

J. S. STEINER.  
Sewing Machine.

2 Sheets—Sheet 1.

No. 28,788.

Patented June 19, 1860.

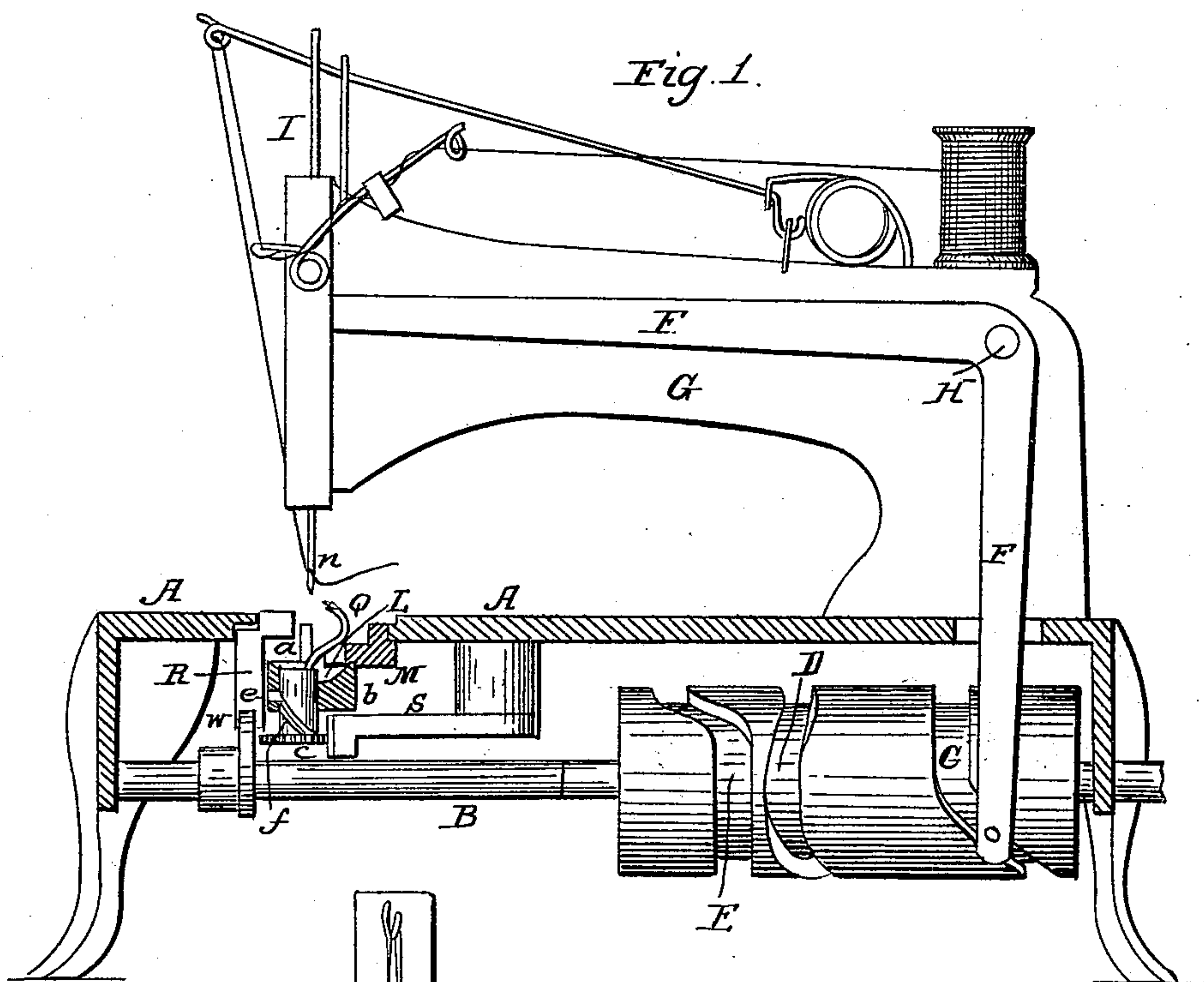
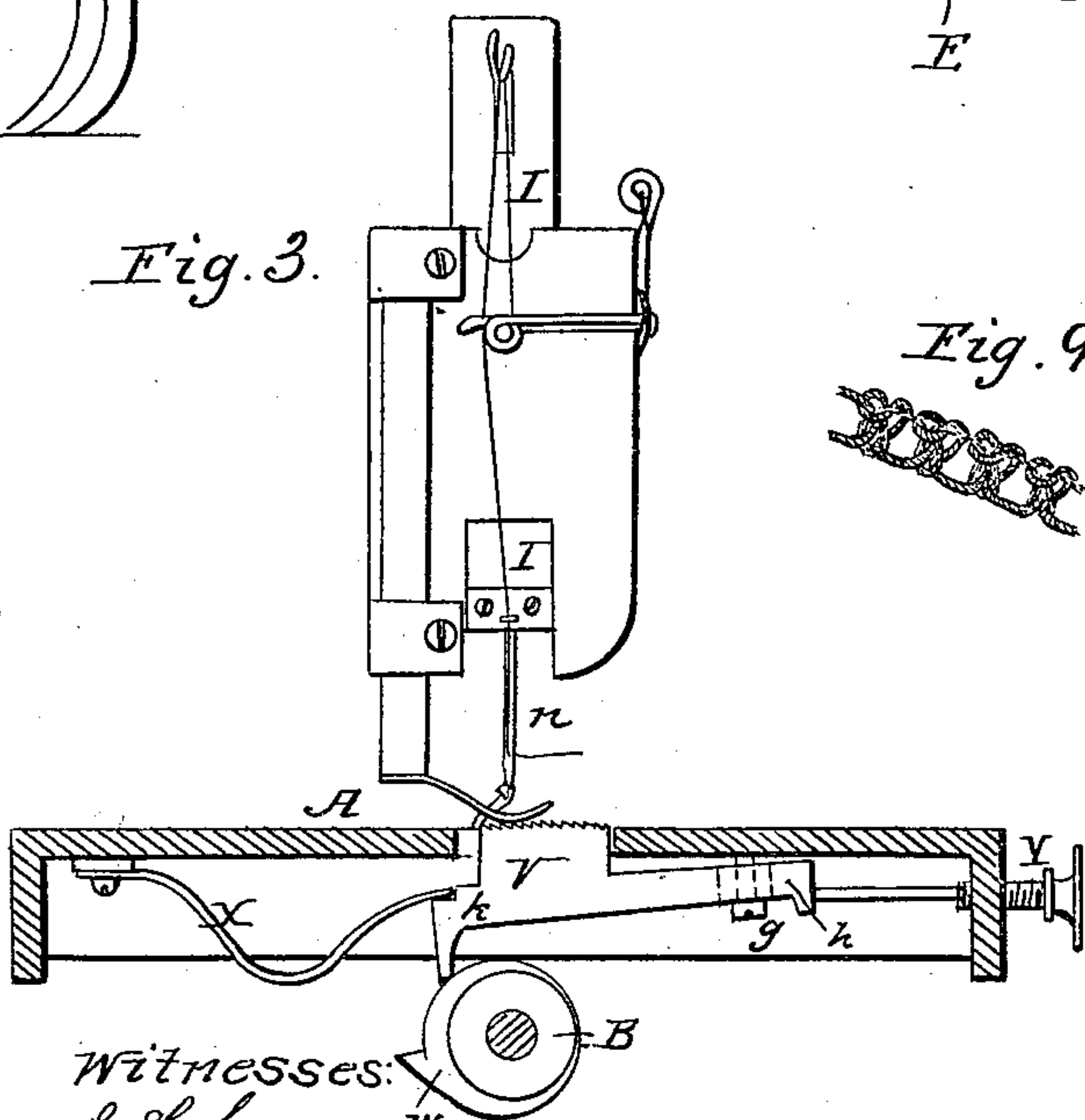


