I. M. SINGER.

Sewing Machine.

No. 12,364. Patented Feb. 6, 1855.

Fig. 3. B. b.

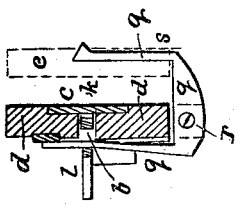


Fig. 1.

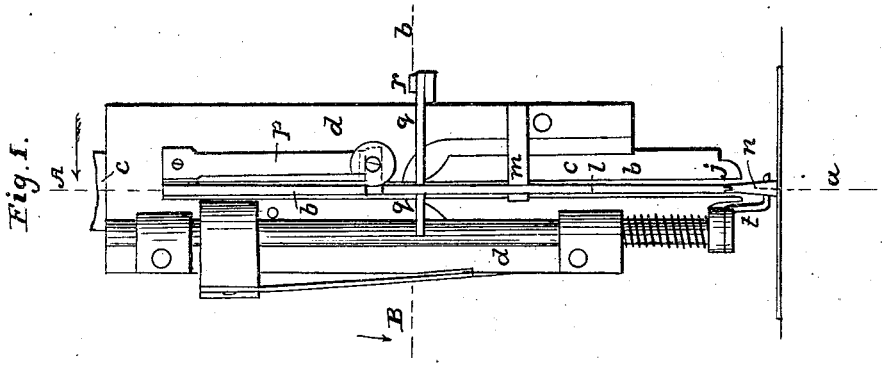
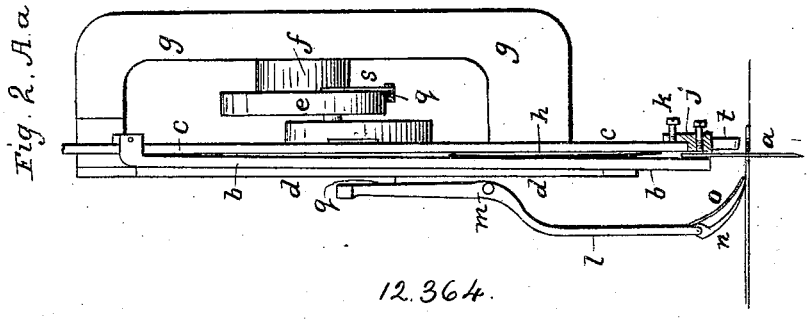


Fig. 2. A. a



12.364.

Witnesses:
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UNITED STATES PATENT OFFICE.

ISAAC M. SINGER, OF NEW YORK, N. Y.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **12,364**, dated February 6, 1855.

To all whom it may concern:

Be it known that I, ISAAC M. SINGER, of the city, county, and State of New York, have invented a certain new and useful Improvement in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a front elevation of part of a sewing-machine; Fig. 2, a vertical section taken at the line A *a* of Fig. 1, and Fig. 3 a horizontal section taken at the line B *b* of the same figure.

The same letters indicate like parts in all the figures.

Machines for sewing have been made to give the feed motion that is to move the cloth to determine the spacing of the stitches by the lateral motion of the needle while in the cloth; but in these machines, as heretofore made, the motion is imparted to the needle by mechanism acting directly on the needle-bar, in consequence of which a lateral strain is exerted on the needle, which tends to bend and loosen it in its socket, for the reason that at the time the cloth is moved the needle acts on the cloth at some distance from the point of its attachment to the bar; and as experience has shown that the only practical mode of securing the needle in the bar is by inserting the end of the needle in a socket made in the end of the bar the lateral strain in giving the feed motion, which occurs at every operation of the needle, and therefore under high velocity, produces a vibration which in a very short time bends and loosens the needle in its socket; and machines have also been made to give the feed motions with the needle by causing the point of the needle, after it has passed through the cloth, to strike against an inclined surface, which forces it laterally to give the required feed motion. This mode is also defective, for the reason that the action of the needle on the inclined surface is so far from the cloth as to have the effect to bend the needle and injure the point, particularly as the strain consequent upon the lateral motion must strain the needle at the eye, which is its weakest part.

The object of my invention is to give the feed motion by the needle without the injurious effects due to the modes above described; and to this end the nature of my invention consists in imparting the lateral or feed motion to the needle while inserted in the cloth by means of a feed-hand, or its equivalent, receiving motion from the mechanism and acting against the needle in contact or in close proximity to the cloth, thus imparting the lateral or feed motion to the needle in close proximity to the point of its action on the cloth or other substance to be sewed, whereby I avoid all tendency to bend the needle or loosen its connection with the bar in which it is secured.

In the accompanying drawings, *a* represents the needle, such as is usually employed in sewing-machines, and which is inserted in a socket in the lower end of the needle-bar *b*, which is hinged at its upper end to the carrier *c*, which moves up and down, in the usual manner, in ways *d d*, the up-and-down motion being imparted in the well-known manner by a cam, *e*, on the cam-shaft *f* in the standard *g* of the frame. A delicate spring, *h*, is interposed between the needle-bar *b* and the carrier *c*, the tension of which forces the bar, with its needle, when out of the cloth, outward from the carrier. The lower end of the needle-bar is guided in its vibrations by a spur, *j*, projecting from its rear face, fitted to work freely but accurately in a slot cut in the lower end of the carrier, and back of the carrier the spur *j* is provided with a set-screw, *k*, which strikes against the carrier, and by which the limit of motion of the bar with its needle can be regulated at pleasure. In front of the needle-bar there is a lever, *l*, vibrating on a fulcrum at *m*. To its lower end is hinged a feed-hand, *n*, which bears on the cloth by the tension of a delicate spring, *o*, and which is of sufficient length to act against the needle where it is inserted in the cloth. The upper end of the lever *l* is connected with a spring, *p*, attached to the standard of the frame, the tension of which draws the upper end of the lever inward, and hence draws the feed-hand away from the needle, and the upper end of the lever is acted upon at the required time by one arm of a lever, *q*, which turns on a fulcrum-pin at *r*, the other arm extending back of the standard of the frame, where it is acted upon by a cam projection, *s*, on the needle-cam; and this cam projection is so situated relatively to the cam which operates the needle that as the needle descends into the cloth, and so soon as the eye of the needle has passed through the cloth, the cam projection *s* acts on the lever *q*, which in

turn acts on the lever *l*, which carries the feed-hand against and moves the needle, and with it the cloth, to the required distance to space a stitch. The spring or hold pad *t*, of the usual construction, then comes down on the cloth to hold it in place during the operation of forming the stitch, and the feed-hand is permitted to be forced back by the tension of the spring before described, there being a set-screw, *u*, at the upper end of the lever, to regulate the extent of the back motion. In this way it will be seen that the motion is imparted to the needle to give the feed motion at its junction with the cloth through which it is moving, thus avoiding all tendency either to bend it or loosen it in its socket. By having the feed-hand to bear on the surface of the cloth, it aids the needle in giving the feed motion; but this may be dispensed with by having the feed-hand to act on the needle near to the surface of the cloth.

It will be obvious that the construction of the several parts may be modified without changing the principle or mode of operation of the improvement herein specified—as, for instance, the feed-hand, instead of acting against the needle above the cloth, may be so arranged as to act upon it below the cloth, provided the mode of operation herein specified be preserved.

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

Imparting the feed motion to the needle to move the cloth or other substance to determine the space of the stitches to be made therein by a feed-hand or its equivalent receiving the required motion from the mechanism, and acting against the needle in close proximity to or in contact with the cloth, substantially as and for the purpose specified.

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Witnesses:
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