Feb. 12, 1935. R. G. TURNER 1,991,069

METHOD OF AND APPARATUS FOR FINISHING SHUTTLE BOXES AND THE LIKE IN LOOMS

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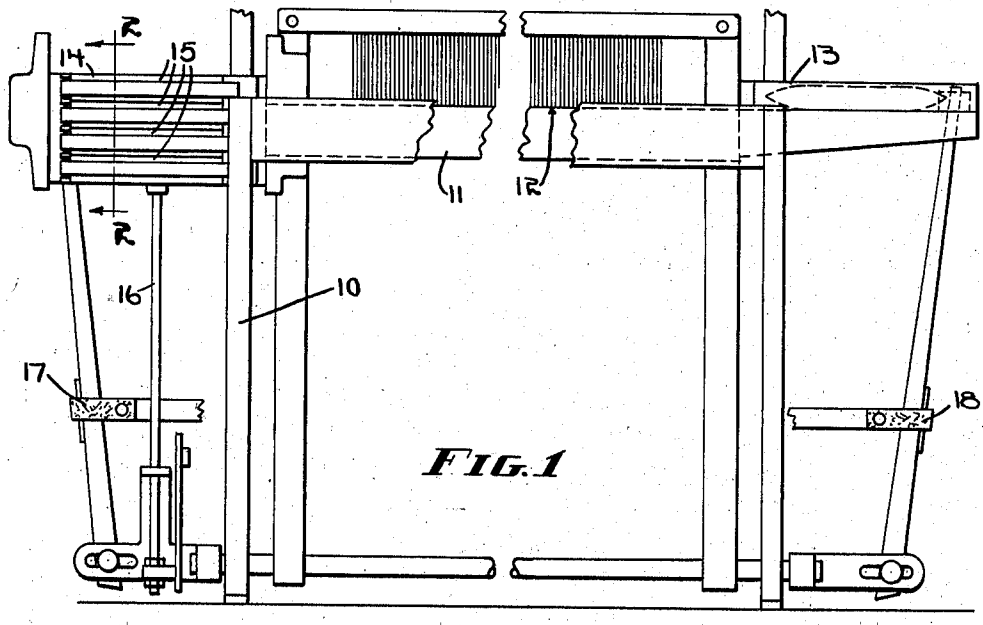


FIG. 1

FIG. 2

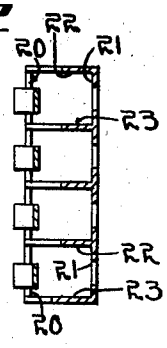


FIG. 3

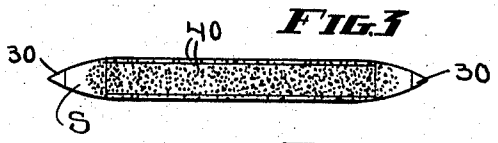


FIG. 4

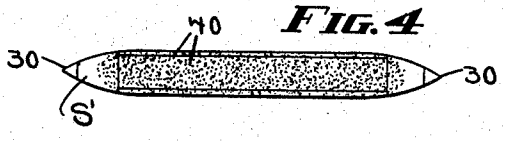


FIG. 5

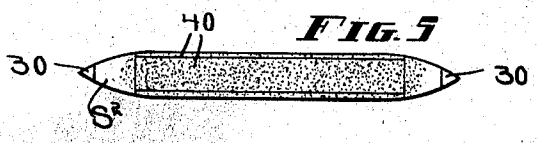


FIG 6

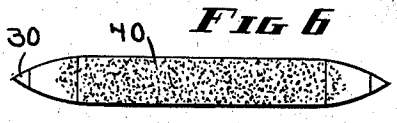
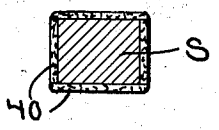


FIG. 7



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METHOD OF AND APPARATUS FOR FINISHING SHUTTLE BOXES AND THE LIKE IN LOOMS

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7 Claims. (Cl. 51—278)

This invention relates to improvements in the finishing of shuttle boxes and other parts of a loom which may have contact with shuttles and it is the general object of the invention to provide means for accelerating the finishing of shuttle engaging surfaces.

