Sept. 4, 1951 H. EPSTEIN 2,566,657

HAND WEAVING DEVICE

Filed Jan. 23, 1947

FIG. 1.

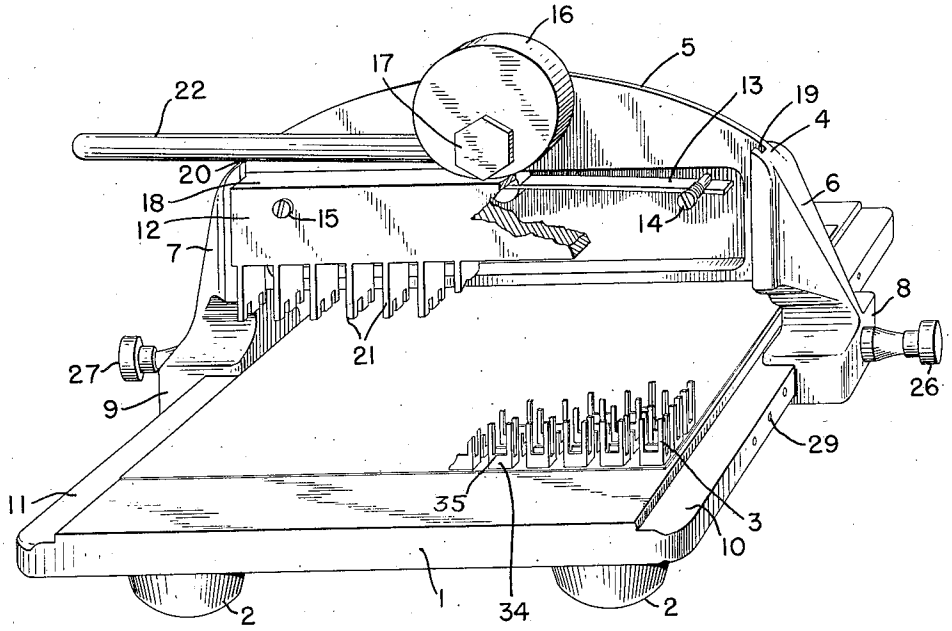


FIG. 5.

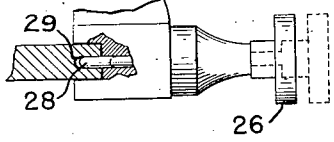


FIG. 3.

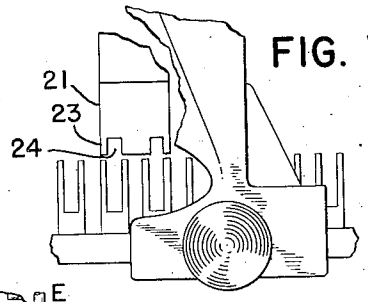


FIG. 2.

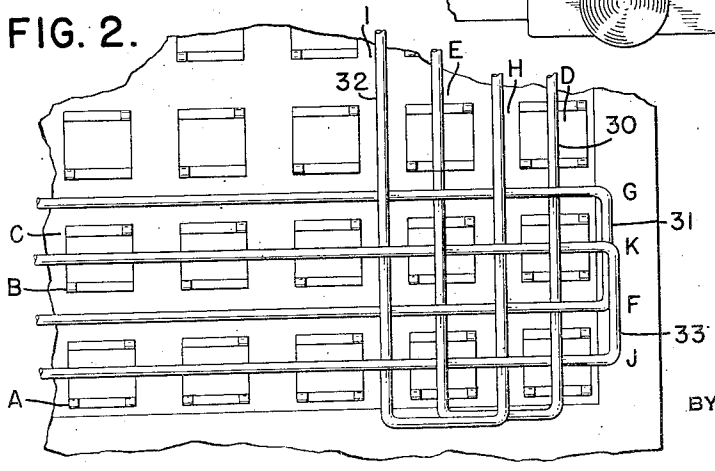
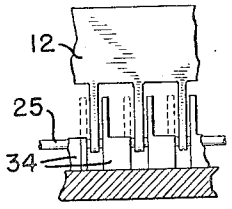


FIG. 4.



