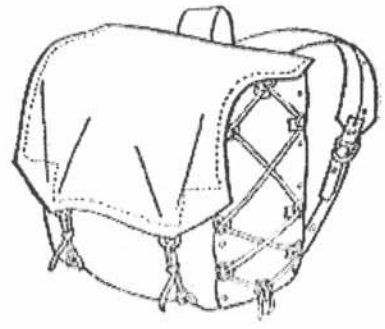
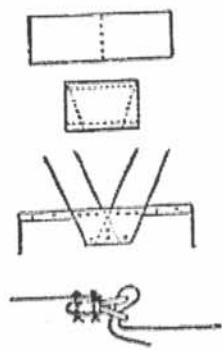
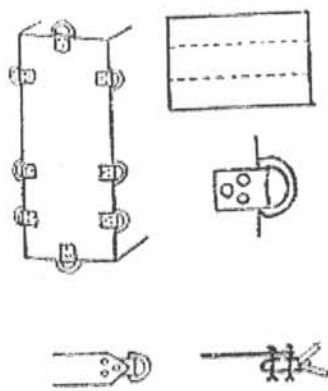
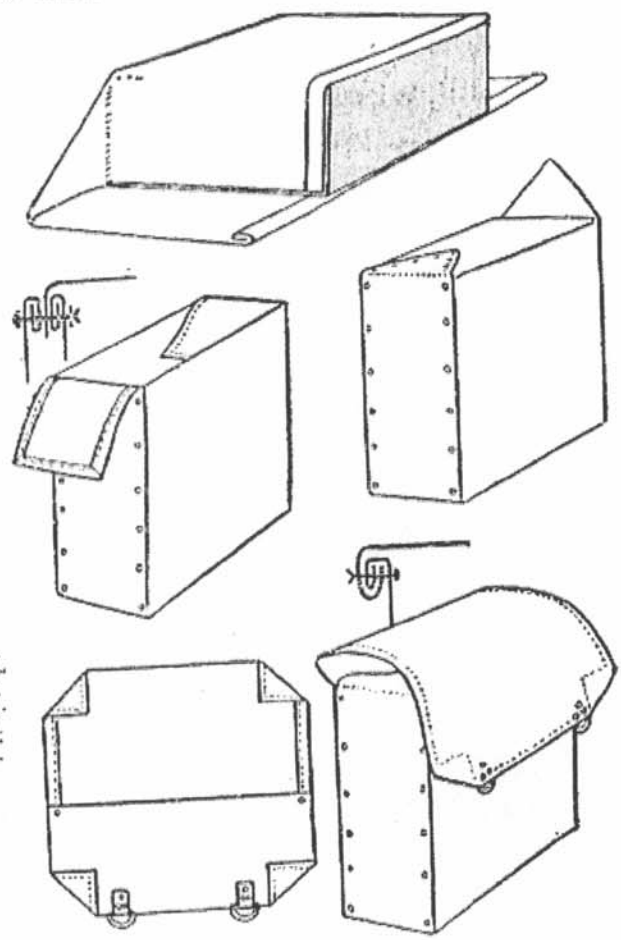
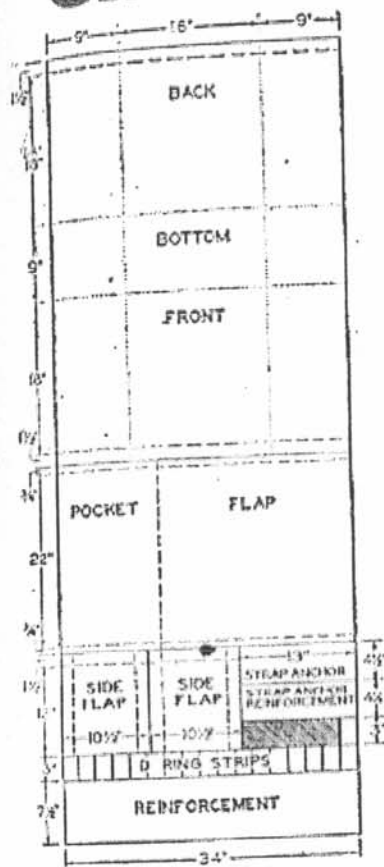


GREEN BAR BILL PACK



By lacing the sides close together you can turn your Jumbo Pack into a box pack.



For overnight camping open the lacing, fill your pack, then tighten the lacing.