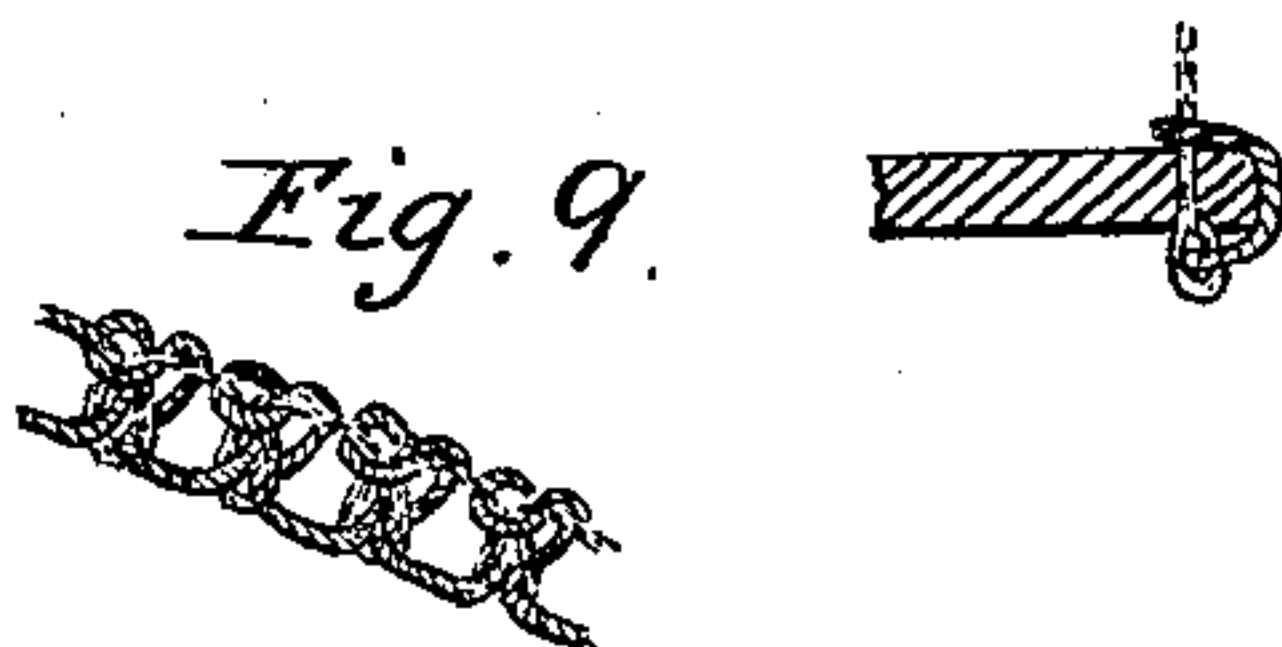
Fig. 3.



Witnesses:  
E. Cohen.  
J. Hirsch.

Fig. 10.

Fig. 9.



Inventor:  
Jacob S. Steiner  
per atty A. B. Stoughton.

