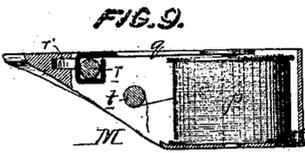
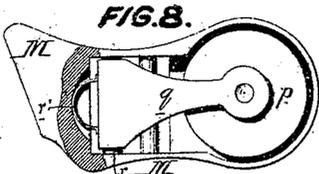
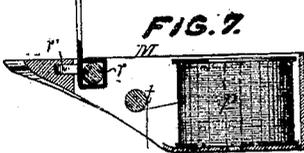
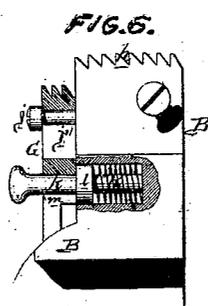
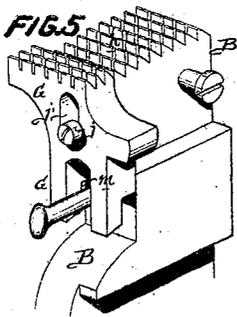
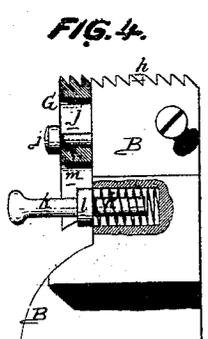
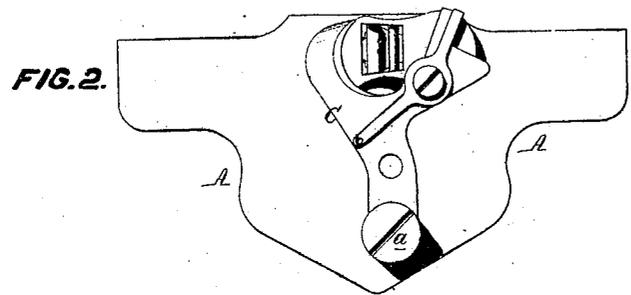
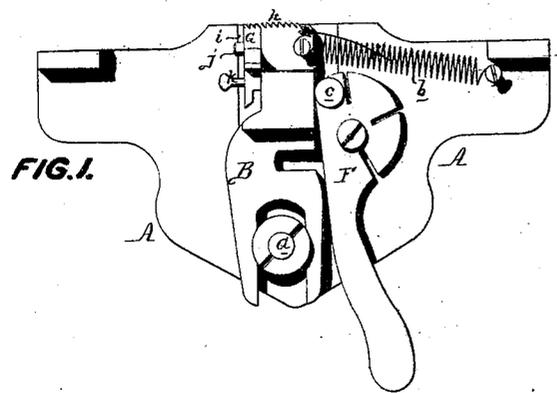


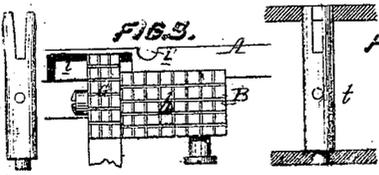
*G. Rehfuss,*  
*Sewing Machine.*

*No. 102710.*

*Patented May 3 1870.*



WITNESSES,  
*Wm. A. Steel,*  
*Jno. B. Harding.*



*G. Rehfuss.*  
*By his atty*  
*Howson & Co*

# United States Patent Office.

GEORGE REHFUSS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO AMERICAN BUTTON-HOLE OVER-SEAMING AND SEWING-MACHINE COMPANY, OF PENNSYLVANIA.

Letters Patent No. 102,710, dated May 3, 1870.

## IMPROVEMENT IN SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same

I, GEORGE REHFUSS, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented certain Improvements in Sewing-Machines, of which the following is a specification.

### *Nature and Object of the Invention.*

My invention consists principally of a combination feed for sewing-machines, composed of a feed-bar of ordinary construction and of one or more plates or sections attached to and rendered adjustable upon the said feed-bar, so that, by their use, the extent of serrated feeding-surface may be increased or diminished as hereafter described, this enabling the character of the feed to be changed according to the nature of the work to be performed by the machine, it being, for instance, caused to act as a side-feed only, when the machine is to be used for circular or embroidering work, and as a combined side and back feed or back feed only, for hemming or other straight sewing.

My invention also consists of a peculiar retaining and locking device to be used in connection with the said adjustable sections of the feed-bar, and, finally, of a tension-spindle arranged within the shuttle, and rendered self-retaining in any position to which it is adjusted, as hereafter described.

### *Description of the Accompanying Drawing.*

Figure 1 is a view of a part of a sewing-machine with my improvements;

Figure 2, the same viewed from a side opposite that shown in fig. 1;

Figure 3 is a plan view of fig. 1;

Figures 4, 5, and 6 are detached views of the upper portion of the feed-bar drawn to an enlarged scale.

Figures 7, 8, and 9, enlarged views of the shuttle; and

Figures 10 and 11, detached views, also enlarged, of parts of the shuttle.