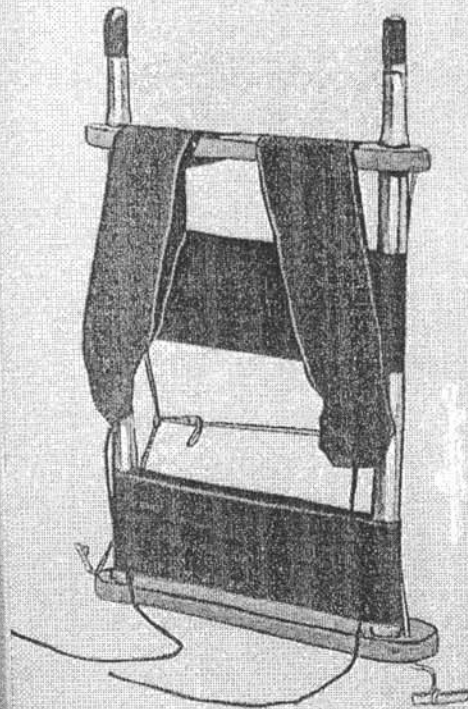
For long camping trips fill pack to capacity, then tie blanket roll around top.

GREEN BAR BILL PACK

Tent Pole Pack Frame

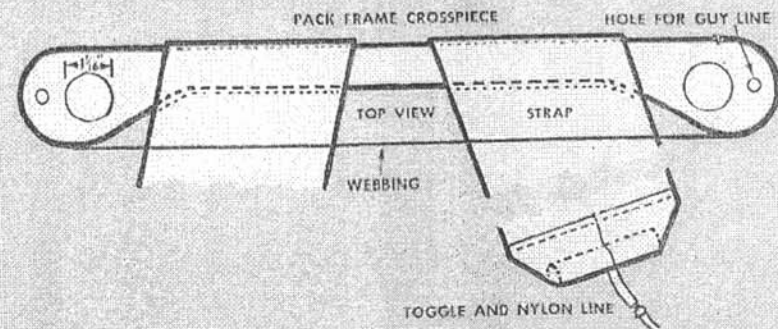
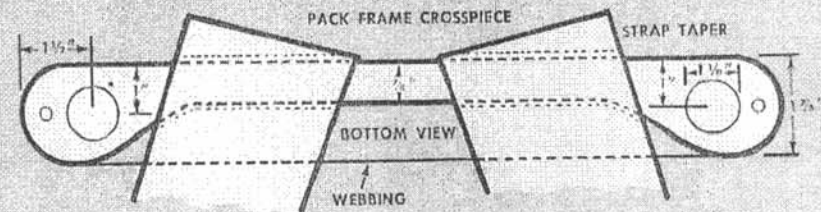
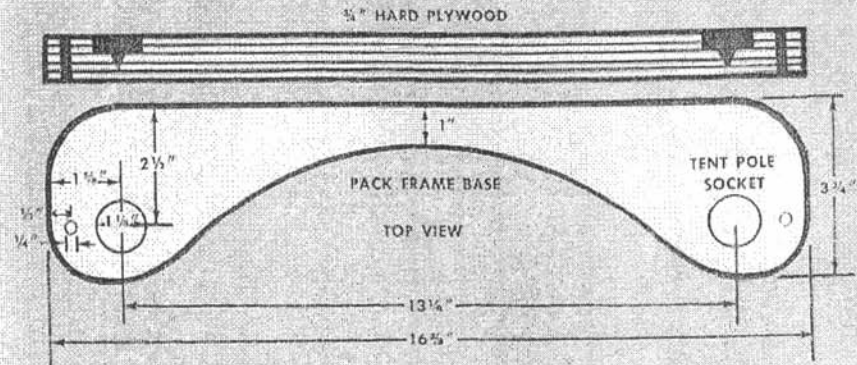
Double-duty equipment lightens your load. When you must carry tent poles, put them to work and take credit for carrying their weight. You'll need: a saber saw, an expansive bit, some cloth and plywood, 3/4-inch webbing, 10 feet of nylon cord, monofilament 6-pound test nylon fishline, a fine needle, long tacks or sheet metal screws.

