

A. STOCKER.  
Sewing-Machines.

No. 126,911.

Patented May 21, 1872.

Fig. 1.

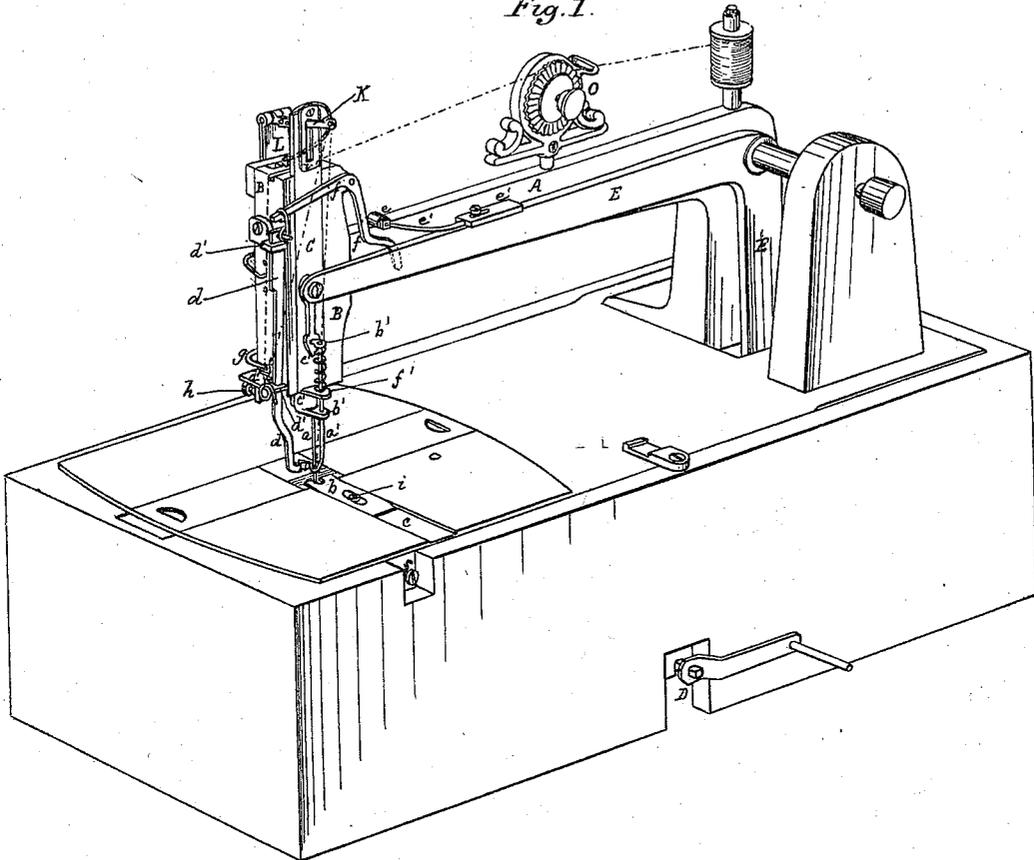
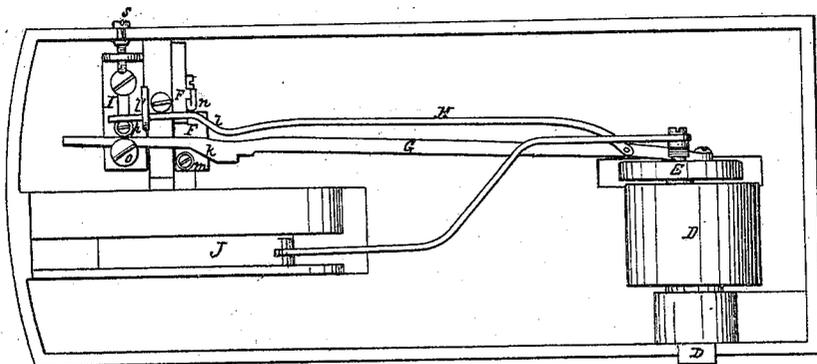


Fig. 2.



