MAY 1954

35 CENTS

POPULAR MECHANICS

MAGAZINE

HOW TO BUILD
IM KENDALL'S
TRAILER
—Page 181

Craftsman Jim Kendall, high-school shop instructor at Oak Park, Ill., tells how he built his . . .

FAMILY CAMPING TRAILER

Part I

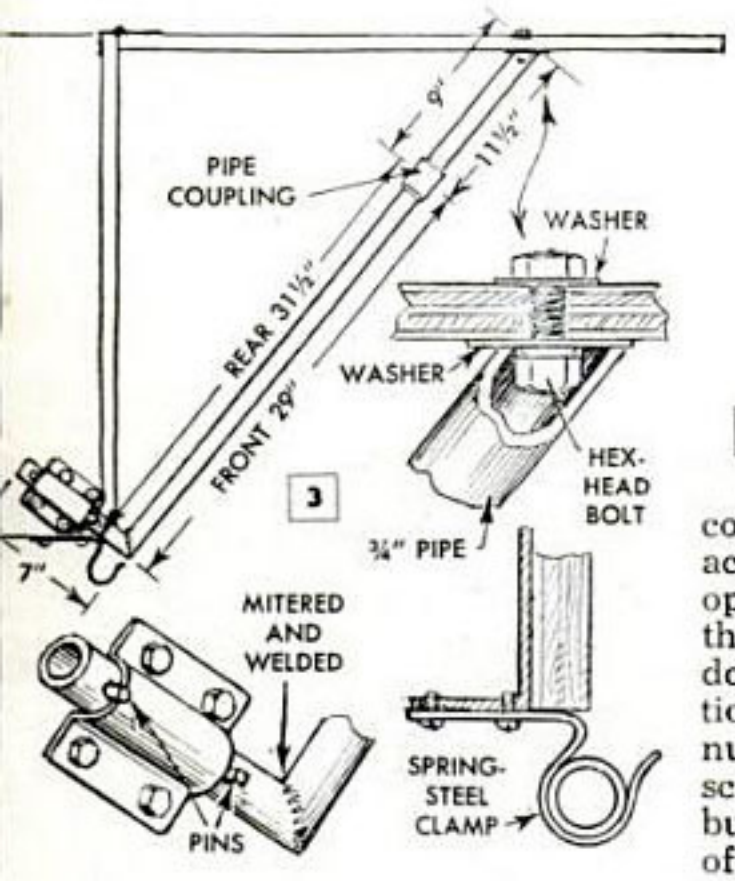
LIKE SO MANY outdoor-loving Americans, my family thoroughly enjoys spending its vacations and long week ends camping out—roughing it, so to speak — while exploring the many lakes and back trails of this great U.S.A. After having roughed it several summers in true Boy Scout style, we decided to design and build a camping trailer that would incorporate "all the comforts of home" in a compact, two-wheel job capable of being trailed safely at highway speeds.

Having two boys, Bruce and Craig, I knew that the trailer would have to sleep at least four. It would have to be small enough to park in my two-car garage, and it would need a roomy ice chest to handle an ample food supply. It also would have to afford adequate protection in bad weather and, preferably, be collapsible, which meant finding a way of erecting and dismantling it without a lot of work. In short, a fold-away "tent" on wheels was what we needed.

The trailer you see pictured below fulfills all these requirements. And, after having put it through a tour of the West last summer (a grueling test of some 5000 miles), we found the trailer towed beautifully, provided all the comforts we had hoped for and caused a mild sensation wherever we set up camp or pulled stakes. When open, each overhanging wing of the trailer to which the tent is permanently attached, accommodates a full-size air mattress to provide comfortable sleeping for four. The deep insulated ice chest at the front of the trailer is easy to reach both when the trailer is open or closed. The boys found this feature especially convenient for getting Cokes and other treats while on the road. Likewise, two lock-fitted

Independent of motel and restaurant, the Kendall family are enjoying camp life at its best with their trailer

Pipe extensions are screwed on lid supports to increase their length



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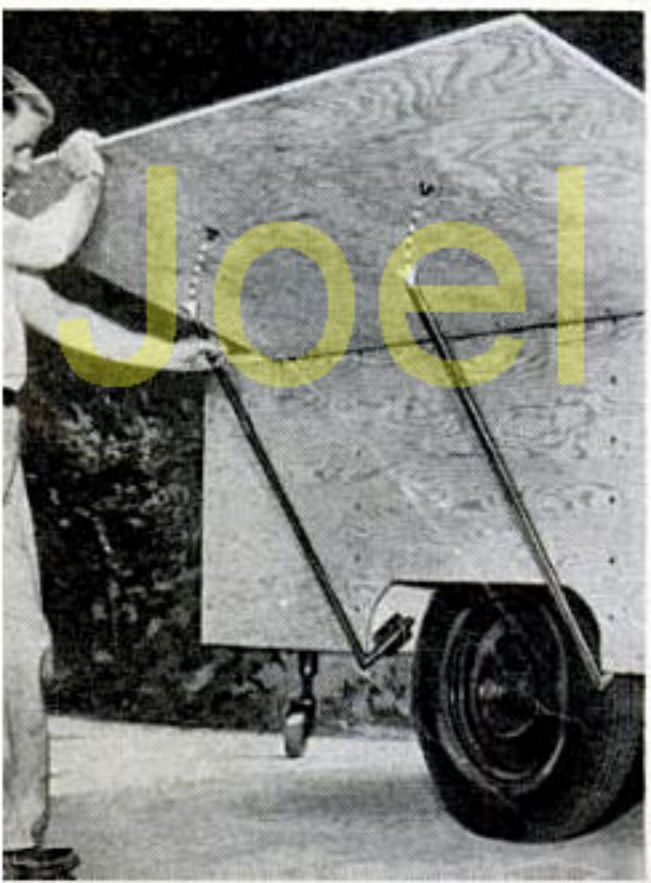
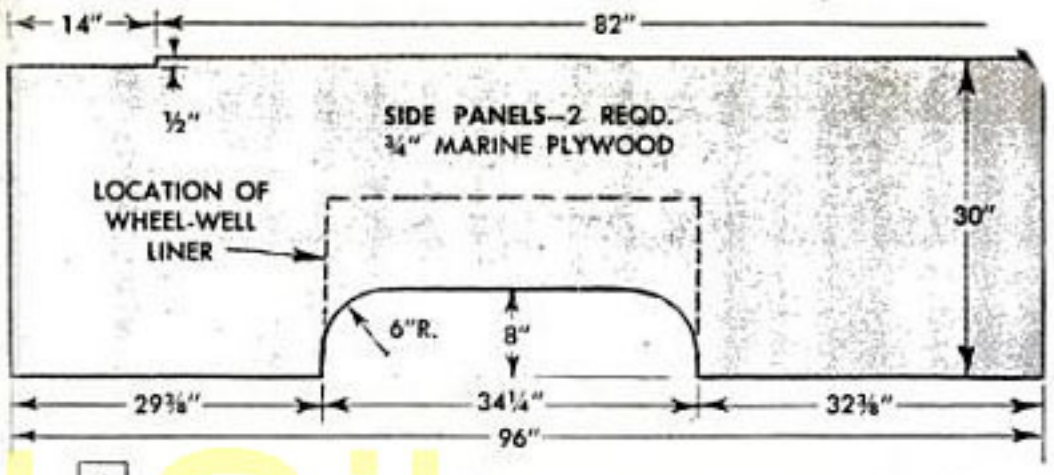
Below, bolt-head studs project from lids to engage ends of pipe supports





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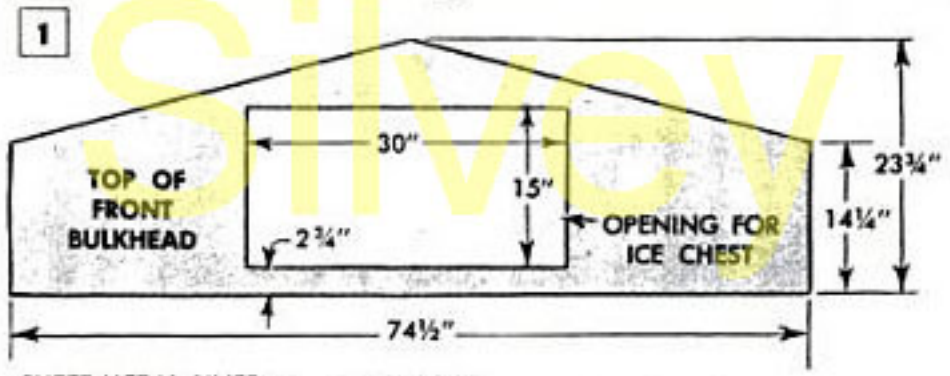
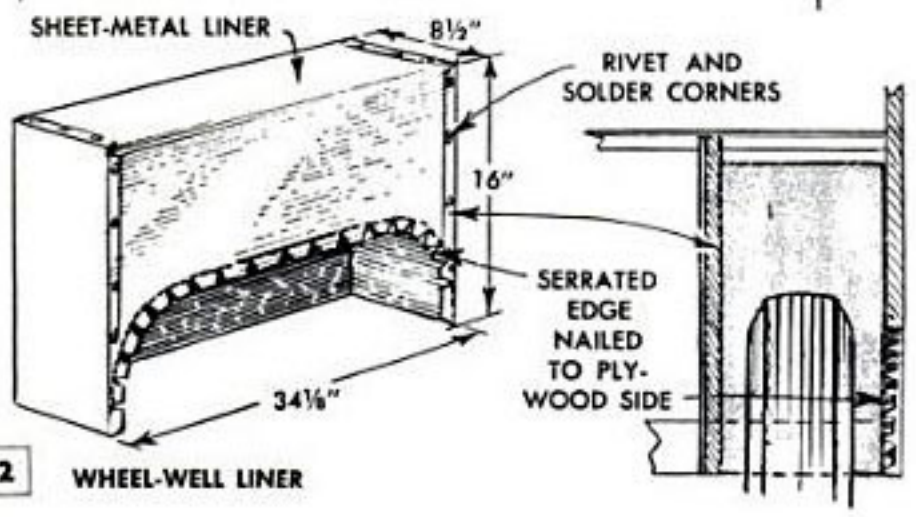