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HAND WEAVING DEVICE

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6 Claims. (Cl. 139—34)

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This invention relates to new and useful improvements in hand weaving implements.

This invention is an improvement of my copending application, Serial No. 653,753, filed March 12, 1946, now Patent No. 2,463,365, in which I disclosed a weaving implement comprising a board having upright guides and a hand-operated tool to depress certain lengths of the yarn lying within the guides to permit the passing of a needle therethrough and thus effect weaving.

In accordance with the present invention, the number of guides is reduced about one-half, resulting in weight and cost reduction and facilitating operation of the yarn-depressing tool.

According to another feature of the invention, the yarn-depressing tool is arranged to depress at least one complete row of yarn at a time without employing both hands of the weaver.

Another feature of my invention provides for the correct alignment of the yarn-depressing tool with the rows of guides, without requiring particular effort from the weaver.

The invention will be more fully explained in the following detailed description, the appended claims, and the drawing, in which:

Fig. 1 is a perspective view of the weaving board and the yarn-depressing tool on it;

Fig. 2 is a plan view of some of the guides;

Fig. 3 is a side view of the cross-piece in non-operating position on the board;

Fig. 4 is a front view of the cross-piece in operative position with the needle inserted; and

Fig. 5 is a cross section of a spring-loaded plunger.

Rectangularly shaped base 1 of the weaving board rests on suitable supports 2 at its four corners. A plurality of upright guides or pins 3 project from the base in a square and are arranged in rows which cover substantially the entire surface of the base. The construction and arrangement of guides 3 have been described in my copending application and the present guides are similar to those there described except that the number of guides is reduced.

The reduction in guides is accomplished by eliminating about one-half the guides heretofore used in the inside rows. The guides in the inside rows are staggered in adjacent rows. However, the number of guides in the marginal rows has not been reduced and, as in my copending application, the guides in opposite marginal rows of the square correspond. For instance, each guide in marginal row A (Fig. 2) is aligned with a guide in the marginal row (not shown) on the

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opposite side of the square. If row A were completed, there would be thirty-two guides in it as well as in the opposite marginal row. Inside rows, such as B and C, if completed, would each have seventeen guides but, as shown in Fig. 2, the guides in adjacent rows (B and C) are staggered with respect to one another. Each inside row has one guide for each second guide in the marginal rows.

Yarn-depressing tool 4 is a bridgelike structure arranged to engage slidably base 1 and pass over guides 3. Tool 4 comprises a yoke 5 having pedestals 6 and 7 mounted on feet 8 and 9. Each foot has a slot or groove adapted to engage polished edges 10 and 11 of base 1. Movable cross-piece 12 extends between pedestals 6 and 7 and may be moved perpendicularly to base 1. Leaf spring 13 is attached near its middle to yoke 5 and at either end to cross-piece 12 by suitable means, such as screws 14 and 15. Cam 16 is fastened near the center of yoke 5 by shaft 17 and rests on top surface 18 of cross-piece 12. Projections (not shown) at either end of cross-piece 12 fit into slots 19 and 20 of pedestals 6 and 7 so as to guide the cross-piece when it is moved. Prongs or projections 21 extend from the bottom surface of cross-piece 12 and are spaced so that they may engage the warp lengths of yarn crossing two rows of guides 3. The prongs 21 are moved down to engage the yarn by rotating lever 22 of cam 16 clockwise. Cam 16 forces cross-piece 12 down and flexes spring 13 until lever 22 is returned to the position shown in Fig. 1. Spring 13 then springs back to normal and carries cross-piece 12 up and free of guides 3.

Although in the preferred embodiment of my invention I have shown projections 21 adapted to mesh with four rows of guides 3 at a time, it is to be understood that tool 4 may be constructed to have projections which mesh with more or less than four rows of guides 3.

Each projection 21 has tines 23 and cut-away portions 24. When the tool is in non-operative position on the board (Fig. 3) tines 23 clear guides 3 so that tool 4 may be moved along the board on feet 8 and 9. When lever 22 is rotated, projections 21 are depressed and mesh with guides 3 (Fig. 4). A needle 25 carrying the weaving lengths of yarn is inserted in one end of tool 4 and pulled through to the other end. This procedure is repeated in the adjoining row of guides. After two rows are woven the cross-piece is raised into non-operative position, the tool

moved along to the next depressions 29 (Fig. 1) and two more rows woven. This procedure is repeated until the fabric is completely woven.