Witnesses  
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Inventor  
*Amos Stocker*  
by *att'y A. Pollok*

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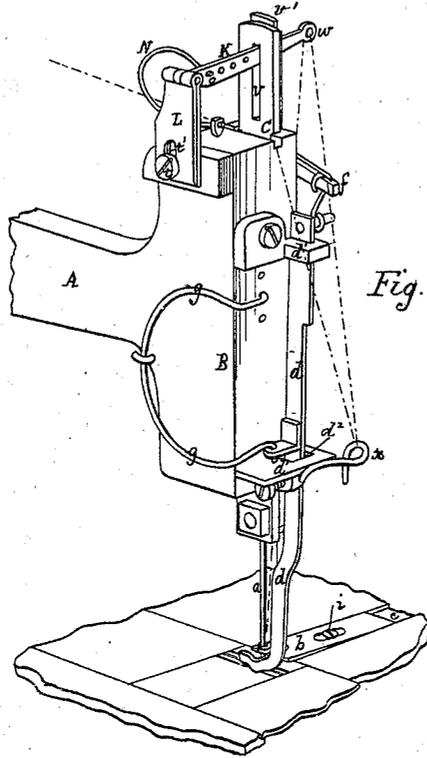


Fig. 3.

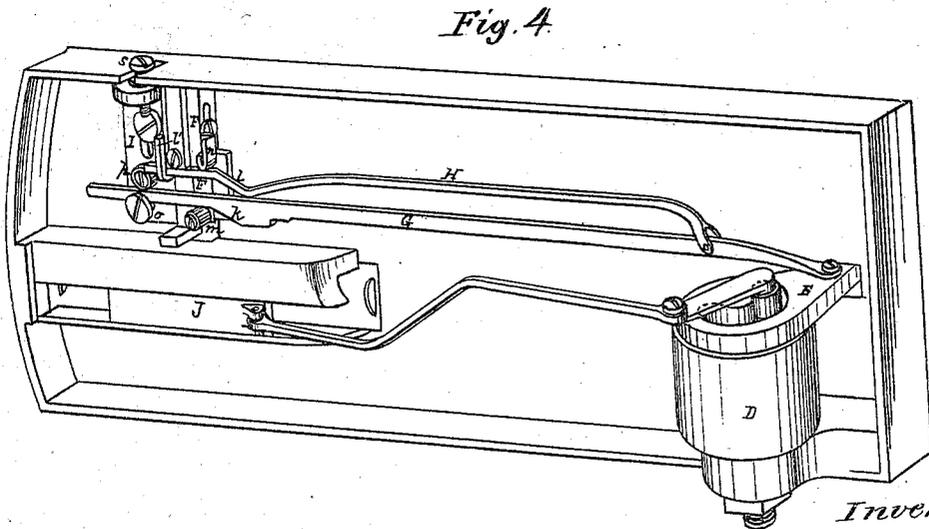


Fig. 4.

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# UNITED STATES PATENT OFFICE.

AMOS STOCKER, OF WATERTOWN, NEW YORK, ASSIGNOR TO HIMSELF AND OSCAR PADDOCK, OF SAME PLACE.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 126,911, dated May 21, 1872.

### *To whom it may concern:*

Be it known that I, AMOS STOCKER, of Watertown, Jefferson county, New York, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification:

My invention consists principally in a peculiar combination, for the purpose of feeding the cloth, of a two-motion feed with a presser-foot adapted to move both up and down and to and fro, as hereinafter described; and it further consists in certain peculiarities, hereinafter set forth, in the construction and arrangement of the mechanisms for operating the feed and the presser-foot.

In the accompanying drawing, Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is a view of the under side of the same. Fig. 3 is a perspective view of the head which carries the needle, the take-up, and the presser-foot. Fig. 4 is a perspective view of the under side of the machine.

A is the stationary goose-neck, provided with a head, B, in which is arranged the sliding needle-bar C, carrying the needle *a*, and operated from the driving-shaft D by means of a needle-arm, E, having its lower end formed with a heart-shaped cam-slot engaging with a wrist-pin on the driving-shaft in the usual manner. The feed consists of a plate, *b*, arranged on top of the cloth-plate, and preferably in a groove, *c*, formed therein, so that it may be about flush with the surface of the cloth-plate. This feed-plate moves at proper intervals toward and away from the needle. On the other side of the needle from the feed is the presser-foot *d*, which is mounted in guides *d'* *d'* on the head B, and is capable of motion both up and down and to and fro with respect to the needle.

