SHEETMETAL TOOLBOX WITH LIFT-OUT TRAY

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PROCEDURE FOR MAKING THE TOOL BOX

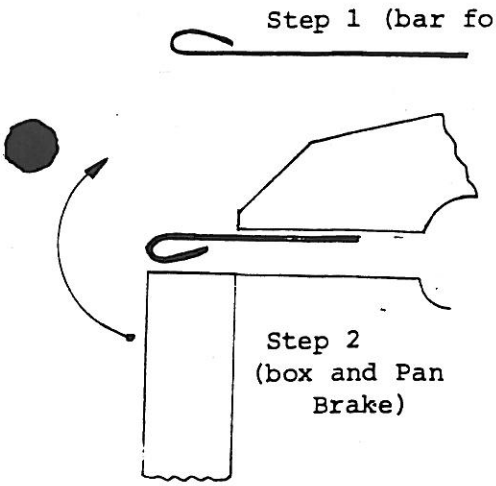
Note: Following this procedure carefully will cause this box to be made without any errors. Have all layout work checked by the instructor before ANY cutting or bending of the metal takes place. Make all parts in the sequence that they are shown here. When parts are shown in pairs, make them in pairs. All layout work will be done with a scratch awl, NOT pencils!!

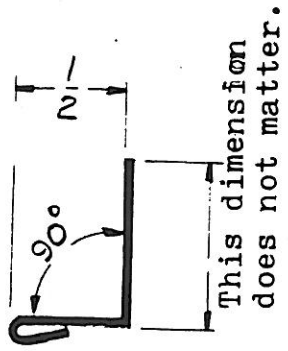
SIDE PIECES (2)

1. Layout all lines for the 2 side pieces.
2. Have the instructor check the layout.
3. Flange the two ends of the side pieces to 90 degrees. Do this flanging on the BRAKE. The proper way to do this bending will be demonstrated by the instructor. This completes the 2 side pieces. Both are made the same.

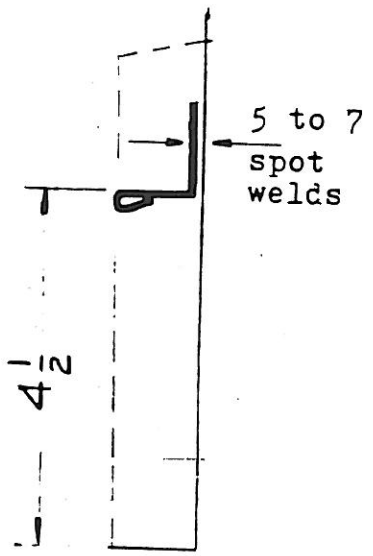
TRAY SUPPORTS (2)

1. Layout all the lines for the two supports on BOTH sides of the metal from the SAME edge, using the marking gage.
2. Have your layout checked.
3. Hem one long edge in the bar folder with a 1/4" setting. Close the hem tightly in the box and pan brake.
4. Bend the 90 degree bend in the BRAKE. Note that the hem ends up underneath as shown in the illustrations.





Step 3--Make sure about the 90 degree bend!!



5. Tray support gets clamped to the side piece, as shown, and spot welded.

ENDS (2)

1. Layout all lines.
2. Check layout with instructor
3. Cut the two corners off in the squaring shear by sighting down between the guard and the upper blade. Notch out the top portions with snips where the hems would otherwise overlap.
4. Set bar folder for hemming. Hem the top 3 edges as called for on the drawing.

END STIFFENERS (2)

1. Layout all lines.
2. Check layout with instructor
3. Cut off the 4 corners as illustrated on the drawing.
4. Hem the 2 long edges on both pieces in the bar folder (1/4')
5. Bend up the 2 hems on both pieces in the brake as shown in the steps below in Fig. 3.

