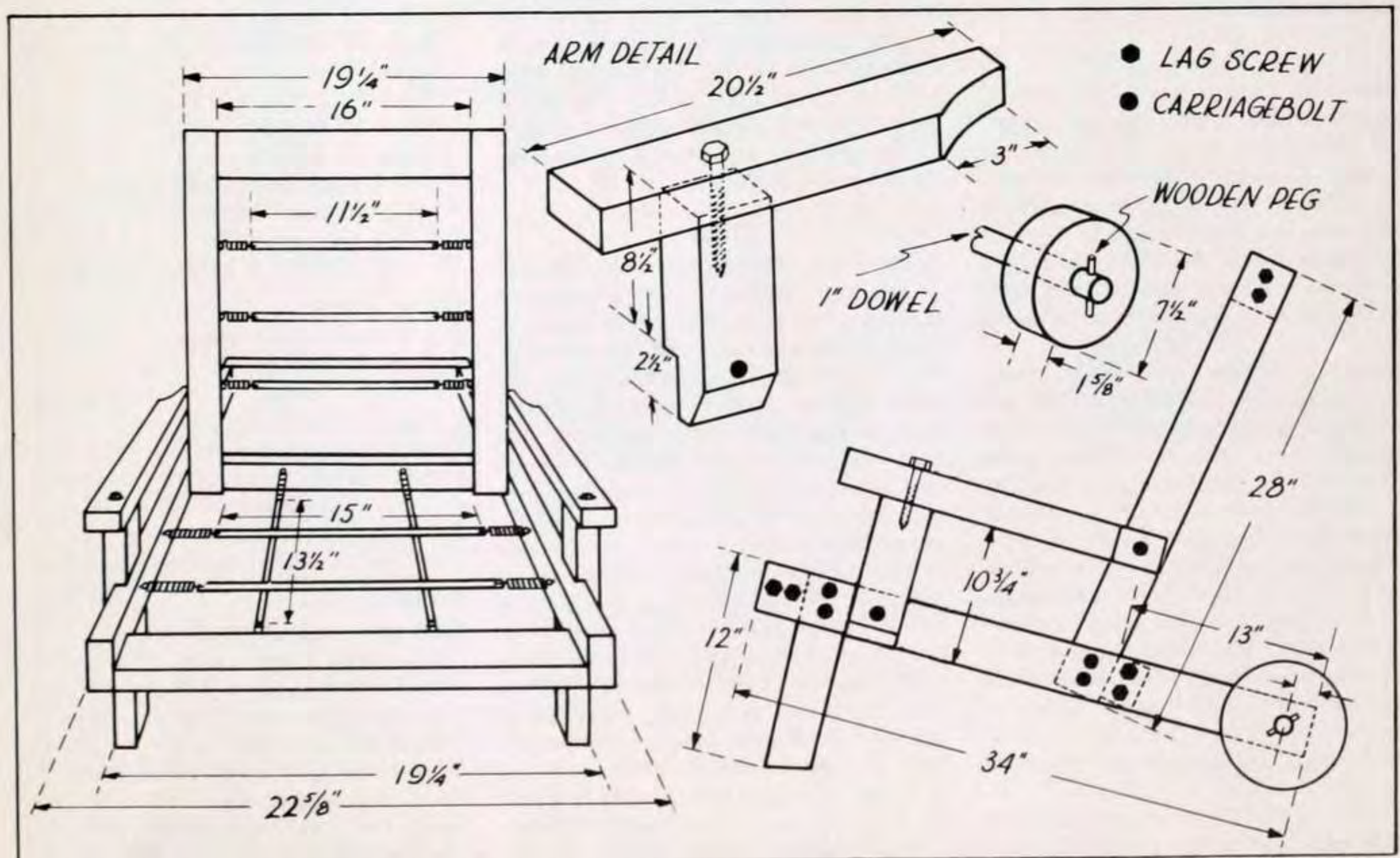
The dimensions have been figured so that a ready-made cushion will fit the chair. For those who wish to make their own cushion, instructions are given in the front of the book.



BILL OF MATERIALS

2" x 4" redwood—total length 24'
 2 pcs. 34" long for base
 2 pcs. 19 1/4" long for seat frame
 2 pcs. 12" long for legs
 2 pcs. 28" long for back
 2 pcs. 16" long for back
 2 pcs. 20 1/2" long for arms

2 pcs. 10 3/4" long for arms
 1" round for axle, 28" long
 16 lag screws and washers, 1/2" x 4"
 8 carriage bolts with nuts and washers, 1/2" x 5"
 Spring and straps or rope for webbing
 1 pc. pad or cushion to fit





John Matthais, Design; Ernest Braun, Photo

PLAN 2. MODULAR CHAIR AND TABLE

Pictured above are a modular chair and table constructed of redwood and metal cloth. This unusual combination of materials blends into an attractive grouping for the garden and patio. And when one looks beyond the pleasing outward appearance, he will find the design not only easy to duplicate, but inexpensive and durable as well.

TABLE

The table pattern has a variation in assembly which allows for an adjustment in finished height and width. If one plan is used, it becomes a coffee table, while if the alternate suggestion is adopted, it is low enough to serve as an ottoman for the matching chair. The dimensions naturally vary, but the manner of assembly is fundamentally the same.

Since the metal parts cover an extensive area of the finished unit, yet are installed in a ready-made state, much time and labor is saved in the home workshop. The chair design primarily incorporates four rectangular frames made from redwood 2 by 3's to bind the metal cloth. Then these frames are joined with carriage bolts and angle braces to form the two sides and the seat and back. The table or ottoman is similarly assembled, with three main parts tied together with bolts. And both table and chair are reinforced with diagonal metal bracing to insure adequate support.

There are two types of metal suitable for the panels. The one pictured is per-

forated metal cloth which is generally used for heater and ventilator grills, and is manufactured in several different patterns. It is stiffer, stronger, and consequently more costly than hardware cloth which could also be used.

The table frame is routed out and the metal is then slipped into place and secured with screws. But for additional support needed in the chair, a strip is rabbeted out of the frame and then replaced to hold the metal. For this a power saw is necessary unless it is done by the lumber yard or mill at the time the stock is purchased.

CHAIR

The chair offers a reasonable amount of comfort without any upholstered cushions. But of course it will be much more inviting if cushions are provided. The ones in the sample shown here are made of foam rubber and covered in a durable material. They represent the most costly investment in the chair and are definitely a luxury. A standard cotton batting or kapok-filled cushion would serve the purpose nicely and would cut the cost substantially. If the cushions are made with an inexpensive muslin cover and then slip-covered in denim, sailcloth, or other durable washable material, they would be easy to keep fresh and clean, but would not be waterproof. Waterproofing is not necessary if foam rubber is used; however, if cotton or kapok is the base, it would be better to use a plastic-coated material or heavy canvas to protect the

stuffing from damage due to moisture.

Note: The metal cloth should be thoroughly painted to forestall rust.

BILL OF MATERIALS

Chair:

- 2 x 3—total length 31'2".
- 4 pcs. 21" for sides
- 4 pcs. 27" for sides
- 2 pcs. 20" for back
- 2 pcs. 21" for back
- 2 pcs. 28" for seat
- 2 pcs. 21" for seat
- 2 4-inch angle braces with screws
- 2 diagonal metal braces to fit
- 2 6-inch carriage bolts
- Perforated metal or hardware cloth to fit

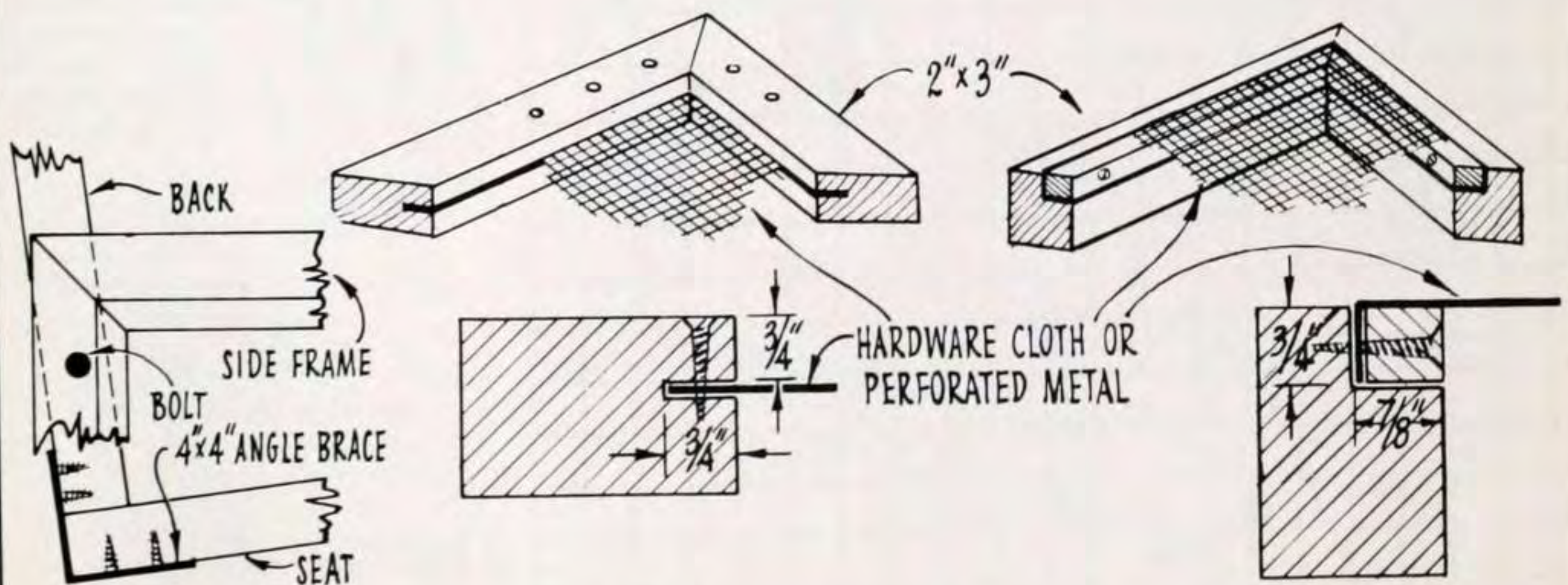
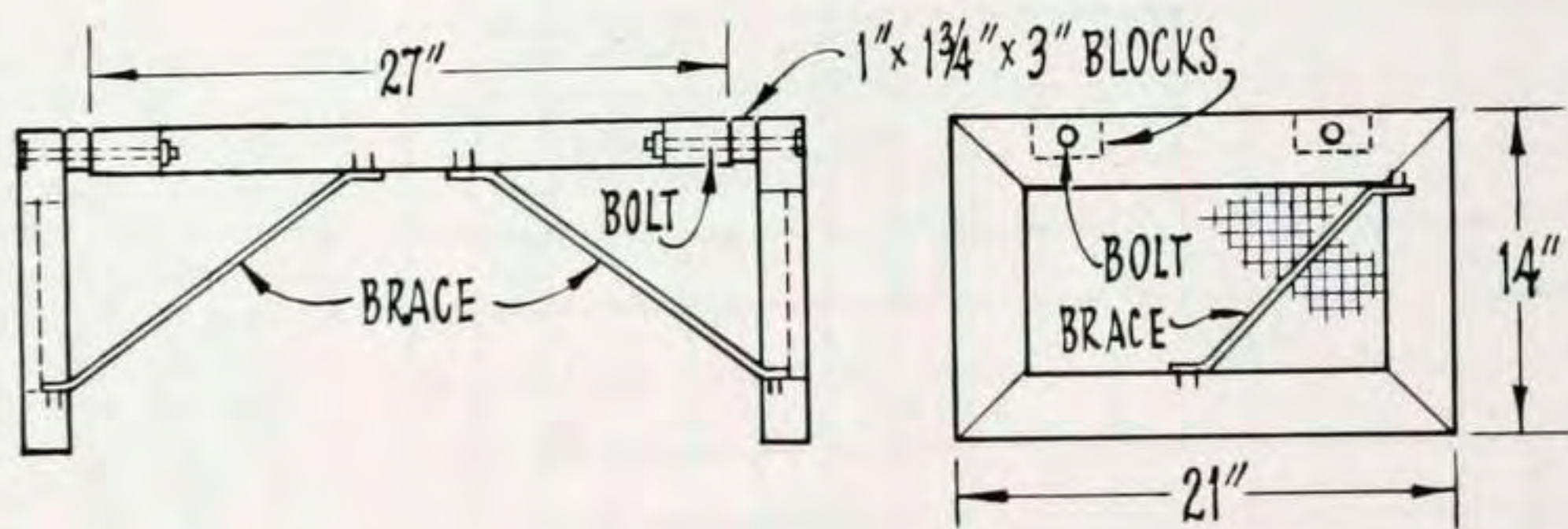
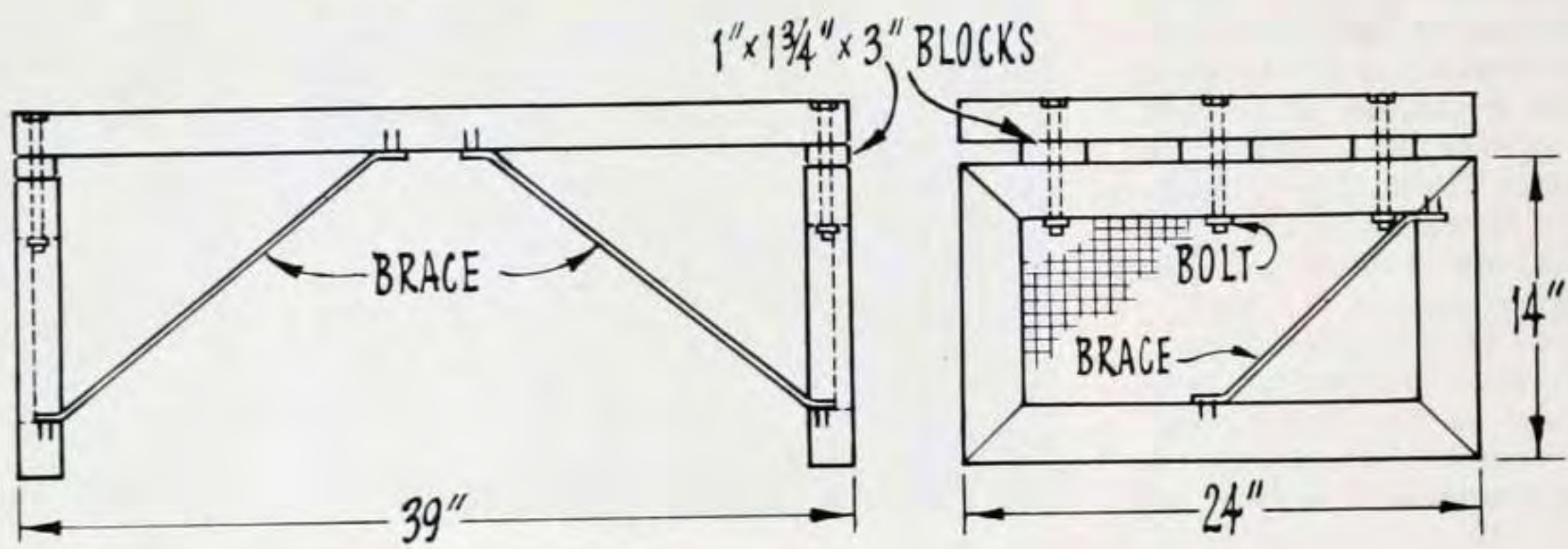
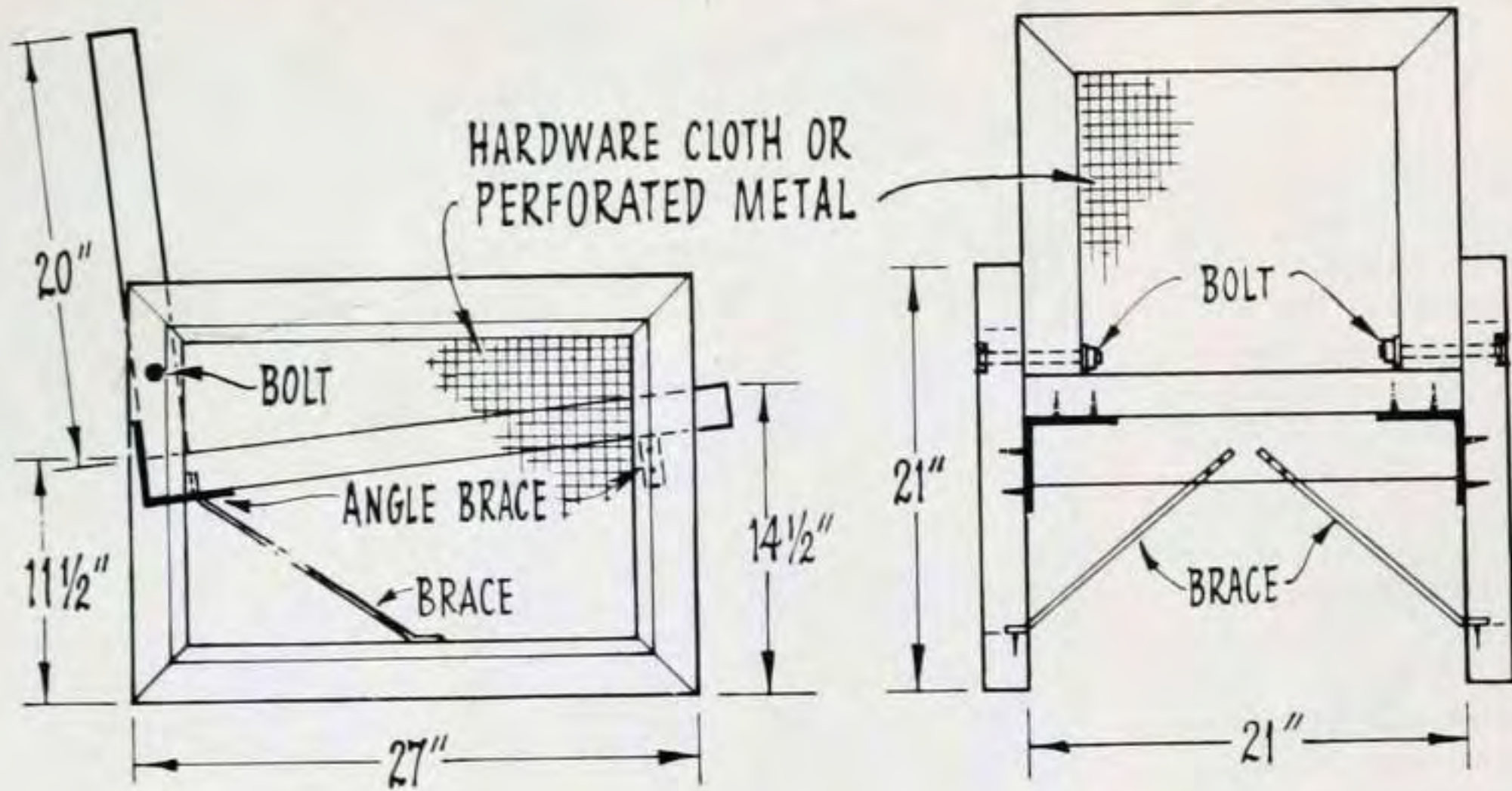
Coffee Table:

- 2 x 3—total length 19'8"
- 2 pcs. 27" for top
- 2 pcs. 21" for top
- 4 pcs. 14" for sides
- 4 pcs. 21" for sides
- 4 spacer blocks 1 x 1 $\frac{3}{4}$ x 3
- 4 6-inch carriage bolts
- 2 diagonal metal braces to fit
- Perforated metal or hardware cloth to fit

Ottoman:

- 2 x 3—total length 23'2"
- 2 pcs. 39" for top
- 2 pcs. 24" for top
- 4 pcs. 14" for sides
- 4 pcs. 24" for sides
- 6 spacer blocks 1 x 1 $\frac{3}{4}$ x 3 inches
- 6 6-inch carriage bolts
- 2 diagonal metal braces to fit
- Perforated metal or hardware cloth to fit

PLAN 2. MODULAR CHAIR AND TABLE



DOWEL CHAIR

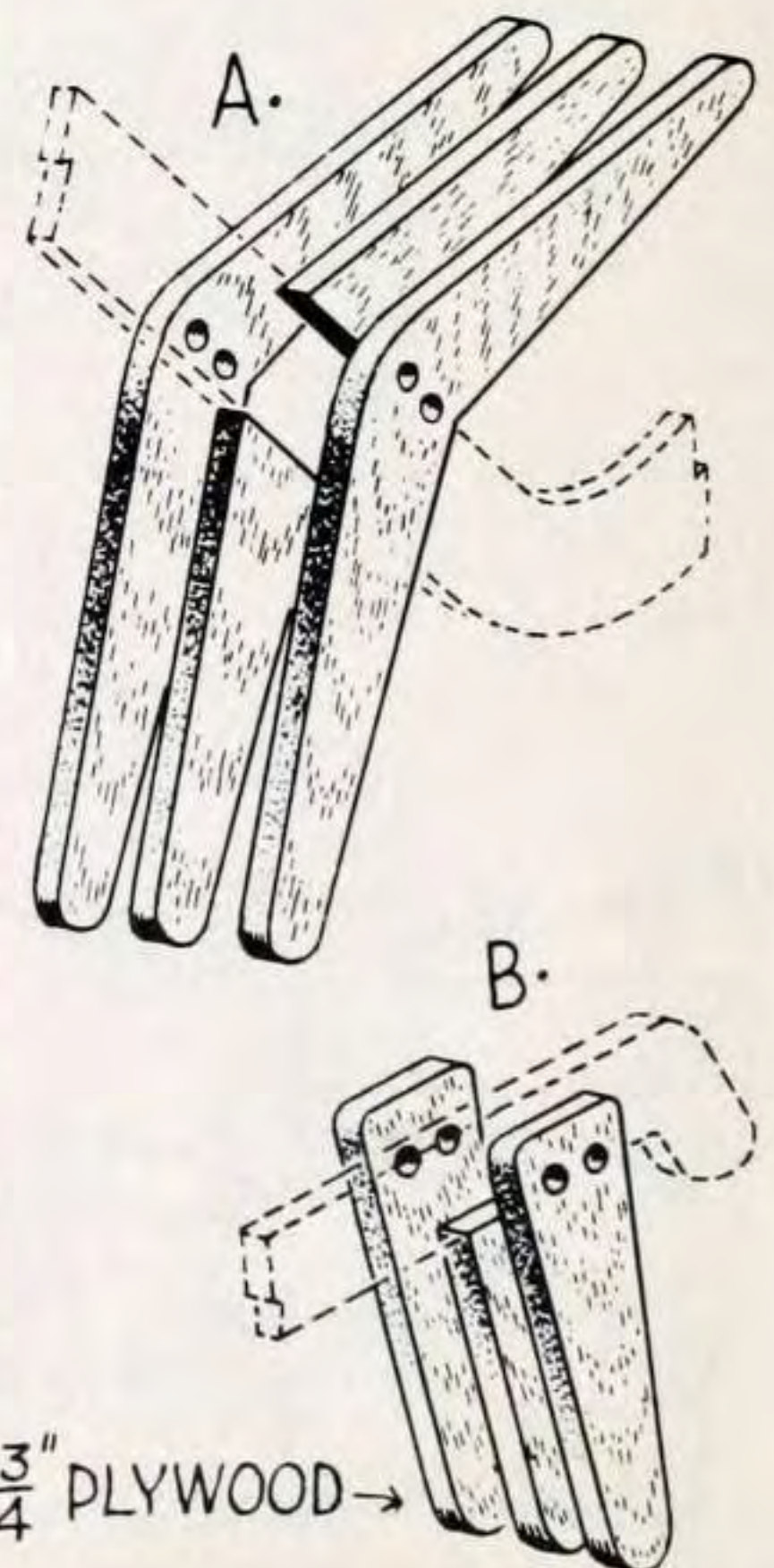
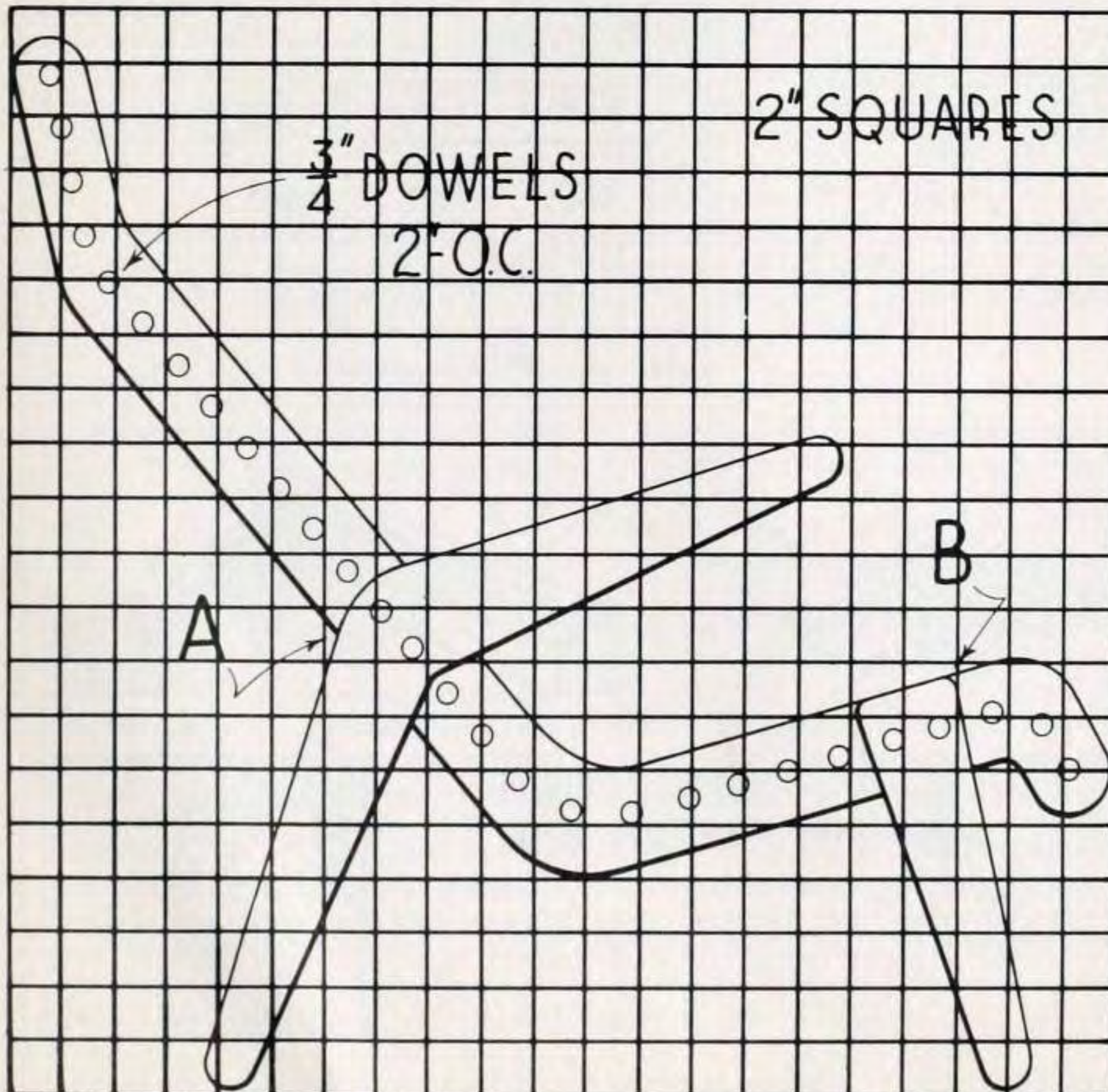
This smart looking chair made from dowels has an attractive modern feeling and unusual style. Its sturdy construction assures years of use. Since the frame is cleverly shaped with contour lines, it is bound to be a comfortable addition to anyone's outdoor furniture arrangement.

The materials required for building this chair are simple and few in number. To build it, one needs only outdoor plywood and $\frac{3}{4}$ -inch dowels. The seat and back are made from 28 dowels cut 24 inches long. The frame which receives the dowels is cut from a single thickness of $\frac{3}{4}$ -inch plywood according to the pattern on this page. But to add strength and improve proportions of the arms and legs, three thicknesses of plywood are bound together with waterproof glue or cement. The dowels protrude $\frac{3}{4}$ -inch beyond the narrower side pieces but are set flush with the arms and legs. Dowels are set in glue.

The seat and back may be covered with cushions or a thin pad of foam rubber. Be sure to give the exposed edges of the plywood several coats of varnish or paint to protect from weather.



Bassetti & Morse, Design; Charles Pearson, Photo



PLAN 4. DEMOUNTABLE CHAIR

This unusual chair design requires no glue, nails, or tools to assemble. It is completely demountable, and when it is knocked down it may be rolled up in a small package for easy storing. Although, at first glance, the pattern may appear to be simple, it nevertheless requires a certain amount of skill and craftsmanship to execute.

When it is put together, the weight of the sitter causes tension which pulls the joints tight. And to add to its comfort, it has a pivot back which changes its position whenever the sitter changes his posture.

The wooden members of the chair must be fashioned from hard wood. Maple is recommended because of its close grain. Oak is not suitable. The rungs on the legs, especially, must be of very tough wood and the ends should be carefully tapered in order to insure a good tight fit.

The legs are constructed from 2 by 2's which are shaped with a draw knife as shown on the accompanying drawing. The seat frame and the back frame are cut from 1 1/8-inch dowels and are tapered 2 1/2 inches from each end to 3/4 inch. The arms and the seat and back should be made from heavy-weight canvas stitched with extra-heavy thread to get the best wearability. The canvas straps used for the arms are secured with two screws to the back legs. But to make it easy to dismount, there is one screw on each front leg over which the grommet slips to hold the arm in place.

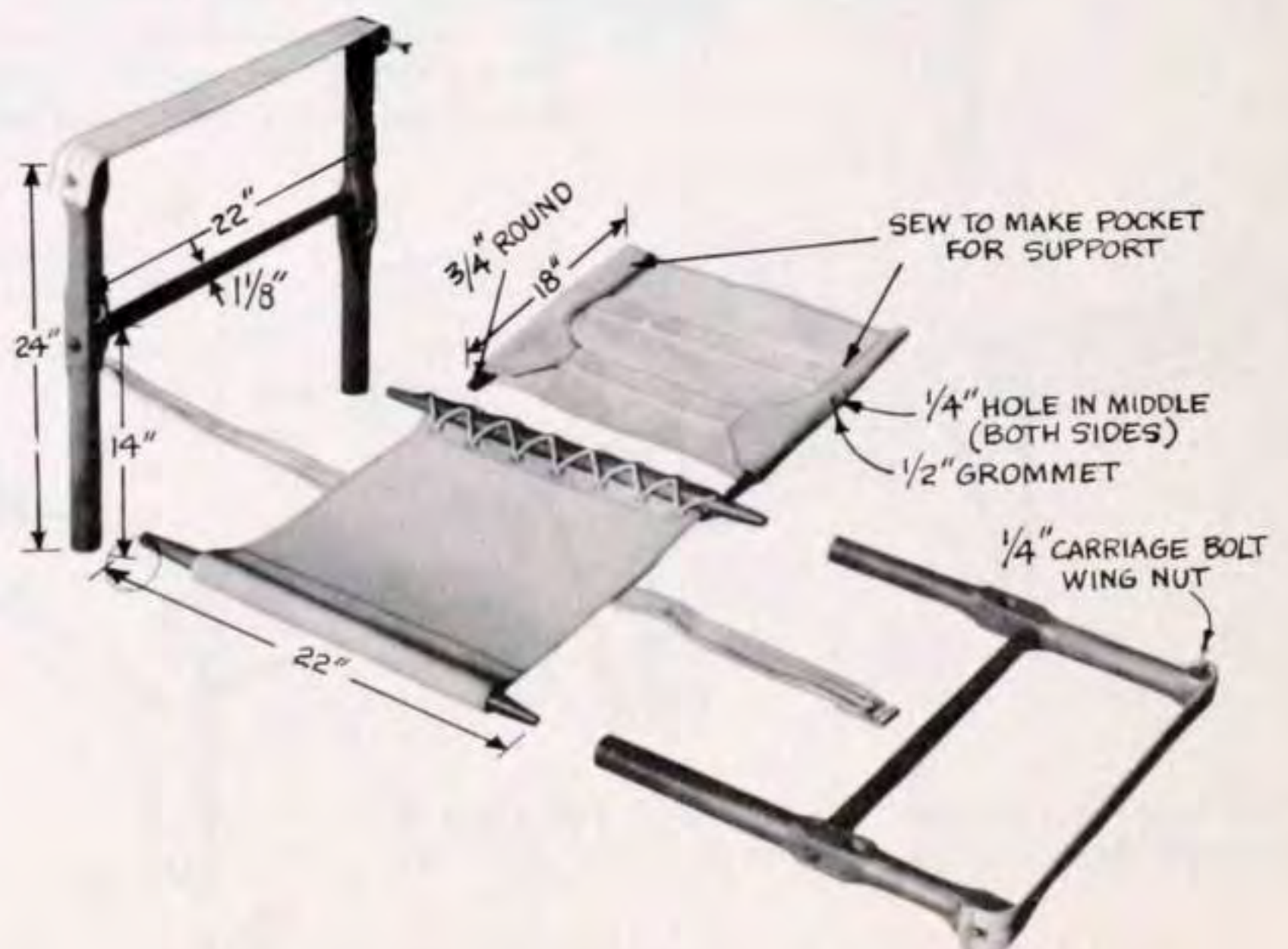
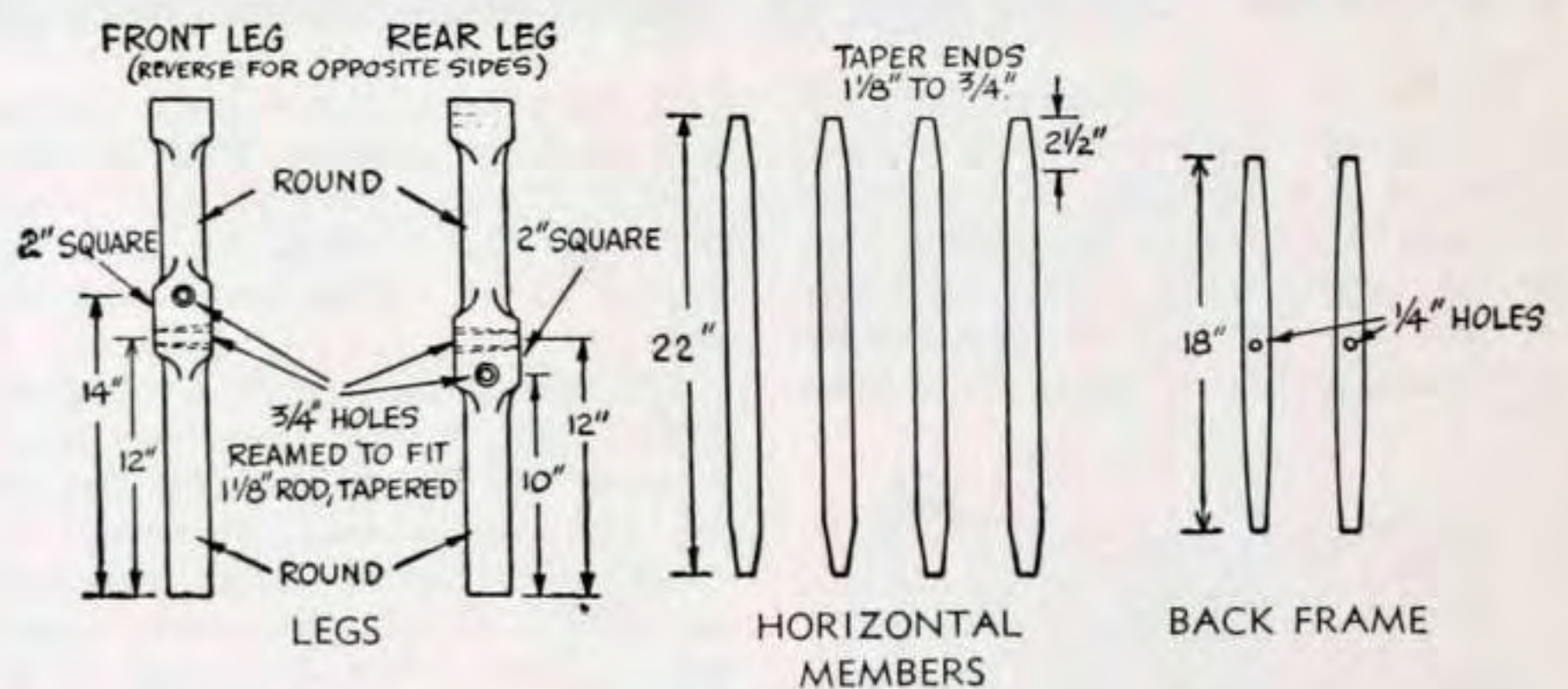
To assemble the chair follow these steps: Insert the front and back rung ends in the holes provided. Then loop the strap around the rungs and fasten. Put carriage bolts on the arms through the grommets in each side of the chair back; screw on the wing nut. It is a good idea to check the nut and strap occasionally.

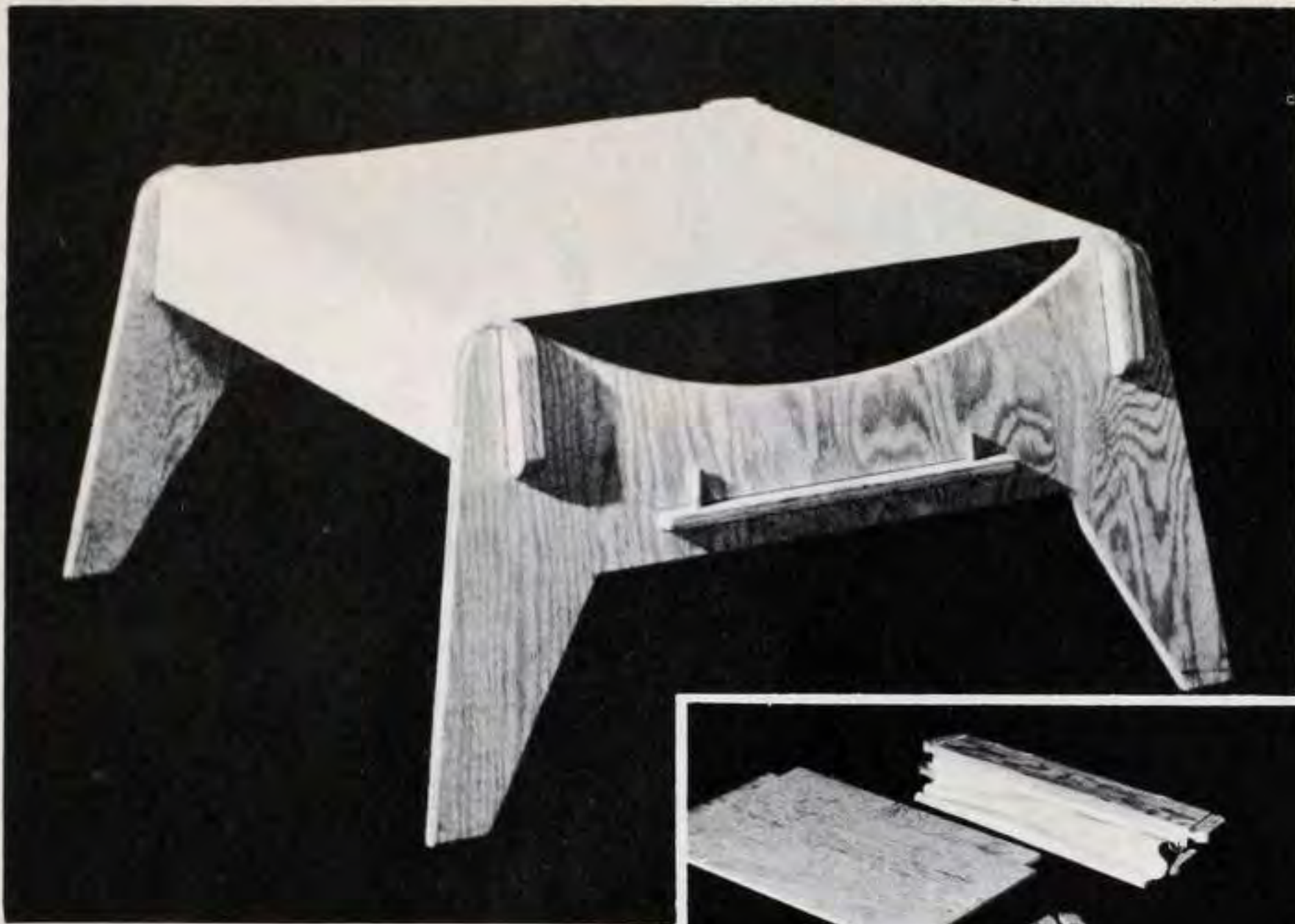
BILL OF MATERIALS

- 2" x 2" maple—approx. length 8'
- 4 pcs. 24" long for legs
- 1 1/8" dowels—approx. length 10'4"
- 4 pcs. 22" long for seat frame
- 2 pcs. 18" long for back frame
- 13 1/2" grommets
- 2 1/4 x 4" carriage bolts with wing nuts
- 1 slide buckle for strap
- 1 1/2 yds. 36" heavy duck for seat, arms, back and strap
- 12' cord for lacing seat back
- 4 1" wood screws with 3/4" round heads for rear end of arm strap
- 2 1" wood screws with 1/2" round heads for front end of arm strap



David Walker, Design





PLAN 5.

PATIO STOOLS

During the outdoor season, there will be few times when one or more of these stools is not fulfilling an important function. When used separately, they become seating space, or two can double as pedestals for a plywood top when there is need for a utility or coffee table.

Line three up in a row for a satisfactory cot for sunbathing. They also have built-in storage space—a shelf under the seat which is handy for books, sun-tan oil or any other small odds and ends.

The pattern calls for $\frac{1}{2}$ -inch exterior grade plywood which has been water-proofed, and No. 10 duck for the canvas seat (preshrunk). Redwood plywood is ideal for the frame. The stools are held together with small wooden pegs and by notches at the edge of each side piece.

Best results are assured if a full-size pattern is cut from cardboard using the dimensions shown on Diagram A. The pattern is then traced on plywood and cut out with a jig or band saw.

The under-seat shelf (see Diagram B) has $\frac{1}{4}$ -inch holes drilled to hold the pegs, 1 inch from the sides and $\frac{3}{8}$ inch from the ends. Pegs are $1\frac{1}{2}$ inches long and $\frac{1}{4}$ inch in diameter.

Diagram C gives the dimensions for the top bars. Use $\frac{3}{4}$ -inch plywood for the longer piece which is grooved, and $\frac{1}{2}$ -inch for the shorter piece. The canvas is inserted between the two pieces of the top bar, screwed on, then the shorter length of plywood is screwed to the longer one. One-inch screws are used to secure the canvas.

BILL OF MATERIALS

$\frac{1}{2}$ -inch exterior grade plywood—

Approximately 23 square feet

6 pcs. $24'' \times 12\frac{3}{4}''$ for ends

3 pcs. $22\frac{3}{4}'' \times 14''$ for shelf

6 pcs. $20'' \times 31\frac{1}{2}''$ for canvas cleats

$\frac{3}{4}$ -inch exterior grade plywood—

Approximately 4 square feet

6 pcs. $22\frac{1}{4}'' \times 31\frac{1}{2}''$ for side bars

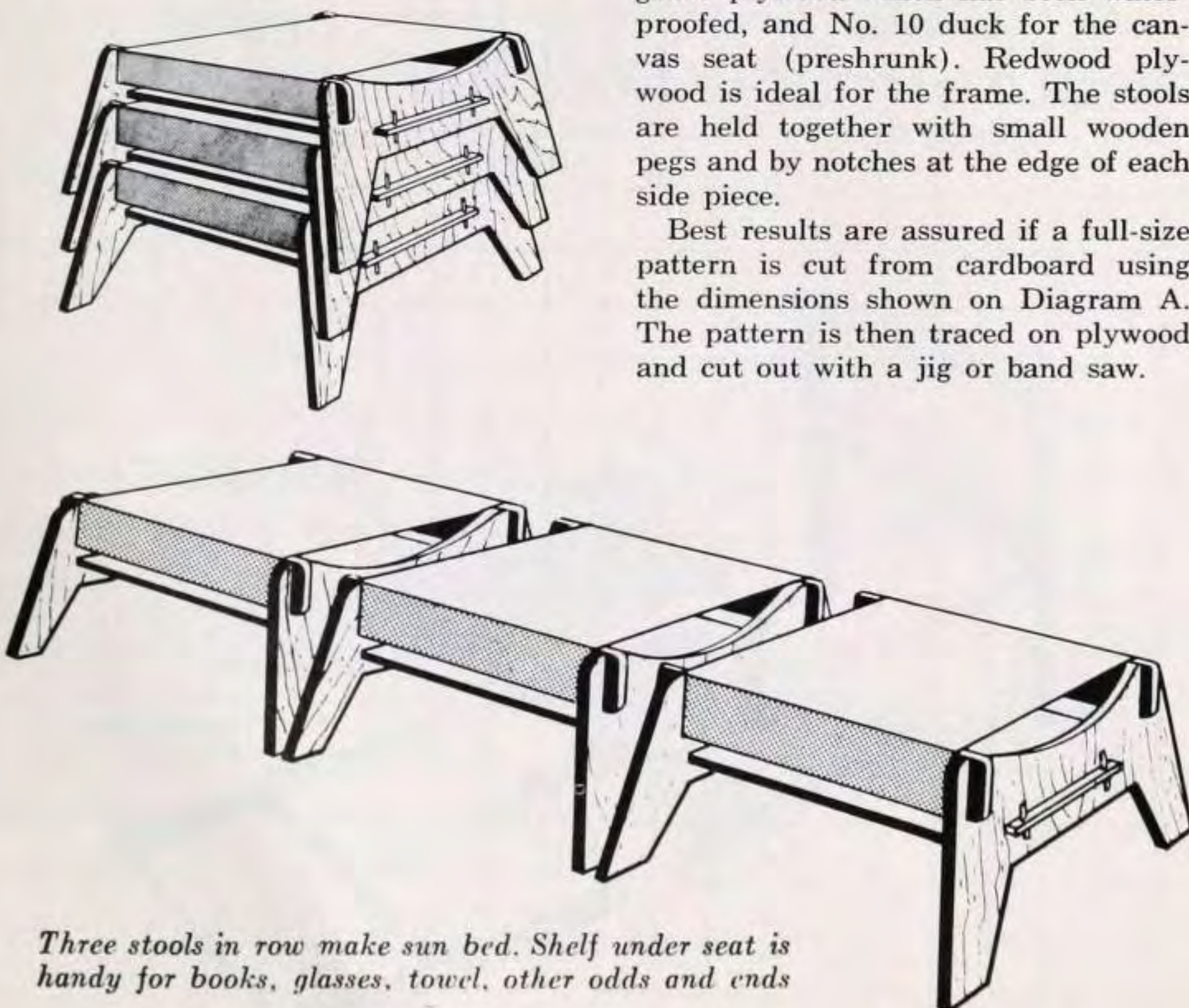
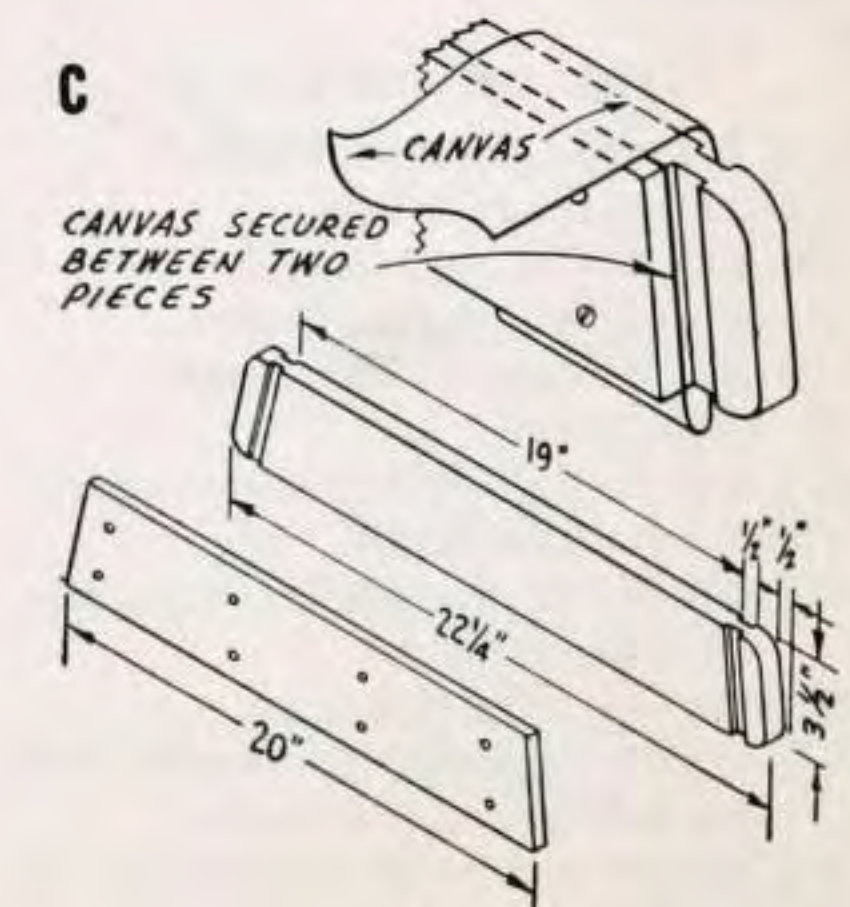
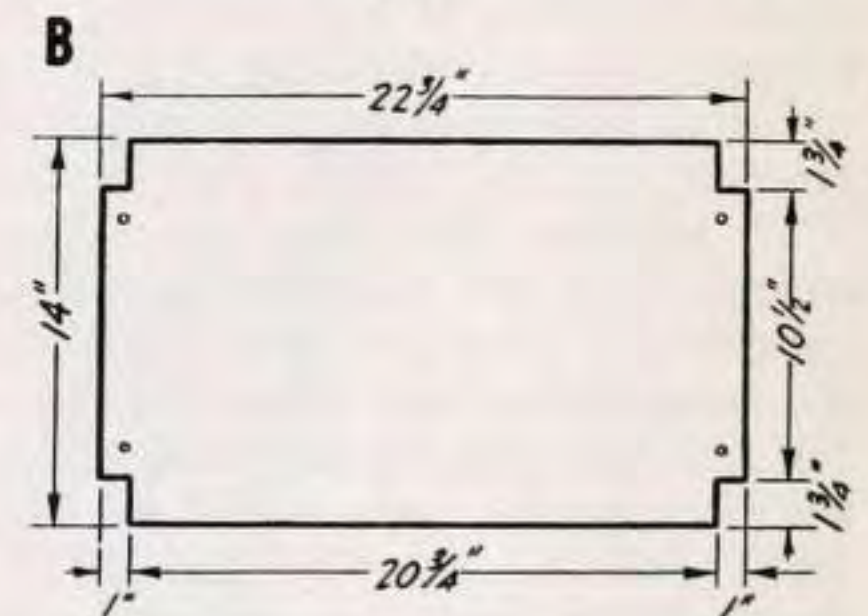
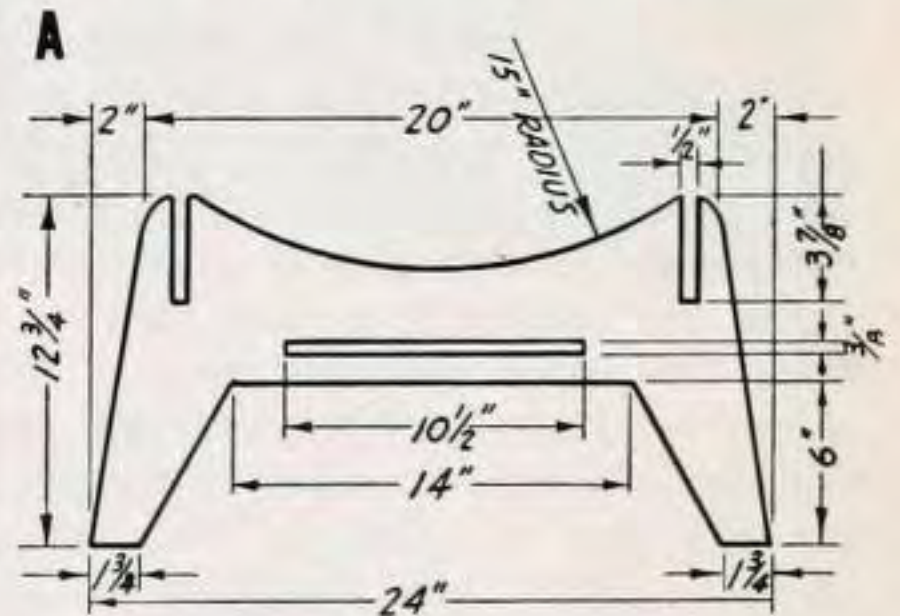
48 1-inch wood screws

12 hardwood pegs from scrap

No. 10 preshrunk duck—Approximately

5 feet by 1 yard wide

3 pcs. $20\frac{1}{2}'' \times 34''$ before hemming for seats. (Finished dimension is $18\frac{3}{4}'' \times 34''$ after hemming.)



Three stools in row make sun bed. Shelf under seat is handy for books, glasses, towel, other odds and ends



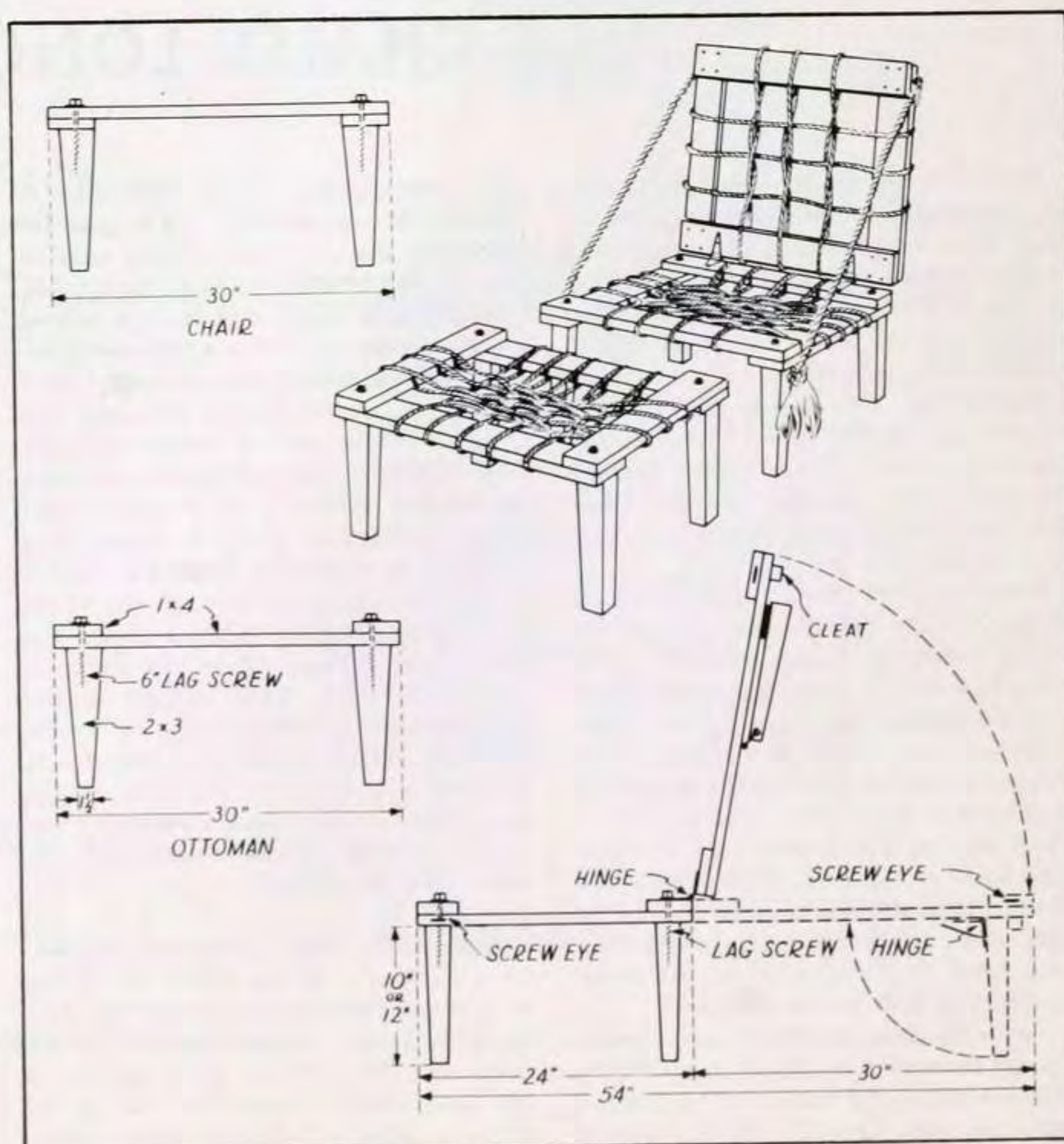
PLAN 6. EASY-TO-MAKE CHAIRS

For those who feel that their efforts in carpentry must be limited to simple design and execution, this easy-to-make chair is a rewarding project. Not only are the number of necessary tools and materials small, but the finished product offers a great deal of comfort, charm, and adaptability for either outdoor or informal indoor use. The chair and ottoman can be pushed together to make a relaxing lounge chair, or if they are separated, will provide seating space for two people. When the ropes are untied, the back will drop down on hinged legs, making a flat surface for an extra bed or cot for sunbathing.