### *General Description.*

A represents a vertical plate, arranged to be secured to the under side of the bed-plate of a sewing-machine, and to one side of this plate is attached the feed-bar B, and to its opposite side the shuttle-carrier C, the latter being, in the present instance, hung to the plate by the same pin *a*, which serves to guide the lower forked end of the feed-bar.

A spiral spring, *b*, tends to force the feed-bar in the direction of the arrow, fig. 1, and a crank on the main shaft of the machine, or equivalent device, in combination with this spring, imparts the necessary combined vibrating and vertical reciprocating movement to the upper end of the feed-bar, the extent of this movement, and, consequently, the length of the stitch, being regulated by a pin, *c*, on an adjustable lever, F, hung to the plate A. (see fig. 1.)

The feed-bar has an upper serrated surface, *h*, as usual, and to the edge of the bar opposite that to which the spring *b* is connected, is attached a plate, G, which has also serrations or teeth in its upper edge.

The serrated portion of this plate, however, is somewhat wider than the serrated surface *h* of the feed-bar, and extends into a recess, *i*, formed in the plate A at a point adjacent to the needle-hole *i'*, (see fig. 3.)

The plate G is so attached to the edge of the feed-bar, by a screw, *j*, passing through its slot *j'*, that it can be raised until its teeth are on a level with the teeth *h* of the feed-bar, as shown in figs. 4 and 5; or it can be lowered as seen in fig. 6, so that its teeth may be below the level of the work-plate.

The plate G is guided and maintained in a vertical position, when thus adjusted, by means of a spring pin, *k*, of the feed-bar, which passes through its slotted lower end. This pin serves also as a lock for the said plate, it having an enlargement, *l*, which bears against and holds the plate when it is lowered, and which enters a recess, *m*, in the said plate when it is raised, and thus prevents the accidental depression of the same.

When the machine is to be used for button-hole or embroidering work, the supplementary plate G is lowered, so that the feeding may be effected entirely by the serrated surface *h* of the feed-bar.

This surface, as will be best observed in fig. 3, is so situated, in respect to the needle-hole *i'*, (which may be considered as the point around which the work is to be fed,) that it will act as a side-feed, and will have little or no tendency to carry the work away from the needle in a straight line, and thus interfere with the necessary turning of the same.

For ordinary straight work, however, a back as well as a side-feed is required, so that the serrated surface *h*, used alone, would be found insufficient to properly guide and feed the fabric; hence, when the machine is to be used for this purpose, the supplementary feed-plate or section G must be raised, as shown in figs. 4 and 5, so as to increase the length and width of the feeding-surface, and situate a portion of the same at the rear of the needle-hole *i'*.

It will thus be seen that, by forming a part of the feeding-surface upon an adjustable plate or section, the character of the whole feed may be changed so as to adapt it to the work to be performed by the machine. It can, for instance, be arranged as a side-feed for circular and embroidering work, or as a combined side and back feed for hemming or other straight work.

If one section G is not sufficient, two or more adjustable sections may be employed in connection with the feed-bar without departing from my invention, nor is it essential that the section or sections should be arranged to slide vertically, as any other method of adjustment may be adopted.

The shuttle M, illustrated in figs. 7, 8, and 9 of the

drawing, is of the usual form, it being pointed in front and semicircular at its rear end, where there is a recess for a spool or bobbin, *p*, which turns upon the usual pin, and is retained in its place by a flat plate, *q*, which bears against its exposed sides.

This plate, however, instead of being simply hinged and arranged to turn to one side to release the bobbin as usual, is hung on a pin, *r*, in the shuttle-case, and is squared at this point so as to present shoulders against which bears a loose V-shaped spring, *r'*.

This spring is so arranged, in respect to the shoulders of the plate *q*, that it will hold the same in either of the positions shown in figs. 7 or 9 with sufficient force to prevent the said plate from being turned without a slight effort.

A spindle, *t*, extends across the shuttle-case, and has a hole formed in it through which the thread from the bobbin is caused to pass, the tension of this thread being regulated with the greatest nicety by simply turning the spindle so as to cause a portion of the thread to be wound upon the same.

As it is important, however, that the tension of the thread should not turn the spindle, the latter is generally acted on by a flat spring, which retains it in the position to which it is adjusted; but, in the present instance, this is effected by simply splitting one end of the spindle and slightly bending the elastic fingers thus formed, as shown in fig. 10, so that they may

bear against the sides of the opening in the shuttle-case, as seen in fig. 11, and thus be self-retaining in any position to which it is adjusted.

It will be seen that, as the fingers of the spindle project through the shuttle-case, the slot or space between the said fingers serves to receive a suitable instrument, by which the spindle may be turned to regulate the tension without opening the case.

#### Claims.

1. The combination of a feed-bar, B, operating at one side of a needle-opening, *i*, and an adjustable plate, G, which, when elevated, operates at the rear of said opening, substantially as described.
2. The combination of the adjustable plate or section G of the feed-bar with a spring locking device, K.
3. The combination of a shuttle and a tension-spindle, so split at one end as to form elastic fingers, which extend through and bear against the sides of an opening in the shuttle-case, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE REHFUSS.

Witnesses:

FRANK B. RICHARDS,  
HARRY SMITH.