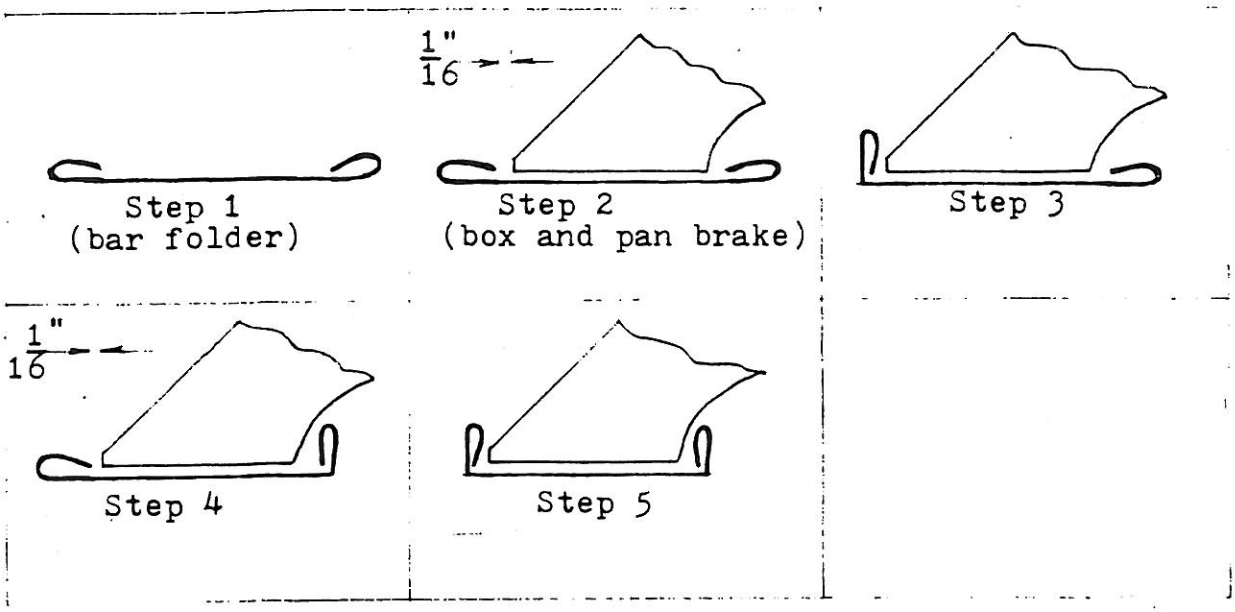
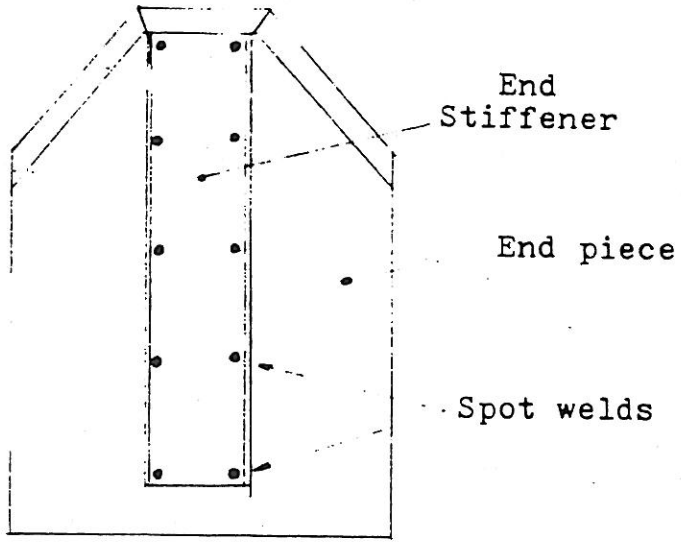


Fig. 3

6. Center the end stiffener on the end piece. Keep the top of the stiffener against the edge of the top hem on the end piece as shown in (The large amount of space below the stiffener is okay.
7. Spot weld with 5 pair of welds as shown on the drawing to the right.



