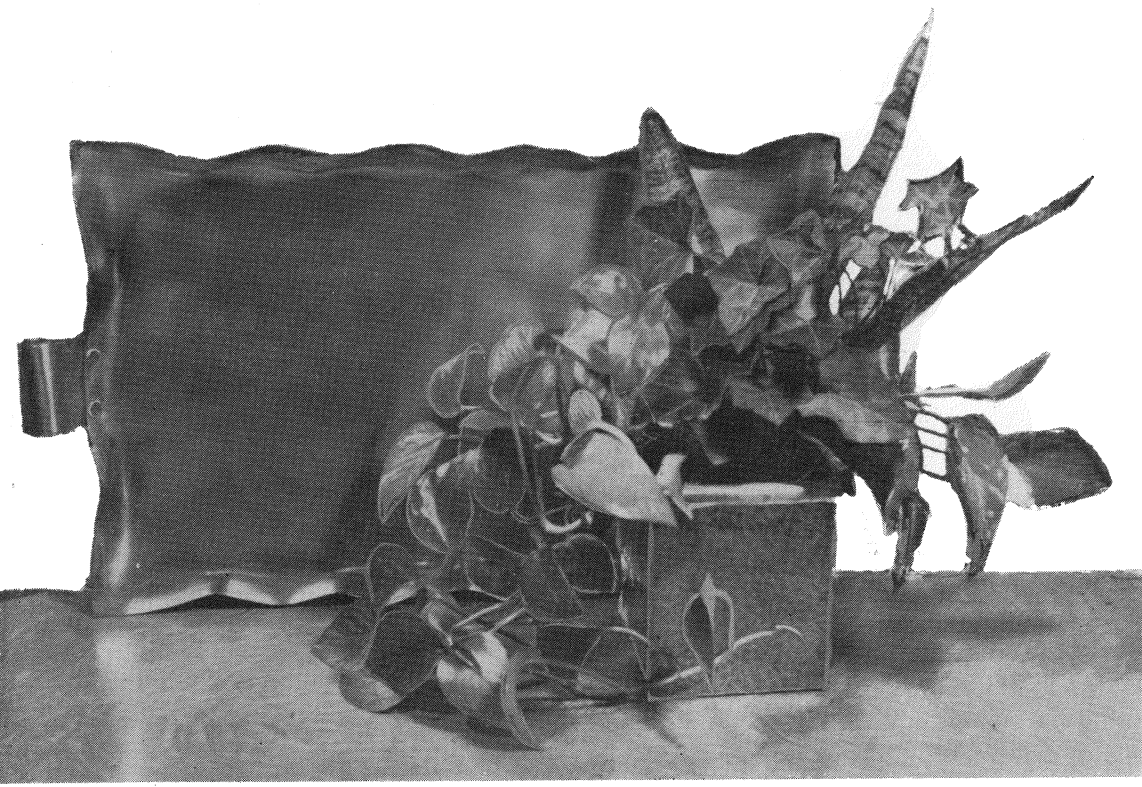
4-H CRAFTS

METAL HAMMERING

WEAVING



Circular 542

EXTENSION SERVICE
Oklahoma A. and M. College

Shawnee Brown, Director
Stillwater, Oklahoma

4-H CRAFTS MANUAL

METAL HAMMERING and WEAVING

by

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METAL HAMMERING

This information has been prepared to give simple steps and information on working with copper and aluminum.

Satisfaction, skills and results can be accomplished by the 4-H member who is interested and wishes to add beauty and charm to his home through articles made in metal craft.

KINDS OF METAL

The weight of copper (whether heavy or light, thick or thin) is determined in ounces per one square foot. Light metal suggested for bookends, plaques, pictures and hot dish mats is either 34 ounce or 36 ounce. This weight metal may be ordered by the local tinshop or from craft shops. Heavy copper applies to 14, 16 or 18 ounce metal and is desirable for ash trays, pin trays, letter holders and trays for serving.

Aluminum is purchased by thickness — the lower the number, the lighter the metal. .025 to .040 is desirable for pin and ash trays while .050 to .060 would make serving trays.

TOOLS

For metal tooling, the following supplies are needed: ball-peen hammer; very fine (00-000) steel wool; metal—aluminum or copper (local tin shop may have these metals); wood surface on which to hammer; old newspapers; pliers, jaws padded with adhesive tape or cloth; hardwood molds, optional; medium size water color brush; white poster paint, small jar (also called show-card or tempera) or metal carbon; designs from wall paper sample book, fabrics, magazines, needlework book, etc.; pencil, ruler, tracing paper, orange sticks, carbon paper; 10-penny nail, old nail file, or ice pick; tin shears if using sheet metal, plywood for bookends and "liver of sulphur" for darkening copper (may be purchased at drug store).

