GEORGE REHFUSS.

Improvement in Sewing-Machines.

No. 114,197. Patented April 25, 1871.

FIG. 1.

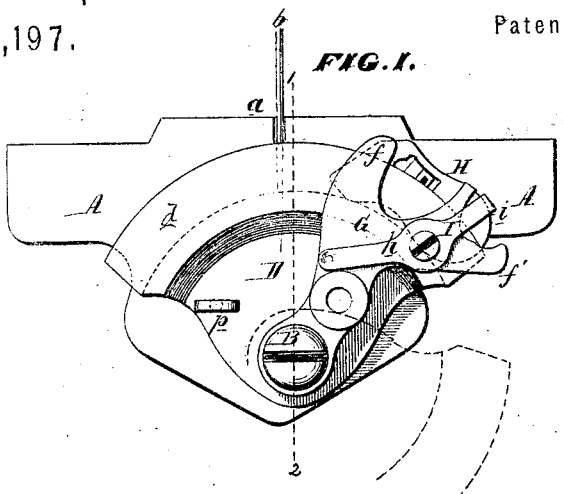


FIG. 2.

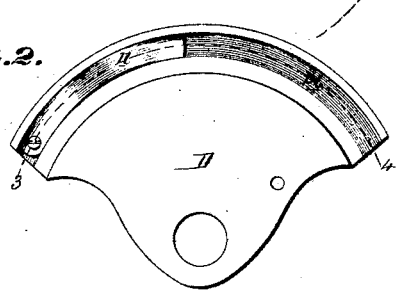


FIG. 3.

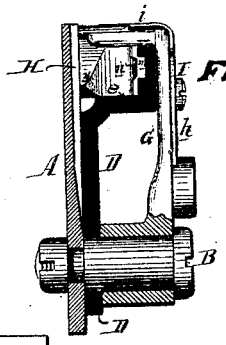


FIG. 4.

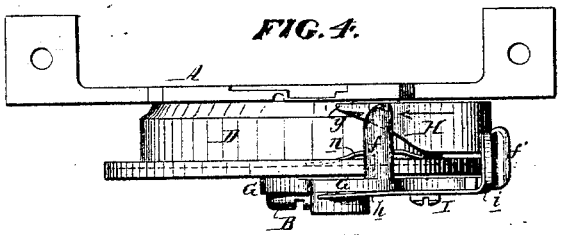
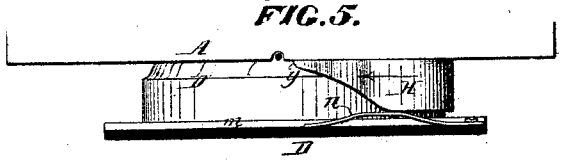


FIG. 5.



Witnesses { Jno. B. Harding
Thos. McIlwain

George Rehfuss
by his Attys
Howson and Son

UNITED STATES PATENT OFFICE.

GEORGE REHFUSS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO AMERICAN BUTTON HOLE, OVERSEAMING, AND SEWING MACHINE COMPANY, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **114,197**, dated April 25, 1871.

I, GEORGE REHFUSS, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improvement in Sewing-Machines, of which the following is a specification:

Nature and Object of the Invention.

My invention consists of a segmental shuttle-race composed of a fixed plate and a plate rendered movable thereon, all substantially as described hereafter, so that the movable plate may be adjusted on the fixed plate when the shuttle-race has to be dispensed with and the machine has to be used for making a looped or button-hole stitch.

My invention also consists of a shuttle-driver and the above-mentioned movable plate, the two being constructed and arranged with respect to each other, substantially as described hereafter, so that both may be moved to one side when not required for use.

My invention further consists of the said movable segmental plate, constructed to support and guide the shuttle, with a spring for directing the point of the shuttle toward the needle and causing its point to enter the loop of needle.

Description of the Accompanying Drawing.

Figure 1 is a front view of the shuttle-race and shuttle-driver; Fig. 2, an inside view of part of the shuttle-race; Fig. 3, a transverse section on the line 1 2, Fig. 1; Fig. 4, a plan view of Fig. 1; and Fig. 5, a sectional plan on the line 3 4, Fig. 2.

General Description.