ASSEMBLING THE 2 ENDS AND THE 2 SIDE PIECES

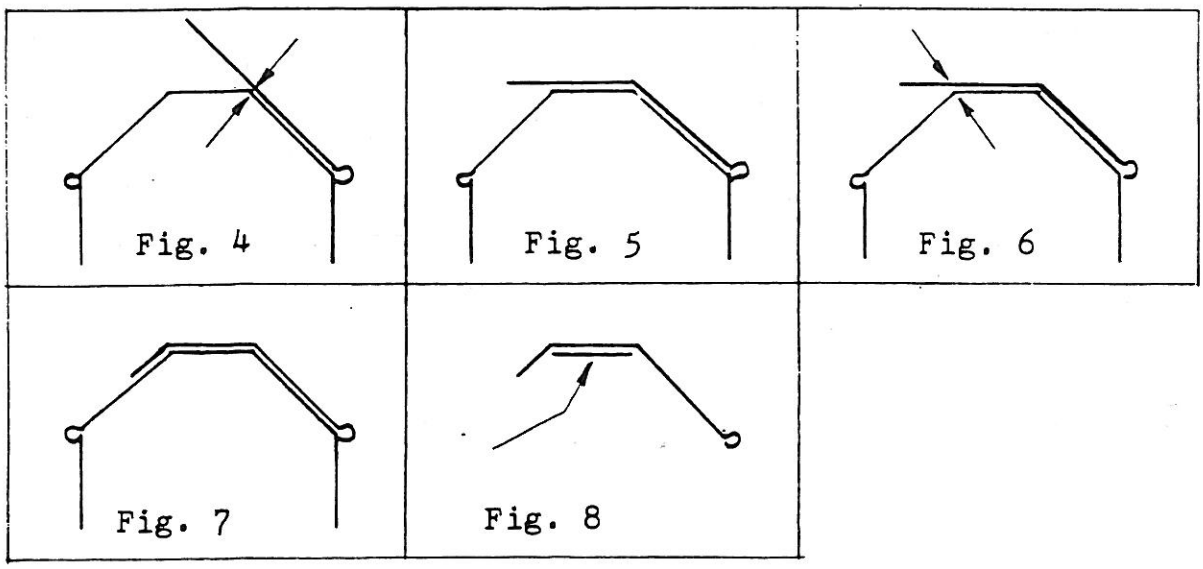
1. The flanges of the side pieces go on the outside of the end pieces.
2. Clamp the 2 sides and 2 ends together with 8 small C-clamps. Get perfect flatness by doing this on a flat surface. The bottom edges of the 4 pieces must be flat down on the table. The upright edges of the ends must fit all the way fit all the way into the corner of the flange of the side pieces.
3. Make 2 widely spaced spot welds in each of the 4 corners. Remove your welds 3/4" to 1" apart. Always be sure to have one weld at the ends of every joint.

THE BOTTOM PIECE (1)

1. Layout the 4 bending lines for the bottom. The rectangle formed by these 4 lines MUST EQUAL THE INSIDE measurements of your box, measured at the corners. THIS IS VERY IMPORTANT. If in order to accomplish this, you have to trim off one or two of the flange allowances, do so. That will be perfectly okay. Everybody's box will vary somewhat, so you will be custom fitting your bottom piece to your box.
2. Check the layout with the instructor before doing any cutting or bending!!!
3. Cut out the 4 corners as shown on the drawing. Try the bottom for fit into the 4 edges of the box. It must go in without forcing.
4. Shorten the hinges to 16 3/4" with a hacksaw.
5. The bending line should be exactly on line with the crack between the bed and the folding leaf..(do not line it up on the edge of the brake finger or else your bottom piece will end up too large to fit into the box). Work closely with your instructor on this bending.
6. Bend the two long sides and then the 2 short sides, or ends, of the bottom. Be sure to bend an accurate 90 degrees.
7. File the corners of the bottom piece round.
8. Place the bottom into the box, flanges down, and even with the bottom edges of the box.
9. Spot weld about every 1-1/2" apart around the bottom.