METHOD

(FLAT ARTICLES WITH SHAPED EDGES) *An all-over hammered effect when no design is used.*

(1) Select a ball-peen hammer that has a smooth, rounded head. If there are any rough spots on the edges of the metal, file them with a fine file and smooth with 00 or 000 steel wool. Place the piece of

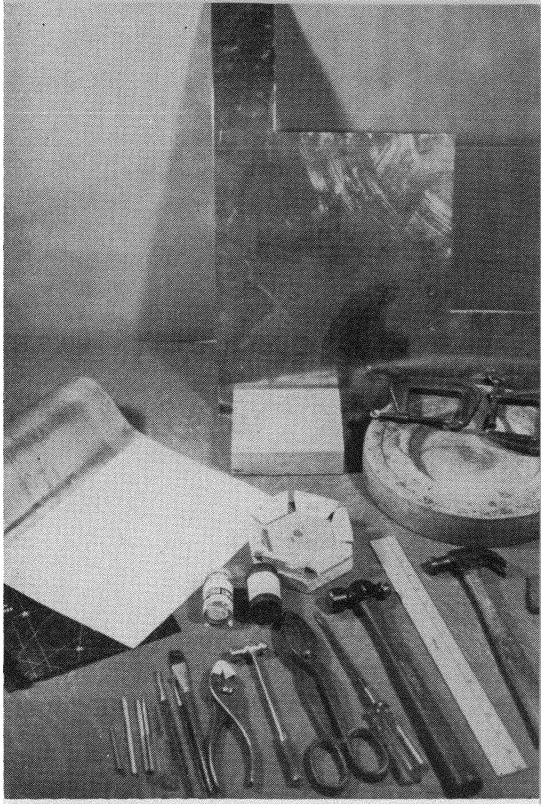


FIG. 1—Supplies for metal tooling.

metal, shiny side up, on a hardwood surface. Strike a sharp blow with the rounded head of the hammer. Continue striking each time in a different spot, working across the metal until the edge is reached. The most pleasing effect is obtained by striking one blow next to, but not on top of, the previous one. Take plenty of time. Light blows produce small marks; heavy blows, large marks.

(2) The hammering process may have bent the piece somewhat out of shape. Spread a pile of old newspapers on the table. Place the metal, hammered side down on the newspapers. Gently flatten the piece of metal into its original shape by tapping all over the surface with a wooden mallet, or a ball-peen hammer with a rubber chair cup slipped over one end of its head. It is better to go over the same spot several times than to try to flatten it with one blow.

(3) To shape the article or flute the edges, divide back of article into equal parts. Divide a four-inch circle into eighths; an eight-inch circle into sixteenths, etc.

Oblong or square objects are divided into equal parts and in proportion to the article being made. Pad the jaws of pliers with cloth strips or adhesive tape. Take a "bite" of the metal about ½ to ¾ inches with the pliers in one of the divisions marked off and bend up. Repeat around the article. On larger articles a larger "bite" will look better. Best results will be obtained if bending is done with one movement and not too far up.

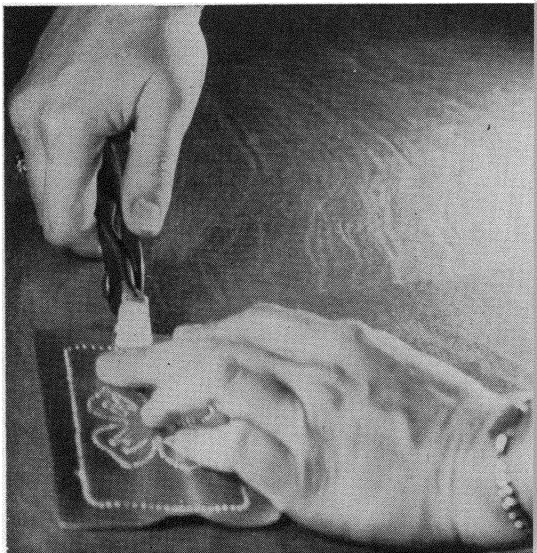


FIG. 2—Pad the jaws of pliers with cloth strips or adhesive tape before shaping or fluting the edges.

(4) Polish well with 00 or 000 steel wool, working with the lines of the metal if they are noticeable. To prevent the metal from tarnishing, a smooth coat of clear shellac or lacquer may be brushed over the surface.