The frames for the chair and ottoman are of 1 by 4's which are joined with flat-head 6-inch lag screws. The seat and back of the chair are hinged together, as are the legs to use in the bed position. The legs are made of 2 by 3-inch lumber tapered to a 1½-inch square at the bottoms.

BILL OF MATERIALS

- 1" x 4"—total length 28'
- 8 pcs. 30" long for frames
- 2 pcs. 20" long for ottoman
- 2 pcs. 24" long for seat
- 2" x 3"—total length 10'
- 10 pcs. 12" long for legs
- 4 4-inch strap hinges with 1" flat-head screws
- 8 6-inch lag screws with washers
- Rope or webbing





PLAN 7. CHAISE LONGUE

Here is a noteworthy plan for a roll-around chaise longue that is an especially fine combination of sturdy and simple construction with pleasing lines and style. The actual amount of lumber is small and the plan lends itself well to either pine or redwood.

Frame. The side pieces are cut from 2 by 6's and at the wheel end they are either tip sawed or band sawed to form the back. The handles are fashioned from the end of these pieces in a very easy to cut form.

Bracing. Two round cross bars are fitted into the frame, then glued and wedged. A 1 by 2 adds support to the front legs and a crosspiece made from 2 by 2 supports the brace for the back.

Wheels. It is better to cut the wheels from one piece of stock but it is possible to assemble them from smaller pieces. They can be glued and doweled, then tied with crosspieces. When they are glued, they should be put in clamps until thoroughly dry and then if they have been properly fitted at the dowel joints, they will last indefinitely.

To hold the wheels, 2 by 4's are shaped according to the diagram on the opposite page and nailed to the frame. An axle goes through these supports

and receives the wheels. To prevent swelling in wet weather and to give lubrication, dip the ends of the axle in hot paraffin before attaching the wheels.

Adjustable back. The back is braced by two pieces of 1 by 3 which are mortised into the frame. One piece of 1 by 4 is notched, centered, and attached vertically to hold the adjustable support. The hardware will withstand exposure to weather better if it is made from either galvanized iron or brass. The plan can be revised to make a variation of the adjustable feature of the back. The frame then is notched above the wheel base instead of on the back. A U-shaped metal rod is hinged to the back rest frame at the center with pipe brackets. If this method of supporting the back is used, it is advisable to attach the metal bar first, and then make the notches so that the most comfortable positions can be attained.

Upholstery. The cushion can be made in one piece to fit the chaise. Or it can be made in two separate pieces, one long to fit the frame, and one short to fit the back rest. The two are then joined on one side, leaving a finished crease on the other to allow for a better fit. For sew-

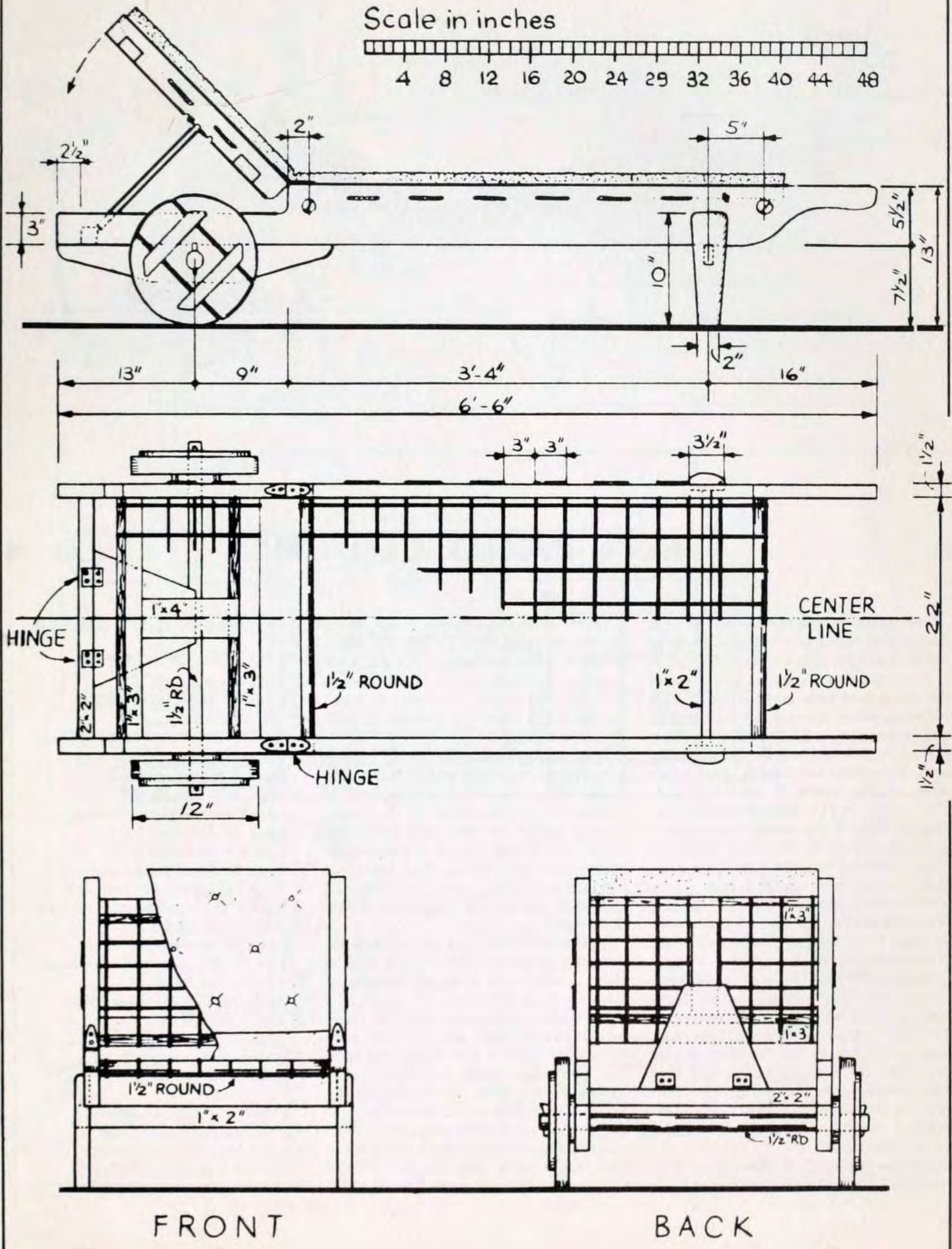
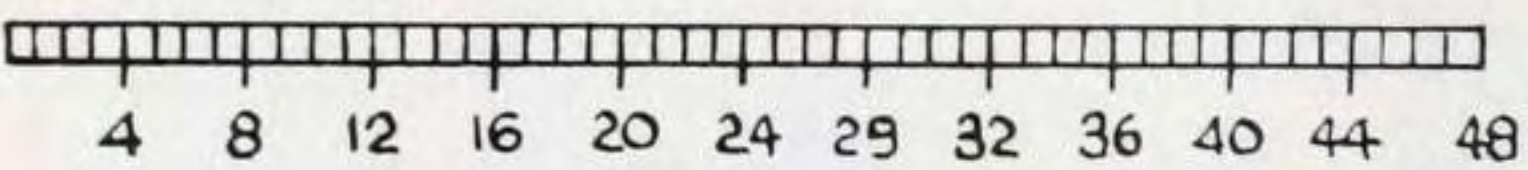
ing instructions, see the upholstery section in the front of the book.

BILL OF MATERIALS

- 1" x 2"—total length 2'
- 1 pc. 24" long for leg brace
- 1" x 3"—Total length 4'2"
- 2 pcs. 25" long for back braces
- 1" x 4"—total length 1'1"
- 1 pc. 13" long for back support
- 1" x 12"—Total length 1'1"
- 1 pc. 13" long for back support
- 2" x 2"—total length 3'8"
- 2 pcs. 22" long for back support
- 2" x 4"—total length 6'
- 2 pcs. 26" long for wheel base
- 2 pcs. 10" long for legs
- 2" x 6"—total length 13'
- 2 pcs. 6'6" for frame sides
- 2" x 12"—total length 2'
- 2 pcs. 12" long for wheels
- 1½" round—total length 6'10"
- 2 pcs. 25" for frame
- 1 pc. 32" for axle
- 2 strap hinges 1½" wide for frame
- 2 cabinet hinges for back support, or
- 2 pipe brackets and approximately
- 5' of 5/8" galv. steel rod or similar
- if using variation.
- 100' window sash cord for lacing

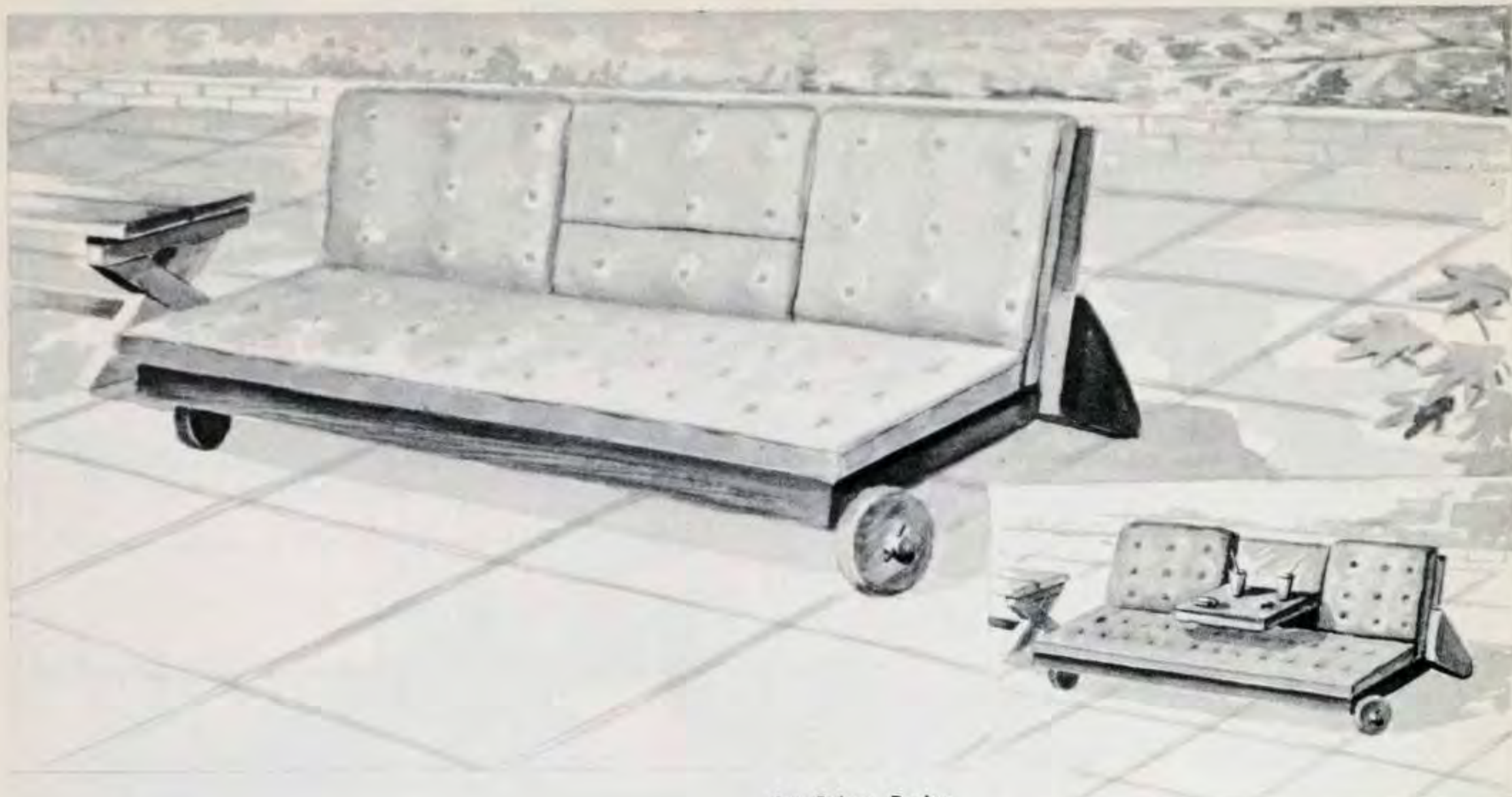
PLAN 7. CHAISE LONGUE

Scale in inches



FRONT

BACK



Jan Reiner, Design

PLAN 8. PATIO COUCH

This patio couch is another roll-around design that could be a companion piece to the chaise longue shown on page 16. It is constructed in a similar manner and the same materials may be used, with redwood being favored for wearability and appearance. The folding cushion feature makes it ideal for patio dining since it provides extra table space when extra seating space is not important. The plan with limited variations, namely eliminating wheels and handles in favor of legs in the front, could be easily adapted to indoor use in a television or game room, and even in its outdoor state, could be brought indoors for extra seating space during the winter months instead of storing with less versatile furniture.

Frame. The side pieces of the seat are constructed from 2 by 6's but the front has a 2 by 4 set on edge to accommodate the cushion and add to the seating comfort. The back has two 2 by 4's on the ends and 2 by 3's at top and bottom mortised into the end pieces. Note that the top 2 by 3 is notched to 2-inch width at the center 24 inches to receive the folding table.

Folding table. This is cut from plywood and is hinged to a horizontal 2 by

6 centered in the back between two 2 by 4's set vertically. To fill the space revealed when the table is in its down position, a similar piece of plywood is set into this frame. The table is faced on the sides with 1 by 3 strips to hold the loose cushion.

Legs and wheels. The wheel base is secured to the lower edge of the side frame with glue and nails and the axle extends the entire width of the frame with 6 inches at each end being cut down to 1½-inch round to receive the wheel base and wheels. The back legs are shaped from 2 by 10's as diagrammed and screwed or doweled into the frame.

Variation. This plan can be used for a three-cushion seat without the folding table. Ample bracing should be inserted into the back, however.

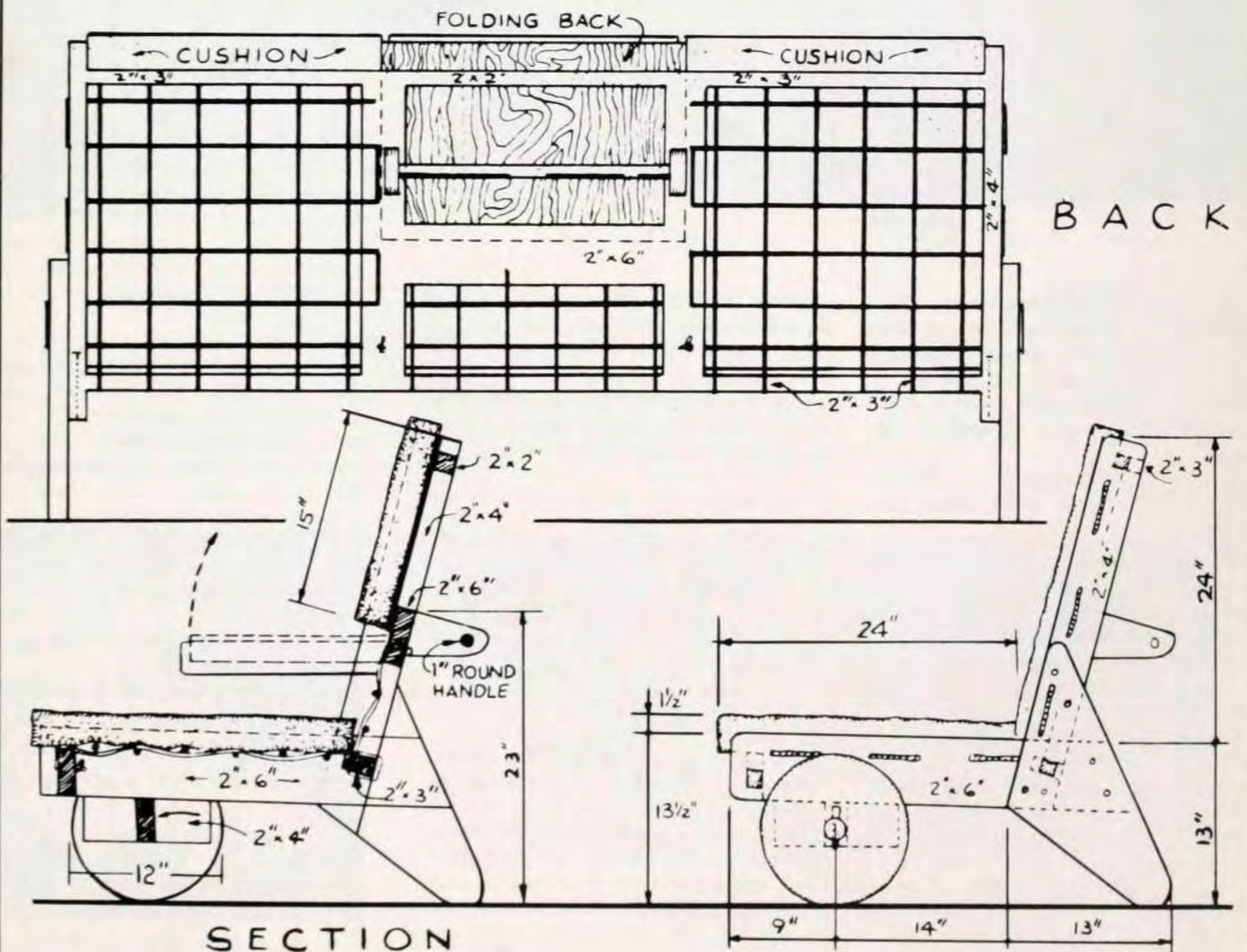
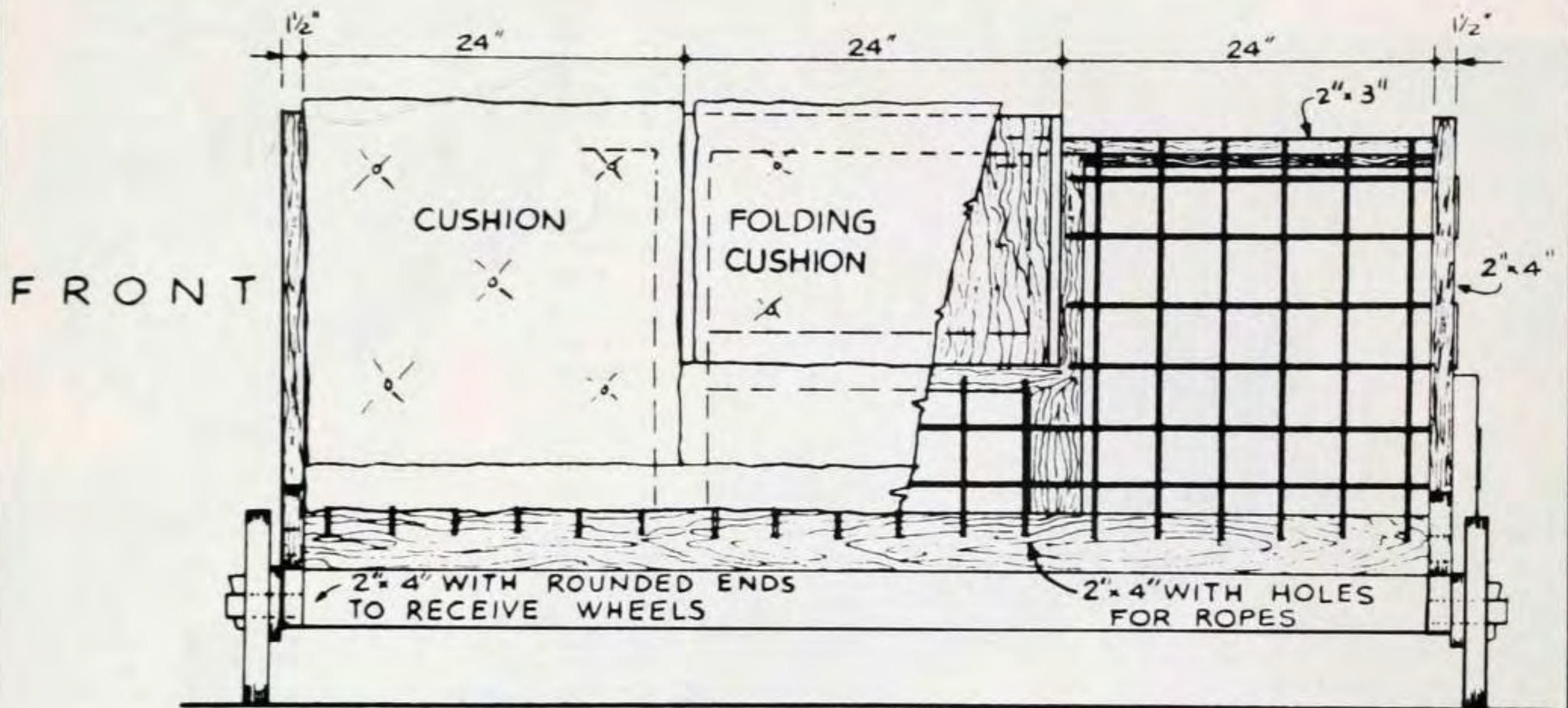
Upholstery. The seat may be made as one long cushion and the back may be similarly executed if the folding table has been eliminated. But it is better looking if the table has been incorporated into the plan to make the seat cushion in three separate pieces. The cushion for the center back must be in two pieces with that inserted in the table being thinner so that the surface

is even when the table is folded up.

BILL OF MATERIALS

1" x 3"—total length 2'6"
 2 pcs. 15" for sides of table
 1" x 4"—total length 8"
 2 pcs. 4" square for wheel washers
 2" x 3"—total length 12'6"
 2 pcs. 6' 3" for frame rear
 2" x 4"—total length 25'
 1 pc. 7' for frame brace and axle
 2 pcs. 10" for wheel base
 1 pc. 6'3" for frame front
 2 pcs. 30" for sides of seat back
 2 pcs. 24" for vertical back braces
 2 pcs. 6" for handle braces on back
 2" x 6"—total length 7'6"
 2 pcs. 32" for frame sides
 1 pc. 26" for horizontal back brace
 2" x 10"—total length 4'
 2 pcs. 24" shaped for back legs
 2" x 12"—total length 2'
 2 pcs. 12" for wheels
 1" round—total length 2'
 1 pc. 24" for handle bars
 ¾" plywood
 2 pcs. 15" x 24" for table top
 1 pr. hinges for folding table
 2 hardwood cleats for wheels
 140' window sash cord for lacing
 Upholstery material as needed.

PLAN 8. PATIO COUCH



PLAN 9. ALUMINUM TUBING



James Lawrence, Photos

Here is an outline for a lounge chair, chaise, and combination table and chair set made from aluminum tubing. It does not take exceptional skill or require many complicated tools to make these attractive pieces of outdoor furniture.

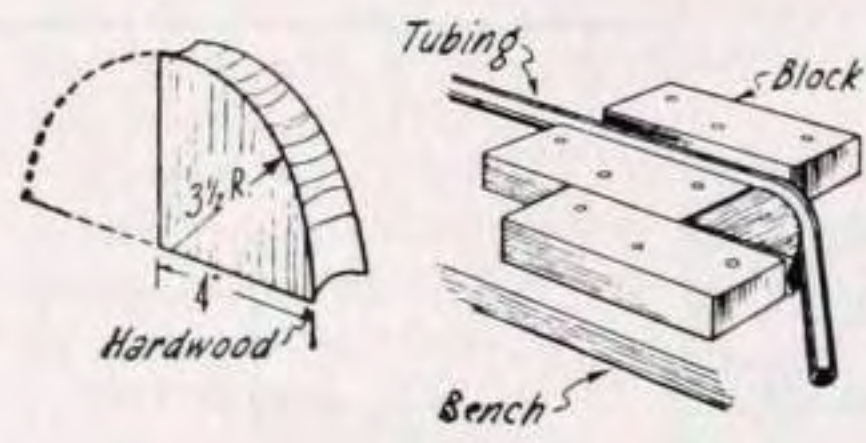
Materials. Refer to section on Tubing and Pipe for best types; sizes and sources.

Tubing of $\frac{3}{4}$ -inch diameter and with .065-inch wall thickness has ample strength for these projects. In making a new design, it is wise to bear in mind that stock lengths range only up to 12 feet and joints made with sleeves are unsightly when exposed.

Cotton or plastic webbing are good finishing materials and can be purchased at furniture upholstery supply houses or from surplus property stores. Canvas is used on some sag-seat designs. (See opening chapter.)

Tools. Basic tools are a thin-wall bender or homemade jig, drill, hacksaw, screwdriver, and file. For finishing you need scissors, hammer, and anvil. A rivet tool does a quick, neat job, but is not a necessity.

Bench jig. To make a circular bench jig for bending the tubing, cut a half-circle with $3\frac{1}{2}$ -inch radius from 2-inch hardwood. Saw off the half circle 4 inches down on the diameter. With a rasp, groove the round section to fit the tubing. Secure this to the bench

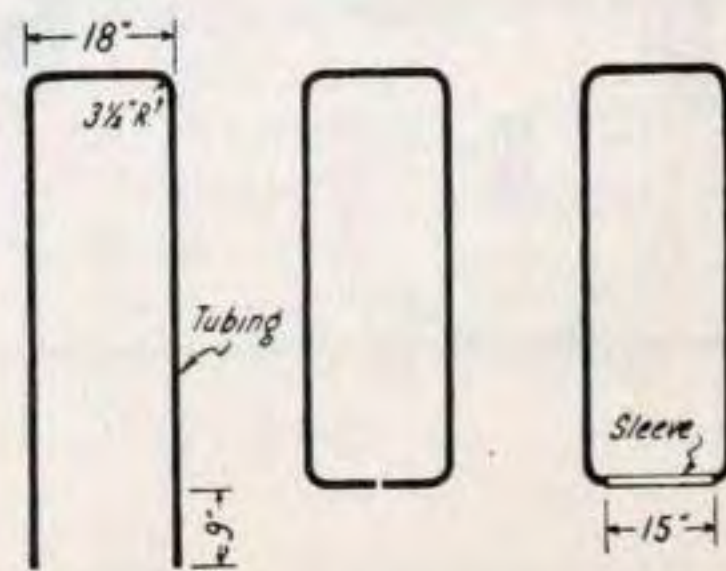


and reinforce as shown, then set a block to form a space just wide enough to receive the tubing. The bench can be marked to indicate 30, 45, 60, 90-degree bends. If possible, find a conduit bender used by electricians. This has a long lever with a hook and quadrant on the end. With this professional tool you will be able to do a neater and faster job, and it will make it easier to bend heavier-walled tubing.

BILL OF MATERIALS

Lounge Chair

- $\frac{5}{8}$ " aluminum tubing—approx. length 23'
- 1 pc. 12' long for leg section
- 1 pc. 11' long for seat section
- $\frac{7}{8}$ " aluminum tubing—approx. length 30"
- 2 pcs. 15" long for sleeves
(be sure size fits over $\frac{5}{8}$ " tubing)
- 4 round-headed bolts $\frac{3}{16}$ " x $1\frac{1}{2}$ " with round-headed cap nuts and lock washers
- 60 feet of 2" cotton or plastic webbing
- 6 doz. solid copper rivets
- Adhesive tape to tape pipe and sleeves
- Pads or cushions to fit



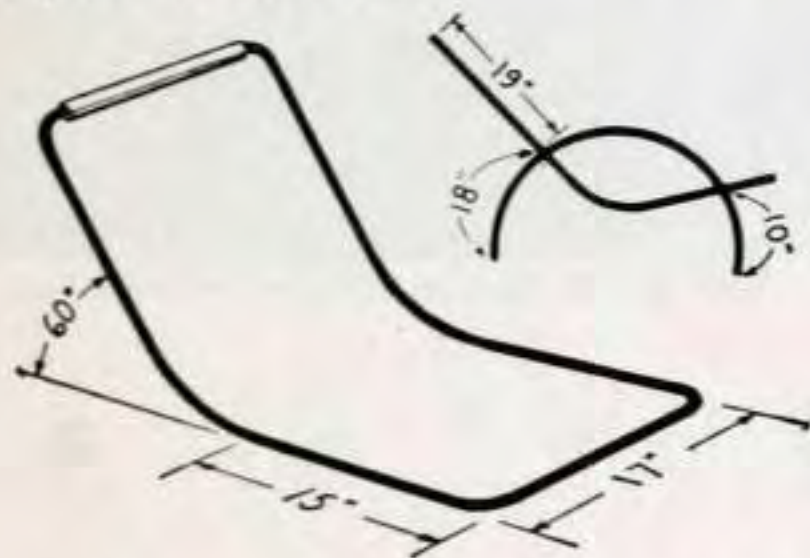
This consists mainly of two hoops of tubing bent according to specifications.

For the leg section, mark off 9" on each side from the middle of the 12-foot length. From this 18-inch section, bend in the ends. Use a $3\frac{1}{2}$ -inch radius on both first and second bends.

Nine inches from the ends of the tubing, bend in to form a rectangle. Cut a 15-inch length of $\frac{7}{8}$ -inch tubing, file the burrs smooth, and slip it over the butt ends of the $\frac{5}{8}$ -inch tubing to form a joining sleeve.



Using a barrel, drum, or other round object, gradually bend the whole rectangle into a smooth curve 34 inches long at the base and 19 inches high at peak of arm rest.



Follow the same method to bend and join a rectangle from the 11-foot length. The ends of this rectangle will be 17 inches, 1 inch narrower in order to fit inside the supporting hoop. Fifteen inches from one end of the rectangle, bend the sides up to about a 60-degree angle.

Now fit the smaller rectangle inside the larger one. At the intersection of the frames, bore holes for the $\frac{3}{16}$ -inch bolts.

Use lock washers under the nuts to keep the finished frame rigid. Use round-headed cap nuts on exposed joints. Make conduit joints with thread-

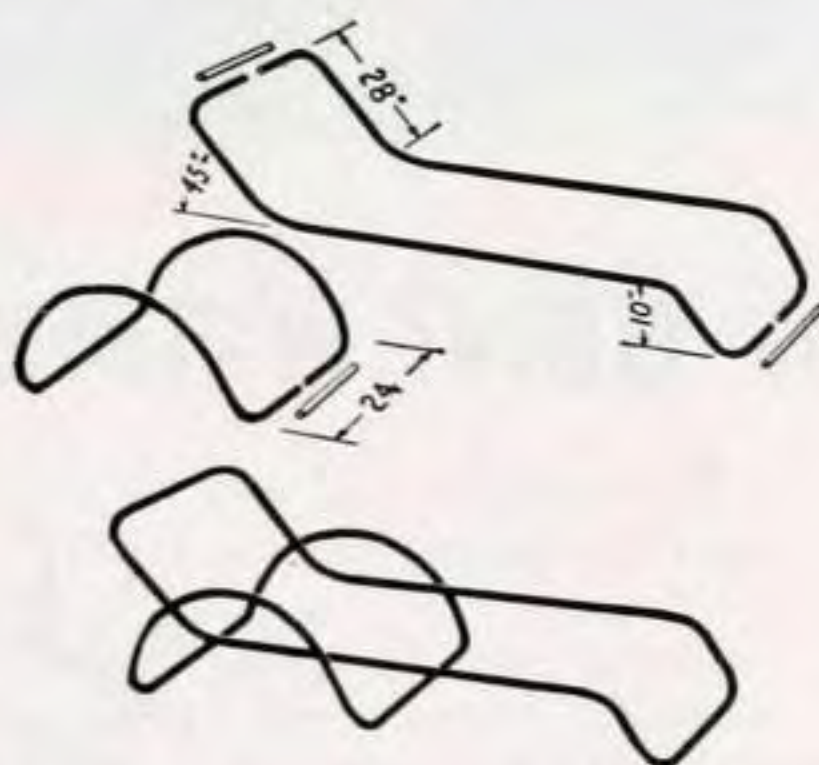
cutting Parker screws or with ready-made conduit couplings crimped on with a hammer and punch.

Stretch strips of webbing about 29 inches long across the seat, folding back a $\frac{3}{4}$ -inch hem and fastening tightly around the tubing with rivets hammered flat. Weave five 53-inch strips the length of the chair and secure with rivets. Use steel wool to clean off scuff marks and polish the frame with jewelers' rouge.

BILL OF MATERIALS

Chaise Longue

- $\frac{5}{8}$ " aluminum tubing, approx. length 29' 8"
- 1 pc. 12' long for leg section
- 2 pcs. 8' 10" long for seat section
- $\frac{7}{8}$ " aluminum tubing, approx. length 3' 9"
- 3 pcs. 15" long for sleeves (must fit over $\frac{5}{8}$ " tubing)
- 4 round-headed bolts $\frac{3}{16}$ " x $1\frac{1}{2}$ " with round-headed cap nuts and lock washers
- 75 feet of 2" cotton or plastic webbing
- 9 doz. solid copper rivets
- Adhesive tape



Bend a rectangle of tubing 24 inches wide from the 12-foot piece. Join with a loose sleeve. Bow the rectangle into a half circle.

Make a second rectangle 23 inches wide with the other pieces, and join the ends with 2 bolted sleeves. Bend one end down 10 inches for a stand; and 28 inches from the other end, bend the

tubing up at a 45-degree angle. Bolt this frame level inside the semi-circular stand. Webbing supports the seat cushions.

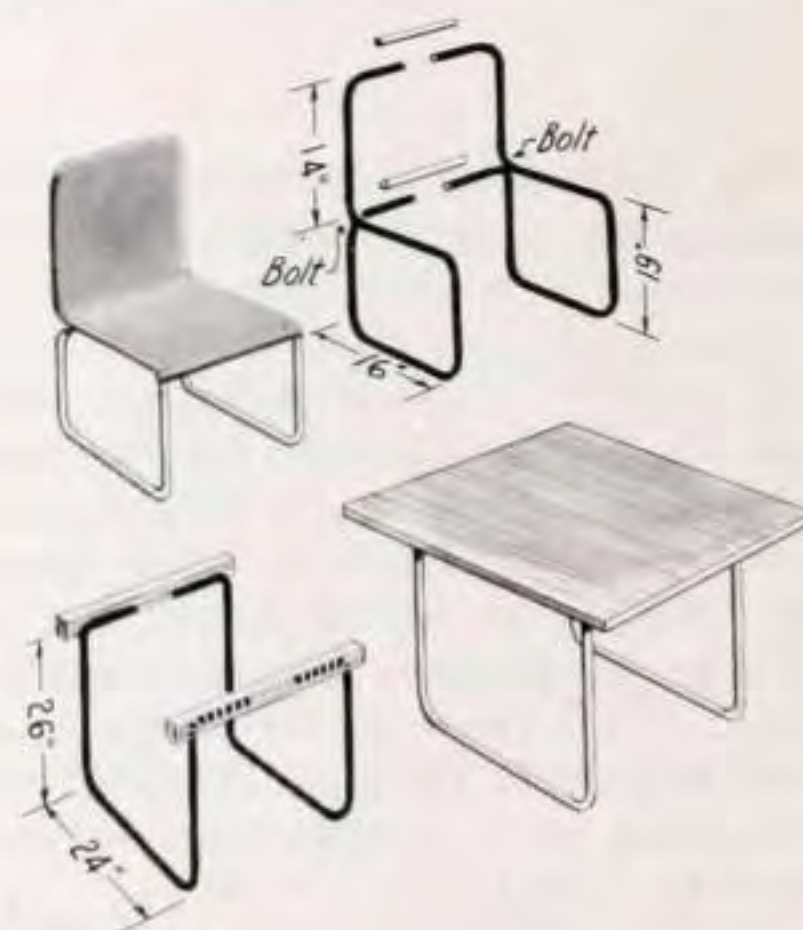
BILL OF MATERIALS

Table and Chair

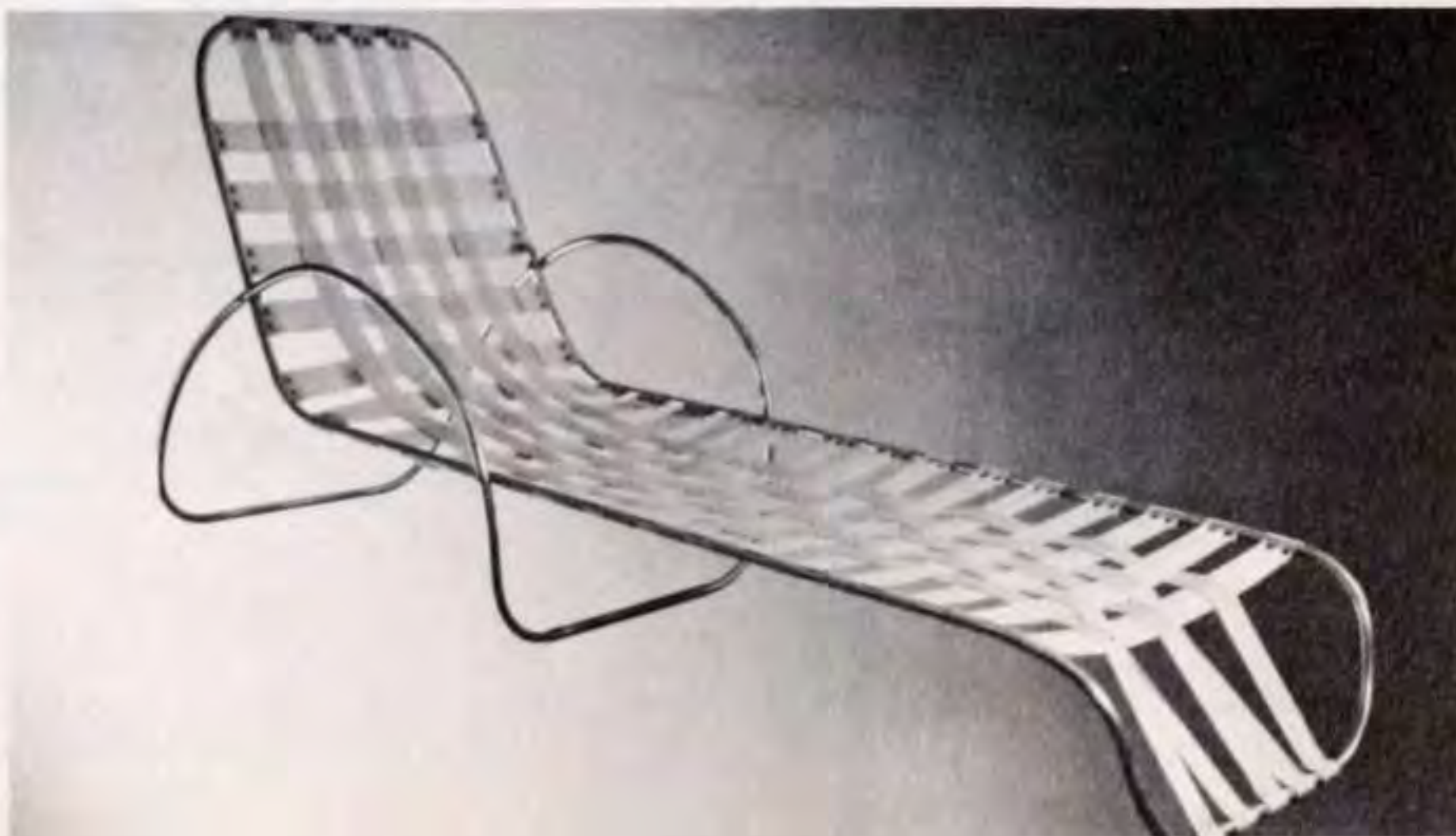
- $\frac{5}{8}$ " aluminum tubing, approx length 36'
- 2 pcs. 8' 6" long for chair
- 2 pcs. 9' 4" long for table
- $\frac{7}{8}$ " aluminum tubing, approx. length 2'
- 2 pcs. 10" long for chair sleeves (must fit over $\frac{5}{8}$ " tubing)
- 2 round-headed bolts $\frac{3}{16}$ " x $1\frac{1}{2}$ " with round headed cap nuts and lock washers
- 4 round-headed bolts $\frac{3}{16}$ " x 1" for attaching sleeves
- Plywood table top
- Canvas for chair seats
- 2 wooden cross pieces for table

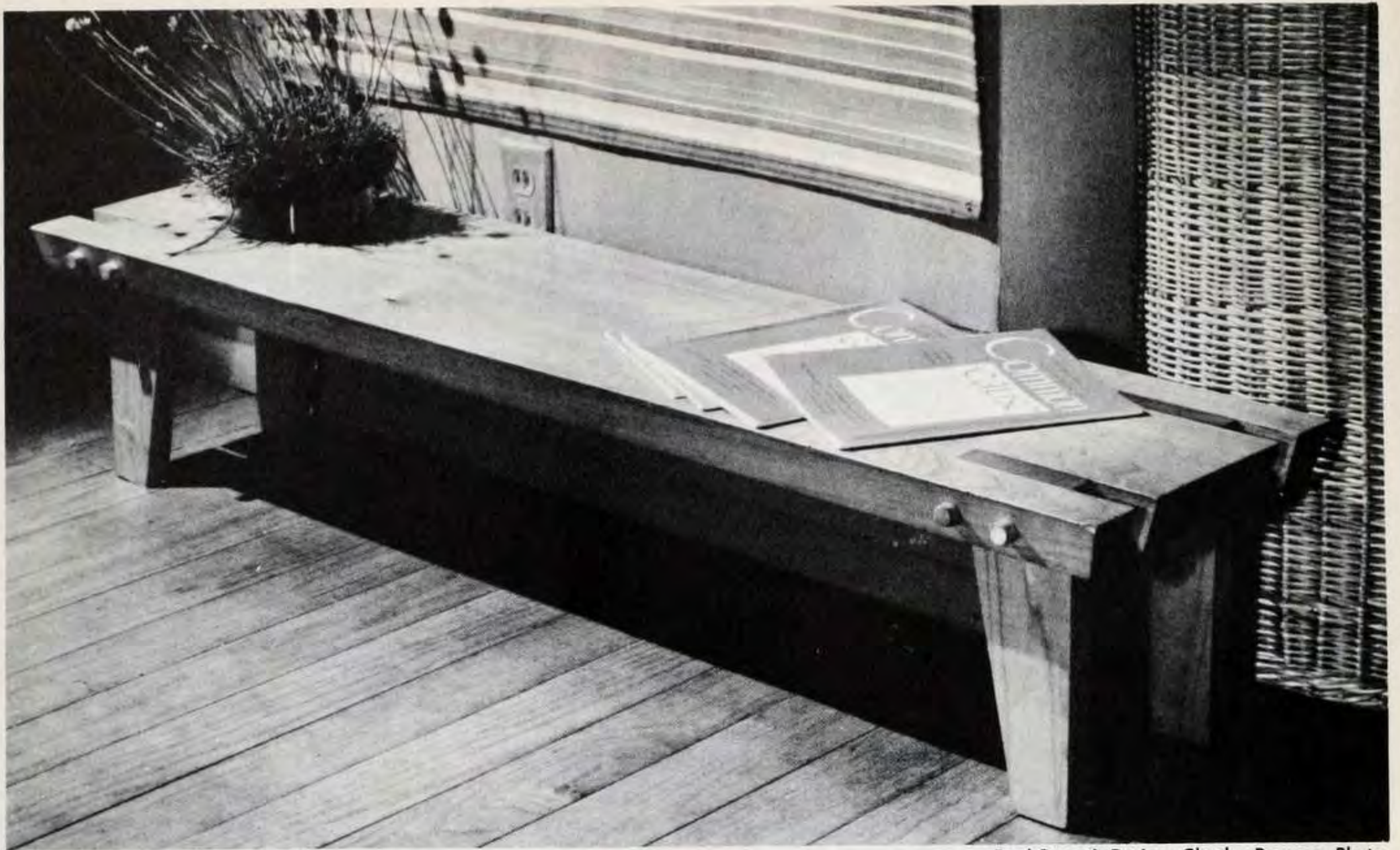
Bend the side sections for the chair as shown. Slip 10-inch sleeves over the ends and run bolts through the sleeves an inch from each end to grip the sections together. Bend the seat down 2 inches to contact the support from the base, and bolt. Fit a webbing or canvas seat to the chair.

Bend the table legs as shown and bolt the crosspieces to the ends. The table top may be made from exterior grade plywood or spaced boards.



Lace with webbing to support cushions. Rivet webbing loops around the frame

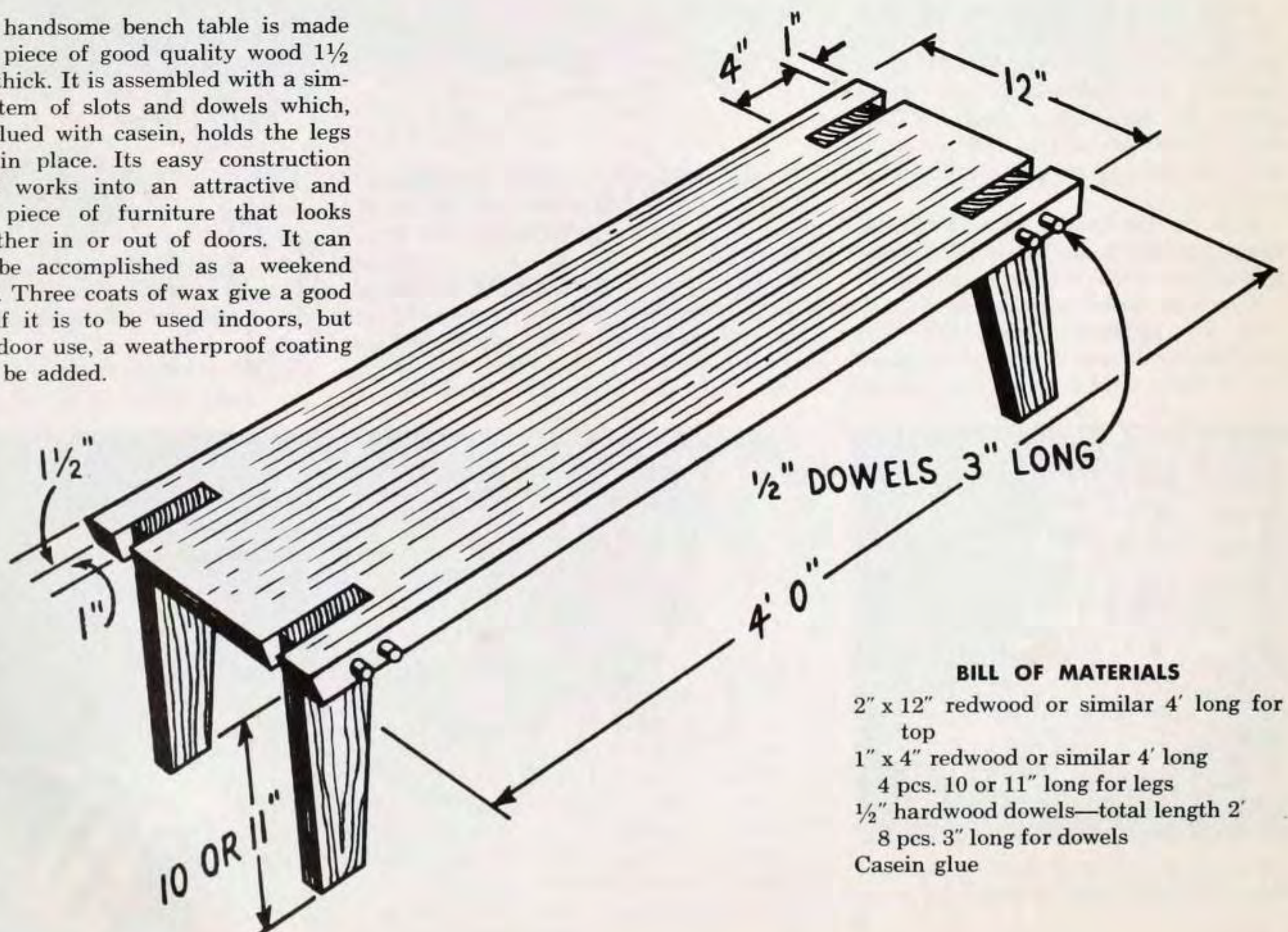




Fred Bassetti, Design; Charles Pearson, Photo

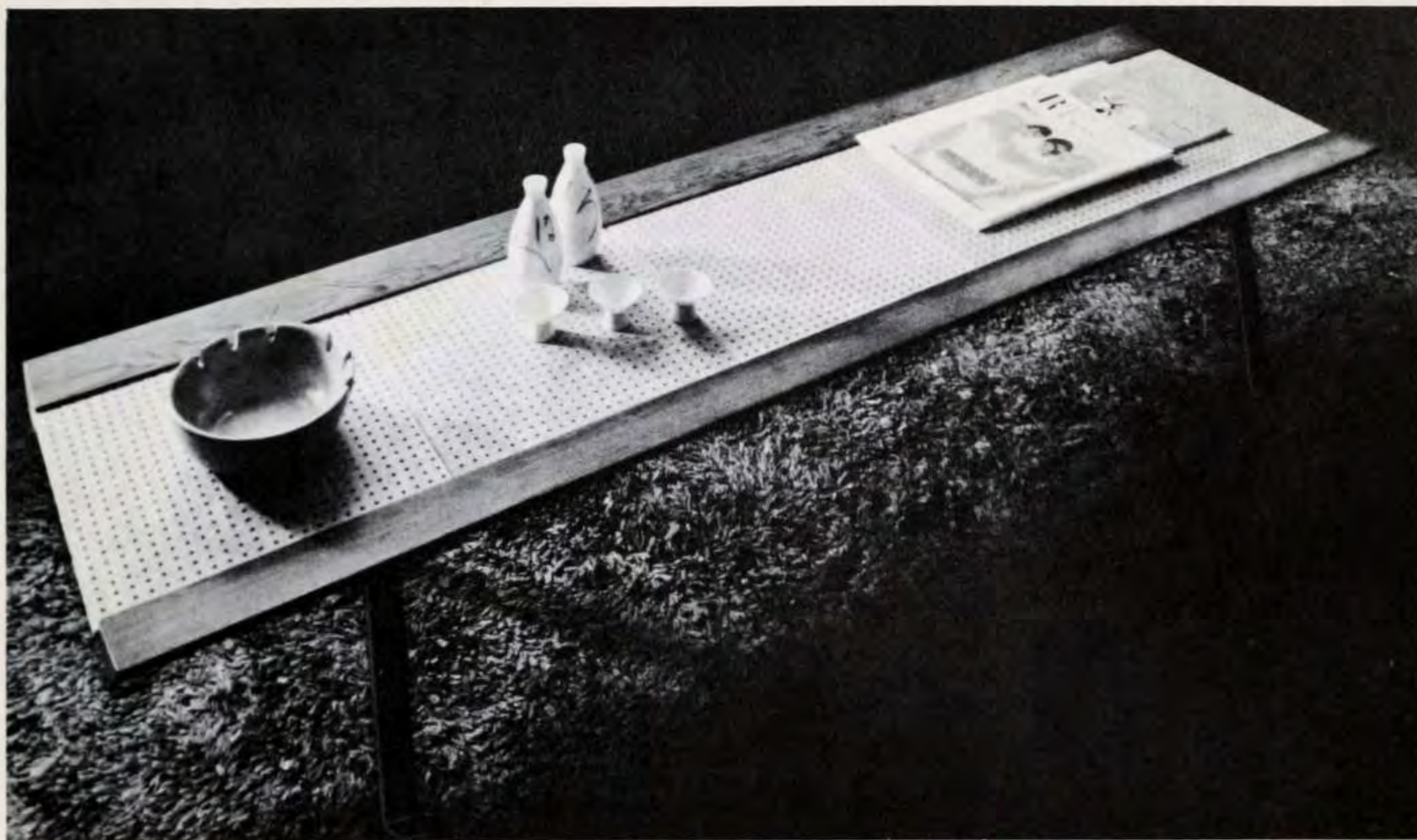
PLAN 10. BENCH-TABLE

This handsome bench table is made from a piece of good quality wood $1\frac{1}{2}$ inches thick. It is assembled with a simple system of slots and dowels which, when glued with casein, holds the legs firmly in place. Its easy construction method works into an attractive and usable piece of furniture that looks well either in or out of doors. It can easily be accomplished as a weekend project. Three coats of wax give a good finish if it is to be used indoors, but for outdoor use, a weatherproof coating should be added.



BILL OF MATERIALS

2" x 12" redwood or similar 4' long for top
 1" x 4" redwood or similar 4' long
 4 pcs. 10 or 11" long for legs
 $\frac{1}{2}$ " hardwood dowels—total length 2'
 8 pcs. 3" long for dowels
 Casein glue



Victor Papanek, Design; Ernest Braun, Photo

PLAN 11. ASBESTOS BOARD TABLE

Here is a fine example of inventiveness in design and interesting use of unusual materials. The table is long and low for use as an outdoor coffee table, but could easily be varied in size to serve as end tables.

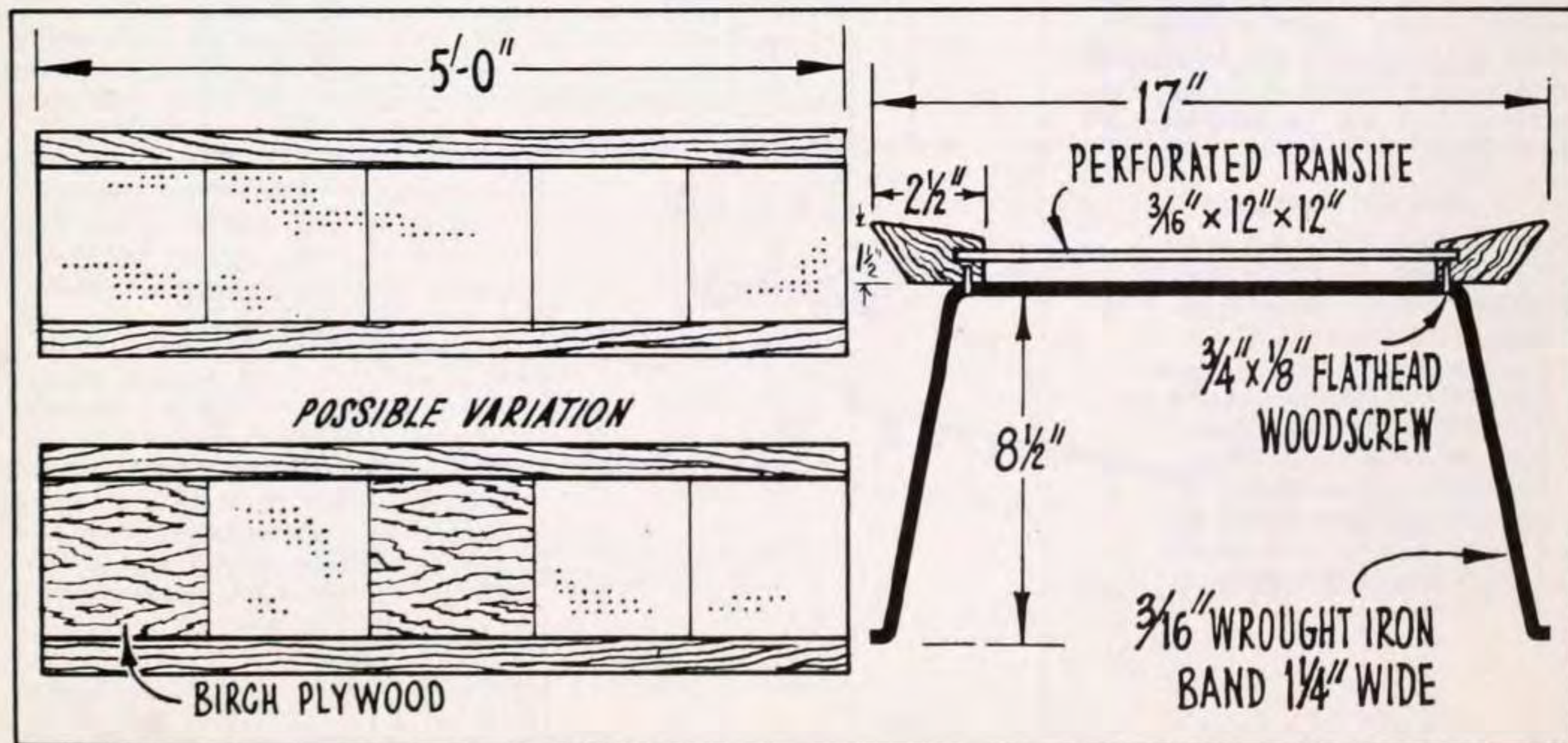
The frame of the table is constructed from redwood 2 by 3's which have been shaped and grooved to receive the foot-square panels of perforated asbestos-cement board. These panels are cut

from a 24 by 24-inch sheet.

The legs are wrought iron which has been bent into U's sloped outward slightly and then bent again to form feet. They are secured to the frame with wood screws placed in holes drilled at each corner of the U. It is possible to vary the appearance of the top by combining the perforated board with squares cut from weatherproofed plywood.

