(No Model.) 2 Sheets—Sheet 1.

A. O. VERY.

FEEDING MECHANISM FOR SEWING MACHINES.

No. 486,961. Patented Nov. 29, 1892.

Fig. 1.

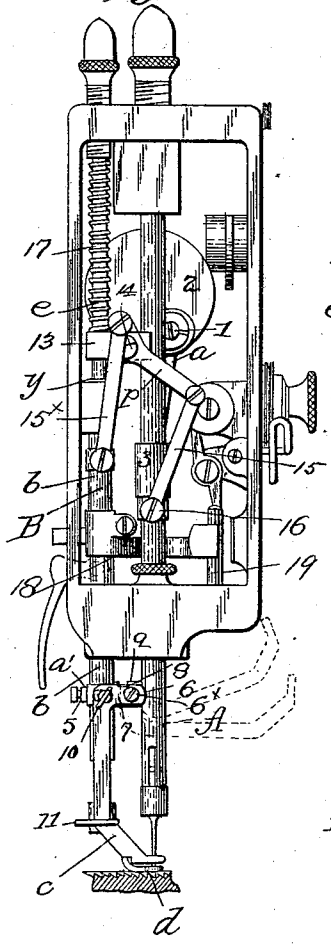

Fig. 2.

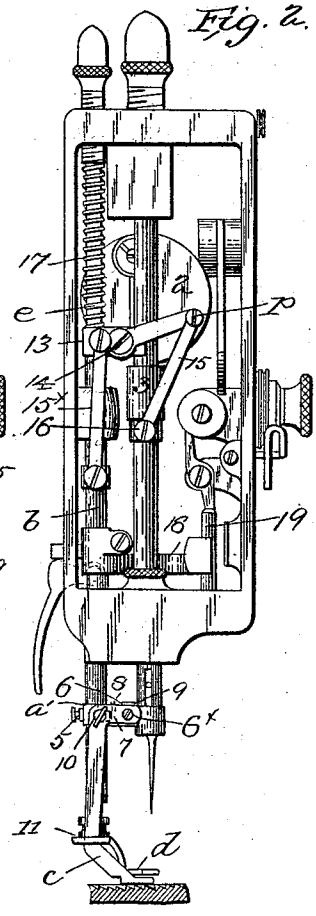

Fig. 3.

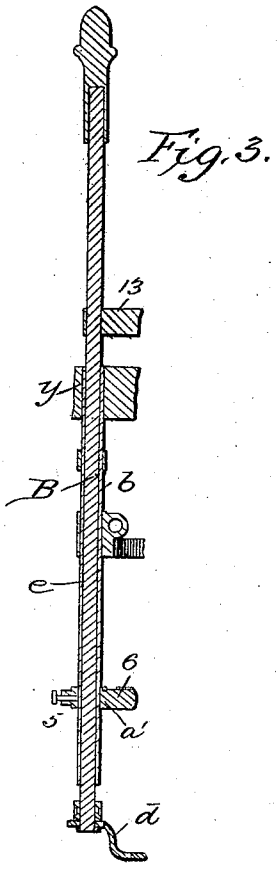

Fig. 4.

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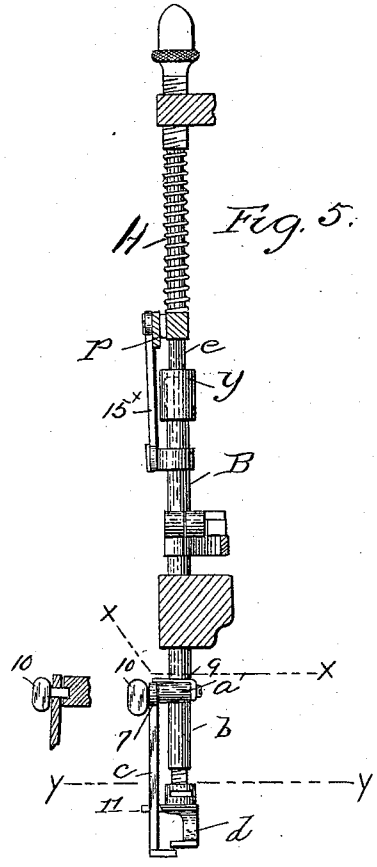


Fig. 5.

Fig. 6.

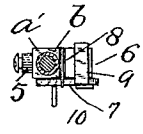
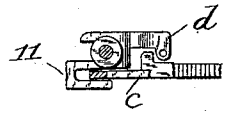


Fig. 7.



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UNITED STATES PATENT OFFICE.

ALPHA O. VERY, OF BOSTON, MASSACHUSETTS.

FEEDING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 486,961, dated November 29, 1892.

Application filed June 30, 1892. Serial No. 438,490. (No model.)

To all whom it may concern:

Be it known that I, ALPHA O. VERY, a citizen of the United States of America, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

My invention is an improvement in the feeding mechanism of a sewing-machine in which two alternately-acting presser-feet are used, one of which is a feed-helper foot. It is illustrated in the drawings which accompany the specification, in which drawings—

Figure 1 represents an end elevation of the head of the arm with the front plate removed and showing a needle and a needle-bar and the feed and presser foot mechanisms with the presser-foot down upon the work. Fig. 2 is a similar view showing the presser-foot in position reversed to the first. Fig. 3 shows a vertical section of the bar carrying the presser-foot and the sleeve for carrying the feed-helper foot. Fig. 4 is a front view of the presser-foot. Fig. 5 is a view of the presser-foot, feed-helper foot, their supports, and attached parts, taken a quarter-turn from the position of Fig. 1, parts of the frame being in section. Fig. 6 is a sectional plan view on line $x\,x$ of Fig. 5. Fig. 7 is a sectional plan view on line $y\,y$ of Fig. 5.

