(No Model.)

H. WILLMUNDER.

SWIVEL LOOM.

No. 570,359. Patented Oct. 27, 1896.

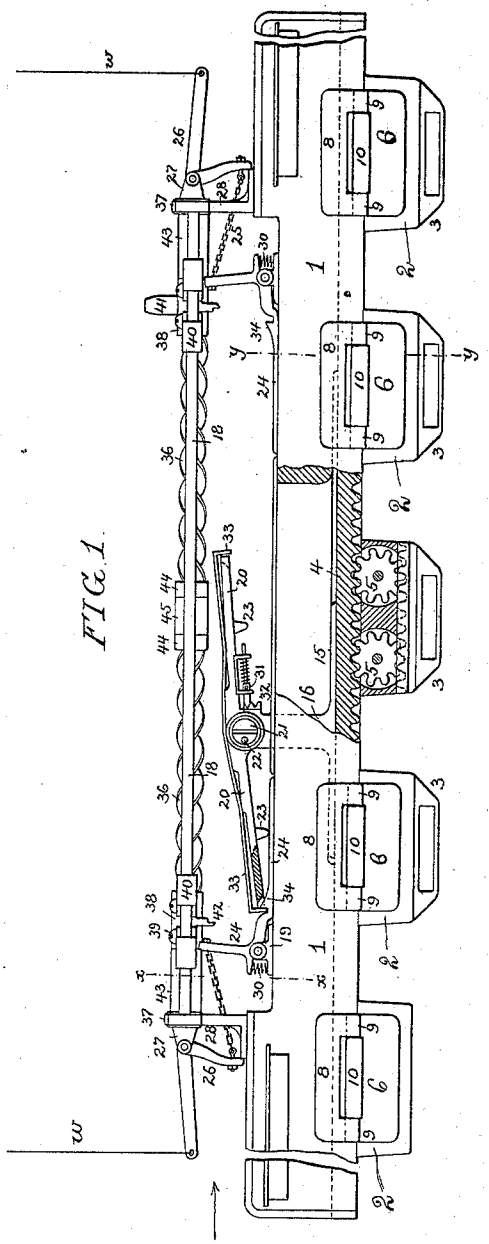

FIG. 1.

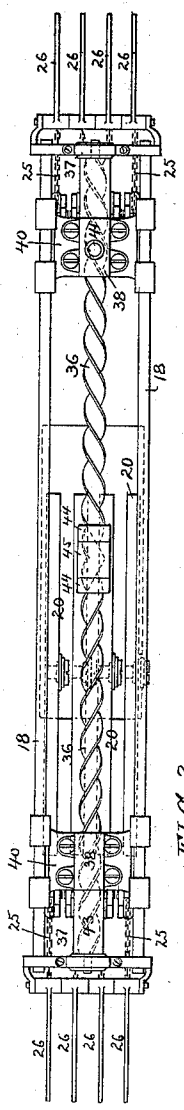

FIG. 2.

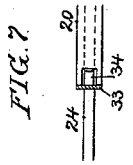

FIG. 7.

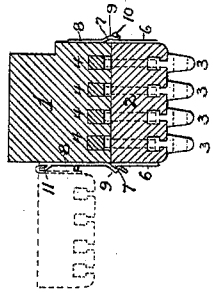

FIG. 5.

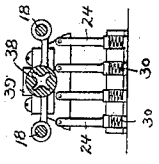

FIG. 4.

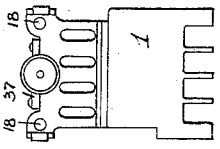

FIG. 3.

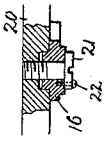

FIG. 6.

Witnesses:
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UNITED STATES PATENT OFFICE.

HERMANN WILLMUNDER, OF PHILADELPHIA, PENNSYLVANIA.

SWIVEL-LOOM.

SPECIFICATION forming part of Letters Patent No. 570,359, dated October 27, 1896.

Application filed March 8, 1895. Serial No. 540,929. (No model.)

To all whom it may concern:

Be it known that I, HERMANN WILLMUNDER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Swivel-Looms, of which the following is a specification.