BILL OF MATERIALS

- 2" x 3" redwood—total length 10'
- 2 pcs. 5' long for table frame
- $\frac{3}{16}$ " x $1\frac{1}{4}$ " wrought iron band—total length 5'6"
- 2 pcs. 33" long for legs
- Perforated asbestos cement—total 5 sq. feet
- 5 pcs. 12" x 12" for table top
- 8 flat head wood screws $\frac{3}{4}$ " x $1\frac{1}{8}$ "





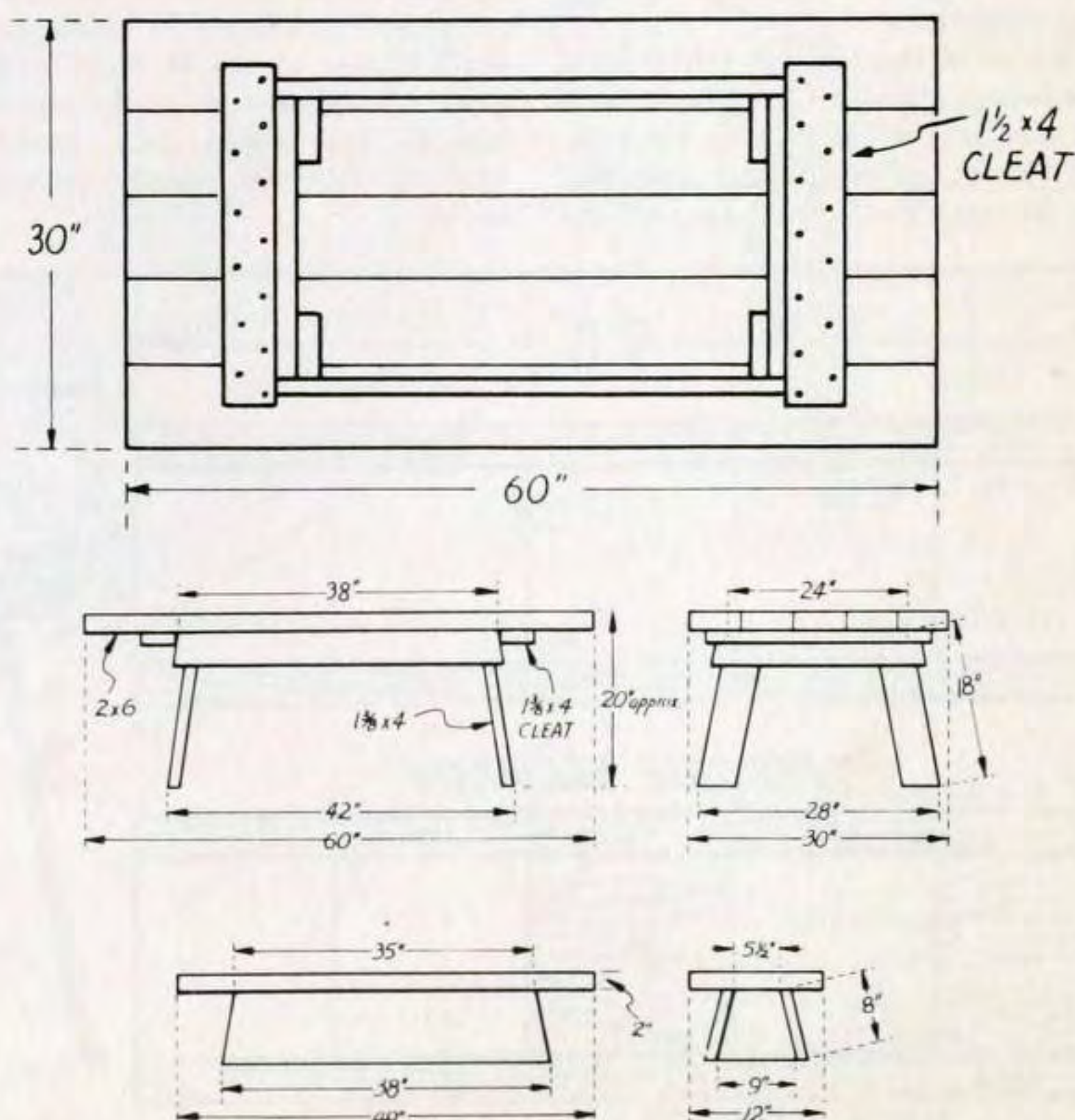
PLAN 12. TABLE AND BENCH SET

It takes no special carpentry skill to construct this rough redwood outdoor coffee table and bench, but the results are pleasing and useful.

Variations. All dimensions may be adjusted to suit the individual; the table could be square, longer or wider. The height of either piece may be adjusted by changing the length of the legs. Conventional legs may be substituted for the pedestal base of the low bench.

BILL OF MATERIALS

- 2" x 12" redwood—1 pc. 4' long for bench seat
- 2" x 6" redwood—total length 25'
 - 5 pcs. 60" long for table top
 - 1½" x 4" redwood—total length 18'
 - 2 pcs. 26" long for cleats on table top
 - 2 pcs. 25" long for table frame
 - 2 pcs. 38" long for table frame
 - 2 pcs. 18" long for table legs
- 1" x 8" redwood—total length 8'
 - 2 pcs. 38" long for bench sides
 - 2 pcs. 9" long for bench ends





Davis Wood, Design; John Robinson, Photo

PLAN 13. TILE-TOP COFFEE TABLE

This tile-top coffee table offers maximum wearability with attractive appearance. The tiles are weatherproof and are not affected by hot serving dishes. They are heavy, however, and moving this sturdy table is definitely a two-man operation.

The table shown is made with paving tiles 12 inches square. But the finished dimensions may be altered to accommodate tiles of varying sizes and shapes. Home-fired ceramic tiles in decorative patterns can be used to striking advantage.

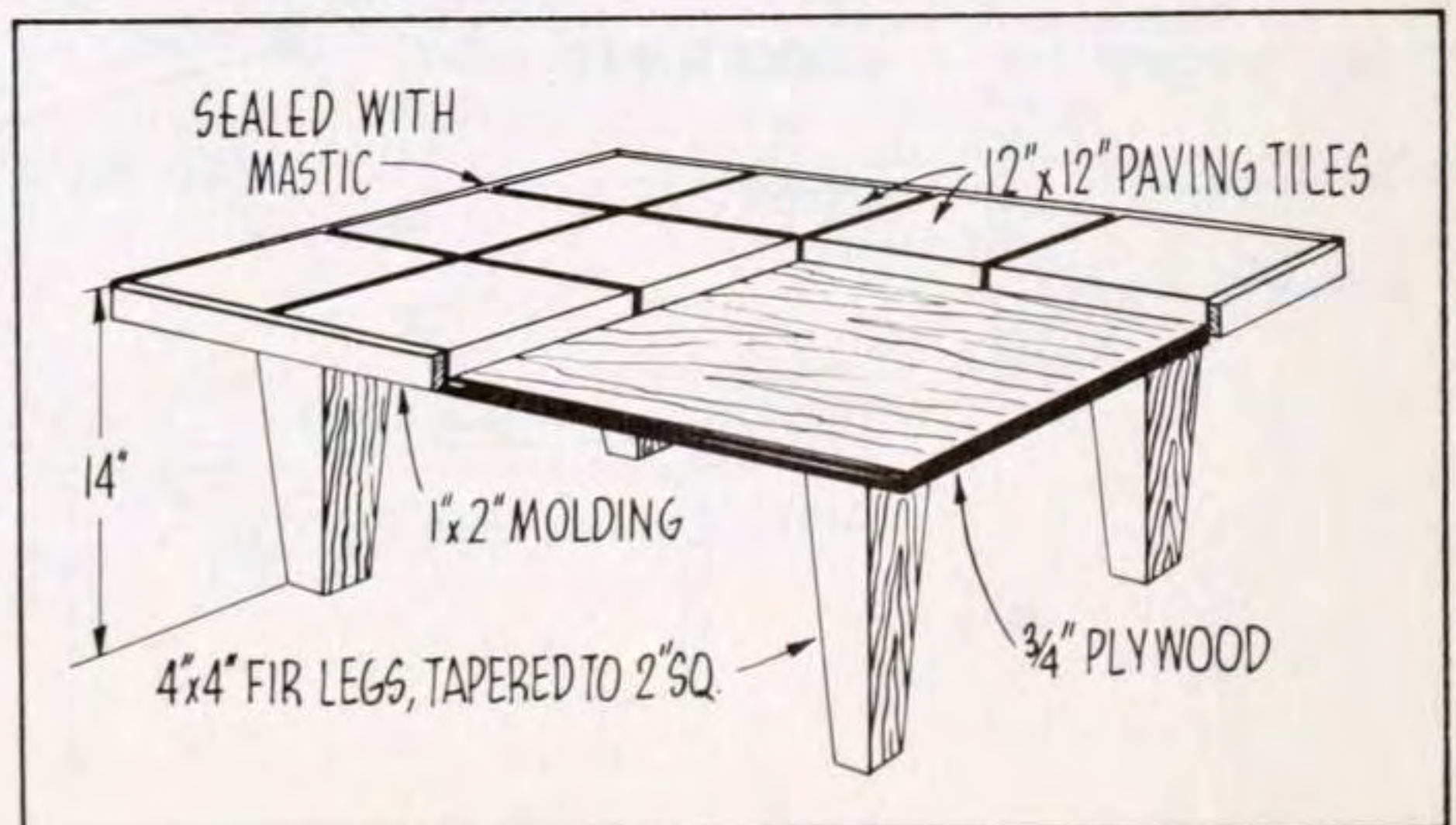
Tiles are laid in place on a square of $\frac{3}{4}$ -inch exterior plywood. They may be seated in mastic or mortar, although this is not essential. Legs are constructed of 4 by 4's, tapered to 2 inches square, and fastened to the plywood with lag screws and glue. Tiles are held in place by a 1 by 2-inch molding with mitered corners.

NOTE: When shopping for tiles, try to buy ones that are truly square.

BILL OF MATERIALS

$\frac{3}{4}$ " exterior plywood, $36\frac{1}{4}$ " x $48\frac{3}{8}$ "
for top
4" x 4" fir—total length 4'

4 pcs. 12" for legs
1" x 2" molding—total length 15'
2 pcs. 38" for rim
2 pcs. 50" for rim
12 12" x 12" paving tiles for top
4 $\frac{1}{4}$ " x 5" lag screws





John Lautner, Design; Julius Shulman, Photo

PLAN 14. PATIO TABLES

Small, weather-resistant tables that can be easily moved from place to place have many uses on the patio. The ones shown here are easily constructed and the finished design is unusually attractive.

The long, low table pictured above makes a good plant stand. It can be pushed in or out of the sun and the size may be varied to accommodate a large or small collection of plants.

The square-top table is perhaps a little more versatile. When it is not in use as a plant stand or coffee table, it will see duty as a good barbecue cart. The holes

cut in the top could hold bean pots or similar casseroles when outdoor meals are being served.

The legs are painted with flat black and the tops may be finished with spar varnish to give good protection against hard use and wet weather.

BILL OF MATERIALS

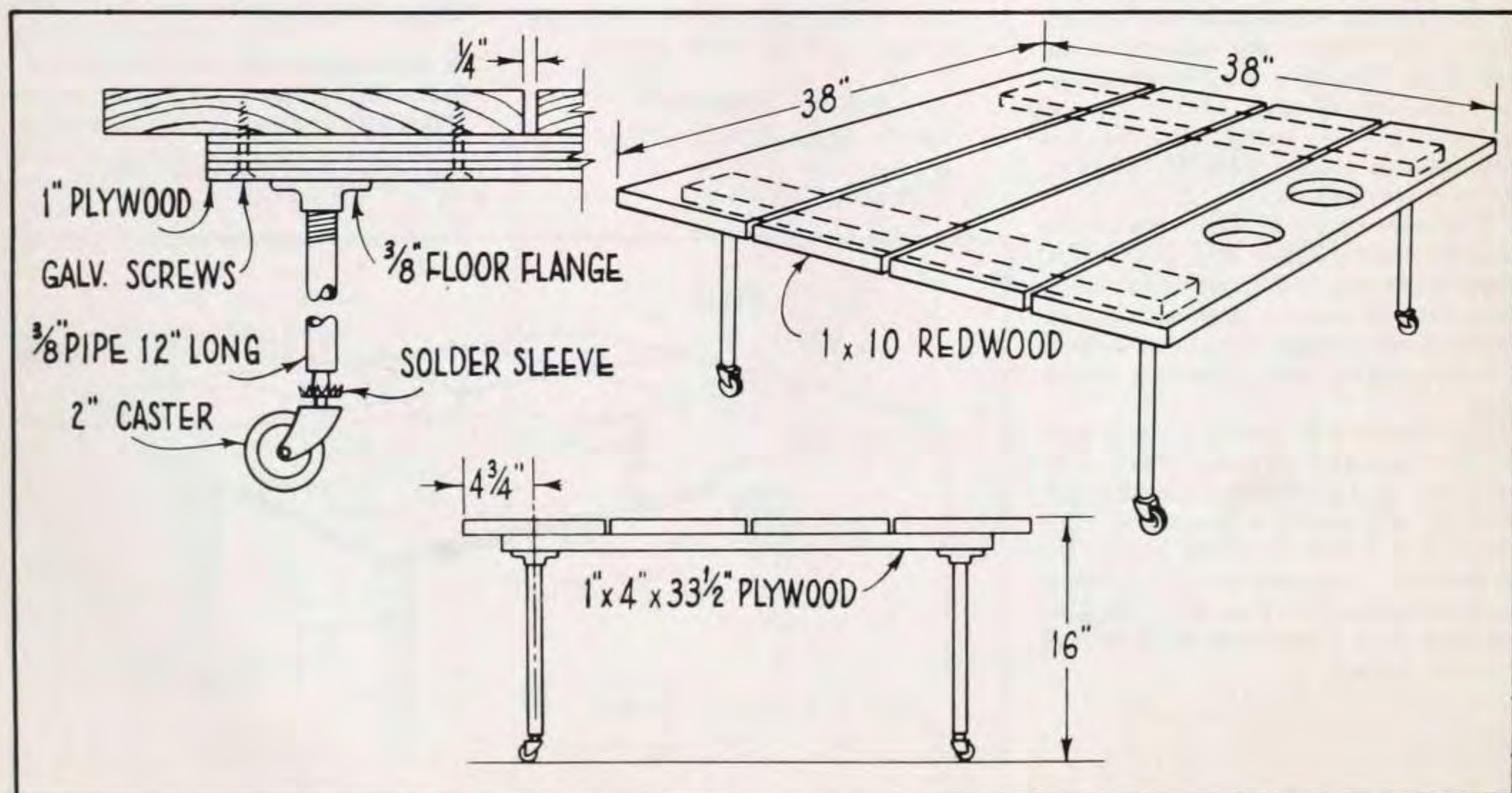
Below and Above Right

- 1" x 10" redwood—total length 12'8"
- 4 pcs. 38" long for top
- 1" x 4" plywood
- 2 pcs. 33½" long for cleats

- 4 floor flanges, ⅜", with screws
- 4 ⅜" pipe legs 12" long
- 4 2" casters
- 16 galvanized flat head screws 1½" long

Left Above

- 2" x 3" redwood
- 16 pcs. any length desired
- 1" x 4" redwood or plywood
- 2 pcs. 32" long for cleats (add center cleat for long table)
- 4 floor flanges with ¾" screws
- 4 ¾" pipe legs 7" long
- 4 2" casters
- 32 galvanized flat head screws 2" long



PLAN 15.

UMBRELLA TABLE



This table incorporates all the most wanted features in redwood outdoor furniture — sturdy construction, pleasing appearance, mobility, and collapsible legs for easy storage.

The top is secured to the leg members with bolts. And since there are several holes drilled in the cleats on the top, it is possible to adjust the height of the table by bolting the legs to the cleats in various positions.

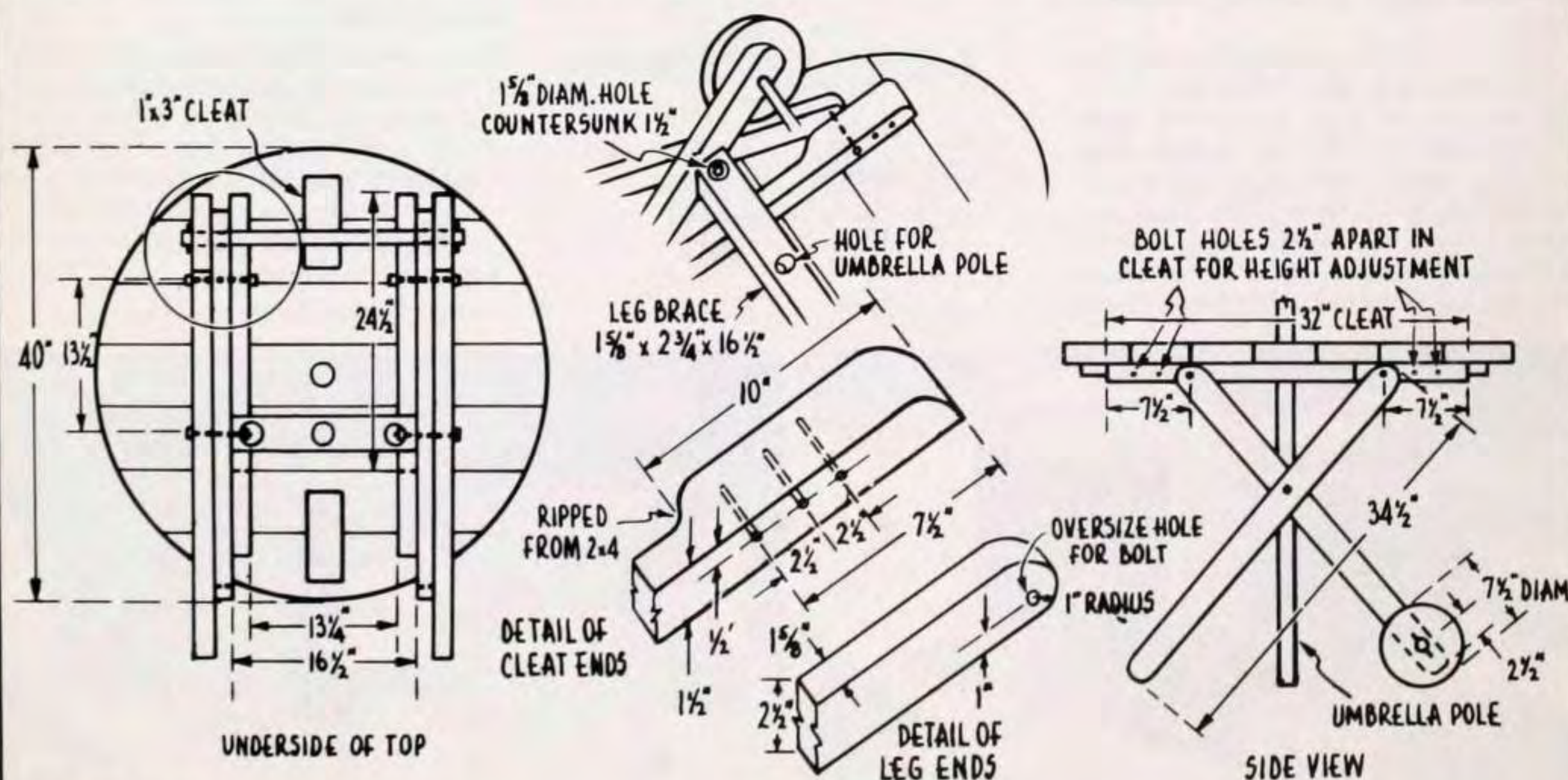
Both the top and the leg crosspiece have a hole cut in the center to hold an

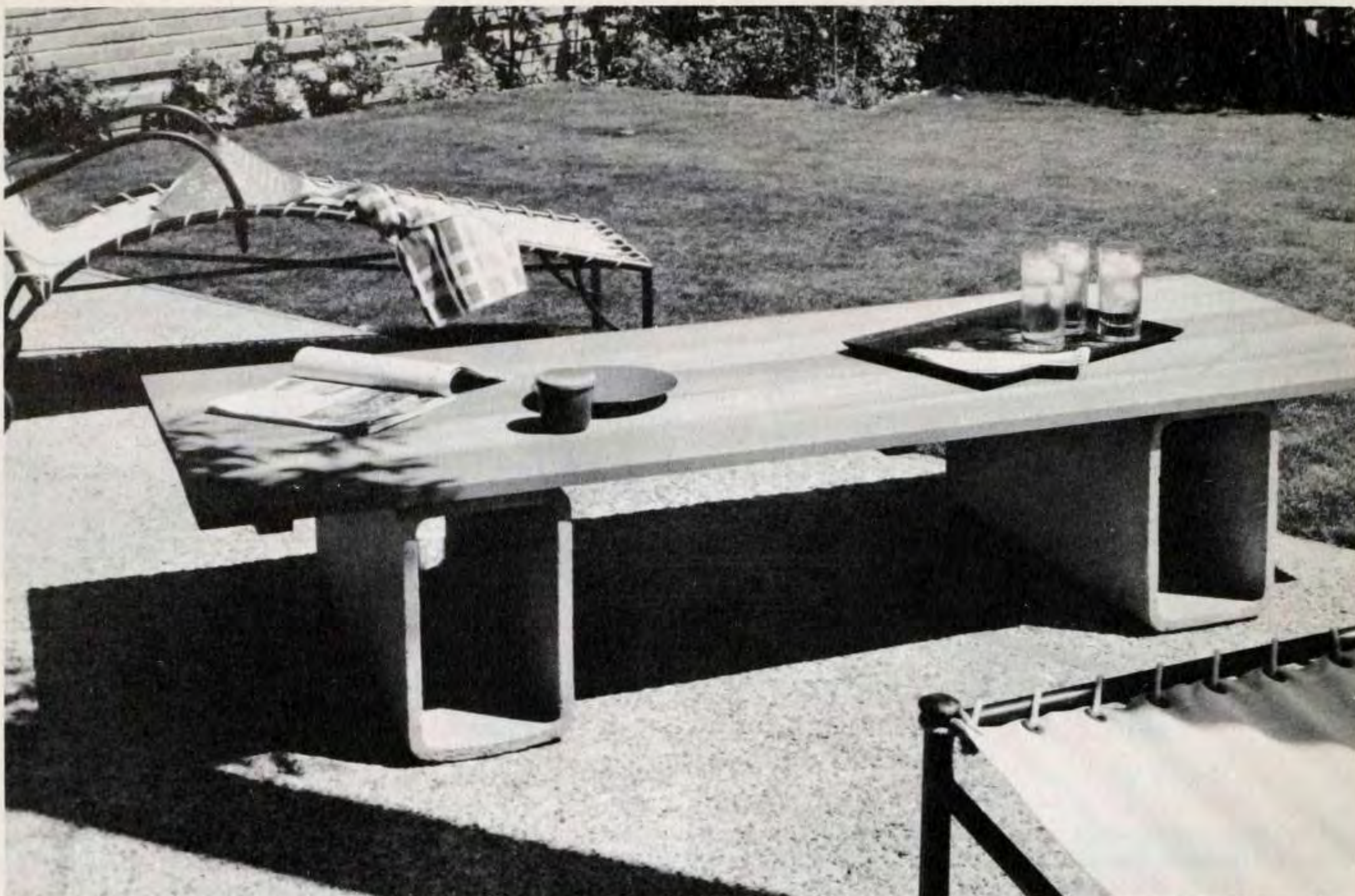
umbrella but naturally this may be omitted from the plan if desired. The size of this hole should be determined by the size of the umbrella pole; therefore it is suggested that the hole be cut after the pole has been measured.

BILL OF MATERIALS

2" x 6" redwood—total length 24'6"
 3 pcs. 40" long for top
 2 pcs. 38" long for top
 2 pcs. 30" long for top

2" x 8"—total length 16"
 2 pcs. 8" long for wheels
 2" x 3" redwood—total length 13'
 1 pc. 16½" long for leg brace
 4 pcs. 34½" long for legs
 2" x 4"—total length 5'4"
 2 pcs. 32" long for cleats
 1" x 3"—total length 2'
 2 pcs. 1' for cleats
 1" round 25" long for wheel axle
 4 carriage bolts 6" long with nuts
 2 carriage bolts 4" long with nuts
 3 doz. 2½" wood screws for top





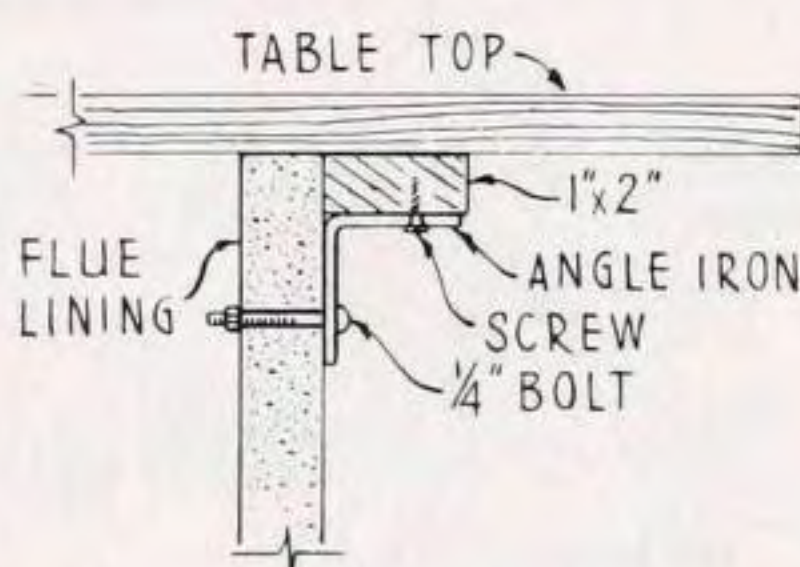
Ernest Braun, Photo

PLAN 16. FLUE-TILE TABLES

For those who wish to make patio furniture with a minimum of cost and effort, chimney flue tile offers some pleasant possibilities. Its color and proportion blend well with outdoor surroundings and it is relatively inexpensive.

The two tables shown here may be constructed with only a hammer, hand saw and screwdriver. The coffee table is supported by $8\frac{1}{2}$ by 13-inch tiles while the dining table is set on the 13 by 13-inch size. Both table tops are made from 1 by 6-inch redwood with a finished dimension of 30 by 72 inches. The dining table has 1 by 2-inch cleats

to keep the top from sliding, and has angle irons bolted to each tile and screwed to the top to give additional stability (drill hole with pointed rat-tail file or star drill).



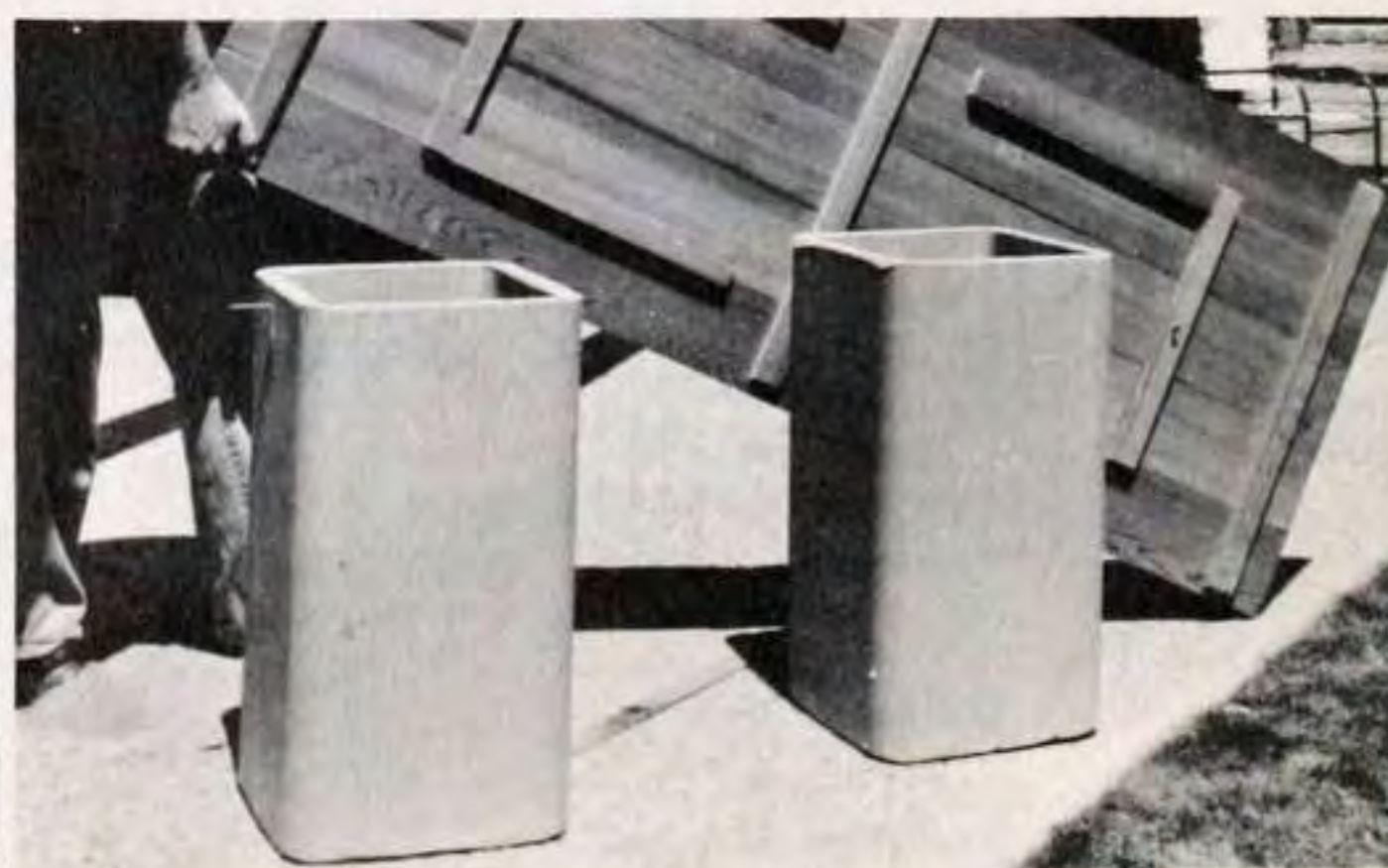
BILL OF MATERIALS

Coffee Table

- 2 flue tiles $18\frac{1}{2}$ " x 13" x 25" for legs
- 1" x 6" redwood—total length 30'
- 5 pcs. 6' long for table top
- 1" x 2" redwood—total length 7'6"
- 3 pcs. 30" long for cleats
- 3 doz. $1\frac{1}{2}$ " wood screws

Dining Table

- 2 flue tiles 13" x 13" x 25" for legs
- 1" x 6" redwood—total length 30'
- 5 pcs. 6' long for top
- 1" x 2"—total length 16'6"
- 3 pcs. 30" long for cleats
- 6 pcs. 18" long for cleats
- $\frac{1}{4}$ " carriage bolts $2\frac{1}{2}$ " long
- 6 doz. $1\frac{1}{2}$ " wood screws
- 2 angle braces 2" long





David Walker, Design; John Robinson, Photo

PLAN 17. TWO-LEVEL TABLE

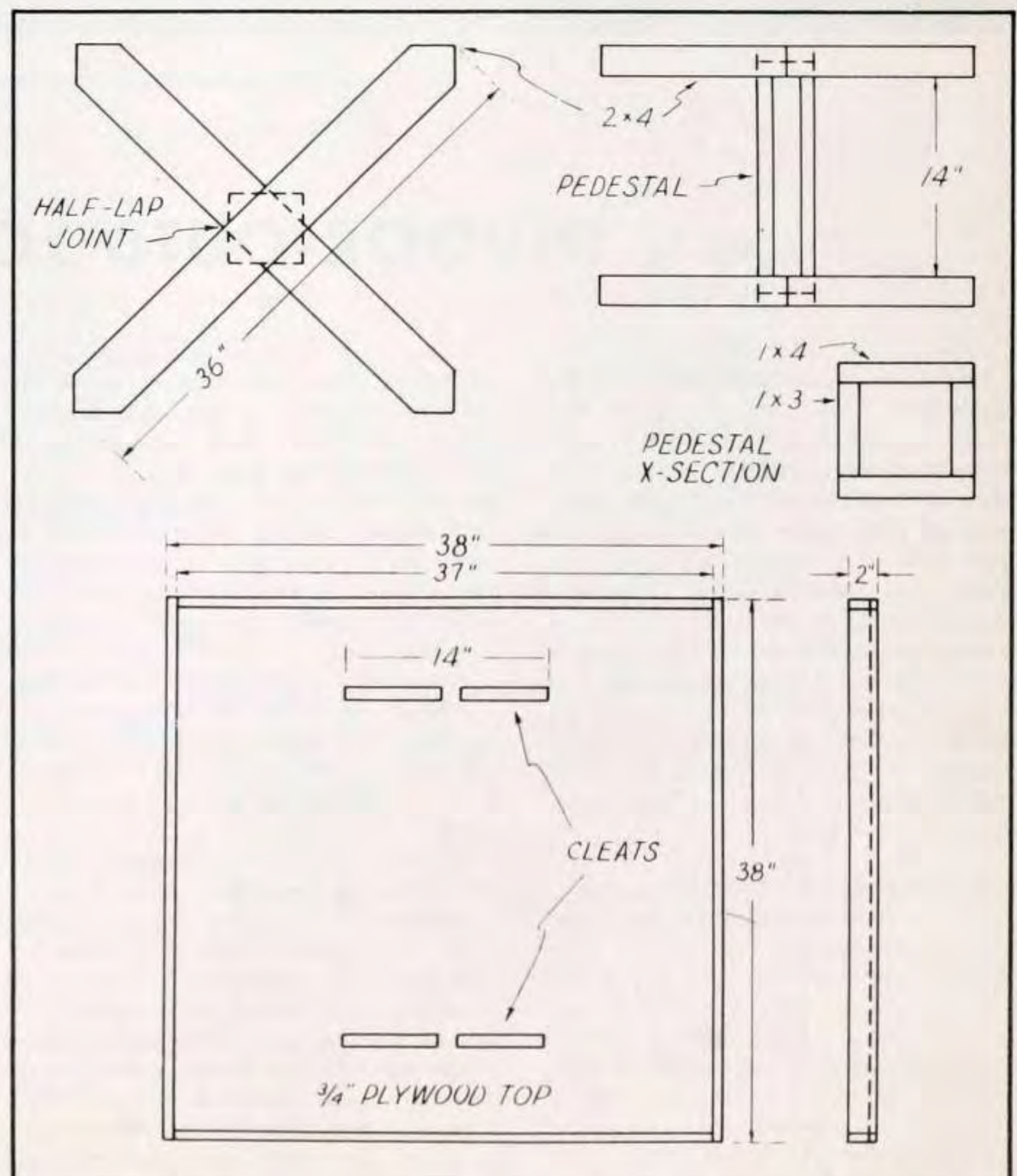
Often there is a need for two tables when there is only space for one in the outdoor living area or summer cabin. This table is the answer to that problem by providing either a table high enough for card-playing or dining when it is in one position, or one low enough to serve as a coffee or occasional table when the position of the pedestal is changed.

The top is made from a piece of weatherproof plywood 37 inches square with a 2-inch edging strip. The sawbuck base is constructed from 2 by 4-inch pine legs, crossed at right angles and notched in a half lap. The box pedestal is made of 2 pieces of 1 by 4-inch pine and 2 pieces of 1 by 3-inch pine. The strips on the underside of the top are to keep the base from shifting position.

The table may either be painted or varnished to give a protective finish.

BILL OF MATERIALS

- $\frac{3}{4}$ " exterior grade plywood 37" x 37" for top
- 2" x 4" pine—total length 12'
- 4 pcs. 36" long for legs
- $\frac{1}{2}$ " x 2" hardwood—total length 12'6"
- 2 pcs. 37" long for edging
- 2 pcs. 38" long for edging
- 1" x 3"—total length 28"
- 2 pcs. 14" long for pedestal
- 1" x 4"—total length 28"
- 2 pcs. 14" long for pedestal
- Nails, screws, glue, scrap for cleats.





G. A. Dory, Design; Charles Pearson, Photo

PLAN 18. INDOOR-OUTDOOR SET

There are many instances when the rough-hewn, heavy type outdoor furniture is undesirable, especially when it is out of scale with its surroundings. This is particularly true when large areas of glass unite the outdoor living area with the interior of the home. When this situation exists, it is often desirable to keep the scale and dimensions of the outdoor furniture somewhat in keeping with that used indoors. And the table and bench set shown here is a happy compromise between the sturdy stability of most barbecue furniture and the grace and unity of less rugged indoor construction.

There are several modifications which could be incorporated into the design to add to its stability and make it more practical for placement on rough-surfaced patios or lawn areas. It is suggested that the dowels used on the legs for runners be replaced with skids made from 2 x 2-inch blocks 3 $\frac{5}{8}$ inches long. For hard use, a board should be added, connecting the horizontal parts of the leg units which are just above the

ground. If these stretchers are made of the same materials as the legs and are placed with their upper surfaces flush with those of the legs, they need not detract from the harmony of the design. Furthermore, the leg joints of all pieces could be strengthened by countersinking metal angle braces on the inside of each corner before the $\frac{3}{4}$ -inch molding is added.

The most suitable materials from the standpoint of withstanding weather and blending with the outdoor atmosphere are pine, redwood or fir. Doweling should be of birch or some equally hard wood.

All joints are set in waterproof glue. For the table, use three large screws, countersunk from above, obliquely, with plugs of $\frac{3}{8}$ -inch dowels and three 3-inch nails. The bench legs are similarly constructed but require only two smaller screws and two nails. After each corner of the legs has been nailed, screwed and glued, the outer corner is rounded with a plane and sandpaper, or a disk sander to match the inner curve provided by the cove molding.

The stools shown in the picture are made from 2 by 3-inch lumber which is used for both legs and top. The outer edges of the legs are spaced 20 inches apart and the ends of the top boards are curved to match the table.

BILL OF MATERIALS

2" x 6"—total length 51'10"
 5 pcs. 6'9" for table top
 4 pcs. 25 $\frac{1}{2}$ " for legs
 4 pcs. 28 $\frac{3}{4}$ " for leg cross pieces
 2" x 4"—total length 56'
 8 pcs. 3'11 $\frac{1}{2}$ " for bench tops
 8 pcs. 15" for bench legs
 8 pcs. 20 $\frac{3}{4}$ " for leg crosspieces
 $\frac{3}{4}$ " cove molding—approx. 7' for set
 1 $\frac{1}{4}$ " round—approx. 3' for 3-pc. set
 8 doz. case nails
 5 doz. flat head nails
 No. 10 screws—approx. 9 doz.
 Linseed oil for finishing

Small Benches

2" x 3"—total 24' per bench
 3 doz. screws for each bench
 2 doz. nails
 Molding and dowels

PLAN 18. INDOOR-OUTDOOR SET

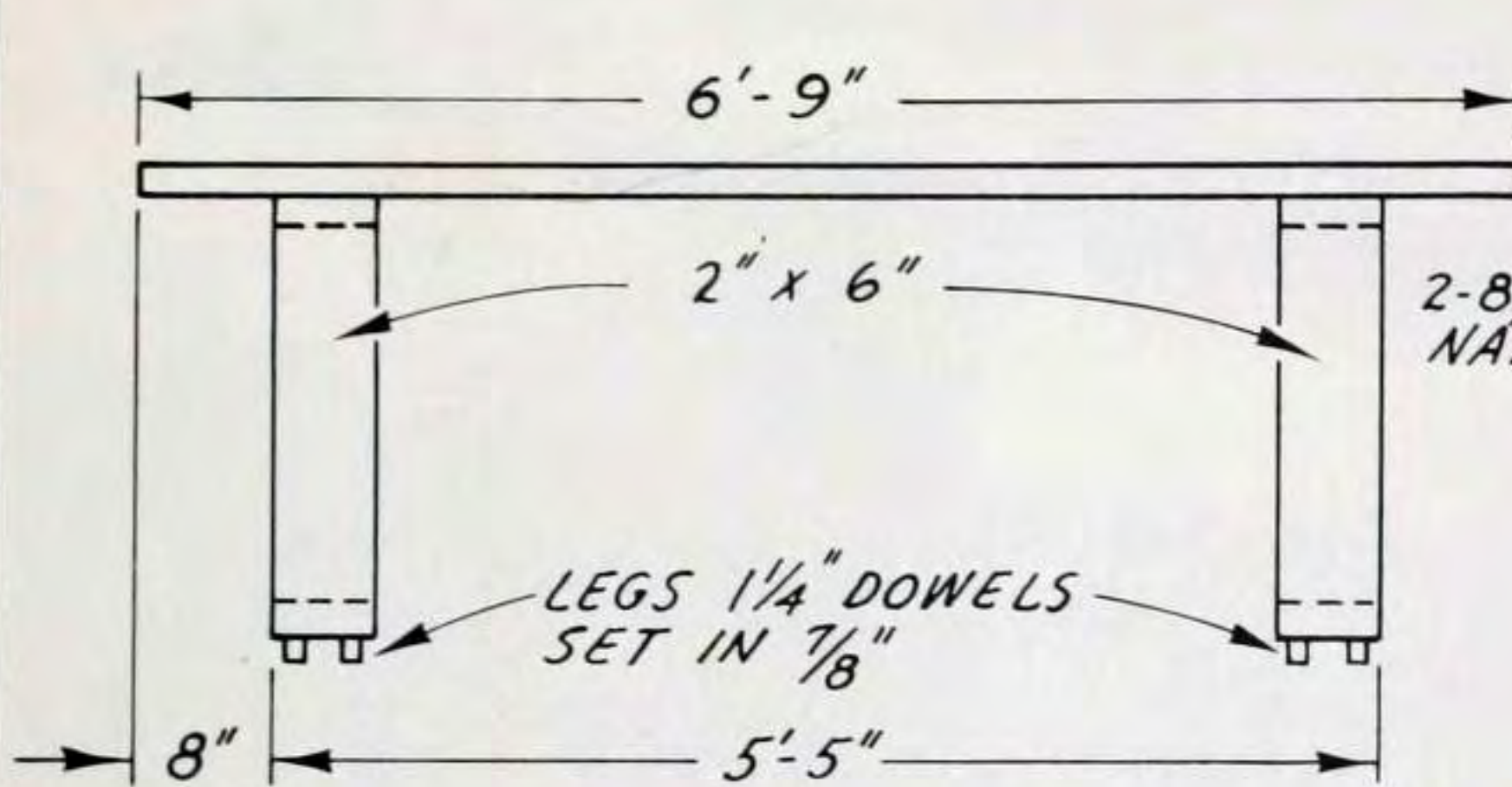


TABLE - SIDE VIEW

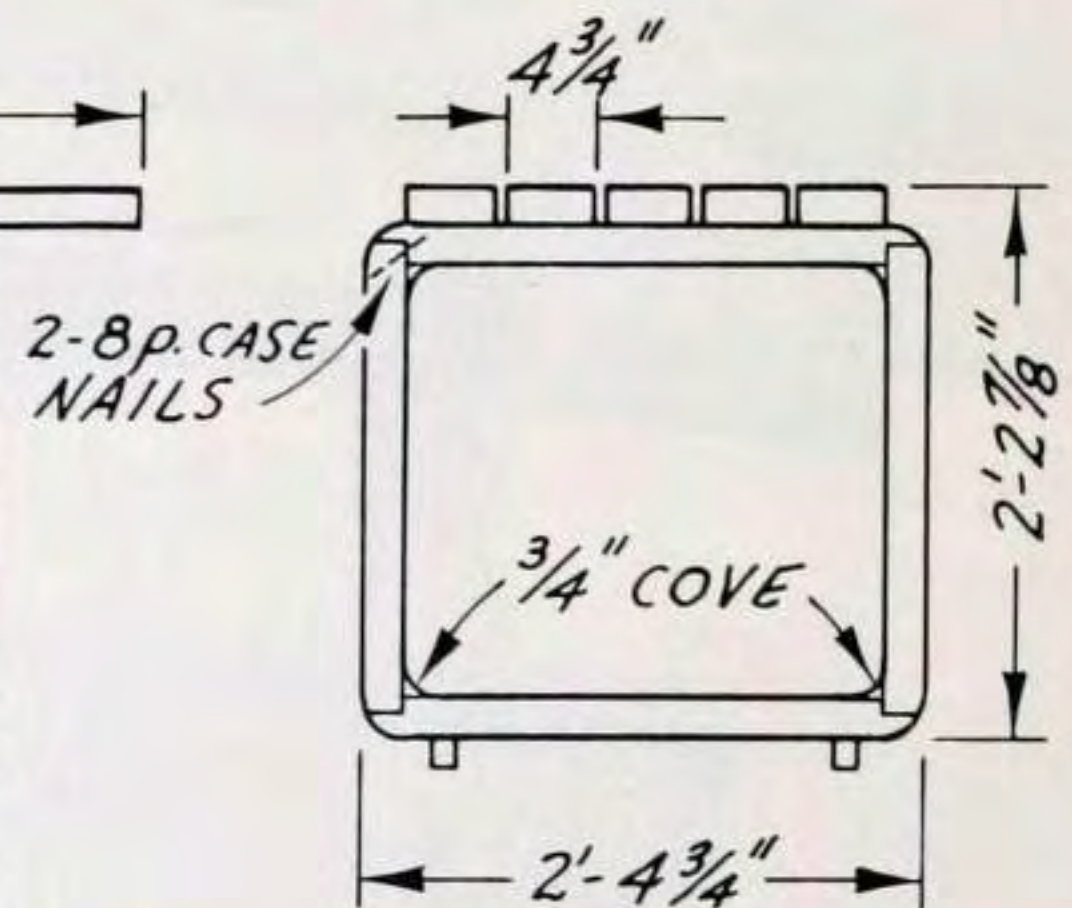


TABLE - END VIEW

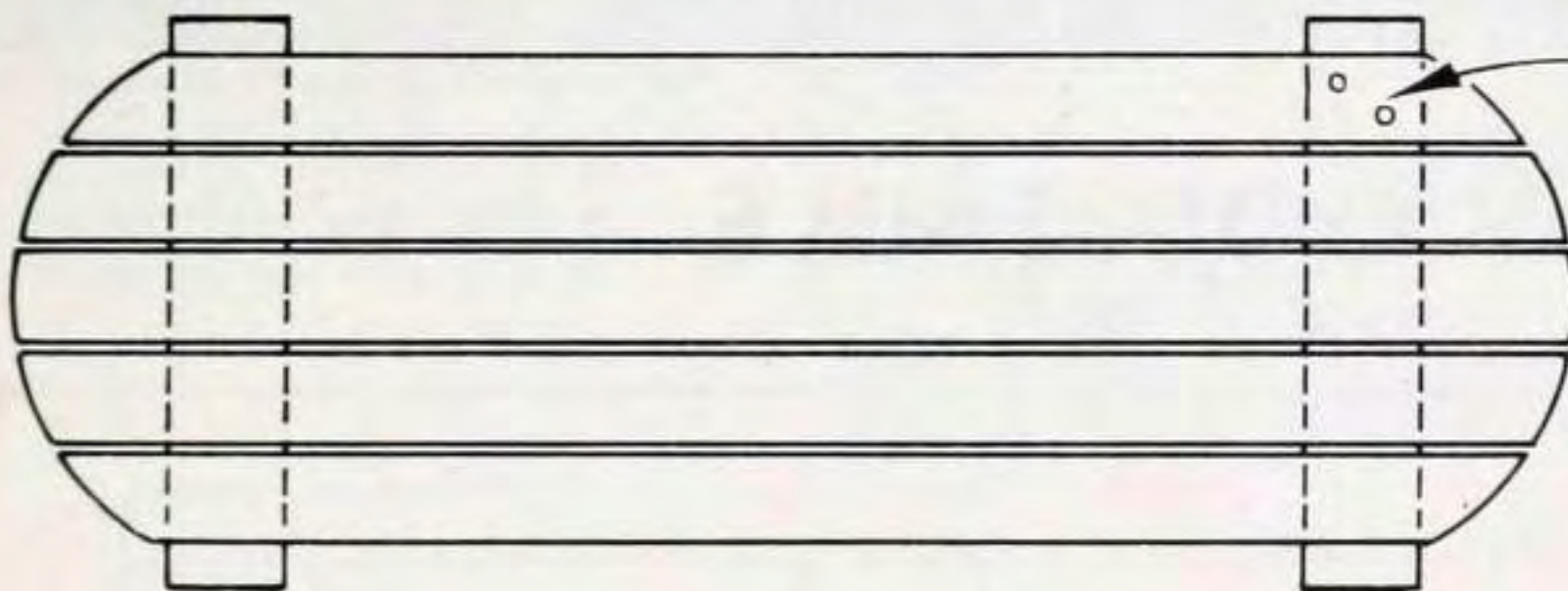
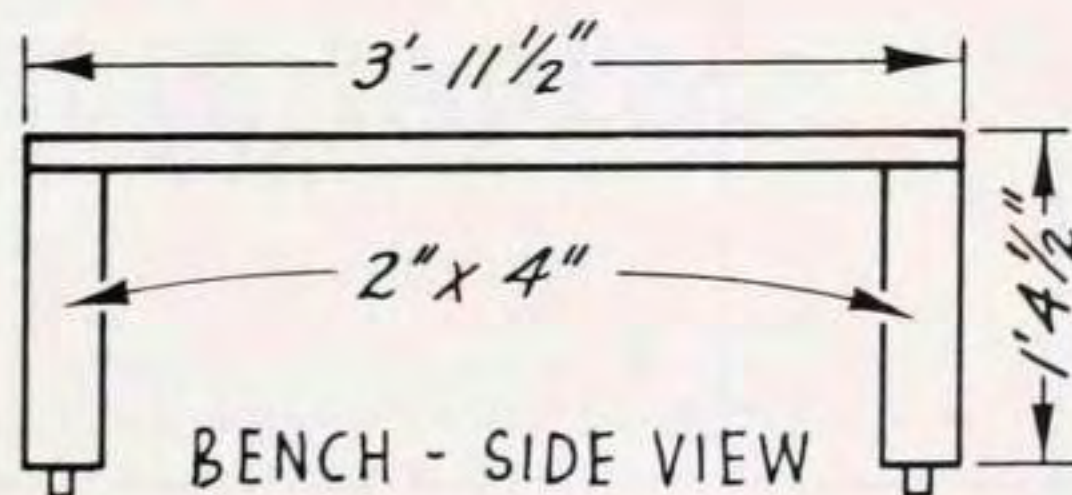


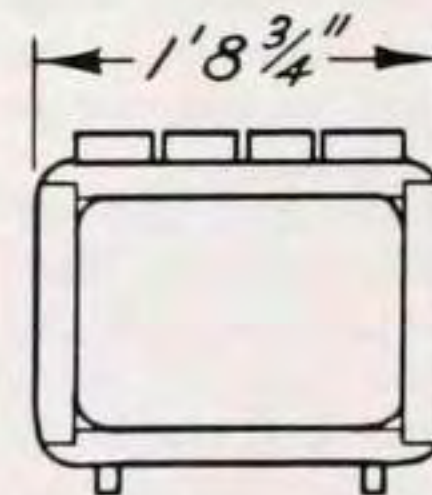
TABLE - TOP VIEW

2-#10 SCREWS

ALL JOINTS MORTISED AND SET IN WATERPROOF GLUE.

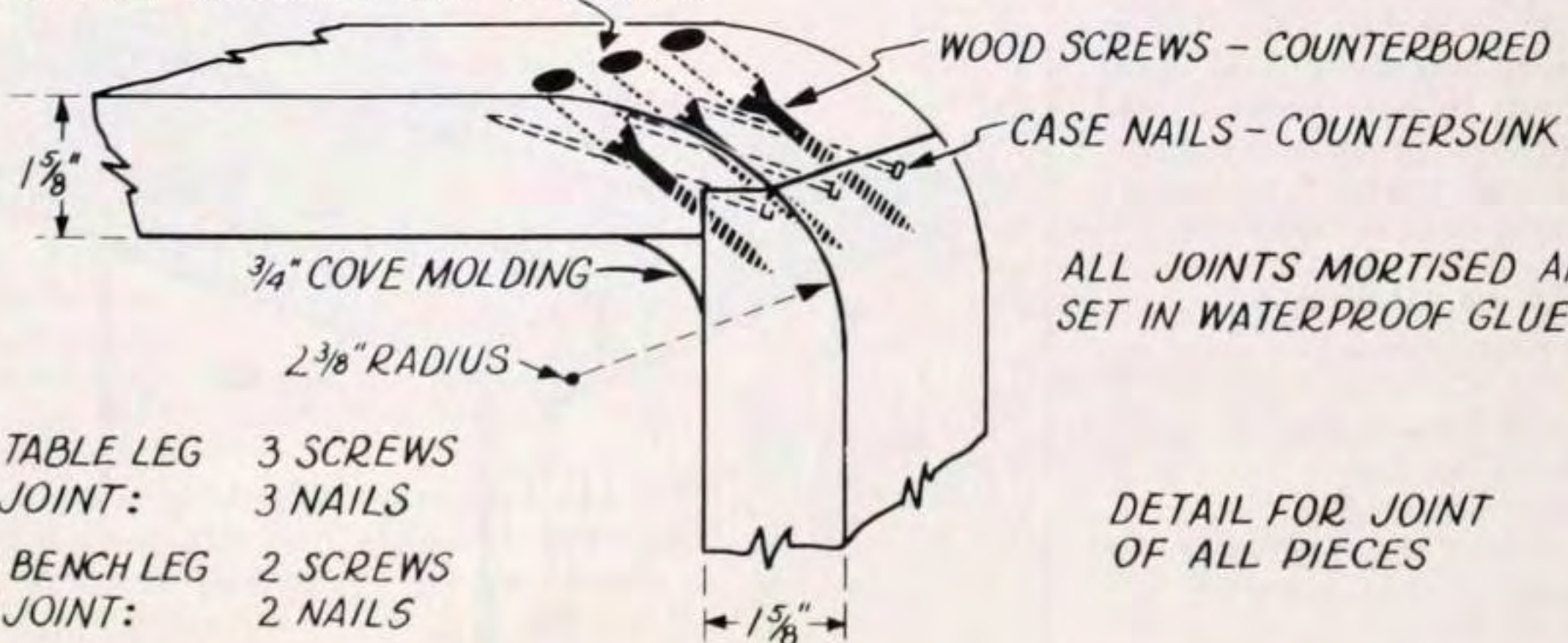


BENCH - SIDE VIEW



BENCH - END VIEW

3/8" HOLES 1/2" DEEP PLUGGED WITH 3/8" DOWEL



EACH TABLE LEG 3 SCREWS
(2x6) JOINT: 3 NAILS
EACH BENCH LEG 2 SCREWS
(2x4) JOINT: 2 NAILS

DETAIL FOR JOINT OF ALL PIECES



Fred Langhorst, Design; Ernest Braun, Photo

PLAN 19. PLYWOOD TABLE

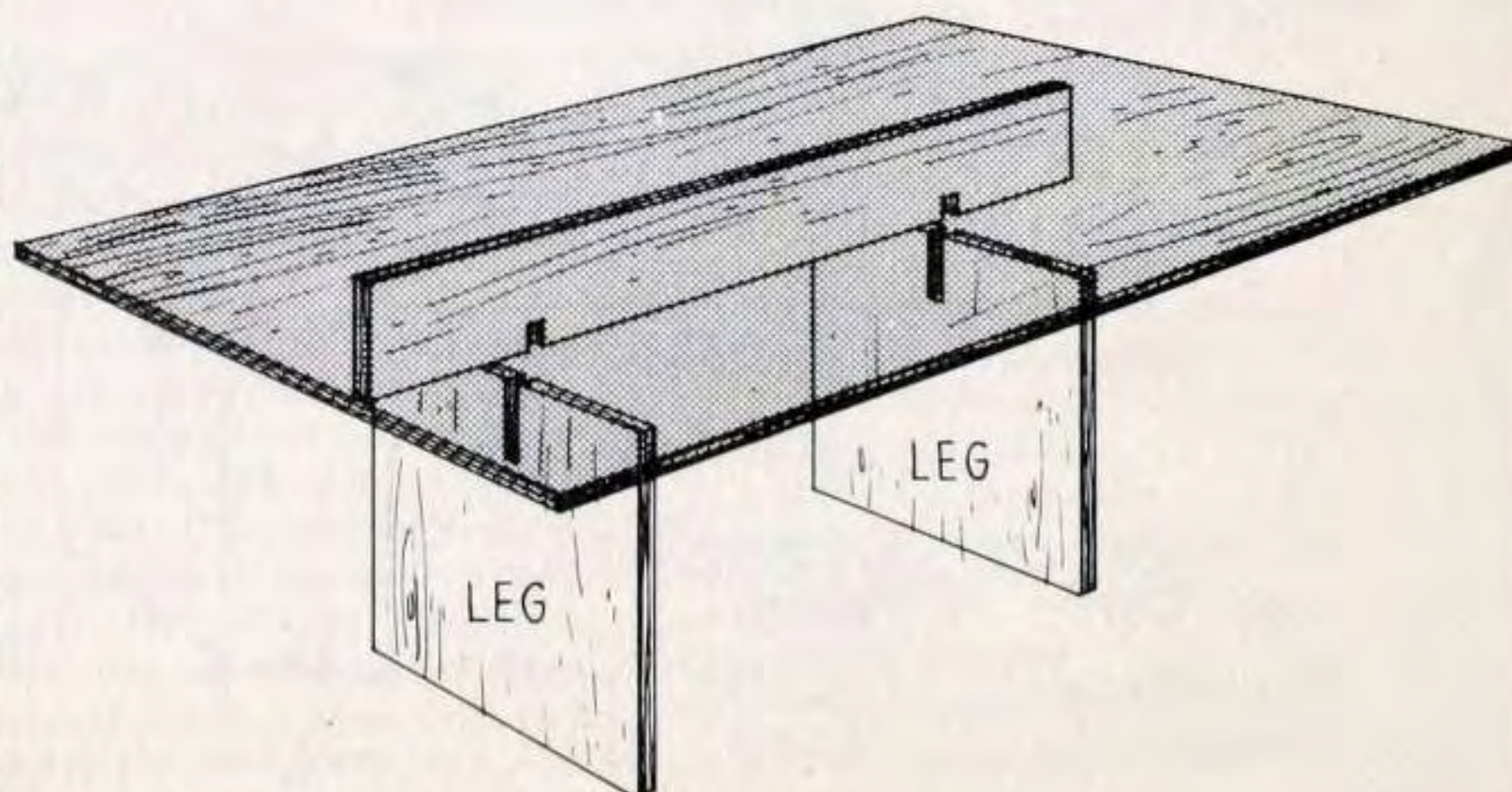
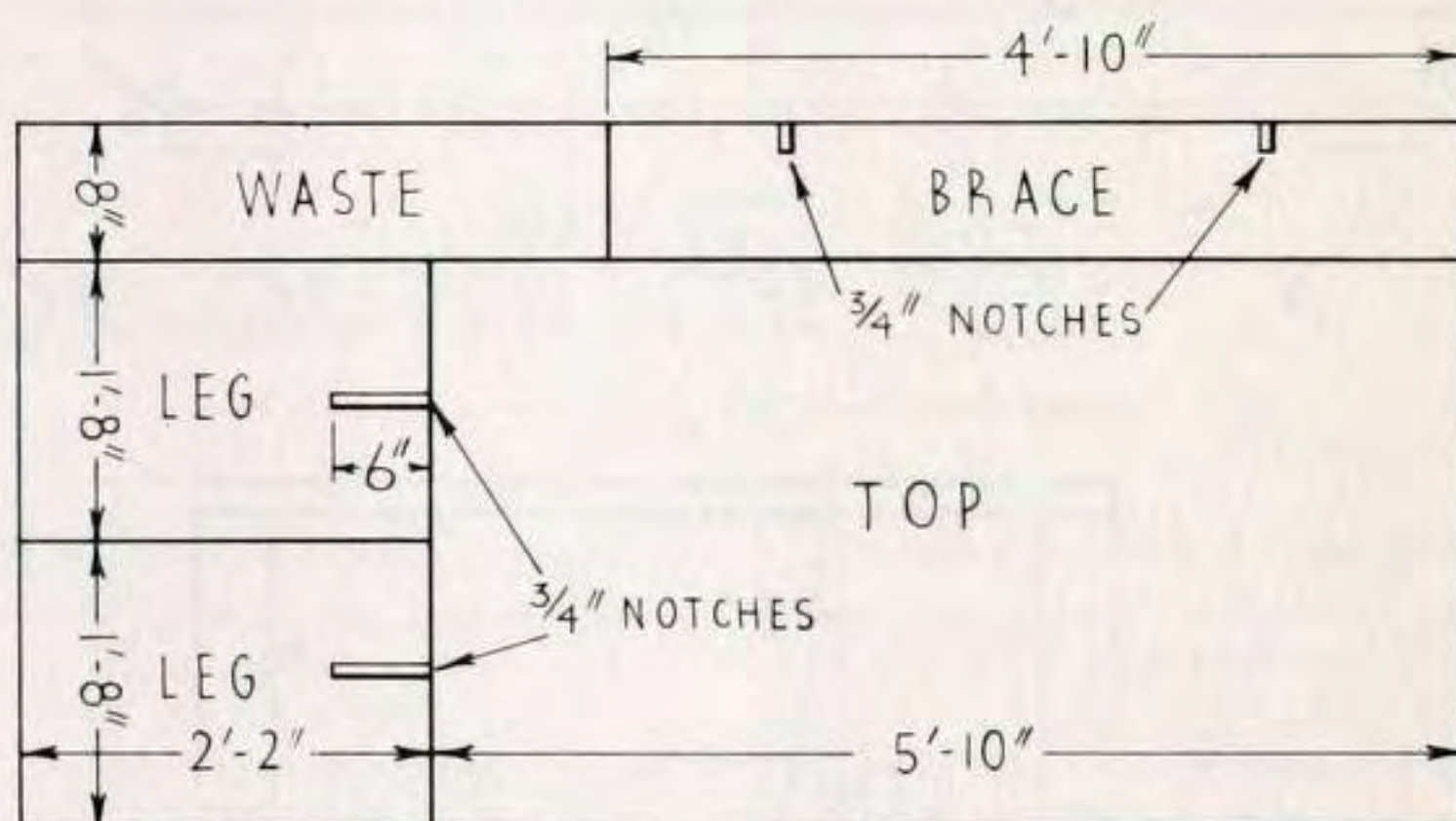
One sheet of plywood 4 by 8 feet and $\frac{3}{4}$ inch thick is all that is needed to make this very easily constructed table. It has the advantage also of being versatile enough to be used either in or out of doors, and it is very inexpensive as well as attractive in appearance.

