2 Sheets—Sheet 1.

E. BOUSCAY, Jr.

SEWING-MACHINE.

No. 176,917 Patented May 2, 1876.

Fig. 1.

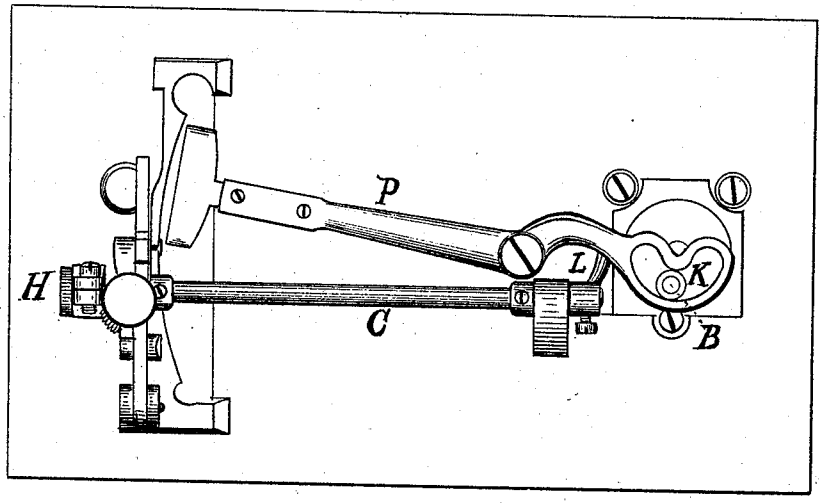


Fig. 2.

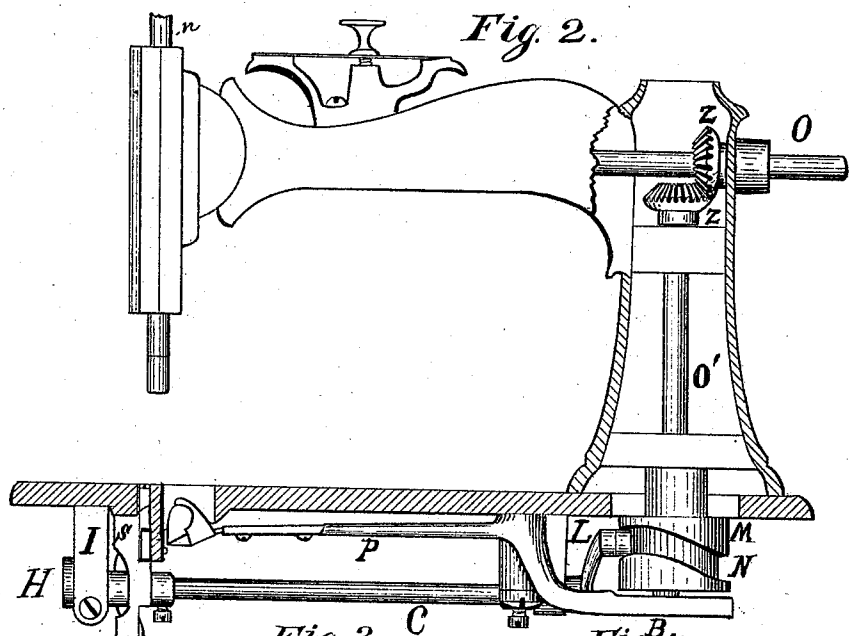


Fig. 3.

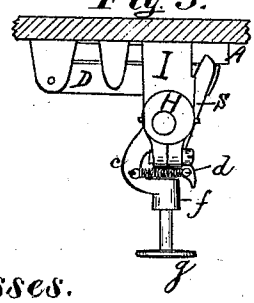
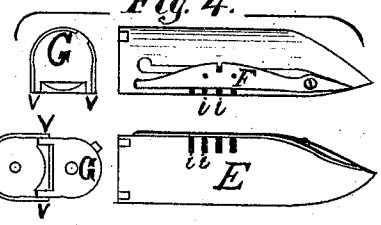


Fig. 4.



Witnesses.

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J. R. Perkins

Inventor.

Eloi Bouscay Jr.

2 Sheets—Sheet 2.

E. BOUSCAY, Jr.

SEWING-MACHINE.

No. 176,917. Patented May 2, 1876.

Fig. 5.