Its movements, in this instance, are effected as follows: Its up motion is effected by a roller-stud, *e*, on the needle-arm, which, at the proper time, when the needle descends, presses upon the inclined rear portion of an angle-lever, *f*, pivoted to the head B and linked at its front end to the presser-bar. The down movement takes place when the angle-lever is released by the rising of the needle-arm, a spring, *g*, then acting to carry down the presser-foot upon the cloth-plate. The movement away from the needle takes place while the presser-

foot is resting with a yielding pressure (due to the spring *g*) upon the cloth-plate, or the stuff thereon, and is effected by the feed-plate, the front end of which, during its forward movement, presses against and forces back the presser-foot. In order to permit of this movement of the presser-foot the lower guide *d'*, through which the shank of the foot passes, is made with an oblong opening or slot *d''*, as shown in Fig. 3, and the presser-bar or shank is so constructed or arranged in its guides as to allow this movement to take place.

The forward movement of the presser-foot is effected by the spring *g*, which is so arranged as to offer a yielding resistance to the lateral pushing action of the feed-plate; or this movement may be provided for by making the presser shank or bar of light spring metal, so that when the pressure of the feed-plate is removed it will recoil or spring back to its normal position. The portion of the presser-foot which is directly opposite the needle is curved outward, as shown in Figs. 1 and 3, and the front end of the feed-plate at the same point, is slotted, as shown in the first-named figure, the object being to allow these two parts—the presser-foot and the feed-plate—to come in contact without interference with the needle.

I prefer to roughen or score the portion of the cloth-plate over which the presser-foot moves in order to render its action more effective and to prevent it from springing toward the needle until lifted away from the cloth-plate. The presser-foot proper may be simply a thin, narrow metallic bar or strip, as it is intended principally to form a bearing or point of resistance for the front end of the feed-plate.

The operation of these devices in connection with the needle is as follows: Supposing the needle to have completed its downward movement, at this time the feed-plate will be in its furthest position from the needle and the presser-foot will be lifted away from the cloth-plate. When the needle rises the roller-stud *e* will be lifted from the angle-lever *f* and the presser-foot will consequently, by its spring *g*, be forced down upon the work alongside of the needle. As soon as the needle rises far enough to clear the work the feed-plate advances until the work is pinched between its front end and the adjoining side of the presser-foot, and the fur-

ther movement of the feed pushes back the presser-foot and carries along the work the length of one stitch. The needle now descends and simultaneously the feed-plate moves back, leaving the presser-foot holding the work in its proper position to receive the needle. As soon as the needle penetrates the work the roller-stud presses the angle-lever, and thus raises and releases the presser-foot, which now springs forward toward the needle into its normal upright position.

In order to prevent the presser-foot from going beyond the length of stitch required I provide a set-screw, *h*, or its equivalent, having its point arranged opposite to the shank of the presser-foot, at or near the lower bracket *d*. By advancing this screw more or less toward the presser bar or shank the extent of the lateral movement of the presser-foot may be regulated.

The feed-plate is connected with its operating mechanism by means of a set-screw, *i*, passing through a slot in the feed-plate, as shown in Figs. 1 and 3, whereby said plate may be accurately adjusted with relation to the needle and the presser-foot.

The set-screw *i* extends into a reciprocating sliding block, *F*, on the under side of the machine. The movement of this block is effected by means of two rods, *G* *H*, provided with inclines *k* *l*. The rod *G* is pivoted to the lower part of the needle-arm and the rod *H* is hinged to *G*. The incline *k* effects the forward movement of the feed by being brought in contact with the roller-stud *m* on block *F* during the forward movement of the arm *G*. The retraction of the feed-plate is caused by the oppositely-disposed incline *l* on rod *H* pressing against the stud or shoulder *n* on block *F* during the backward movement of rod *G*, which, of course, carries with it rod *H*. The length of stitch is regulated by means of a sliding plate, *I*, provided with two roller-studs, *o* *p*, through which the free end of rod *G* passes. This sliding plate can be moved in the one direction or the other by means of thumb-screw *s*, whereby the rod *G* may be brought nearer to or further from the roller-stud *m*, which will consequently be caused to traverse a greater or less part of the incline *k*, thus determining the feed. The rod *H*, being hinged to rod *G*, admits of this independent movement and adjustment of the latter, and its free end is held at all times in the same position by passing through an eye, *v*, fixed to the frame of the machine.