After making four saw cuts and cutting four notches (a spiral-tooth blade in the coping saw is invaluable if this is done by hand), the table is ready to assemble. The legs and brace will lock into each other, so that the only job is in fastening on the top with nails, screws, or angle irons.

It is also possible to make the table demountable, so that it can be carried easily and its parts stored flat. This is done by nailing four cleats to the under side of the top to help center it, and gravity will hold it in place. It could be given additional strength by adding hooks and eyes or other hardware.

BILL OF MATERIALS

- $\frac{3}{4}$ " exterior grade plywood—4' x 8' panel
- 1 pc. 70" x 40" for table top
- 2 pcs. 26" x 20" for legs
- 1 pc. 58" x 8" for brace
- 12 angle brackets 4" long (optional)
- Nails or screws



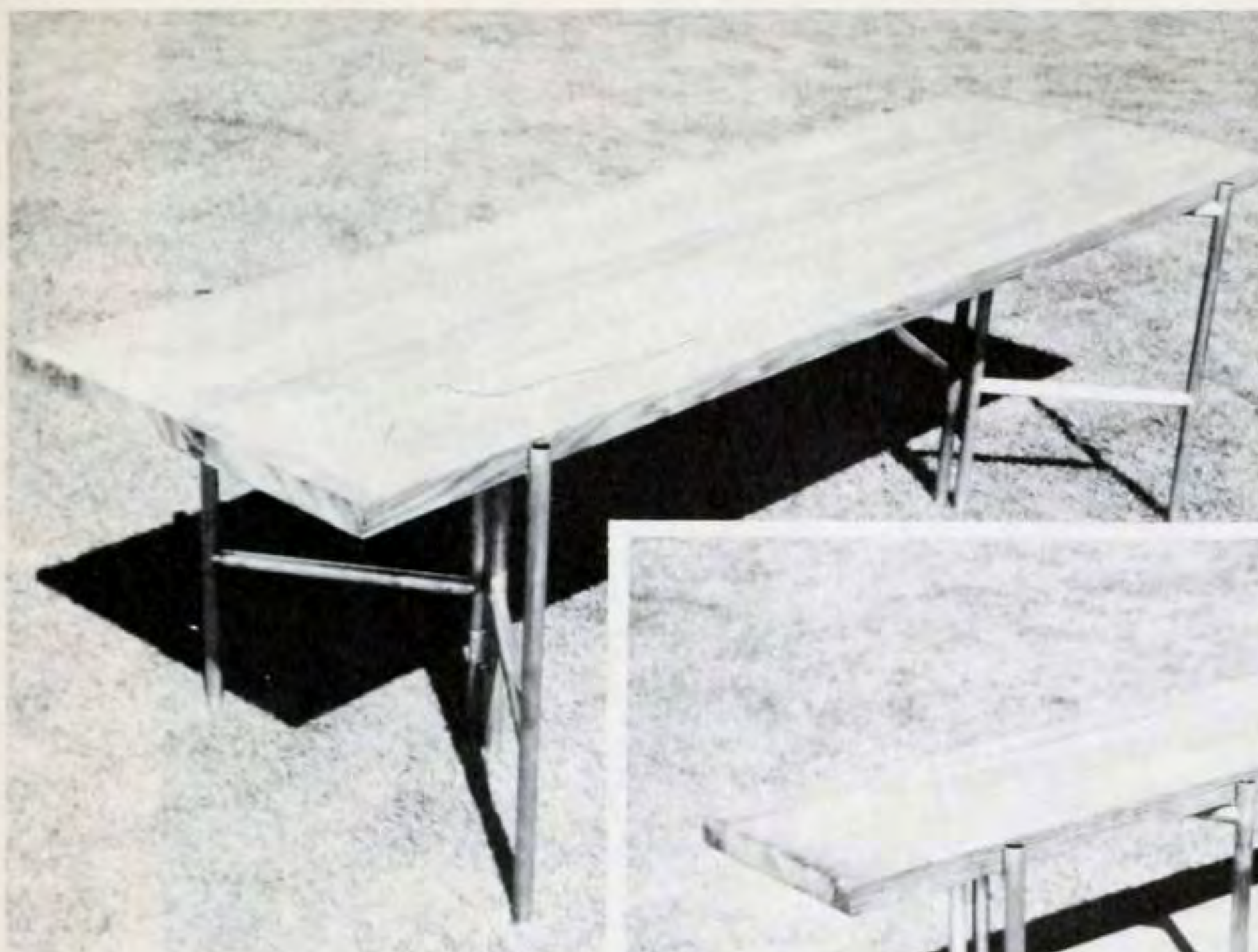


Table top is of two 2 by 14-inch pieces of redwood. Legs are of 1-inch copper tubing. Spread "V" of leg sections provides support



If outdoor dinner is to be buffet style, top splits to make a two-level table

PLAN 20.

CONVERTIBLE TABLE

The table shown here is designed with a double purpose. The hinged leg sections provide support for the plank top which is made in two pieces. By resetting the leg sections and separating the planks, the table easily converts into an outdoor buffet. And the complete unit is equally simple to dismantle for storage in a compact area.

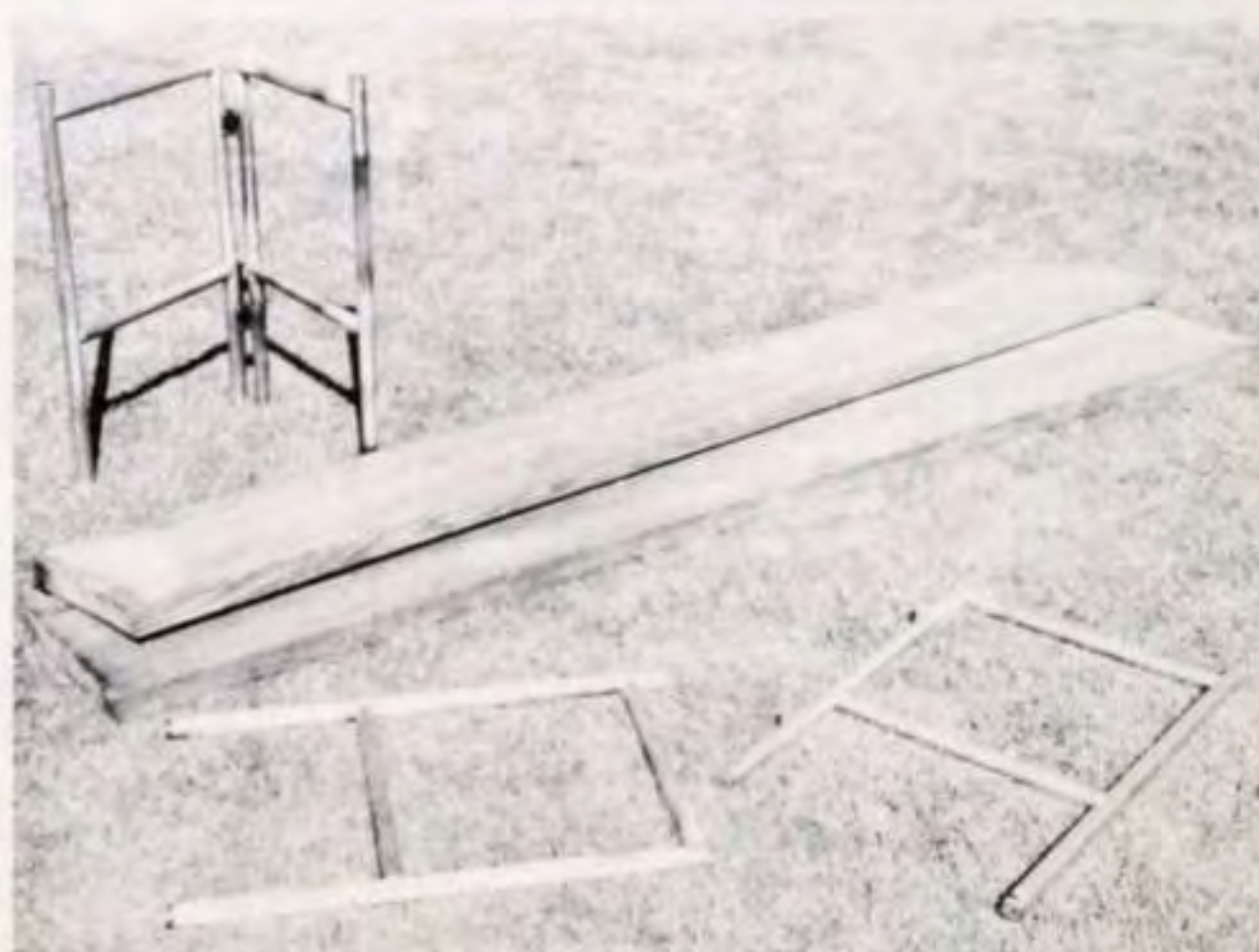
The design requires considerable skill in making precise miters and cuts for the corners and other joints, as well as for brazing together all connections accurately and cleanly. But with very little loss in appearance, one may use copper solder pipe fittings to make the same connections: T fittings wherever there is a T connection, and elbows for the corners. Threaded fittings may be used, but they would require right- and left-hand threads for all the cross bars. Such special threading can be done only in a pipe shop, and at considerable additional expense.

The same design principle could be used with hinged wooden leg sections. In that case, the legs would be constructed from 2 by 2-inch fir or redwood.

All wooden members of the table should be finished with an oil stain and, after it is thoroughly dry, varnished with two coats of spar varnish to provide protection from the weather.

BILL OF MATERIALS

- 2—2" x 14" redwood planks each 8' long for top
- 1" copper tubing or pipe—total length 32'6"
- 4 pcs. 30" long for legs
- 4 pcs. 31½" long for legs
- 8 pcs. 18" long for cross arms
- 4 butt hinges
- Solder





Martin Nelson, Design; Ernest Braun, Photo

PLAN 21. EIGHT-FOOT ROUND-TOP

Many people favor a circular barbecue table not only for its good looks but also for its large serving area.

The one pictured here is unusually large and would rarely be in scale for use indoors; but if it is used in a large patio area, the dimensions may not be excessive. The plan could be easily adapted to make the finished piece smaller. As it is, it will accommodate twelve people easily.

The top is made of redwood or fir planks which are cleated at the joints. The cleats must be placed so that they do not interfere with the legs or side rails. Weatherproofed plywood could be substituted for the top, but if it is used, the table would lack much of the eye-appeal provided by the 12-inch planks.

The legs are constructed from 4 by 4's which have been tapered to 2 inches. They are joined with 1½ by 5-inch rails making a square frame for the top. The corners are reinforced with blocks; and to give additional strength, there is a diagonal spanner between two of the legs.

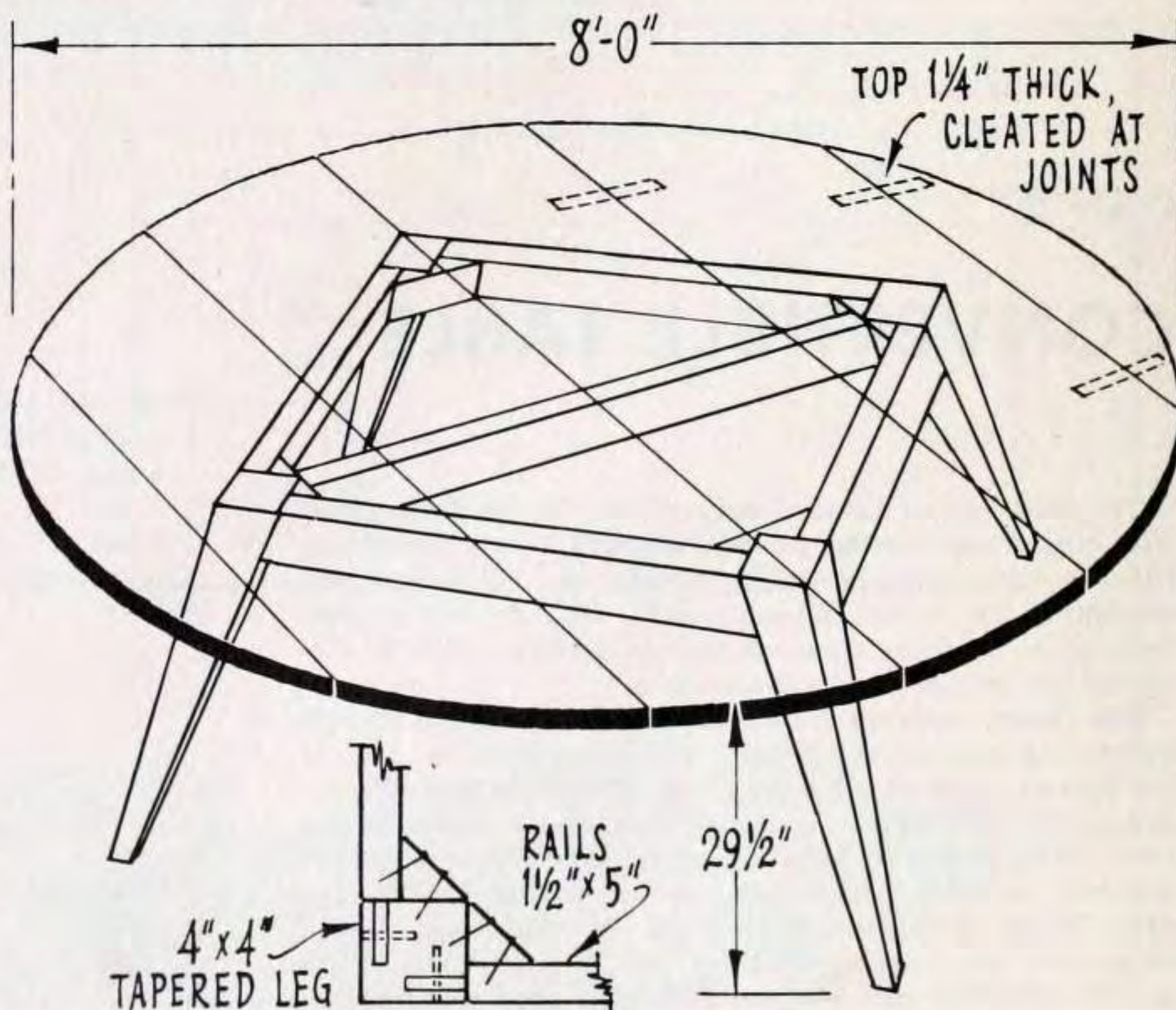
Since this heavy table is likely to remain outdoors in wet weather, it would be wise to give it a thick protective finish of three coats of good spar varnish. The last coat could be rubbed with steel wool if a dull finish is preferred.

BILL OF MATERIALS

1½" x 12"—total length 56'
3 pcs. 8' long for top
2 pcs. 7'6" long for top

2 pcs. 6'6" long for top
1 pc. 4' long for top (rip for outside pieces)
4" x 4"—total length 9'4"
4 pcs. 28" long for legs
1" x 2" hardwood—total length 18'

36 pcs. 6" long for cleats
1½" x 5"—total length 22'
4 pcs. 4' long for rails
1 pc. 6' long for spanner
Corner blocks made from scrap
Wood screws, glue



PLAN 22.

LONG AND NARROW TABLE

The table and benches shown here are an interesting variation to most outdoor dining furniture. The table is unusually long so that it will seat sixteen or more people, but it is also narrow enough to take up very little room if it is pushed against a wall when not in use. Its dimensions also make it ideal for use as a buffet when it is not being used for sit-down meals.

The top of both the table and benches are constructed of 2 by 4's set on edge. They rest on cleats of 2 by 4 stock at the point where the legs are notched and fitted into place. The legs are also cut from 2 by 4's which have been tapered to 2 inches at the base. Hardwood dowels are used to strengthen members at the joints.

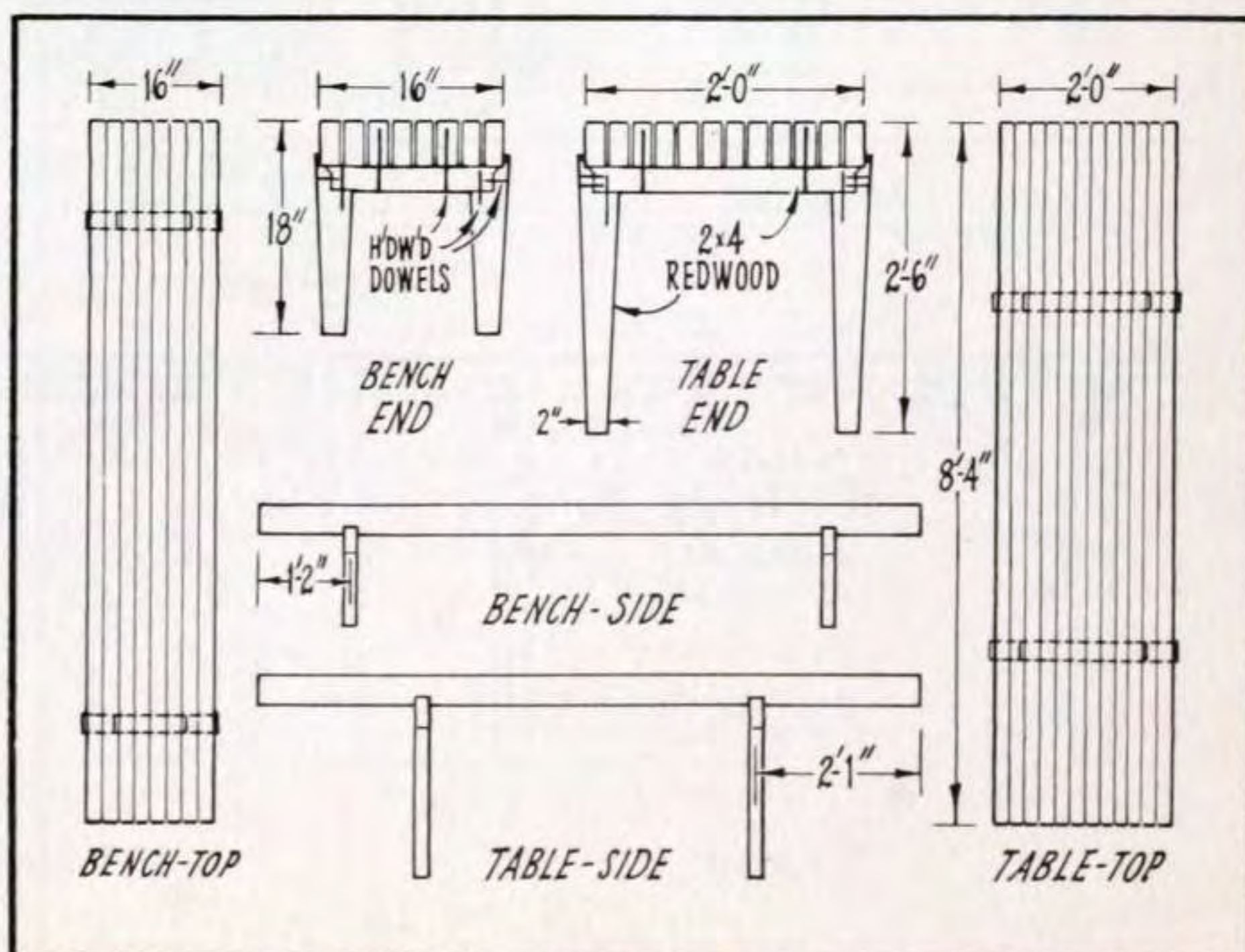
A good waterproof redwood stain should be used to give the completed pieces a protective finish.

BILL OF MATERIALS

- 2" x 4" redwood or fir—total length 262'
- 12 pcs. 100" long for table top
- 16 pcs. 100" long for bench tops
- 4 pcs. 27" long for table legs
- 8 pcs. 15" long for bench legs
- 2 pcs. 24" long for table cleats
- 4 pcs. 16" long for bench cleats
- 1/4" hardwood dowel



Alfred Preis, Design; R. Wenkam, Photo



This design for an outdoor table and benches is probably the most popular and widely used of any redwood furniture. Its general acceptance is not based wholly on appearance but also because of its simple construction, easy variation of size, and demountable members for compact storage. The design can be adapted by increasing the length of the top and seat boards to increase its seating space without altering other dimensions. The pieces are secured with lag bolts so that it may be dismantled for storing during the winter months.

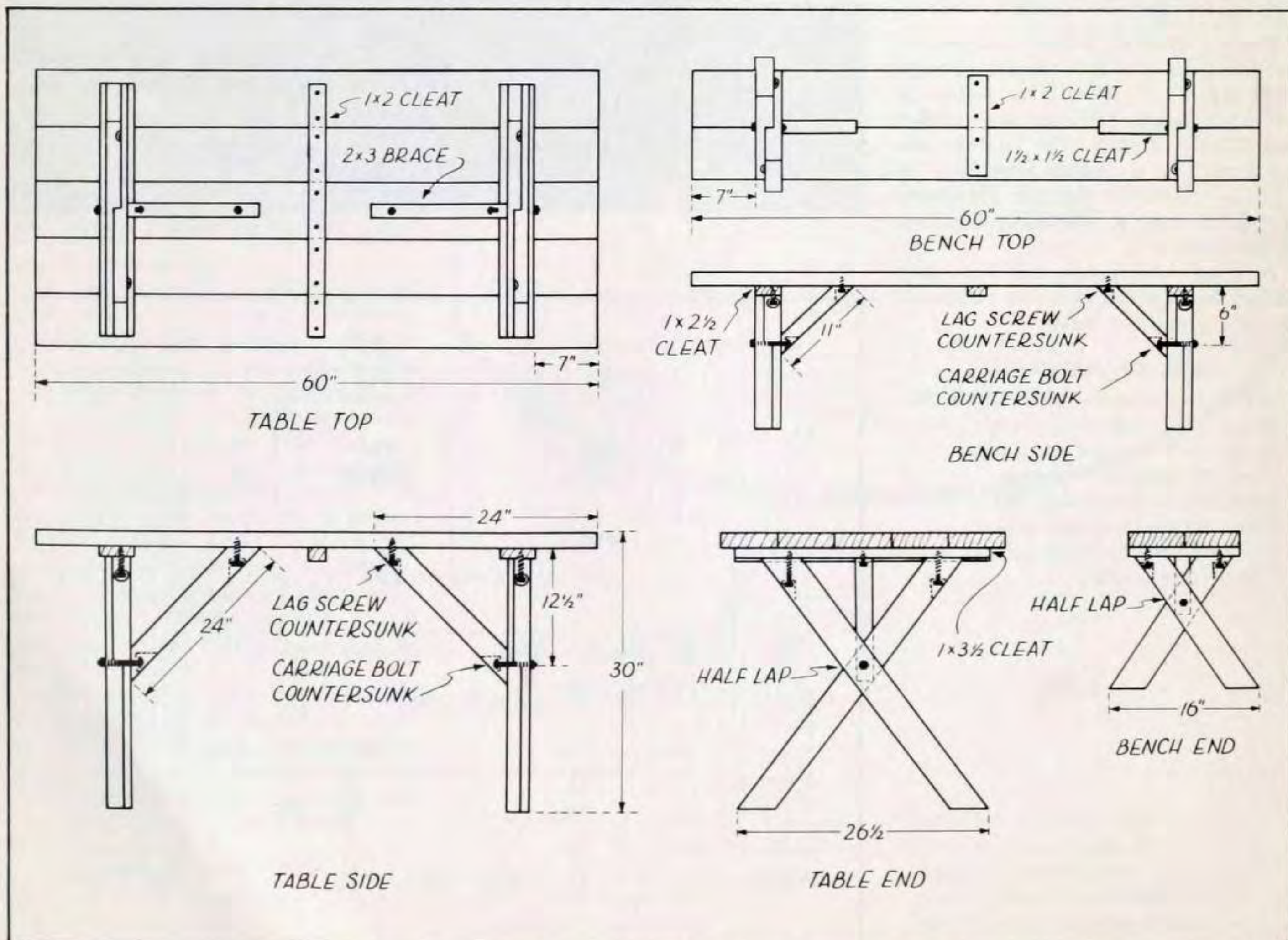
BILL OF MATERIALS

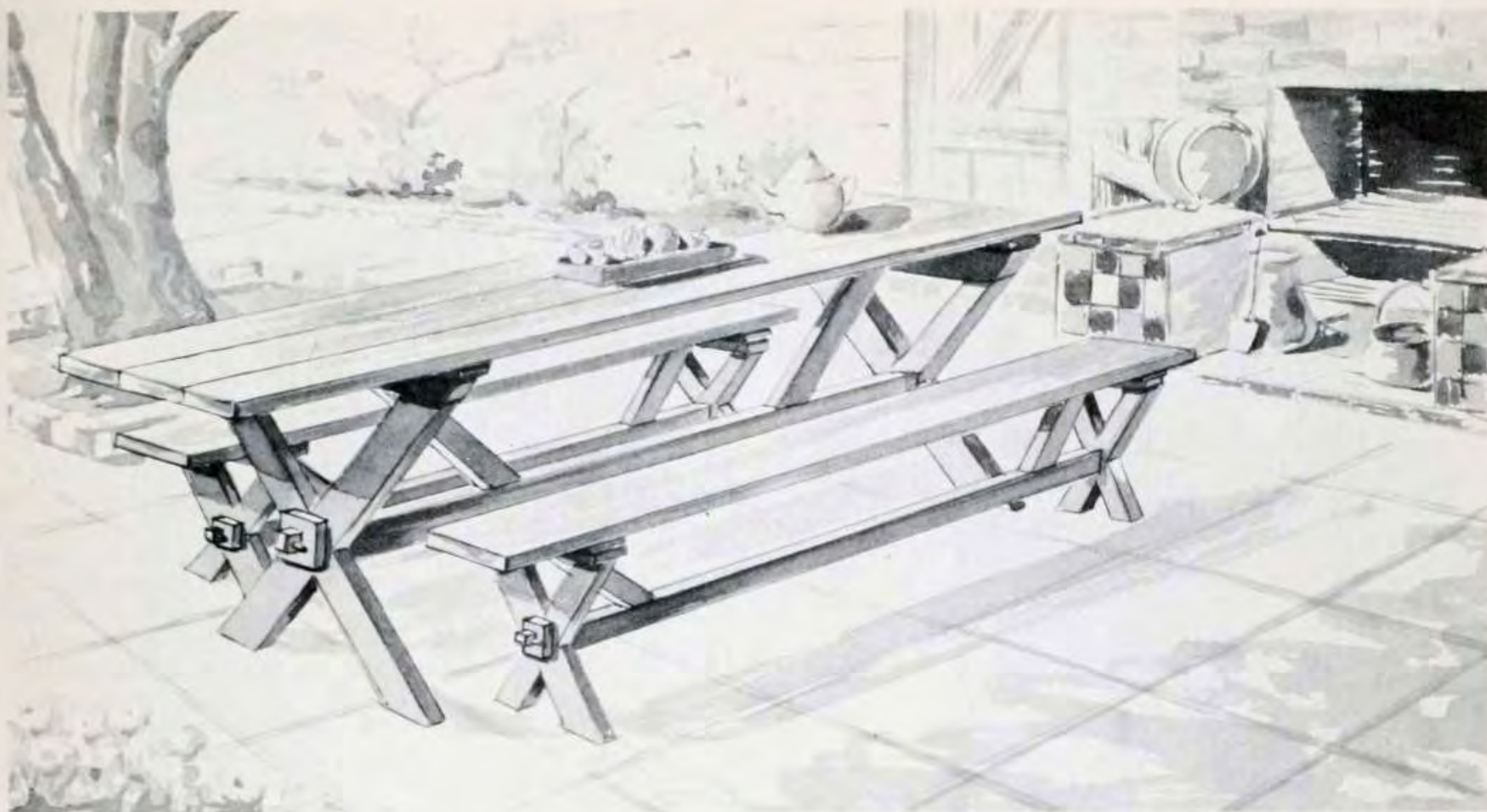
2" x 6" redwood—total length 45'
 9 pcs. 60" long for table and bench tops
 2" x 4" redwood—total length 25'4"
 4 pcs. 36" long for table legs
 8 pcs. 20" long for bench legs
 2" x 3" redwood—total length 7'8"
 2 pcs. 24" long for table braces
 4 pcs. 11" long for bench braces
 1" x 4" redwood—total length 12'
 3 pcs. 26" long for cleats
 6 pcs. 10½" long for cleats
 36 wood screws 2" long
 24 lag bolts 3" long



Middlekauff Mfg. Co., Design; Ernest Braun, Photo

PLAN 23. BARBECUE TABLE SET





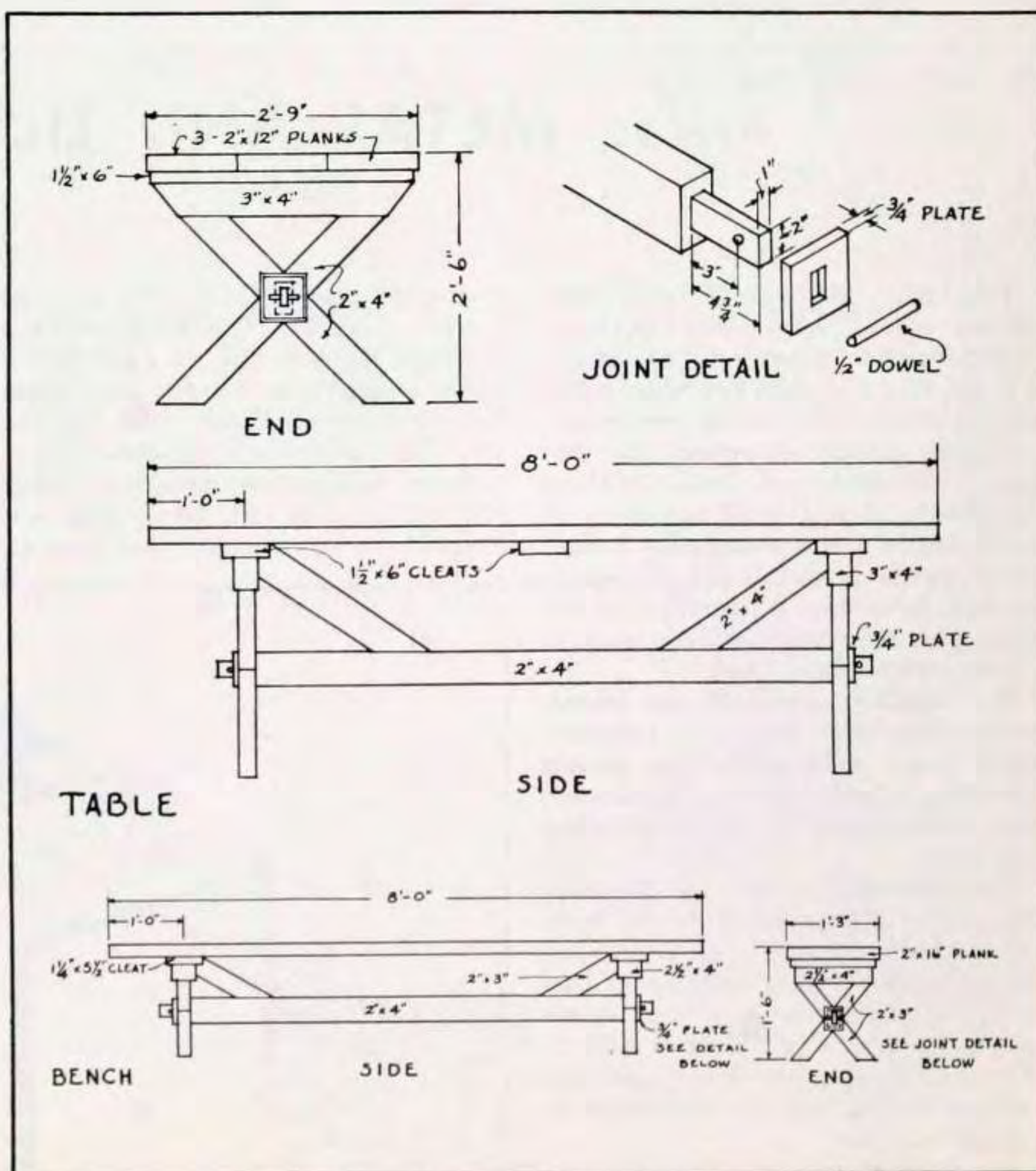
PLAN 24. HEAVY DUTY BARBECUE TABLE

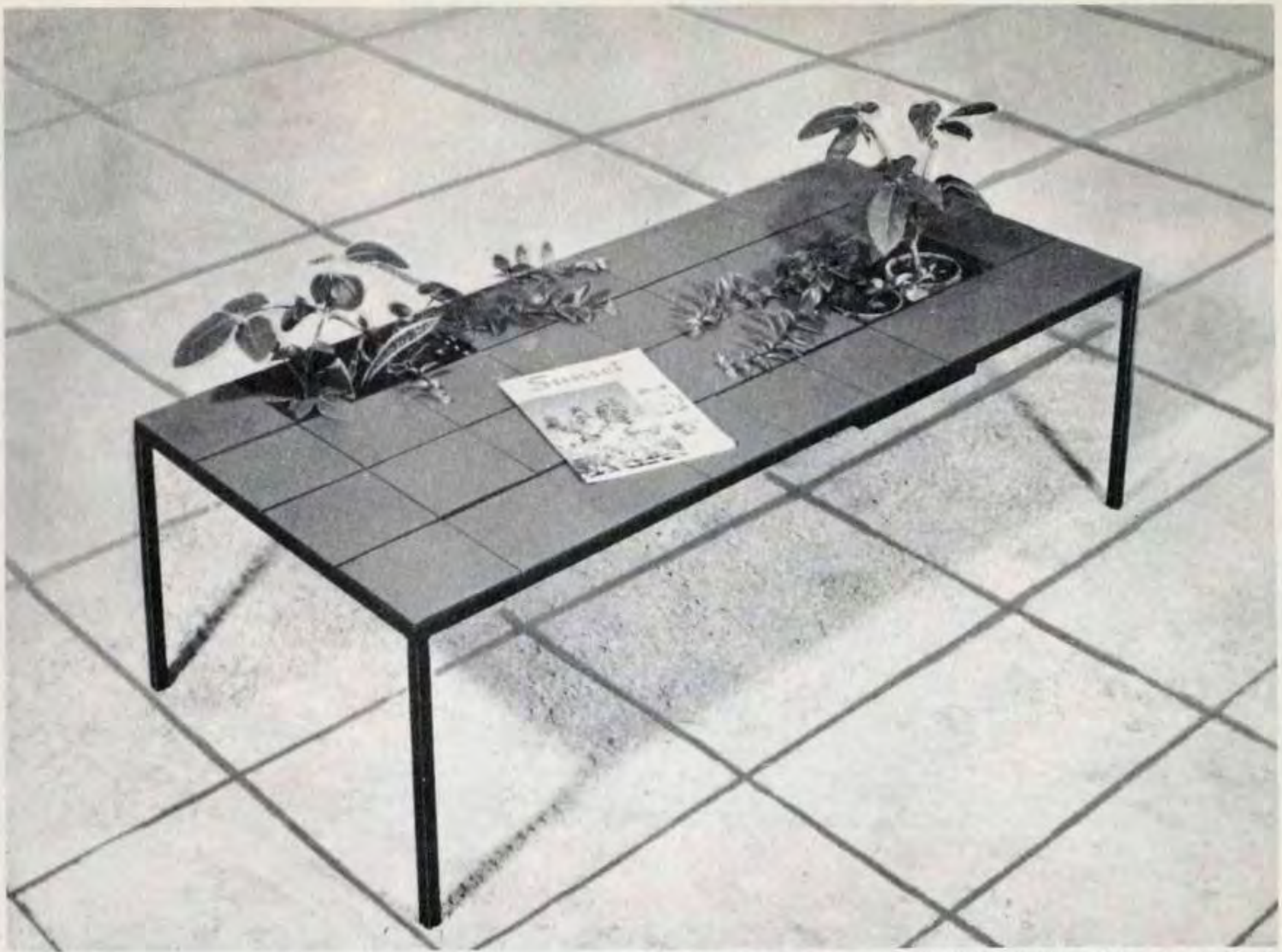
This table and bench set offers the handyman an opportunity to build a substantial outdoor unit that will take plenty of punishment — both from the weather and normal outdoor usage.

The bench and table tops are made of sturdy, 2-inch planks. The table top is assembled from three 2" by 12" planks; the seat is a 2" by 16" board. Both table and bench are braced with a 2" by 4" runner, held in place with dowels. By using screws and removable dowels to hold the set together, it can easily be disassembled for storage.

BILL OF MATERIALS

- 2" x 16" redwood—total length 16'
- 2 pcs. 8' for seats
- 2" x 12" redwood—total length 24'
- 3 pcs. 8' for table top
- 3" x 4"—total length 9'6"
- 2 pcs. 33" for table braces
- 4 pcs. 1' for bench braces (trim to 2½")
- 2" x 4"—total length 34'
- 4 pcs. 33" for legs
- 3 pcs. 6' for bench, table braces
- 2 pcs. 2' for table braces
- 2" x 6"—total length 12'
- 4 pcs. 1' for bench cleats
- 3 pcs. 30" for table cleats
- 2" x 3"—total length 16'
- 8 pcs. 18" for bench legs
- 4 pcs. 1' for bench braces
- ½" round—total length 30'
- 4 pcs. 4" for benches
- 2 pcs. 6" for table





Russell Illig, Photo; Builder, M. C. Ortiz

PLAN 25. METAL AND TILE TABLE

This coffee table can be used either indoors or out. Any desired arrangement is possible—quarry tile and planter boxes are removable. For added color, painted glazed tiles may be substituted.

This is, frankly, a project that few home craftsmen can tackle without skilled help. If you would like to try it, you would be wise to sign up for a night school course in metalcraft. If you do not want to attempt it yourself, you can easily pass the whole problem along to a local metalworking shop.

Buy tiles first, grind off any irregularities on edges. Check your measurements before welding to make certain that there will be enough room between steel sections for tile to set in place with ease.

Plant box (1) is made of 20-gauge galvanized steel, painted black. Steel (2) T-beams are $\frac{3}{4}$ " x $\frac{3}{4}$ " x $\frac{1}{8}$ ". For stronger outside edge, weld angle iron to $\frac{3}{4}$ -inch O.D. square tubing. Angle iron is $\frac{1}{2}$ " x $\frac{1}{2}$ " x $\frac{1}{8}$ ". Steel is sold by the pound. Quarry tile used in this table are 6" x 6"; but they are obtainable in a range of sizes.

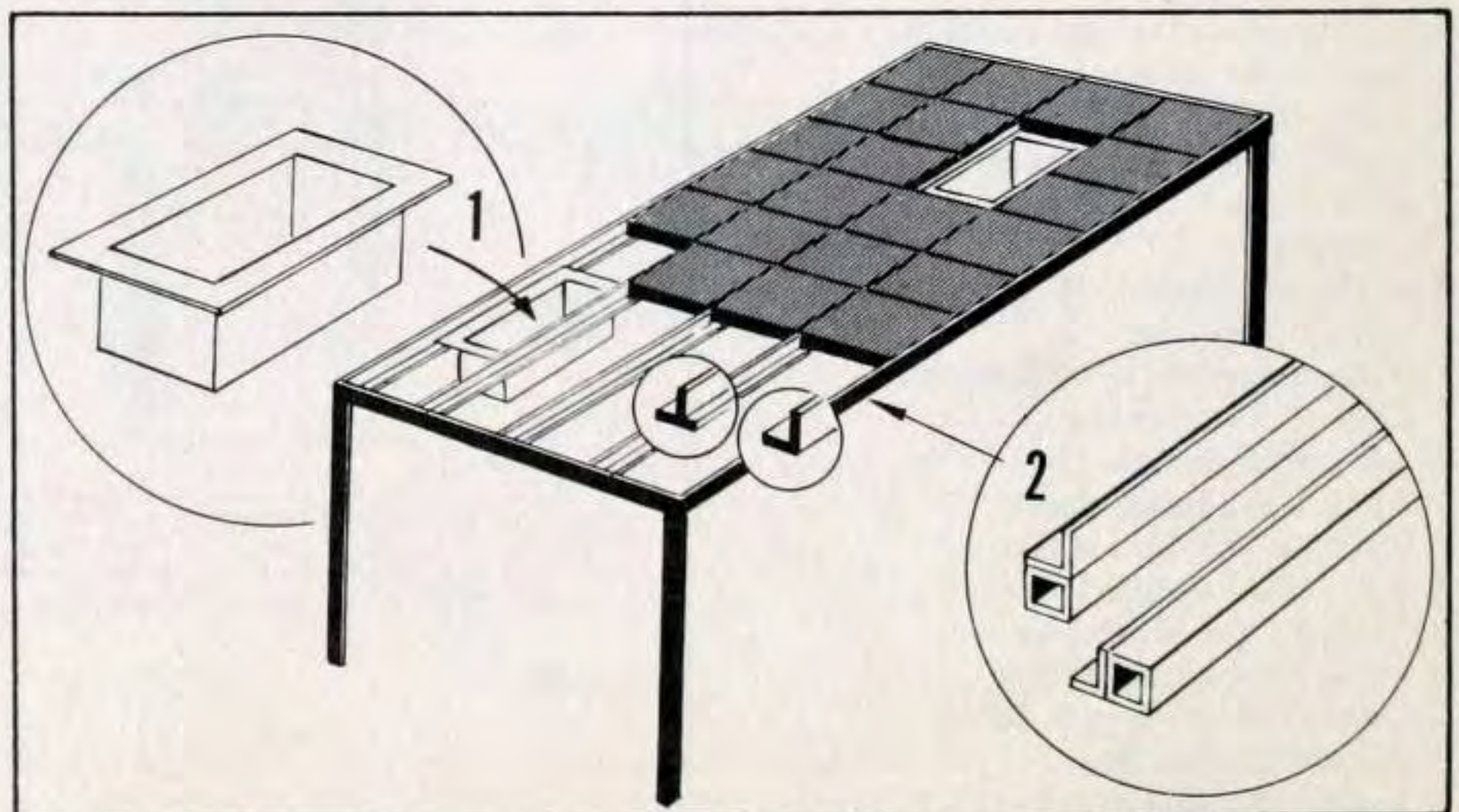
If you have this table built for you,

you may have to do a little detective work to find the right metal shop for your job. Look in the classified section of the telephone book for these listings: Iron Ornamental Work, Steel Fabricator, Welding Works, and Blacksmith.

Since welding and metalsmith shops are equipped to cut, bend, drill, and assemble almost any steel item, they are

often called on to do repair work as well as fabrication of parts. Large shops, however, often discourage this type of work. It is suggested that you try the smaller welding or automobile repair shops.

(Availability of materials will depend on local circumstances. Hence, omission of Bill of Materials for this plan.)



PLANTER- TABLE

A plant box has always added decorative interest to a patio and provided mobile shade, but when it is constructed with drop leaves, it can also double as outdoor furniture. The one pictured above is constructed of 2 by 8-inch redwood on three sides. But the fourth side is made of 1 by 8's with another 1 by 8-inch panel attached to it with hinges. When the hinged panel swings up to be used as a small table, it is supported by a strip which is wedged into grooves cut into the side of the box and the underside of the panel. When the panel is dropped back into place, that wood strip fits on top of the hinges and completes the side of the box. Three casters are attached to the recessed bottom so that it can be moved on hard surfaces even though it weighs about 500 pounds when filled with soil. See drawings below for suggested variations.

BILL OF MATERIALS

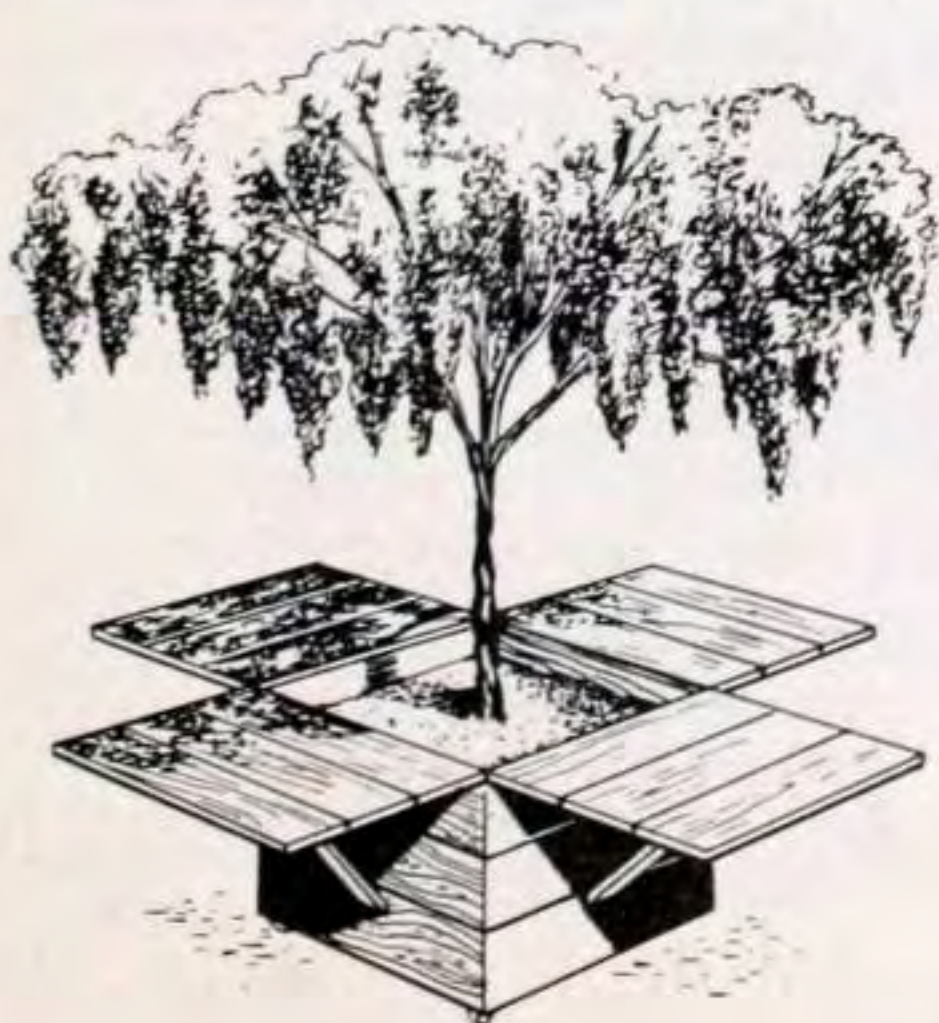
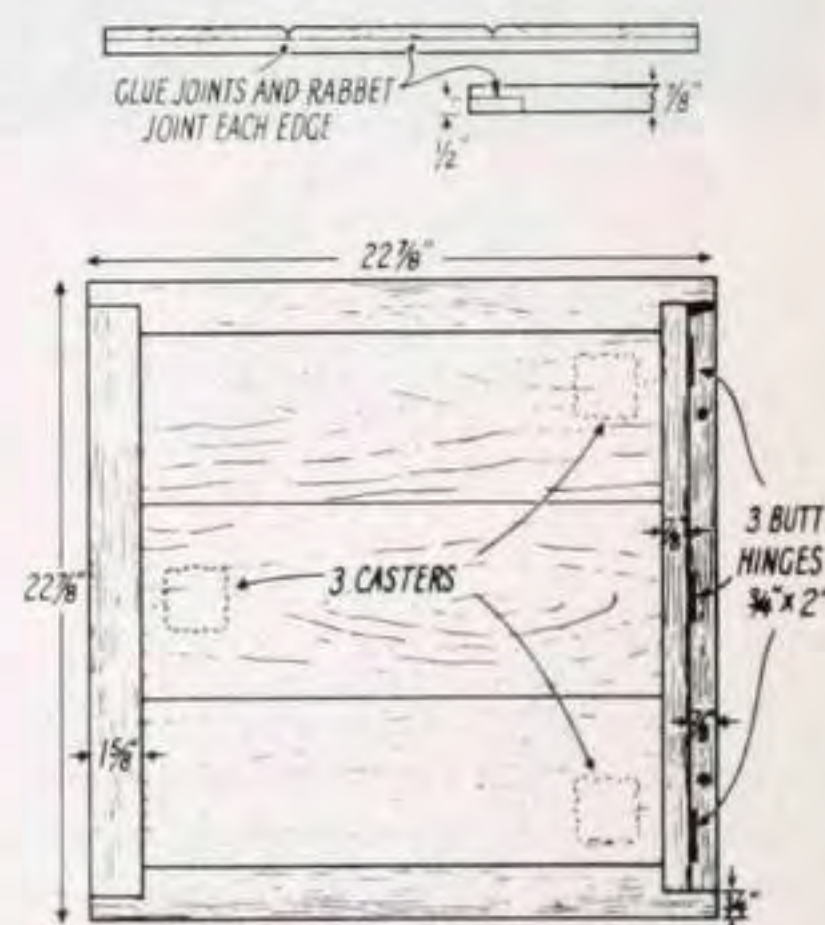
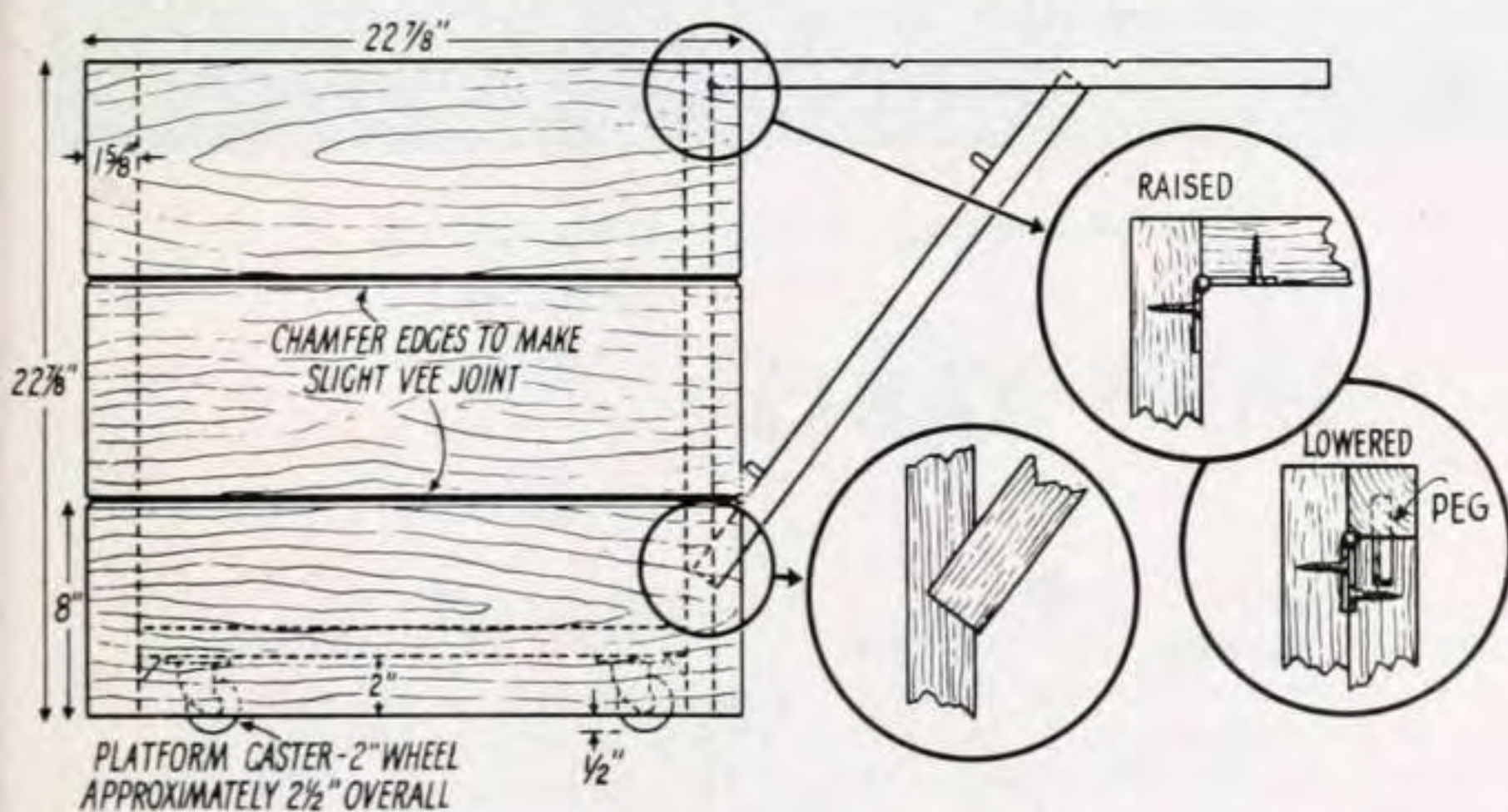
2" x 8" redwood—total length 22'
6 pcs. 22⁷/₈" long for sides
3 pcs. 20⁷/₈" long for sides

3 pcs. 19⁵/₈" long for bottom
1" x 8" redwood—total length 10' 6"
6 pcs. 20⁷/₈" long for side and table
1" x 1" strip 20⁷/₈" long with pegs for table support

1/2" x 2"—total length 44"
2 pcs. 21⁷/₈" long for table cleats
3 butt hinges 3/4" x 2"
1 swivel platform caster 2"
2 stationary platform casters 2"



Ralph Stevens, Design; Ernest Braun, Photo





PLAN 27. SHIP'S TABLE

When a ship's table comes ashore, it provides a fine outdoor dining table which is sturdy, good looking and large enough to comfortably seat at least eight people. The plan shown here is slightly revised from one used by the United States Navy and has an ingenious system for swinging the bent iron legs under for quick and compact stowing.

