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SEWING-MACHINE.

No. 193,477. Patented July 24, 1877.

Fig. 1

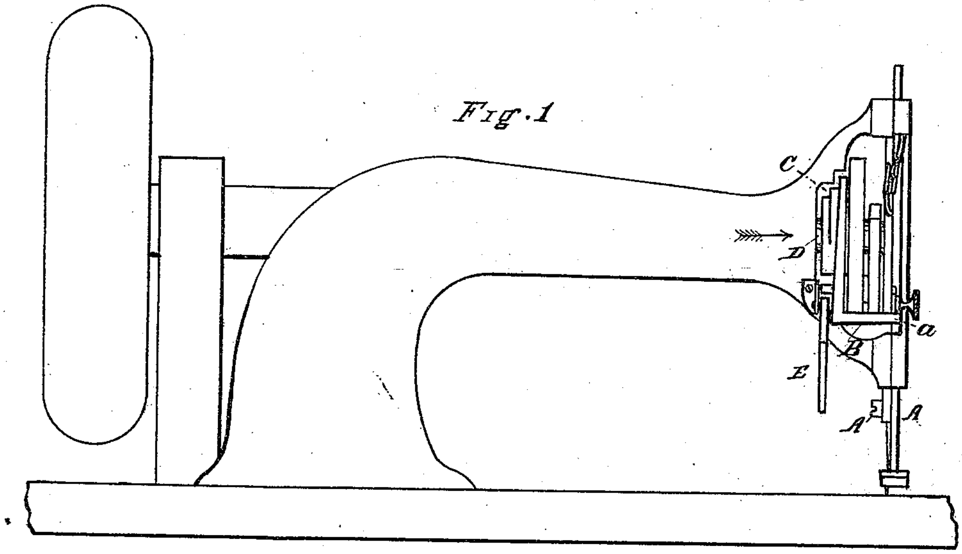


Fig. 2

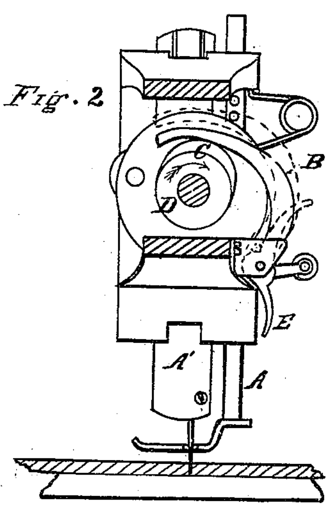


Fig. 3

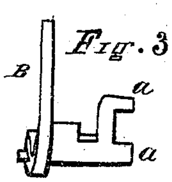


Fig. 4

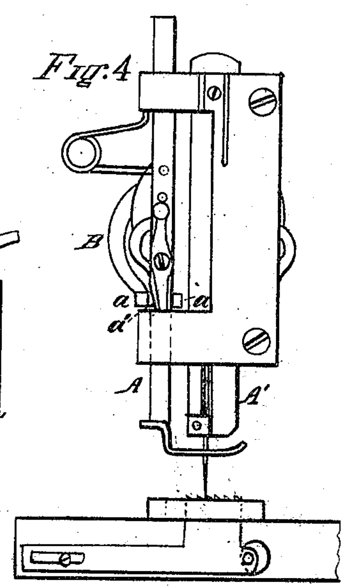


Fig. 5

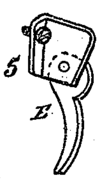


Fig. 6

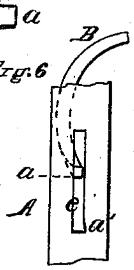
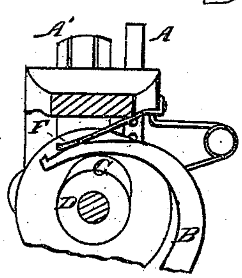


Fig. 7



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UNITED STATES PATENT OFFICE.

FRANKLIN H. BROWN, (WILLIAM P. BROWN, ADMINISTRATOR,) OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **193,477**, dated July 24, 1877; application filed January 8, 1877.

To all whom it may concern:

Be it known that I, FRANKLIN H. BROWN, of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Sewing-Machines, of which the following is a full, clear, and exact description, which will enable others skilled in the art to which my invention appertains to make and use the said improvement, reference being had to the accompanying drawing, forming a part hereof, and in which—

Figure 1 represents a side elevation of a sewing-machine embodying my invention; Fig. 2, a section through the neck of the machine, showing the parts arranged within the head when viewed in the direction of the arrow there shown; Fig. 3, a top view of the automatic foot-lifter; Fig. 4, an end elevation of the head of the machine; Fig. 5, a perspective of the device employed to raise the automatic lifter for the purpose of rendering it inoperative; Fig. 6, a modification in the construction of the automatic lifter; and Fig. 7, a representation of the means employed to diminish the noise produced by the action of the automatic lifter.

Like letters of reference indicate like parts.