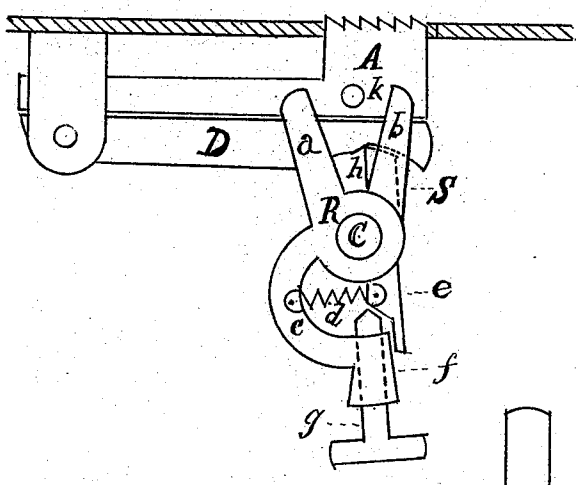
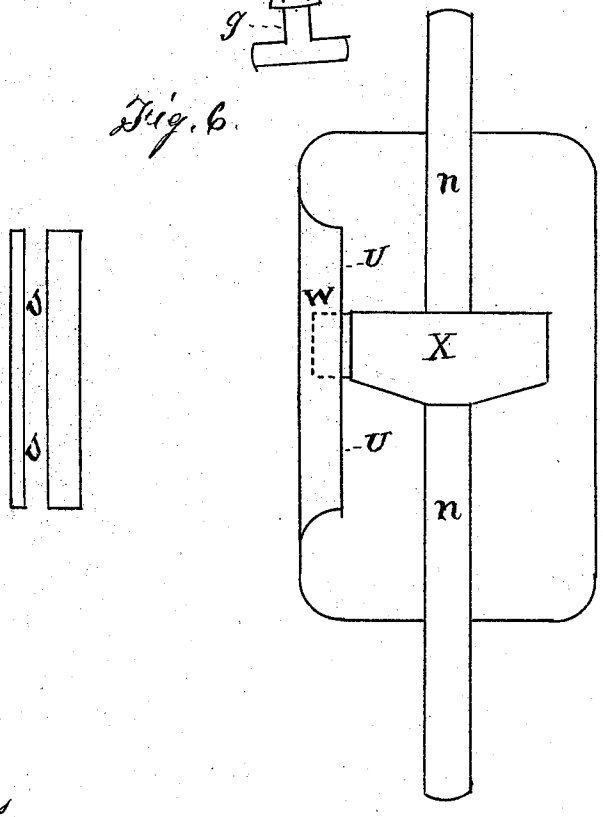


Fig. 6.



Witnesses
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ELOI BOUSCAY, JR., OF NORWALK, OHIO.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **176,917**, dated May 2, 1876; application filed May 21, 1874.

To all whom it may concern:

Be it known that I, ELOI BOUSCAY, Jr., of Norwalk, county of Huron, and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention consists in certain details of construction in a sewing-machine, as hereinafter specified and claimed.

In the drawings, Figure 1 is an inverted view of a machine, showing the shuttle-driver and its cam-slot. Fig. 2 is a side elevation of a machine, showing the vertical shaft, the cylinder, shuttle-driver, and feed-shaft. Fig. 3 is a cross-section of the feed-shaft, eccentric sleeve-journal, and its hanger. Fig. 4 is the shuttle and its details. Fig. 5 is a front elevation of the feed regulating and operating mechanism. Fig. 6 is the needle-bar with its wing device for keeping it from turning in its bearings.

O is the elevated horizontal shaft. Z Z are the bevel-gears. O′ is the vertical shaft. M is the cylinder, having the cam-groove N in its periphery, and crank-pin B in its lower face. P is the shuttle-driver, and K its cam-slot. C is the feed-shaft, and L its crank-arm. H is the eccentric sleeve, and I its hanger. E is the shuttle; G, its lid; F, the tension-spring, and *i i* notches for threading the tension.

The operation of my invention is as follows: The power is applied, in this as in all machines of this class, to the elevated horizontal shaft O; thence it is communicated to the vertical shaft O′ through the bevel-gears Z Z. The vertical shaft, with its cylinder M, engages, first, the horizontal rock-shaft C, which actuates the feed through the cam-groove N and crank-arm L, and, secondly, the shuttle driver P in its cam-slot K, through the crank-pin B. The shuttle-driver is of the oscillating class, and drives the shuttle through an arc, at a certain period in each revolution of the vertical shaft O′ and its crank B, the latter operating, as stated, in the cam-slot K, gradually moving toward the fulcrum, thereby destroying the leverage equilibrium, and accelerating the motion of the driver P. This movement I improve by causing the shuttle to pass through the loop. This being done, the proper shape of the cam-slot K and crank-point B, moving away from the fulcrum of the shuttle-driver P, allows the shuttle to slacken sufficiently for the needle-thread to be drawn up at the heel of the shuttle. This motion is again increased, and ultimately intermits, simultaneously with the motion of the needle-bar, thereby drawing both threads at the same time at the termination of the stitch.