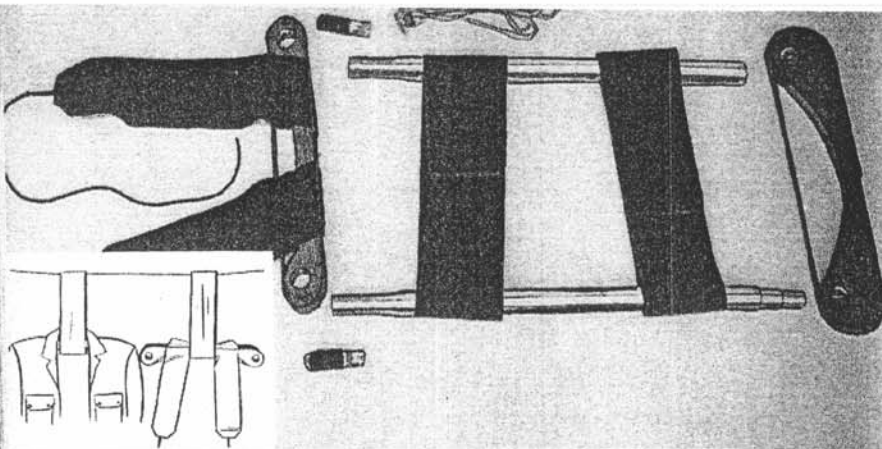
In scrap plywood, test drill until you find a setting of the expansive bit that snugly fits the bottom of the tent pole. Drill the holes halfway through the base and crosspiece. Adjust the expansive bit and test drill to find a setting that snugly fits the first shoulder on the pole. Complete the holes for the tent poles in the crosspiece. Cut out the base and crosspiece with a saber saw. Tack or screw the webbing tightly around the base and crosspiece. Sew the taper or strap angle in the straps and tightly sew the straps to the crosspiece, sewing into the edges of the webbing at the taper and at the top of the crosspiece.



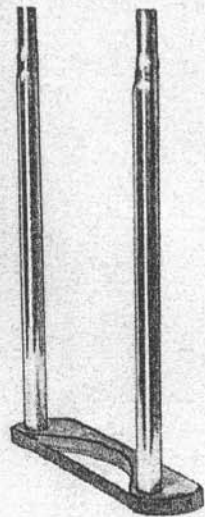
The straps and back protectors are made from several thicknesses of cloth. Department or dry goods stores may have ends of bolts of cloth that you can buy inexpensively. Any tightly woven cloth will do. The broad straps spread the weight over your shoulders making the load easy to carry. The knobs extending from the tent poles add length to the frame and protect the bag's support ears or pocket. The guy line, holding the frame together, has a toggle at one end and a smaller stick stopper tied 5 inches from the toggle.

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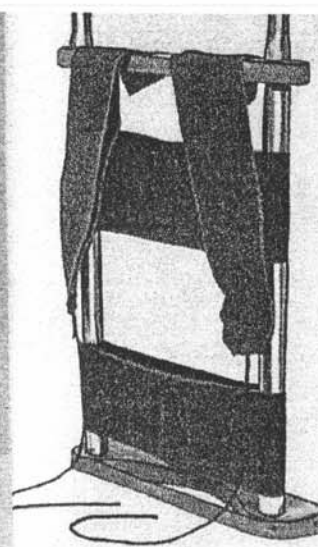




The frame comes apart easily. The poles go to work holding up the tent. The knobs, straps, bands, and base so far have nothing to do until the return trip—unless you need some coat hangers. Put the knobs in the crosspiece holes (just to keep them from getting lost), slip one of the bands over the crosspiece to the middle between the straps. Put your jac-shirt on the crosspiece and run the guy line through the top of the band. Use the base and other band in the same way.



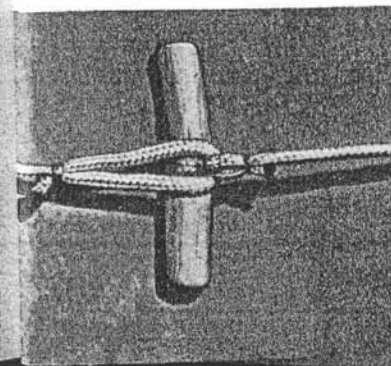
To assemble the tent pole pack frame, place the Voyageur tent poles into the base. Be sure that all sections are within each pole.



Place both protecting bands over the upright poles, then drop the crosspiece over the ends of the poles and push down until it stops. When you make the back protectors, fold several thicknesses of cloth into a 4-inch band. Wrap it around the poles and pin into the position. Chalk a line where the edges overlap. Take out the pins. Overlap the pieces making it tighter than when it was pinned to the frame. Tuck in the raw edges and tightly sew with monofilament fishline.



Run the loop end of the toggle line through the base at the left until the stopper hits the base. Thread the loop through the crosspiece at the left. Run the line over the crosspiece on this side of the poles and down through it—and through the base. Pull the line tight and tie an overhand knot in a bight. Bring the free end back upon itself and tie a taut-line hitch, pull tight, loop the free end around the left line and draw together until tight. Secure with two half hitches.



Strong nylon toggle lines are easy to make because you can whip the ends of the line by melting them in a match flame. You can sew the line together with monofilament fishline. Easy to sew—tough to break. Wrap line around your waist four times, make a loop in one end and put a grooved-stick toggle in the other.