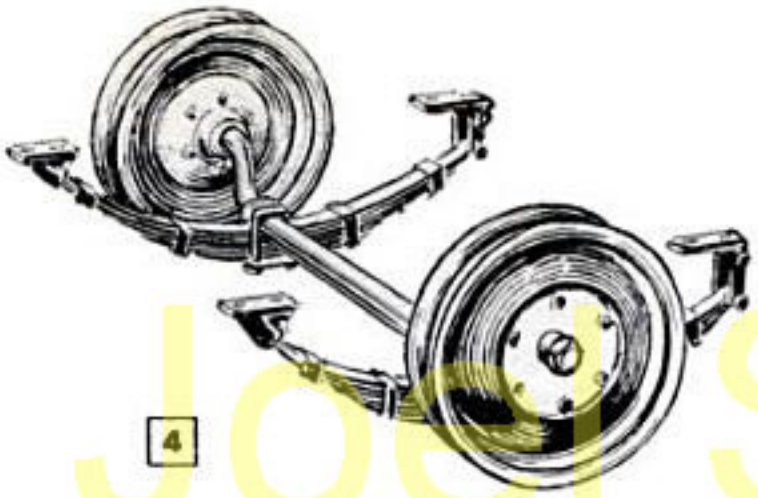


2 WHEEL-WELL LINER

compartments in the nose of the trailer permit quick access to items that might be needed en route without opening the trailer itself. Two persons can easily erect the canvas top in a few minutes, and a full-length screen door keeps flies and mosquitoes outside. The center portion of the trailer interior affords space to store an aluminum table-and-chair set, as well as a camp stove. The screen door stows away in a trap door in the floor, and built-in compartments with sliding doors provide plenty of room for cooking utensils, bedding and clothing.

Down to the last nut and bolt, the trailer cost me $457.31 to build. However, we later found we could have saved as much as $30 on the cost of the canvas top ($133) by having the awning makers sew it together during their slack season. If materials can be salvaged and a second-hand running gear purchased, the cost can be reduced considerably.

I made the bed of the trailer body from lengths of 3-in. channel iron and 1-in. angle iron, and welded the 18 separate pieces into a rigid framework. The channel stock is used for the main members of the bed and the tongue, these parts being shaded in the plan drawing, Fig. 5. Note that the forward ends of the two center members are cut at a 13-deg. angle to match the slant of the two front members of the bed. I laid out the members squarely on my garage floor to assure a flat assembly when welding the joints. The various members are placed in position, with the flat side of the channel facing outward. The two center channels are spaced 36 in. apart and butt-welded to the front and rear members. Two short lengths of channel, 16¾ in. long, are butt-welded to the center members on each side of the bed to form the wheel wells.



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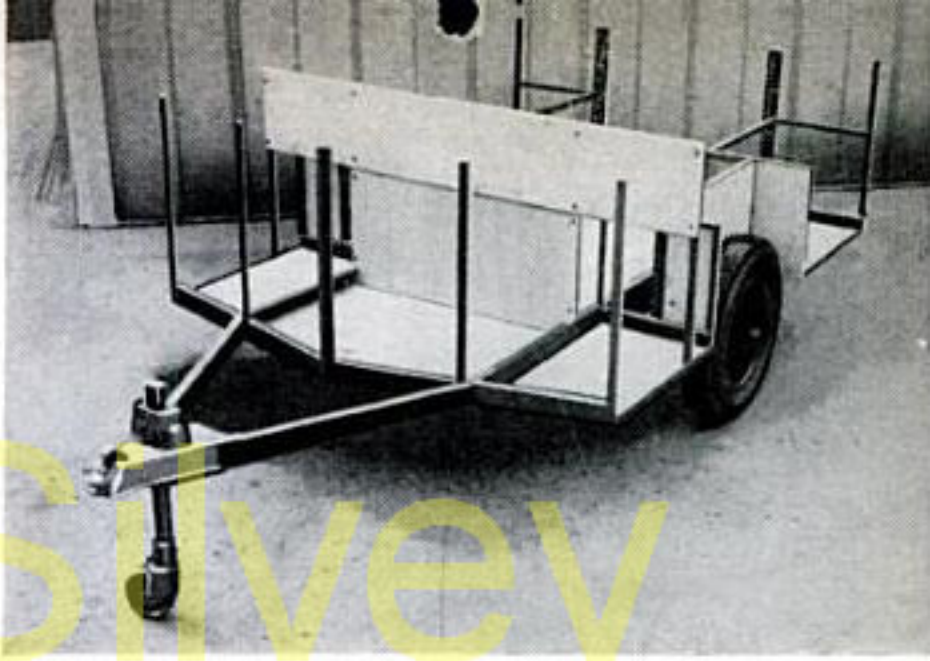

