Sept. 2, 1952 J. HENLE 2,609,102

SHUTTLE LOADING RACK

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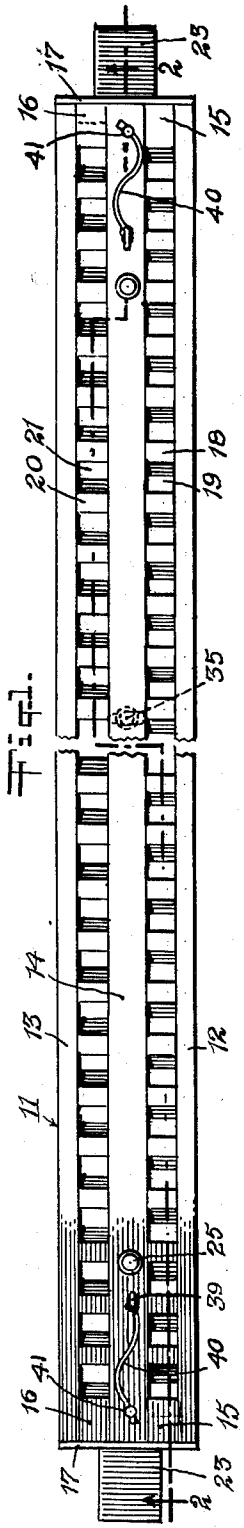


Fig. 1.

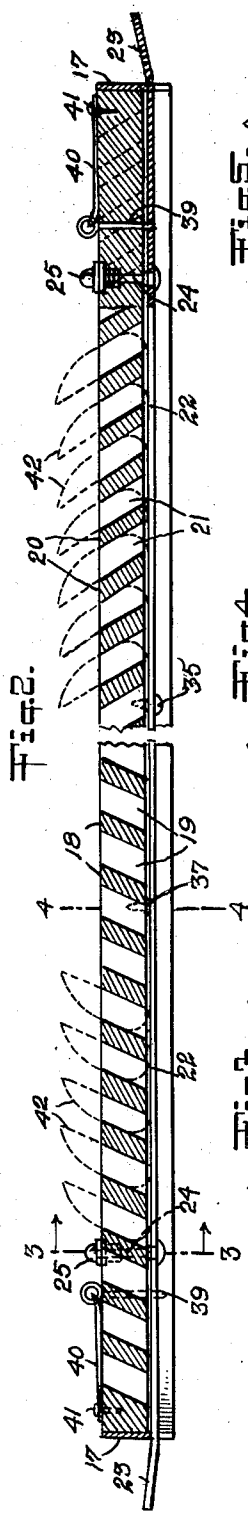


Fig. 2.

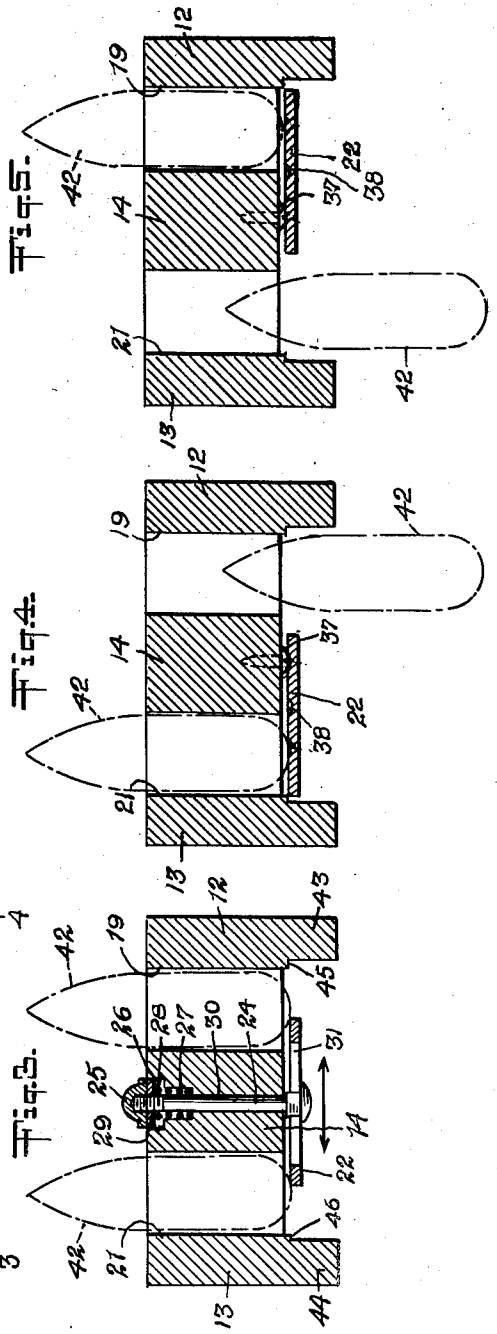


Fig. 5.

