

Forms for Winding Coils Like Those Previously Used.—

A simple form that can be made from a pine board for dupli-

ating the shape of coils previously used in an armature that is being rewound is shown in Fig. 111. The dimensions and general shape can be secured from a sample coil preserved from the old winding. In the illustration *A* is a small hole for mounting on a spindle. Small pins *B* are driven into the form to hold the coil in place while winding. *C* and *C'* are slots cut into the sides so that the several turns of the coil may be tied together with thread. This keeps the wires together after the coil is removed from the form. At the ends *D* and *D'* two pins are used in order to make the turn shown on the end section at the right in Fig. 111.

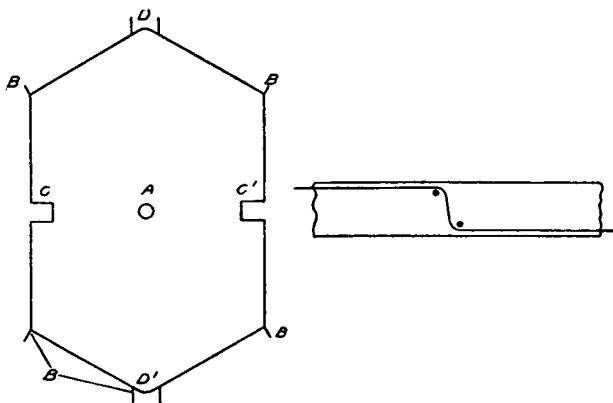


FIG. 111.—Form for shaping diamond armature coils to match old ones used.

Now mount the form on a spindle so that it can be revolved and wind on the required number of turns, using the pins as a guide. If the completed coil is to consist of two coils, take two wires and wind them together. When the proper number of turns have been made, cut off the wire and tie the coil with thread at *C* and *C'*. Remove the coil from the form and compare it with a sample if such a sample was preserved from the old windings. It is also well to try this first coil in the armature, and see that it has the proper span, and that the leads to the armature are long enough.

The following method for winding coils for small motors has been found convenient by Maurice S. Clement (*Electrical Record*, November, 1918) in those cases where a repair must

be made on the job or coils made up where a coil winding machine is not available. The form is made up as follows: First take a flat piece of wood about three-fourths of an inch thick and plot out the shape of the coil. Then place right angle screw hooks, at all angle points. The screw hooks should point away from the center of the form. Mark out the center and run a breast drill through as far as it will go. Place the breast drill in a vise in a horizontal position with the coil form toward the left, taking care to place it so as to allow free

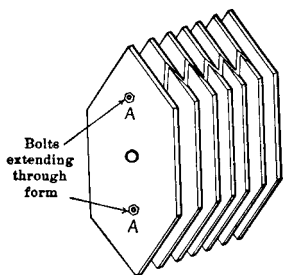


FIG. 112.

FIG. 112.—A six gang form for winding coils in series.

Six coils can be wound in series and removed in a group so they can be inserted in the slots of an alternating current motor stator without the necessity of making the series connections. This form can also be used to wind a single or double coil. It is built up in sections which are held together by the bolts at A. The slots in the divisions between sections enable the winding and removal of the coils in series.

FIG. 113.—Continuous jointless phase-group coils used on rotors of Fairbanks-Morse phase wound motors. These coils are wound on a form similar to that shown in Fig. 112.

movement of the handle. Turn the wire of which the coil is to be made, once or twice around a nail on the back of coil form, and lead the wire over the edge to the face of the form and turn the handle. The form can be revolved at any desired rate of speed and the wire run over all the screw hooks. Keep sufficient tension on the wire to permit each turn to lie snugly beside its predecessor.

This is a convenient way to wind coils, for the reason that unnecessary crossing of wires can be prevented. When the specified number of turns have been wound, twist a short piece of wire around each end of coil to hold it in proper shape.

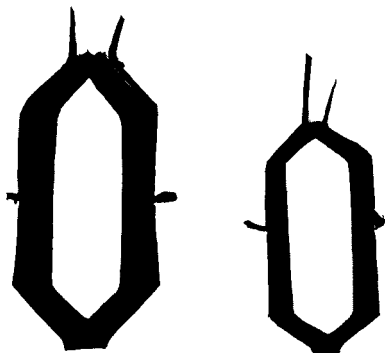
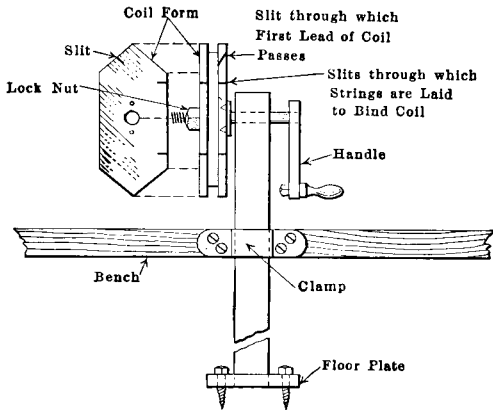


FIG. 113.

To finish the operation, turn all screw hooks toward the center of the form and slip the coil off.

Another hand-made form also recommended by Mr. Clement for use in winding larger coils than the one described above is shown in Fig. 114.



114.—Construction of a convenient bench winder for forming armature coils.