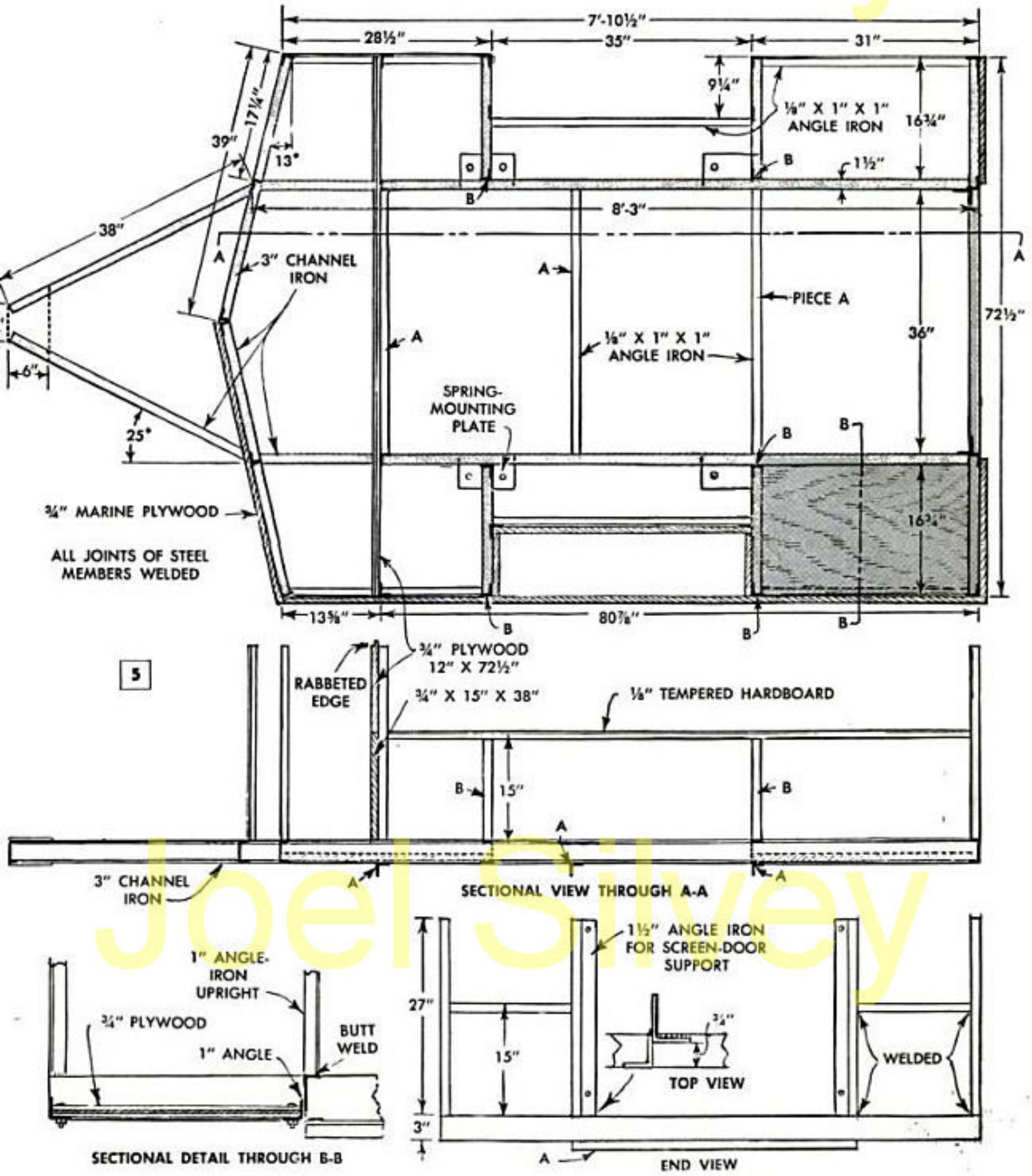

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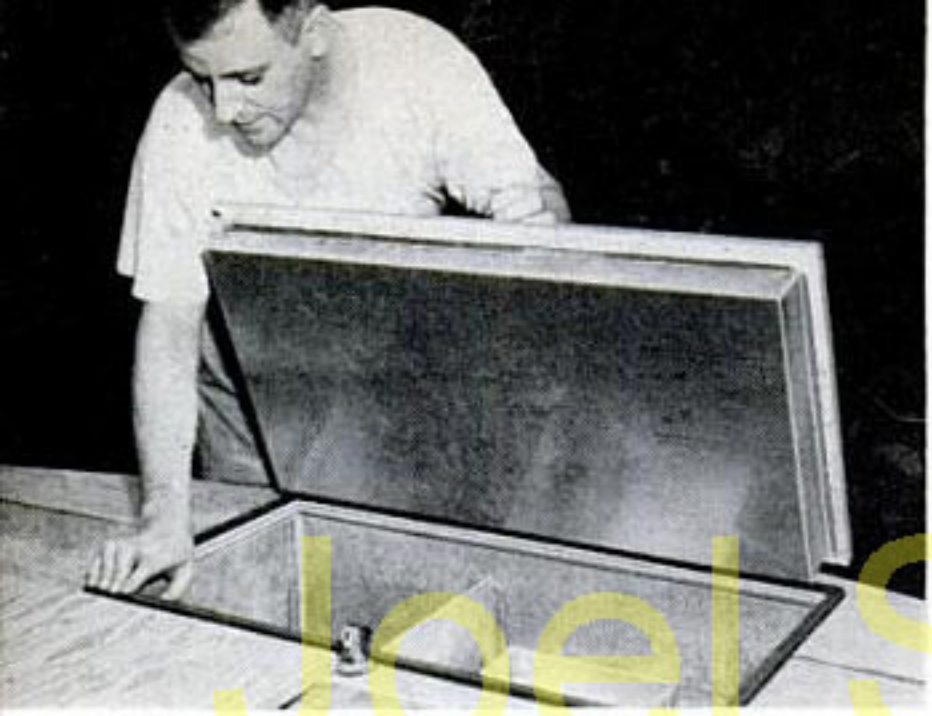
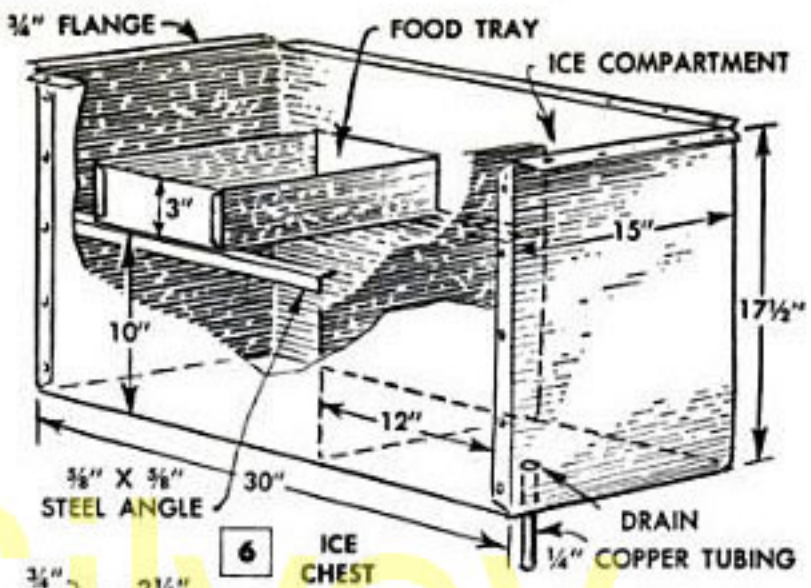
SECTIONAL DETAIL THROUGH B-B

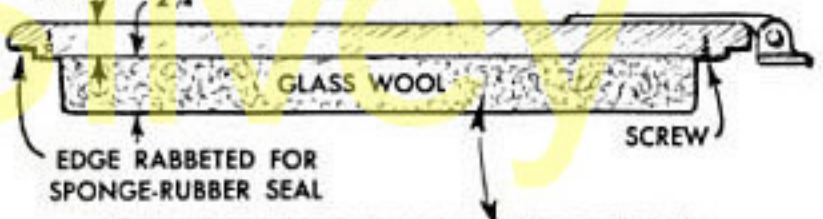
END VIEW

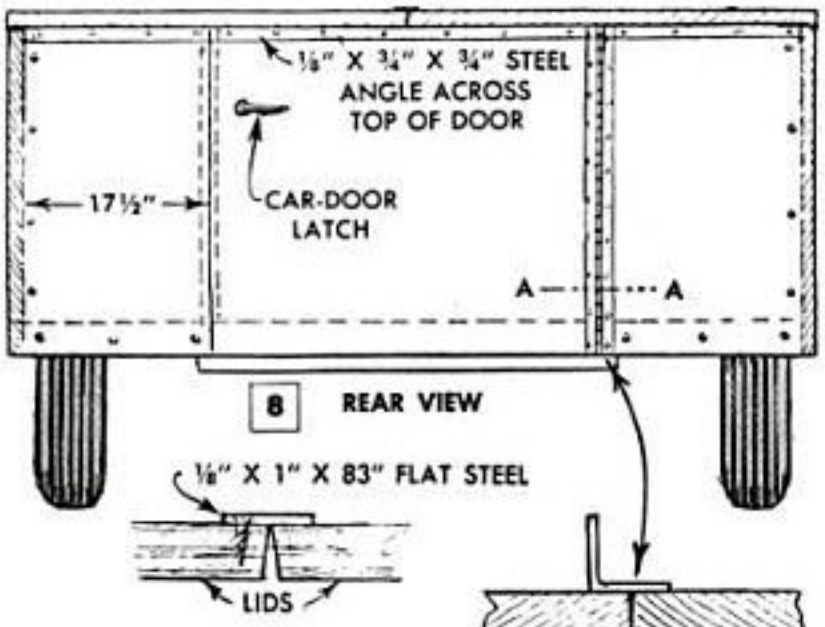


Weather stripping provides a seal for ice-box cover

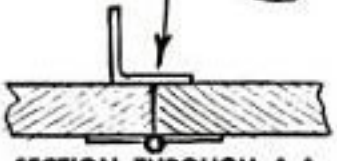


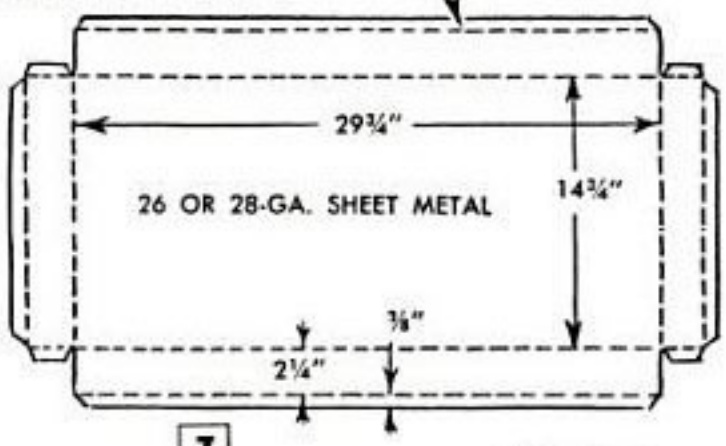
6 ICE CHEST





8 REAR VIEW





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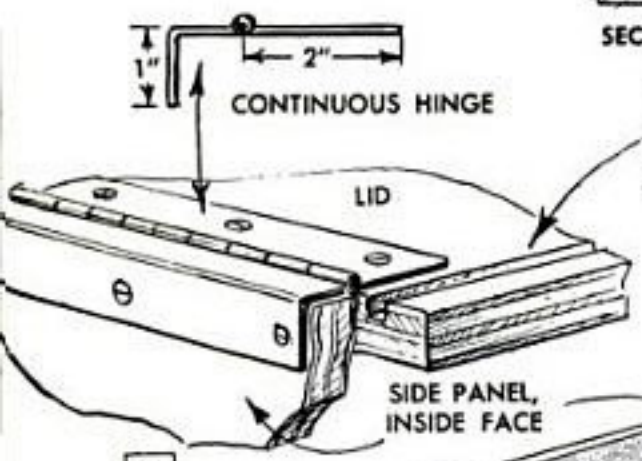