THE COVER (1)

1. Layout all lines.
2. Check the layout with the instructor.
3. Hem the two ends first.
4. Tack spot weld the hinge to the cover, centering it between the two hems.
5. Tack-spot weld (3 places), the cover to the sides.
6. If all fits are good, & hinge operates, finish spot weld hinge and sides
7. Mark off on the inside of the cover the position of the first 2 corners of the ends around which you will make the first bend (Fig. 4). Using this mark as a guide, bend the cover in the brake until it lies flat down on top of the end pieces (Fig. 5). Leave the cover connected to the box when doing this. It will make it easier to get the correct angle. Mark the next bending point onto the cover in the same manner as the first (FIG. 6). Bend the remaining portion of the cover down to fit the ends of the box (Fig. 7).
8. Spot weld the handle carrier piece onto the inside of the cover, centered in all directions (Fig. 8). Use 4 pair of welds.



THE FLAP (1)

1. Layout all lines according to the drawing.
2. Get the layout checked.
3. Hem the two ends.
4. Hem the one long edge. (Note: all hems and bends are inward toward the same surface!!! (refer to the bottom of page 3--this sketch also applies to the FLAP as well as the COVER.
5. Stand the 1/4" hem up, using the brake, to 90 degrees just as you did for the END STIFFENERS. This is called a "standing hem". It is used to greatly stiffen the edge.
6. Shorten the hinge to 16 3/4" with a hacksaw.
7. Tack-spot weld the hinge to the flap, centering it between the two hems.
8. Tack spot-weld the flap to the side.
9. Check for proper fit & operation of hinge & finish spot weld hinge to side.

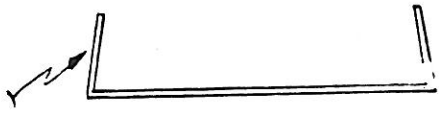
THE TRAY (1)

1. Layout all lines and have them checked.
2. Cut out the corners as required and shown on the drawing.
3. Hem all edges inward toward the layout lines.
4. Bend up the ENDS first, 90 degrees. Hems will be inside tray.
5. Bend up the sides next, 90 degrees, steering the tabs to the outside of the ends of the tray.
6. Spot weld the corners after making sure that the corners are 90 degrees square in both directions!!

TRAY BRACKETS (2)

1. Layout all lines and have them checked.
2. Cut to required shape. Use the squaring shear whenever possible. You will note that the BRACKETS are just like the END PIECES.
3. Hem the top 3 edges as required.
4. Center the bracket on the outside of the tray. Weld with 8 spots. NOTE: Check the proper height for the bracket on your tray. top of the bracket must not stick up higher than the two ends of your box! otherwise, the cover will not close!!

TRAY HANDLE (1)



1. Layout all lines and have them checked.
2. Cut out the parts as shown on drawing.
3. Bend the two long ends in the same direction to about 100 degrees (brake).
4. Form the rest of the handle in the jig provided for this.
5. Bend the end tabs outward (pliers) so the handle will just fit in your tray. Get this handle as high up on the brackets as you can for maximum knuckle clearance. Cut the corners of the tabs if necessary. Weld to the brackets.

SUITCASE CATCHES (2 PAIR)

SUITCASE CATCHES (2 PAIR)
(attached after box has been painted)

1. Locate the centers of the catches on the cover.
2. Drill and pop rivet one of the top holes of the upper halves of the catch to the cover. The edge of the catch should be even with the edge of the cover.
3. Straighten up the catch. Drill and pop the second hole in the catch. Do not attempt to drill and rivet more than one hole at a time because the holes have a nasty habit of slipping out of alignment and causing a lots of grief.
4. Hook on the lower half of the catch in a locked position. Press the cover down firmly and mark the location of the bottom center hole of the catch onto the flap..on the center line.
5. Drill and rivet this center hole on the right and left bottom halves of the catches. Straighten up the catches. Drill and rivet a second hole in each lower catch. Drill and rivet the third hole in the catches. DO NOT PREDRILL ALL THREE HOLES AT ONE TIME. You will not save time this way and end up with a nice job.