The table top and bench top are constructed from redwood, although waterproof plywood or fir could be substituted. There is a fiddle molding made from 2 by 2-inch stock which forms a gallery around the top of the table and preserves the "salty" style. This is secured to the top with $\frac{1}{2}$ " hardwood doweling. Cleats on the under side support the top pieces.

The basic units for supporting the

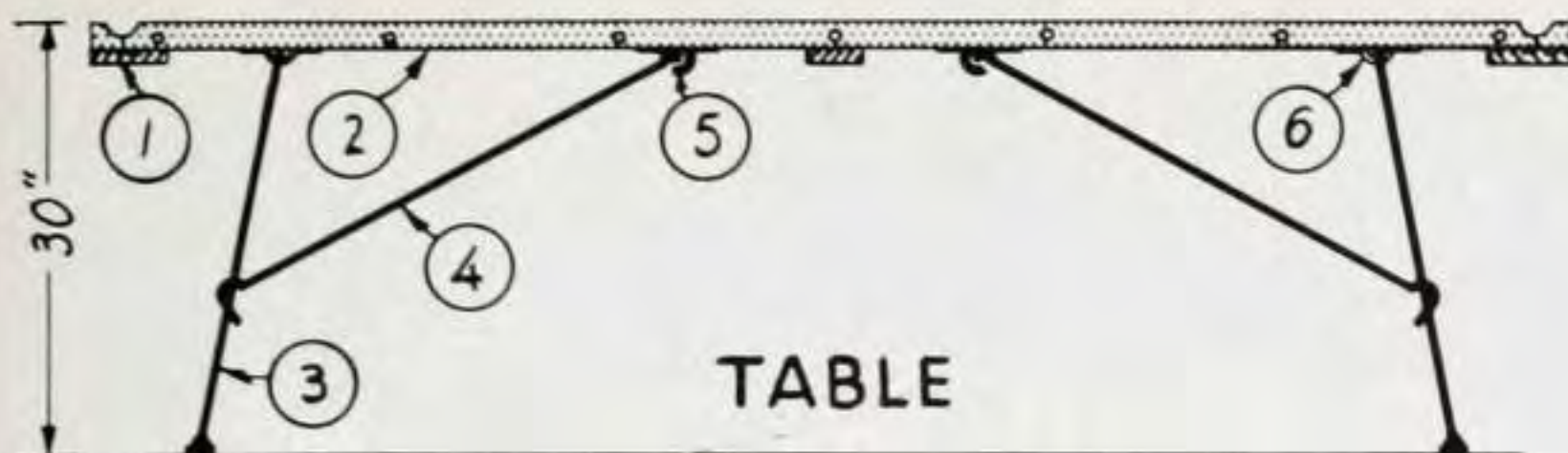
top are the U-shaped iron legs and the iron hooks for securing them in place. The bends in the U can be made after heating the iron with a blow torch. This is not an easy job; therefore it would be simpler for most home craftsmen to have all of the welding and bending done at a machine shop.

The authentic ship's tables use rivets to hold down the tops. This is not particularly practical for home building, so in their place, machine bolts with brass washers 1 inch in diameter have been substituted. The washers are countersunk into the top and give the same effect.

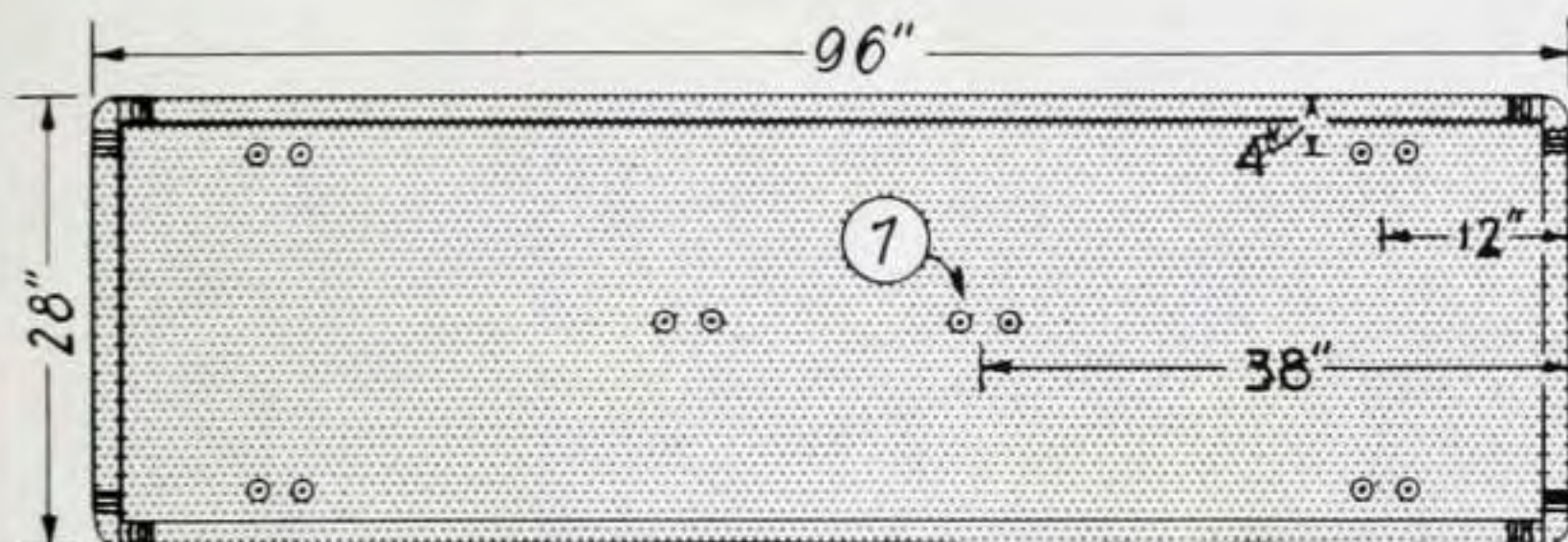
Rubber caps are used on the ends of the legs to cover the metal, giving a finished look and providing a scratchproof tip.

BILL OF MATERIALS

- 1" x 6" redwood—total length 70'
- 5 pcs. 92" long for table top
- 4 pcs. 94" long for bench tops
- 2" x 2"—total length 21'
- 2 pcs. 96" long for fiddle molding
- 2 pcs. 24 $\frac{3}{4}$ " long for fiddle molding
- 1" x 6"—total length 12'
- 3 pcs. 28" long for table cleats
- 6 pcs. 10" long for bench cleats
- $\frac{5}{8}$ " iron rod—total length 51'
- 2 pcs. 81" long for table legs
- 2 pcs. 25" long for leg spanners
- 2 pcs. 40" long for cross braces
- 4 pcs. 42" long for bench legs
- 4 pcs. 8" long for leg spanners
- 4 pcs. 30" long for cross braces
- 6 eyes for cross braces
- 12 hinge brackets for legs
- 3 doz. flat head machine bolts and nuts
- 3 doz. brass washers 1" diameter
- 12 rubber caps for legs

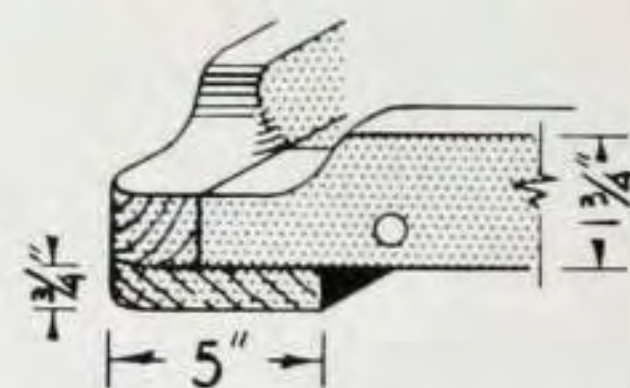


TABLE

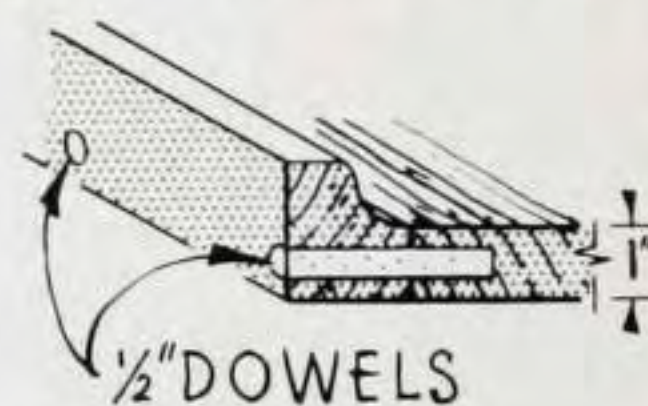


PLAN

PLAN 27. SHIP'S TABLE

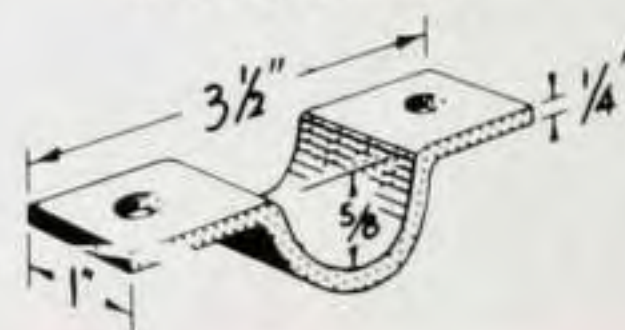


① CORNER DETAIL

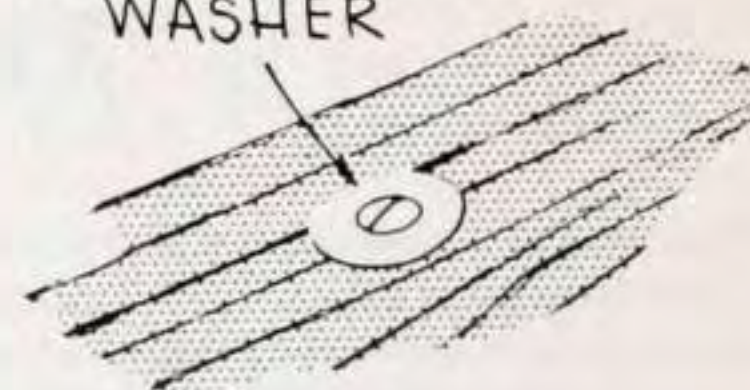


② FIDDLE DETAIL

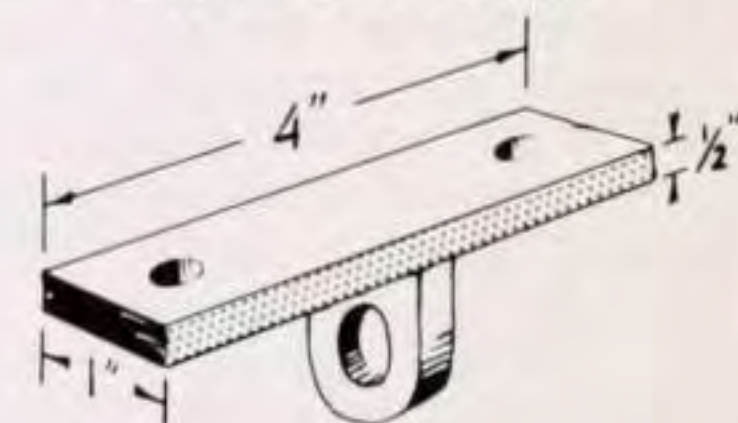
⑥ HINGE BRACKET FOR LEGS



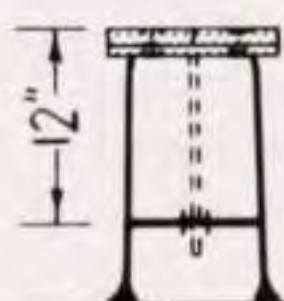
COUNTERSINK WASHER



⑤ EYE FOR CROSS BRACE



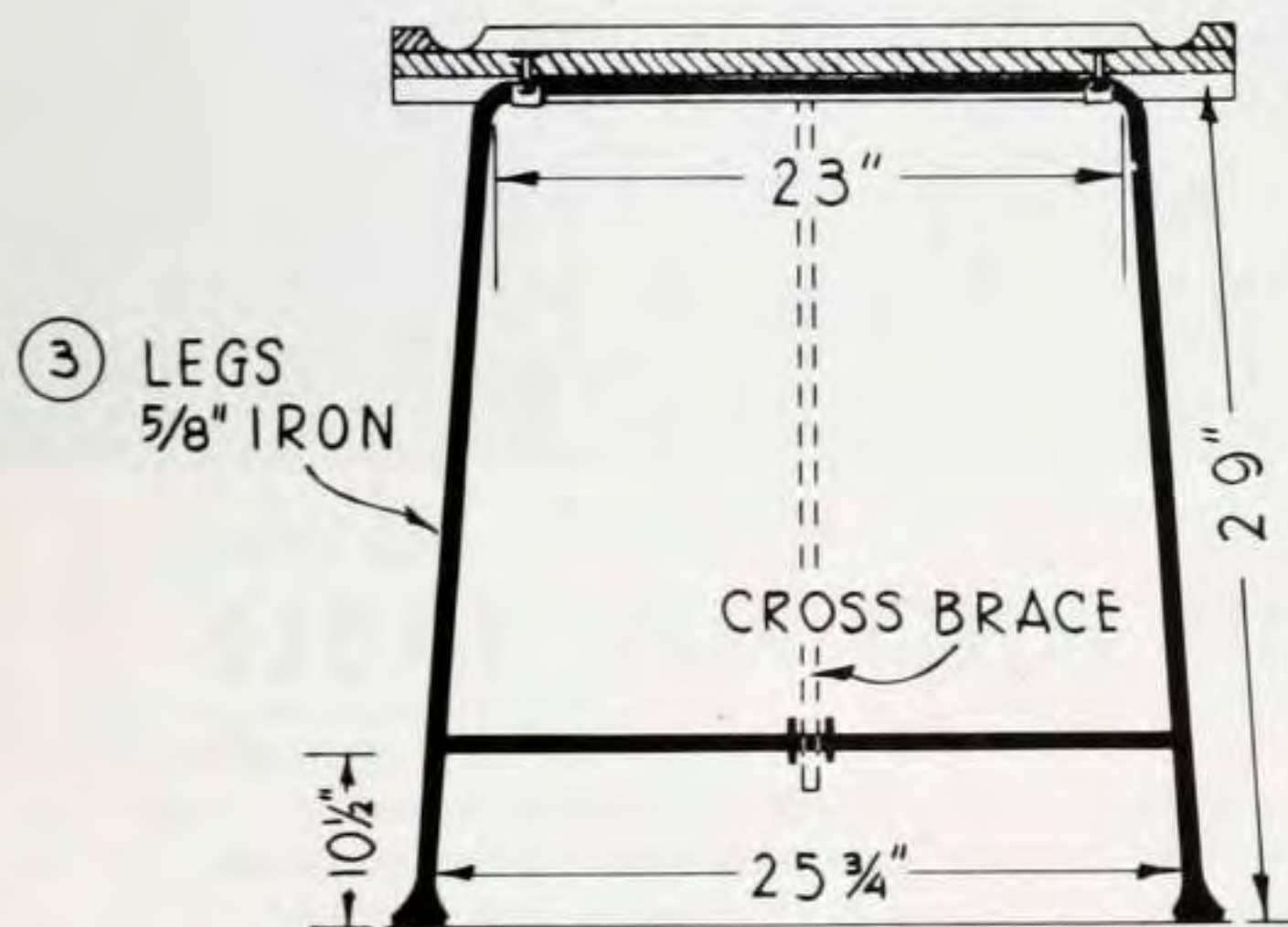
⑦ 1" DIA. BRASS WASHER



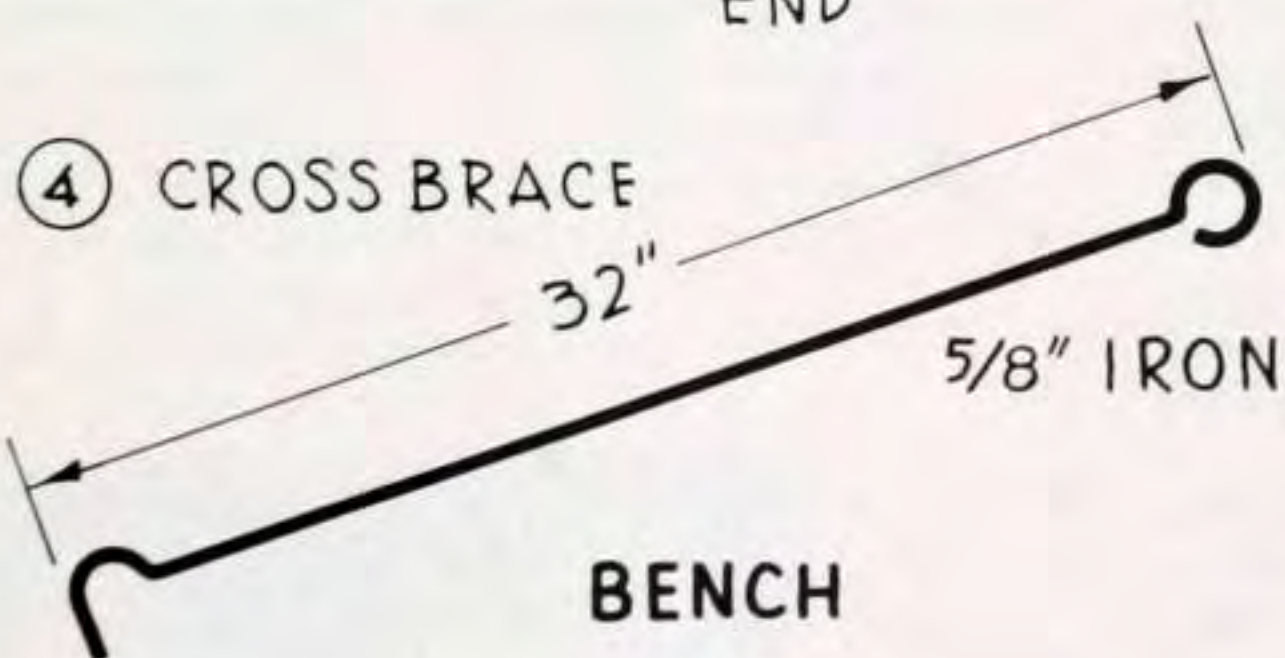
MACHINE BOLT



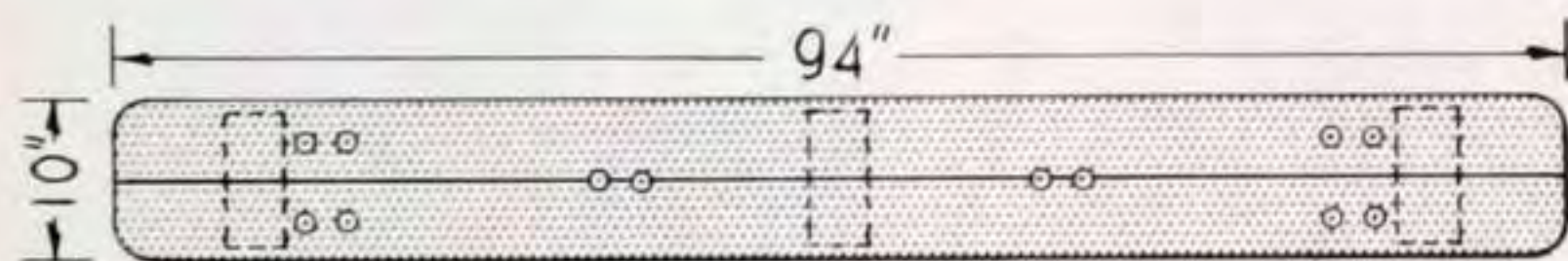
BOLT SUBSTITUTE FOR RIVETS



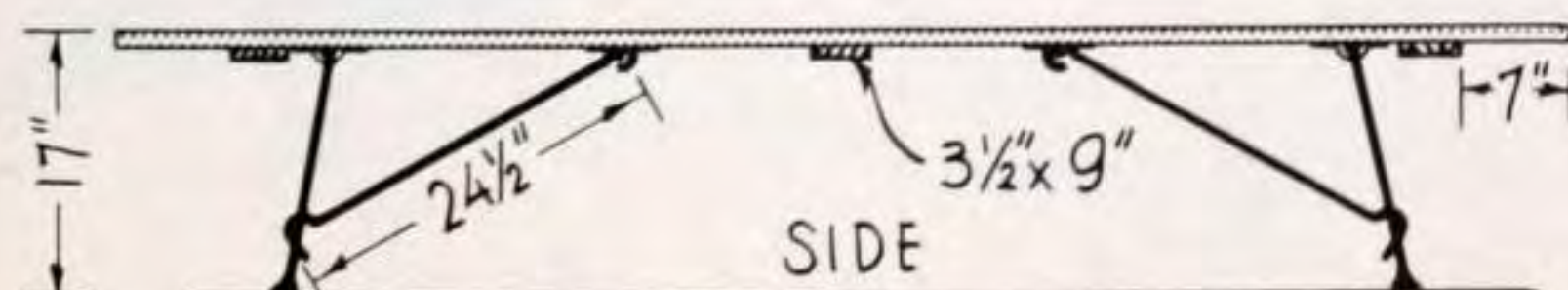
END



BENCH



PLAN



SIDE



PLAN 28. REDWOOD AND PIPE TABLE

This redwood and galvanized pipe table has many unusual and interesting features to recommend it. Its simple design and construction make it easy to assemble and require no great carpentry skill. It is fundamentally a problem of cutting boards, screwing on pipe fittings and applying a linseed oil coating to the wood. And the finished product is not only attractive in appearance, but sturdy as well. It is light in weight, which makes it easy to move from one place to another, and it quickly and easily dismounts for storing during winter.

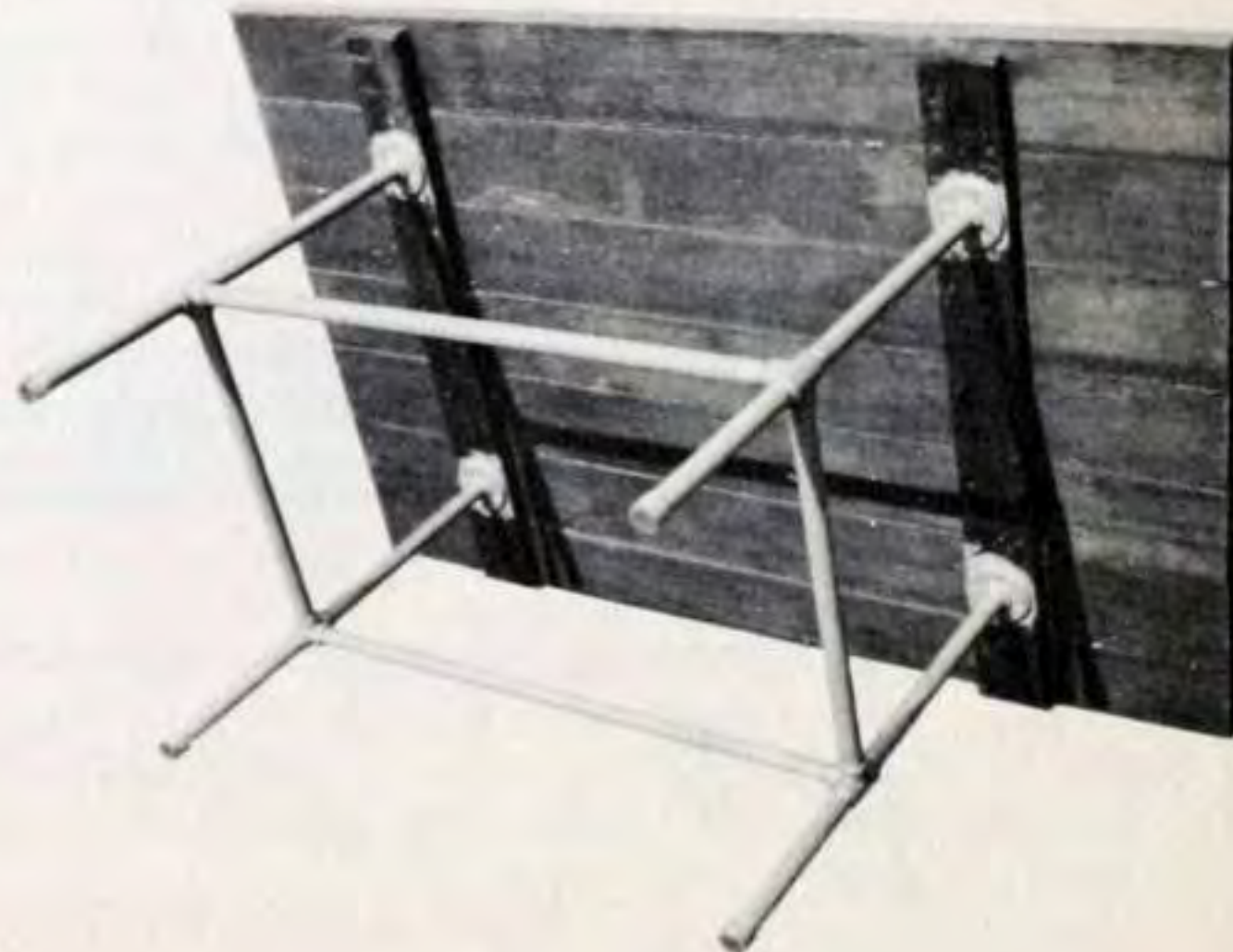
The table is 58 inches long, 38½ inches wide, and 30 inches high. The top is made of seven 2 by 6-inch redwood boards with two 1 by 4-inch boards screwed to the underside to hold them together.

The table legs are made from ¾-inch galvanized threaded pipe and ¾-inch fittings. Four floor flanges are fastened by screws to the 1 by 4-inch cleats. A 15-inch length of pipe is screwed into each flange, and a 4-way T joint is screwed to the lower end of each of these 15-inch pipes. The lower part of each leg consists of an 11-inch length of pipe screwed into the T joint and finished at the bottom with a pipe cap. The legs are braced by 20- and 30-inch lengths of pipe screwed into the side openings of the T's. Of these four pieces of horizontal pipe, one must have a quarter-inch longer thread. This piece is put into position last and is screwed into one T and then unscrewed enough so that it screws into the other T three or four turns.

BILL OF MATERIALS

2" x 6" redwood—total length 34'
 7 pcs. 58" long for top
 1" x 4" redwood—total length 6'5"
 2 pcs. 38½" long for cleats

28 No. 10 2" flat head wood screws
 ¾" I.D. galvanized pipe—approx. 17'
 4 pcs. 11" long
 4 pcs. 15" long
 2 pcs. 20" long
 2 pcs. 30" long
 4—¾" floor flanges
 4—4-way T joints





Carroll Barnes, Design; Jerry Anson, Photo

PLAN 29. REDWOOD AND STEEL TABLE

Steel and redwood blend together to give this table and bench set eye appeal and sturdy, lasting construction. Although it is ideal for outdoor use, it will look equally at home in the kitchen, lanai, or game room. The simplicity of line is readily adaptable to the uncluttered modern interior.

The table is constructed of 2 by 6-inch redwood planks; but the benches have an interesting variation by using both 2 by 8's and 2 by 4's. The metal supports are fashioned from 1-inch solid steel which is bent after it has been heated with a blow torch. The upright supports are welded to the metal rods which are fastened to the table and benches by two angle irons. These angle irons are bolted together as shown in the accompanying diagram.

The planks in this particular table have been painted with white which is wiped off before it dries. Then a matte oil finish which is especially made for redwood is applied. A waterproof finish could be used to give added protection.

It is possible to reduce the cost of these pieces by substituting a lighter gauge metal or tubing instead of the solid steel rods.

BILL OF MATERIALS

2" x 6" redwood—total length 36'

6 pcs. 6' long for table top

2" x 8" redwood—total length 24'

4 pcs. 6' long for bench tops

2" x 4" redwood—total length 12'

2 pcs. 6' long for benches

1" diameter steel rod—total length 100'

3 pcs. 30" long for table support

2 pcs. 50" long for table support

2 pcs. 48" long for table support

2 pcs. 80" long for legs

4 pcs. 50" long for bench legs

6 pcs. 18" long for bench supports

4 pcs. 50" long for bench supports

4 pcs. 48" long for bench supports

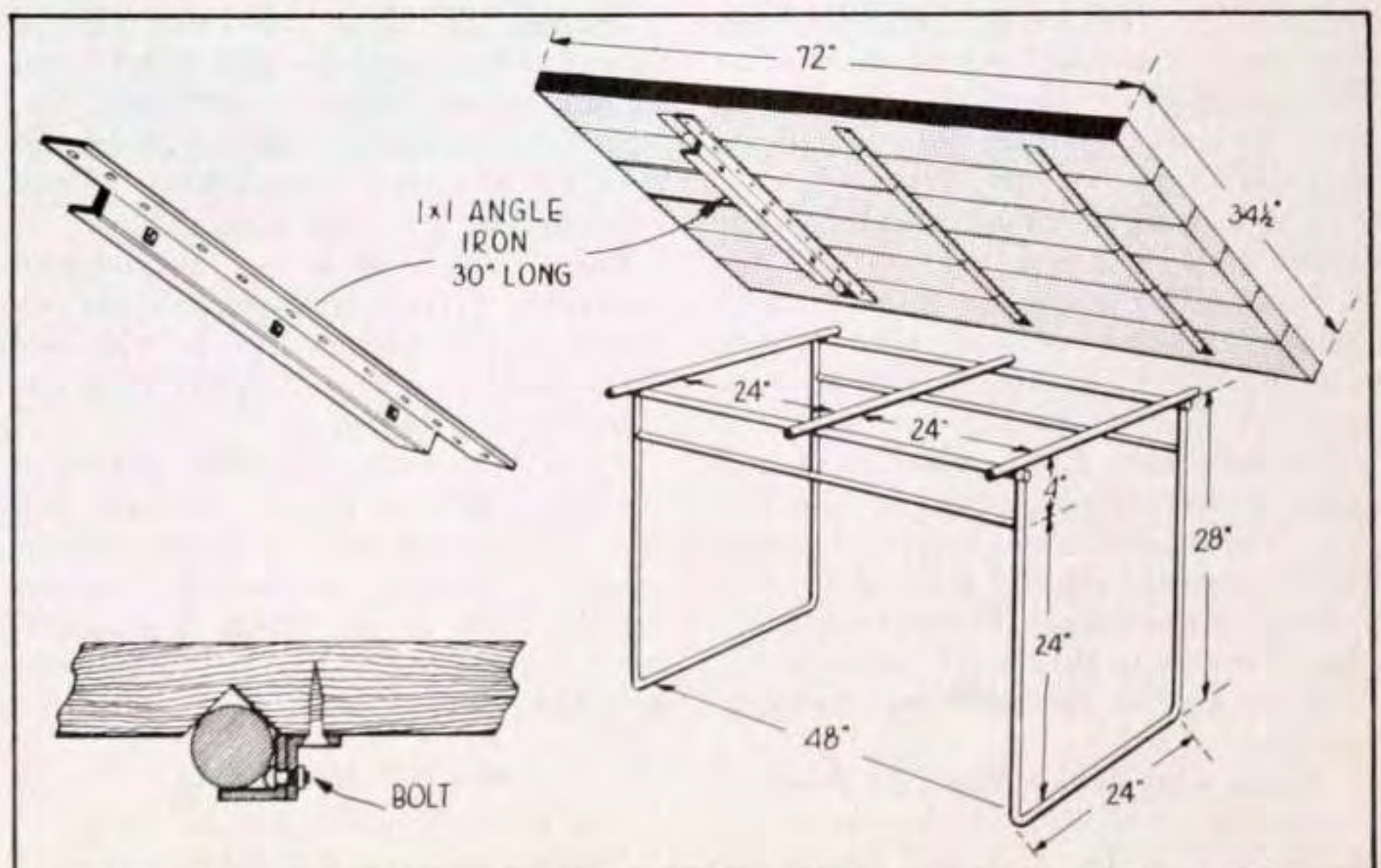
1" x 1" angle iron—total length 30'

3 pcs. 30" long for table cleats

3 pcs. 23" long for table cleats

6 pcs. 18" long for bench cleats

6 pcs. 15" long for bench cleats





Eckbo, Royston & Williams, Design; Gordon Bartels, Photo

PLAN 30. SLATTED TABLE AND BENCHES

For those looking for a patio table and bench set which is light in scale and easy to move, here is an excellent suggestion. The design departs from the massive proportions of most other wooden outdoor furniture, yet retains the desirable feature of not being harmed by the weather.

The tops of both table and bench are made of 2 by 2-inch redwood set into a frame. The edges are rounded, with $\frac{3}{16}$ -inch spaces between the pieces. Birch dowels $\frac{1}{2}$ inch in diameter go through the 2 by 2's and come out flush with the frame. The undersides of both table and bench are braced by cleats in the center, and wide bands of waterproof plywood at the ends give additional reinforcement. Provision is made for drainage so that water will not collect on top of the plywood reinforcements.

Table and Bench Top. To insure a perfect fit, it is advisable to pre-cut the 2 by 2's for the table and bench top

slightly over-length and trim after the dowel holes are drilled, and the dowels are inserted.

Frame. To make the frame, cut 4 pieces of 2 by 3 to size and either bevel or mortise and tenon at the joints. Before final assembly, cut the pads and braces and install them into a $\frac{3}{4}$ -inch rabbeted strip on the under side.

Legs. The 4 by 4 legs are tapered according to the drawing and are secured to the plywood pads with lag bolts and wood screws. Pads then are inserted into the frame.

Final Assembly. After the cleats are placed across the frame, the table top may be inserted and the dowels placed into the finished position. By careful attention to the finishing details, one may be assured that the surface will give the appearance of a one-piece top.

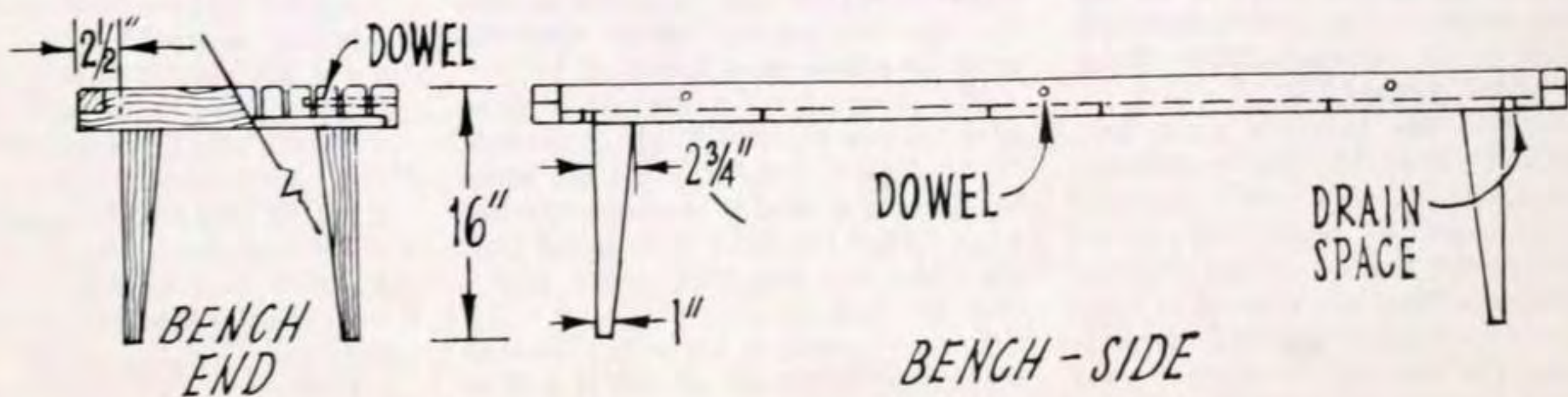
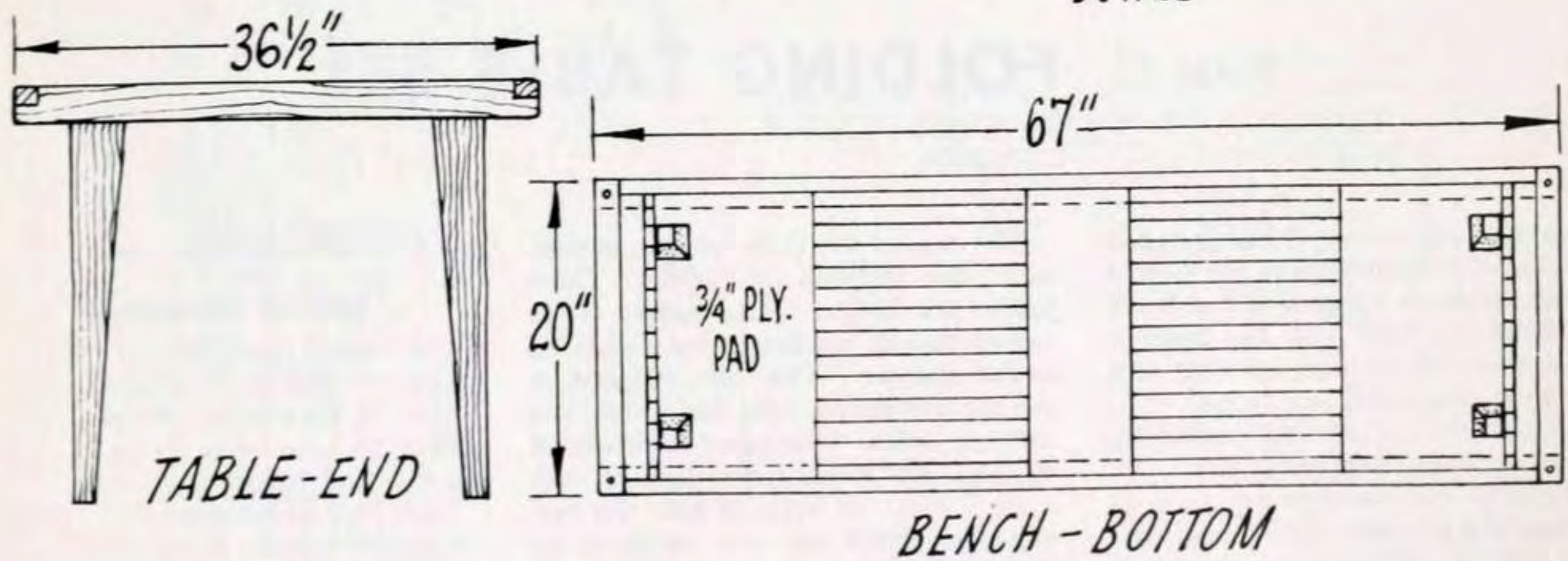
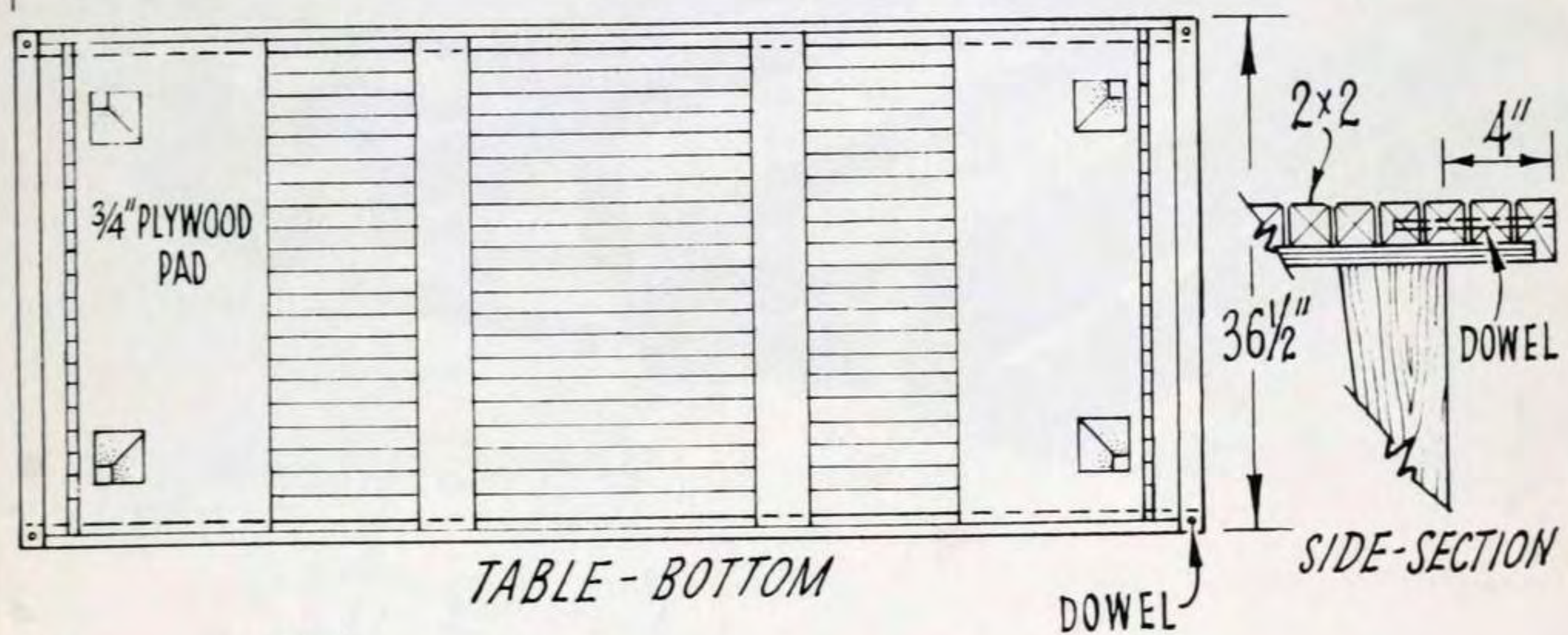
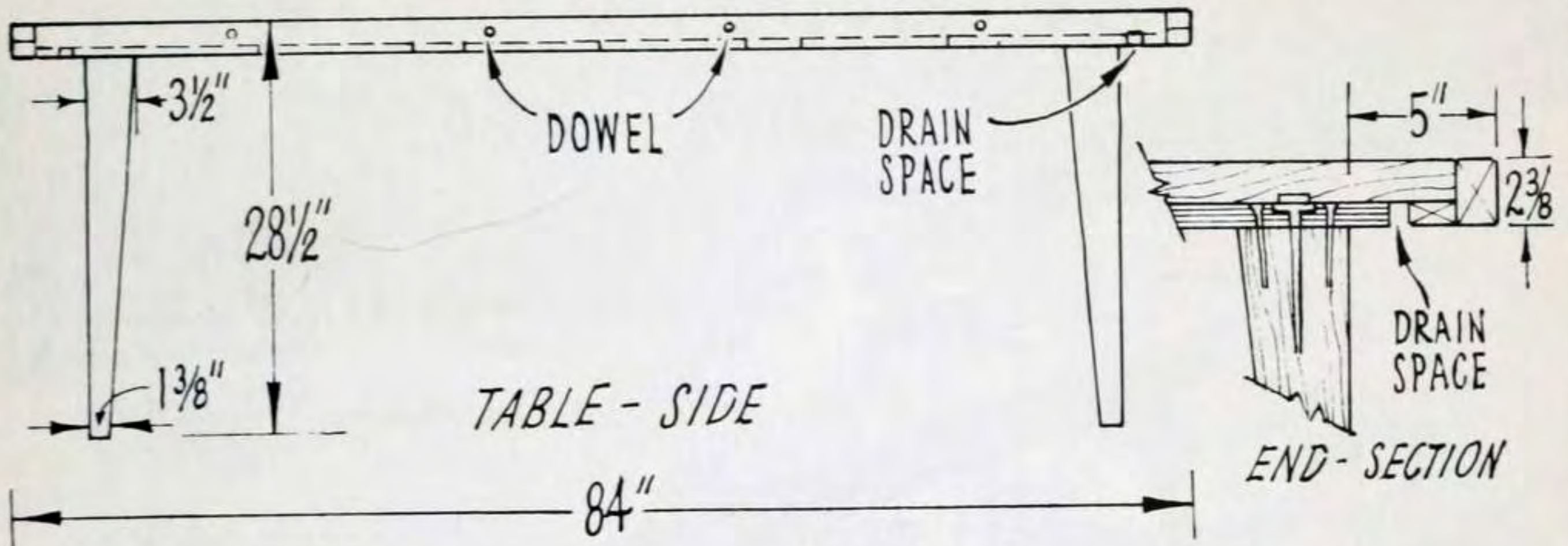
BILL OF MATERIALS

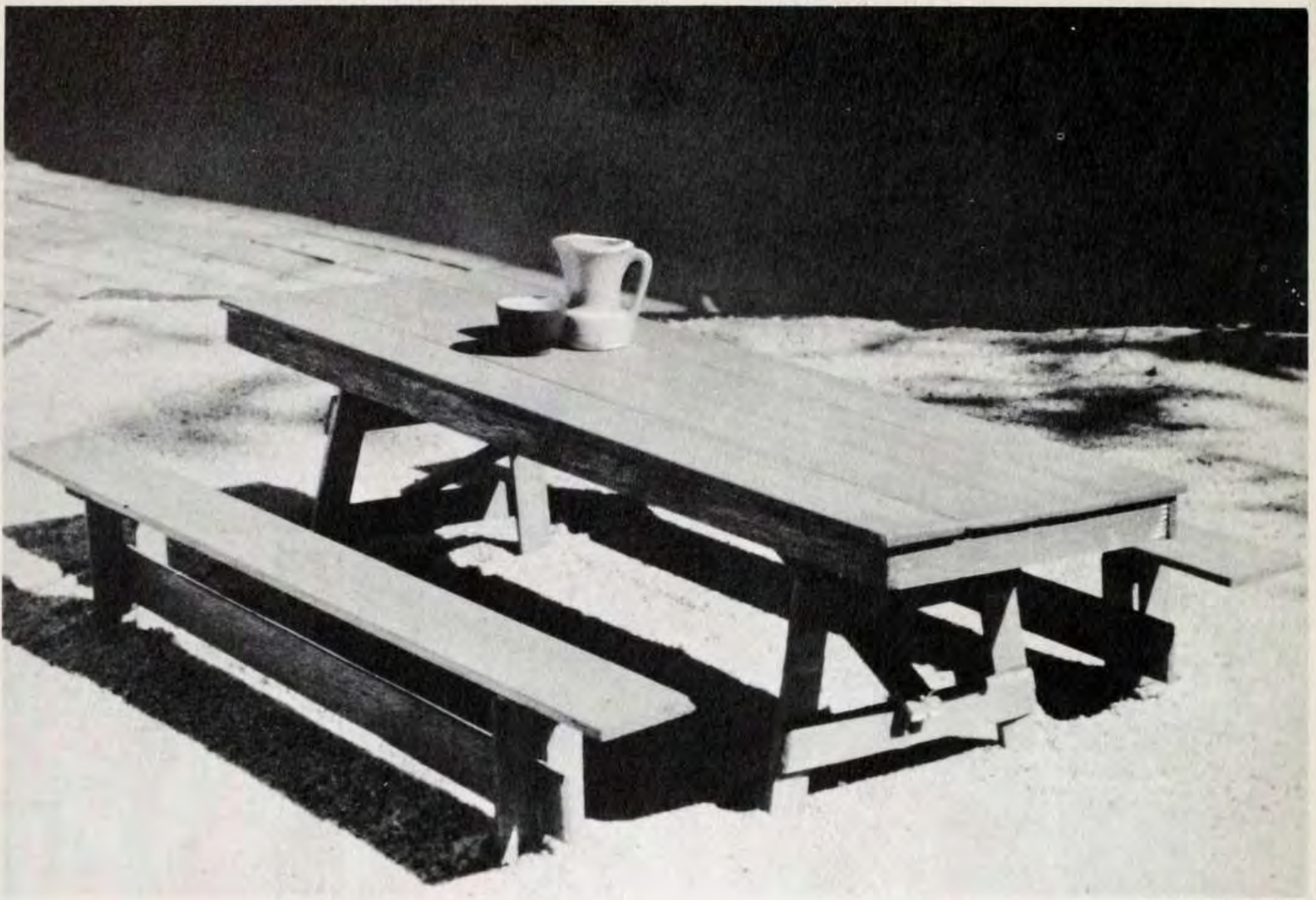
2" x 2" redwood—total length 188'4"
20 pcs. 81" long for table top

10 pcs. 64" long for bench top
2" x 3" redwood—total length 34'7"
2 pcs. 84" long for table frame
2 pcs. 36 $\frac{1}{2}$ " long for table frame
2 pcs. 67" long for bench frame
2 pcs. 20" long for bench frame
4" x 4" fir—total length 13'2"
4 pcs. 26" long for table legs
4 pcs. 13 $\frac{1}{2}$ " long for bench legs
 $\frac{3}{4}$ " waterproof plywood—12 $\frac{1}{2}$ sq. ft.
(one 4' x 4' panel)
2 pcs. 35" x 12" for table pads
2 pcs. 35" x 4" for table cleats
2 pcs. 35" x 2" for cleats at drain
2 pcs. 18 $\frac{1}{2}$ " x 10" for bench pads
1 pc. 18 $\frac{1}{2}$ " x 6" for bench cleat
2 pcs. 18 $\frac{1}{2}$ " x 2" for cleats at drain
 $\frac{1}{2}$ " birch dowel—total length 21'
4 pcs. 36 $\frac{1}{2}$ " long for table
4 pcs. 20" long for bench
8 pcs. 3" long for frame corners
8 $\frac{1}{4}$ " lag screws 5" long for legs
16 $\frac{1}{8}$ " wood screws 2 $\frac{1}{2}$ " for legs

Waterproof glue

PLAN 30. SLATTED TABLE AND BENCHES





Ernest Braun, Photo

PLAN 31. FOLDING TABLE SET

This table and bench set was designed for those with limited space for storing outdoor furniture when it is not being used. Both the table and two benches can be stored along a garage wall or a fence in a space only six inches wide. Yet, when the pieces are assembled, they will accommodate ten adults.

The table and benches are both 10 feet long and are built with sturdy legs which will set well on rough or uneven surfaces. They may be constructed from Douglas fir or redwood, either being practical for outdoor use.

The table top is made from four boards and is braced by four cross members or cleats. Wood screws $1\frac{1}{4}$ inches long are used to secure the apron around the top and two of the cleats to the table top. They are screwed in from the top of the table and should be countersunk. The end cleats to which the legs are hinged are notched into the apron and secured to the top by screws up from the bottom. Corner blocks are used to strengthen the apron.

The legs of the table are made rigid with the addition of braces. These braces are hinged to the center cleats and slotted at the lower end according to the diagram. They are clamped to the leg assemblies with wing nuts and carriage bolts. The cross members of the legs are beveled and backed with a small block of wood to hold the carriage bolt which has been set in on an angle. When the table is set on its side, the legs are quickly folded after the wing nuts have been loosened.