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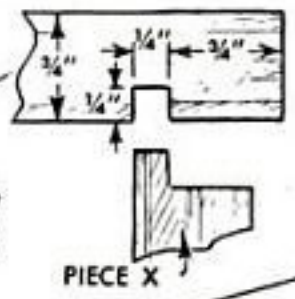

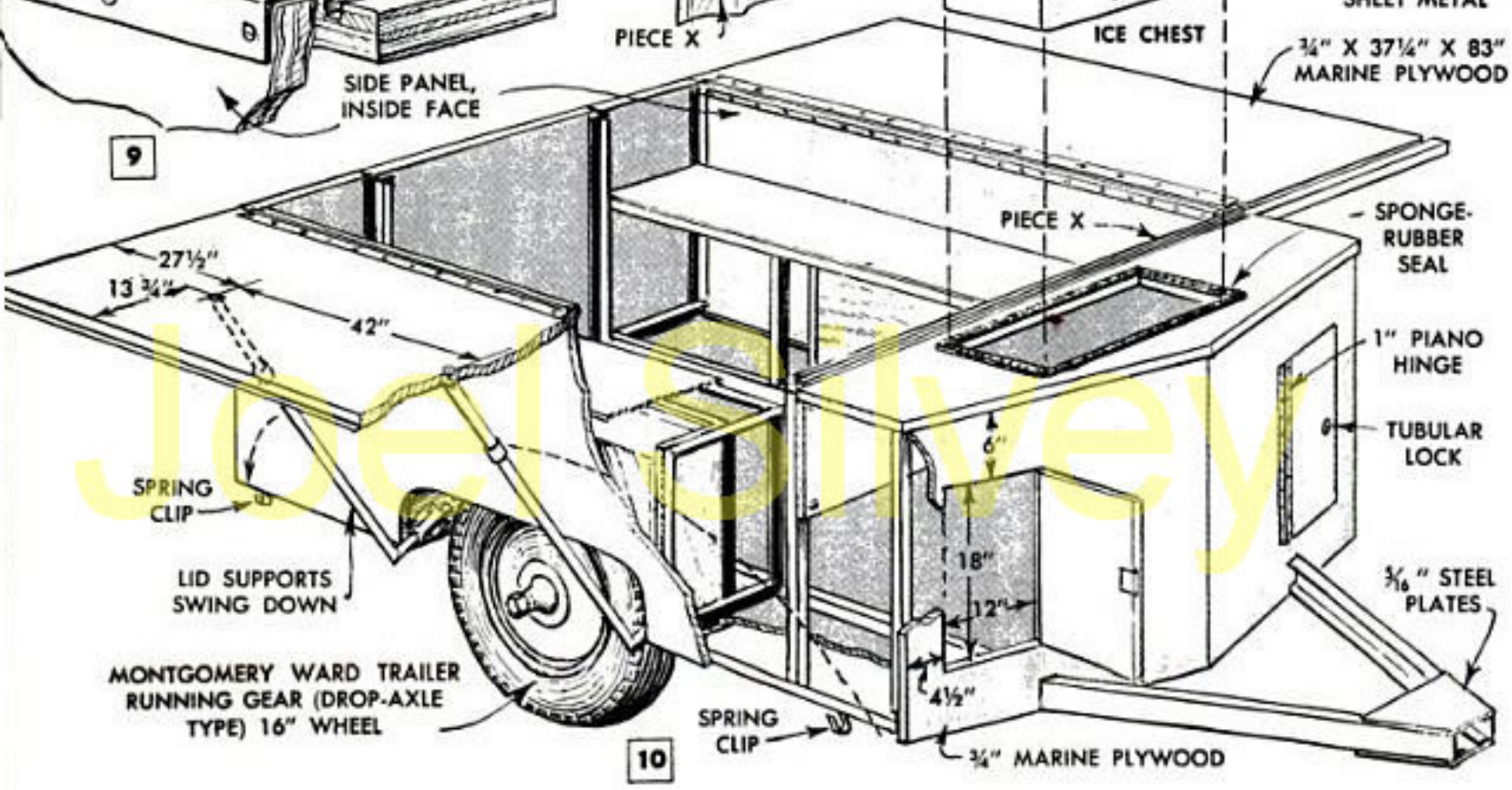

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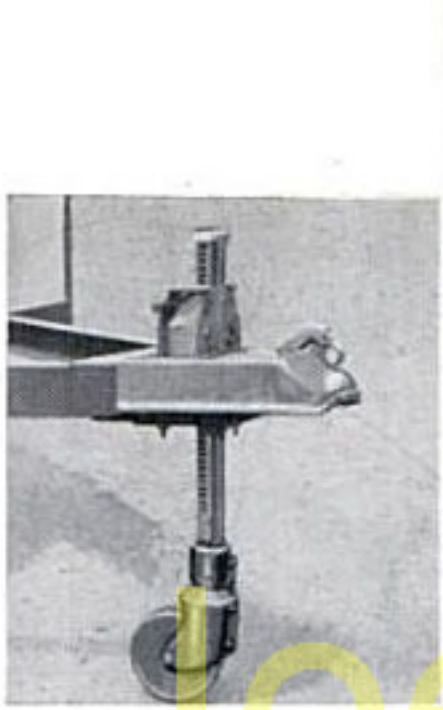
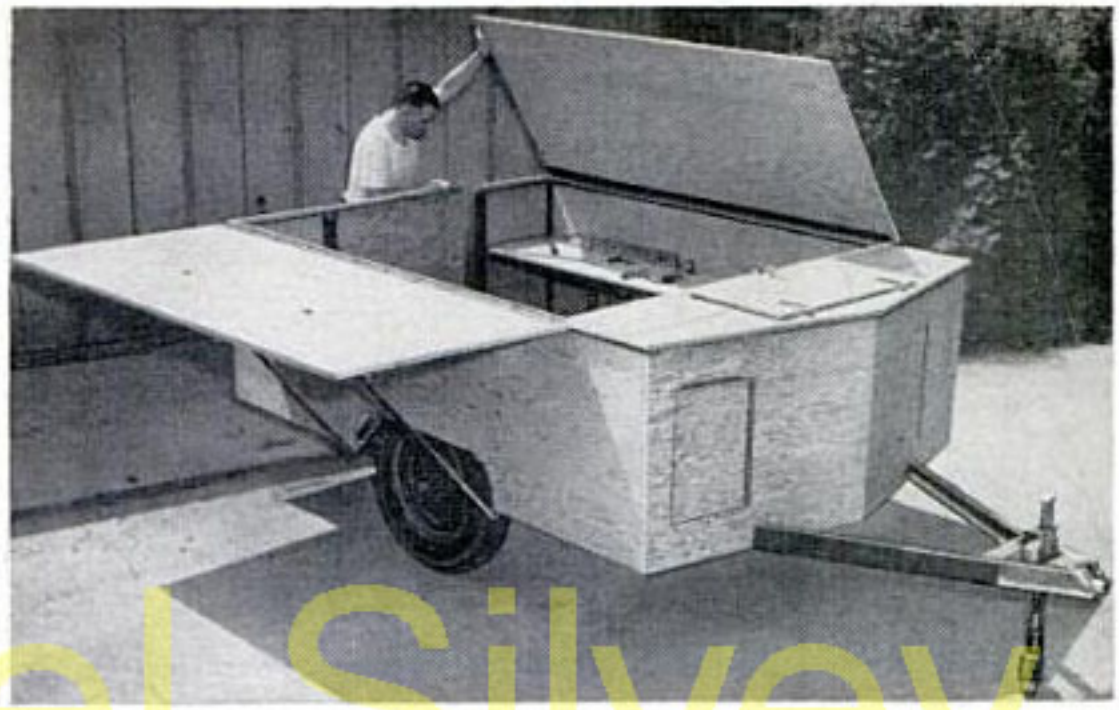




I used an Atwood commercial trailer hitch that bolts to the channel-iron tongue. Hitch permits easy rolling

Three pieces of angle iron, marked A on the drawing, are cut 39 in. long and welded to the underside of the two center channels. These pieces provide support for a ⅜-in. plywood floor. Lengths of angle iron also are welded along the center channels and along the outer edges of the bed at the sides as indicated in section B-B, Fig. 5.