If a mold is used clamp the sheet metal with clamps over the edge of the wooden mold. Start in the center, striking sharp blows with the rounded head of the hammer. Continue striking each time in a different spot, working in circle outward until the edge is reached, Fig. 3.

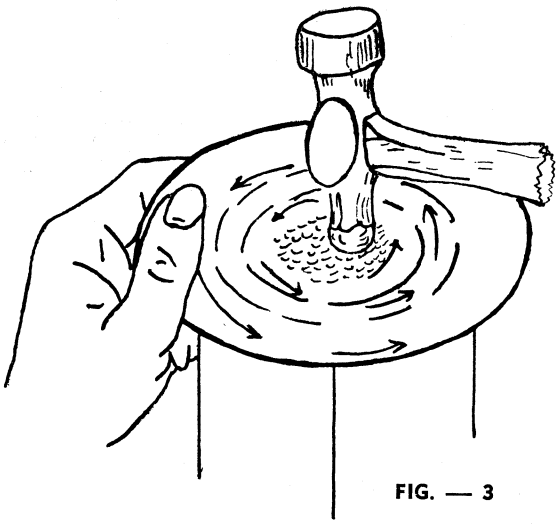


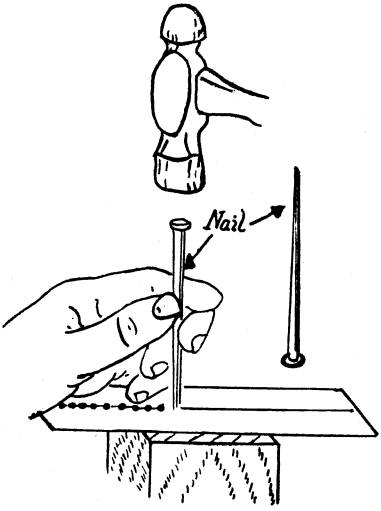
FIG. — 3

RAISING OR EMBOSSING EITHER THE BACKGROUND OR THE DESIGN

(1) Paint right side of metal with a thin coat of white poster paint (water paint). Carbon paper will not mark on metal unless metal carbon is used. This may be secured from a craft shop. The right side of the metal is shiny. If there seems to be no difference, pick the side with the fewest scratches. Allow poster paint to dry (about 5 minutes).

(2) The design is transferred to the metal by placing a sheet of carbon paper over the metal piece. Lay the pattern right side up and trace the lines of the design with a hard lead pencil. The paper pattern and the carbon paper are then lifted and the design retraced on the metal with a sharp nail to prevent the pattern rubbing off while the work proceeds. Wash off poster paint with water.

FIG. 4—Many attractive articles for use in the home are the result of raising or embossing either the background or the design of the metal work.



(3) The design is raised by "tapping" the background. To do this, the metal piece is laid, design side up, on the block of soft wood or a magazine as a protection to the work surface and as a cushion for the tapping. A ten-penny nail is blunted with a file so that it will make a round dent in the metal. Hold the nail in a vertical (upright) position. Tap the nail head lightly and squarely with a hammer. The design is outlined first with these dents and then the background is filled in or left plain. Care should be taken to keep the dents an even depth and to prevent the nail making a hole in the metal. A more pleasing effect is gained when the dents are not too close together and are evenly spaced.

A variation here may be made by outlining the design on the wrong side of the metal so the raised effect of nail mark is on the right side. To finish, follow directions given on page 6 for the "all-over hammered effect" above.

METAL FOIL

Attractive articles, such as bookends, plaques, hot dish mats and pictures may be made by tapping, stippling or raising the designs on light weight metal foil and attaching the metal to plywood by means of brads or small nails or framing.

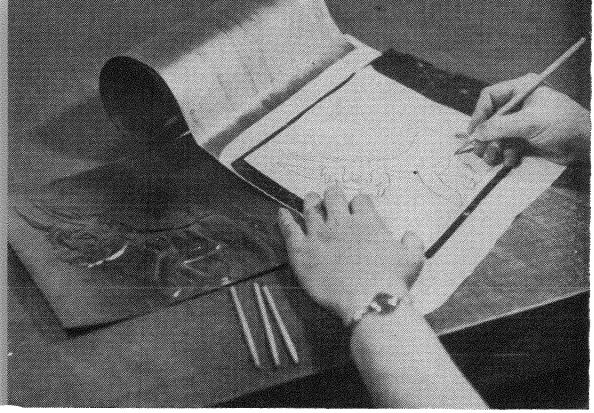


FIG. 6—Transferring a pattern after poster paint has been applied to one side of the metal. Note carbon paper next to metal.