Drop or multicell shuttle boxes as usually made are cast in one piece and then rendered malleable. Because of the construction the interior surfaces of the walls and partitions along which the shuttles slide cannot be finished in the usual manner by power grinding and polishing. Scale, sand and flash marks on these surfaces are removed by filing, after which the surfaces are polished with emery cloth by hand. It is common experience that after new shuttle boxes finished in this way have been in operation for several months they acquire a much improved polish and the loom will operate better than when new so far as picking of the shuttles is concerned. Constant rubbing of the wooden walls of the shuttle against the iron surfaces of the shuttle box incident to weaving is responsible for the change, and it is found that picking efficiently increases with age up to a certain limit.

During the time that the shuttle box surfaces are being polished in this way, however, the loom is not operating at its highest efficiency and it is an important object of my present invention to give the loom a preliminary run with a specially constructed dummy shuttle coated with suitable abrasive and polishing materials which shall accelerate the polishing under conditions practically identical with loom operation. In this way the surfaces are subjected to the same general action as existed in the older practice where the weaving shuttles finished the polishing, except that the desired result is accomplished in a very short time.

The usual weaving shuttle has resilient walls which define or enclose the weft chamber, and these walls yield somewhat when the shuttle is boxed. In order to retain any effect which this yielding may have in the polishing I may provide my dummy polishing shuttles with surfaces of leather to which the abrasive or polish is applied. The dummy shuttles are also preferably of approximately the same weight as weaving shuttles, and are picked across the loom at a rate corresponding to commercial weaving.

In carrying my methed into effect I may employ a series of shuttles the first of which is coated with a relatively coarse abrasive and succeeding shuttles will have coatings of progressively finer abrasive, the last step polishing or lapping the surfaces to produce a finish very similar to that occurring in a loom which has been broken in in the ordinary way.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawing, where convenient means of carrying out my method is set forth,

Fig. 1 represents a front diagrammatic elevation of a loom equipped with shuttle boxes to illustrate the practice of my present invention,

Fig. 2 is a vertical section on line 2—2 of Fig. 1,

Figs. 3, 4 and 5 show shuttles carrying different grades of abrasive,

Fig. 6 is a plan view of the shuttles shown in Fig. 3, and

Fig. 7 is an enlarged vertical section through a dummy shuttle coated with leather.

Referring to Fig. 1, the loom frame 10 supports a lay 11 having a shuttle race 12. A single shuttle box 13 at one side is destined for cooperation with any one of several weaving shuttles which will be used when the loom is put into production. The other side of the loom may have a gang of boxes 14 having cells 15. The box lifter rod 16 operated in known manner moves the gang of boxes vertically so that one or another of the cells is in alignment with the race 12. The picker mechanism designated generally at 17 at the box end and a similar mechanism 18 at the plain end may be used to propel the shuttle. The loom of itself forms no part of my present invention and may operate in the usual manner either with boxes as shown in Fig. 1 or with drop boxes at both ends or with a single box at each end.

In the ordinary method of manufacturing, the interior surfaces of the boxes designated as front and back surfaces 20 and 21, respectively, together with top and bottom surfaces 22 and 23, respectively, will be filed and polished as heretofore.

In carrying my invention into effect I provide dummy shuttles which as shown in Figs. 3, 4 and 5 may be three different kinds S, S′ and S^2, respectively. These shuttles will have tips 30 similar to ordinary weaving shuttles and in most respects will be formed so as to have the weight and contour of ordinary shuttles destined for use in the particular loom being operated upon.

The exterior surfaces of the shuttles will be provided with abrasive held in place by a suitable adhesive, the abrasive in shuttle S being relatively coarse, that in shuttle S′ being less

coarse, and as shown herein where only three stages of lapping or polishing are to be practiced, shuttle S^2 will have the finest abrasive. As much of the surface of the shuttles as is likely to have contact with the interior surface of the shuttle box will be coated with the abrasive.