J. S. STEINER.  
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Fig. 2.

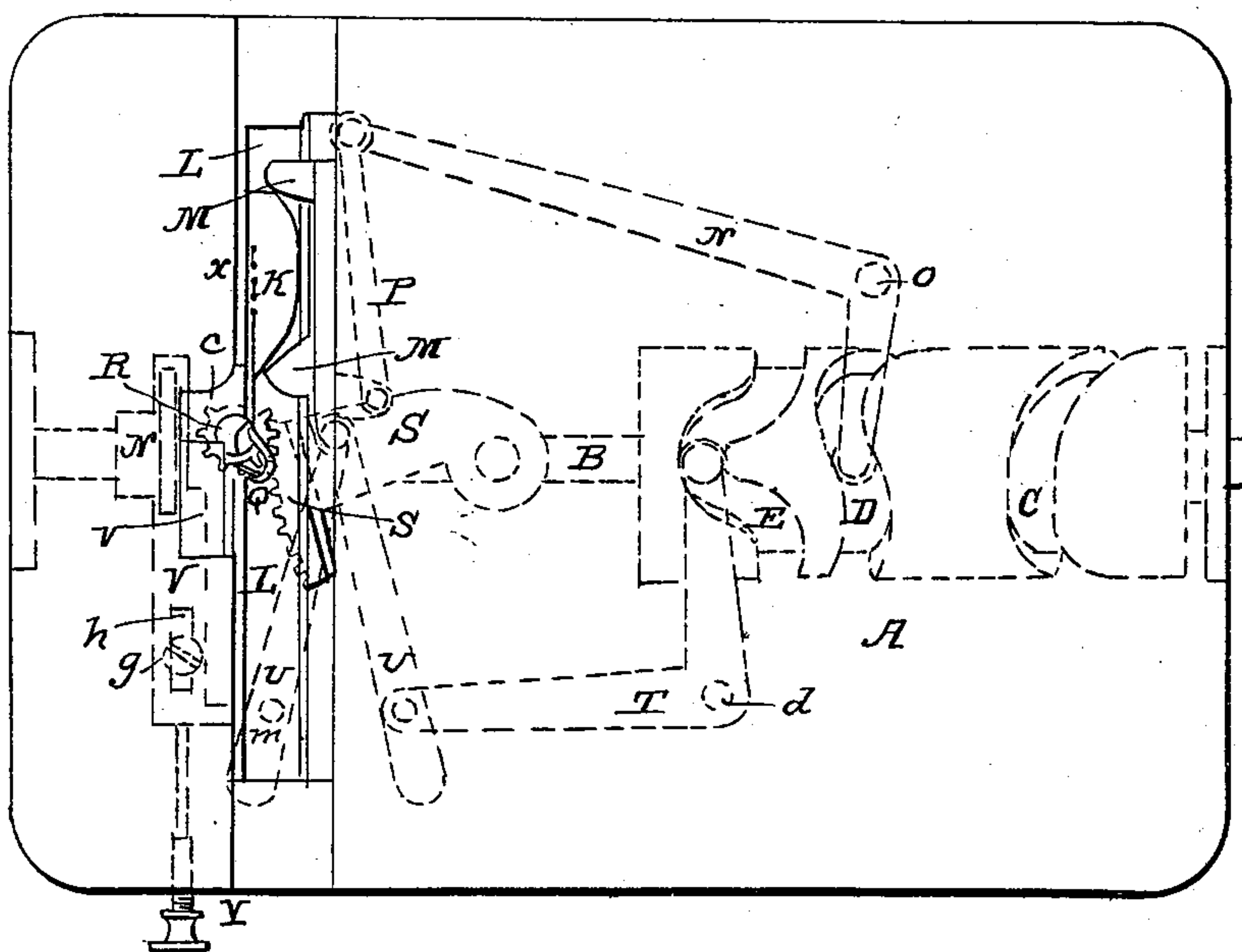


Fig. 4.



Fig. 5.

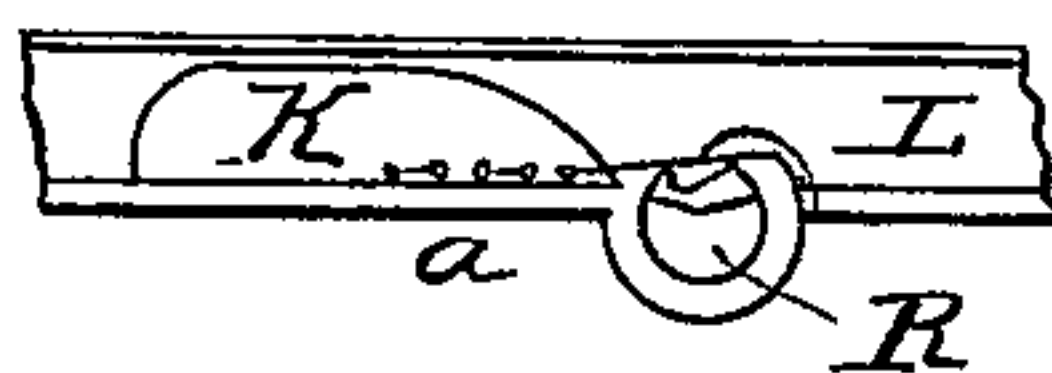


Fig. 6.

