(No Model.)

B. F. BELLOWS.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 483,800. Patented Oct. 4, 1892.

Fig 1

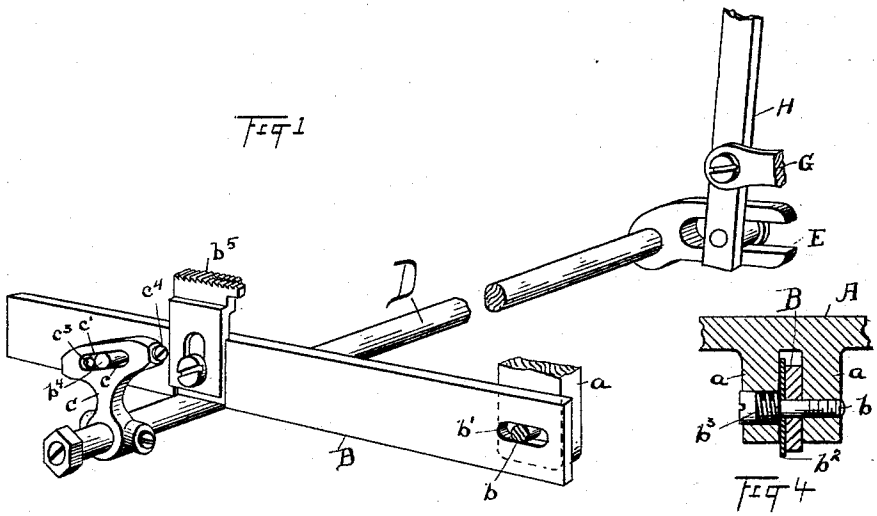


Fig 4

Fig 2

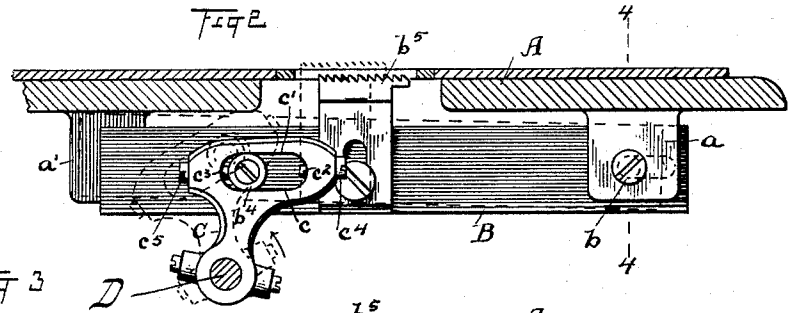
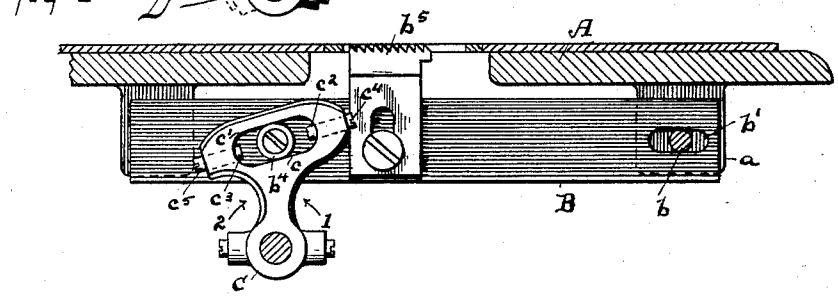


Fig 3



WITNESSES.
R. B. Moser
Frank. Miller.

INVENTOR.
Benjamin F. Bellows
by E. F. Thurston
ATTORNEY.

UNITED STATES PATENT OFFICE.

BENJAMIN F. BELLOWS, OF CLEVELAND, OHIO, ASSIGNOR TO EDWARD T. LUFKIN, OF SAME PLACE.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 483,800, dated October 4, 1892.

Application filed February 8, 1892. Serial No. 420,703. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. BELLOWS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Feed Mechanism for Sewing-Machines, of which the following is a specification.

My invention relates to the feed mechanism for sewing-machines; and my object is to provide a simple and efficient contrivance adapted to impart to the feed-bar the fourway movement necessary to its successful operation.

My invention consists in the construction and combination of parts shown in the drawings, and hereinafter described, all of which will be pointed out definitely in the claim.

In the drawings, Figure 1 is a perspective view of a sewing-machine feed mechanism containing my invention in its best form. Fig. 2 is a sectional end view of the bed-plate of a sewing-machine, the feed-bar, and my improved device for operating the same. Fig. 3 is a similar view of the same parts in different relative positions. Fig. 4 is a sectional view on line 4 4 of Fig. 2.