The cam-groove N, which, in combination with the crank-arm L and rock-shaft C, actuates the feed, is cut in the periphery of the cylinder M, inclining from near the upper face to near the lower face of the same, and vice versa, in such a relation to the crank-point B as to cause the shaft C to rock at proper times, and move the feed in suitable co-ordination with the other mechanisms.

It is desirable in sewing-machines that the feed should be so far adjustable as to permit the raising or depressing of the same as the various kinds of work to be performed require. This I accomplish by fitting the end of the rock-shaft C, immediately under and supporting the feed mechanism, into an eccentric sleeve-journal, H, held in the hanger I. By inspection of the drawings, Fig. 3, it is obvious that the vertical adjustment of the feed is performed by turning the eccentric H in the hanger I.

My shuttle is closed and semi-cylindrical, with one plane face coming in contact with its race. It is provided with a permanently-hinged lid, G, at the heel, secured by the hinges V V, so that it can easily be thrown open to allow the bobbin to be inserted or removed without its being separated from the shuttle. It is also provided with an adjustable tension-spring, F, secured at the top and on the outside in such a manner that the tension can be increased or diminished by means of the screw.

The feed-bar A, with its roughened face, projects up through a slot in the needle-plate, and moves on a bar, D, one end of which is pivoted in a hanger extending from a cloth-plate. The other end of bar D is recessed as shown.

Rigidly affixed on shaft C is a lever, R, having an arm, *a*, extending upwardly, and a curved downward projection, *c*, with an enlarged tubular threaded end, *f*, for receiving a pointed screw, *g*. In the rear of the lever R, and on the shaft, is a lever, S, held loosely in place by a collar on the shaft. This lever is connected with lever R by a helical spring, *d*, and has an upper arm, *b*, with an inclined or cam surface, *h*, on its rear face, and a lower arm, *e*, whose end is beveled, and rests against the point of the screw *g*.

As the shaft C is rocked the arms *a* and *b* strike against a point, K, on the feed-bar, and thereby move it back and forth. At the same time the cam H on the arm *b* plays in the recessed end of bar D, and elevates and depresses the same, which motion is communicated to the feed-bar.

The distance between the upper ends of arms *a* and *b* determines the length of feed, and this distance is regulated by the screw *g;* for the farther the point extends through the sockets *f*, the closer are brought the arms *a b*, and as the screw is withdrawn the arms separate. The point of the screw, coming in contact with the beveled end of arm *e*, causes these adjustments; and I prefer to make the point of the screw conical. A positive and regular motion, both horizontally and vertically, is thus given to the feed.

The device which I make use of to prevent a round needle from turning in its bearing is the following: The cross-head X on needle-bar *n* has a guide, W, projecting from the side, and fitting loosely in a groove cut in the corresponding side of the front plate of the machine, and in a line parallel with the needle-bar. The groove, of course, allows the guide to move vertically as the needle-bar carries it in its regular motion, but the groove and guide being fitted closely enough to prevent the needle-bar from turning.

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

1. As a means of causing the forward motion of the shuttle and upward motion of the needle to stop at the same instant, and begin the reverse motion simultaneously, the horizontal oscillating-lever shuttle-carrier P, provided with the cam-slot K, the needle-bar *n*, provided with the cross-head X and intermediate mechanism, substantially as set forth, for driving the same.

2. The combination, with the horizontal drive-shaft O and vertical shaft O′, of the rock-shaft C, for actuating the feed, substantially as described.

3. The combination, with the rock-shaft C and feed mechanism, of the rigid jaw S, movable pivoted jaw F, and adjustable screw *g*, for regulating the throw of the feed, substantially as described.

4. The combination, with the shuttle, of the lid G, the said lid being hinged directly to the heel of the shuttle, substantially as set forth.

5. The combination, with needle-bar *n*, of cross-head X, guide W, and face-plate, provided with the slot *u*, whereby any tendency to revolve is obviated.

6. The combination, with the shafts O O′ and bevel-gears Z Z, of the cylinder M, bearing the cam-groove *n* in its periphery, crank-pin B on its lower face, the crank L, and shuttle arm P, provided with the curved slot K, substantially as shown and described.

7. The shuttle E, constructed as described, and provided with the adjustable tension-spring F and the threading guide-notches *i i*, substantially as shown and described.

8. The combination of the feed-bar A, rigid lever R, loose lever S, spring *d*, and conical-pointed screw *g*, substantially as shown and described.

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Witnesses:
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