

SHED REGULATORS

In our first issue we have written a short article on this subject. Since then we had several requests to enlarge upon it.

Counterbalanced looms would have been the perfect solution for all technical problems in weaving if not for two drawbacks. One is that they do not work very well with a large number of heddle-frames, and there seems to be no remedy for this. With more than 4 frames the whole set-up is not really well balanced, and even if it is like in case of 8 or 16 frames, the friction makes due to the large number of rollers or pulleys makes the operation of the loom difficult.

The second drawback is, that the sheds open at the same level only when the tie-up is balanced i.e. when the same number of frames is tied to each treadle. Otherwise the sheds open at different heights, so that with each shot of weft one has to adjust the position of shuttle, and some sheds will be too loose in the lower part to support the shuttle at all. Then the upper part of the shed may be so loose that there will be a number of warp ends hanging in the shed.

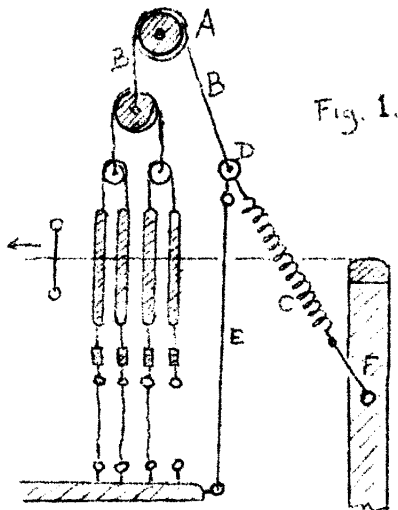


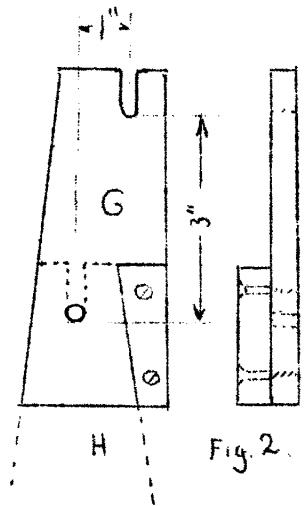
Fig. 1.

A shed regulator corrects completely this second deficiency of counterbalanced looms. It is easy and cheap to construct, and easy to operate. Once installed it can be used for both the unbalanced and the balanced tie-ups; in the second case it simply does not work and the loom behaves as if it had no shed regulator.

The principle is shown in fig.1. The whole harness (all heddle-frames, and rollers) is hung on an additional roller (A) with two cords (B). The weight of the harness is balanced with two springs (C), so that the frames remain in neutral position when the treadles are not depressed. But the cords B are tied at the same time to a crosspiece (D) running parallel to the harness and this piece is tied to the treadles with adjustable cords (E). Now, since the springs balance the weight of the harness, lamms, and treadles - the slightest pull on the cords B will result in the harness going up. At the same time the treadle will pull it down, and the final position of the harness and consequently of the shed will depend only on the length of cord E. Thus if a shed opens too high the cord is too short; if it opens too low, the cord is too long. By adjusting the length of cords E we can have each shed in the best position for weaving. When weaving fine yarns it may be advisable to use the shed regulator even with balanced tie-ups, so as to make sure that every shed will just touch the batten when fully opened, but that there will be no friction between the batten and the shed during beating.

To make the shed regulator, we have to secure the following materials: one large roller about 3 inches shorter than the top roller of our loom, 2 pieces of wood as in fig.2, 1 piece of wood (preferably hardwood) about 1" in cross-section, round or square and as long as the roller, 2 screendoor springs, 16 screw-eyes, 2 - 1½" x ¼" stove bolts, 30 feet of tie-up cord, 4 feet of heavy (3/16") cord.

The large roller can be bought from the same factory which made the loom, together with the end-screws and hooks. It must be cut down to the proper size (i.e. 3" shorter) and the screw on the cut end replaced.



The two pieces of wood which are going to support the upper roller (previously the top roller of the loom) are a little tricky because they must fit the uprights of the loom. Their purpose is to move the harness backwards by about 1 to 1½", and to raise the roller by about 3". They should be made of hardwood. The smaller piece (A fig.2) must be fixed on the larger one with two screws. The bolt B is ¼" stove bolt.

Now we drive 6 screw-eyes in the ends of the treadles, and another 6 in the cross-piece D exactly at the same distance and directly above the screw-eyes in the treadles. One more

screw-eye is driven in each end of the cross-piece, and two more in the lower beam of the loom frame (F, fig.1).

Now we can mount the whole attachment. First we fix the wooden extensions (G, Fig.2) to the uprights H) with the bolts. Then place the upper roller in the slots of the extensions, and attach the shorter roller I to the cross-piece with heavy cord wound twice around the upper roller. Now one end of each spring is fixed to the screw eye in the end of the crosspiece. The lower ends of the springs are not attached directly to the loom, but to two short pieces of cord passing through the screw-eyes in the frame. The length of these pieces is adjusted so that the springs balance the harness. This set-up is permanent. If the shed regulator is not needed the springs are by-passed with pieces of cord of such length that the harness will hang in the neutral position. When the regulator is used these cords are removed and the treadles are tied to the cross-piece. All ties go vertically through the warp.

Not all ties between the treadles and the cross-piece are always necessary. For instance if all treadles but one are tied to two frames, and one treadle to one frame, then we can retain the by-passing cords, and tie only the last treadle to the cross-piece. The same rule applies to a case when several treadles are tied to 3 frames, and one or two to less than three. The by-passing cords are then adjusted for 3 frames (made longer), and additional ties made only on the treadles with 1 or 2 frames.