PLASTIC HANDLE (1)
(attached after box has been painted)

1. Center the plastic handle on the cover.
2. Drill and rivet ONE hole.
3. Adjust the play in the handle so that the handle has equal movement left and right.
4. Locate a second hole on the other end. Drill and rivet.
5. Drill and rivet the third and fourth holes.
6. DO NOT PREDRILL ALL FOUR HOLES AT ONE TIME (for reasons previously stated.

Regarding tray partitions: Tray partitions are definitely NOT recommended!! They make a non-removable part of the tray and tie you up to one set-up. If you want compartments, make, or use, small separate boxes that are removable. This will give you total flexibility.

GENERAL NOTES

After the box is completely done, make sure you have NO sharp corners anywhere. File off any such corners, burrs, and anything else which could cut you.

There is no need to do any soldering anywhere on this box.

If you wish a hasp to lock up your box, you will purchase it on your own and it may be installed.

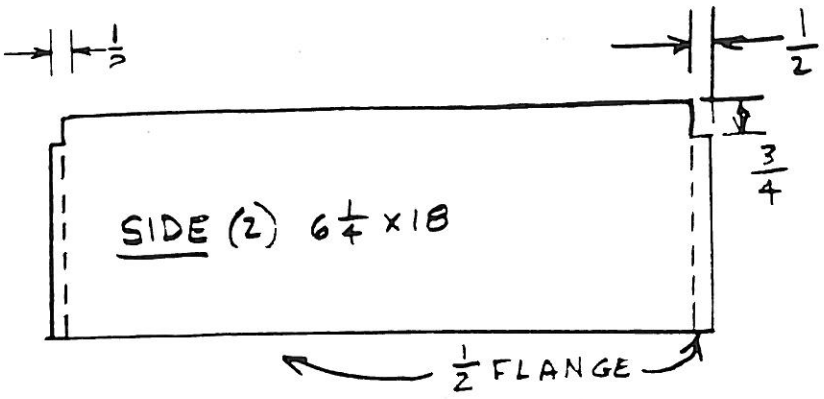
The box must be very thoroughly cleaned with special cleaning liquid before it can be painted. You may paint the box yourself if you wish, with your own paint. We will be using only one color of paint for those that will have the shop paint the box. That color is generally some shade of grey.

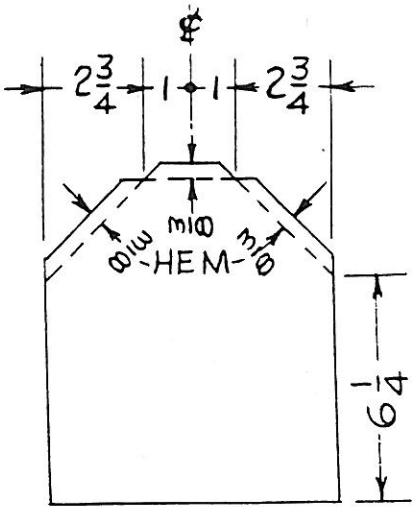
You must stamp your name and class hour on the bottom of the tray and bottom of the box. The steel stamps are signed out through the instructor. This is the best way to have your identification show through the paint job.