The shuttle *J* is operated in the usual manner. The take-up consists of the arm *K*, hinged at one end to a standard, *L*, attached to the head *B* by means of a set-screw, *t*, passing through a slot, *t'*, in the standard. The latter can thus be adjusted up or down, as occasion may require. The free end of the take-up arm passes through a slot, *v*, in the upper end of the needle-bar, as shown in Figs. 1 and 3, and is provided with an eye, *w*, through which the thread passes. An adjustable slotted

link, *v'*, is applied to the slot *v* for the purpose of regulating the movement of the take-up, as required for light or heavy work, in the usual manner. A spring, *N*, tends to keep the take-up at all times elevated as much as the position of the needle-bar will permit. The take-up arm may be provided with a series of perforations, into any one of which, as may be required by circumstances, the upper end of the spring *N* can be inserted. The thread from the tension *O* passes down over the front of the head *B* through the loop or eye *x* on the head, thence up through the eye of the take-up, and thence down to the needle, as indicated in Figs. 1 and 3. The needle is provided with a needle-guard or support, which also serves to hold down the work in the immediate vicinity of the needle when the latter is withdrawing from the work. This guard or support consists of the metallic rod *a'*, capable of sliding in bearings *b'* on the needle-bar, its range of movement being limited between the points *c'* *c'*, against which the stop *f'* on the rod will strike when the rod is sufficiently elevated or lowered. Between the stop *f'* and the upper bearing *b'* is a spiral spring encircling the rod and tending to hold the bar in its lowest position with a yielding pressure. The lower end of the rod is curved and provided with a hole or eye, through which the needle passes. The rod is, of course, so placed that it will at all times encircle the needle. The roller-stud *e* for actuating the presser-foot is attached to an arm or bracket, *e'*, connected with the needle-arm by a set-screw passing through a slot formed in said bracket, whereby the latter may be adjusted to bring the roller-stud into contact with the angle-lever at any desired time relatively to the stroke of the needle, and also to elevate the presser-foot more or less, as required.

In conclusion I would state that as regards the particular construction and arrangement of the presser-foot and feed-plate, as well as of the mechanism for operating the same, these may be varied in many respects without departure in principle from my invention, the main feature of which consists in the combination of the presser-foot with the feed-plate, which at the proper time pushes laterally against said foot so as to effect the feed of the stuff pinched between them, the said parts having substantially the movements hereinbefore stated. A four-motion feed-plate might be employed for the same purpose, but the up-and-down movement would be quite superfluous, as the top of the plate is smooth, and moves back under the cloth without difficulty.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a four-motion presser-foot and an under-feed plate arranged to push laterally in its forward or feed movement against the presser-foot, said parts operating together to effect the feed, substantially in the manner set forth.

2. In combination with the needle and the two-motion feed-plate, a four-motion presser-foot, having imparted to it at the proper times, as specified, an up motion from the needle arm or bar, a horizontal movement away from the needle by the feed-plate, and movements downward and toward the needle by one or more springs, substantially as and for the purposes herein shown and set forth.

3. In combination with the presser-foot operated by the projection on the feed-plate to move away from the needle, as described, the set-screw or its equivalent for preventing the same from being carried back from the needle further than the length of stitch, substantially as set forth.

4. The combination of the presser-foot, the angle-lever linked to the same, and the roller-stud and its adjustable bracket on the vibrat-

ing needle-arm, constructed and arranged as shown and set forth.

5. The two-motion feed-plate, arranged in a groove in the cloth-plate, and adjustable upon its supporting reciprocating block, substantially as shown and described.

6. In combination with the feed-plate and its supporting slide or block, the devices herein described for actuating the same and determining the length of stitch, all constructed and arranged as shown and set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

AMOS STOCKER.

Witnesses:

EDMUND B. WYNN,  
LOTT FROST, Jr.