In using these shuttles I place the shuttle S with the coarsest abrasive, as shown in Fig. 3, in the loom and pick the same back and forth repeatedly. There will be no warp in the loom and the race plate and other parts, if desired, may be shielded from the abrasive action. The filling stop motions will be rendered inoperative so that continued loom operation without weft may take place and the boxes 14 will be moved progressively by well-known means so that each cell of the gang will be subjected to the abrasive action of shuttle S. After a certain number of picks from this dummy shuttle it will be removed from the loom and shuttle S' with finer abrasive, such as shown in Fig. 4, will be placed in the loom and the picking repeated.

As set forth herein where only three stages are described the last step will include the picking of shuttle S^2 which has the finest abrasive. This shuttle may if desired be coated with a polishing material and it will be kept in action until the interior box surface has the required degree of smoothness.

Shuttle S^2 is then removed and any abrasive which may have fallen off the shuttles is brushed away and the loom is then ready for weaving under conditions of picking equal to those of a new loom which has been in operation for several months.

As shown in Figs. 3 to 7 I may fasten leather strips 40 to the top, bottom and sides of the shuttles and the abrasive, etc., will be attached to these strips. The latter are resilient and will yield as the shuttles are boxed to initiate the action of ordinary weaving shuttles which have flexible sides. The leather also holds the abrasive, etc., better than wood.

While I have shown a particular way of carrying my invention into effect, yet I do not wish to be limited to the details set forth herein, as I believe I am the first to use dummy shuttles as described for the purpose set forth. The number of successive steps may be varied and the shuttles can carry abrading and polishing materials suited to specific requirements.

From the foregoing it will be seen that I have provided a very simple method and means for improving the finish of the interior of the shuttle boxes in which a shuttle is coated with an abrasive or polishing material and is then picked back and forth between the boxes in a manner very similar to the picking of shuttles in a weaving operation. As many successive steps of polishing may be used as are necesary and I am not limited to the three steps suggested. Because of the accelerated action on the box surfaces it may be necessary during the first stages of the method to increase the picking force applied to the shuttle. By the method described and by the means employed to carry the method into effect assurance is given that the surface produced will be very close in character to the kind of surface produced by a shuttle after a long period of wear in the new loom. While the invention is described with particular reference to shuttle boxes, yet it can be used to finish any surface along which a shuttle is to slide in the normal weaving operation.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. The method of finishing the interior surface of shuttle boxes in looms, which consists in providing a shuttle having an abrasive surface, and picking the shuttle back and forth in the loom into the box and out of the box to be polished.

2. The method of finishing the interior surface of shuttle boxes in looms which consists in providing a pluraltiy of shuttles having abrasive and polishing coatings of different degrees of fineness and picking the shuttles in sequence from the coarsest to the finest coatings.

3. The method of finishing the interior surface of shuttle boxes in loms which consists in providing a dummy shuttle similar in weight and contour to the shuttle destined to be used in the shuttle box, coating the dummy shuttle with finishing material, and picking the shuttle into and out of the box under conditions simulating shuttle picking during weaving.

4. The method of finishing the interior surface of a loom shuttle box which consists in providing a shuttle having resilient exterior surfaces coated with a metal finishing material, and picking the shuttle into and out of the shuttle box and in contact with the surface to be polished.

5. A shuttle for polishing the interior surfaces of a shuttle box in looms, said shuttle having the exterior surfaces thereof coated with metal finishing material to come in contact with and finish the shuttle engaging surfaces of the shuttle box.

6. A shuttle for polishing the interior of shuttle boxes in looms, leather carried by the exterior of the shuttle, and a metal finishing material secured to the leather to come in contact with the surfaces of the shuttle box to be polished.

7. In a shuttle for polishing the interior surfaces of a loom shuttle box, a resilient material carried by the shuttle, and metal finishing means carried by the material and located to come in contact with and polish interior surfaces of a shuttle box.

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