My invention relates to that class of swivel-looms in which the swivel-batten carries a series of sets of shuttles, and is provided with jacquard-controlled operating mechanism whereby any one of the sets of shuttles can be called into action as the requirements of the pattern may dictate.

My invention comprises certain novel and useful combinations of parts in the shuttle-operating mechanism, also simple means for supporting the shuttle-carrying bar in position on the batten both when in and out of use, all as fully set forth and specifically claimed hereinafter.

In the accompanying drawings, Figure 1 is a rear view, partly in section, of a swivel-batten having shuttle-operating mechanism and shuttle-bar-supporting devices constructed in accordance with my invention. Fig. 2 is a plan or top view of the same. Fig. 3 is an end view looking in the direction of the arrow, Fig. 1, but with certain levers removed. Fig. 4 is a transverse section on the line $x\,x$, Fig. 1. Fig. 5 is a transverse section on the line $y\,y$, Fig. 1; and Figs. 6 and 7 are detached views of parts of the device.

The batten 1 of the swivel attachment is intended to be mounted upon the main lay of the loom in any appropriate manner, so that the swivel-shuttles will occupy their proper relation to the warp-threads. The said batten 1 carries shuttle-blocks 2, in each of which are guides for a series of shuttles 3, there being in the present instance five shuttle-blocks and four sets of shuttles, although, as will be evident, the number of shuttle-blocks and the number of sets of shuttles may be varied as desired without affecting my invention.

In the batten 1 are suitably guided a series of shuttle-operating rack-bars 4, one for each row of shuttles, the movements of these rack-bars being transmitted, as usual, to racks on the backs of the shuttles by means of spur-wheels 5, mounted upon transverse pins in the shuttle-blocks.

Each shuttle-block 2 has at front and rear a plate 6, with projecting rib or lug 7 at the upper edge, as shown in Fig. 5, and upon the front and rear of the batten 1 are secured plates 8, with spring-clips 9 at the lower ends, these clips being adapted to engage with and retain the lugs 7 of the plates 6 when the shuttle-block is properly adjusted to position on the under side of the batten, as shown by full lines in Fig. 5. The central portion of the rear plate 6 of each shuttle-block is, however, bent outward, so as to form a hook 10, the central portion of each of the rear plates 8 of the batten being cut away for the reception of this hook, as shown in Fig. 1, and at the top of each of the front plates 8 of the batten is an upwardly-projecting hook 11, so that when a shuttle-block has been removed from the under side of the batten it can be readily supported upon the front of the same, as shown by dotted lines in Fig. 5. By this means not only is the ready application and removal of the shuttle-blocks provided for, but said shuttle-blocks when out of use are supported upon the front of the batten in a position easy of access for the purpose of removing and replacing the shuttles.

Secured to the back of each rack-bar 4 is the base 15 of an upwardly-projecting bar 16, which is suitably guided in the batten 1, the latter being slotted for the reception of the same, and the upper end of said bar is provided with a projecting boss adapted to a recess formed in one side of the hub of a rock-lever 20, which is held in place by a retaining-screw 21, the latter being prevented from unscrewing by a lock-screw 22. (See Figs. 1 and 6.)

Each of the arms of each of the levers 20 has on the under side a lug 23 for the action of one arm of a lifting-lever 24, which is hung to a boss 19 on the top of the batten, another arm of said lever 24 being connected by a chain 25 to one arm of a bell-crank lever 26, hung to a bracket 27, which is secured to an angle-plate 28, mounted upon the top of the batten, the other arm of said bell-crank lever being adapted for connection to one of the Jacquard cords w.

Each of the levers 24 has a third arm which is acted upon by a spring 30, tending to depress that arm of the lever which acts upon

the rock-lever 20, but when the outer end of one of the levers 26 is lifted by the jacquard the lift-lever 24 will elevate that arm of the lever 20 upon which it acts, but slight movement of the lever 26 being necessary, owing to the long leverage of the lever 24 in its action upon the lug 23.