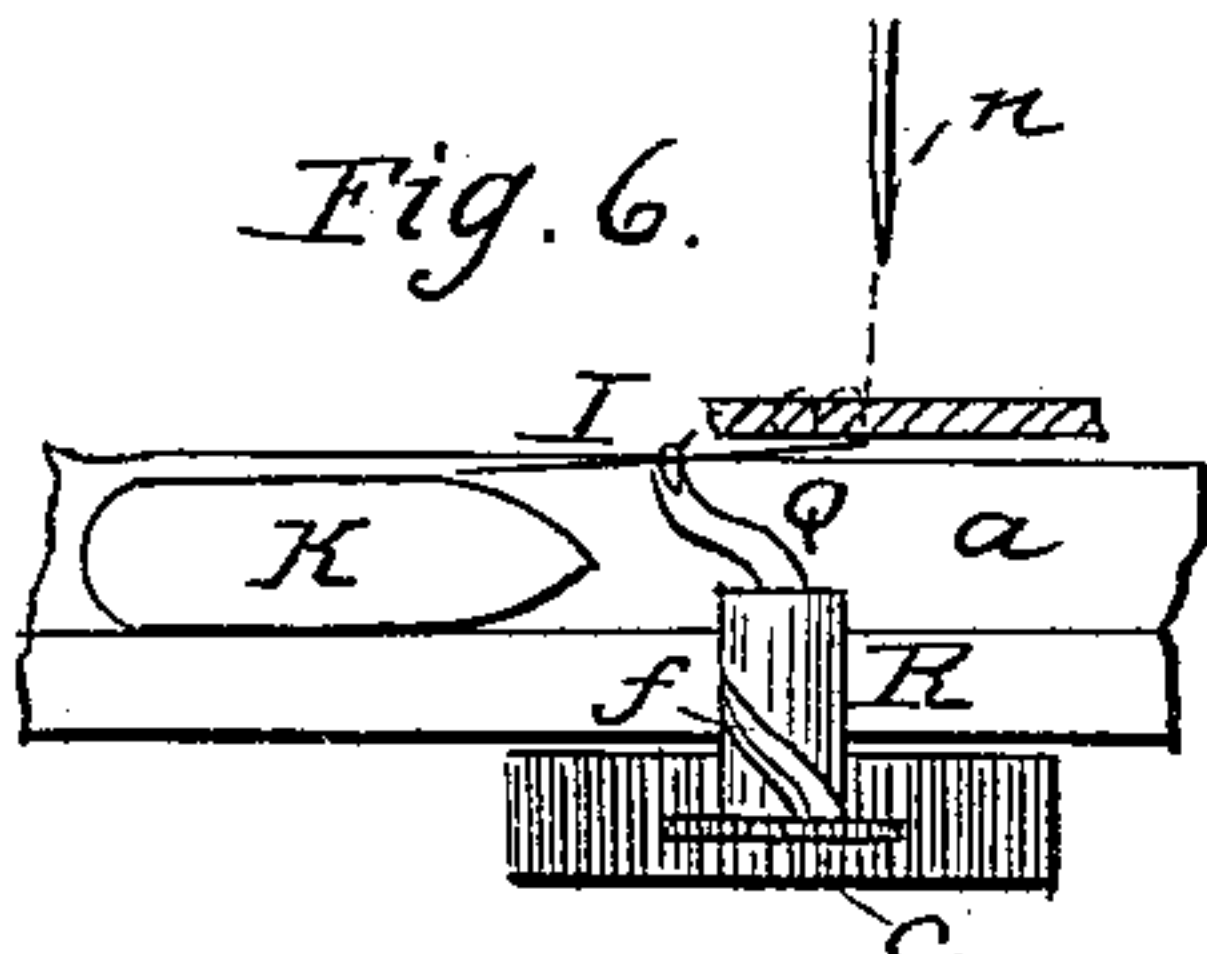


Fig. 7.