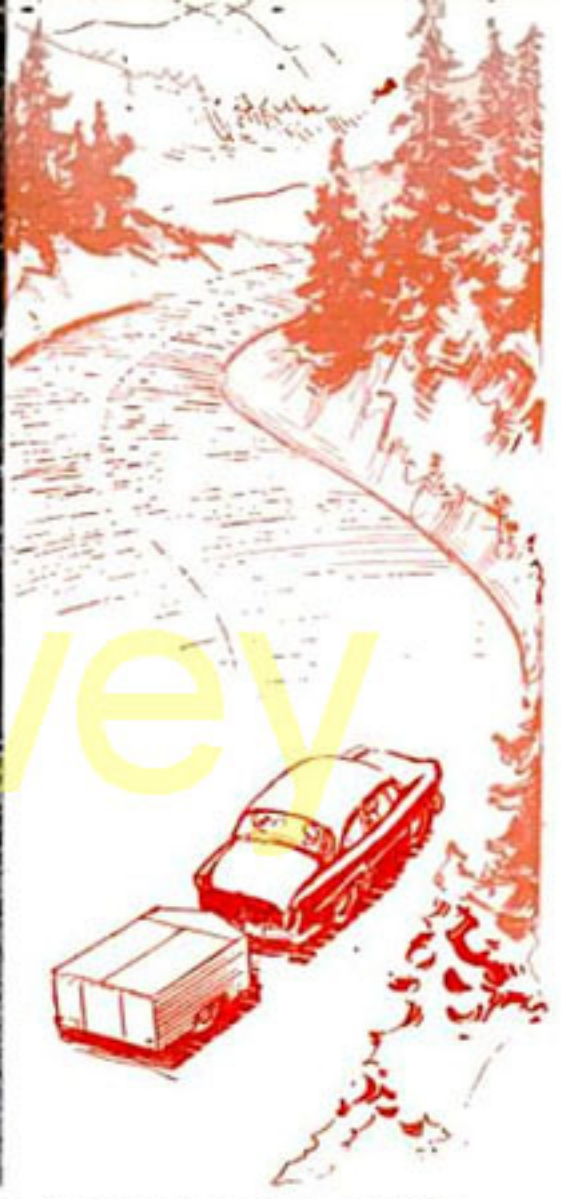
You can use any suitable two-wheel running gear, Fig. 4. I purchased a 58-in., drop-axle type having 16-in. wheels from Montgomery Ward for about $60. Spring-mounting plates, ⅜ x 6 x 8 in., are welded to the bed on the underside at the points shown and drilled for the shackle bolts.

The locations of the angle-iron posts to which the sides of the body are bolted, are spotted on the plan drawing. These are cut from 1-in. angle iron. A total of 24 are needed, ten of these being 27 in. long, two 29 in. long and twelve 14 in. long, the latter ones being located at the wheel wells, B in Fig. 5. All posts are merely butt-welded on end at their respective locations. If you study the plan carefully, you can see the way each post faces. Holes for bolting the plywood sides to the posts should be spotted and drilled before the posts are welded in place. Drill six holes for 5/16 x 1¼-in. carriage bolts in each 27-in. post, spacing them about 5 in. apart. The two 29-in. posts are butt-welded to the edge of the 1-in. angles along the sides 13⅝ in. back from the front corner posts. These particular posts support the plywood bulkhead, marked X in Fig. 10. Note that this piece is rabbeted along the top edge to engage a groove on the underside of each trailer lid to give a watertight joint. Looking at the end view, Fig. 5, you'll notice that the 1-in. posts at the rear-door opening have a second post of 1½-in. angle iron welded to them. These are set in ⅜ in. and provide a bolting surface for attaching the frame of the screen door to be described later. Finally, lengths of 1-in. angle iron are welded across the tops of the 14-in. posts and between the posts at the rear of the bed. Study section A-A, Fig. 5, and the end view. These members form a shelf on each side which is covered with hardboard.

The outside is covered with ¾-in. marine plywood. Figs. 1, 8 and 10 give the sizes for the various panels. Exact lengths should be taken directly from the trailer bed, adding ¾ in. to the length of the side panels to lap the plywood applied to the back. Before the side panels are permanently bolted in place, the wheel wells first are lined with plywood and then fitted with a sheet-metal liner. This is soldered and riveted as in Fig. 2, the cut-out edge being serrated to form tabs for nailing the liner to the edge of the plywood side panel.

Figs. 6 and 7 detail the ice chest and its cover. You'll notice that the plywood part of the cover is rabbeted around the edges to bear against a length of sponge-rubber weather stripping applied around the opening in the bulkhead cover board. Standard ice-chest hardware is used to hinge the cover and provide a positive seal. The ice chest itself hangs in the opening by flanges, and glass-wool insulation is packed solidly around it. The lids, or doors, which overhang the sides when the trailer is open, are hinged with lengths of 4-in. continuous hinge which I bent in a sheet-metal brake, as indicated in Fig. 9. I could buy this hinge only in 6-ft. lengths so I made up the difference by adding a section to it. Fig. 3 shows how the pipe supports for the lids are installed. These pivot in brackets located in the wheel wells and swing up from spring clamps to engage bolt-head studs projecting from the top surface of the lids. Pipe extensions are stowed separately.★★★

(To be continued)

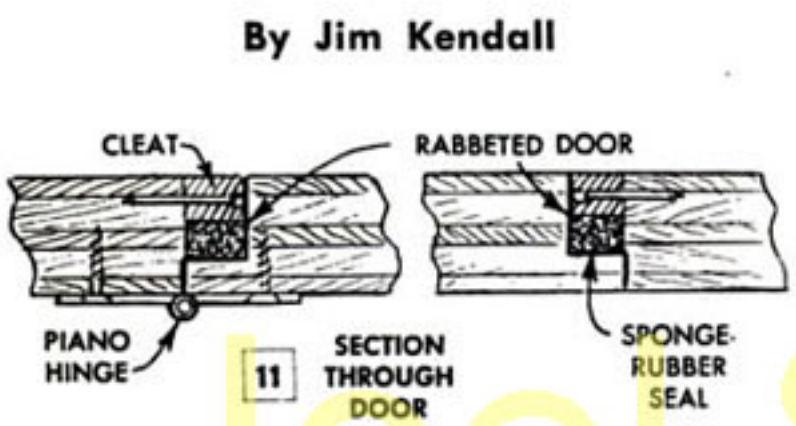


Compact as it is, Kendall's trailer has room for stowing table-and-chair set, stove and cooking utensils

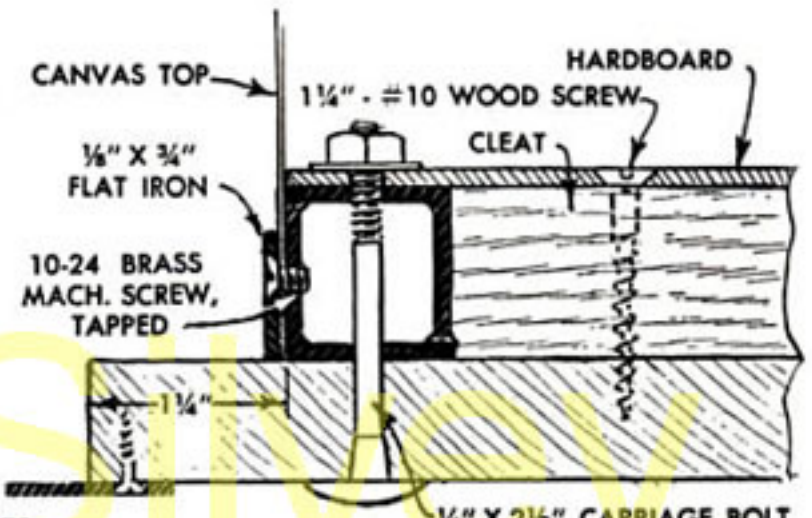
FAMILY CAMPING TRAILER

EDITOR'S NOTE: *In part I, Jim Kendall explained how the bed and body of his trailer were welded together from channel and angle iron, how the ice chest was installed and how marine plywood was used to cover the outside. Part II concludes instructions for completing Kendall's "tent on wheels."*