The lever 20 is retained against accidental displacement from either of its extreme positions by means of a spring-bolt 31, engaging with a notched plate 32 on the bar 16, and longitudinal displacement of either slide-bar 16 and its lever 20 is prevented owing to the fact that when in either of its extreme positions a spring-bar 33 on the back of either arm of the lever engages with a lug 34 on the lift-lever, such lug being centrally disposed on said lift-lever for the reception of the centrally-recessed end of the lever-arm 20 in order to retain the latter in its proper lateral position. (See Fig. 7.)

In suitable bearings in the angle-plates 28 are mounted the opposite ends of a duplex screw-rod 36, said rod being retained in its bearings by means of detachable caps 37, so that it can be readily removed and replaced. One half of the rod 36 has a right-hand thread and the other half a left-hand thread, and to each of these threads is adapted a nut 38, secured by a detachable cap 39 to a pusher-slide 40, suitably mounted and guided upon rods 18, carried by the plates 28.

From one of the pusher-slides 40 projects a pin 41, adapted for the reception of a reciprocating device deriving its motion from any suitable portion of the loom, and on the under side of each slide 40 is a lug 42, adapted to engage with the spring-bar 33 of the corresponding arm of the rock-lever 20 when said arm is lifted.

At each end of the duplex screw-rod 36 is an elastic buffer 43, preferably consisting of a piece of rubber tubing slipped over the rod and bearing against the angle-plate 28, and similar buffers 44 may bear against the central block 45, which unites the two sections of the screw-rod, or a single buffer may be centrally disposed on said screw-rod.

When the pusher-slide at the right-hand side of the batten is moved inward, it effects the turning of the screw-rod 36 and thereby causes the simultaneous drawing inward of the opposite pusher-slide, simultaneous outward movement of both slides being likewise effected on the retraction of said right-hand slide. Supposing that a slide-bar 16 at the left-hand side of the batten is to be moved to the right-hand side, so as to effect a reverse throw of the shuttles controlled thereby, the left-hand arm of the rock-lever 20 of said slide-bar is raised by the operation of the jacquard and intervening mechanism when the two pusher-slides 40 are at the limit of their inward movement. When, therefore, the left-hand pusher-slide 40 moves outward, it will first depress the spring-bar 33 on the left-hand arm of the rock-lever, and when it reaches the limit of its outward movement will engage with said bar, so that on the next inward movement of the pusher slide the rock-lever and its slide-bar 16 will be carried with it, and in like manner the right-hand pusher-slide 40 effects the movement of the slide-bars 16 to the left, when desired. The rock-levers may, however, be operated when the pusher-slides are at the limit of their outward movement, so as to be engaged as soon as said pusher-slides move inward.

Owing to the use of the screw-caps 39 either nut can be readily detached from its slide 40, so that the drive-nut can be located at either end of the batten.

When the stroke of the shuttles is to be changed, the lift-levers 24 can be shifted to accord with the changed limit of movement of the slides 40, the chains 25 being lengthened or shortened accordingly.

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

1. The combination of the swivel-batten and the shuttle-operating racks thereon, with a duplex screw-rod, pushers adapted to the opposite threaded portions of the same, rock-levers connected to the shuttle-operating racks, and means for adjusting said levers so as to bring either end of either lever into line with one of the pushers, substantially as specified.

2. The within-described means for operating the shuttle-actuating pushers in a swivel-loom, said means comprising a duplex screw-rod mounted in bearings on the batten, and having a right-hand thread extending from the center to one end and a left-hand thread extending from the center to the other end, and pushers adapted to the threaded portions of said rod, and guided so as to prevent them from turning thereon, whereby movement of one of said pushers will cause rotating motion of the rod and reverse movement of the other pusher, substantially as specified.

3. The combination of the swivel-batten and its shuttle-operating bar, a rock-lever carried by said bar, reciprocating pushers for acting upon the lever so as to move the same and its bar in either direction, lifter-levers acting upon the rock-lever and having lugs for locking said lever against longitudinal movement when in either of its extreme positions, and means for operating said lifter-levers, the rock-lever being recessed at each end so as to straddle the lifter-lever and prevent lateral displacement, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN WILLMUNDER.

Witnesses:

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HARRY K. FRIES.