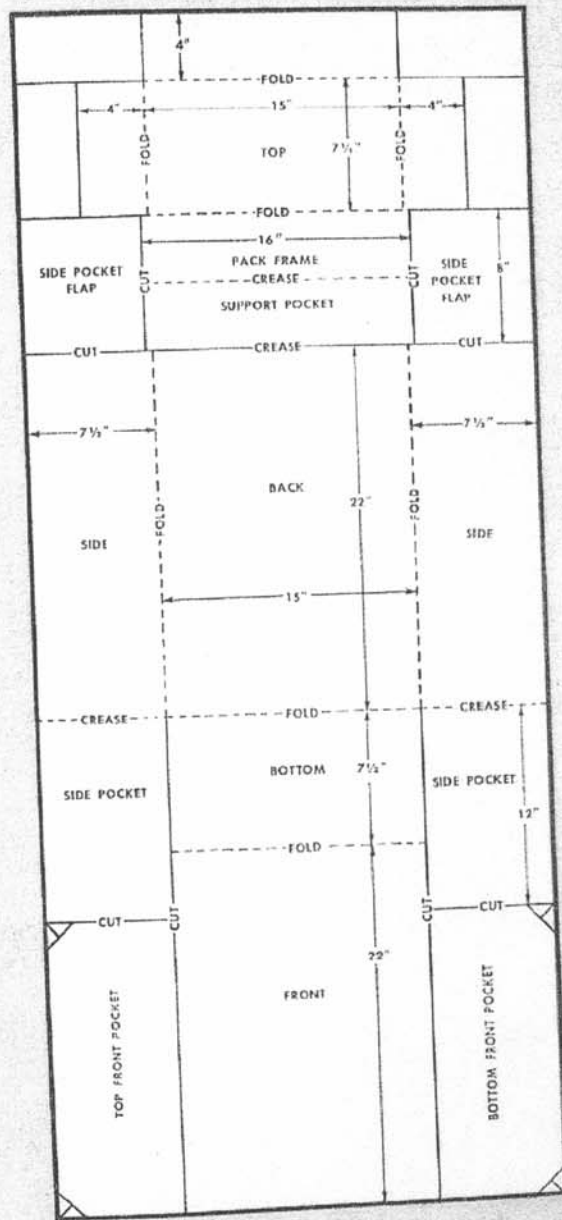
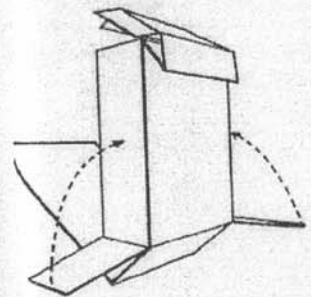
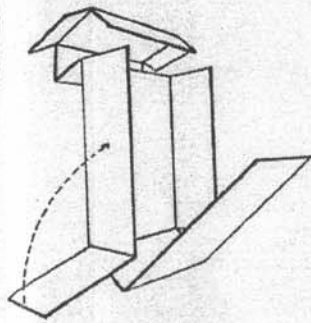
trail pack



Big, modern, easy-to-make, the trail pack fits all standard pack frames. It takes only 2 yards of denim-weight cloth. Ask a dry cleaner to process the cloth to make it water-repellent before you lay it out. Chalk the layout on the cloth and cut only where indicated. Decide which side you wish to have on the inside—then work your seams on that side, sewing with monofilament 6-pound test nylon fishline. First, sew a 40-inch nylon cord along the fold at the back, this will leave 12½-inch tielines at the corners of the bag. Sew the bottom sides to the side pocket creases.

Then sew the front to the sides. Turn the bag right side out. Taper the unsewn edge of the side pocket, turning the raw edges in as you sew. Sew an 8-foot nylon cord into the top fold, and through the back crease at the top of the pack frame support pocket. This will provide 40-inch cords at the top of the bag to lash a sleeping bag to the top if the tent pole pack frame is used. When not on the frame, the ties can hold the pack against a tree. Crease the back top corners of the bag and double sew the pack frame support pocket seams securely. Working right side out and turning the raw edges in, sew the top corners. Hem the raw edges of the top and sew in cords for tie-downs.

Make a corded hem in the rim of the bag. Sew a 12-inch zipper to the bottom and top of the front pocket pieces. Sew the center pocket to the side beginning at the left 5 inches down from the top of the bag. Sew until you reach the bottom corner of the pocket. Now sew the other side to the bag in the same way. Take the pins from the corner, crease the other way to make a right triangle. Loop a 7-inch piece of nylon cord over the triangle and sew the ends inside, leaving the loop outside of the pocket for a tie-down. Fold the raw edges in and sew across the top and bottom of the pocket to a narrow crease that you put into the bag as you sew. Attach the flaps to the side pockets in the same way.