TOOLING METAL FOIL

Follow directions previously given to transfer design to metal sheeting. Remove carbon and retrace design with an orange stick or hard-lead pencil using enough pressure to raise the outline of the design on the underneath side of the metal. Trace the design on a towel or soft surface to help make the impression deeper.

Turn the design over. (The pattern traced on the sheeting is face down on the towel.) With an orange stick or pencil eraser, press lightly following the outline of the design. Care should be taken not to press too hard — but repeat the strokes making a raised effect on the right side. Continue working until the entire design is raised. Turn to the right side (one on which pattern was transferred) and retrace outline of design. This will make your design clearer and the raised part more effective.

The background may be stippled or tapped or just left plain. The stippling or tapping on the foil may be done with a nail or orange stick to give relief to the plain background.

To give contrast to the raised part of the design and the background, darken the background by using "liver of sulphur." Dissolve liver of sulphur in water (a small amount dissolved in water will darken the surface less readily and give more time to gauge the degree of darkness while being applied). When the article is darkened the desired amount, rinse with clear water. Let dry, then polish with steel wool for light and dark effect. If the sulphur darkens the surface too much it may be cleaned with fine steel wool (00-000).

A finish of clear shellac or lacquer may be applied to the surface to keep the metal from tarnishing.

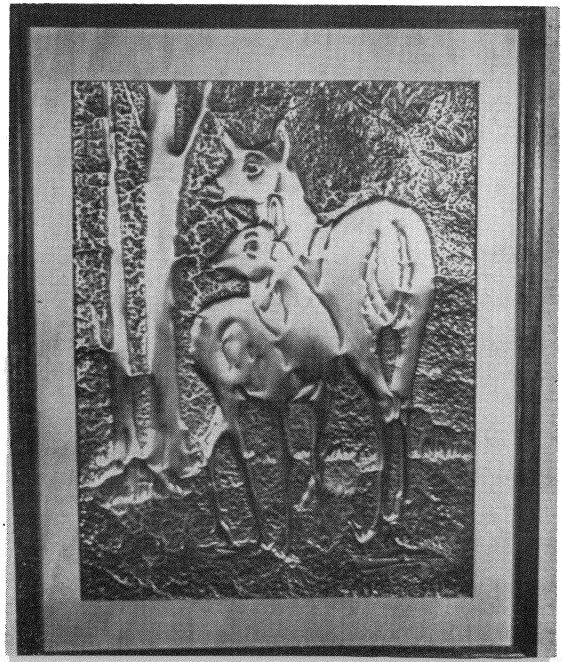


FIG. 7—A finished product shows a contrast to the raised part of the design and the background.

BOOK ENDS

Plywood Forms. For one pair of book ends, two upright sections of 3-ply wood (⅜-inch thick) or end of apple or orange boxes are sawed with a coping saw to insure a smooth, even top curve; and two bases are sawed from 3-ply wood (⅜-inch thick) or made of metal as in Figure 8. The upright sections are to be faced with metal. The bases should be faced with metal if light-weight metal is used, but are left plain when the upright sections are faced with heavy metal. All faces and edges of the plywood pieces which will not be covered with metal should be sandpapered with the grain of the wood until they are smooth; wiped free of dust; stained with any color oil stain desired; wiped almost immediately, to remove excess stain; and rubbed to bring out the grain. When the stain has dried thoroughly, the edge of the longer side of each base should be glued firmly to the lower part of the back side of the upright section if plywood is used for base.

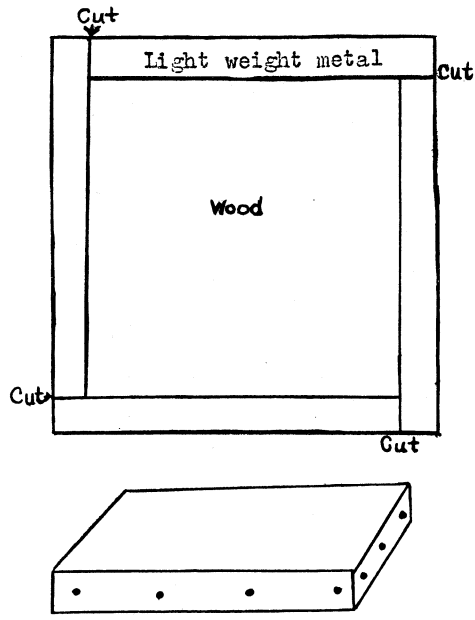


FIG. 8 — Cutting metal to fit wooden form for book ends.

