

HORIZONTAL WARPING MILL

THE HECK BLOCK

As we have explained in the last issue of MW, a good warp is necessary for fast and uninterrupted beaming i.e. that there is no need to straighten out, comb or adjust the tension of the warp between the warping mill and the loom. Such a warp must have all the ends of the same length, all going parallel to each other without crossing or twisting, and not piled up in a haphazard way one on top of another. Although it is possible to warp in this way by hand - it takes quite a long time. A very simple gadget can do the same work in a small fraction of the time necessary for hand-warping. This gadget guides the yarn during warping, and is called Heck-Block.

In the warping reel described so far, we have already one part which will serve as a support for the "feeding" mechanism. It is the rail "D" (fig.4, page 9). The heck-block will slide on it from one end of the mill to the other, and back. This block (fig.1) is pulled by two cords (C) which go around pulleys (P) placed on each end of the rail. Both cords are wound on wooden cylinders (R) inserted on the bolts which support the rotating frame of the mill in the uprights of the base. This is why these bolts were made 8" long. The cords are wound in opposite directions, so that when the frame turns one way, the heck block is pulled to the right, and when it changes the direction of rotation, the other cord pulls the block to the left.

The larger the diameter of the cylinders, the faster travels the heck-block. For instance if the diameter is one inch, the block will travel about 3 inches during one rotation of the frame. This means that it will take about 11 turns of the frame to go from one end of the mill to the other, The warp will be rather long (about 30 yards) but narrow. If more bulky warp is required, the distance between two turns of the frame must be more than 3 inches. We can use then cylinders of 2" in diameter, and the turns of warp will be spaced 6 inches. The length of warp will be only 15 yards. It is advisable then to have two or three sets of cylinders for different warps.

The block itself has three functions: it guides the warp, it distributes the warp so that it does not pile up all in one place, and it helps making the crosses.

The guiding is done by a "gatherer", or two vertical steel rods set in the block very closely together (G, fig.2). Two sets of half heddles made of one piece of wire each (H, fig.2) can open two small sheds which give the cross. One set of 4 heddles slides up and down on two steel rods (R, fig.2).

To space the warp evenly, we divide it into 8 sections and wind them one beside another. The block is not directly tied to the cords, but it sits on a longer board with 8 holes drilled in it (B, fig.2 and fig.3). The board is pulled by the cords, and the block is secured to the board with a peg (P, fig.2) which fits the holes in the board. We start warping with the peg in the 1-st hole (fig.3) and after making one eighth of the warp we transfer the peg to the 2-nd hole, then to the 3-rd and so on, until the warp is finished.

We start with the rail, which already is mounted on the mill. It should be sand-papered until quite smooth, and oiled, or rubbed (but not painted) with varnish. Then the board (fig.3) is made of smooth hardwood. It has exactly the same width as the rail. The holes are drilled (not quite through) about $\frac{1}{2}$ " apart and right in the center of the board. Their size may be about $\frac{1}{4}$ ". One screw eye is set in each end of the board.

The box is built around the rail and the board so that it will slide easily on both. Here again the exact dimensions are not important, and they depend on the thickness of the wood used. The dimensions suggested on the drawing are only approximate. The four sides of the block must be very smooth at least on the inside.

The half-heddles are made from wire (e.g. copper no.14) on a templet (fig.6) with 9 nails driven in two rows. The ends of each set are forced into two holes drilled in wood. One set into the front board of the box, another into the sliding part (S, fig.2).

The cylinders are made of one piece of wood turned down to the same size all over, and then cut in two. If only one set is made it should be about $1\frac{1}{2}$ " in diameter. The $\frac{1}{2}$ " hole should be drilled first, before turning, or it will never be in the center. Each cylinder has one small screw at one end, to which later on the cord will be attached. Both cylinders are placed on the bolts between two nuts and washers.

Two pulleys of any size from 1 to 2 inches are fixed with screws to the rail, one at each end (fig.5). Now the cord can be attached first to the small screw in one of the cylinders, wound several times around, passed around the pulley, and tied to the heck-block. In the same way the other cord is attached on the other side of the mill, but it must be wound in the opposite direction to the first one.

An ingenious craftsman will add two more features to the mill. One of them are two safety stops, which will prevent the frame from rotating when it comes to the end of the warp. These are just two pieces of wood screwed to the frame; they hit the the heck-block when it comes to the end of the rail. Another is a counter secured to the rail at one end. The heck-block or rather the board strikes it at the end of its travel, and thus gives the number of "portees" of the warp.