By Jim Kendall

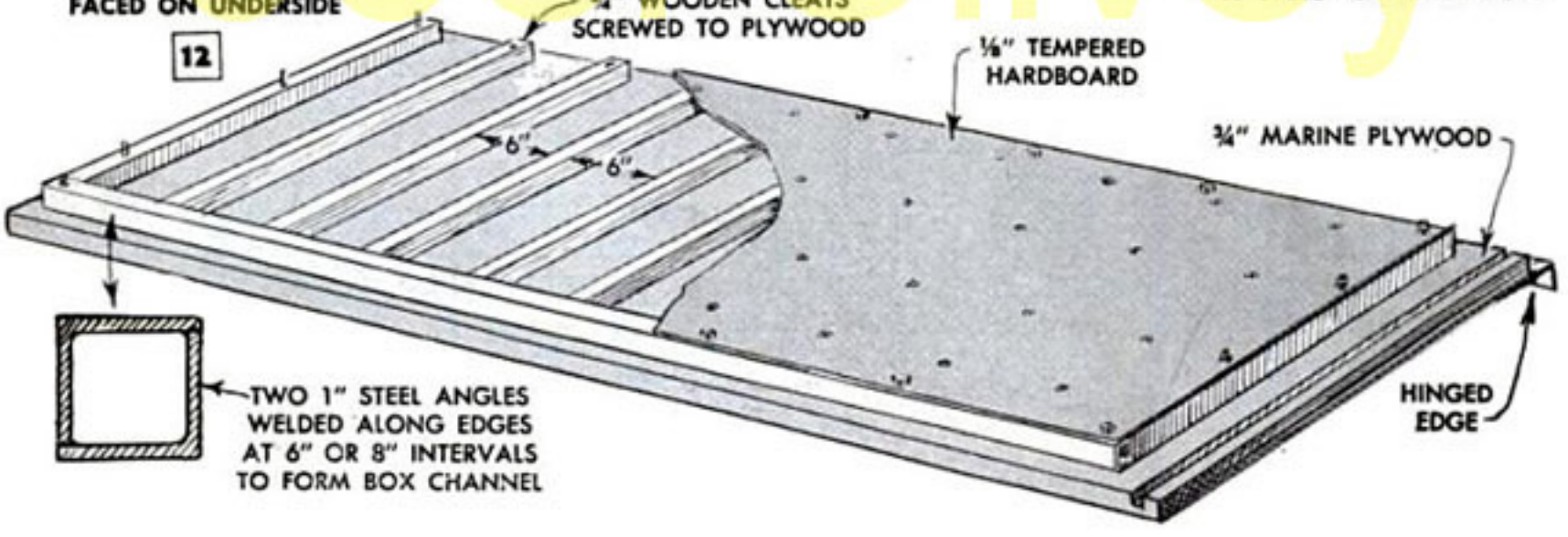


11 SECTION THROUGH DOOR



HOW HINGED LIDS ARE FACED ON UNDERSIDE

12

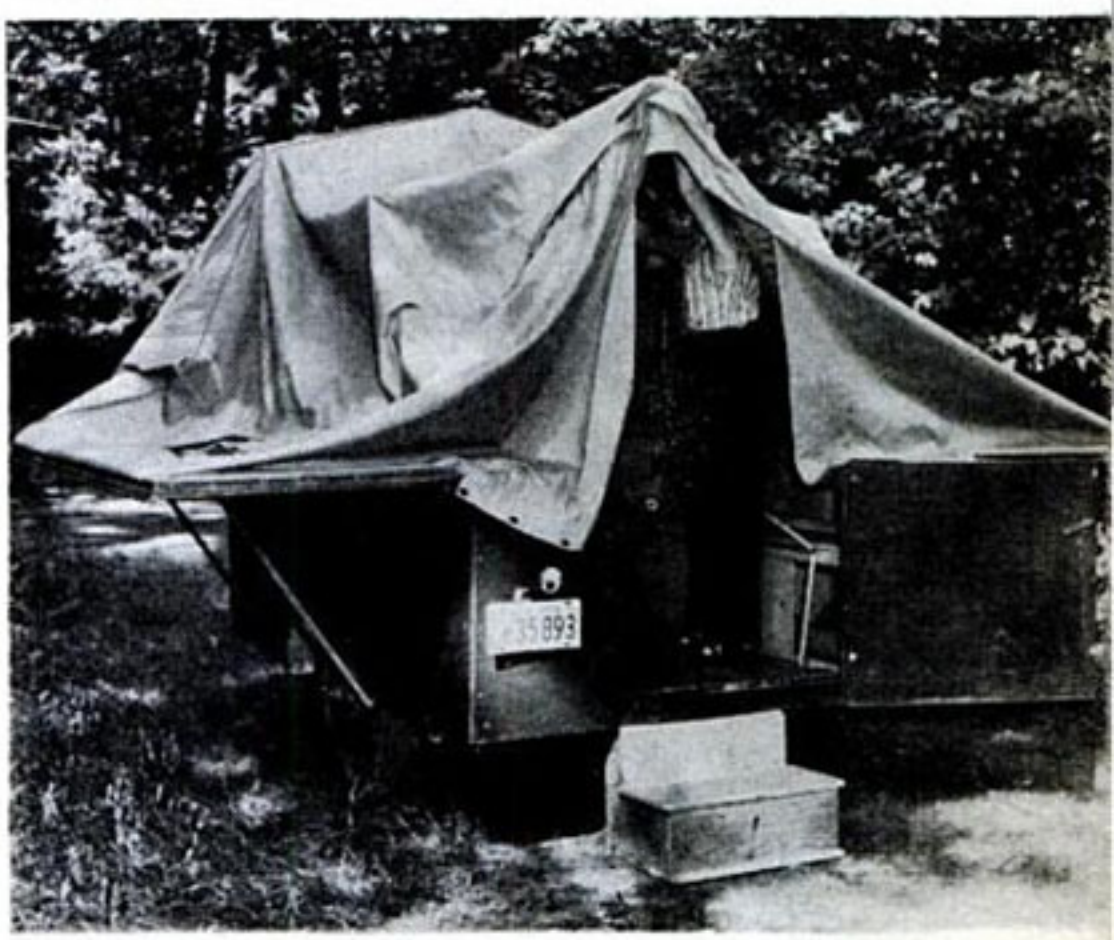


WITH construction completed to the point discussed last month, your next step is to add the framework to the underside of the trailer lids. This framework serves primarily as an anchor point to which the tent is permanently attached along each side. In studying Fig. 12, you'll notice that the framework consists of box channel on three sides over which tempered hardboard is applied and supported every 6 in. by wooden cleats. I made the box channel by placing two lengths of 1-in. angle iron together as shown and welding them along the edges at intervals of 6 to 8 in. The channel is bolted to the plywood lids approximately 1¼ in. in from the edge all around, using ¼-in. carriage bolts long enough to also pass through the hardboard covering. Holes spaced about 8 in. apart are drilled and tapped in the outer faces of the box channel. These receive small machine screws which are used to fasten flat-iron, canvas-clamping strips to the channel. Flat-headed 1¼-in. wood screws are used to fasten the hardboard to the cleats and the cleats to the plywood trailer lids.

With this step completed, you can turn to making the two folding platforms which are used to increase the width of the trailer lids so that standard 54-in. air mattresses can be used. Fig. 13 details the construction of the platforms and shows how they rest on the built-in seats when in use. They are made of ¾-in. plywood and have three legs which are hinged to fold flat. Note that the top board overhangs at the rear so it can rest on the trailer lid and be flush with the hardboard. A suitable groove is run on the underside of the overhang to allow it to fit over the barrel of the continuous hinge supporting the lid. Over-all measurements of the platforms should allow clearance for the lugs to which the tent bracing is pivoted. The links which hold the legs open are made from short lengths of flat metal. When folded flat, the platforms are stowed on the seats. In rainy weather this makes it possible to still use the seats when eating inside the trailer.

Space under the seats on each side of the wheel wells is converted to storage compartments and fitted

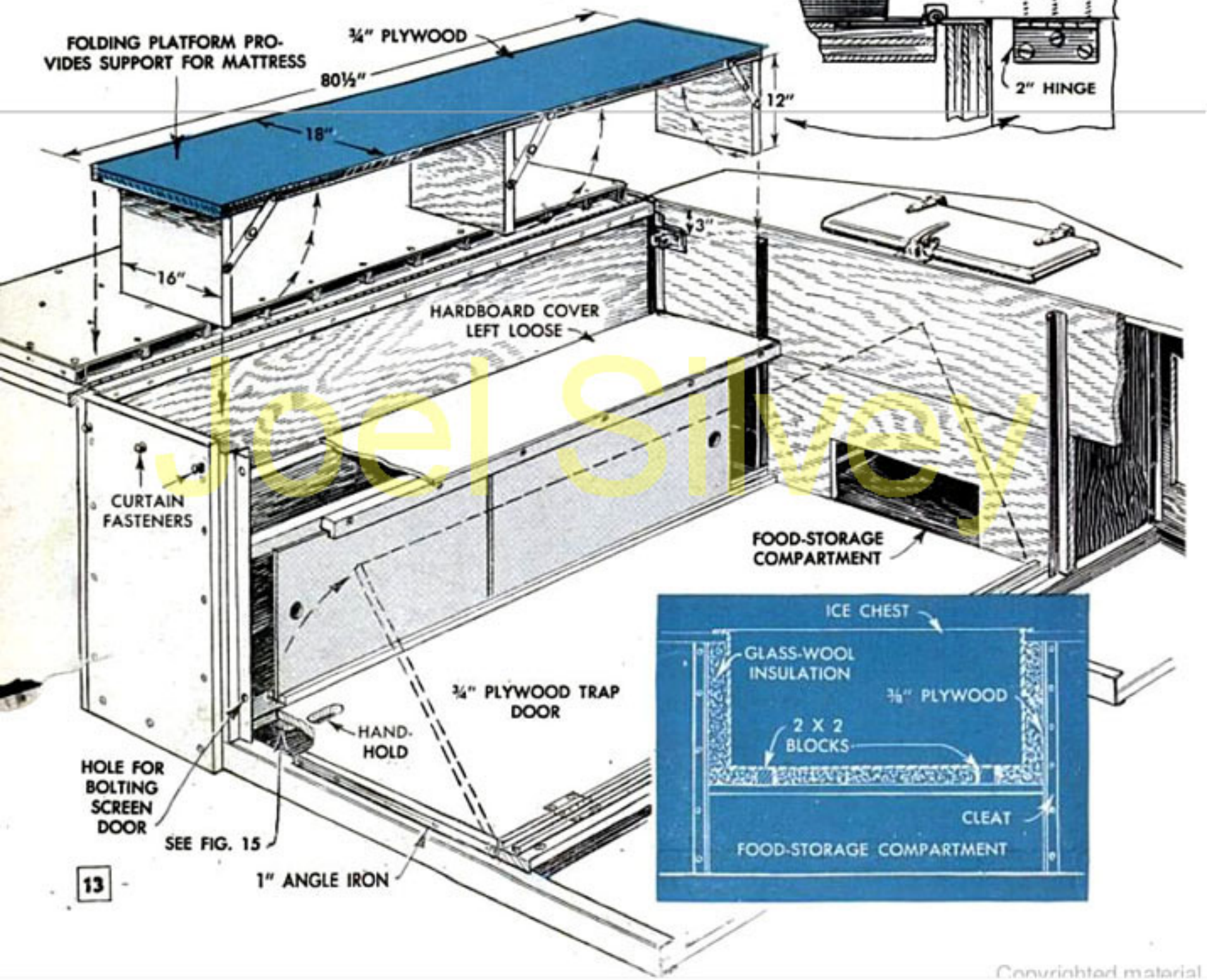
To set up camp, wings of trailer to which tent is attached are first opened outward and supported by fold-away pipe braces