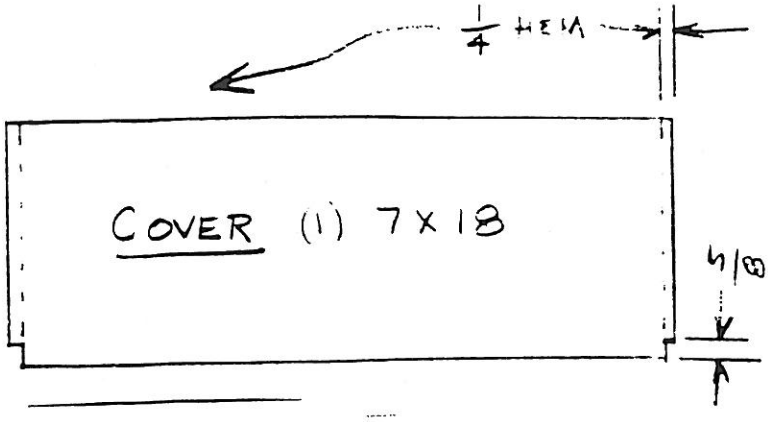
Tool Box Materials List

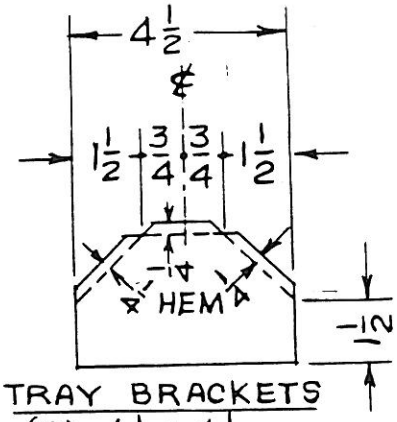
2 - Ends 7 1/2 x 9
1 - Bottom 8 1/8 x 17 9/16
2 - Sides 6 1/4 x 18
2 - End Stiffners 3 x 7 5/8
2 - Tray Supports 1 5/16 x 16
1 - Flap 3 x 18
1 - Cover 7 x 18
1 - Tray 10 3/4 x 19 1/4
2 - Tray Brackets 4 1/8 x 4 1/2
1 - Tray Handle 2 7/8 x 16 3/4
2 - catches
1 - handle
2 - 1 x 16 3/4 continuous hinge