This invention relates to that class of sewing-machines wherein an automatic presser-foot lifter is used to lift the presser-foot from the goods during the operation of the machine. My object is to improve the construction and operation of this part of the mechanism; and my invention consists, first, in the combination of parts which constitute the mechanism for lifting the presser-foot automatically during the operation of the machine; second, in the combination, with an automatic presser-foot lifter, of a lifter for rendering the automatic lifter inoperative at any time by a manual operation; and, third, in the general combination of all the parts above referred to, substantially as hereinafter set forth, respectively, in the three several clauses in which the said combinations of parts are separately and formally claimed.

In the example of sewing-machines shown in the drawing, A represents the presser-foot bar. B is a lifting-arm, constructed and arranged for operation in connection with the bar A, for the purpose above indicated. The arm B may be actuated automatically for this purpose in various ways; and C is an eccentric or cam, which I have here shown for the purpose of representing one way in which this result may be reached. This eccentric or cam is carried by the shaft D, which actuates the needle-bar A′, and the upper end of the arm B rests on the eccentric C. By this means the arm B is raised and lowered during the rotation of the shaft, and in unison with the needle. The eccentric is so set as to raise the arm after the loop is formed, and to allow it to descend before the needle is entirely withdrawn from the goods. In order to communicate this movement to the presser-foot, I make the arm B engage the presser-foot bar for that purpose.

For the purpose of causing the arm B to adapt itself to the different positions of the presser-foot bar when goods varying in thickness are operated upon, I so construct and arrange the arm B that it will perform the function of a clutch while acting upon the bar A. An example of such a construction is shown in Fig. 3, wherein *a a* are fingers projecting laterally from the arm, and arranged to receive the bar. The space between the fingers and bar, though slight, is such that the bar may move freely between them, except when the arm is so inclined as to cause the fingers to grasp the bar. This inclination is produced by the eccentric or cam C during the upward movement of the arm B, and the presser-foot is therefore raised at the same time. Thus the presser-foot, when raised by the goods to any height corresponding to the thickness of the goods, whatever the thickness may be, will cause the bar A to move up freely between the fingers *a a*, which, however, during each upward movement of the arm B, will seize and lift the bar from the position to which it is raised by the goods, and then allow the bar to return to cloth or other material being operated upon.

In order to render the fingers *a a* inoperative when the bar A is at its usual height, when not in use, I make the bar sufficiently

narrow at the point then between the fingers to prevent it from being then seized by them, as shown at *a'*.

E is a lifter, to enable the operator to raise the presser-foot out of use.

A modification in the construction of the clutch is shown in Fig. 6, wherein the arm is represented as having one lateral finger. In order to adapt the bar A to this form of clutch, I slot the bar, as shown at *e*, and arrange the finger in this slot. The slot is sufficiently wide to admit of the free vertical play of the finger, except when the latter, by inclining the arm B, as described, is made to pinch or clutch the sides of the slot. This slot is also sufficiently wide near the bottom to prevent the action of the finger when the bar is raised, for the purpose of rendering it inactive.

In order to render the arm B inactive at any time during the operation of the machine, I employ a lifter, E, whereby the arm may be thrown out of the reach of the cam C.

The noise made by the operation of the parts now described may be lessened by means of a spring, F, arranged, as shown, to hold the arm B to the cam C, except when the arm is raised by the lifter E.

It will be perceived from the foregoing description that the arm or lifter B is simple in construction, and operates directly in connection with the presser-foot bar. The upward movement of the presser-foot is positive, being always so moved to the same extent, whatever may be the thickness of the goods operated upon. The goods may thus be freely turned upon the needle as a center without injury to the work. When the presser-foot is raised by means of the lifter E the lifter B will be inoperative, for the reason that the contracted part *a'* of the presser-foot bar will then be directly opposite the finger or fingers of the automatic lifter. The automatic lifter may also be rendered inoperative at any time, independently of the presser-foot bar, by means of the lifter E. The spring F is only essential for the purpose of lessening the noise, and to aid the descent of the clutch. The clutch or lifter B may be made to perform its functions by means of a crank, or by the instrumentality of a vibrating needle-arm, or any other part moving in unison with the needle, and adapted to give to the automatic lifter a movement substantially the same as herein described.

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

1. The mechanism for lifting the presser-foot automatically during the operation of the machine, the said mechanism consisting of the combination of the friction-clutch B, provided with one or more rigid lateral fingers *a a*, arranged for direct engagement with the presser-foot bar during the upward movement of the clutch, the rotary eccentric C, and the presser-foot bar, substantially as specified.

2. The combination of the lifter E with the automatic lifter B, both arranged, substantially as described, with relation to each other, for operation together, for the purpose of thereby rendering the clutch inoperative when the presser is on the goods.

3. In combination, the rotary eccentric C on the needle-actuating shaft, the clutch B, resting at its upper end on the said eccentric, and having at its lower end one or more lateral fingers, *a a*, the downwardly-pressing spring F, resting on the upper end of the clutch, the presser-foot bar, contracted at the point *a'* below the said fingers when the presser rests upon the goods, and the lifter E, all substantially as and for the purposes specified.

4. The combination of the lifter E with an automatic presser-foot lifter, substantially as and for the purposes specified.

FRANKLIN H. BROWN.

Witnesses:
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