(No Model.)

# G. S. HILL.

## TENSION RELEASING DEVICE FOR BUTTON HOLE SEWING MACHINES.

No. 457,463. Patented Aug. 11, 1891.

Fig: 1.

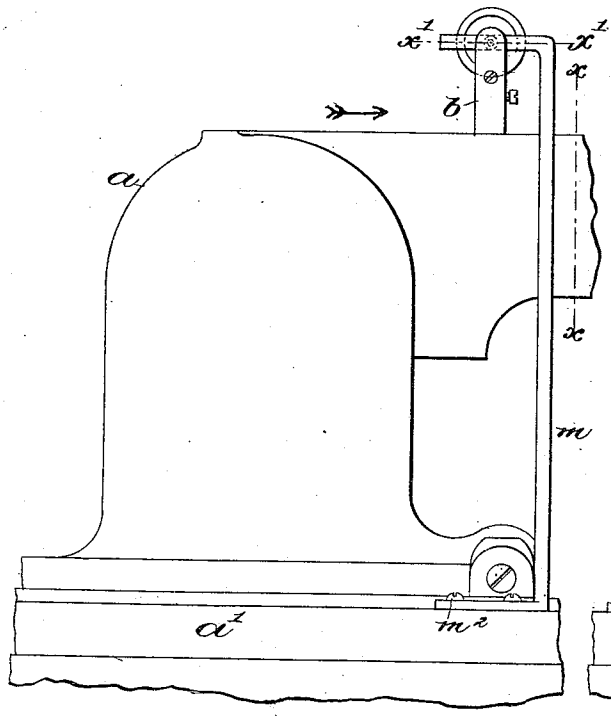



Fig: 2.

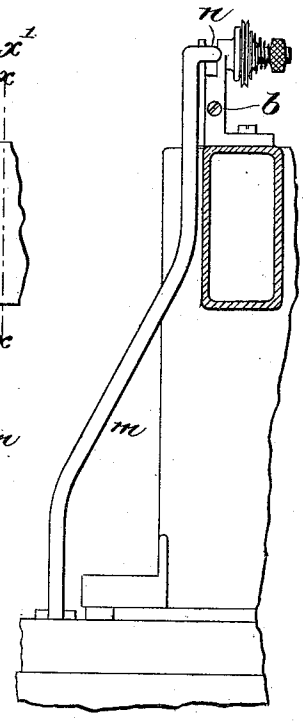
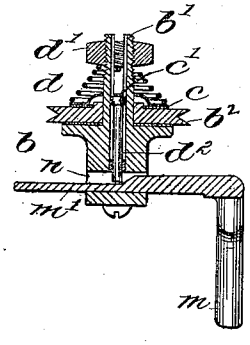



Fig: 3.




Witnesses:
Edward F. Allen.
Fred'k S. Greenleaf.

Inventor:
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# UNITED STATES PATENT OFFICE.

GEORGE S. HILL, OF BRADFORD, MASSACHUSETTS, ASSIGNOR TO THE REECE BUTTON HOLE MACHINE COMPANY, OF PORTLAND, MAINE.

## TENSION-RELEASING DEVICE FOR BUTTON-HOLE SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 457,463, dated August 11, 1891.

Application filed March 10, 1891. Serial No. 384,443. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE S. HILL, of Bradford, county of Essex, State of Massachusetts, have invented an Improvement in Button-Hole-Stitching Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In button-hole-stitching machines wherein the work is held in a work-clamp, as provided for, for instance, in United States Patent No. 349,359, dated September 21, 1886, it is customary prior to removing the material from the clamp to seize the needle-thread between the work and the tension device and draw off enough needle-thread to easily pass through the eye of the needle and enable the work to be taken out of the work-clamp and be moved without straining the needle.

The object of this invention is to obviate the described hand manipulation of the needle-thread to form slack thread for the removal of the work. I do this by automatically moving the tension device for the needle-thread to relieve or release the needle-thread from tension as soon as the frame carrying the stitch-forming mechanism reaches the end of its traverse after having stitched along the second straight side of the button-hole.

Figure 1, in side elevation, shows a sufficient portion of a sewing-machine such as shown in United States Patent No. 349,359 with my improvements added to enable my invention to be understood; Fig. 2, a section to the left of the line $x$; Fig. 3, a section in the line $x'$.

The movable overhanging frame $a$ and the stationary bed-plate $a'$, on which it is made to slide, are and may be as in the said patent, wherein like letters are used to designate like parts, and in practice it will be understood that the said frame $a$, provided with stitch-forming mechanism, (not shown,) will be actuated as in said patent and that the plate $a'$ will be provided with a work-clamp, as in the said patent.

In this my invention I have erected on the sliding frame $a$, supposed to be moving in the direction of the arrow, Fig. 1, a stand $b$, having a hollow, split, and screw-threaded stud $b'$. This stud serves as an axis for the thread-tension wheel $b^2$, at each side of which is preferably a felt washer. Outside the tension-wheel $b^2$ is a metal washer $c$, cut away to embrace the stud and leave a bar $c'$ to enter the slot in the spindle. The washer $c$ is acted upon by a spring $d$, controlled by a nut $d'$. A pin $d^2$ in the hollow stud receives against its outer end the bar $c'$, and the spring, acting on the said washer, causes the inner end of the said pin to project into the space $n$ of the stand. To relieve the needle-thread from tension and release the tension-wheel, so that it may be rotated freely, it is only necessary to push against the inner end of the pin $d^2$, and thus remove the washer $c$ from contact with the tension-wheel.

This particular form of tension device is not of my invention; but I have combined with these parts a releasing device or actuator, it consisting, as shown, of a stationary cam-bar $m'$, against one side of which the inner end of the said pin $d^2$, in the movement of the frame $a$, is made to bear when the tension is to be released. The bar $m'$ has a shank $m$, which is connected rigidly to the bed or plate $a'$ by screws $m^2$, the cam part lying in the path of movement of the end of said pin, so that when the pin strikes the cam or thicker part of the bar $m'$ the tension is released, the tension acting when the pin is opposite the thinner part of the said bar. The bar $m'$ is of such length that it will remain in the space $n$ of the stand during all its movement.

I claim—

In a sewing-machine for stitching button-holes, a movable frame carrying stitch-forming mechanism, and a fixed bed-plate, combined with a tension device carried by said movable frame, a spring-controlled releasing-pin $d^2$, connected with said tension device, and a stationary rod or bar provided with a cam-surface in the path of movement of and to be struck by said pin $d^2$ when the frame $a$ in its movement arrives in position to have the work in the work-clamp released, substantially as described.

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

GEORGE S. HILL.

Witnesses:
GEO. W. GREGORY,
EDWARD F. ALLEN.