Small screws, extending from the front face of the upright section through the edge of the base, should be used after the glue has dried to hold the two pieces more securely together. If possible, the heads of the screws should be sunk into the wood. If metal is used for the base follow Figure 9.

When the design is complete, the wood form for the upright section, with its attached base, is placed in the center of the metal piece and the edges of the metal are bent over the wood on all sides. Corners should be slit and lapped to backside. Brass pins (for copper)

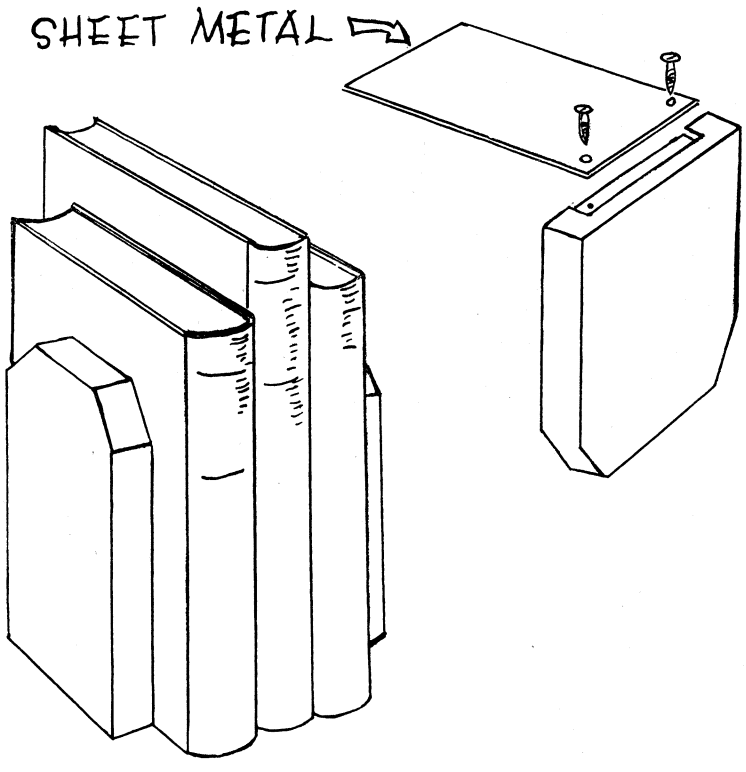


FIG. 9 — Metal used for base of book ends.

or wire brads (for aluminum) placed about one inch apart, are used to secure the metal to the edge of the wood form.

The facing for the base is laid over the bottom and back of the wood form. The edges are secured with pins or brads, and trimmed even with the back and bottom edge of the book end.

If the book ends are to be placed on a surface which might be scratched by the metal edge at the joining of the upright section and the base, it is advisable to glue over the entire bottom of each book end with furniture glue, a piece of felt or of heavy flannel in an inconspicuous color.

After the book ends are completed, the metal is polished with fine scouring powder or 00 or 000 steel wool. Rubbing vigorously will give a beautiful luster to the metal. To prevent tarnish of the metal and to protect the wood, a smooth coat of clear shellac (or lacquer, if preferred) should be brushed over all the surfaces of the book ends.

Heavy Copper Facings. If heavy copper is desired for the book ends, this may be used satisfactorily but in a slightly different manner from the lightweight copper. In this case the base has no copper covering and the upright section is faced with a piece of copper cut exactly the same size and shape as the plywood form for that section. After the design has been tapped on the heavy copper, the facing is attached to the wood form by pieces tacked on the outside face of the book end in an evenly spaced line close to the outer edge. Slightly more pressure is required to strike the blunted nail in tapping the design on heavy copper. Aside from these few variations, the method for heavy copper is the same as for light-weight copper or aluminum.

PLAQUES

Plaques may be made any size and shape desired.

A six-inch square form, of 3-ply wood (⅜-inch) is sawed. If light-weight metal is to be used, the face and all edges of the form will be covered with the metal, so there is no need to stain the wood. If heavy metal is to be used, however, the edges of the wood should be stained as they will not be covered with metal. A facing of light-weight metal is cut ½ inch larger on all sides than the form; one of heavy copper is cut the same size as the form. The design on the plaque will probably look more finished, if a narrower plain border is left inside the edge around the tapped background. After the design is tapped on the metal, the facing is attached to the form in the manner advised for book ends made of the same weight metal.