A is a vertical plate, secured to the under side of the bed of a sewing-machine, this plate having on its face a vertical groove, *a*, for admitting the usual eye-pointed needle *b*. To a pin, B, on the plate A is fitted a segmental plate, D, on the upper edge of which is formed a ledge, *e*, and flange *d*, forming, with the face of the plate A, the segmental race, Fig. 3, in which the shuttle H is caused to vibrate by the driver G, the latter being hung to the pin B, and being operated from the driving-shaft of the sewing-machine by any suitable mechanism.

On the driver are two bent arms, *f* and *f'*, one for acting on the shuttle near the front end of the same, and the other, *f*, for bearing against the rear of the shuttle.

A latch-lever, I, is hung to a pin, *h*, on the driver G, and one arm, I', of this lever is bent and overlaps the shuttle, so as to keep its rear down in the race, the front end of the shuttle being prevented from rising by the projection *f* of the driver.

The long arm of the latch-lever I is elastic, and, bearing against the face of the driver, tends to retain the position shown in Fig. 1. It can, however, be so moved as to set the shuttle at liberty and permit its withdrawal from the race.

It will be observed, on referring to Fig. 4, that the shuttle has considerable lateral play in the race, and this is necessary to permit its free passage through the loop of needle-thread. It is necessary, too, that the point *y* of the shuttle should, when moving in the direction of the arrow and approaching the needle, be in such close contact with the face of the plate A as to catch the loop of needle-thread.

In order to accomplish this result I secure in a recess, *m*, on the inside of the flange *d* of the shuttle-race, a light spring, *n*, Fig. 2, a portion of which is bent outward, as shown in Figs. 4 and 5, and the position of the swell of this spring is such that it will force the shuttle against the plate A as its point approaches the needle, but in no way interfere with the loop of thread as the shuttle passes through it; in other words, the shuttle is entirely free and loose in its race, excepting when it passes the swell of this spring *n*, which, as before remarked, tends to force the shuttle against the plate A with sufficient force to insure the entrance of the loop by the point of the shuttle, which is free from contact with the spring before it passes through the loop.

It should be understood, however, that the spring is more of a precautionary device than a necessity, as the point of the shuttle will, in most cases, enter the loop without the aid of the spring.

The above-described mechanism is designed for a convertible sewing-machine—that is, a machine which can be used for making the

ordinary lock or shuttle stitch, and can be readily adjusted to make a button-hole or loop stitch, as described in the Letters Patent No. 51,086, granted to me November 21, 1865.

In such a machine it is necessary to so dispose of the shuttle, shuttle-driver, and race that they shall be out of the way, to permit the lower looper or needle to operate in conjunction with the needle *b*. I accomplish this end by hanging the plate D to the plate A in the manner illustrated and described.

As long as the said plate D has to perform its functions as part of a shuttle-race it is retained in the position shown in Fig. 1 by a detachable pin, *p*, or by any equivalent device; but when it has to be moved away this pin is removed, the driver uncoupled from its driving mechanism, and both are depressed, as shown by dotted lines in Fig. 1, and are retained in such a position that they cannot interfere with the free operation of the mechanism for forming the loop or button-hole stitch.

The feature of a carrier arranged to be moved out of the way for the operation of the device for forming the loop or button-hole stitch is shown in my aforesaid Patent No. 51,086; but in that case the driver performed the duty of supporting the shuttle and maintaining it in contact with the vertical plate, while the shuttle was prevented from rising by a stationary segmental lip on the said plate; in other words, there was no shuttle-race in the said patent, the shuttle depending on the driver for its support and for its proper lateral position.

In my present invention the stationary segmental plates for preventing the shuttle from rising are dispensed with, the projections on the driver performing this duty, and a fixed segmental race is used for supporting the shuttle and maintaining it in its proper lateral position—duties which are performed more efficiently and with less liability of the shuttle to miss loops than when the shuttle depends for its support and guidance on the driver.

Claims.

1. A segmental shuttle-race composed of the fixed plate A and segmental plate D, constructed substantially as described, and rendered movable on the said plate A, as set forth.

2. The shuttle-driver G and segmental plate D, constructed and arranged with relation to each other substantially as described, and for the purpose specified.

3. The movable segmental plate D, constructed as described, for supporting and guiding the shuttle, in combination with the spring *n*.

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

GEO. REHFUSS.

Witnesses:

WM. A. STEEL,

W. J. R. DELANY.