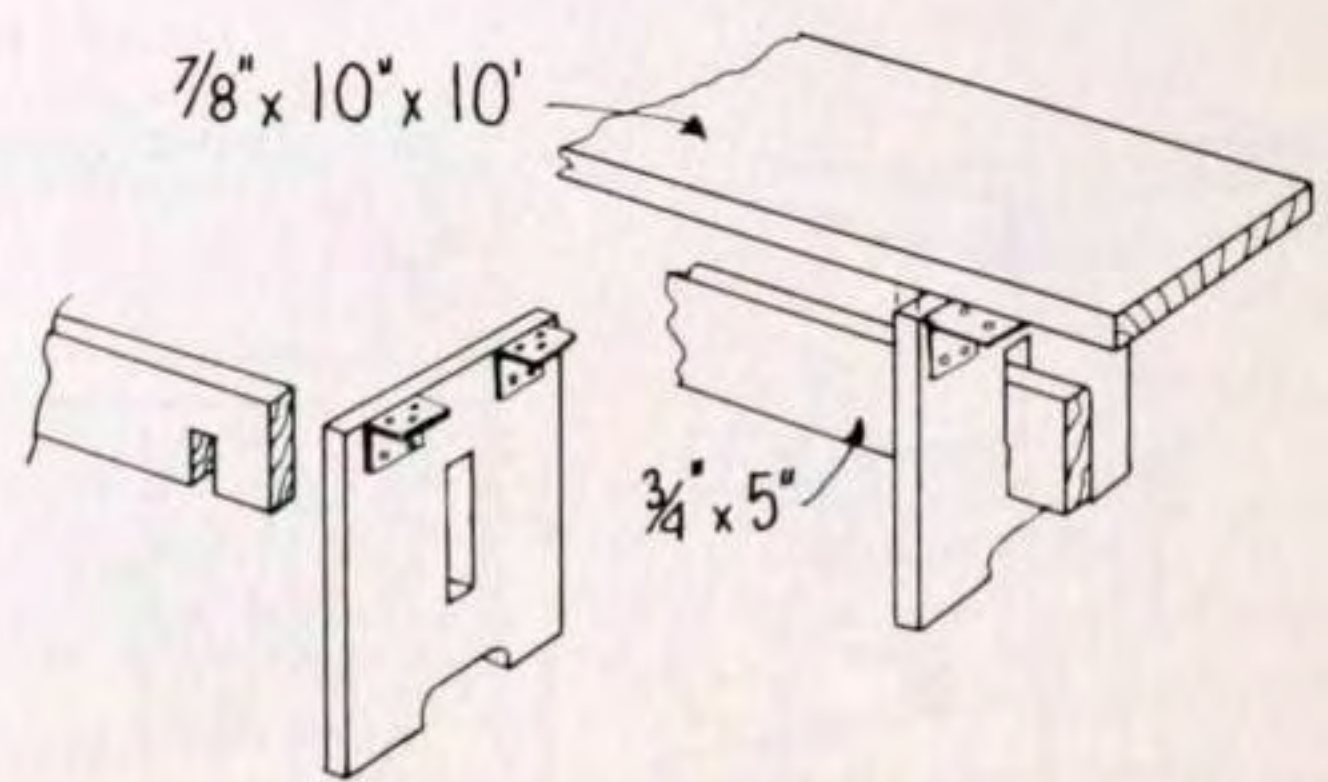
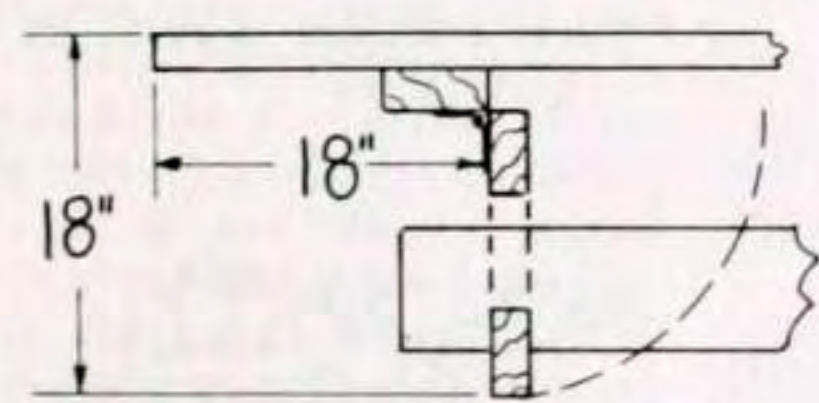
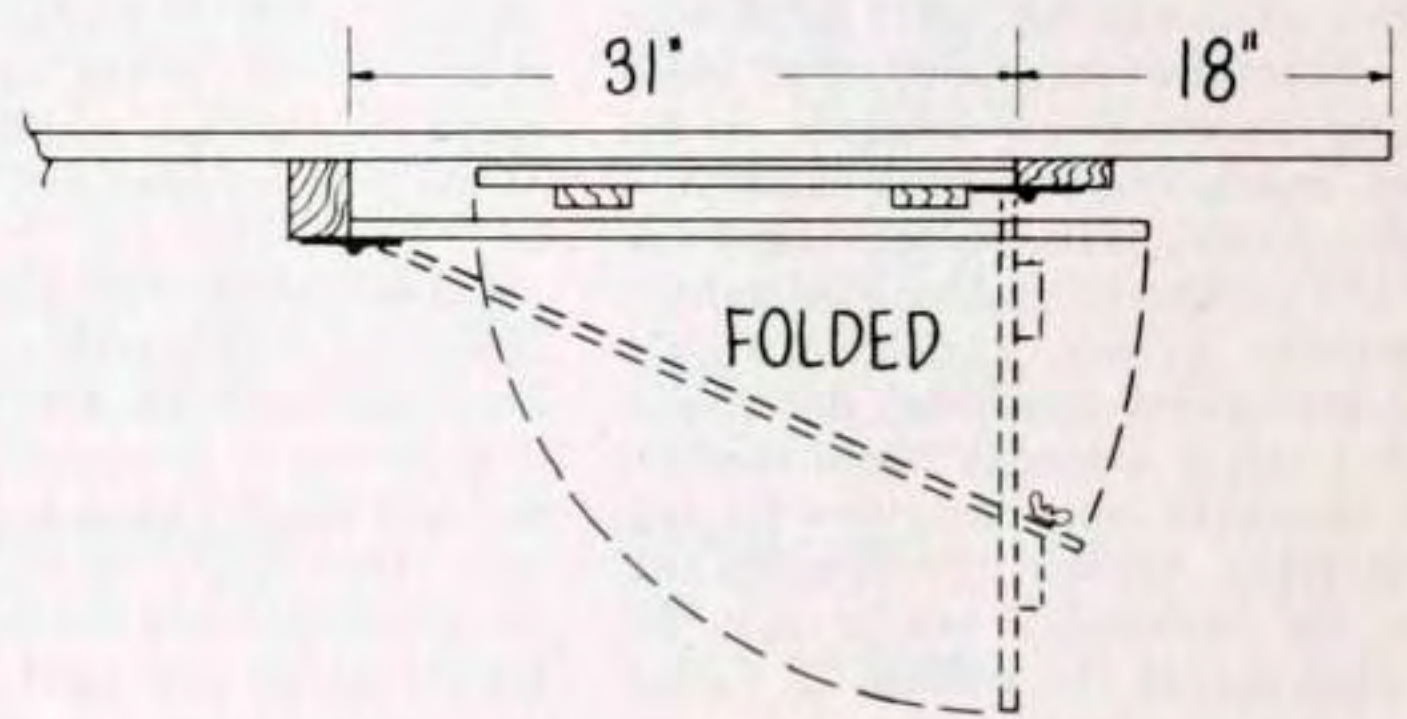
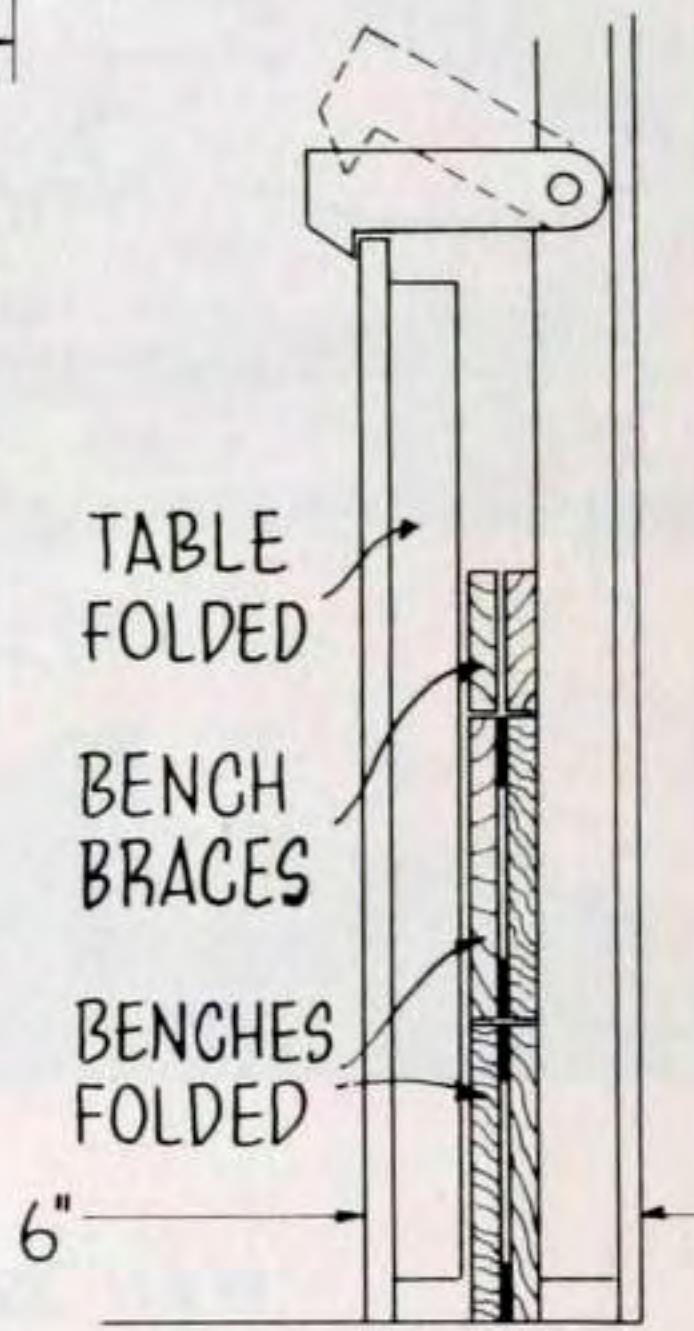
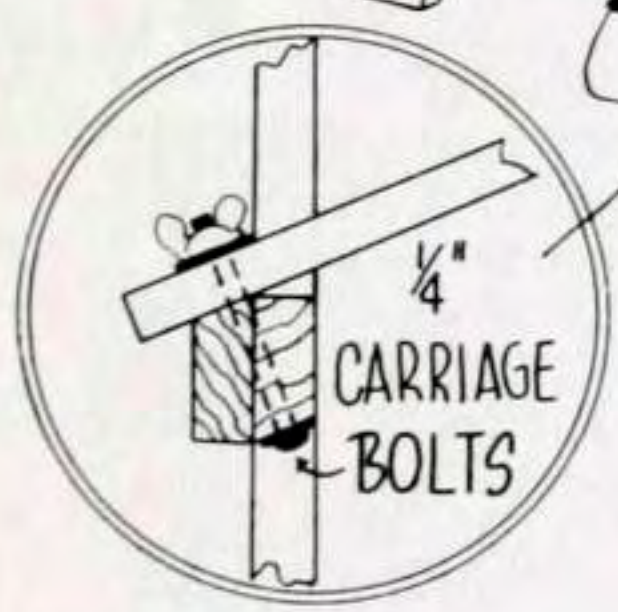
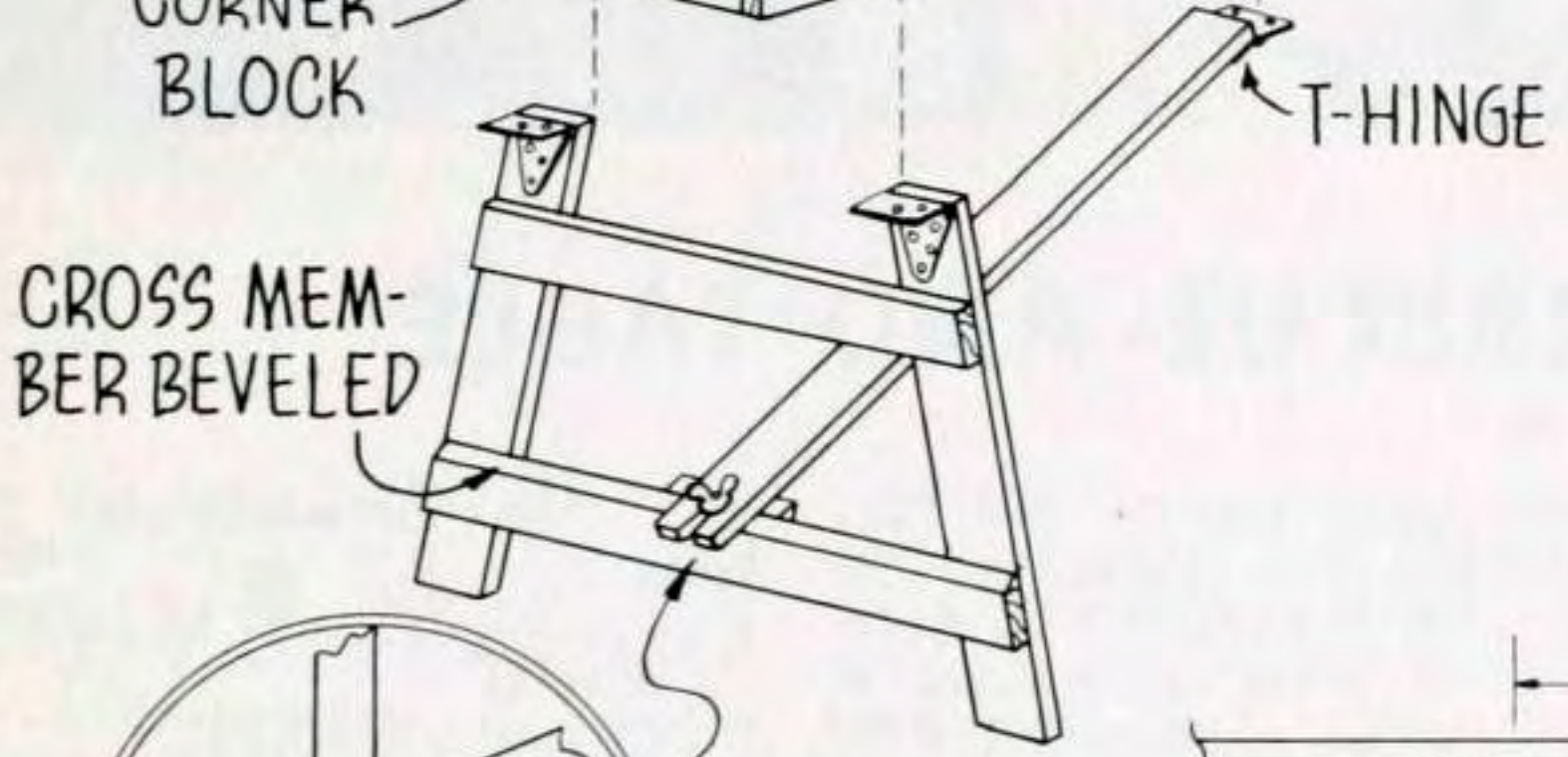
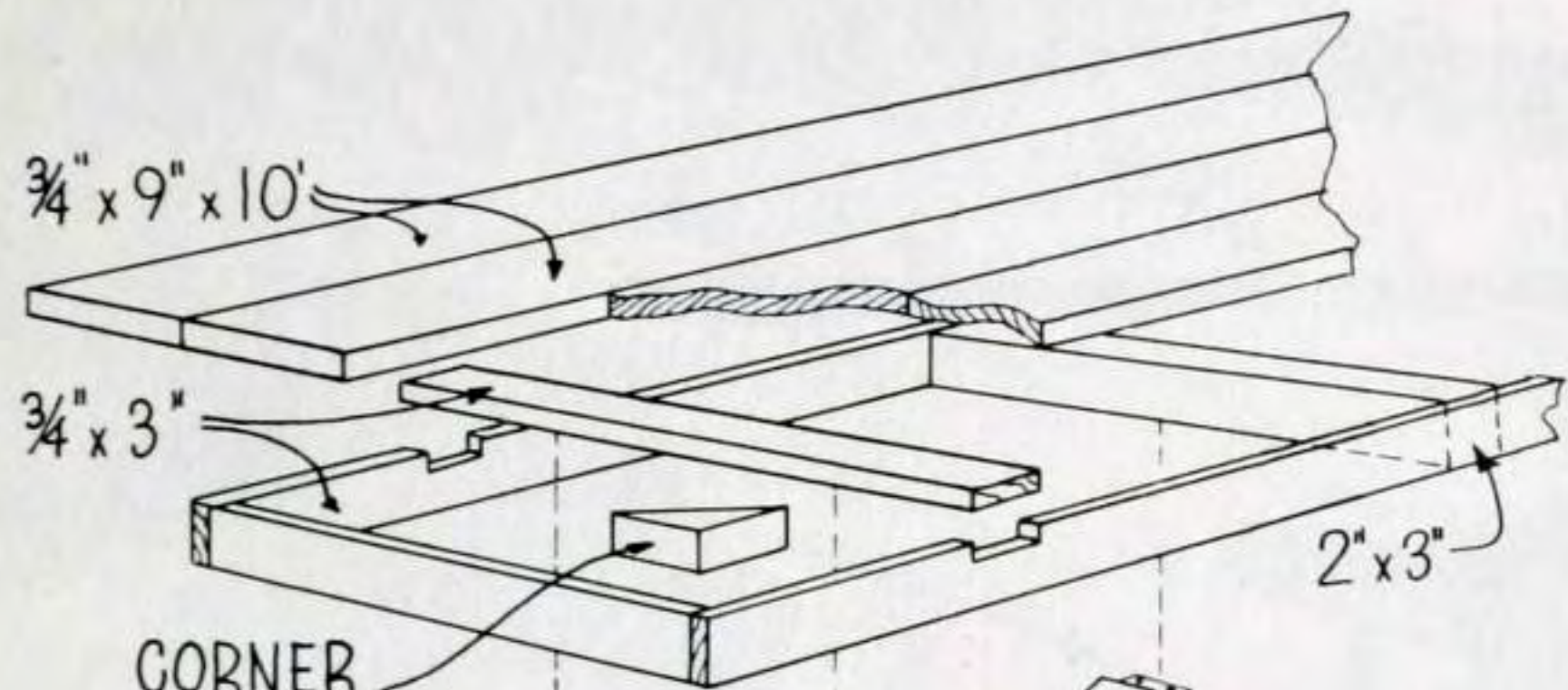
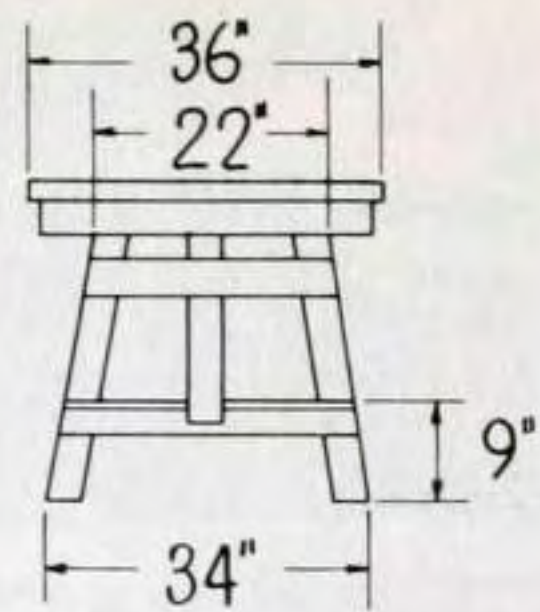
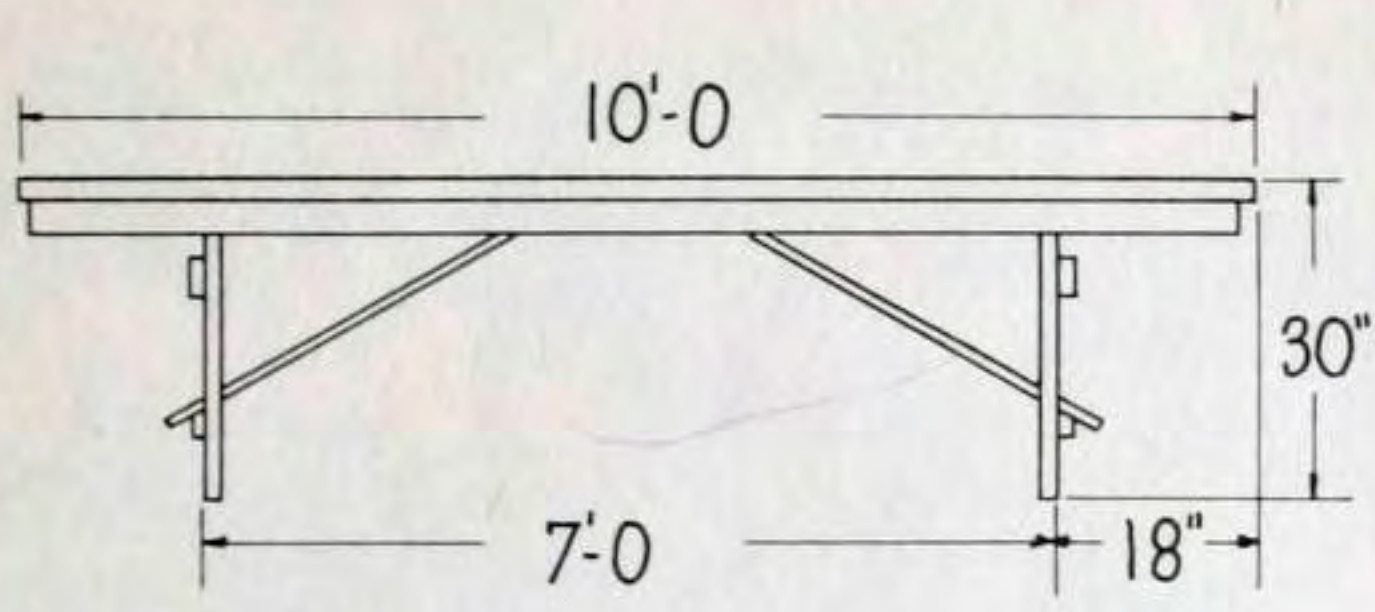
The design for the benches is practical yet not at all difficult to execute. The leg pieces are hinged to the bench top and are slotted to receive a notched brace. When the brace is removed from the slots, the legs fold easily into a compact unit.

It is important to use either brass or galvanized hardware so that it will be safe from rust in the event that it becomes damp. It is also recommended that the wood be treated with a good waterproofing finish before it is al-

lowed to remain outdoors.

BILL OF MATERIALS

- 1" x 10"—total length 66'
- 4 pcs. 10' long for table top
- 2 pcs. 10' long for bench tops
- 4 pcs. 18" long for bench legs
- 1" x 4"—total length 64'
- 2 pcs. 10' long for apron
- 2 pcs. 36" long for apron
- 2 pcs. 36" long for cleats on table
- 4 pcs. 30" long for legs
- 4 pcs. 30" long for stretchers
- 2 pcs. 48" long for braces
- 4 pcs. 10" long for bench cleats
- 1" x 6"—total length 20'
- 2 pcs. 10' long for bench stretcher
- 2" x 3"—total length 6'
- 2 pcs. 36" long for cleats
- Corner blocks made from scrap 2" x 4"
- Hardware
- 6 T hinges
- 2 carriage bolts $\frac{1}{4}$ " x 4" with wing nuts
- 1 gross No. 8 flat head screws
- $1\frac{1}{4}$ " long
- 8 butt hinges





Philip Fein, Photo

PLAN 32. BARBECUE AND TABLE

This unique barbecue unit and table creates a semi-private nook without building a fence or wall. It is made with two cabinet-like cupboards that come together to make an octagon in the corner, much like a corner sink in a kitchen. There, in the center, well away from the wooden sides, has been sunk a rectangular firebox (2'6" x 1'8" x 1'4") made of $\frac{3}{16}$ -inch iron and lined with firebrick. In it charcoal burns readily, draft chimneys being provided by two 3-inch pipes welded into the firebox. When the barbecue is not in use, the octagonal top of the collapsible dining

table fits exactly into the area. The front and sides of the unit and the table top are made of surfaced 1 by 8-inch redwood. All joints are rabbeted to make the cabinets waterproof. The top of the unit is 6-inch red tile set in mortar.

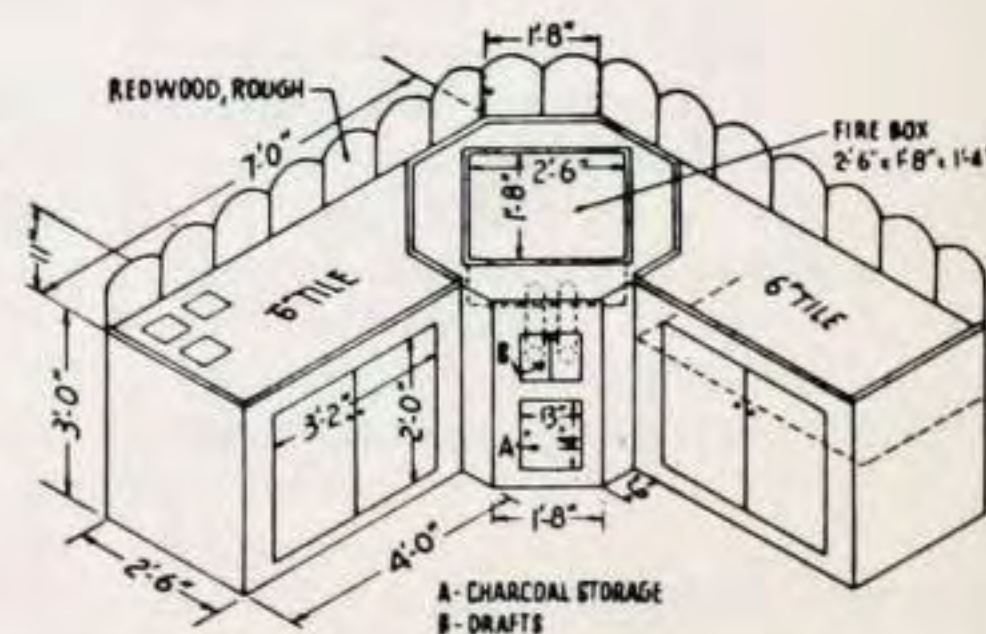
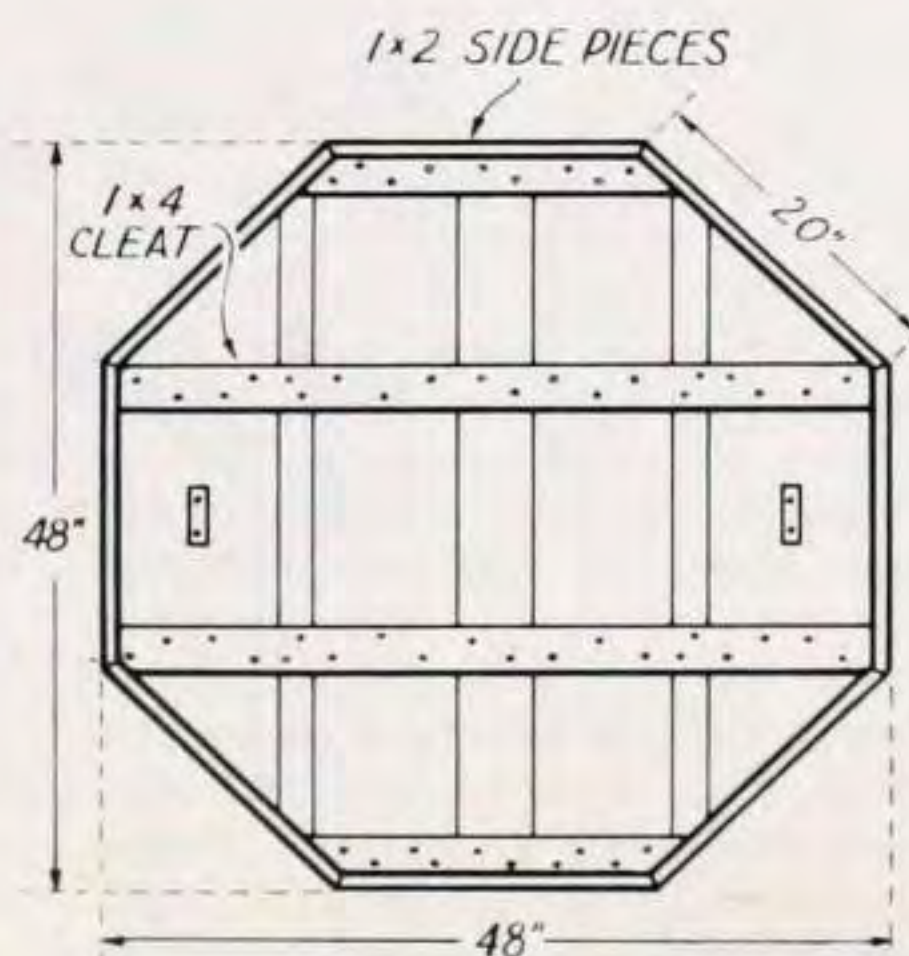
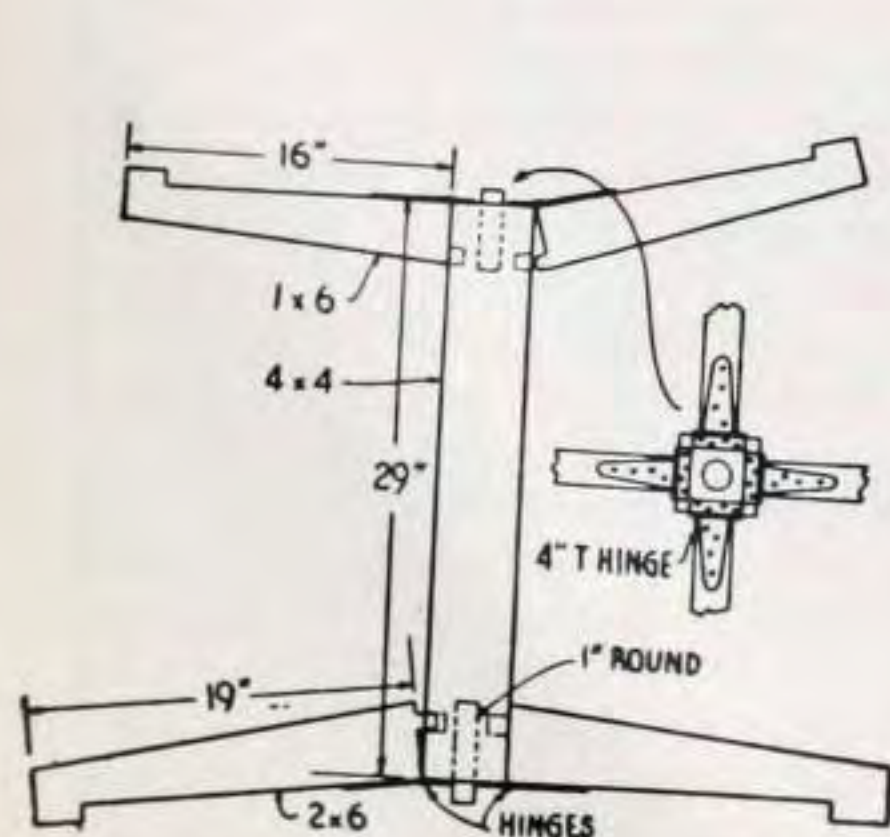
Table Detail. The arms and feet are hinged to 4 by 4-inch center post. The arms fold upward, the feet downward. The arms and feet operate on the mortise and tenon principle with the center post. The weight of the top binds the arms and legs into the center post, making the entire unit rigid.

BILL OF MATERIALS

Table*

- 4" x 4" redwood, 1 pc. 29" long for pedestal
- 1" x 6"—total length 12'4"
- 4 pcs. 17" for top support
- 4 pcs. 20" for legs
- 1" x 12", 2 pcs. 40" long for top
- 1" x 8", 2 pcs. 48" long for top
- 1" x 4", 3 pcs. 48" long for top and cleats
- 2 pcs. 24" long for cleats
- 1" x 2", 2 pcs. 48" for top
- 8 pcs. 20" for side pieces
- 1" round, 2 pcs. 6" long for pegs
- 8 T hinges, 4"

* Build barbecue unit to fit patio requirements.





E. L. Anderson, Design; Philip Fein, Photo

PLAN 33. STORABLE TABLE

Here is a simple garden table which is designed for use on rough and uneven garden paving. There are leveling screws in the base of the leg frames which can be turned to adjust to the ground surface so that the table will not wobble and be unsteady.

It is especially suitable for small gardens as a substitute for the conventional redwood table which often is too large and also difficult to store. This table can be taken apart easily and stored in a very small space during the winter months. The top is made from a 4 by 5-foot piece of exterior grade plywood. It is supported by two crisscrossing frames made from 1 1/4-inch galvanized iron pipe. Because the frames cross under the center of the table, six to eight persons can be seated around it without straddling or bumping a leg. The leg frames are bolted together where they cross. If pipe bending seems too difficult to do in a home workshop, the job could be done by the supplier. The top is bolted to the frame with four 1/4-inch carriage bolts which are countersunk flush with the surface. The leveling screws are located near the ends of the bottom of the frames.

The finish on the plywood top is redwood preservative stain which is covered with several coats of floor wax. The edges are finished with 1 by 2-inch edging strip which is nailed on with brass head tacks to add a decorative touch. The dimensions of the table may be altered to suit the needs of the individual, and the size suggested is really only one of many which would be equally practical.

BILL OF MATERIALS

4' x 5' pc. 5/8" exterior grade plywood for top

1" x 2"—total length 36'8"

2 pcs. 50" long for edge frame

2 pcs. 62" long for edge frame

2 pcs. 48" long for molding

2 pcs. 60" long for molding

1 1/4" galvanized iron pipe for legs
total length approx. 30'

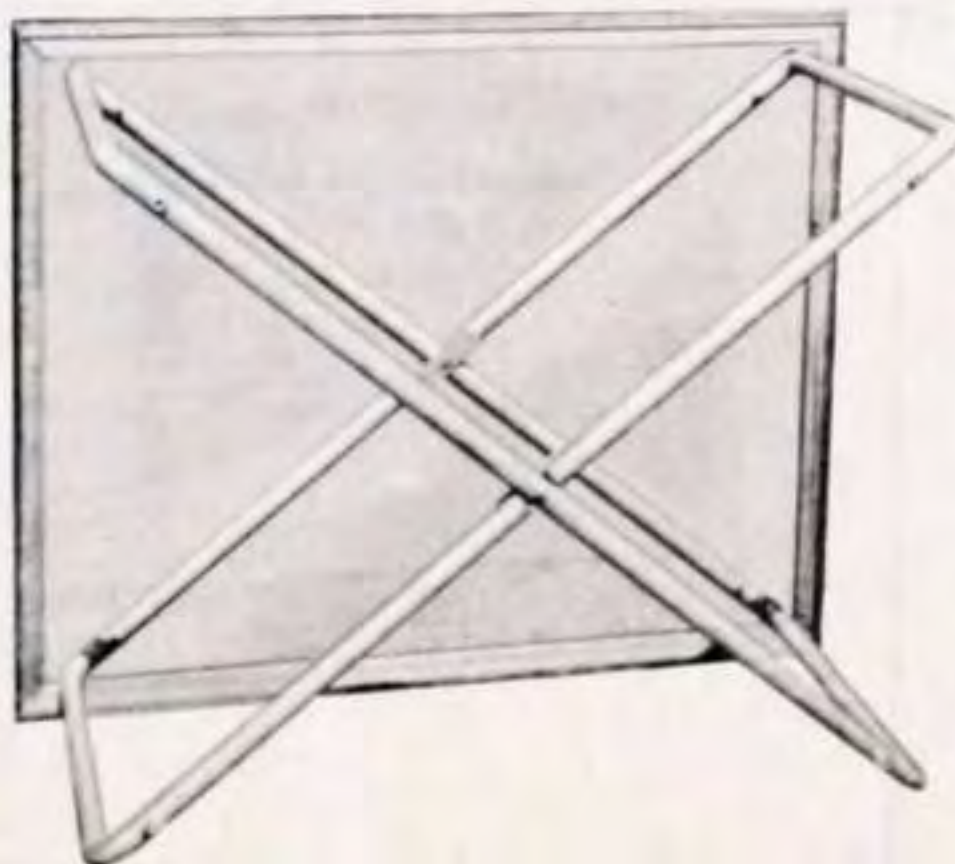
6 1/4" x 2 1/2" carriage bolts with wing nuts

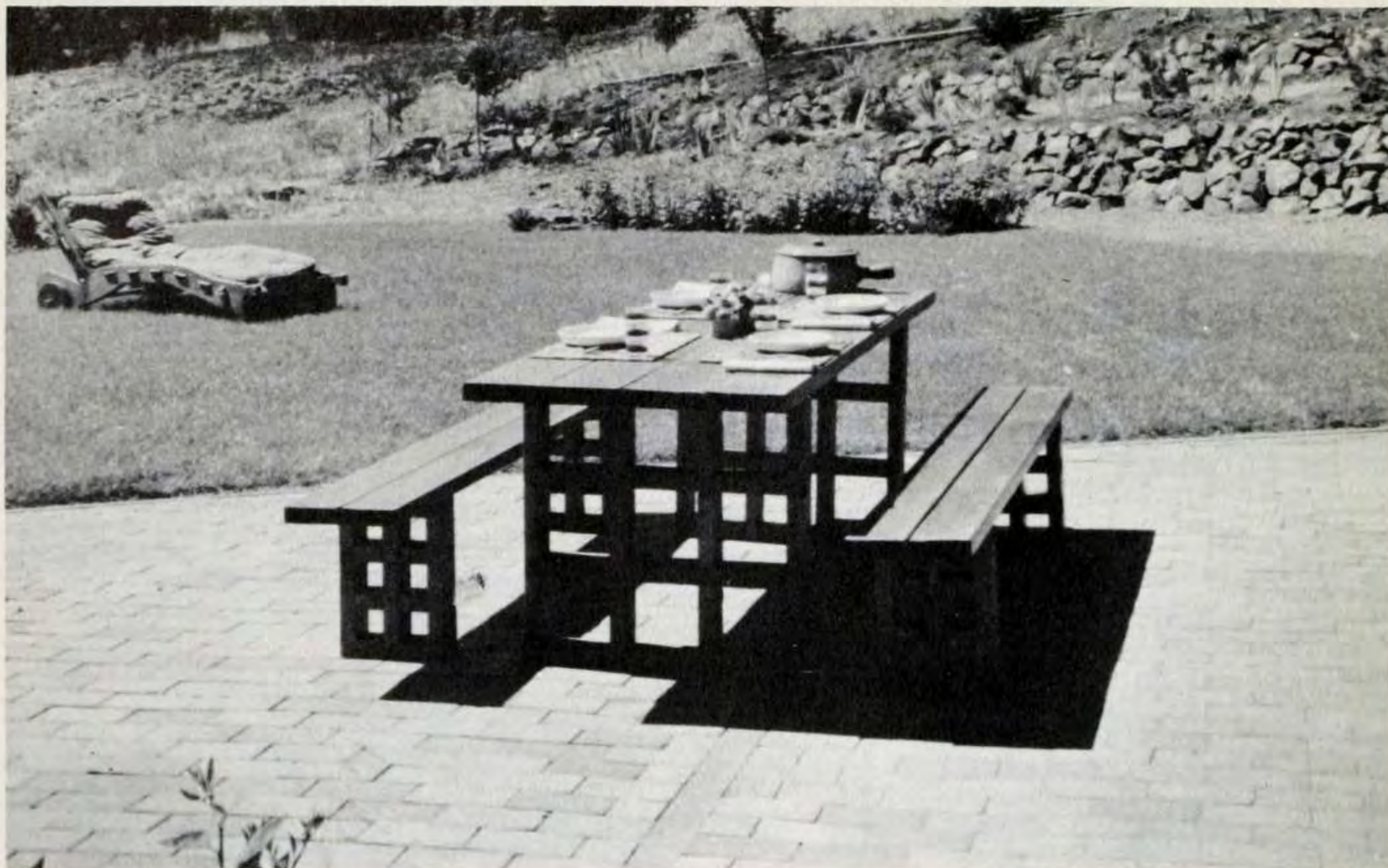
4 1/4" x 2 1/2" machine bolts and nuts for leveling screws

Finishing nails

Glue

Brass head tacks





Lindsey Spight, Design; John Robinson, Photo

PLAN 34. TERRACE TABLE

For those who wish to use their mechanical skill to produce something unusual and attractive, this terrace table and bench set is worth serious consideration.

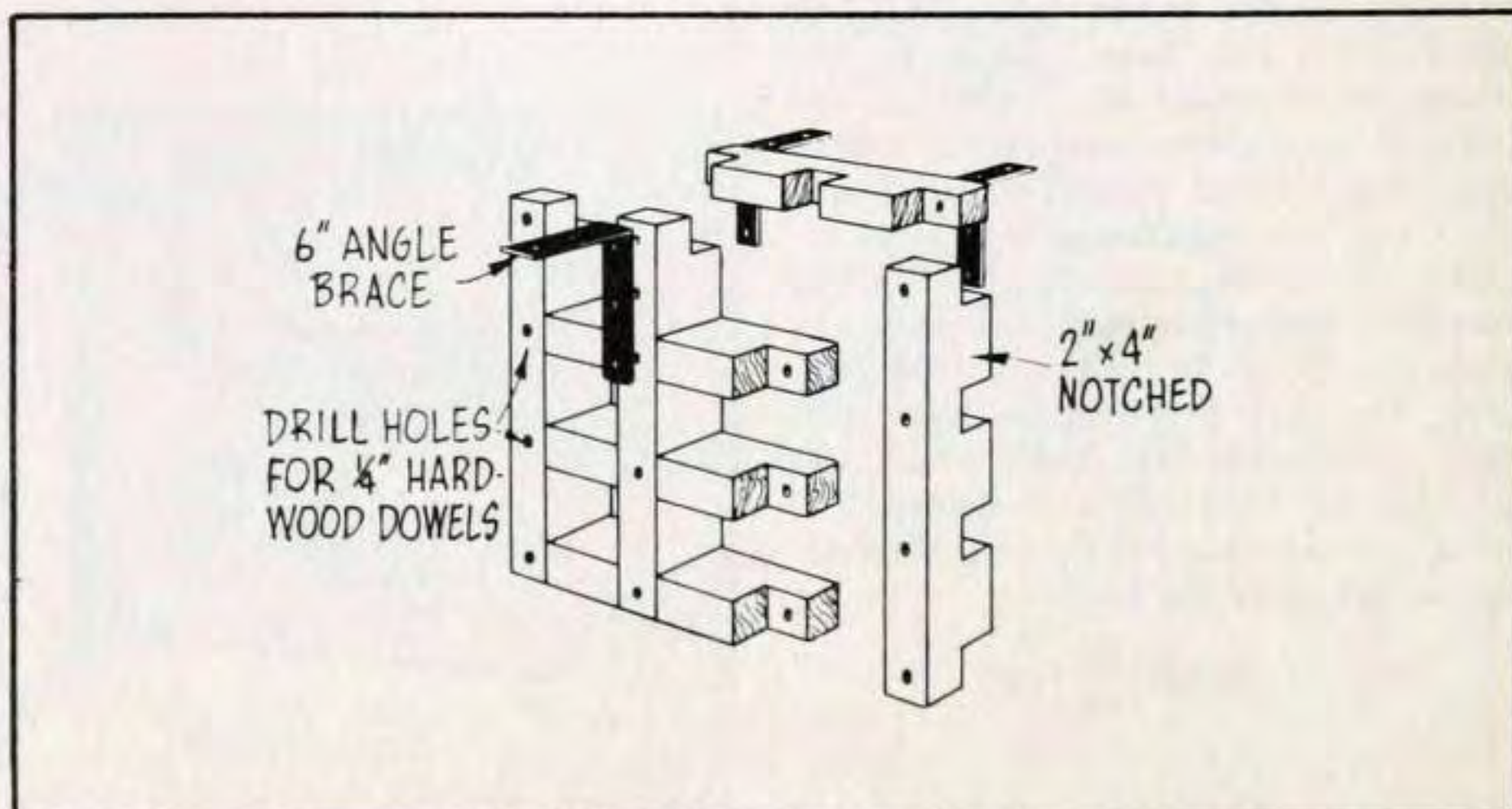
The legs on the pieces are decorative and interesting. They are made of 2 by 4-inch redwood which has been notched and fitted together. Holes are drilled in the pieces so that $\frac{1}{4}$ -inch hardwood dowels may be used to hold them together. After the leg members have been assembled they are secured to the bench and table top with 6-inch angle braces. (See drawings.)

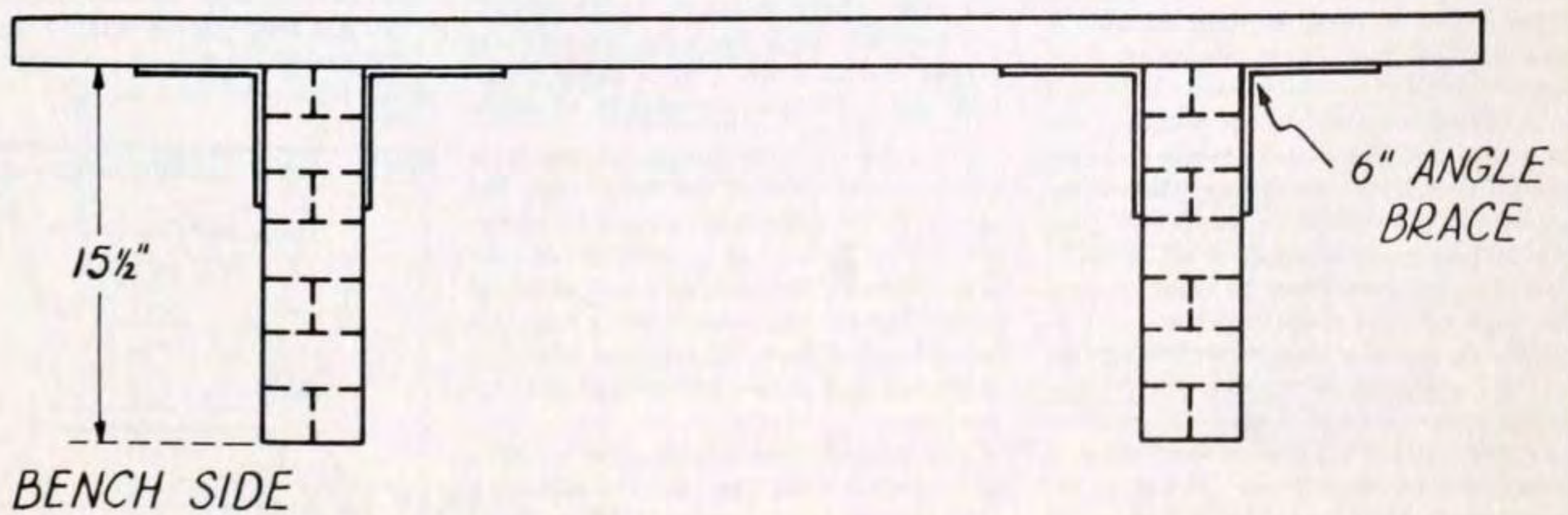
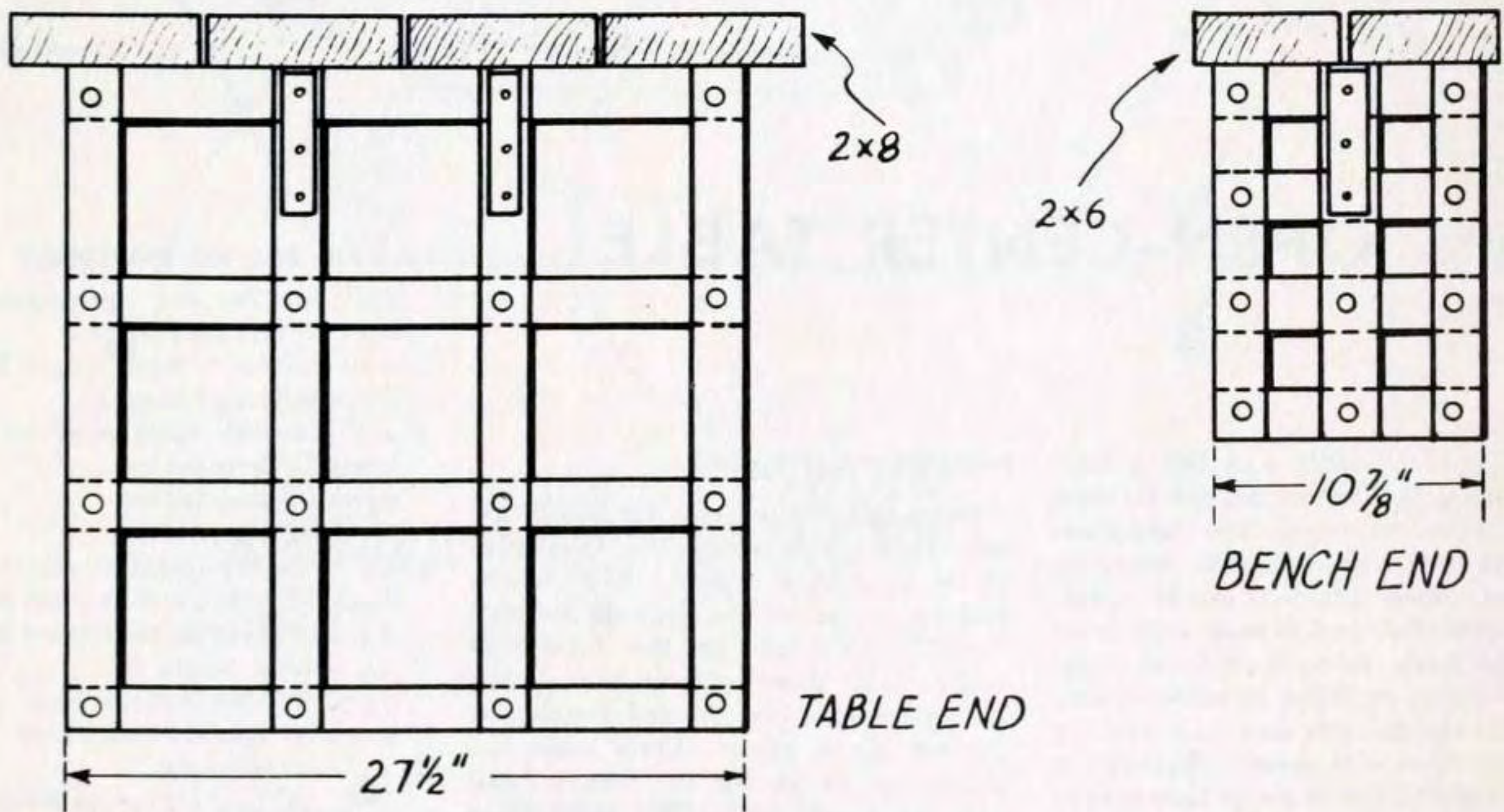
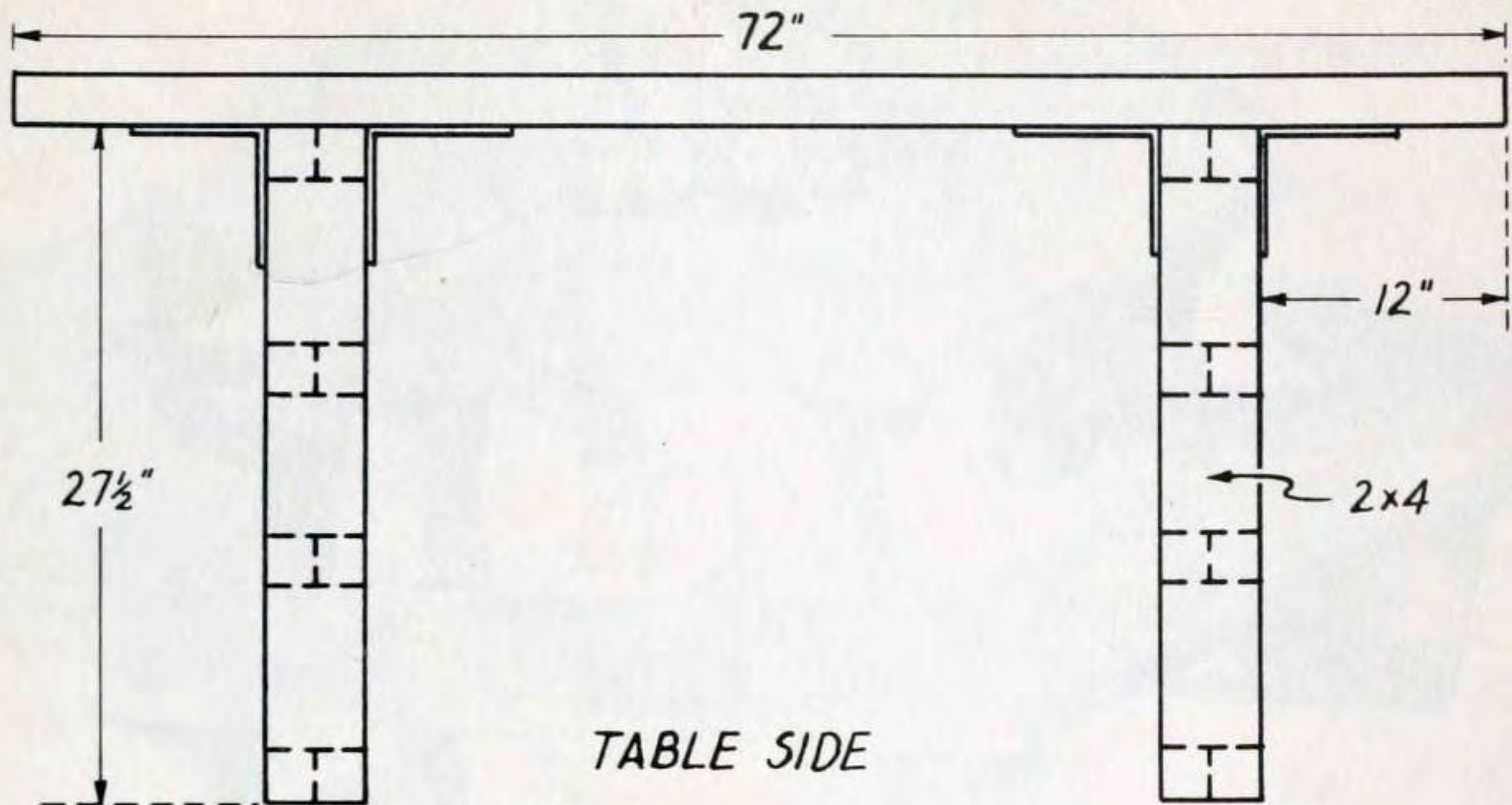
The bench top is constructed from 2 by 6's and the table from 2 by 8's. Although the plan shows that the tops are held in place only by the angle irons attached to the legs, it is suggested that cleats be used on the underside of the tops to give additional strength and support. This is particularly advisable for the outside angle braces on the bench since without cleats, the braces would be secured at a point where the two boards join which is obviously a weak spot.

BILL OF MATERIALS

2" x 8" redwood—total length 24'
 4 pcs. 6' long for top of table
 2" x 6" redwood—total length 24'
 4 pcs. 6' long for bench tops
 2" x 4"—total length approx. 67'
 12 pcs. 15½" long for verticals in bench legs

16 pcs. 10⅞" long for horizontals in bench legs
 8 pcs. 27½" long for table legs (verticals)
 8 pcs. 27½" long for table legs (horizontals)
 20 angle braces 6"
 Waterproof glue
 Screws, finishing materials







Stone-Steccati, Photo

PLAN 35. OPEN-CENTER TABLE

This outdoor table and bench unit has space in the center that can be used in a number of ways. You can grow plants in it or display them as shown in the photo above. The unit can be metal-lined, insulated, and heated with coals from the barbecue to keep food warm. With a slight variation in construction, the table can be built around a tree. Or it can be lined with metal, fitted with a drain, and filled with ice to keep drinks and the salad cold.

The table is large enough to seat a dozen people and it is constructed of heavy materials which will hold up even though exposed to the weather the year around. Since it is large and not easily taken apart for storage, this is an important feature. It is suggested that redwood or cedar be used for all parts to give the best resistance to weather and the most attractive appearance.

This is another design which should not be undertaken unless some carpentry experience is behind the builder. The leg detail and supports offer a rather complicated maze which is interesting to those who have had some practical experience, but too tedious for a beginner to tackle as the number one

home workshop project.

Draw full-size patterns for bench and table top pieces using the triangular sketch at right as a guide. Lay out the pattern pieces on the lawn to be sure they fit correctly in the hexagonal shape. Trace those patterns on the lumber to be used for top and bench and cut out these pieces. Then build the supporting frame for the bench. Note that the inside leg of the bench also serves as a table support. Tie this framing together with the 2 by 12-inch seat pieces and the two 1 by 4 cross pieces that run through the center of table.

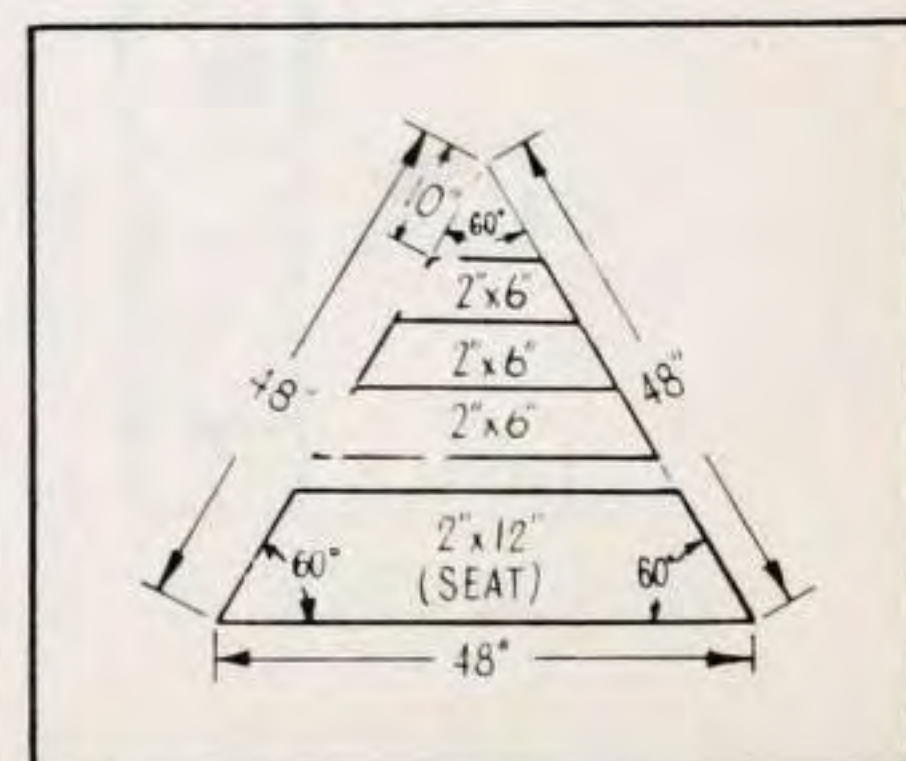
Bolt the 1 by 4 supports for the table top on both sides of the table legs. Set the 2 by 6 table top pieces in place. These can be held in place with dowels, screws from the underneath side, or nails. Box in the center with 1 by 6's for sides and floor. Chamfered edges on the table top pieces will add to the appearance.

For a finish that will take the weather and spilled food, use three coats of a high quality spar varnish, rubbing down the last coat with steel wool to reduce gloss.