HOT DISH MATS

Exactly the same procedure is followed for six-inch square hot dish mats as for the plaques of the same size, except that, instead of a ring attached to the back of the form, a six-inch square piece of felt or flannel is glued, with furniture glue, to the bottom of the hot dish mat if the mat is to be used on a table not entirely covered with a table cloth.

DESIGNS

Creating original designs will make the project more expressive of the ideas of the worker and will add greatly to the enjoyment of the project. One general rule for effective decorative designs for metal tapping is that they must be made up of simple lines with very little detail. Geometric designs are the easiest to draw and are usually pleasing when used.

WEAVING

The equipment needed for weaving: weaving frame, either wooden or metal; wire hook or shuttle to draw threads through the warp thread; materials—woolen yarn, cotton yarn, jute, raffia, woolen rags (cut in ¼ inch strips), cotton rags (cut in ½ inch strips).

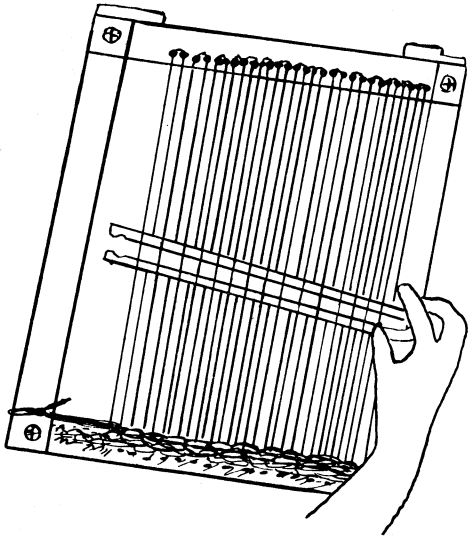


FIG. 10 — Loom weaving for hot mats, pot holders & place mats.

Terms Used in Weaving

Warp . . . the lengthwise threads which are the foundations of the work.

Weft or Woof . . . the crosswise threads which go over and under the warp, making the fabric and the pattern.

Shuttle . . . an instrument on which the weft thread is wound. It is used for sliding thread back and forth in weaving.

Loom . . . a weaving frame, may be wooden or metal.

Weaving is simply a going over and under warp threads with weft threads which creates a webbing. The pattern is made with the color arrangement against a background.

To make your own designs, use graph paper or rule paper into squares. Let each square represent a warp thread. Black out the squares to form your pattern. The pattern is always put in with the over stitches.

Frames for weaving may be made at home from lumber one to two inches wide. Make the frame the size of the article to be made. Frame, size 12 x 18, makes good place mats. Size 6 x 6 are nice for pot holders or hot dish mats. These squares may be sewed together for place mats, rugs and purses.

WEAVING A PURSE

Material: Strips of cotton material or cotton rug yarn; end of apple or orange crate or plywood; small finishing nails; tooth brush handle or shuttle; large button.

To make: Cut end of orange or apple crate the size that you wish your purse to be. To make a purse 5 x 8 inches cut one piece of wood

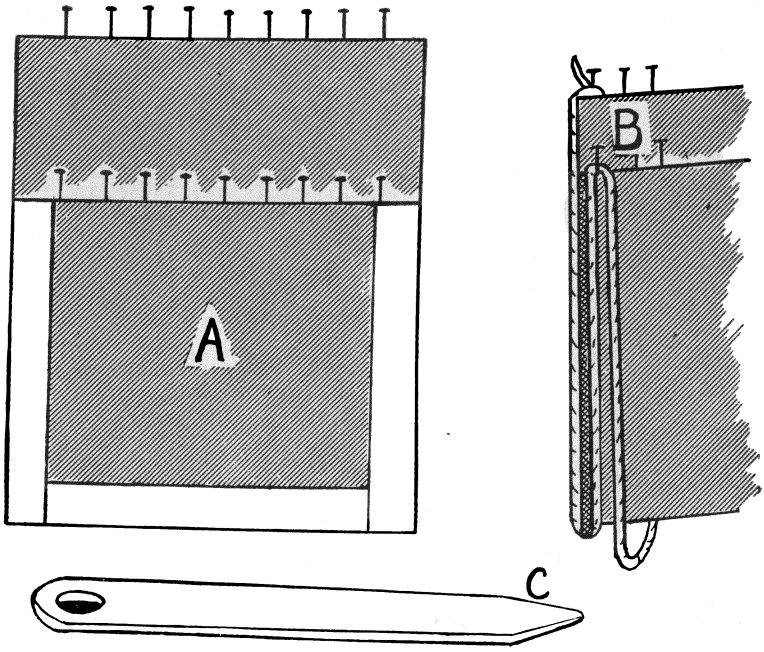


FIG. — 11

7 x 8 inches. The two inches are added to make the flap of the purse. Nail small finishing nails ¼ inch apart on the top of the board, Fig. 11-A. Nail small finishing nails ¼ inch apart down two inches from the top, Figure 11-A. Wind the thread on the loom as in Fig. 11-B.