The operation of the mill starts with placing the tubes with yarn on a bobbin rack. If only two tubes are used, there is no necessity of passing the yarn through the half-heddles - it can go straight through the gatherer (G, fig.2). If more, the ends are threaded alternately through the lower and upper heddles. Then the whole bunch of yarn is tied to the lower peg of the right hand side of the frame. Now we start rotating the frame until we come to the other end. Here the cross is made with the help of half-heddles. Open one shed for the lower peg, another for the upper one, then again the first for the lower peg. After the cross is made, we turn the frame in the opposite direction until the first cross is reached. Since this cross will be later used only to spread the warp in the raddle, it may be made without dividing the warp into single crosses. From now on we proceed as previously described (MW, No.8, page 10).

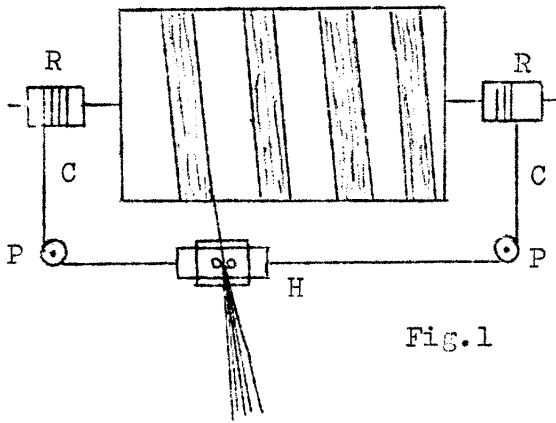


Fig. 1

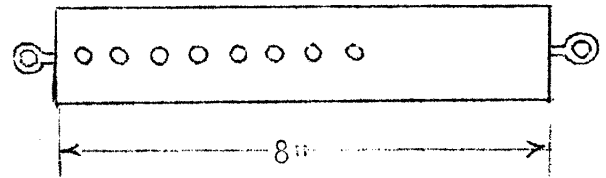


Fig. 3

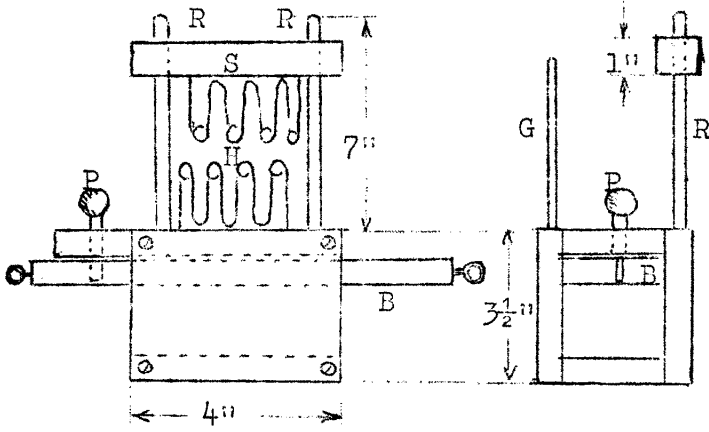


Fig. 2

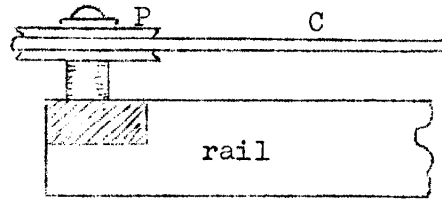
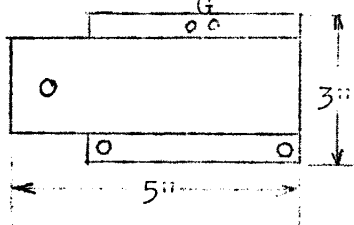


Fig. 5

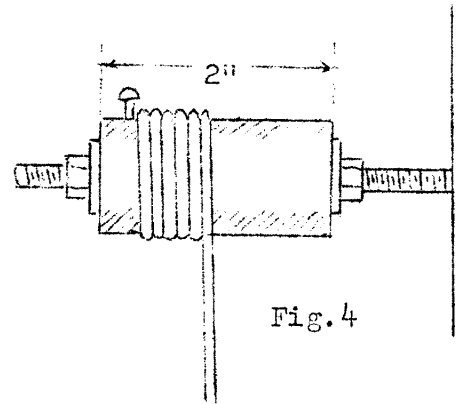


Fig. 4

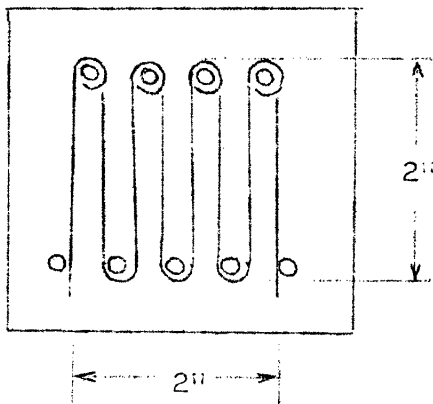


Fig. 6

All dimensions given here
are only approximate.