

UNITED STATES PATENT OFFICE.

WILBUR F. DIAL, OF BRIDGEPORT, CONN., ASSIGNOR TO THE WHEELER
& WILSON MANUFACTURING COMPANY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 350,044, dated September 28, 1886.

Application filed January 22, 1886. Serial No. 189,392. (No model.)

To all whom it may concern:

Be it known that I, WILBUR F. DIAL, of Bridgeport, county of Fairfield, and State of Connecticut, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide means for positively rotating a segmental loop-taker in a circular race or loop-taker guide, my invention being an improvement upon the machine described in United States Patent No. 328,165, dated October 13, 1885, to which reference may be had. The machine described in the said patent has as the driver for the loop-taker a saddle fixed to one end of a variably-rotating shaft, the said saddle being provided at one end with a lug and at the other end with a prong, the said lug, owing to the eccentric adjustment of the loop-taker guide, being made to move out and in a notch in the loop-taker back of its point, the said lug at times pushing and at other times pulling the loop-taker in its guide.

In the invention to be herein described the eccentric adjustment of the loop-taker guide with relation to the rotation of the shaft carrying the saddle is maintained; but instead of a long saddle extended somewhat about the bridge of the loop-taker and having at one end a point and at its other end a lug separated a considerable distance one from the other, as shown in the said patent, I have made a lighter and simpler device consisting, essentially, of an arm provided with two projections, one extending outwardly into a notch in the loop-taker back of its hook, substantially as does the lug described in the said patent, the second projection extending downwardly from the said arm and entering a notch in the loop-taker or its bridge at or near its junction with the shoulder of the loop-taker, the said two projections being substantially in line one with the other, as will be described, the said two projections constituting a double-ended horn, which in the rotation of the shaft enters first one and then the other notch of the said loop-taker, the movement of the horn taking place at the proper time to permit the loop of needle-thread to pass the horn and the loop taker to

pass through the said loop. The horn at all times impels the loop-taker positively through the loop of needle-thread. I have also provided the bobbin holder with a novel latch, by which the bobbin is kept in the loop-taker.

My invention consists, essentially, in a rotating shaft having an arm provided with a horn comprising inwardly and outwardly extended projections, and a loop-taker provided with two recesses back of its point, combined with a loop-taker guide set eccentrically to the axis of rotation of the shaft for rotating the arm carrying the said horn, the combination being and operating substantially as will be described.

Figure 1 is a front elevation of a sufficient portion of a sewing-machine to enable my invention to be understood, the bobbin-holder being partially broken away. Fig. 2 is a section of Fig. 1 in the dotted line *x x*, the bobbin-holder being, however, added. Fig. 3 is a front elevation of the loop-taker guide, the loop-taker and the horn and its arm for rotating it; and Fig. 4 is a perspective detail of the variably-rotating shaft and its attached arm and horn.

The bed-plate A, reciprocating shaft B, crank B³, variably-rotating shaft B⁶, the hanger D, having the hub D³, the loop-taker guide D⁶, set eccentrically to the center of the shaft B⁶, the screw D⁴, the bobbin-case *a* and its projection *a'*, and cap *n* are all substantially as in the said patent, and are herein designated by like letters.

The loop-taker G, as herein shown, is shaped externally, and has a point, *g*¹, shoulders *g*³ *g*⁵, a heel, *g*², and a bridge, *g*⁷, substantially as indicated by like letters in the said patent, and between the said shoulders *g*³ and *g*⁵ there is a recess; but herein, besides the said recess, I have provided the shank of the loop-taker with a recess, 2, in continuation of the said recess, and also I have provided the loop-taker, at or near the junction of the bridge *g*⁷ and shoulder *g*⁵, with a recess, 4, both the said recesses 2 and 4 being in the same radial line with relation to the center of rotation of the loop-taker.

Instead of the saddle shown in the said patent, I have provided the shaft B⁶ with an arm, 5, which at its outer end is bent into nearly

horizontal position, and is provided with two projections, 6 7, one extending outwardly and the other inwardly, the two projections 6 7 constituting a horn, one part of which enters the recess 2 and the other the recess 4, one entering one recess while the other is being withdrawn from the other recess, such change of position of the horn taking place during each rotation of the shaft B⁶.

10 In this invention the eccentricity of the loop-taker guide is a little greater with relation to the center of rotation of the shaft B⁶ than in the patent referred to.

15 Fig. 1 shows the point or back of the loop-taker as having been moved far enough to enter a loop of needle-thread, and in such position the projection 7 of the horn rests in the recess 4 and moves the loop-taker in the loop-taker guide; but by the time that the shaft B⁶ and loop-taker have been rotated over a distance of one hundred and eighty degrees, or into the position shown by Fig. 3, the projection 6 of the horn, owing to the eccentric position of the loop-taker guide D', is made to enter the recess 2, the projection 7 withdrawing from the recess 4, leaving the loop of needle-thread free to be drawn up about the loop-taker and so as to inclose its thread.

25 As herein shown, the horn and the part of the arm 5 of which it forms a part is of T shape.

To retain the bobbin-case *a* in the central space of the loop-taker, I employ a bobbin-holder, *h*, pivoted at *h'* and slotted at *h²*, a latch, *h³*, pivoted at *h⁴*, and acted upon by a spring, *h⁵*, entering the said slot, as shown fully in Fig. 2, and keeping the bobbin-holder *h* in upright position, the depression of the outer beveled end of the latch causing the disengagement of the latch from the bobbin-holder.

30 Patent of the United States No. 304,708, granted to me, shows a circular shuttle provided just back of its point with a round hole to receive a stud or pin projecting from the face of a disk at one side of its center of rotation, the said shuttle resting at its rear side against the face of the disk, the pin causing the rotation of the shuttle and disk in unison.

35 Patent of the United States No. 304,709, also granted to me, shows a circular shuttle which

back of its point is engaged by a grooved crank-pin extended from the face of a rotating disk, the pin being provided with an enlarged head to keep the shuttle on the pin, the said pin also receiving upon it a link which is jointed to a second link pivoted to the frame of the machine, the crank-pin constantly drawing the shuttle in a forward direction, an open yoke preventing the shuttle from being thrown out of place by centrifugal action, the groove in the crank-pin being effectual in permitting the discharge of the loop of needle-thread.

I claim—

1. The rotating shaft, its arm provided with a horn comprising inwardly and outwardly extended projections, and a loop-taker provided with two recesses back of its point, combined with a loop-taker guide set eccentrically to the axis of rotation of the shaft for rotating the arm carrying the said horn, the combination being and operating substantially as described.

2. A variably-rotating shaft, an arm attached to it provided with a horn consisting of an outwardly-extended projection, 6, and an inwardly-extended projection, 7, and a loop-taker guide set eccentrically to the center of the said shaft, combined with a loop-taker having two opposite recesses, 2 4, at the rear of its point or beak and in line with the center of rotation of the loop-taker, into which recesses the ends of the said horn enter alternately as the said shaft is rotated, one or the other of the projections of the said horn constantly pulling the said loop-taker, point forward, in the loop-taker guide, as set forth.

3. The loop-taker guide, its cap *n*, the loop-taker free to be rotated in the said guide, and the bobbin-case, combined with the pivoted bobbin-holder *h* to restrain the rotation of the bobbin-case with the shuttle, and the latch *h³*, pivoted at *h⁴*, and acted upon by a spring to secure the bobbin-holder in place, substantially as described.

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

WILBUR F. DIAL.

Witnesses:

ISAAC HOLDEN,
LOUIS H. BAKER.