Knot the thread around the first nail on the top row, Figure 11-B. Bring it down back of loom to bottom, up front of loom and around first nail, then down again and underneath loom to back. Bring thread around second nail at top, down back of loom, underneath, up front and around second nail at top. Fig. 11-B.

Continue in this way until loom is completely wound, knotting the thread around the last nail.

Thread a tooth brush handle or shuttle that has been sharpened to a point, Fig. 11-C. Fasten end of thread to the first nail on the lower front side, Fig. 12.

Start to weave by going over the first strand, under the second, over the third. Continue until you reach the end of the row. Turn the loom over and keep right on weaving, Figure 12, going across back of loom. Continue weaving around the loom in this manner until the bottom of the loom is reached.

Weave top section (or flap of purse) at back of loom by weaving back and forth on same side.

Fasten end threads by weaving them into woven material so that the ends will not become loose.

Take out nails. Remove pieces of board.

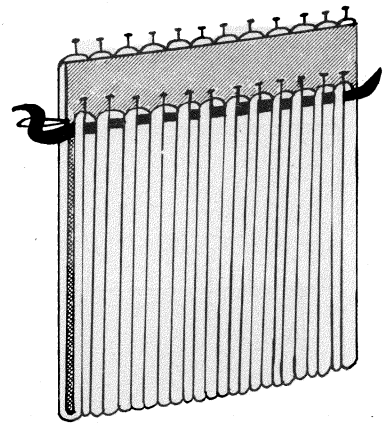


FIG. 12 — Weaving front and back of purse together.

Lining for purse

Cut lining material ½ inch larger than the sections for the woven purse. Stitch lining as in Figure 13. Sections for combs and lipstick may be stitched as in Figure 13. Slip stitch the lining in the bag. Turn over flap at top. Sew button in place. Crochet buttonhole loop. Sew to flap of bag.

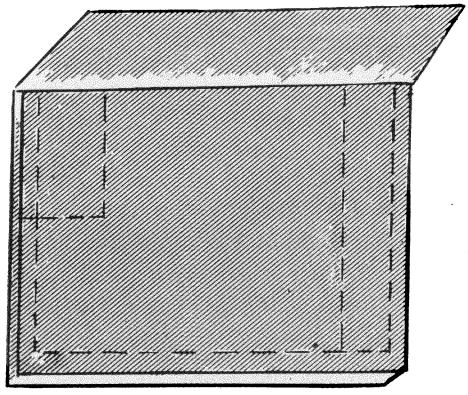
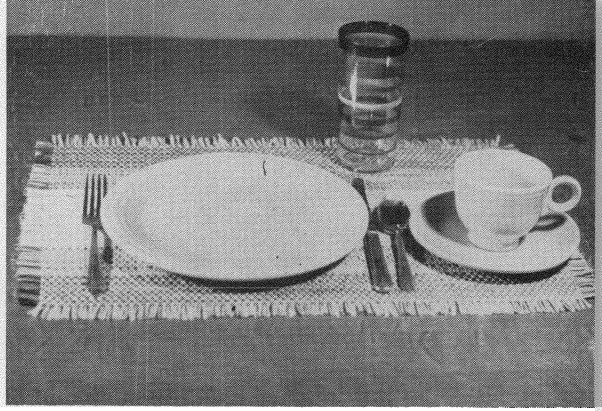


FIG. 13 — Lining for purse.

Things That May Be Made from Weaving

Hot pot holders, table mats for hot dishes, place mats, purses, rugs.



FIGS. 14-15 — Attractive table mats can be made on your own loom.

CYLINDER WEAVING

Cylinder weaving is done on cylinder-like objects that are three or four inches long such as: plastic soda straws, glass or metal tubing or macaroni.

1. The weaving will be as wide as the cylinders. You can determine the number needed by measurement and experimentation.
2. Cut the warp threads ten inches longer than the finished material.
3. Thread each thread through a cylinder.
4. Tie each two adjoining warp threads together as in Fig. 16-A.