Fig. 4.

Fig. 3.

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SHUTTLE LOADING RACK

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4 Claims. (Cl. 211—13)

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The present invention relates to a device for placing shuttles into an embroidery machine, and, more particularly, it relates to a shuttle loading rack from which a group of shuttles may be simultaneously dropped into the compartmented shuttle rail of an embroidery machine.

Heretofore, in reloading an embroidery machine with filled shuttles, it has been necessary to position each shuttle individually in the machine by hand. Since there are hundreds of shuttles to be placed in each machine, the reloading operation is a most time consuming one. Because operators of embroidery machines are generally paid on a stitch basis, and because the machines can be reloaded only while they are idle, the reloading operation poses a serious problem to both operators and management.

It is an object of the present invention to provide a shuttle loading rack wherein filled shuttles may be placed in the loading rack while the embroidery machine is in operation, and then when the machine is idle and ready for refilling, the loading rack is placed over the shuttle rail and the shuttles are very quickly dropped into their proper positions.

It is a further object of the present invention to provide a shuttle loading rack which is simple in construction, easy to manipulate and quite inexpensive in cost.

One advantage of the present invention is that the productive day of the operator is considerably lengthened and his income increased, if he is on a stitch basis.

Another advantage of the present invention resides in the fact that the time during which the embroidery machines are idle is considerably reduced so that an embroidery mill is capable of a larger output.

Other objects and advantages of the present invention will become more apparent as it is described in detail below, with particular reference to the accompanying drawings wherein,

Fig. 1 is a broken top view of the shuttle rack embodying the present invention;

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1, and looking in the direction of the arrows;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2 and looking in the direction of the arrows;

Fig. 4 is a view taken on line 4—4 of Fig. 2 showing the movable floor support in one position; and,

Fig. 5 is a view taken on line 4—4 of Fig. 2 showing the movable floor support in another position.

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In accordance with the present invention, I have provided a shuttle loading rack comprising a body portion having a plurality of rows of slanting open-ended compartments, the compartments of each row having a slant equal but opposite to the slant of the compartments of the adjacent row, a floor member slidably mounted on said body portion and disposed below said compartments, and means for urging said floor member upwardly toward said body portion.

With particular reference to Fig. 1, there is shown a shuttle loading rack 11 having side walls 12 and 13, respectively, and a central dividing wall 14. Connected to the extremities of the walls 12 and 14 and intermediately positioned thereof are end portions 15. In like manner, at the extremities of the walls 13 and 14 and positioned therebetween are end portions 16. Metal plates 17 are fixedly mounted to each end of the shuttle rack 11, as shown in Fig. 1, to strengthen its structure.

Between the wall 12 and the dividing wall 14 and fixed thereto is provided a plurality of parallel plates 18 which define a plurality of open-ended chambers 19. In like manner, between the wall 13 and dividing wall 14 and fixed thereto is further provided a plurality of parallel slats 20 defining the open-ended chambers 21. The plates 18 and 20 have a slope or slant which is generally the same as that of the slanted compartments (not shown) of the shuttle rail of the embroidery machine. Moreover, the compartments or chambers 19 and 21 are designed to register with the corresponding shuttle rail compartments. However, the plates 18 have a slant which is equal to but opposite to the slant of the plates 20. The reason for this will be explained later in the description of the operation of the loading rack.

Underneath the shuttle loading rack 11 and slidably fastened thereto is provided a metal bar 22 having upwardly extending end handles 23. The bar 22 is attached to the dividing wall 16 by means of the carriage bolts 24. Each carriage bolt 24 is received in a bore 30. Threaded to the carriage bolt 24 is a round headed nut 25 which reposes in an annular recess 26. The annular recess 26 merges into a smaller annular recess 27 in which is seated a compression spring 28, which encircles the stem of the carriage bolt 24. The annular recess 27 connects with the bore 30. Between the nut 25 and spring 28 is provided a washer 29.

