Jan. 8, 1952 R. J. MESSIER 2,581,494

LOOM SHUTTLE

Filed Jan. 18, 1950 2 SHEETS—SHEET 1

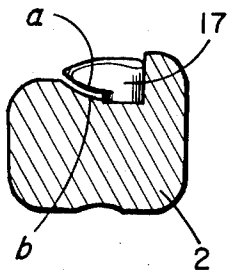

FIG. 1a

FIG. 1

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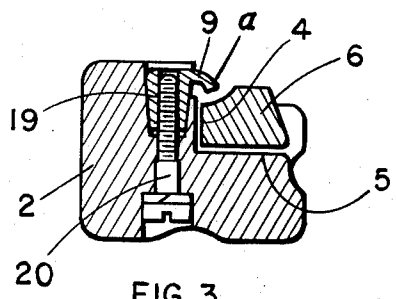

FIG. 3

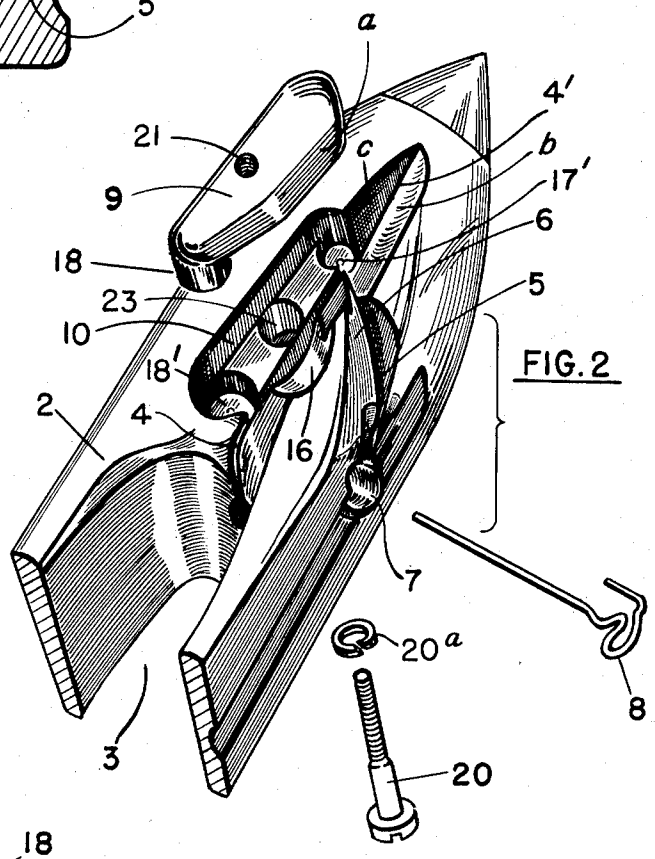

FIG. 2

FIG. 4

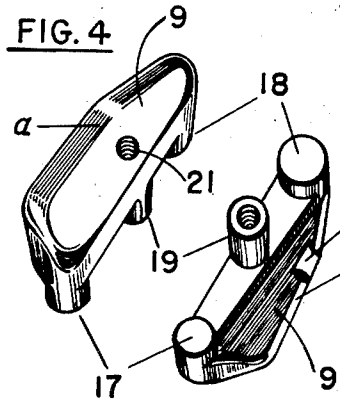

FIG. 5

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UNITED STATES PATENT OFFICE

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LOOM SHUTTLE

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Application January 18, 1950, Serial No. 139,225

2 Claims. (Cl. 139—223)

1

This invention relates to loom shuttles of the automatic threading type designed primarily for use in automatic weft-replenishing looms. It is more particularly concerned with shuttles of the character shown in United States Patent No. 2,220,812, granted November 5, 1940, and it aims to overcome certain minor, but annoying, difficulties which have developed in the practical use of the shuttles disclosed in that patent.

The nature of the invention will be readily understood from the following description when read in connection with the accompanying drawings, and the novel features will be particularly pointed out in the appended claims.