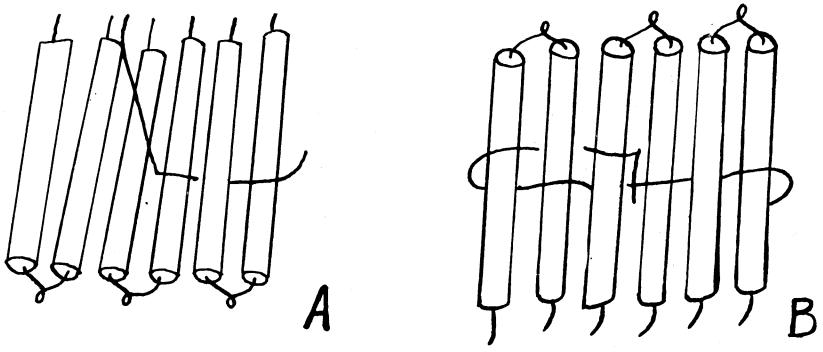
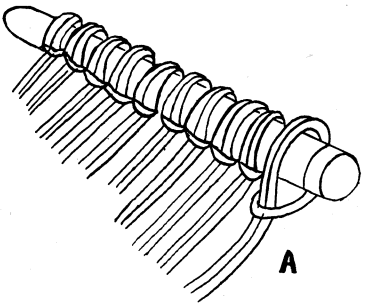


FIG. — 16

5. Hold cylinders in hand flat and close together.
6. Place heavier yarn, (cotton yarn is very good for this purpose), between the two center cylinders about half way



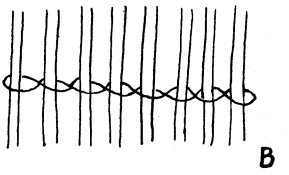
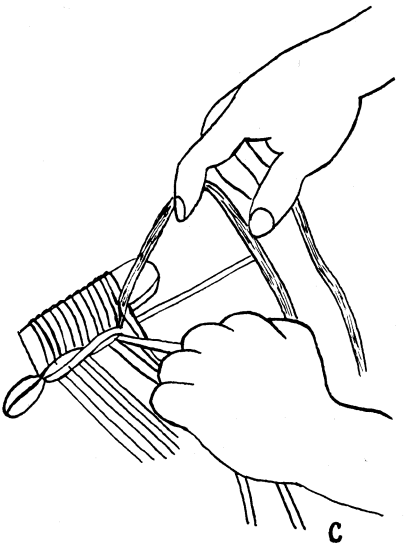


FIG. 17 — Broomstick weaving.



down the length of the cylinders. Leave 1 or 1½ inch of yarn before starting to weave. Go left over the first cylinder and under the next until the last one on the left side is reached. Fig. 16-A.

7. Wind the yarn around the last cylinder and reverse the process going over the cylinder that you had gone under before and vice versa. Fig. 16-B.

8. The short end that was left over in the beginning is held with one of the cylinders and is woven in with the warp thread. This makes for extra security and neatness.

9. Continue in this manner until the article is the length you desire.

10. Finish off by threading a darning needle with the end of the thread you have been weaving with. The yarn is then tacked securely and neatly to the rest of the article.

11. The warp threads are tied together the same as those at the other end. They can be trimmed and kept as fringe or cut close to leave a smooth edge.

BROOMSTICK WEAVING

Materials Needed: Yarn, rags, raffia or rug yarn, string, a broomstick.

1. Cut warp thread 12 inches longer than the doubled length of the finished product.

2. Double the warp thread. Place loop on top of broomstick. Put the two ends around and underneath the broomstick. Draw them up through the loop until they are tight, Fig. 17-A.

3. Double a long thread of the weft material around the first warp thread, Fig. 17-B.

4. With the right hand hold the weft threads, twist and pull the warp thread through. Continue until the end of the row, Fig. 17-C.

5. Turn and come back in the opposite direction.

6. Avoid curved edges by pulling warp threads just tight enough to keep width of weaving firm and uniform.

7. To finish, cut the loops from the broomstick. Knot and fringe both ends. Trim fringe evenly.

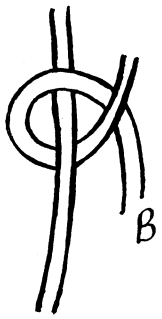


FIG. — 18

Variations of this pattern may be made by twisting over two and under two warp threads instead of one.

Another variation can be made by using a half-hitch knot instead of twisting, Fig. 18.

Half Hitch: Pull strand B under strand A. Continue around and over strand A and under strand B. This forms a loop as in Fig. 18.

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