

No. 693,091.

Patented Feb. 11, 1902.

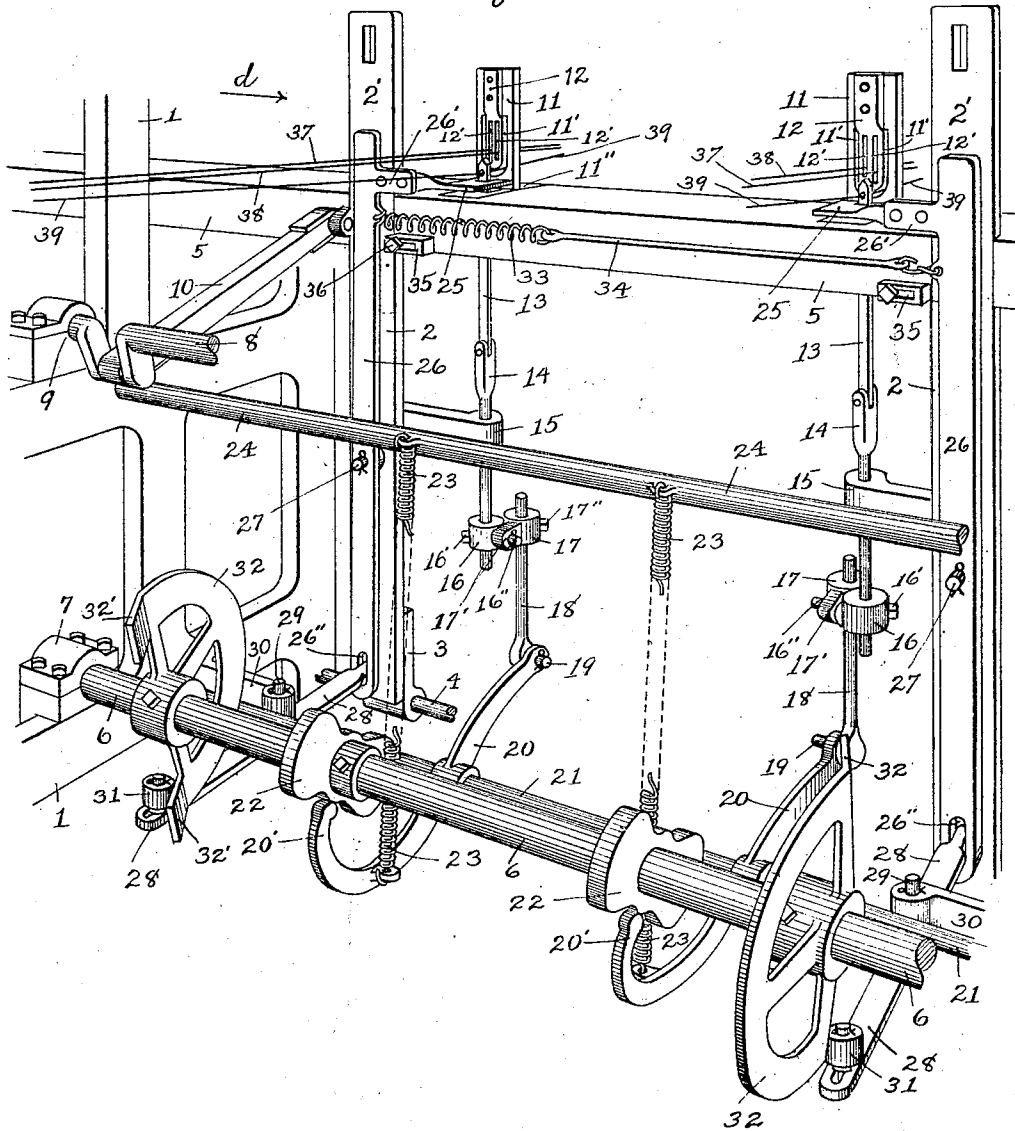
W. WATTIE.
LOOM FOR MAKING STRAW MATTING.

(Application filed Nov. 19, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1