In the drawings,

Fig. 1 is a perspective view of the forward end portion of a loom shuttle embodying features of this invention;

Fig. 1*a* is a transverse, vertical, sectional view through the forward end of the shuttle body showing the relation of the lateral flange of the guiding plate and right hand wall of the threading groove;

Fig. 2 is an exploded view of the thread-guiding mechanism of the shuttle structure shown in Fig. 1;

Fig. 3 is a transverse, vertical, sectional view through the shuttle shown in Fig. 1; and

Figs. 4 and 5 are perspective views of the threading plate used in said shuttle, the former showing the plate right side up and the latter showing it inverted.

Referring first to Figs. 1 and 2, the construction there shown comprises a shuttle body 2 provided with a chamber 3 adapted to receive a bobbin, such as that indicated at B. Extending forwardly from the shuttle chamber is a threading groove 4, and intersecting that groove is a laterally disposed thread-guiding slot 5 cut through the side of the shuttle body and forming the usual tip or nose piece 6. The slot 5 leads to a delivery eye 7 in which the usual pig-tail guide 8 is mounted. So far as the features above described are concerned, the construction is like those common in self-threading shuttles.

For the purpose of controlling the thread properly during the threading-up operation, a thread guiding plate 9 is mounted in a recess 10, Fig. 2, cut in the top of the shuttle body to receive this plate snugly, and this plate is provided with a lateral flange *a* which extends across the threading groove 4 where it overlies the tip of the nose piece 6, with the edge of this flange extending diagonally across the groove 4 near the rearward end of the plate and again near its

2

forward end, it being observed that the groove extends forward beyond the plate almost to the reinforced tip 11 of the shuttle. This forward end portion 4' of the groove has a right-angle configuration, the right-hand wall *b* of it, as shown in Figs. 1 and 2, being approximately horizontal and the left-hand wall *c* being substantially vertical.

When the shuttle is in operation in the loom and the filling in the running shuttle is about to run out, the automatic bobbin-changing mechanism ejects the spent bobbin from the running shuttle and forces a full bobbin into it when the latter is boxed at the magazine end of the lay. Then, when the shuttle starts on its next flight through the shed, the yarn is drawn from the bobbin B through part of the thread groove 4 and slides down around the edge of the flange *a* into the threading groove. Upon the next flight of the shuttle in the opposite direction, the yarn follows back along the horizontal surface of the groove 4', under the tip of the nose piece 6, through the curved guiding slot 5 and into the delivery eye 8. Thereafter the normal running position of the thread is directly from the end of the bobbin B through the slot 4 to its intersection with the hole 7 where the thread makes a sharp right-angle turn and runs through the delivery eye 8. There is, however, a strong tendency at times for a loop created in some manner, due usually to the ballooning of the thread as it leaves the bobbin, to run out through the groove and cause the shuttle to become unthreaded. Such a loop may travel in either direction, and for this purpose a guard 15 is formed integral with the threading plate 9 and on the lower side of it, the opposite ends of this guard being notched so that it will catch a loop travelling in either direction and prevent the shuttle from becoming unthreaded. This guard normally lies in the cut-out 16, Fig. 2, and it has proved to be a very satisfactory construction for preventing the looping-out above referred to.

In order to secure the threading plate 9 in its operative position, it is provided with front and rear lugs 17 and 18, respectively, formed integral with it, but projecting downwardly therefrom, and sockets 17' and 18' are formed in the shuttle body at opposite ends of the recess 10 to receive these lugs. Preferably these sockets and the recess are so made that the upper exposed surface of the thread plate is either flush with, or slightly below, the adjacent top surface of the shuttle.

It is important that the threading plate shall be held securely in its operative position so that it cannot become loose, even under the severe punishment which a shuttle must be expected to survive, and one of the difficulties encountered in using the shuttle shown in the earlier patent above referred to has been the fact that the posts integral with the threading plates frequently break off. Various expedients have been tried to overcome this difficulty, and an important object of this invention has been to discover this cause of failure and to find a remedy for it.