Ely pack frame

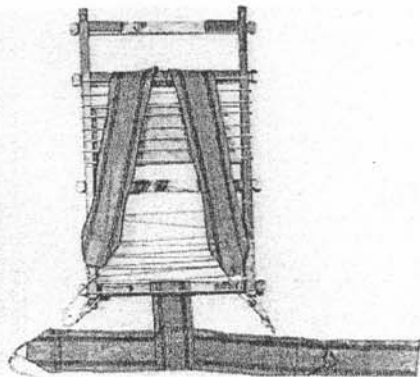
This inexpensive and easy-to-make Ely pack frame features a hip strap that takes the strain off your shoulders. It can handle practically any pack to carry your share of the group gear and all your personal camping equipment.

Attach a pack with shoulder straps to the frame by looping the pack's straps over the top crossbar, drawing them up tight and hooking them to the bottom of the pack. Tie the D rings to the first and third crossbar. Lash your sleeping bag to the two bottom crossbars.

You can improvise by wrapping all your gear in a plastic or a canvas tarp and tying this on the frame with a diamond or spider hitch. The top of the pack may extend several inches above the top of the frame or about even with your head.

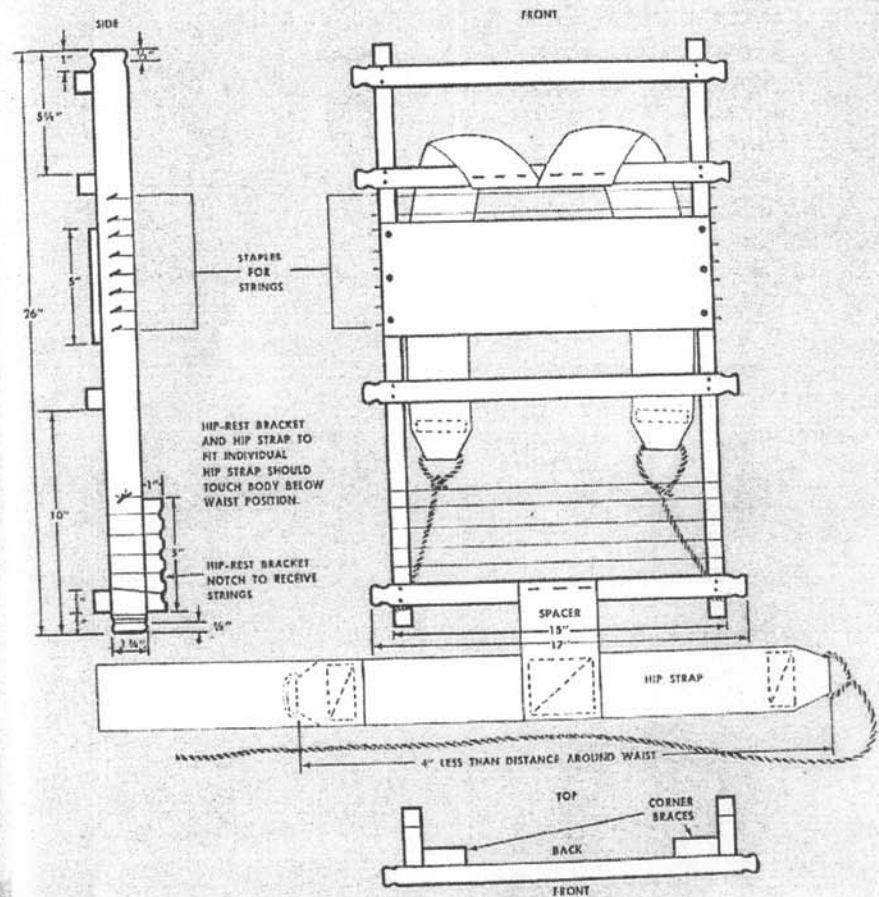
Study the drawing carefully. Cut to size all wooden parts. Notch both ends of the uprights and the crossbars. Clamp the hip-rest brackets together and saw five grooves in them 1 inch apart. Drive eight staples on the side of each upright, starting 6 inches from the top and leaving 1 inch between the staples. Glue and nail the plywood crosspieces. Glue and nail the crossbars. Glue and nail the corner braces. All joints must be well-glued and nailed tight. Keep your eye on them while you work, tightening any that come loose. Round off all edges. Apply two coats of spar varnish following instructions on can. Let dry.

String the shoulder rest and wrap the shoulder straps on without stapling them. Try the frame on to see where the shoulder straps need to be shortened. Determine the proper position for the hip-rest brackets and the hip strap (below the waist, square on the hips). Sew the shoulder straps and the hip straps as shown using a needle and monofilament nylon fishline for thread. Staple the straps and string the hip rest with the light nylon cord.