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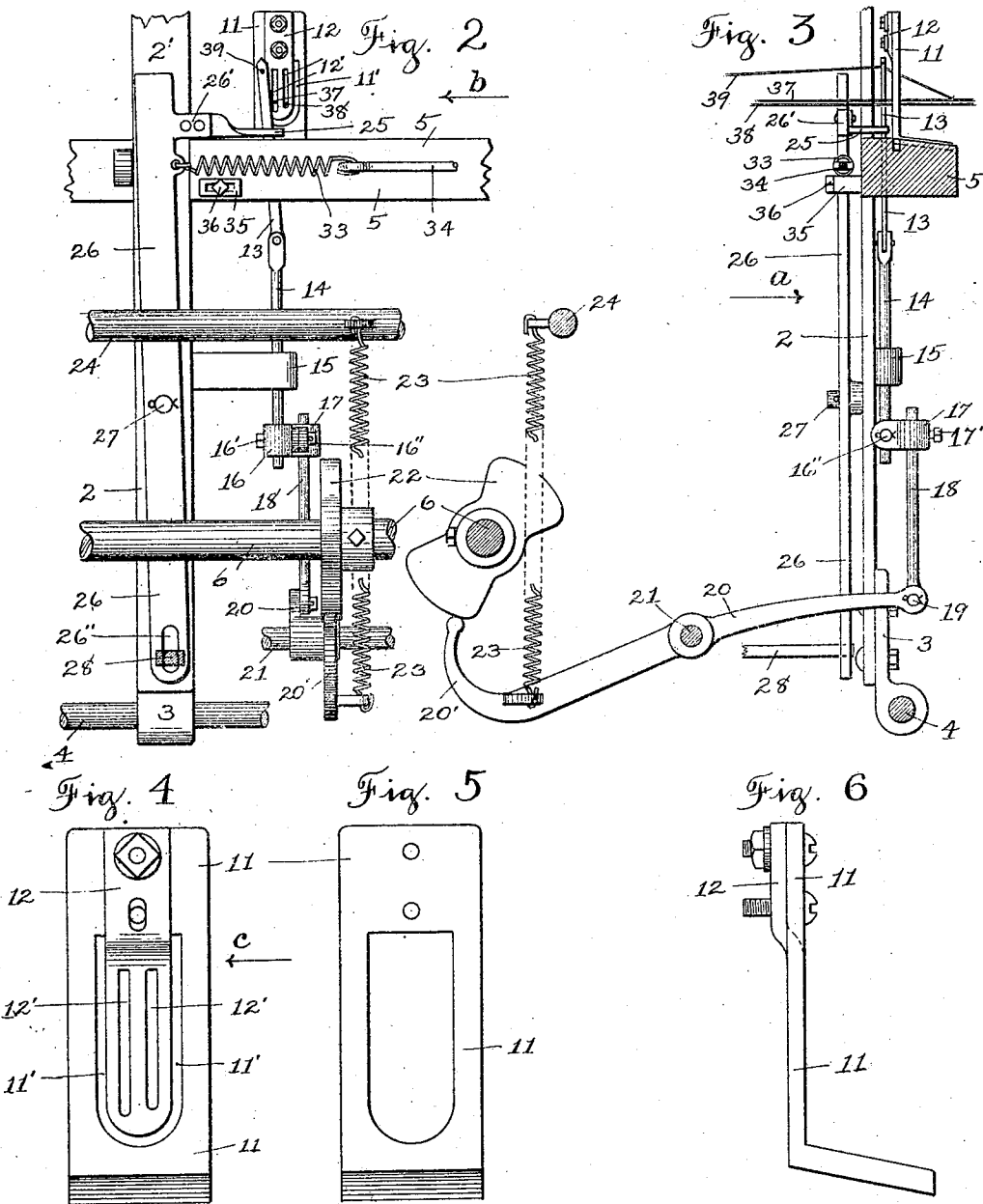
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UNITED STATES PATENT OFFICE.

WILLIAM WATTIE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

LOOM FOR MAKING STRAW MATTING.

SPECIFICATION forming part of Letters Patent No. 693,091, dated February 11, 1902.

Application filed November 19, 1901. Serial No. 82,869. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WATTIE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Looms for Making Straw Matting, of which the following is a specification.

My invention relates to looms for making straw matting and similar fabrics, and more particularly to improvements in the mechanism for making the selvage edges on straw matting of the description set out in my application for Letters Patent of the United States, filed January 19, 1901, Serial No. 43,939, to which reference is hereby made.

The object of my invention is to provide mechanism for making the selvage edges on the straw matting above referred to; and my invention consists in certain novel features of construction of my improvements, as will be hereinafter fully described.

I have only shown in the drawings sufficient portions of a loom, with my improvements applied thereto, to enable those skilled in the art to which my invention belongs to make and use the same.

Referring to the drawings, Figure 1 is a rear perspective view of parts of a loom and the mechanism for making the selvage edges on the straw matting applied thereto. Fig. 2 is a rear view of some of the parts shown in Fig. 1, showing a different position of the parts, looking in the direction of arrow *a*. Fig. 3. Fig. 3 is an end view of the parts shown in Fig. 2 looking in the direction of arrow *b*, same figure. Fig. 4 is a front view of the stand and the guides for the selvage-cord and the supplemental warp or binder thread. Fig. 5 is a rear view of the stand shown in Fig. 4 with the guides removed, and Fig. 6 is an edge view of the parts shown in Fig. 4 looking in the direction of arrow *c*, same figure. Figs. 4 to 6, inclusive, are shown on an enlarged scale.