In the drawings is shown a needle-bar A, which slides in guides in the head and is reciprocated in the ordinary way by means of a link a, connecting the wrist-pin 1, upon the plate 2, with a pin on the collar 3, fixed to the needle-bar.

The bar B is in similar guides in the head and is composed of two parts, of which one is a sleeve b, carrying the feed-helper foot c. This sleeve b is provided with a collar a', held thereon by a set-screw 5, and on the sleeve is an offset 6, on which is pivoted the movable feed-helper foot, which rests over the feed device and yields in order to move with it. The upper end of the shank of this foot has an offset 7, the end of which is pivoted at $6^{\times}$ to the offset of the sleeve. A wire spring 8, secured to the offset 6 and bearing on the offset 7, holds the foot normally forward. Its motion is limited by a thumb-screw 10, the inner end of which projects into a recess formed in the collar a' sufficiently larger than the screw to permit the necessary movement. A leaf-spring 9, fixed to the offset of the sleeve and extending over that of the feed-foot, holds the foot out of work when it is turned up, as shown in dotted lines of Fig. 1, the spring then bearing on the extreme end of the offset 7, which passes under it. The feed-foot is guided in its working movement by the slotted piece 11, which is carried on the shank of the presser-foot. The presser-foot d is opposite the needle and is attached to the lower projecting end of bar e, arranged within the sleeve b, in which it fits closely, but so as to have free vertical movement. The upper end of the sleeve terminates at the point y, and at a point a little above this termination of the sleeve a block 13 is fixed at one end to the bar e. This block at the other end is formed with a recess to bear against the needle-bar. On the block is pivoted a lever p by screw-pivot 14. The longer arm of this lever is connected by a link 15 to the pivot 16, set in a sleeve fixed to the needle-bar, so that the motion of the needle-bar through this connection imparts reciprocating motion to the lever, which in turn transmits motion through the link $15^{\times}$ to the sleeve b, which the link connects with the other end of the lever. The end of the lever connected with the sleeve b is shorter to give a less amount of movement to the said sleeve.

On the upper end of the interior presser-bar e is a coiled spring 17, which is held between an upper bearing and the block 13 on the said bar and tends constantly to hold down both the presser-foot and feed-foot, the one by direct pressure on the interior bar and the other through the block and link. As the block on which the lever p is pivoted is on the interior bar, it is thus pressed down by the spring, and this spring is of sufficient tension to serve as a resistance to the upward movement of the block and cause the block to act as a fixed fulcrum for the lever p in the first part of the upward movement of the needle-bar. The first movement of the needle-bar, therefore, forces down the sleeve and with it the feed-foot; but when this foot is upon the work the upper pivot of the link becomes thus rigidly supported against further downward movement and affords a ful-

crum for the lever, which latter changes to one of the second order and lifts the block against the coiled spring, and with it the interior bar *e*, carrying the presser-foot, which latter in turn is returned by the direct reaction of the spring. Thus the action of the two—the feed-foot and presser-foot operated, mainly, by the same lever—is alternate. The same spring presses upon both the presser-foot and feed-foot, on one directly and on the other through the block and its connections with the sleeve on the presser-foot bar.

The precise form of the connections between the needle-bar and the presser-foot bar is not material, although the form shown is very simple and effective.

The sleeve *b* has an arm 18 clamped thereto, one end of which embraces a stud 19 and prevents the sleeve from turning.

The presser-foot is connected rigidly to its bar by the nuts, as shown, and may be removed. The sleeve carrying the feed-foot is also detachable, so that both may be removed and the ordinary presser-foot be attached instead.

I claim as my invention—

1. In combination, the needle-bar with means for reciprocating the same, the presser-foot and its bar, the feed-foot and its bar, a lever carried by one of said bars and in permanent connection with each of the other bars for operating the feed and presser foot bars reversely, and means for applying a tension to the feed-foot and presser-foot bars and the lower feed, substantially as described.

2. In combination, the needle-bar with means for reciprocating the same, the presser-foot and its bar, the feed-foot and its bar, the lever pivotally connected to and carried by one of the bars, the links connecting the ends of said lever with the other bars, and the means for applying a tension to the presser-foot and feed bars and the lower feed, substantially as described.

3. In combination, the needle-bar with means for reciprocating the same, the presser-foot with its carrying-bar, the block 13 on the presser-foot bar, the feed-foot and its carrying-bar, the lever pivoted on the block 13 and connected pivotally at its opposite ends with the needle-bar and feed-foot bar, respectively, and the spring for applying a tension to the bars and the lower feed, substantially as described.

4. In combination, the needle-bar, the presser-foot and its bar, the feed-foot bar having the feed-foot pivotally connected thereto, the spring for applying a tension to the said foot, the block 13 on the presser-foot bar, the spring above said block and around said bar, the lever pivoted on the said block 13, the links connecting the ends of said lever with the needle and presser-foot bars, respectively, and the lower feed, substantially as described.

5. In combination, the needle-bar, the feed-foot, the presser-foot, the bars for said feet, one of which is in the form of a sleeve and receives the other within it, the tension means, the connections between the foot-bars and the needle-bar for operating the presser and feed foot bars reversely, and the lower feed, substantially as described.

6. In combination, in a sewing-machine, the needle-bar with means for reciprocating the same, the feed-foot bar with connections to the needle-bar for operating the same, the feed-foot pivotally connected to the feed-foot bar and having an angular offset, the spring for applying a tension to said foot engaging the said offset, and the means for limiting the oscillatory movement of the foot and the lower feed, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALPHA O. VERY.

Witnesses:
WM. E. JEWELL,
C. H. WELCH.