Referring to the parts by letters, A represents the bed-plate of the sewing-machine head.

B represents the feed-bar, which is placed beneath the bed and guided between ears a a and a' which project downward from the bed in the usual manner. A screw b passes through one ear a and through a longitudinal slot b' in the feed-bar and screws into the opposite ear a, whereby the front end of the feed-bar is supported. A friction-plate or pressure-piece b^2 lies against the feed-bar and between it and one of the ears a, and a coiled spring b^3, which surrounds the screw b, is compressed between the screw-head and friction-plate b^2, whereby the latter is pressed against the feed-bar with sufficient force to permit the forward or backward movement thereof during the time it is being moved up or down by the mechanism hereinafter described.

The fourway movement of the feed-bar is imparted to it by the reciprocating motion of a vibrating piece C, which is provided, essentially, with two surfaces c c', which are inclined with reference to its path of travel, and with two shoulders c^2 c^3. In the best form of this vibrating piece it is an arm rigidly attached to a rock-shaft D and is provided with a cam-slot. The upper edge of this slot is the inclined surface c', which moves the feed-bar downward. The lower edge of this slot is the inclined surface c, which moves the feed-bar upward, and the ends of the slot are the shoulders c^2 c^3, with which the feed-bar is moved backward and forward. Projecting from the feed-bar B into the slot just described is a pin b^4.

Since the mechanism for oscillating the rock-shaft is no part of the present invention and since numerous specific forms of mechanism for the purpose well known in the art may be employed, I have not thought it necessary to completely show the mechanism for this purpose. I have shown, however, a slotted arm E, rigidly attached to the rock-shaft. A pin on a vertically-reciprocating rod H enters the said slot, and as the rod is moved up and down the rock-shaft is rocked. The lever G is pivoted to the rod H and to an adjustable support, by the movement of which the rock-shaft may be given a greater or less range of movement, thereby changing the amount of the feed and hence the length of the stitch. The mechanism thus partially described and illustrated is well known to persons familiar with this art.

The described feed mechanism operates as follows: The full lines in Fig. 2 show the relative position of the parts when the feed-bar has just completed its backward movement. When the arm is rocked in the direction of the arrow, the inclined surface c, engaging with the pin b^4, moves it upward, the bar B turning on the screw b as a pivot, and this upward movement continues until the shoulder c^2 strikes the pin, at which time the feed-dog b^5 projects the proper distance above the work-plate. By a further movement of the arm C in the same direction the shoulder c^2 moves the pin b^4, and consequently the feed-bar B, forward, thereby feeding the fabric. By the first movement of the arm C in the opposite direction the inclined surface c, engaging with the pin b^4, causes the bar B to turn

downward on the screw b as a pivot, thereby drawing the feed-dog below the work-plate, and this downward movement continues until the shoulder c^3 strikes the pin, when a continuation of the movement of the arm C moves the feed-bar backward to its first position. (Shown in full lines.) The principal forces of the inclined surfaces are exerted in the up or down directions, as pointed out; but there is, of course, in each case a lesser force acting at a right angle to said direction, tending to impart to the bar a forward or backward movement, as the case may be. The friction-plate b^2 is employed as a tension device to prevent the bar B from yielding to this lesser force, or, as heretofore otherwise stated, to prevent the bar from moving either forward or backward during the time the inclined surfaces are acting in the pin for the purpose of moving it up or down.

Fig. 3 shows the pin b^4 midway of the slot in the arm C. If the arm be moved in the direction indicated by arrow 1 the bar will be moved upward; but if in the direction of arrow 2 it will be moved downward.

In the form of the invention shown in Figs. 1, 2, and 3 the shoulders c^2 c^3 are small pieces of rawhide or other like material, which are seated in sockets in the arm C at the ends of the slot, and which project into said slot and serve as buffers against which the pin b^4 strikes. Let screws c^4 c^5 screw into the arm and their ends abut against said rawhide pieces, whereby the latter are held in place and moved forward to take up wear or to shorten the slot. By varying the position of these shoulders c^2 c^3 the vertical movement of the feed-dog is varied. If the shoulders are moved toward each other, the vertical movement of the feed-dog is lessened. If the screws c^4 c^5 are screwed outward, the rawhide shoulders will be moved against them and the vertical movement of the feed-dog will be increased.

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

In a sewing-machine, a feed-bar, a pin projecting therefrom, and a tension device, combined with a rock-shaft, an arm secured thereto having a cam-slot into which said pin projects, and the buffer-pieces projecting into the ends of said slot, substantially as set forth.

BENJAMIN F. BELLOWS.

Witnesses:
E. L. THURSTON,
FRANK. MILLER.