In the accompanying drawings, 1 is the loom side. 2 2 are the lay-swords, bolted at their lower ends to the stand 3 on the shaft 4. To the upper ends of the lay-swords 2 is

secured the lay 5, above which extend the horns 2' for the hand-rail. (Not shown.) The bottom shaft 6 is mounted in bearings 7 on the loom side 1. The crank-shaft 8 is mounted in bearings 9 on the loom side 1 and connected by crank-connector 10 with the lay 5.

I will now describe the mechanism shown in the drawings for making the selvage edges on the straw matting.

It will be understood that the mechanism is in duplicate, one mechanism at each end of the lay. It will only be necessary to describe one mechanism.

A plate 11, having a central opening of the shape shown in Fig. 5, is attached at its lower bent end 11' to the upper side of the lay in such a position that the vertical plane of said plate is close to and in alinement with the reed. (Not shown.) In connection with the plate 11 a second plate 12 is used, which has two longitudinal guide-slots 12' 12' therein and which is attached at its upper end to the upper end of the plate 11 by bolts and nuts, the bolts extending through elongated slots in the upper end of the plate 12, as shown in Fig. 4, so that the plate 12 may be adjusted up or down, if desired. The lower part of the plate 12 extends inwardly, so that it will extend within the opening in the plate 11 and be in alinement with said plate. When the plates 11 and 12 are secured together, as shown in Fig. 4, there are the two vertical guide-slots 12' 12' and also the U-shaped guide-slot 11' extending around the plate 12. The plates 11 and 12 may be made in one piece; but I prefer to make them in two pieces for adjustment. The upper end of the needle 13 extends loosely through a vertical opening in the lay. The lower end of the needle 13 is pivoted to a vertically-moving rod 14, mounted and having its bearing in a bracket 15, secured to the lay-sword. The lower end of the rod 14 extends through a collar 16 and is adjustable therein by a set-screw 16'. The collar 16 has a stud 16'' extending out from one side thereof, which stud extends through an ear or extension 17' on the collar 17, secured by a set-screw 17'' on the upper end of the rod 18, the

collars 16 and 17, connected as above described, forming a hinge-joint between the rods 14 and 18. The lower end of the rod 18 is pivotally connected by a pin 19 to one extremity of an arm 20, centrally pivoted on a shaft 21. The other end 20' of the arm 20 is preferably bent upwardly, as shown, to extend in the path of and be engaged by the periphery of the double cam 22, fast on the bottom shaft 6, as shown. A spring 23, connected at one end to the end 20' of the arm 20 and at its other end to a rod 24, extending between the loom sides, acts to hold the end 20' of the arm 20 in engagement with the cam 22. The vertical motion of the needle 13 as the lay moves is caused by the cam 22 through the intermediate mechanism above described.

I will now describe the means for communicating an oscillating motion to the needle 13 at its upper end from right to left and left to right. A guide-fork 25 loosely incloses the upper end of the needle 13 on three sides and is secured at its end to a side extension 26' on the lever 26, centrally pivoted at 27 on the lay-sword 2. The lower end of the lever 26 has an elongated vertical slot 26'' therein, into which extends one end of a lever 28, centrally pivoted on a stud 29 on a bracket or stand 30, secured to the loom side. The other end of the lever 28 has a roll 31 thereon, which extends in the path of and is adapted to be engaged by the face of the cam 32, in this instance semicircular in shape and fast on the bottom shaft 6. The cam 32 has the flat circular surface to engage the roll 31 and the inclined or angular extensions 32'. A spring 33 is attached at one end to the upper inner edge of the lever 26, and in this instance the other end of the spring 33 is connected by a rod 34 to the upper end of the duplicate lever 26 on the opposite side of the loom. The action of the spring 33 is to keep the roll 31 on each lever 28 in engagement with its cam 32. The cam 32 shown at the right in Fig. 6 is in a reverse position on the shaft 6 to the cam 32 shown at the left in said figure, so that each needle 13 at each end of the lay will have an alternate oscillating motion—that is, first one needle and then the other—in making the selvage edge on the matting. A stop 35, secured at the back side of the lay by a bolt 36, limits the inward rocking motion of the lever 26.

As above stated, the parts above described are in duplicate—that is, there is a needle for the turn-over thread at each end of the lay and separate mechanism for operating each needle.

I will now describe the operation of the mechanism shown in the drawings and above described for making the selvage edges on the straw matting.

It will be understood that the means for inserting the individual straws between the sheds of the warp-threads may be of any usual construction, and therefore are not

shown; neither is the shed-forming mechanism shown, which may be of any usual or well-known construction.