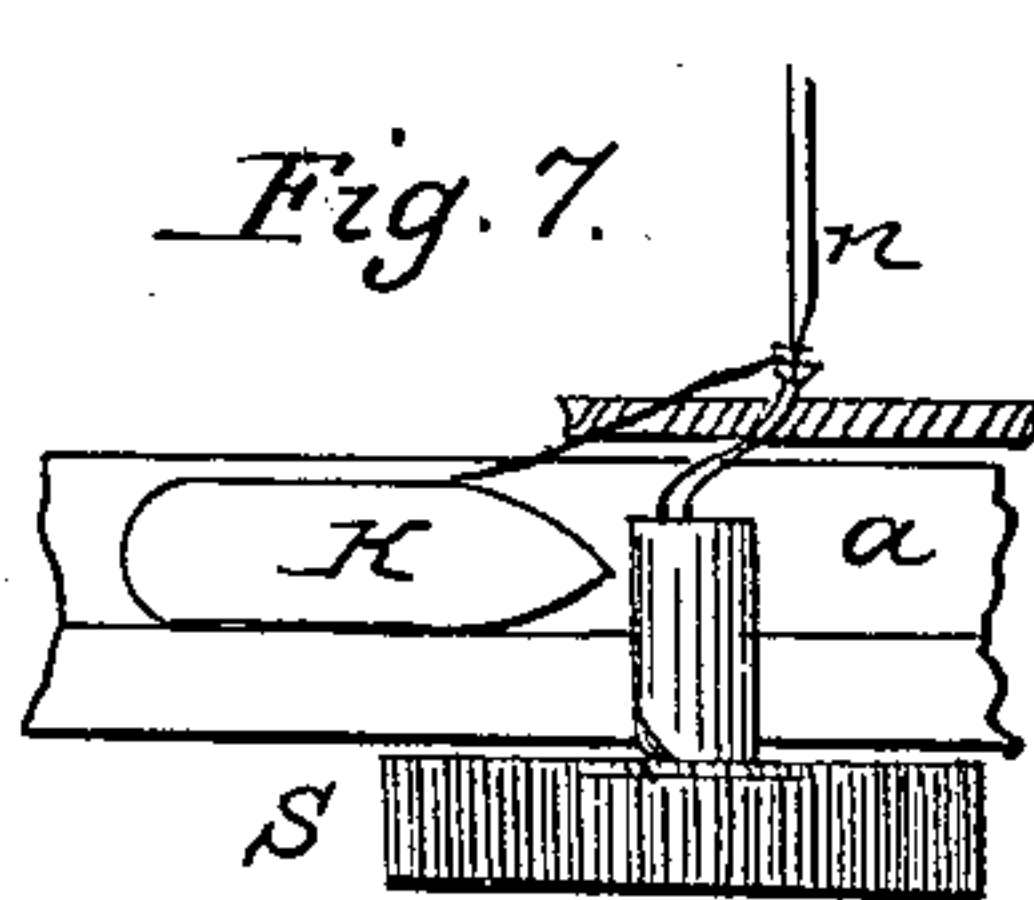
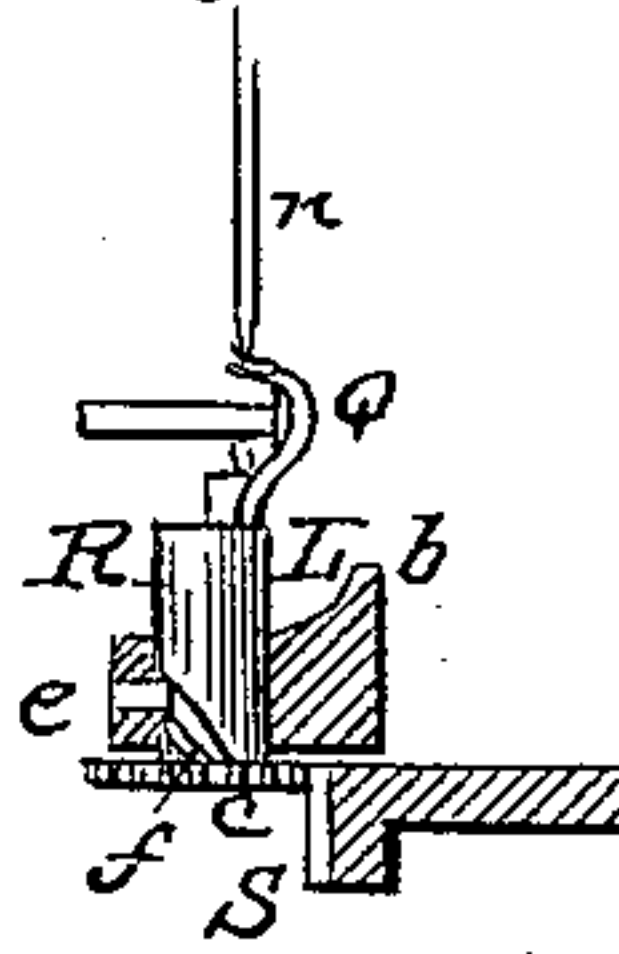