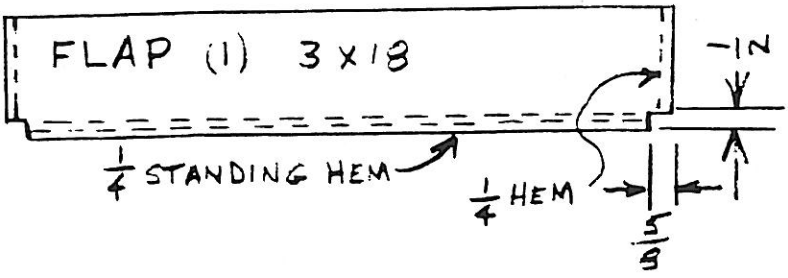
Tool Box

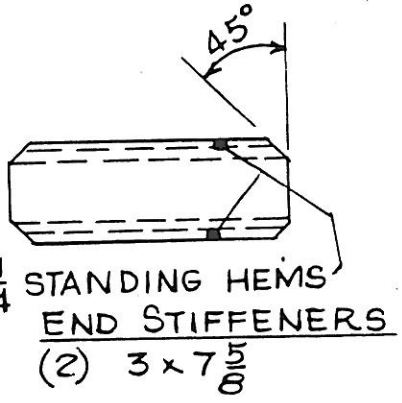


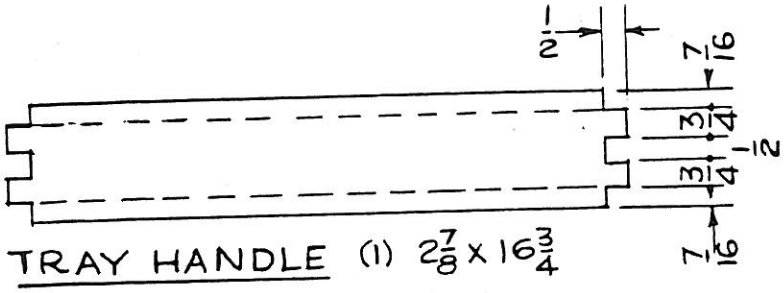


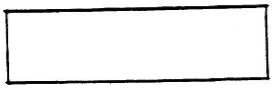


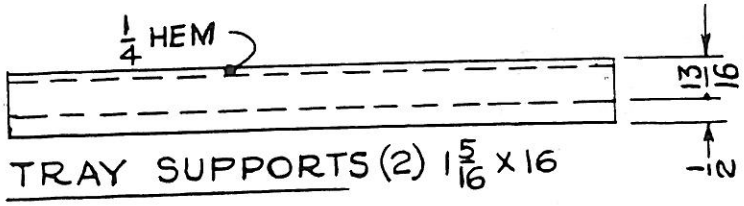