The selvage-cord 37 extends through the outer vertical guide-slot 12' in the plate 12, and the supplemental warp-threads 38 extend through the inner vertical guide-slot, 12' in the plate 12. The turn-over thread 39 extends through an eye or opening in the upper end of the needle 13 and through the U-shaped guide-slot 11' around the outside of the plate 12. It will be understood that the large end of each straw is inserted first from opposite sides of the loom alternately and that these large ends which extend beyond the selvage edges are trimmed off. The large end of the straw (not shown) is fed in in the direction of arrow *d*, Fig. 1, under the turn-over thread 39, which is supported in the upper end of the needle 13 and extends through the upper part of the U-shaped guide-slot 11', as shown in Fig. 2, and over the selvage-cord 37 and under the supplemental warp or binder thread 38 and between the two sets of warp-threads (not shown) when the shed is open. The smaller end of the straw (not shown) is left extending beyond the selvage-cord 37. The cam 22 is now rotated from the position shown in Figs. 2 and 3 to the position shown in Fig. 1, allowing the spring 23 to act to draw down the needle 13 through intermediate mechanism, and then the continued rotation of the cam 22 raises the needle 13. At the same time the cam 32 operates, through intermediate mechanism, to move the needle 13 sidewise and carry the turn-over thread 39, extending through the eye of said needle and guided in the U-shaped slot 11', to the opposite side of said U-shaped guide-slot 11' upon the inner side of the plate 12 to bend down the projecting small end of the straw and carry it around the selvage-cord 37 and bring it up to extend under and bear against the supplemental warp or binder thread 38 and the adjoining warp-thread. (Not shown.) The shed is now closed, as the reed has reached the fell of the matting. On the following pick and while the turn-over thread 39 is still in the upper inner end of the U-shaped guide-slot 11' a filling-straw from the opposite side of the lay is inserted and passes under the turn-over thread 39 and binds the same into the body of the matting on the beating up of the lay. The needle 13, carrying the turn-over thread 39, is then returned to the position shown in Fig. 2, and the succeeding pick leaves a straw under the turn-over thread 39, and the operation of making the selvage, above described, is repeated.

It will be understood that the selvage is formed on each edge of the matting in the manner above described for one edge of the matting.

The operation of the needle 13, through which the turn-over thread 39 passes, is to carry the turn-over thread 39 from the upper part of the U-shaped slot 11' downward and

under the selvage-cord 37 and the supplemental warp or binder thread 38, then upward to a point near the top of the inner end of the U-shaped slot 11', and then to carry the turn-over thread 39 back again on the following pick to its first position. The turn-over thread 39 is always at the top of the outer or inner part of the slot 11' when the shed is open and forms a part of the upper system of warp-threads. The motion of the needle 13 and the turn-over thread 39 is duplicated, but in the reverse order, to form the selvage on the opposite side of the matting.

It will be understood that the details of construction of my improvements shown in the drawings and above described may be varied, if desired.

My improvements may be adapted to weave fabrics other than straw matting, if desired.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Mechanism for making a selvage edge on straw matting, &c., consisting of a needle for holding the turn-over thread, which thread engages and turns in the projecting small end of the filling-straw, means for guiding said thread, and means for guiding the selvage-cord and a supplemental binder-thread adjoining said cord, and means for operating said needle, to move it downwardly, inwardly, and upwardly, and downwardly, outwardly, and upwardly, substantially as shown and described.

2. In mechanism for making a selvage edge on straw matting, &c., a needle which holds the turn-over thread, which thread engages and turns in the projecting small end of the

filling-straw, a guide through which said thread extends, a guide for the selvage-cord and a supplemental binder-thread adjoining said cord, and means for operating the needle, to carry the turn-over thread downwardly, inwardly, and upwardly, and turn in the small end of the filling-straw and bring it upon the under surface of the matting, substantially as shown and described.

3. In mechanism for making a selvage edge on straw matting, &c., a needle for holding the turn-over thread, which thread engages and turns in the projecting small end of the filling-straw, a guide for said thread, a guide for the selvage-cord and for a supplemental binder-thread adjoining said cord, and means for communicating a vertical and an oscillating motion to said needle, substantially as shown and described.

4. In mechanism for making a selvage edge on straw matting, &c., a needle for holding the turn-over thread, which thread engages and turns in the projecting small end of the filling-straw, a guide for said thread, a guide for the selvage-cord and for a supplemental binder-thread adjoining said cord, and means for communicating a vertical and an oscillating motion to said needle, said means consisting of a cam and intermediate connections to said needle, for communicating a vertical motion to the needle, and a second cam and intermediate connections, for communicating an oscillating motion to said needle, substantially as shown and described.

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