Above, pipe framework swings upward from trailer body to support tent roof like covered wagon. Steps under body keep trailer from tipping. Below, Jim Kendall buttons canvas to row of regular curtain fasteners which are added to front of trailer

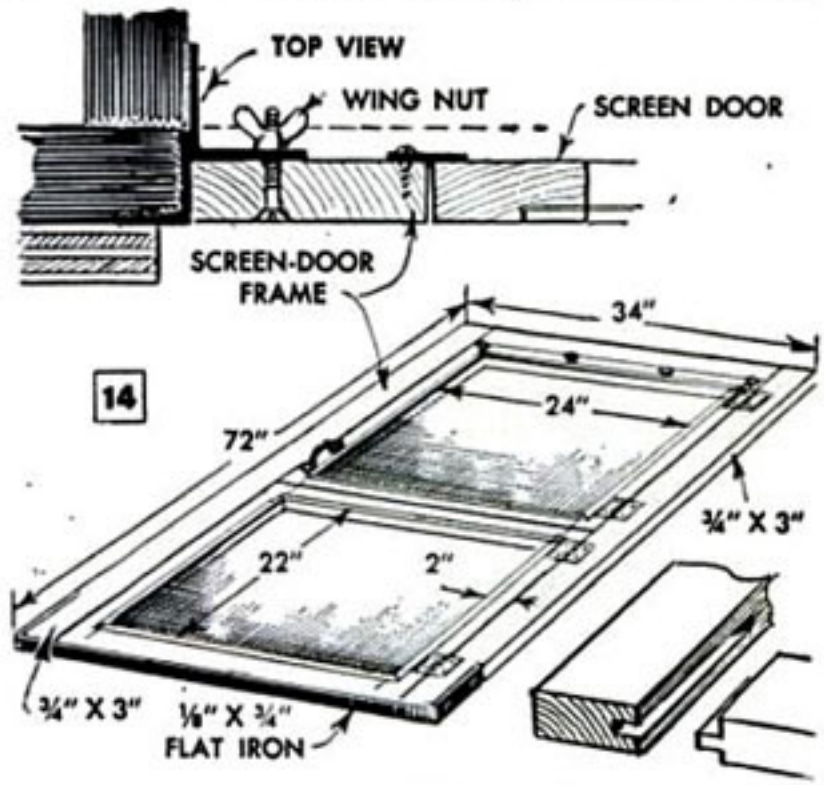
with sliding doors of tempered hardboard. The cross-section view in Fig. 15 shows how tracks are made for the sliding doors. The upper track is formed by a rabbeted strip which is bolted to the face of the angle-iron seat rail, flush with the top. The lower track is formed by two ¼-in. cleats nailed to a ¾ x 2¼-in. strip which is bolted to a channel member of the trailer bed. The ¼-in. cleats are lined up, of course, with the rabbet directly above. The ⅜-in. rabbet allows ample clearance for the two sliding doors so that any subsequent swelling will not cause them to bind. Handles are formed by boring a 1-in. finger hole in opposite ends of the hardboard panels. Stops for the hinged trap door in the floor, which affords access to a storage well below it, are bolted to the underside of the wooden channel strips. The stops run the full length of the door and you'll note that one edge of each one is rabbeted to fit over the edge of the iron channel. The trap door itself, below which the screen door is stored, is hinged along one side, the hinges being set flush so they will not interfere with the hardboard sliding doors. The trap door should be short enough to allow the screen door to rest directly on the channel iron of the trailer bed when the door is set up. A handhold is cut in the lower left-hand corner of the door for easy lifting.

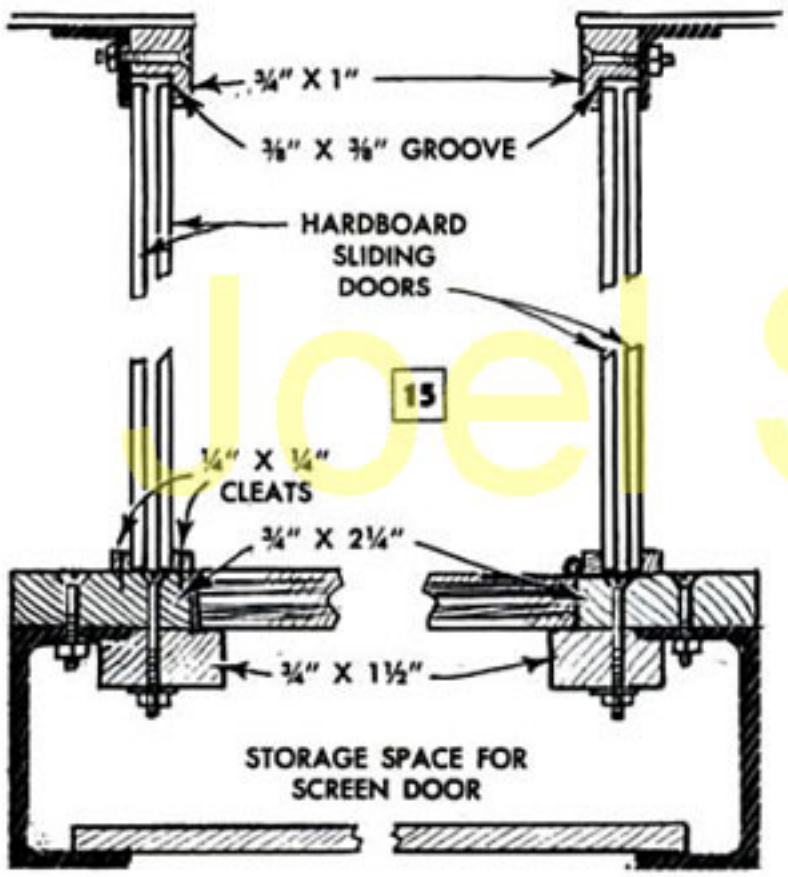
I made the screen door in one piece as you can see in the photo on the opposite page, although I since have converted it into a Dutch-type door as detailed in Fig. 14. This proved more convenient in that the door of the trailer itself could be closed and yet allow the upper part of the screen door to be opened independent of the lower section. The 3-piece frame for the door is made of ¾ x 3-in. hardwood. I used mortise-and-tenon joints at the upper corners and braced them on each side with flat-iron mending plates. These corners could be doweled or held with corrugated fasteners. The doorframe is braced across the bottom with a flat-iron strip which I bent at right angles to extend up the sides of the frame, flush. Note that the upper section of the screen door is fitted with regular curtain fasteners to permit buttoning a canvas flap across the top. Curtain fasteners also are added to the doorframe, one on each side, in line with those previ-

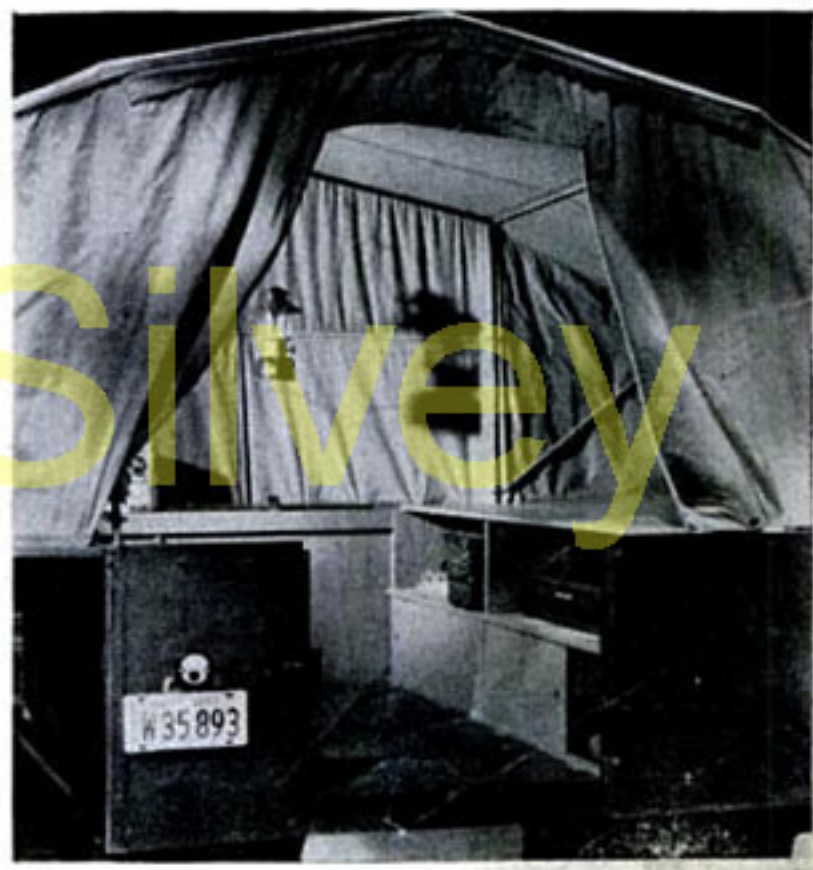


Above, screen-door unit bolts to door opening and tent flaps button to doorframe. Right, screen-door unit stores in well under trap door in trailer floor