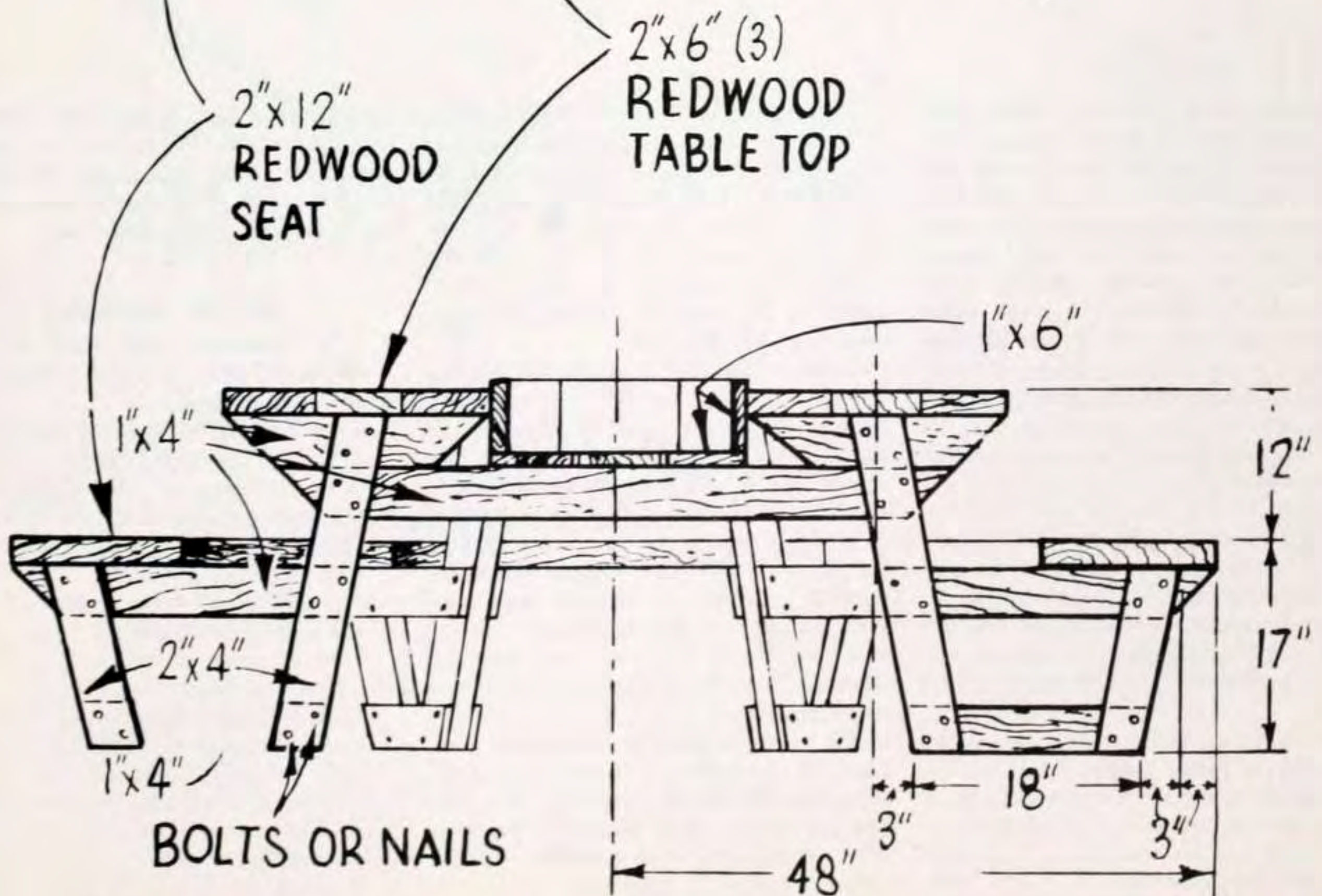
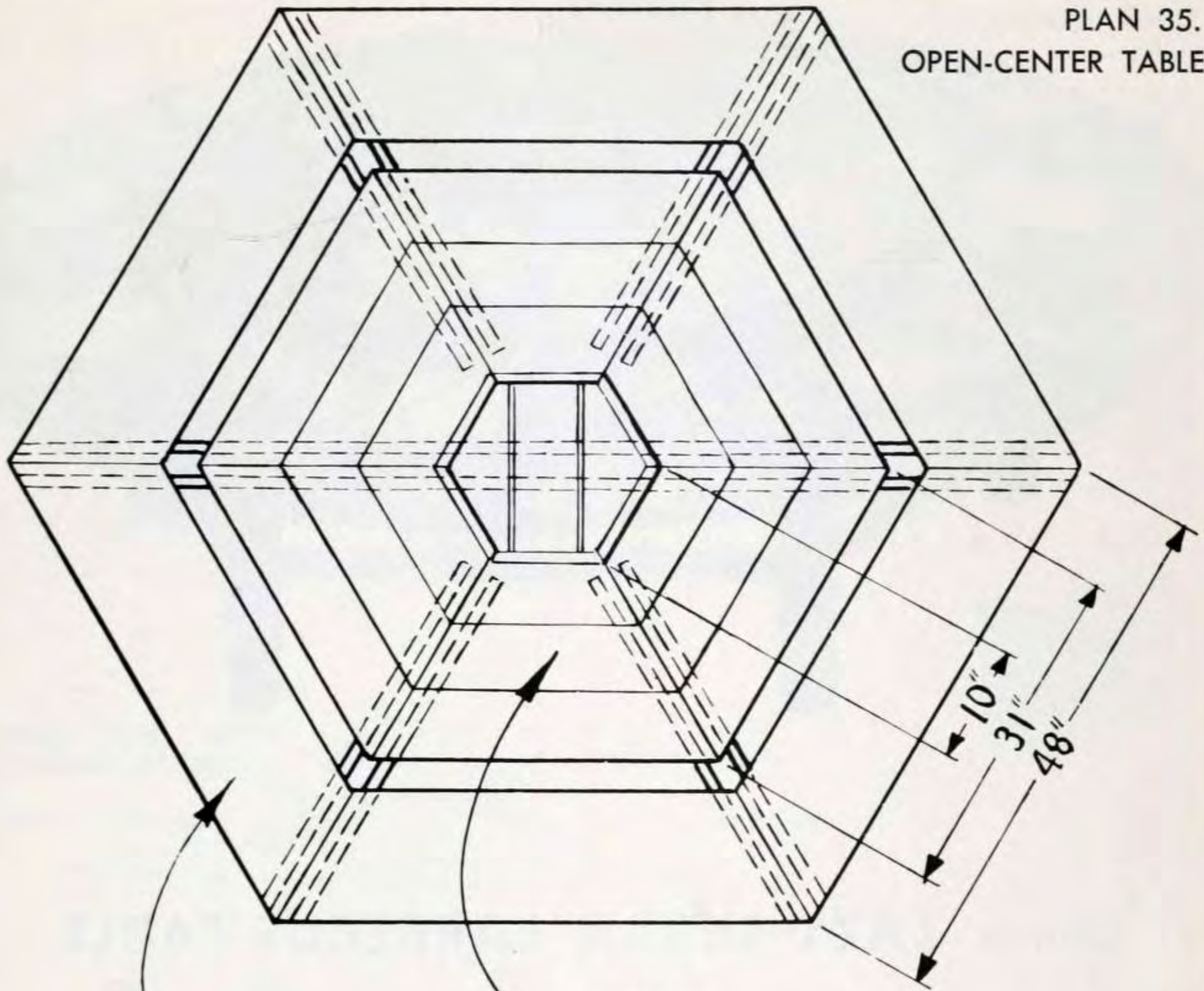
BILL OF MATERIALS

(All lengths are approximate and should be trimmed to fit.)

- 2" x 12" redwood—total length 24'
- 6 pcs. 48" long for seats
- 2" x 6" redwood—total length 36'
- 6 pcs. 31" long for top
- 6 pcs. 24" long for top
- 6 pcs. 17" long for top
- 1" x 6" redwood—total length 9'6"
- 6 pcs. 10" long for center box sides
- 3 pcs. 18" long for center box floor
- 2" x 4"—total length 24'
- 6 pcs. 30" long for table legs
- 6 pcs. 18" long for bench legs
- 1" x 4"—total length 72'
- 2 pcs. 54" long for center support
- 12 pcs. 18" long for table support
- 12 pcs. 27" long for bench support
- 12 pcs. 18" long for base support
- Dowels, screws, and nails



PLAN 35.
OPEN-CENTER TABLE





L. E. David, Design

PLAN 36. LAZY-SUSAN BARBECUE TABLE

This attractive barbecue table puts the idea of the lazy-Susan to good use. It will seat 14 people comfortably and has the virtue of every round table—it is always possible to squeeze in seats for one or two more. The table proper is 9 feet wide; the lazy-Susan is 64 inches wide. With such a large turntable in the center, food serving and passing is greatly simplified. Salads, vegetable, garlic bread, beverages and condiments—in fact everything but the meat from the barbecue—goes on the lazy-Susan.

This project requires careful attention to detail and a certain amount of skill. It is not something that can be turned out on a week-end, but the finished result is not only practical, but also a handsome piece of outdoor furniture.

The sections of the table should be cut first following the pattern for the individual section on the opposite page. There are 14 sections. Place the sections together on the lawn. This will give you the finished size of the table for checking your other measurements.

By measuring from the center of the circle to the outside edge, the length of the 1 by 6 horizontal supports can be determined. They should be cut about an inch short of the edge. The six legs are cut, grooved at the top, and the 1 by 6's are then set into place. These supports are secured to the legs with dowels or wood screws.

The center leg is made by bolting together three 2 by 6's. The center 2 by 6 is cut according to the diagram to hold the spindle for the wheel assembly.

The top 6 inches of the center leg is cut into a hexagon. Then the horizontal 1 by 6's are mounted in place on this leg. The 1 by 6's are fastened together with 2 by 4 braces and the legs with 2 by 2 rails. **IMPORTANT:** Make sure the axle for the lazy-Susan is absolutely vertical—otherwise it will not perform properly.

To assemble the top, turn the sections of the table upside down and divide the circle of sections into two halves. Fasten the segments together with cleats, and then place the halves into place and tie together.

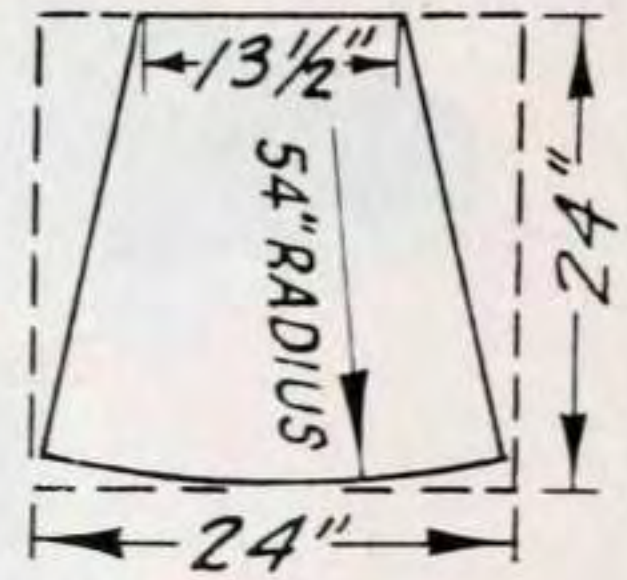
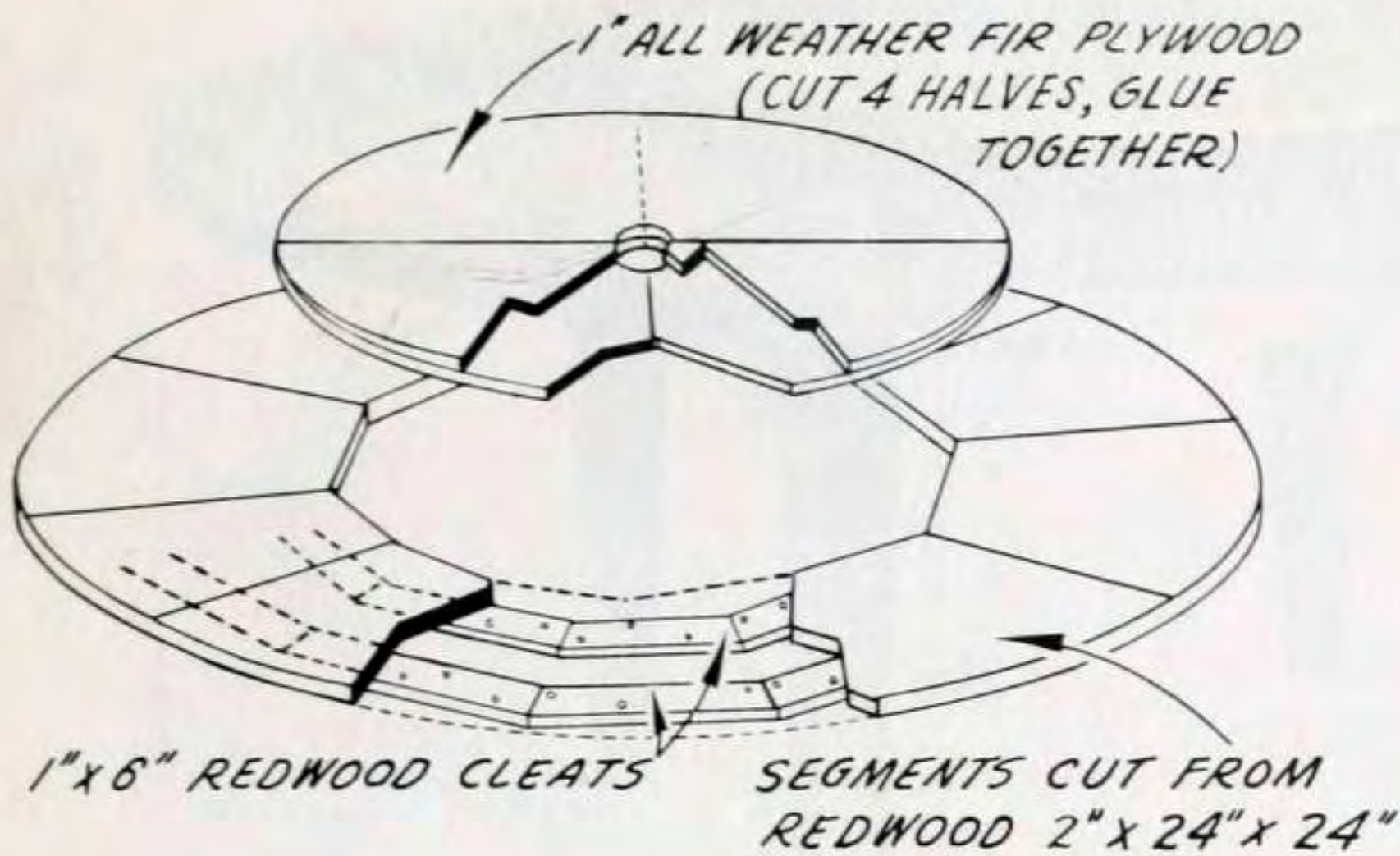
The wheel assembly is mounted and

the plywood lazy-Susan disk bolted to the steel plate. There is a hole cut in the center of the lazy-Susan for the hub to go through. The hub is covered with an individual-size salad bowl.

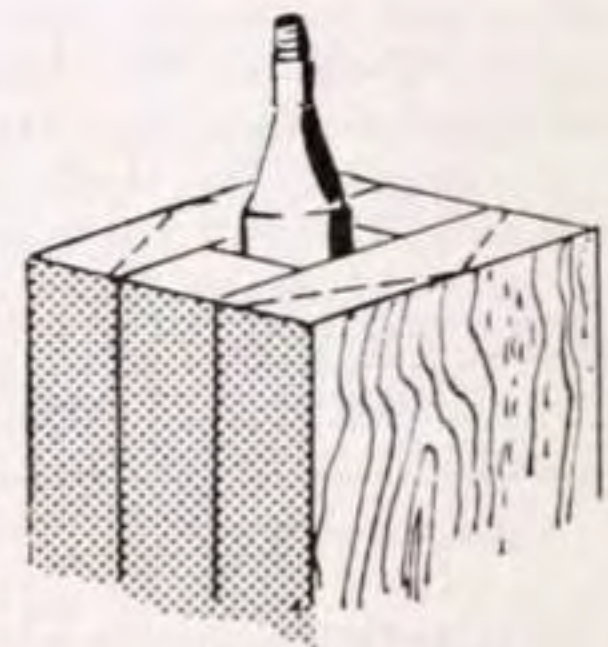
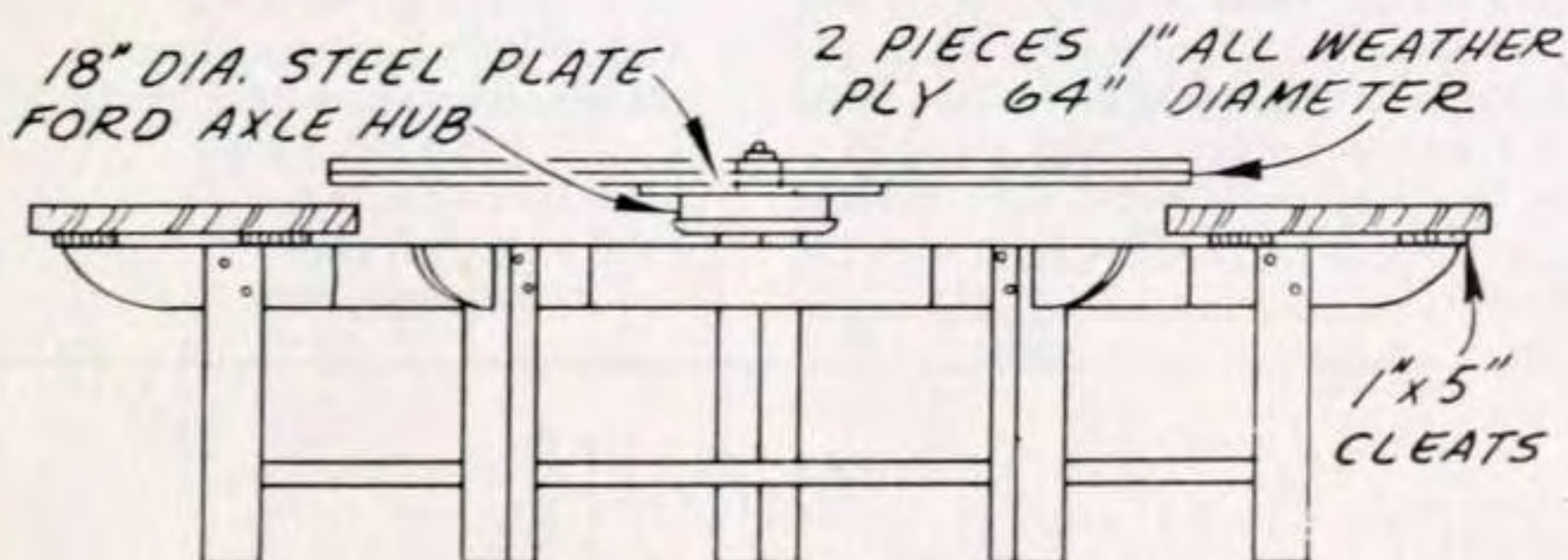
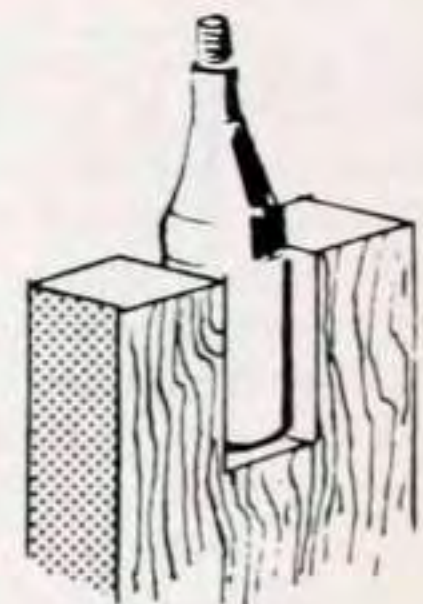
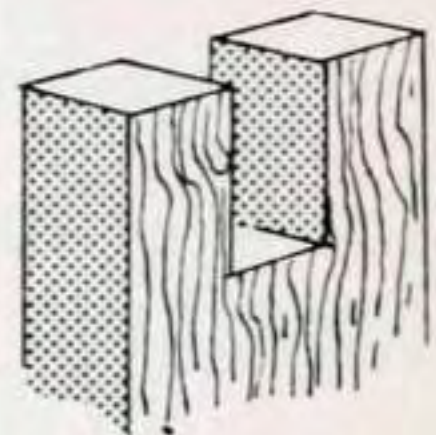
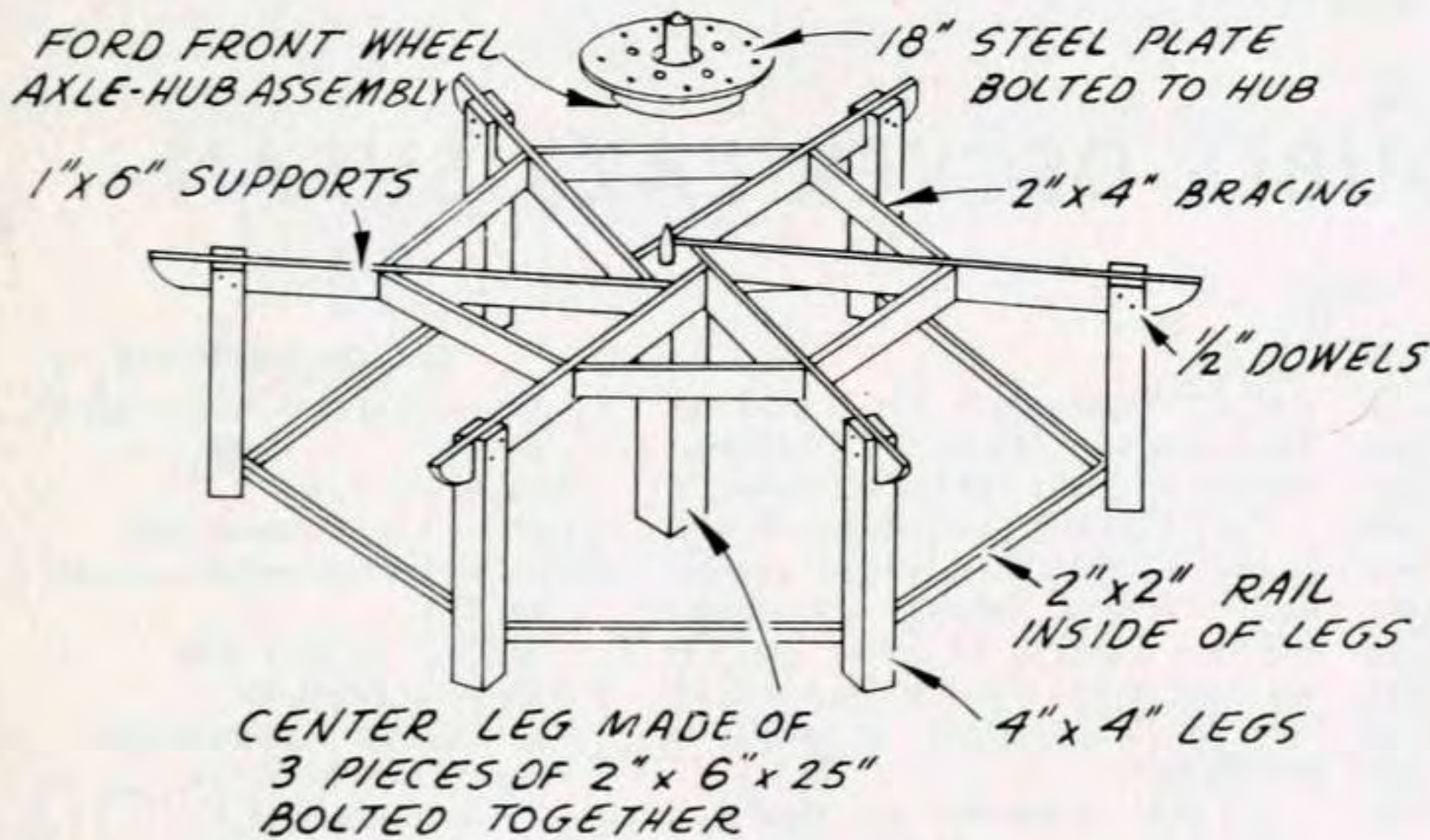
BILL OF MATERIALS

- 2" x 24" redwood—total length 28'
- 14 pcs. 24" x 24" for table sections
- 1" x 6"—total length 70'
- 6 pcs. 56" long for table supports
- 14 pcs. 16" long for table cleats
- 14 pcs. 20" long for table cleats
- 4" x 4" redwood—total length 12'6"
- 6 pcs. 25" long for legs
- 2" x 6"—total length 6'3"
- 3 pcs. 25" long for center leg
- 2" x 4"—total length 6'
- 6 pcs. 12" long for braces
- 2" x 2"—total length 24'
- 6 pcs. approx. 4' long for leg rails
- 1" exterior plywood—approx. 60 sq. ft.
- 4 pcs. 32" x 64" for lazy-Susan
- 1 Ford front wheel axle hub assembly
- 1 18" diameter steel plate for hub
- 1/2" hardwood round—total length 4'
- 12 pcs. 4" long for leg dowels
- 1 individual-size salad bowl

PLAN 36. LAZY-SUSAN BARBECUE TABLE



TYPICAL SEGMENT OF 2" REDWOOD TOP





Smith & Williams, Design; Julius Shulman, Photo

PLAN 37. DOUBLE-DECKER LAZY-SUSAN

A round table is a useful addition to any home and this one has the pleasing distinction of offering a variety of functions. It is particularly well built and sturdy but will fit into almost any part of the house. It may find its way from the patio to the dining room, lanai, game room or workshop during the indoor months. Or perhaps it will be moved into the children's play room to provide a work or play center on rainy days.

The double-decker lazy-Susan is not only useful, but adds interest to the design. The top layer of the lazy-Sue is joined to the bottom by four $\frac{1}{2}$ -inch hardwood dowels, so that both layers revolve together when they are turned. The diameter of the large turntable is 36 inches, the small one is 18 inches across, and the two of them will hold numerous food items. The top one is cut from $\frac{3}{4}$ -inch exterior grade plywood

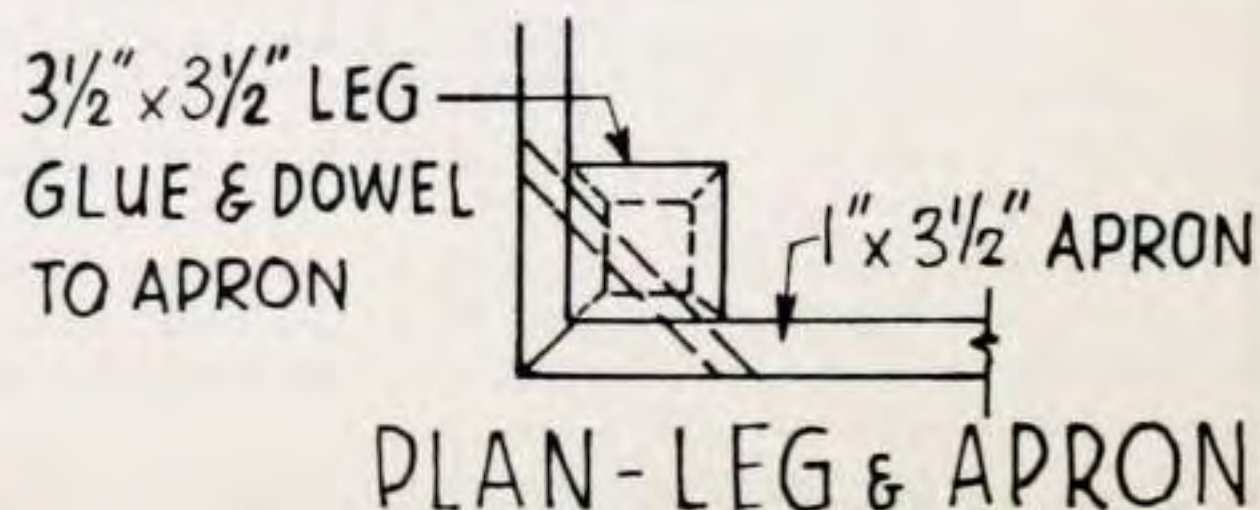
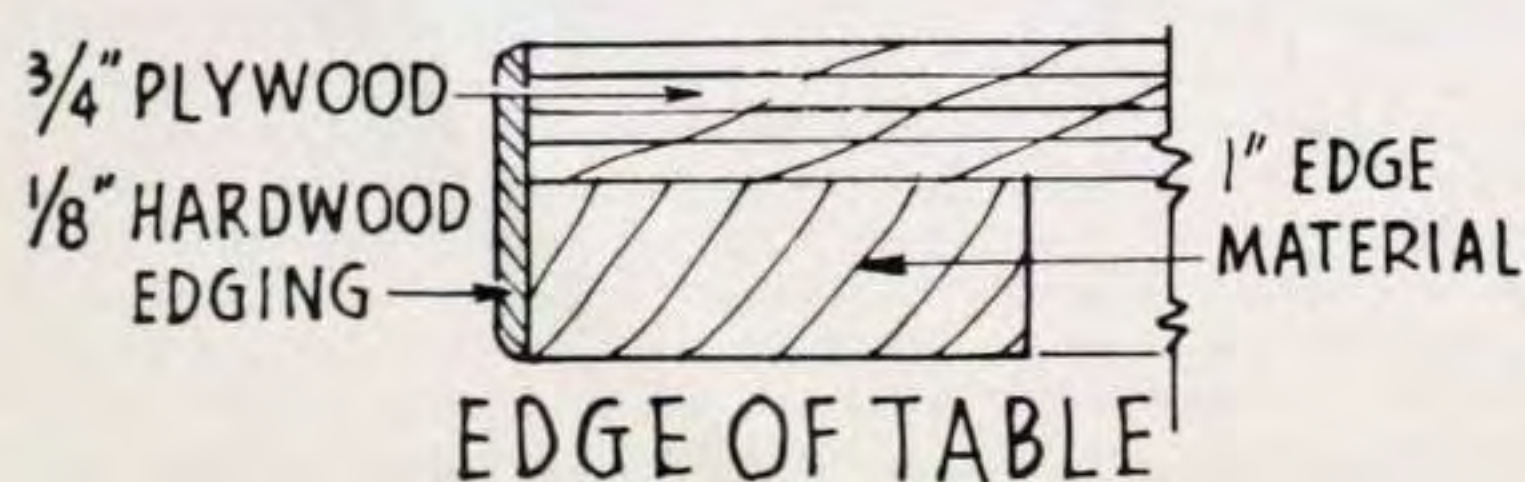
and the bottom from 1-inch plywood. The assembly is fastened to a ball-bearing unit so that it will revolve smoothly.

The table top is also constructed from $\frac{3}{4}$ -inch plywood. To add to its strength and to prevent warping, a hardwood edging is added to the under side. The top is cut in two pieces which are glued and doweled together to provide a smooth joint.

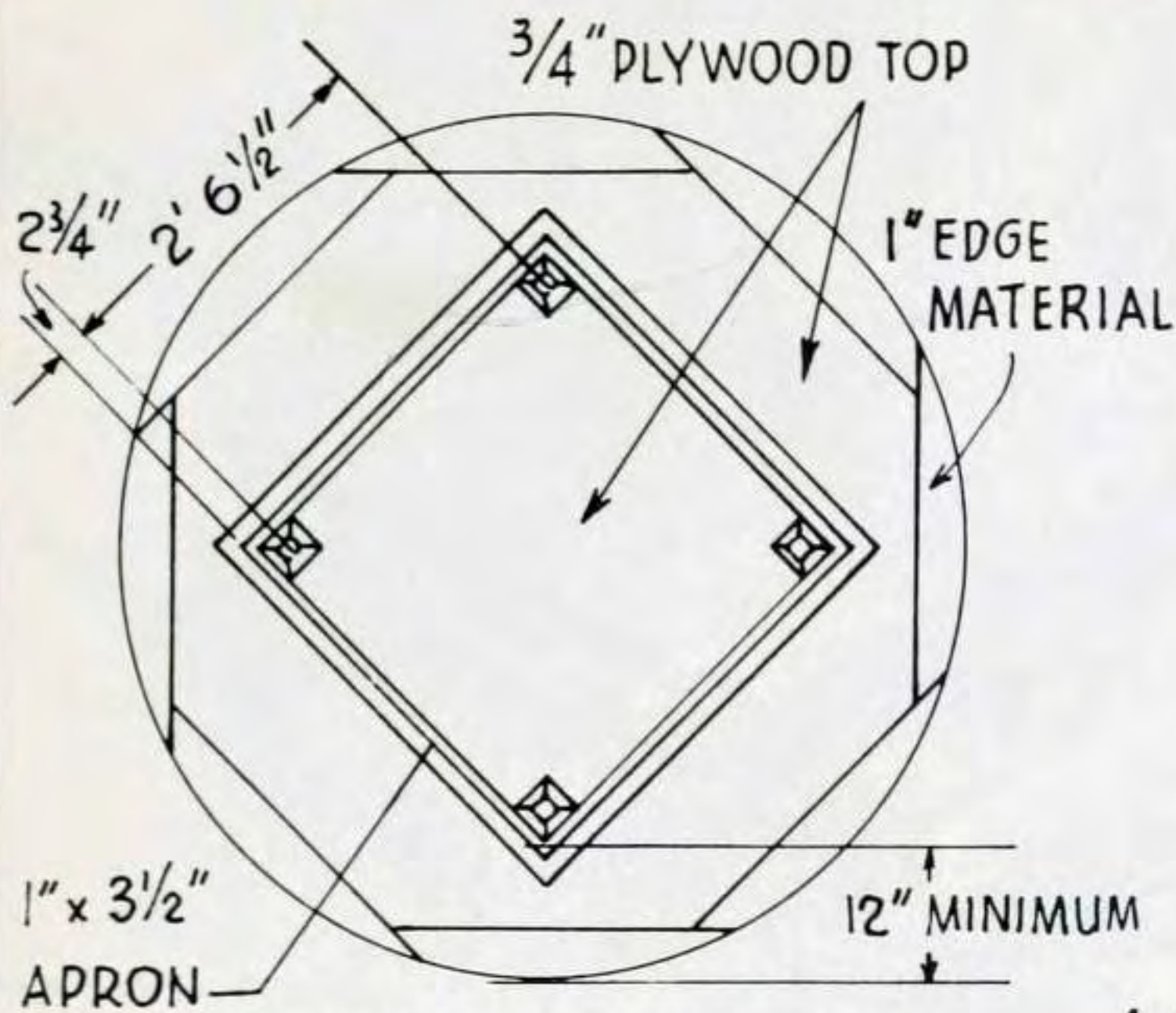
The legs are doweled and glued to a 1 by $3\frac{1}{2}$ -inch apron. If any adjustment in dimensions is made, it should be noted that the apron must be at least 12 inches from the edge of the table top so that it will not make seating uncomfortable. There is also a 2 by 3-inch block glued to the top at each leg to add stability. If the table is to be placed on a smooth surface, casters attached to the legs would be a worthwhile addition to make it easy to move from place to place.

BILL OF MATERIALS

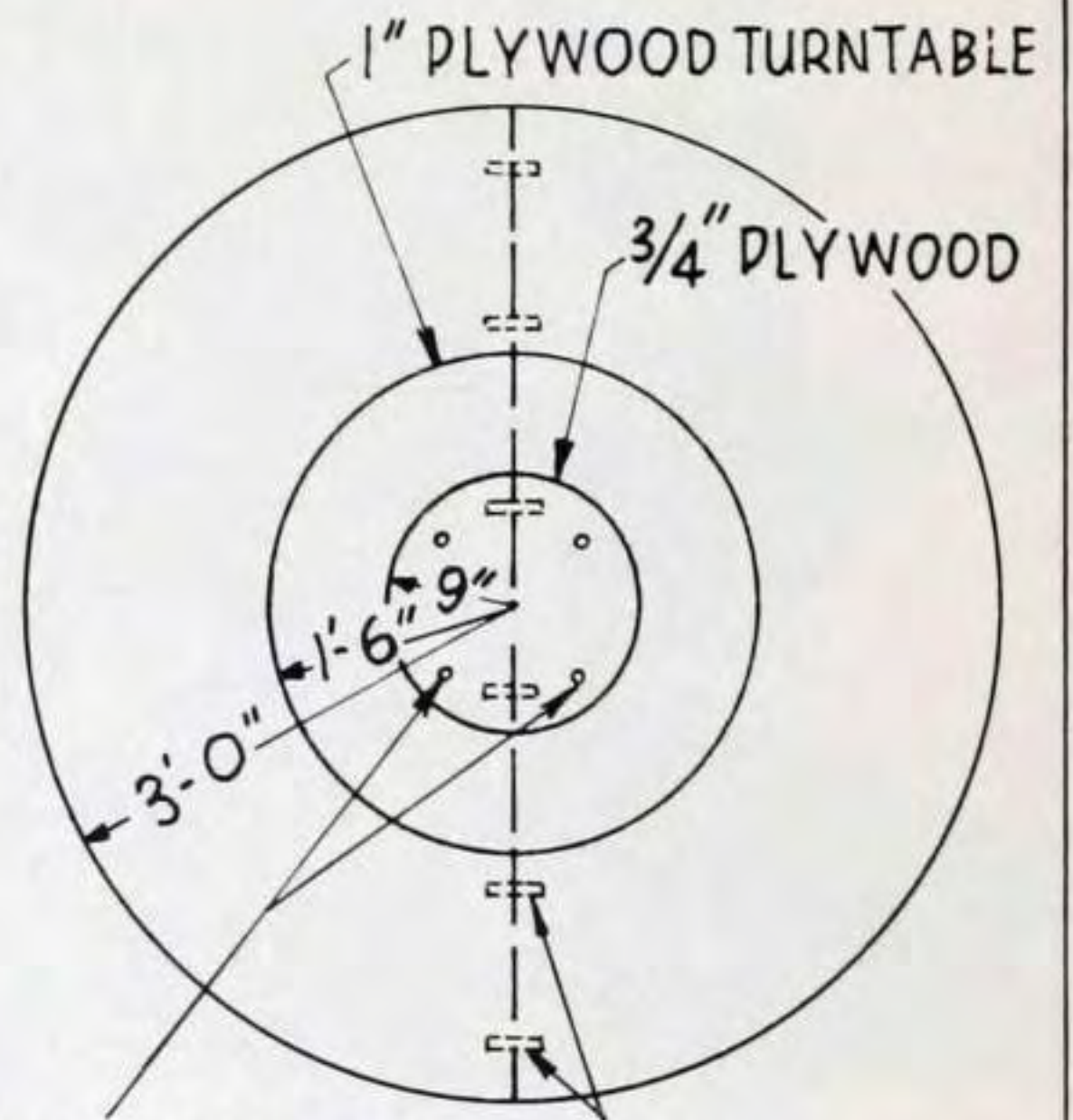
- $\frac{3}{4}$ " exterior grade plywood—approx. 39 sq. ft.
- 2 pcs. 3' x 6' for top
- 1 pc. 18" x 18" for small deck
- 1" exterior grade plywood—approx. 9 sq. ft.
- 1 pc. 3' x 3' for large deck
- 1" x 4"—total length 32'
- 8 pcs. 30" long for edge material
- 4 pcs. 36" long for apron
- 2" x 3"—total length 13'4"
- 4 pcs. 40" long for frame
- 4" x 4"—total length 9'4"
- 4 pcs. 2'4" for legs
- $\frac{1}{8}$ " x 2" hardwood edging—approx. 20'
- $\frac{3}{8}$ " hardwood round—total length 4'8"
- 6 pcs. 4" long for top dowels
- 4 pcs. 8" long for corner dowels
- $\frac{1}{2}$ " hardwood round—total length 2'7"
- 4 pcs. $7\frac{3}{4}$ " for lazy-Susan
- 1 ball-bearing fixture
- 1 $\frac{3}{16}$ " x 16" steel plate
- Wood screws, nails, glue



PLAN 37. DOUBLE-DECKER LAZY-SUSAN



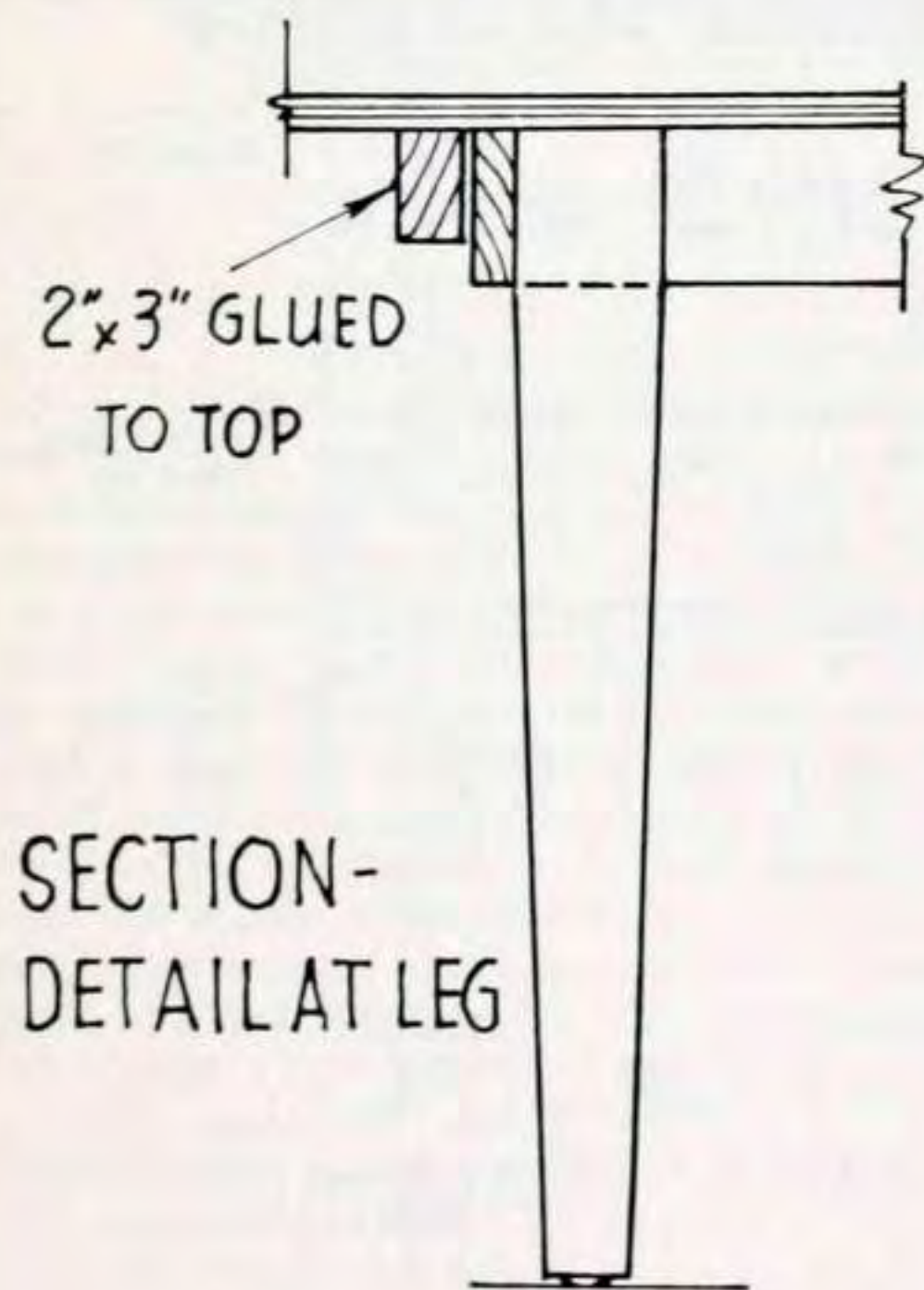
PLAN-BOTTOM



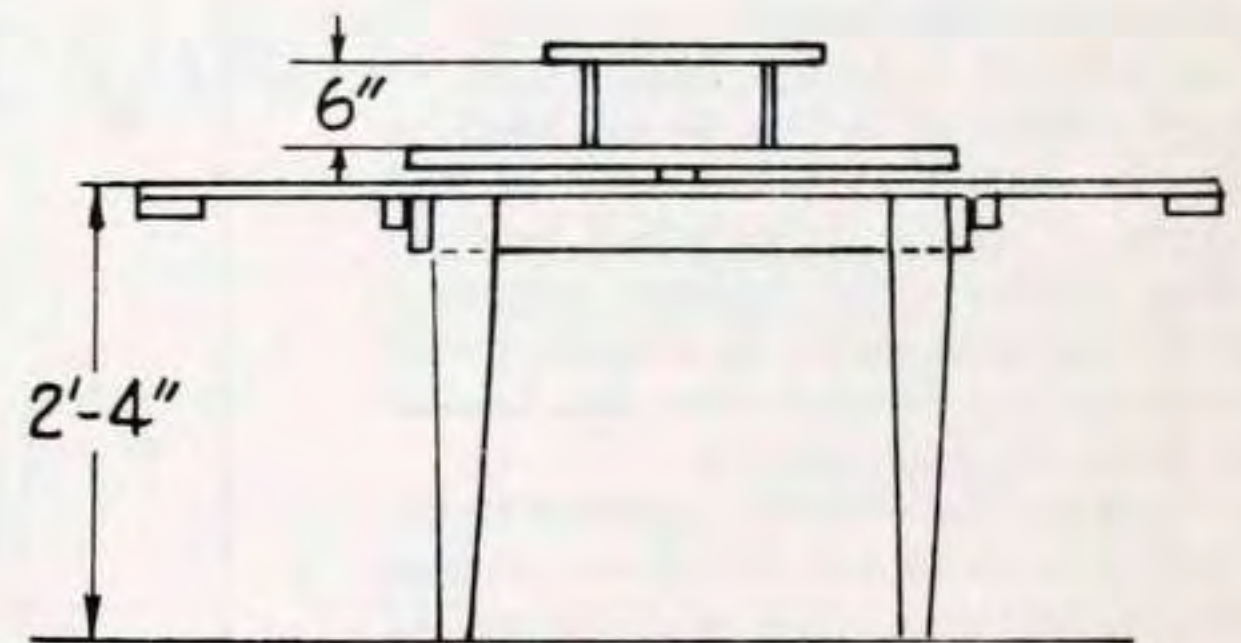
4 - 1/2" DIA. HARDWOOD
DOWEL SUPPORTS

6 - 3/8" x 4" DOWELS
AT JOINT

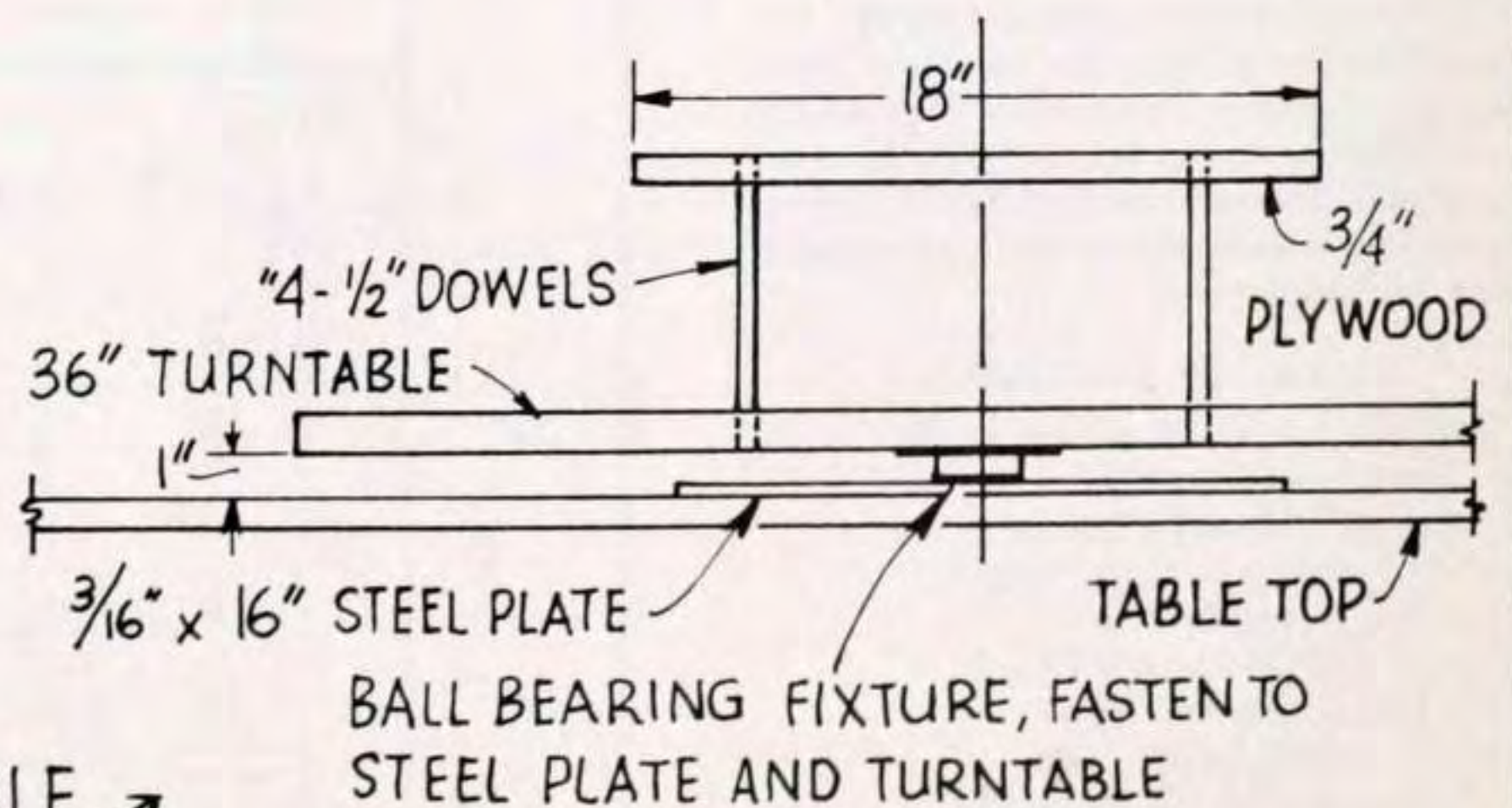
PLAN-TOP



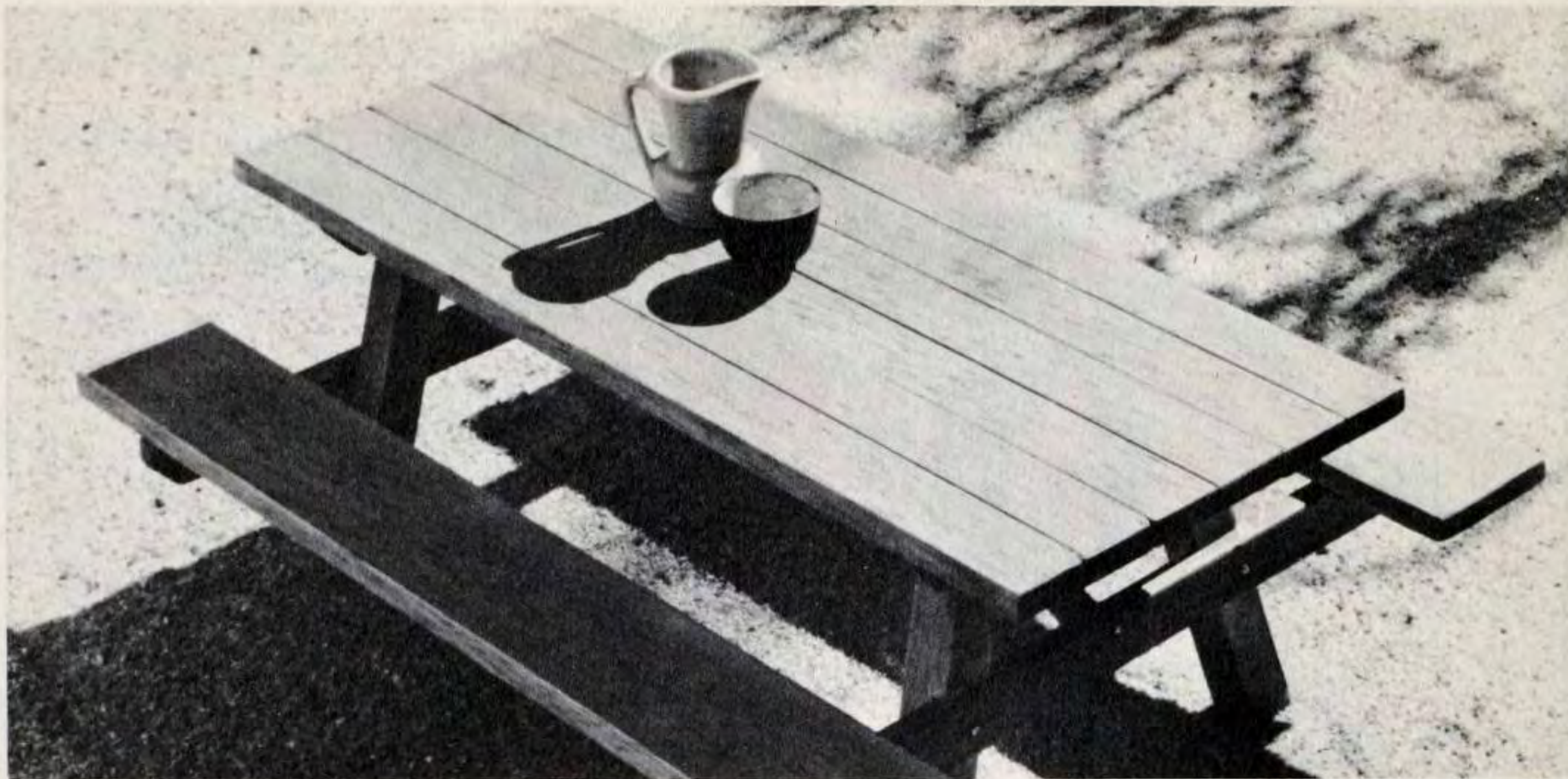
SECTION-
DETAIL AT LEG



SECTION THRU TABLE



SECTION AT TURNTABLE ➔



National Park Service, Design; Ernest Braun, Photo

PLAN 38. PICNIC TABLE

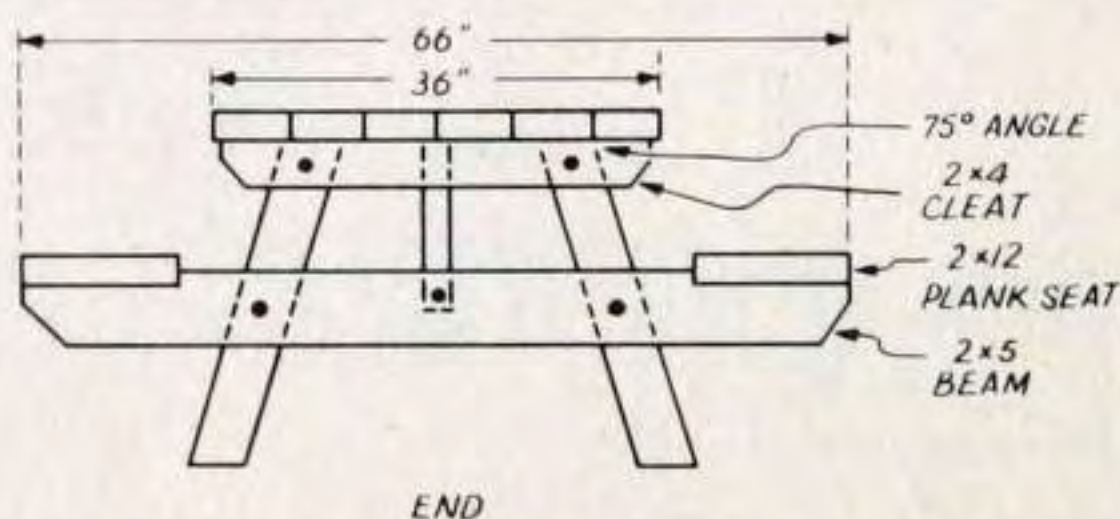
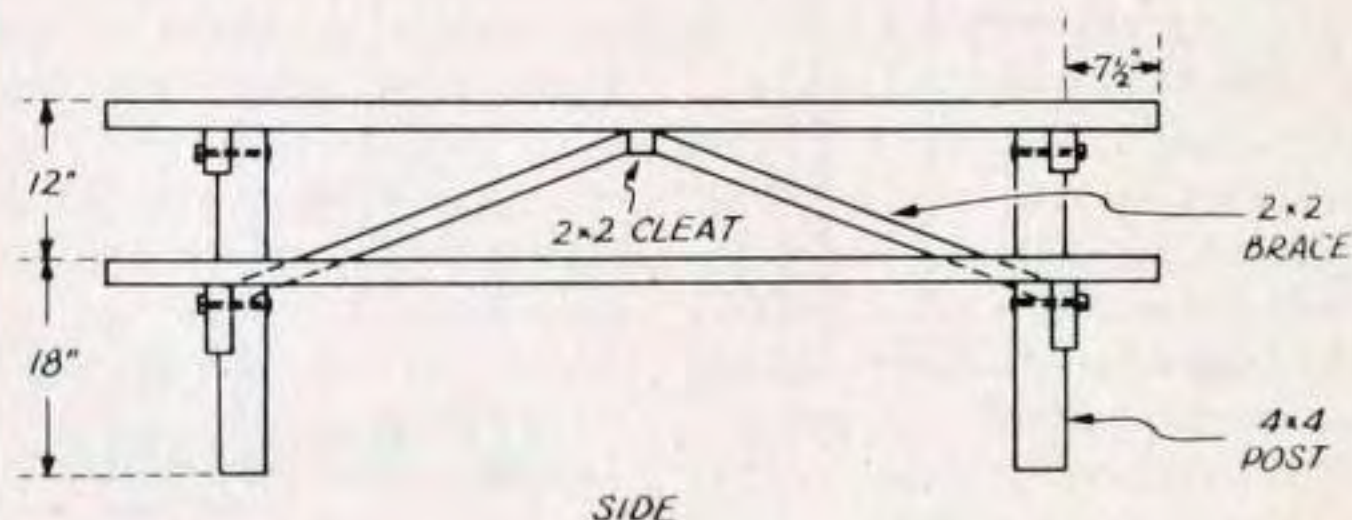
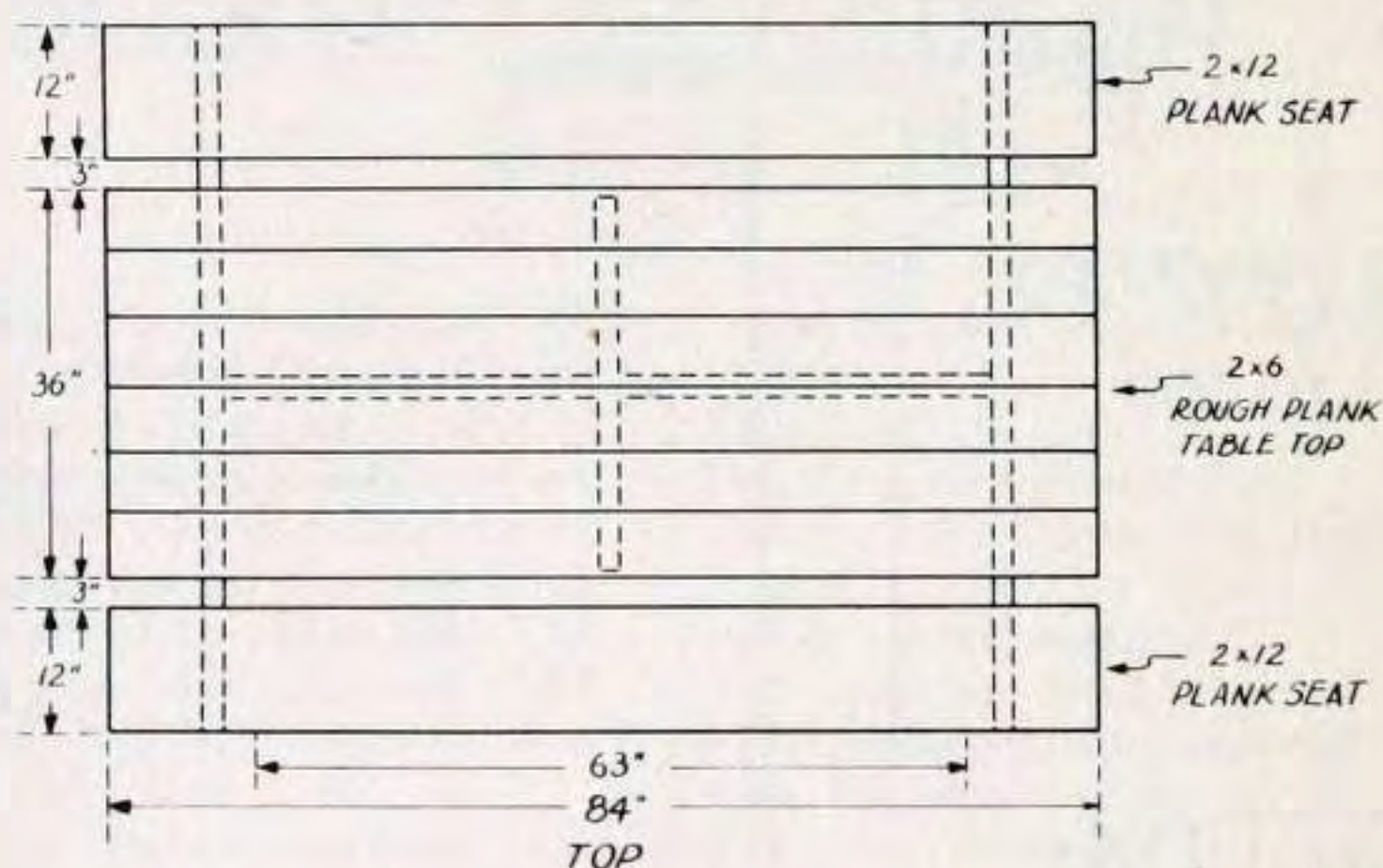
This picnic table is offered to those who have a summer cabin and are looking for a rugged design in keeping with natural surroundings.