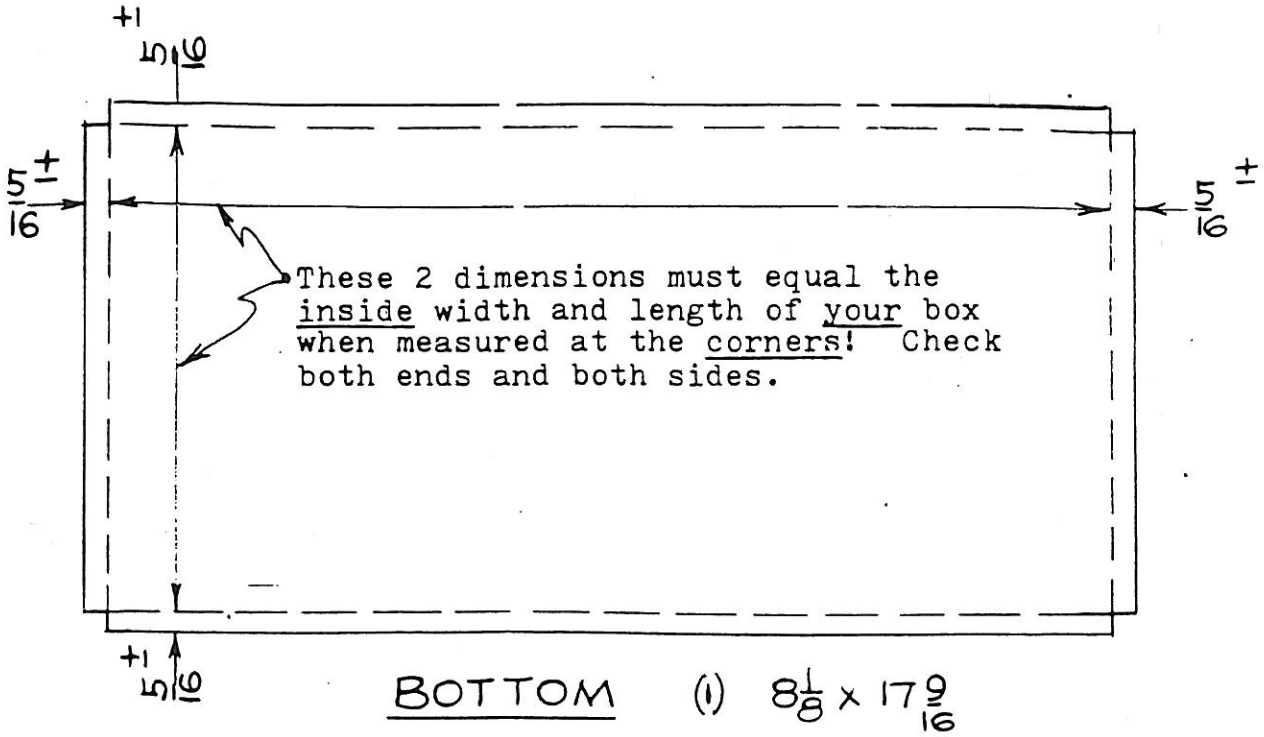


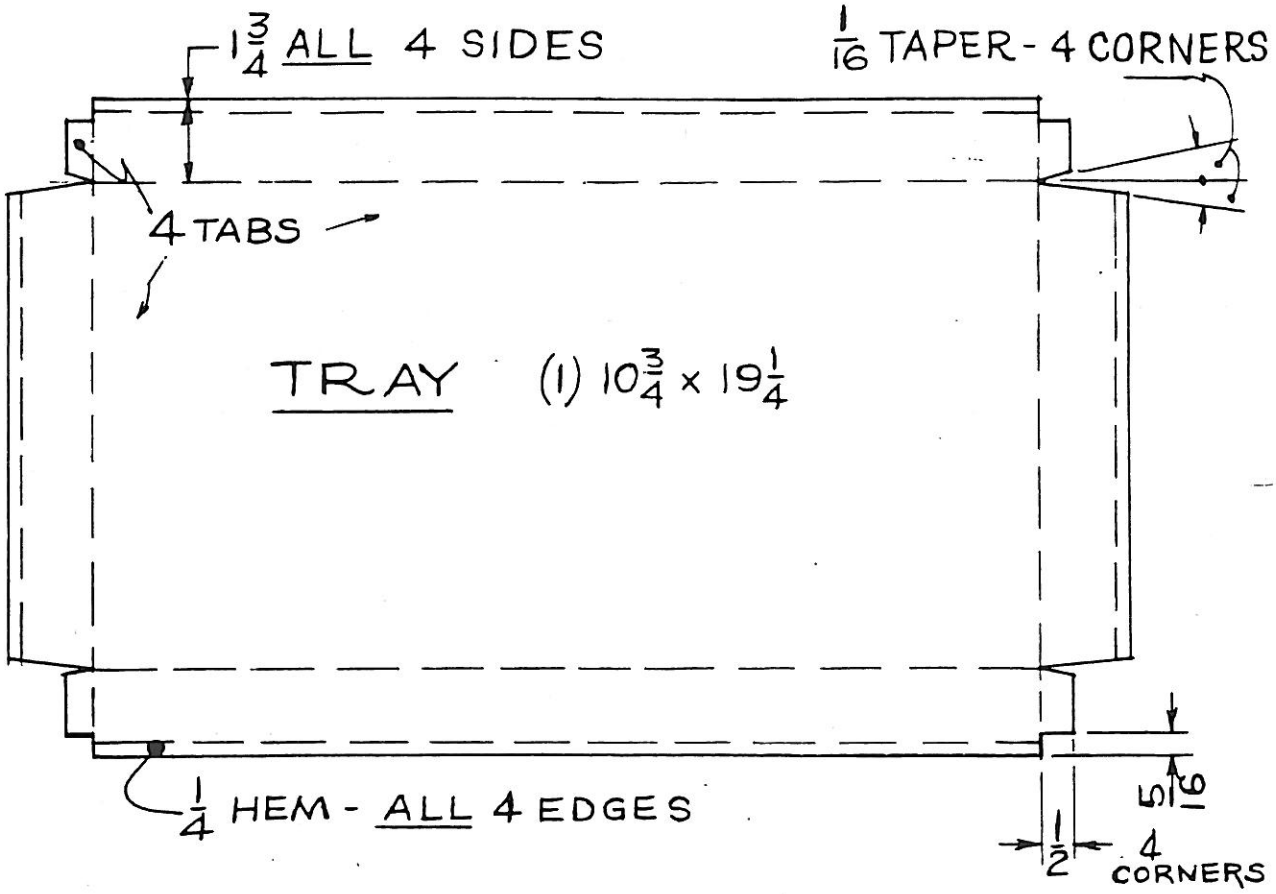






The dashed lines indicate where bends or hems will be made.
The drawings are not to scale!





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