ously added to the trailer body for buttoning the tent top. The screen-door unit, which is installed after the tent top is erected, is held securely by four flat-headed stove bolts fitted with wing nuts. Holes for these are made in the doorframe to correspond with the holes previously drilled in the angle-iron pieces to which the frame is bolted. The top-view detail in Fig. 14 shows the wing nuts on the inside so they will not interfere with closing the trailer door. The handle for the screen door is attached to the upper section so it clears the trailer door when the latter is closed.



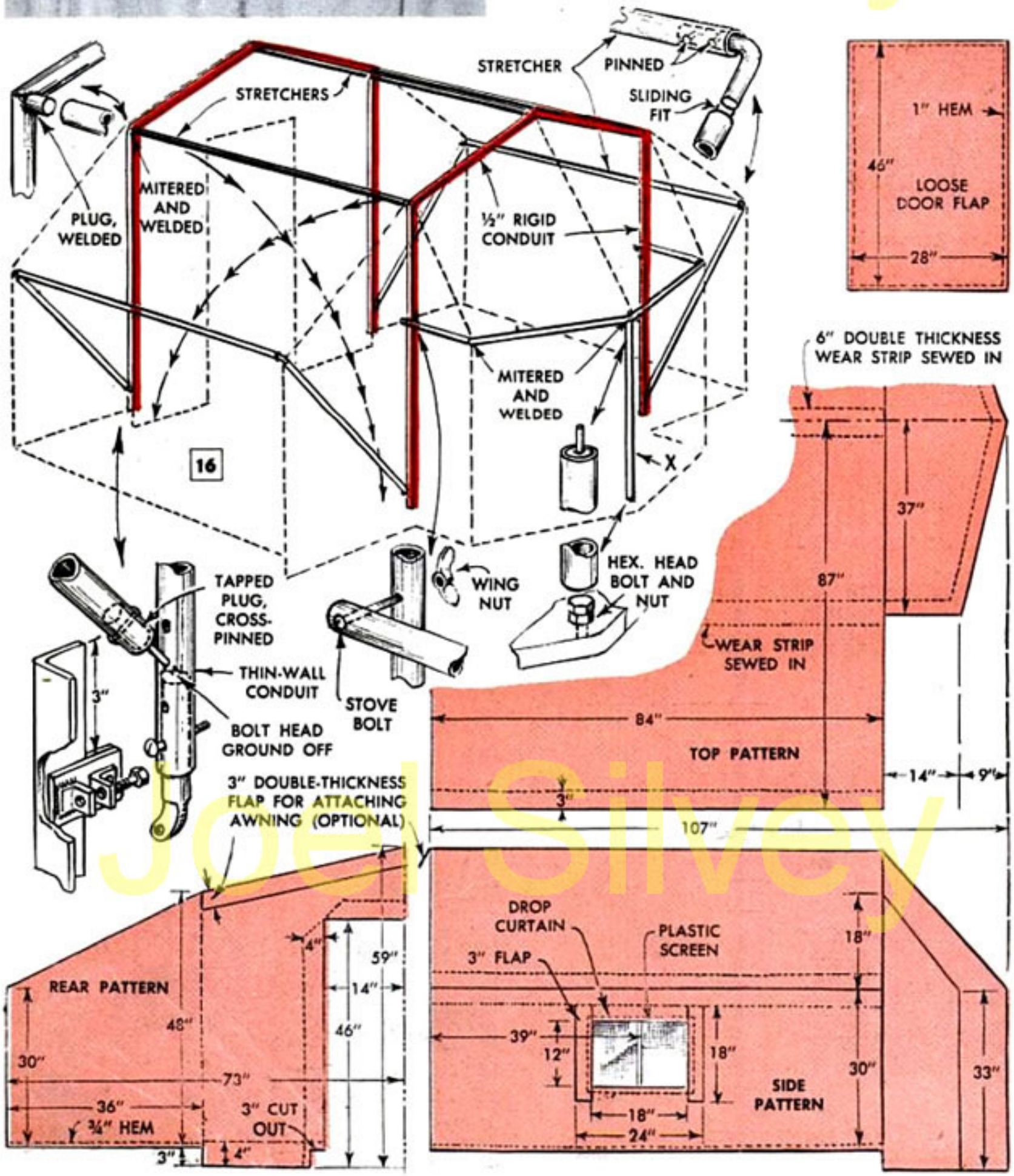


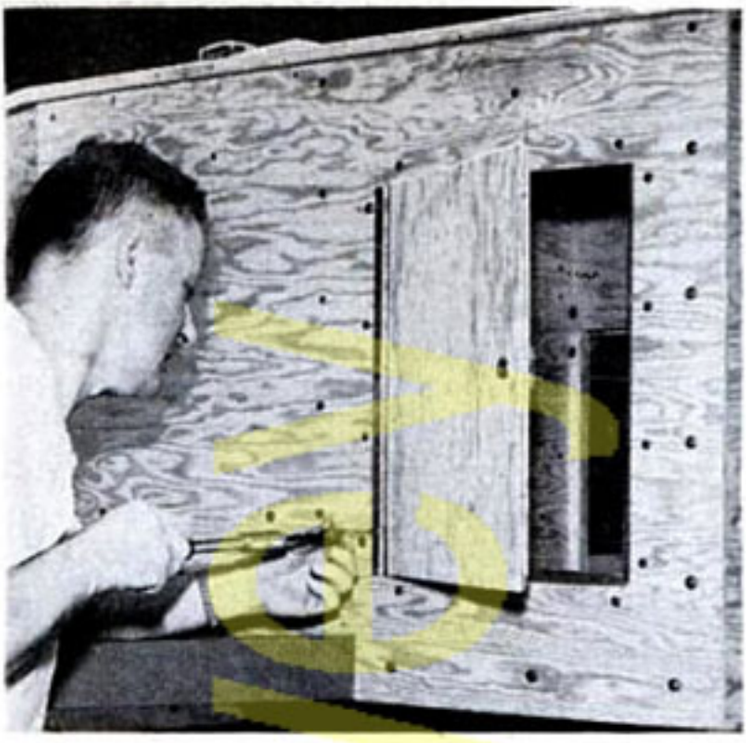


Left, drop-curtain tent window, which any awning maker can add, is installed on each side of trailer

Fig. 11 shows how I sealed the two access doors in the nose of the trailer with sponge rubber to make the storage compartments dust and water tight. Rabbeted edges around both door and door opening provide space for the rubber which is cemented to the cleats that form the inner rabbet. In closing, the door compresses the sponge rubber and seals the joint tightly.

This brings you to the tent and its supporting pipe framework. Except for the two main units of the framework which are shown red in Fig. 16 and which are perma-





Lock-fitted, rubber-sealed doors to storage compartments in nose of trailer are hinged with piano hinges

nently attached to the trailer body, all supporting members are designed to come apart to facilitate storing. The two main units are pivoted in welded angle-iron brackets bolted to the trailer body and fold flat. You'll notice here that height adjustment is provided to take up any slack in the canvas. I made the whole framework of rigid and thin-wall electrical conduit. The bows which stretch the sides of the tent, are fitted with pins in the ends to engage holes in the lower ends of the main supporting bows. Note that these side bows are made to come apart in three pieces. Pipe X serves as a prop to support the one-piece front bow. The lower end sets over a bolt-head stud in the trailer body, while the upper end has a pin to pass through a hole at the mitered joint.

In erecting the tent top, the main bows are swung up in position first, and then the three stretcher pipes are put in place over welded studs. Usually, there is enough play in the canvas top to permit the stretchers to be forced over the studs. Exact lengths of the various members that make up the framework are best determined from the actual tent itself as the over-all size of the tent will vary somewhat in each individual case.

Patterns for the tent accompany Fig. 16. I had this sewed together by an awning maker and suggest that you do, too. They know how to add the drop-curtain windows and are equipped to install the grommets for buttoning the tent to the trailer. The 3-in. flap indicated across the top of the rear pattern is optional. I had this sewed in at the time, as I plan to add a canvas canopy, supported by tent poles, over the door. The flap will provide a means of buttoning the canopy. ★ ★ ★