Tested on the trails at Philmont, this easy-to-make pack frame carries man-sized loads easier, because the hip strap shares the work with your shoulders.

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MATERIALS NEEDED

Uprights (straight-grained, clear pine or spruce), two pieces, 1 by 2 by 26 inches

Crossbars (pine or spruce), four pieces, 1 by 1 by 17 inches

Hip-rest brackets, two pieces, 1 by 1 by 5 inches

Corner braces, eight pieces, 1 by $\frac{3}{4}$ by 3 inches

Crosspiece (plywood), $\frac{1}{4}$ by 5 by 15 inches

Shoulder strap, 4 feet of 4-inch upholstery webbing

Hip strap, 3 feet of 4-inch upholstery webbing

Spacer, 1 foot of 4-inch upholstery webbing

Heavy nylon cord, 8 feet Light nylon cord, 30 feet

Fishline, monofilament nylon, 6-pound test for thread

Finishing nails, 2 inch Wood glue, waterproof

Staples, chicken wire Roofing nails, $1\frac{1}{2}$ inch

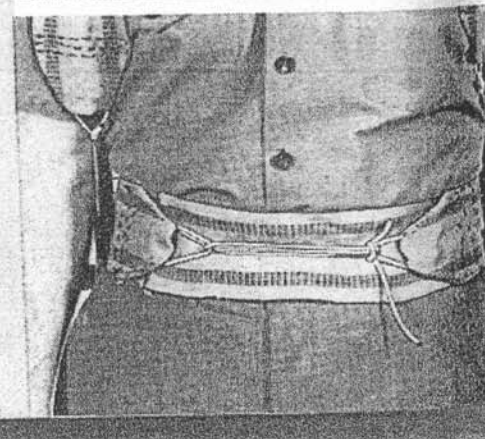
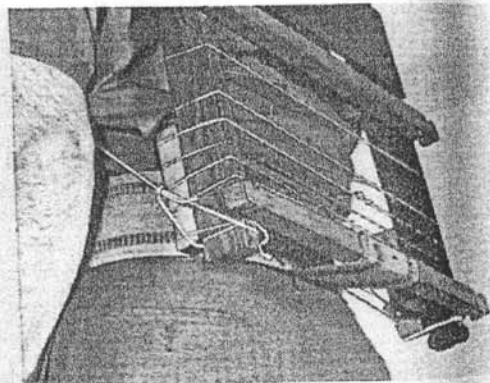
Sandpaper Spar varnish

And, of course, you'll need a hammer, saw, pencil, ruler, carpenter's square, pocketknife, and a sewing needle.

Notice that the spacer supports the bottom crossbar when the strap is turned up. In this photo, the position is too high, the strap cords must be adjusted to lower the frame so that the hip strap is just above the pockets. Then much of the pack's weight will ride on the hips.

You can adjust the tension of the strap by tightening the hip lash. The extra webbing protects your stomach. The top of the strap should be even with the top of your belt.

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Dimond-O Pack Frame

A pack frame makes your load easier to carry by distributing the weight, preventing the pack from rubbing, and leaving your hands free for balancing as you swing along the trail. One of the best of several types for Scouts is the Dimond-O.

Use oak, ash or hickory $\frac{1}{4}$ inch thick, if possible. Otherwise, use straight grained pine $\frac{3}{8}$ inch thick.

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Here are the materials needed:

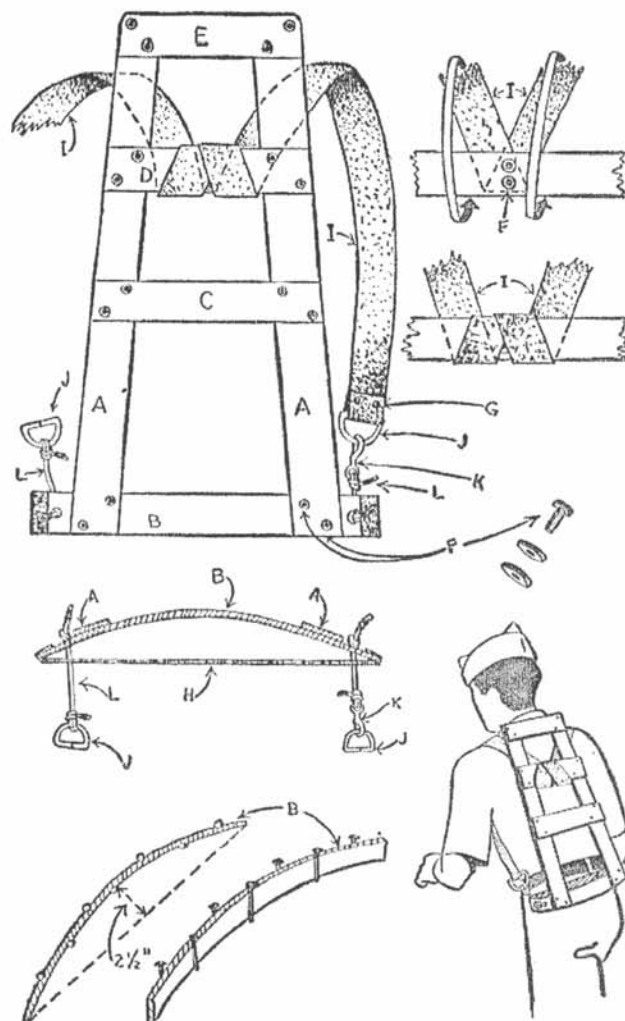
Diagram Letter*	Number Needed	Material	Size
A	2	Wood strip	$\frac{1}{4}$ " x 2" x 24"
B	1	Wood strip	$\frac{1}{4}$ " x 2" x 16"
C	1	Wood strip	$\frac{1}{4}$ " x 2" x 10 $\frac{1}{2}$ "
D	1	Wood strip	$\frac{1}{4}$ " x 2" x 9 $\frac{1}{2}$ "
E	1	Wood strip	$\frac{1}{4}$ " x 2" x 8 $\frac{3}{4}$ "
F	22	Copper rivets and washers	$\frac{3}{4}$ " long
G	4	Copper rivets and washers	$\frac{1}{4}$ " long
H	1	Webbing strip	2" x 18"
I	1	Webbing strip	2" x 3'
J	2	D-rings	2"
K	1	Spring snap	small
L	2	Rope or sash cord	$\frac{1}{8}$ " x 1'
M	1	Rope or sash cord for lashing pack to frame	$\frac{1}{8}$ " x 3'

* See diagram on page 345.

Webbing may be bought at army surplus stores, in furniture repair stores, or from mail order houses. It can be made from several folds of canvas, denim, or other heavy cloth cross-stitched together. D-rings can be bought at a hardware store or made from thick cold-rolled wire with solder on the joints of the rings.

The lengths of the uprights A and the bottom cross-piece B will depend on your size. Likewise the distances between crosspieces B and D will vary. The measurements given above are for an average-size Scout. When the frame is finished, B should be just below the belt, and D should be level with the shoulder blades. Have someone measure this distance on you. Add 6 inches and you have the length for uprights A. With a tape line measure from one hip bone around back to the other hip bone, and that's the length for crosspiece B.

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Packing Up

You may have dresser drawers at home where you keep your things. On a campout, your pack is like a dresser. Instead of drawers, you can use small bags to keep clothing and gear sorted and safe from the rain. Bread wrappers are just the right size; so are the stuff sacks you can buy at camping supply stores or make from the legs of old pants.



MAKE YOUR OWN STUFF SACKS

Start by cutting a leg off worn-out trousers or jeans. Stitch the bottom shut with a sewing machine or a needle and strong thread. Fold over the top inch of the open end and sew it down for a collar. Snip a small hole in the collar. To easily thread a drawstring through, first pin a safety pin in one end of a shoestring or a 24-inch length of cord. Push the closed safety pin through the hole, then work it down the length of the collar. Turn the bag right side out, and it's ready to be filled with clothing or gear.



Sort similar clothing and equipment into separate sacks. Put socks and underwear in one, eating utensils in another, and so on. Pull the drawstring tight or use a rubber band or a loose overhand knot in the top of each sack to keep it closed.



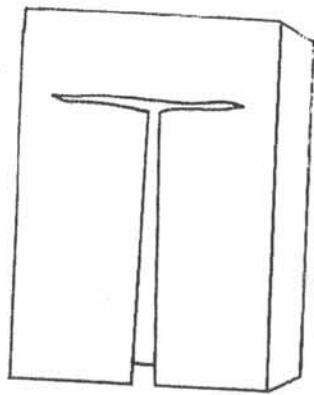
Stow everything into your pack. In addition to your own gear, you may carry some patrol or crew equipment. Your share might include pots and pans, part of a tent, and some food. Arrange soft items in your pack so they will cushion your back. Keep your rain gear, flashlight, first aid kit, and water bottle near the top or in pockets on the outside of your pack where you can reach them quickly without digging through the entire load.