Slots 31 are provided widthwise of the bar 22 so that the bar may be slid the length of the slots along the heads of the carriage bolts 24 and toward either wall 12 or 13. At the same time the

central portion of the bar 22 is slotted widthwise to receive the screw 35 which is screwed to the bottom of the dividing wall 16. The screw 35 acts as a guide for the bar 22 and also prevents the central portion of the bar from bowing outwardly under the weight of the shuttles. Between the screw 35 and each carriage bolt 24 is provided a screw 37 which is screwed to the under-portion of the dividing wall 16 and the head of which is adapted to rest in a circular detent 38 in the bar 22. Each detent 38 is positioned along the axial line of the bar 22 so that when the bar is in closed position, the heads of the screws 37 will be forced or snapped into the detents 38 by reason of the spring 28 urging the carriage bolt 24 and bar 22 upwardly.

A pair of locking pins 39, attached to the top of the rack 11 by means of the chain 40 and pin 41, is adapted for insertion through suitable holes in the body of the rack 11 and bar 22 so as to lock the bar against sideward movement.

Extending downwardly from the walls 12 and 13 and below the bar 22 are legs or extensions 43 and 44 respectively, which are adapted to engage and fit over the outer side surfaces of a standard shuttle rail. The shoulders 45 and 46 engage the top of the shuttle rail so that the entire rack 11 can rest on the shuttle rail in a firm manner.

The shuttle rack described above may be made of any suitable material, although wood has been found to be preferable.

In operation the shuttles 42, shown in phantom in Figs. 3 to 5, are placed in the chambers 19 and 21 and are held there by reason of the slidable bar 22 which forms a floor support for the shuttles and prevents their dropping through into the shuttle rail. When all the used shuttles have been removed from the embroidery machine and it is desired to reload the compartments of the shuttle rail, then the shuttle rack 11 is placed over the shuttle rail so that one row of the chambers 21 or 19 will be in registry with the compartments of the shuttle rail. The locking pins 39 are then removed and the bar 22 is moved by means of the handles 23 away from the row of chambers in registry with the shuttle rail compartments. As the metal bar is so slid it will no longer support the particular row of shuttles and all the shuttles in that row will drop through to the respective compartments of the shuttle rail. The rack is then lifted off of the shuttle rail and turned around through 180° so that its other row of chambers will be in registry with further unloaded chambers of the shuttle rail. This time the bar is slid in the opposite direction as far as it will go, thereby releasing the remaining shuttles which drop through to the shuttle rail. The shuttle rack 11 is then completely removed from the shuttle rail and the bar 22 slid back to its central position and locked. The rack is then ready for a reloading with shuttles.

While the invention has been described in detail and shown with respect to the accompanying drawings, it is not to be limited to such details, since many changes and modifications may be made in the invention without departing from the spirit and scope thereof. Hence, it is desired to cover any and all forms and modifications of the invention which may come within the language and scope of any one or more of the appended claims.

I claim:

1. A device for containing shuttles comprising a rack having a plurality of rows of sloped open-ended chambers, a floor member slidably connected to said rack and disposed below said chambers, the chambers of each row having a slope equal but opposite to the slope of the chambers of each adjacent row, and means for urging said member upwardly toward said rack.

2. A rack for containing shuttles having side walls, a wall disposed intermediate said side walls, a row of parallel slanted plates disposed between each side wall and the intermediately disposed wall, said plates and walls defining a plurality of open-ended compartments, the plates in one row having a slant equal but opposite to the slant of the plates in an adjacent row, a slidable plate positioned below said compartments and adapted to support the shuttles, and means for urging the slidable plate toward said rack.

3. A shuttle loading rack comprising a body portion having a plurality of rows of slanting open-ended compartments, the compartments of each row having a slant equal but opposite to the slant of the compartments of the adjacent row, a floor member slidably mounted on said body portion and disposed below said compartments, and means for urging said floor member upwardly toward said body portion.

4. A shuttle loading rack having a front and a rear wall, a wall positioned intermediate said front and rear walls and parallel thereto, a row of slats disposed between the intermediate wall and the front wall and a row of slats disposed between the intermediate wall and the rear wall, said slats cooperating with said walls to define two rows of equally sloping passages, one row of passages sloping in a direction opposite to the other row of passages, and a member slidably mounted on said rack and below said passages, said slidable member adapted to act as a gate for said passages.

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