It is large enough to easily seat 12 people although it can be adjusted in size by changing the length of the planks to adapt to personal requirements. However its massive materials do not make it useful as a small piece; the scale is generally large and should be maintained as such.

Since the benches are attached to the table, it is ideal for use on rough and uneven surfaces where a minimum of grading has been done. This is particularly important when an outdoor table is used in an area where no patio paving has been installed. It is perfectly possible to adapt this particular design for patio use by making the members from lighter material. No sacrifice in strength would be involved. And it would take on a neater appearance if finished planks of the same general size were substituted for the rough ones.

BILL OF MATERIALS

- 2" x 6" redwood—total length 53'
- 6 pcs. 7' long for top
- 2 pcs. 5'6" long for beams
- 2" x 12" redwood—total length 14'
- 2 pcs. 7' long for seats
- 2" x 4" redwood—total length 6'
- 2 pcs. 3' long for cleats
- 2" x 2"—total length 8'6"
- 2 pcs. approx. 33" for braces
- 1 pc. 3' long for center cleat
- 4" x 4"—4 pcs. 30" long for legs
- 1 doz. carriage bolts 6" long
- 3 doz. wood screws 3" long





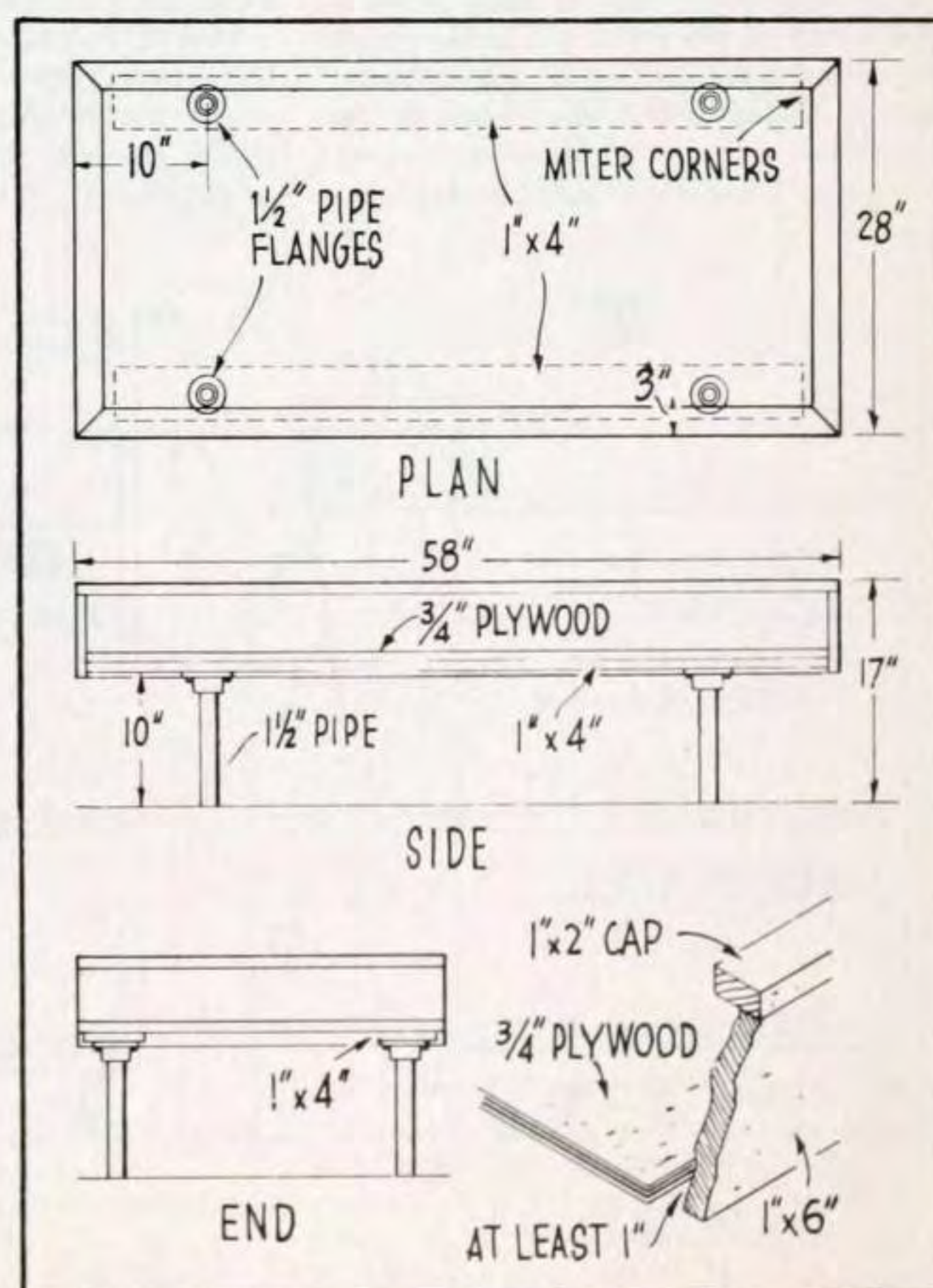
Ernest Braun, Photo

PLAN 39 CHILDREN'S SAND TABLE

This sand table design is sturdy yet light enough to be easily moved from one place to another when it is empty of sand. It is mounted on pipe-legs and is high enough for youngsters to stand around rather than sit in it. Since it is a portable box, it can be moved from the outdoors into the garage, lanai, or garden room when weather prevents outdoor play. And if the sides are made high enough, and the box not filled too full, it might go into a child's play room. To adapt the table for indoor use, drive a wooden peg into the bottom of each leg to prevent scratching the floor. Because of moisture in sand, the inside surface of the box should be painted with asphalt paint as a moisture seal. A cover of canvas, plastic, or light plywood will prevent pets from misusing the box.

BILL OF MATERIALS

- $\frac{3}{4}$ " exterior grade plywood 26 $\frac{1}{2}$ " x 56 $\frac{1}{2}$ " for bottom
- 1" x 6"—total length 14'1"
- 2 pcs. 56 $\frac{1}{2}$ " long for sides
- 2 pcs. 28" long for ends
- 1" x 2"—total length 14'4"
- 2 pcs. 28" long for side cap
- 2 pcs. 58" long for end cap
- 1" x 4"—total length 9'
- 2 pcs. 54" long for cleats
- $1\frac{1}{2}$ " pipe—total length 3'4"
- 4 pcs. 10" long for legs
- 4— $1\frac{1}{2}$ " floor flanges with screws
- 4— $1\frac{1}{2}$ " pipe caps or wood plugs for legs
- 5 doz. $1\frac{1}{2}$ " wood screws for assembly



PLAN 40.

PLYWOOD SERVING CART

When the weather is warm enough for al fresco dinners on the patio, it is often a chore for the host and hostess to carry food and the necessary utensils from the kitchen to the barbecue area. But this neat little plywood service cart solves this problem so well that it will probably be stored in the kitchen during the winter months for similar use indoors.

It is well constructed from $\frac{3}{4}$ -inch exterior grade plywood which may either be painted or left with a natural finish. The handy drawer, which is large enough to hold silverware or perhaps paper napkins which are likely to blow away, has a $1\frac{1}{4}$ -inch hole drilled in it for a drawer pull.

The back of the cart is made from a solid piece of plywood, while the front and other three sides are left open to provide access to the three shelves. So that it will be easy to guide and move about, the wheels are ball-bearing cas-

ters covered with hard rubber. For use on a rough patio floor, the wheels might be larger than those shown in the plan.

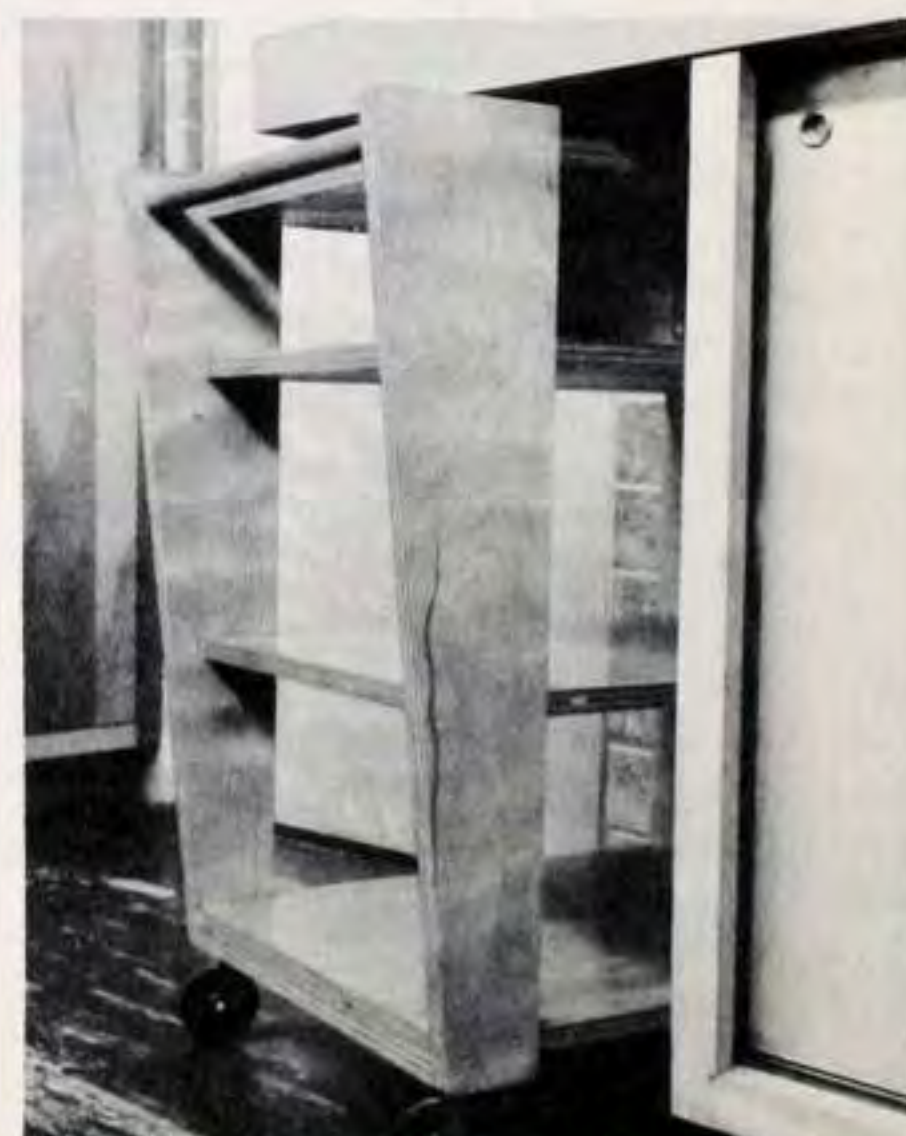
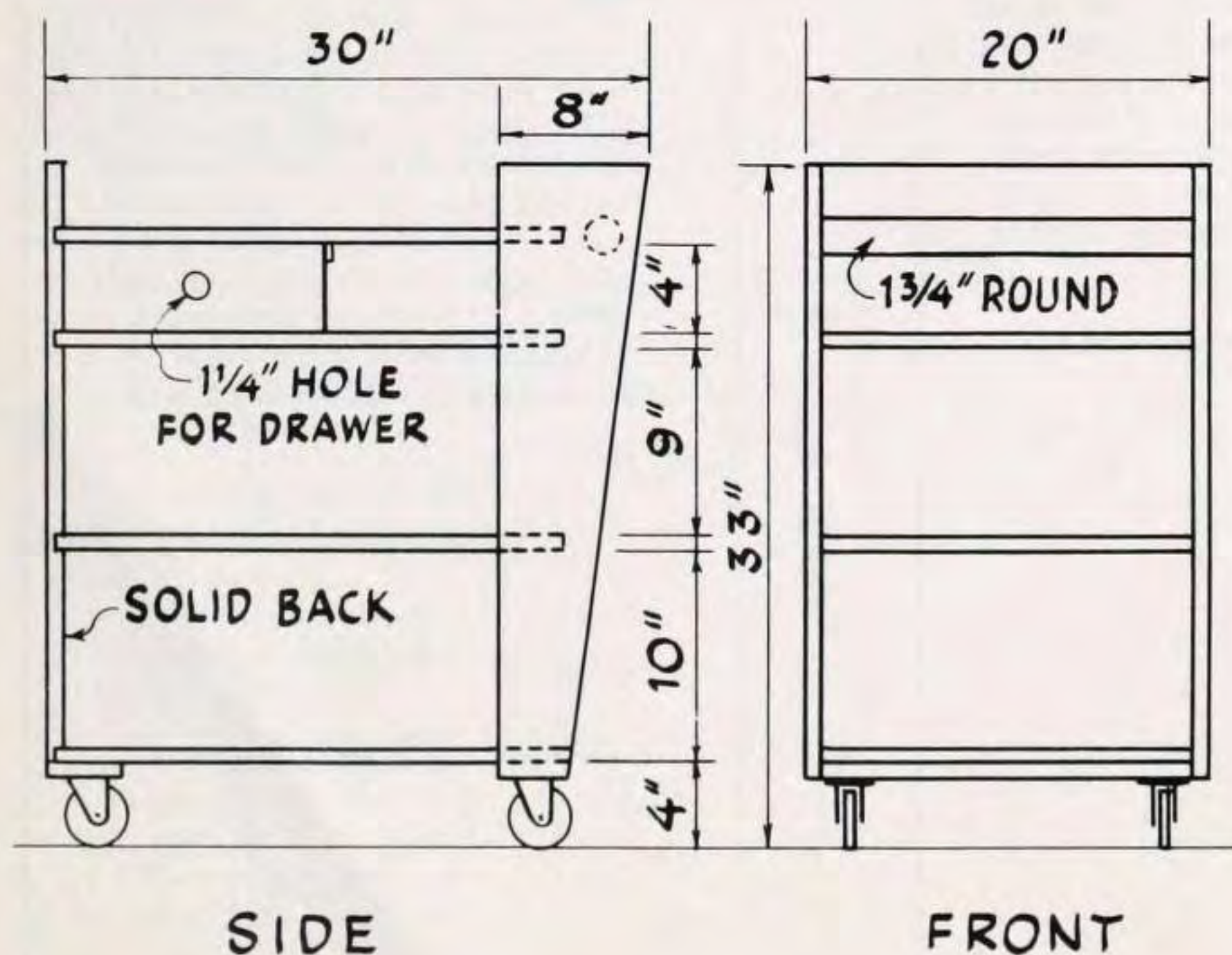
One way to store the cart is shown in the lower photo. Space was provided under the kitchen counter so the cart could provide shelf storage when not in action.



William Alexander, Design; Alex De Paola, Photo

BILL OF MATERIALS

- $\frac{3}{4}$ " exterior grade plywood 4' x 8' panel
- 1 pc. 29" x 20" for solid back
- 4 pcs. 26" x 20" for shelves
- 2 pcs. 4" x 20" for caster bases
- 2 pcs. 8" x 30" for side frames
- 2 pcs. 4" x 13" for drawer front & back
- 2 pcs. 4" x 20" for drawer sides
- 1 pc. 13" x 20" for drawer bottom
- $1\frac{3}{4}$ " round 20" long for handle
- 4 hard rubber ball-bearing casters
- 3 doz. 1" flat head screws
- Waterproof glue





Morgan Stedman, Design: Clyde Childress, Photo

PLAN 41. DE LUXE SERVING CART

This serving cart is handsome enough to keep indoors, still rugged and large enough to use on a patio.

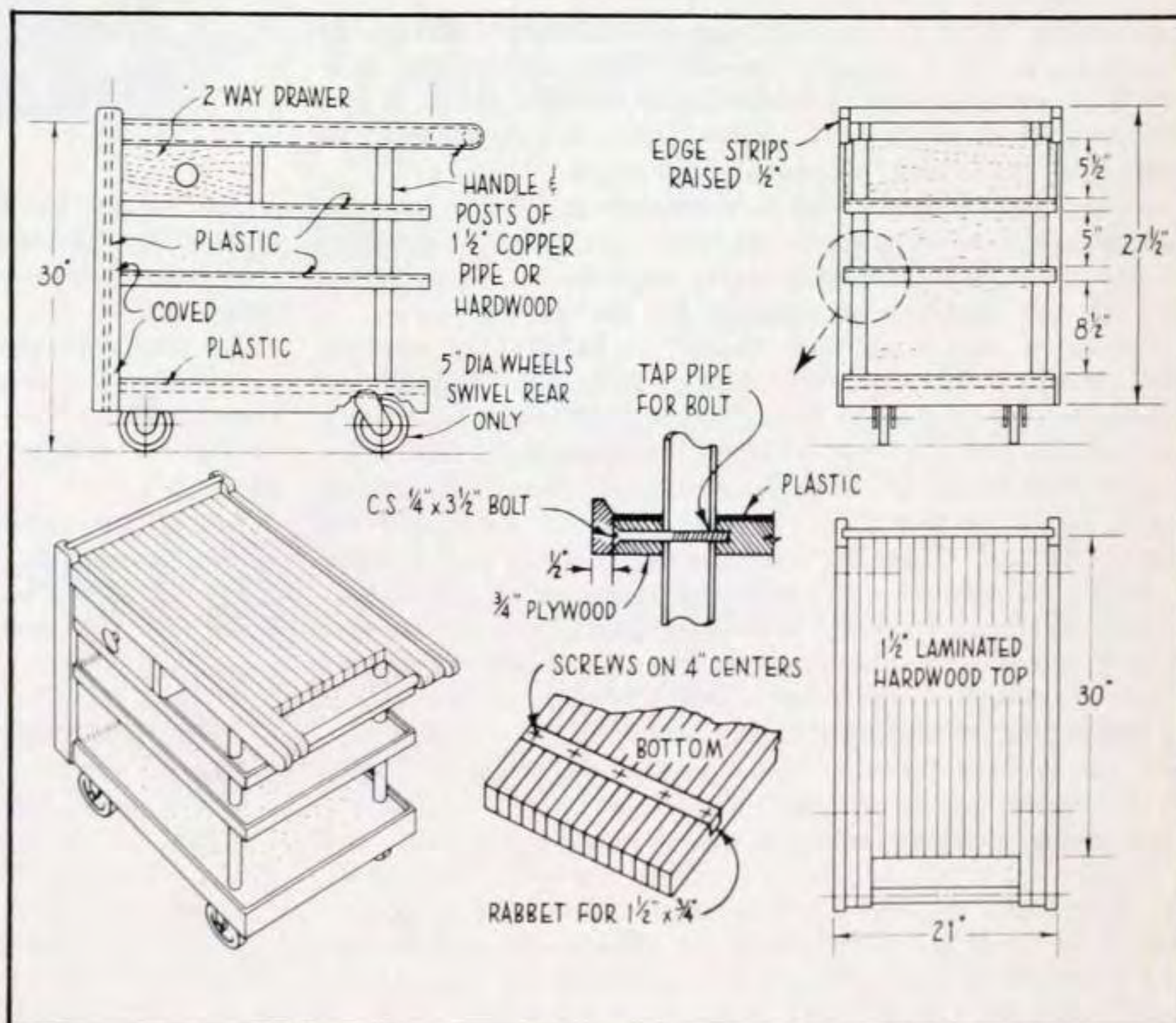
The three shelves will hold all the food and dinnerware needed to serve a complete meal. The wheels are big enough to roll smoothly over a rough-paved surface.

If you intend to use the laminated edge-grain hardwood top for cutting or carving, leave the wood unfinished.

The flexible plastic covering the shelves requires expert fitting, and is best put on by a professional.

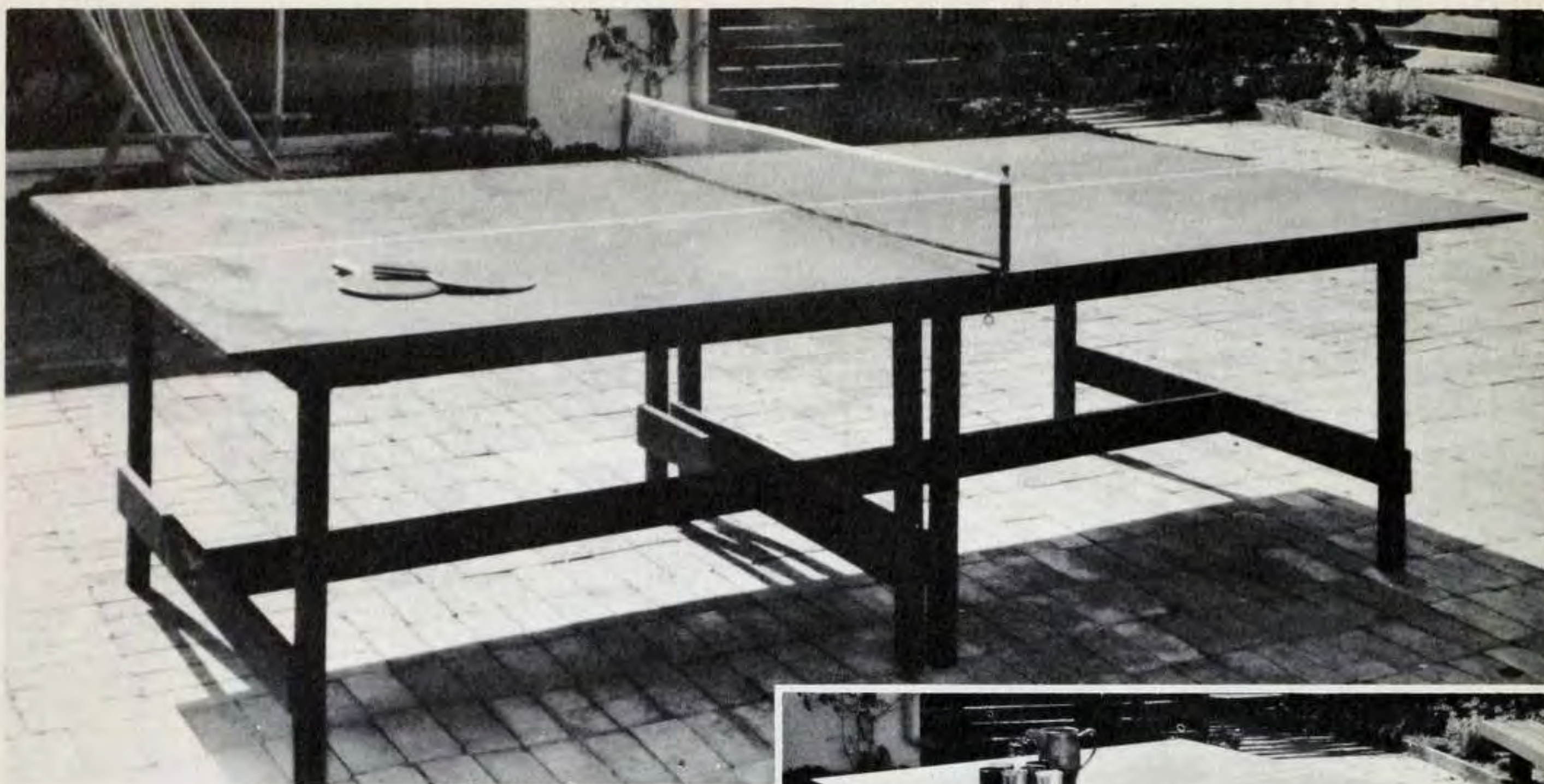
BILL OF MATERIALS

- 1" x 1½" hardwood—total length 45'
 - 6 pcs. 35" long for top
 - 11 pcs. 30" long for top
- ¾" plywood—total 16½ sq. ft.
 - 3 pcs. 20" x 30" for shelves and bottom
 - 1 pc. 20" x 27½" for back
- 1" x 4"—total length 5'
 - 2 pcs. 27½" long for back
- ½" x 4"—total length 7'
 - 2 pcs. 30" long for bottom
 - 1 pc. 20" long for bottom
- ½" x 2"—total length 14'
 - 4 pcs. 30" long for shelves
 - 2 pcs. 20" long for shelves
- 1" x 6"—total length 4'
 - 2 pcs. 12" long for 2-way front
 - 1 pc. 20" long for drawer partition
- ¼" plywood—total 4 sq. ft.
 - 2 pcs. 19" x 5½" for drawer sides
 - 1 pc. 19" x 12" for bottom sides



- 2 drawer pulls
- 2 stationary casters and 2 movable casters
- 1½" copper pipe or hardwood round—total 5'8"
- 2 pcs. 24" long and 1 pc. 20" long

- ½" cove molding—total length 60"
- 3 pcs. 20" long for shelves
- Plastic covering for shelves—2 yds. 20" wide
- 8 bolts ¼" x 3½"
- Wood screws



PLAN 42.

PING PONG TABLE

In many localities, table tennis is considered strictly an indoor game, but in many areas with benign spring and summer weather, it is justly popular as an outdoor sport. A certain amount of shelter, of course, is needed to protect the game from the erratic influence of the wind.

A ping pong table is easy to construct and it can be built at a saving over store costs—however, not as great a saving as one might think, because of the expense of the oversized (5' x 9') slab of plywood required for the game.

Ideally, a ping pong table should be lightly, but sturdily built. It will receive rough handling during its lifetime, and should be strong enough to endure the collisions that are a part of the game. However, it need not be built like a log cabin, for it should be movable. Few people can permanently spare the 70 square feet of patio that the table and the players require. However, moving the table is not a light-hearted task, because even with the barest minimum of supporting structure, the table is a formidable chunk of furniture to shift around. The slab of plywood alone weighs 90 pounds.

For the reasons listed above, this table has been designed to break into two separate tables that fold. This design permits the table to be taken down and stored when its period of usefulness has passed; and it allows the table to be dismembered and used as two separate dining or game tables.

One by four-inch lumber is used for the basic framework, and 2 by 2's for the legs. Lock the legs in place with a spanner that is fastened to each bottom leg brace with a closet bolt and wing nut. When this spanner is removed, the legs may be folded into the frame. They rotate on leg screws.

The tops lie flat on the support. They are held in place by cleats, that also give the mover a handhold on the heavy plywood and help to keep the plywood from warping due to exposure to the weather.

Surface should be painted with an outdoor priming coat and then two or three coats of dark green enamel, dulled with the addition of dull black enamel. A $\frac{1}{8}$ -inch white line



P. C. Johnson, Design; Ernest Braun, Photo

should be painted down the center and a $\frac{3}{4}$ -inch white band around the outside edge. Be sure to seal the edge of the board, if it is to be left outdoors all the time. Paint understructure dull black.

As shown on the opposite page, there are many possible variations in designing the understructure. It can be made from notched boards (be sure to fit the notches accurately to prevent wobble), saw horses, or legs that fold up against the top.

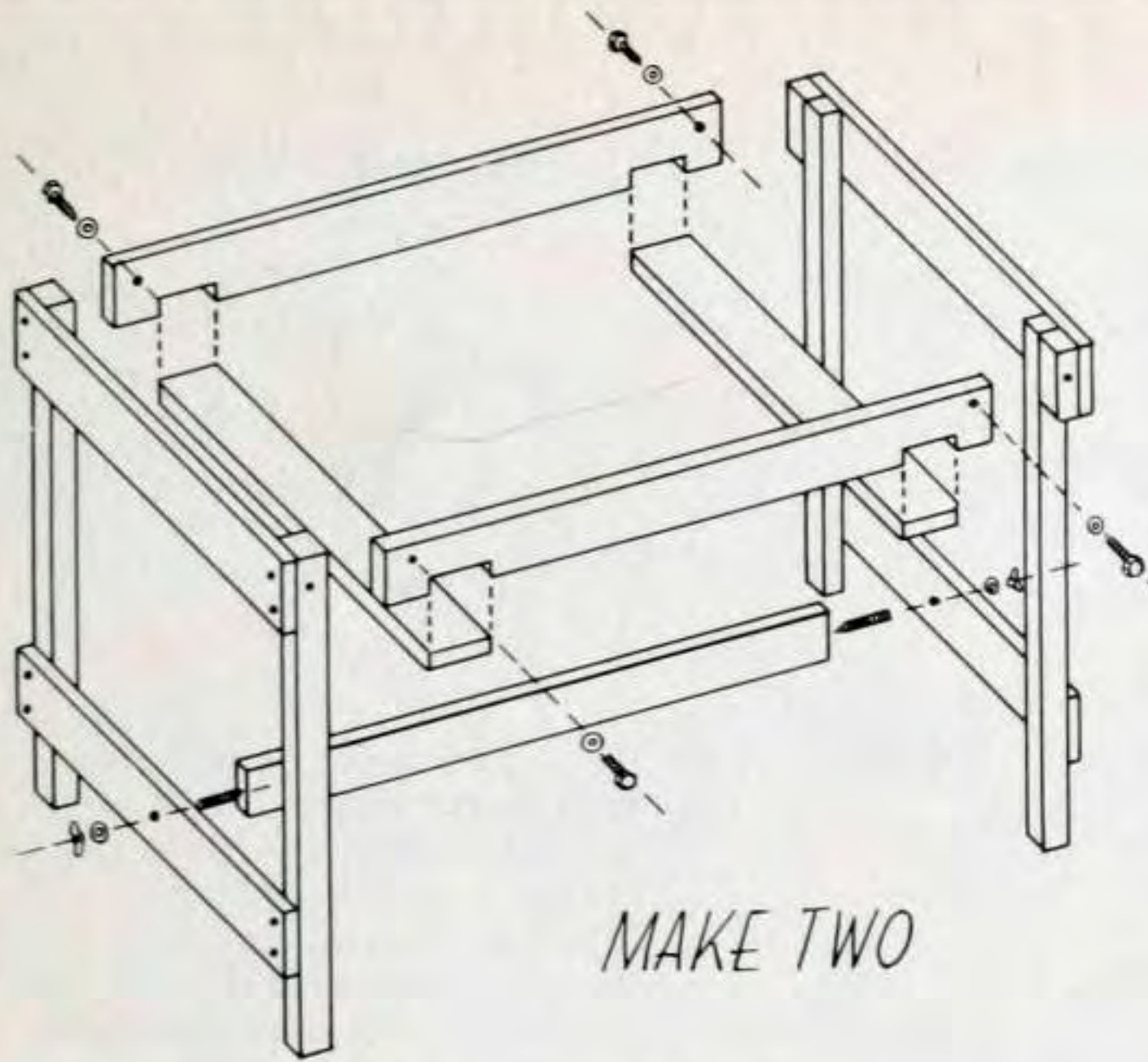
For security, apply glue to all joints and fasten with screws rather than nails.

It is a good idea to cover the table at night to protect it from dew. Use canvas or a pair of old shower curtains.

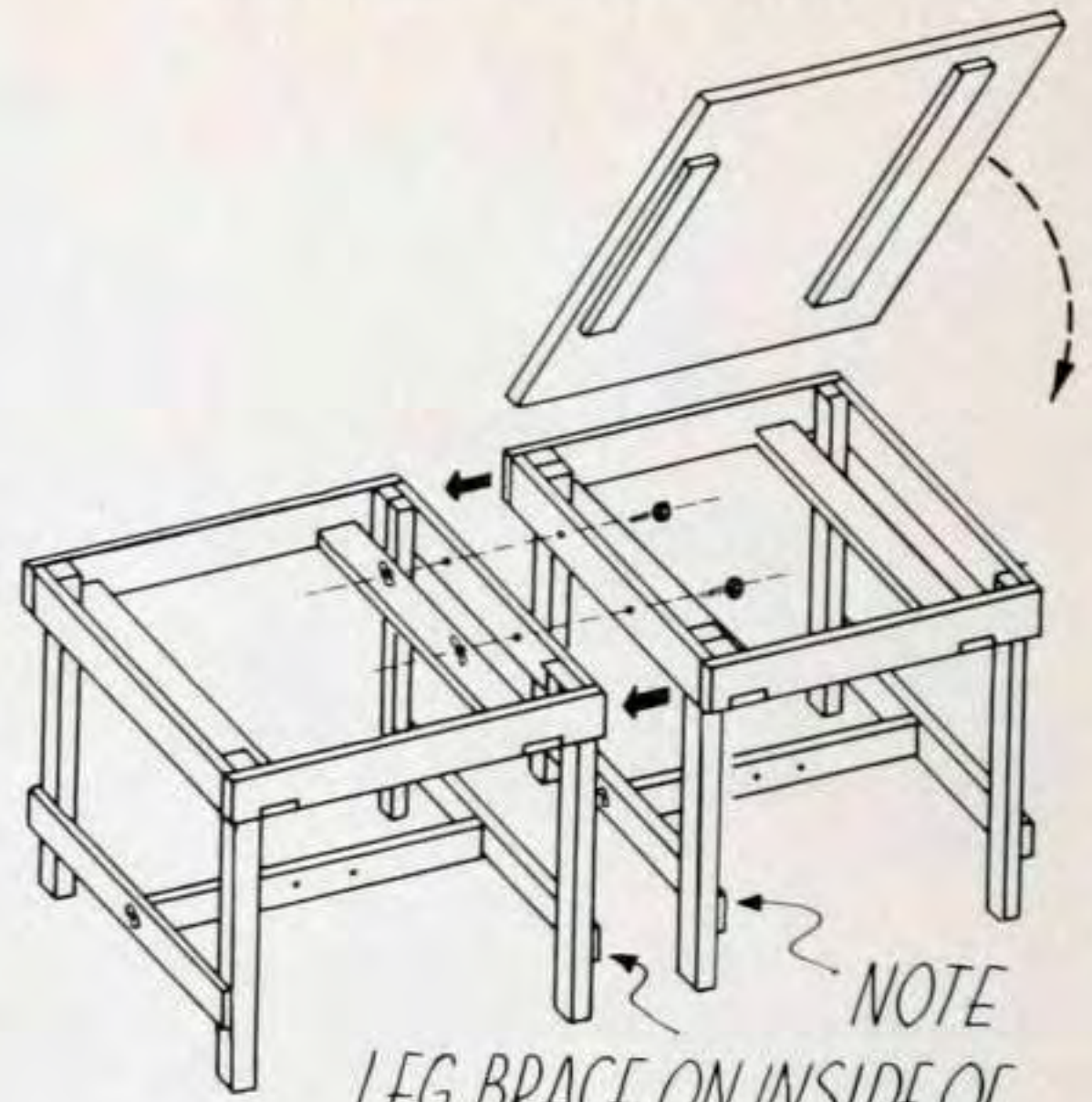
BILL OF MATERIALS

- 1" x 4"—total length 72'
- 10 pcs. 48" for sides and cross braces
- 6 pcs. 46 $\frac{1}{2}$ " for leg braces
- 2 pcs. 43" for bottom leg braces
- 2" x 2"—total length 22'
- 8 pcs. 29 $\frac{3}{8}$ " for legs
- 4 pcs. 3 $\frac{3}{4}$ " for leg clearance blocks
- 4 lag bolts $\frac{1}{4}$ " x 2"
- 4 lag bolts $\frac{1}{4}$ " x 4"
- 4 closet bolts $\frac{1}{4}$ " x 3"
- 2 carriage bolts $\frac{1}{4}$ " x 2"
- 2 carriage bolts $\frac{1}{4}$ " x 5"
- 16 washers
- 8 wing nuts
- 56 screws, 1 $\frac{1}{2}$ "
- 12 screws, 1 $\frac{1}{4}$ "

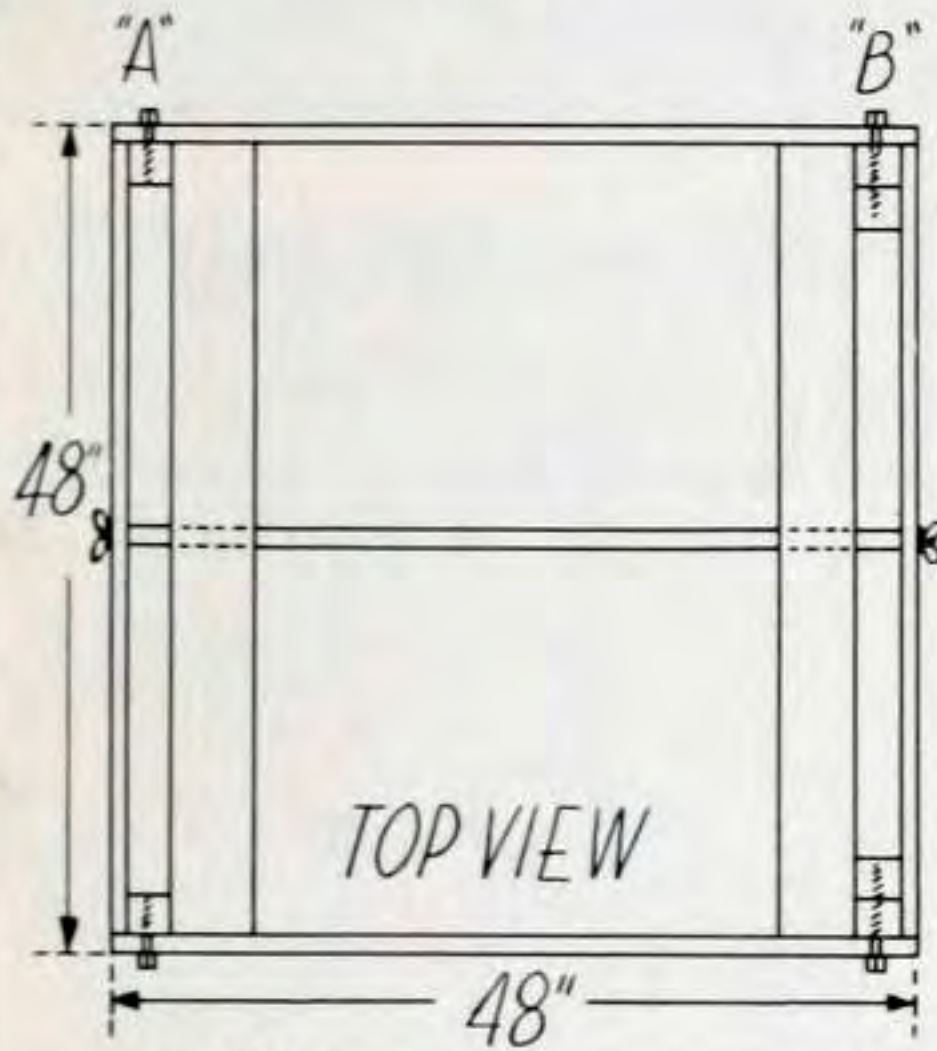
PLAN 42. PING PONG TABLE



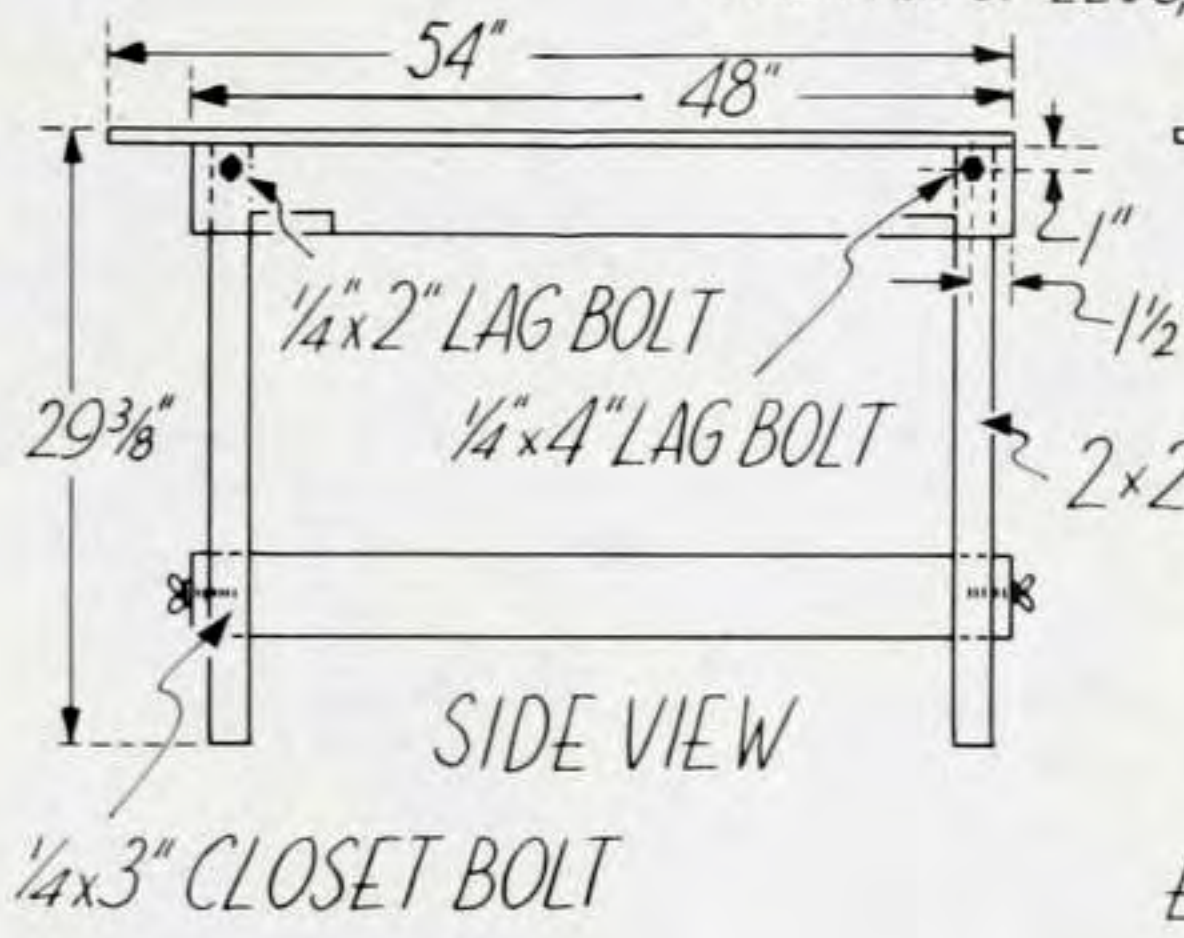
MAKE TWO



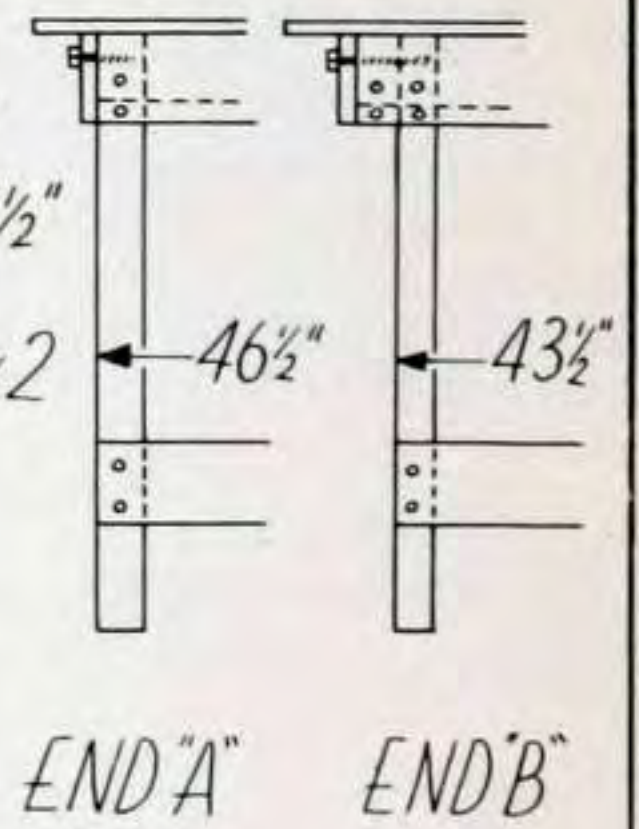
NOTE
LEG BRACE ON INSIDE OF
ONE PAIR OF LEGS, OUTSIDE OF OTHER



TOP VIEW

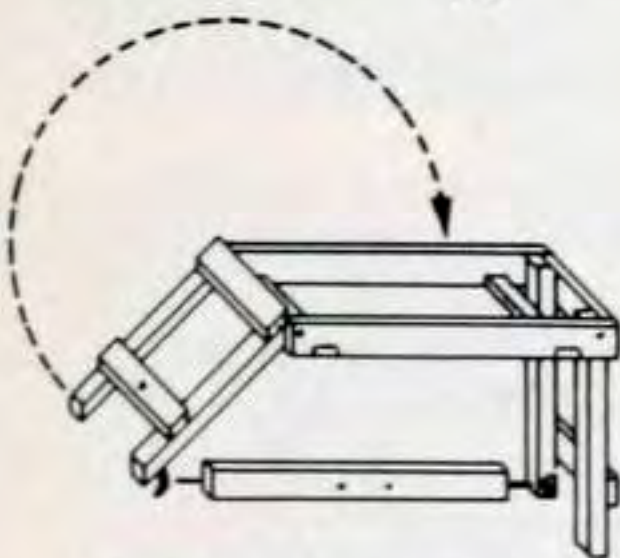


SIDE VIEW

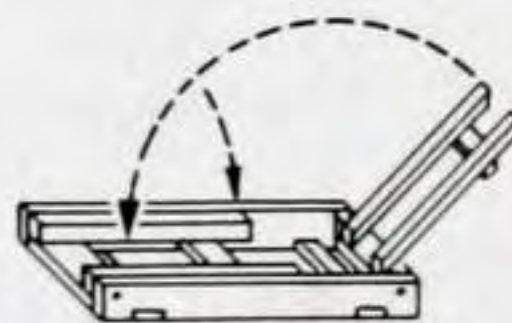


END "A"

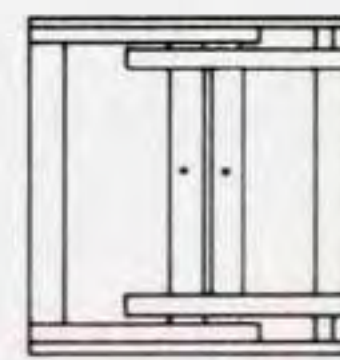
END "B"



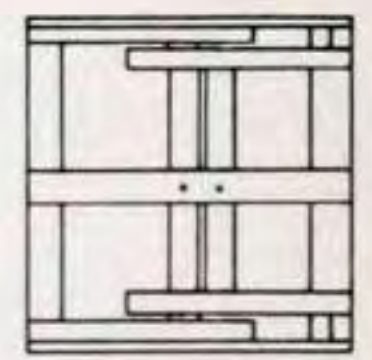
HOW TO FOLD



SWING LEGS IN

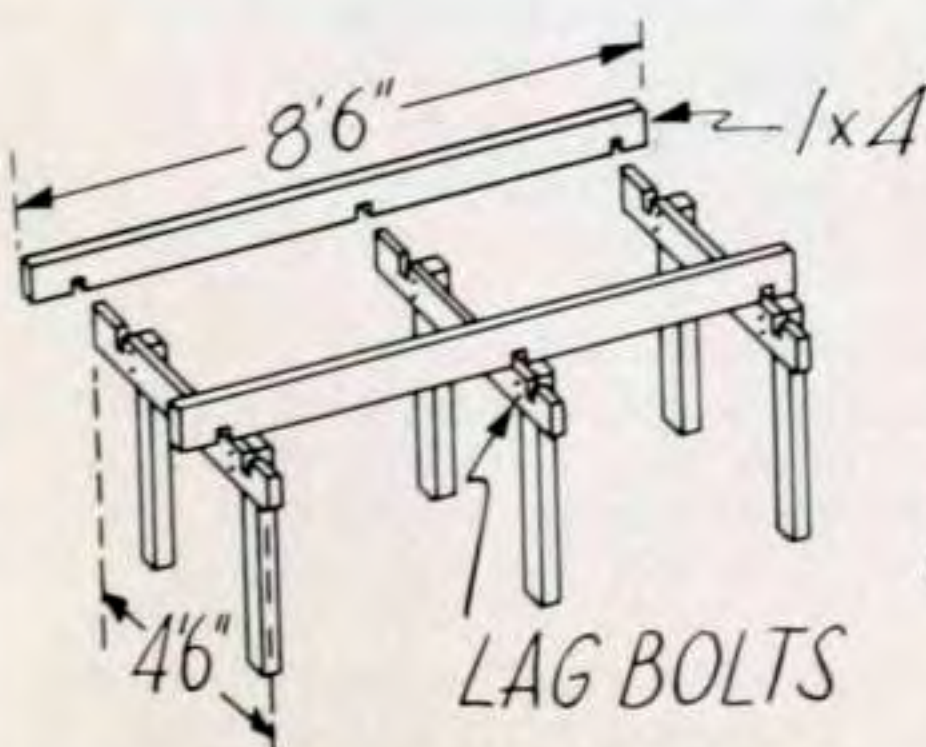


FOLDED

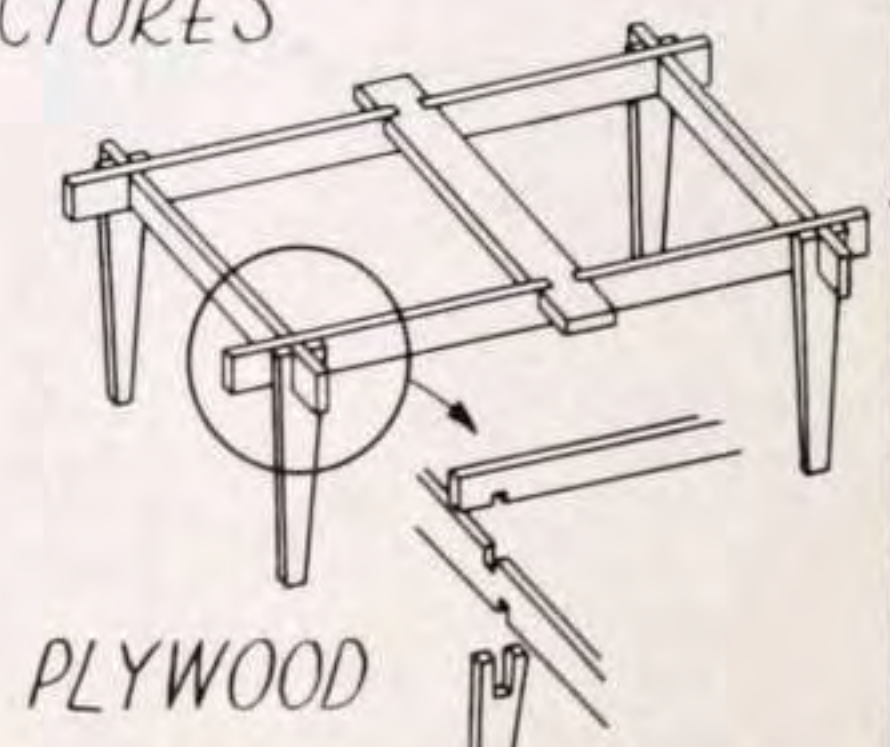
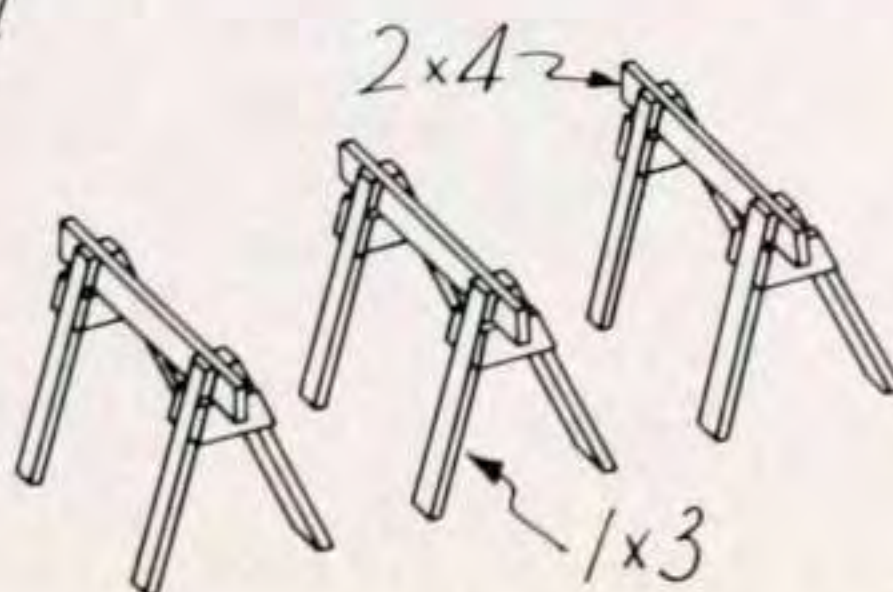


BRACED

ALTERNATE UNDERSTRUCTURES



LAG BOLTS



PLYWOOD

LUMBER GRADES, DIMENSIONS—How to use, How to buy

LUMBER GRADES

USES	GRADES				
	REDWOOD	PINE	FIR	CEDAR	PLYWOOD (EXTERIOR)
Suitable for table tops, benches, chair arms, shelves, cabinets, and other high finish surfaces.	Clear all heart Select heart	B and Better 1 and 2 clear Supreme	B and Better	Finish Select Clear	A-A
May contain slight defects such as torn grain or sapwood, but suitable for furniture framing, exposed sheeting such as outdoor shelter walls and often used where surface is to be planed and sanded.	"A" Grade	C select Choice	C	B and Better	A-B
Suitable for general outdoor garden construction. Contains some knots and defects on back. Medium crook and cup. Use when appearance is not a primary consideration, or where surfaces will be painted. Economical for fence posts, rails, retaining walls, plant boxes, exposed supports in outdoor shelters.	Utility	Quality D Select	D	C Finish	B-C
Seldom used for finish work because of visible irregularities in surface or lack of resistance to decay. However these grades are suitable for rough, bulky, construction such as plating, studding or sub-flooring.	Construction heart Sap Common No. 3 Common	3rd Clear 1-5 Common Utility	Merchantable 1-4	D Finish 1-3 boards	C-C

NOTE: Above grades apply whether using rough or finished lumber. Specify kiln-dried lumber if shrinkage will affect quality of construction.

STANDARD DIMENSIONS OF SURFACED LUMBER

THICKNESS		WIDTH		SQUARES	
Rough	Surfaced	Rough	Surfaced	Rough	Surfaced
1"	25/32"	3"	25/8"	3x3	25/8 x 25/8
1 1/4"	1-1/16"	4"	35/8"	4x4	35/8 x 35/8
1 1/2"	1-5/16"	5"	45/8"	5x5	45/8 x 45/8
2"	1-3/4"	6"	55/8"	6x6	55/8 x 55/8
3"	2-5/8"	8"	7 1/2"	8x8	7 1/2 x 7 1/2
4"	3-5/8"	10"	9 1/2"		
		12"	11 1/2"		

TABLE FOR CONVERTING LINEAL TO BOARD FEET

LUMBER SIZE	LINEAL FEET								
	8	10	12	14	16	18	20	22	24
1x2	Sold by lineal foot								
1x3	Sold by lineal foot								
1x4	2-2/3	3-1/3	4	4-2/3	5-1/3	6	6-2/3	7-1/3	8
1x6	4	5	6	7	8	9	10	11	12
1x8	5-1/3	6-2/3	8	9-1/3	10-2/3	12	13-1/3	14-2/3	16
1x10	6-2/3	8-1/3	10	11-2/3	13-1/3	15	16-2/3	18-1/3	20
1x12	8	10	12	14	16	18	20	22	24
2x2	Sold by lineal foot								
2x3	Sold by lineal foot								
2x4	5-1/3	6-2/3	8	9-1/3	10-2/3	12	13-1/3	14-2/3	16
2x6	8	10	12	14	16	18	20	22	24
2x8	10-2/3	13-1/3	16	18-2/3	21-1/3	24	26-2/3	29-1/3	32
2x10	13-1/3	16-2/3	20	23-1/3	26-2/3	30	33-1/3	36-2/3	40
2x12	16	20	24	28	32	36	40	44	48
3x6	12	15	18	21	24	27	30	33	36
4x4	10-2/3	13-1/3	16	18-2/3	21-1/3	24	26-2/3	29-1/3	32

Formula for computing board feet: Thickness in inches x width in feet x length in feet.

Example: 1"x1"x10' = 1x1/12x10 = $\frac{10}{12}$ = 5/6 board foot.

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How to plan and build practically every outdoor project.	\$4.95
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