This object has been accomplished by omitting the post and substituting for it a machine screw 20, Figs. 2 and 3, introduced through a counterbored hole formed in the shuttle body where it can be threaded directly into the hole 21 in the plate 9. When tightened up it draws the plate 9 firmly into its recess 10 and also seats the lugs 17 and 18 in their sockets formed at the ends of the recess. Preferably a boss 19 is cast integral with the plate 9, the hole 21 is drilled through both the boss and the plate, and a socket 23, Fig. 2, is formed in the bottom of the recess 10 to receive this boss. The boss desirably is tapered slightly and the socket may be correspondingly tapered. Also, a lock washer 20*a* should be used under the head of the screw 20.

This construction provides an anchorage which has proved entirely satisfactory. When a mill prefers to have the top of the plate 9 smooth and polished, the hole 21 can be stopped just below the top surface of the plate so as to avoid breaking that surface.

A further difficulty experienced in running fine fillings in the shuttle shown in the patent above referred to, has been the fact that when some of these loop formations occur, and even at other times, the thread is caught between the front lug 17 and the wall of the socket in which it fits and is promptly broken. A further object of this invention, therefore, has been to prevent occurrences of this kind. This difficulty I find can be avoided by making a change in the relationship of the front lug to the adjacent parts.

In the present construction the bottom of the socket 17 is approximately on the same level with the horizontal wall or floor of the groove 4', or it may be below it. However, the groove 4 guides the thread during the threading-up operation in a path approximately in the vertex of the section 4' of the threading groove where the thread runs immediately beside the outer surface of the lug 17. In this area, and that immediately behind it, the flange *a* closely overlies the groove 4 and the tip of the nose 6, the tension on the yarn normally holding it closely beside the vertical surface *c*. However, at times during the threading-up operation the yarn or thread is guided at the front end of the plate 9 by the curved edge *a*, and in the prior constructions this edge has tended strongly to lead the yarn down to the bottom of the front lug where, under some conditions at least, it is caught and held between that lug and the adjacent surface of the socket. In the present construction, as best shown in Fig. 1*a*, the thread guiding edge *a* guides the thread on to a part of the lug 17 above its lower end and also above the surface *b* of the thread groove in the shuttle. In any event, this construction has proved that it avoids the difficulty above described. Also, if the end of the lug 17 is set down below the surface of the shuttle on which the thread runs, there is still less opportunity for the yarn to be caught between the lug 17 and the adjacent wall of the socket in which it is positioned.

Thus the present invention overcomes both of the objections which have developed in the use of the shuttle referred to in the patent above mentioned. Therefore, it accomplishes a very desirable practical object for the reason that any breakage interrupts the production of the machine and therefore increases the cost of operation.

Having thus described my invention, what I desire to claim as new is:

1. A loom shuttle provided with a bobbin chamber and a threading groove extending forward from said chamber, a threading plate set into the shuttle top at one side of said groove and provided with a flange extending laterally across said groove into overlapping relationship with the portion of said shuttle at the opposite side of the groove so that the thread must pass over, around, and under said flange in moving into its running position during the threading-up operation, said flange having a thread guiding edge extending diagonally across said groove, said plate being provided near its front and rear ends with lugs extending downwardly from the lower side thereof and the forward thread guiding edge of said plate extending across the path of travel of the thread during the threading-up operation and meeting said lug at a point above the lower end of the lug, said shuttle having a socket in which said front lug is positioned.

2. A loom shuttle according to preceding claim 1, in which said threading groove extends forward in the shuttle body to a point in front of said threading plate and is shaped to guide the thread in a path close beside the front lug of said threading plate, and said flange of the threading plate closely overlies said path of travel of the thread at the outer side of said lug.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,985,960	Stimpson	Jan. 1, 1935
2,220,812	Daudelin et al.	Nov. 5, 1940
2,314,669	Talbot	Mar. 23, 1943