Put your blankets or sleeping bag inside your pack if there is room. Otherwise, wrap your bedroll inside your ground cloth or stuff it in a trash can liner to protect it from the elements. Tuck it right under the pack's top flap or tie it to the frame above or below the pack. If you have a pot that's too big to fit inside your pack, try slipping it over one end of your sleeping bag before you lash the bedroll to the frame.



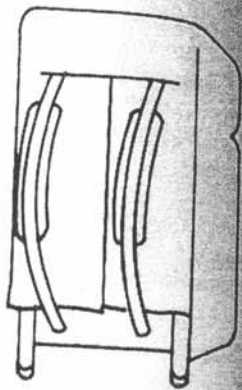
Pack Cover

A plastic garbage bag liner makes a good temporary rain cover for your pack. Simply slit it two-thirds the way up the front, then cut a few inches across the top of the slit to form a T-shaped opening. Slip the bag over your pack and tuck the loose ends of the plastic around the straps or under the bars of your pack frame.



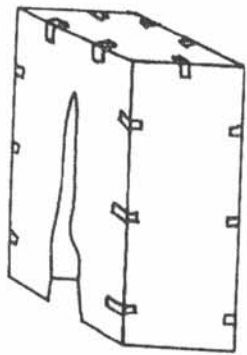
Garbage bag

Make a T-cut in one side.

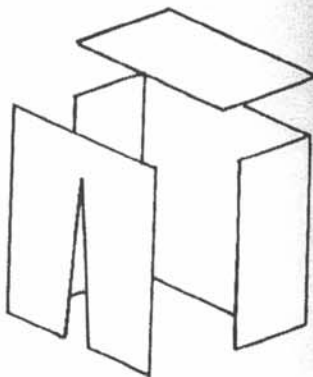


Tuck around bars of pack frame.

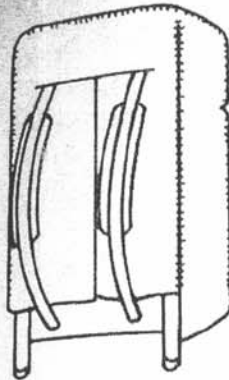
For a more durable cover, use coated nylon fabric. Begin by wrapping sheets of newspaper around your pack, taping them together, and trimming them with scissors until you have a paper version of a pack cover. Be sure to make it long enough to cover the entire pack and anything tied above or below it. Also make it loose enough to fit over your pack when it's



Drape newspaper over pack and tape mockup.



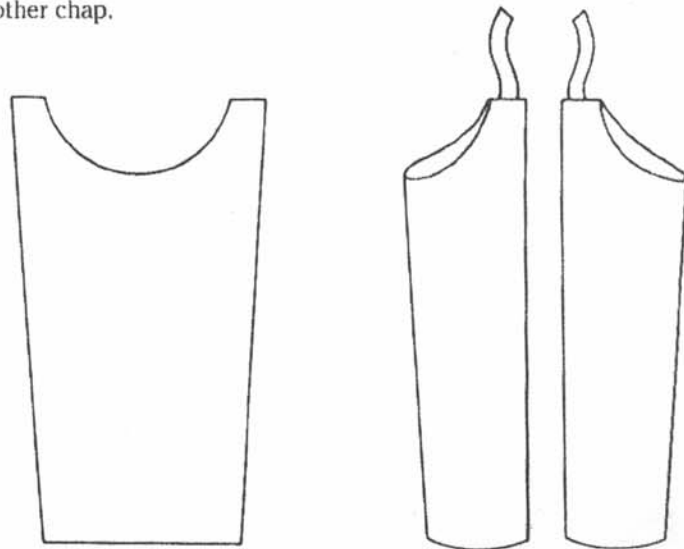
Separate parts. Cut out nylon, adding enough fabric for seams.



bulging with gear. Remove the paper mock-up and carefully cut it until it will lie flat on the floor (it may be in several pieces). Pin each piece to the nylon and cut around it, allowing an extra 1/2 inch for seams. Stitch the pieces together, reinforce the edges with seam binding, and sew on a few fabric ties 6 inches long and 1 inch wide.

Rain Chaps

Rain chaps will keep your legs dry in a downpour and protect them from mountain winds. They're easy to make and easy to wear. Start with a piece of coated nylon (ripstop or taffeta) or Gore-Tex. On it, lay out the pattern below, sizing the pattern to your leg length. Cut the cloth to fit the pattern, hem edges A and B, and stitch together edges C and D to form the chap. A couple of 6-inch long shoestrings sewn to the chap at E can be tied to a belt loop of your pants to hold up each chap. Reverse the pattern for the other chap.



For rain pants, you can use the pattern for a pair of pajama bottoms, and put a two-way zipper up the outside seam of each leg.