Spring-pressed plungers 26 and 27 are mounted in feet 8 and 9 so that points 28 (Fig. 5) register with depressions 29 along opposite edges of base 1. Depressions 29 are spaced between the suitable rows of guides 3 so that when plungers 26 and 27 register with the depressions, tool 4 will be in position to permit projections 21 to mesh with guides 3. When plungers 26 and 27 are pulled out to the position shown in dotted lines (Fig. 5), points 28 are withdrawn from depressions 29 and tool 4 may be moved along surfaces 10 and 11.

The laying and weaving of lengths of yarn between guides 3 are performed in the same manner as described in my copending application. Warp lengths 30 (Fig. 2) are laid across the square between adjacent warpwise rows, such as D and E. Next, weft lengths 31 are laid across the square between alternate transverse rows, such as F and G. Then, second warp lengths 32 are laid across the square in rows, such as H and I, skipped by lengths 30. Finally, second weft lengths 33 are woven across the square by needle 25 in rows, such as J and K. Projections 21 engage only lengths 32 in rows J and K and depress them below the level of top surfaces 35 of base portions 34 (Fig. 1) of guides 3. When needle 25 passes lengths 33 along top surfaces 35 in rows J and K, lengths 33 are alternately placed under lengths 30 and over lengths 32 (Fig. 2).

The marginal guides provide a continuous enclosure so that each inside row in the square has a guide at either end around which the warp and weft lengths 30—33 may be looped, thereby permitting a fabric to be woven from one continuous length of yarn. However, the guides of the inside rows are not continuous but staggered because I have found that the warp and weft lengths may be held in position satisfactorily by alternate guides. The reduction in guides not only lowers the manufacturing cost of the device but speeds up its operation.

What is claimed is:

1. In a hand weaving device, a base, a plurality of evenly spaced guides arranged on the base in rows covering substantially the entire surface of the base for supporting lengths of yarn, the marginal guides of said plurality of guides adapted to have lengths of yarn fastened thereto, the number of guides in a marginal row being greater than the number of guides in any one inside row, and a lever operated tool having projections adapted to mesh with certain rows of guides.

2. The tool according to claim 1, and in which the guides in the inside rows are staggered and in opposite marginal rows are all aligned.

3. The device according to claim 1, and in which the number of guides in each inside row is about one-half the number in a marginal row.

4. The hand weaving device according to claim 1, and in which the tool comprises a yoke having grooves in either extremity adapted to fit over opposite edges of the base, a cross-piece carrying said projections and movably attached to the yoke, means on the yoke for depressing the cross-piece, and means in either extremity of the yoke to position the tool with respect to a row of guides.

5. In a yarn-depressing tool for a hand weaving device having upright yarn guides on a base, a yoke having grooves in either extremity adapted to fit over opposite edges of the base, a cross-piece attached to the yoke and movable perpendicularly with respect to the base, a central lever on the yoke for depressing the cross-piece, a spring fastened to the yoke and the cross-piece flexed by the perpendicular movement of the cross-piece, projections on the cross-piece adapted to mesh with a row of guides, and spring-pressed pins in either extremity of the yoke adapted to register with depressions along the edges of the base to position the tool with respect to a row.

6. In a yarn-depressing tool for a hand weaving device having a rectangular base with upright rows of guides adapted to support warp and weft lengths of yarn, a yoke, pedestals on the yoke, feet on the pedestals having grooves adapted to engage opposite edges of the base, said edges having polished surfaces which the grooves slidably engage, a cross-piece movably mounted between the pedestals, a cam fastened near the center of the yoke and contacting the cross-piece, a lever for rotating the cam, a leaf spring fastened near its center to the yoke directly below the cam and engaging at either end the cross-piece, projections on the cross-piece adapted to mesh with at least one transverse row of guides and depress certain warp lengths resting therein, and spring-pressed pins in the feet registering with depressions along the edges of the base to position the tool with respect to transverse rows of guides.

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