Fig. 8.



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Inventor:

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# UNITED STATES PATENT OFFICE.

JACOB S. STEINER, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 28,788, dated June 19, 1860.

*To all whom it may concern:*

Be it known that I, JACOB S. STEINER, of the city and county of St. Louis, and State of Missouri, have invented certain new and useful Improvements in Sewing-Machines for Sewing Plain or Button-Hole Work; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a longitudinal vertical section through said sewing-machine. Fig. 2 represents a top view of the same. Fig. 3 represents a front view of the machine. Figs. 4, 5, 6, 7, and 8 are detached views representing in different positions the operation of the needle-shuttle and hook. Fig. 9 represents a perspective view of, and Fig. 10 a section through, the button-hole stitch.

My invention relates to the manner of constructing the devices by which the needle, shuttle, and hook of a sewing-machine are worked, so that all these three shall be operated for button-hole work, but that the hook may be readily uncoupled from the machine, and that the latter may then be used for plain sewing without modifying other parts of the machine.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the table or platform on which the articles to be sewed are laid.

B represents the main driving-shaft, from which the various devices are operated by means of the cams C D E, the cam C operating the needle-arm, the cam D operating the shuttle, and the cam E operating the hook.

F represents the needle-arm. It is pivoted to the frame G at H, and its long arm is connected to the needle-bar I, which is operated in the usual manner.

K represents the shuttle. It runs within the race L, its flat and vertical side resting against the side *a* of said race. It is operated by means of a shuttle-driver, M, which runs on the side *b* of the race L, and which is operated from the cam-groove D by means of the lever N, which turns on the fulcrum O, and which is connected with the shuttle-driver M by means of the connecting rod or link P.

Q represents a hook which, in conjunction with the needle and shuttle, makes the button-hole stitch. It is secured to a vertical shaft,

R, which can freely turn within a suitable recess in the race L.

*c* represents a pinion which is secured to the lower end of the shaft R, and which has a reciprocating rotating motion imparted to it by means of the toothed sector S, which latter is operated from the cam-groove E by means of the lever T, which turns on the fulcrum *d*, and which is connected to the sector S by means of the bar U. The bar U can be disconnected from the lever T, and may be turned into the position represented in red lines and sprung into a pin, *m*, which holds it in said position when the machine is to be used for plain work, whereby the needle and shuttle only are operated, while the hook Q is disconnected from the machine. The hook Q, besides its reciprocating rotating motion, has a vertical reciprocating motion, which is imparted to it by the action of the stationary pin *e*, which is secured to the frame of the machine, and which extends into the spiral cam-groove *f*, which is on the circumference of the shaft R, and thus the motion of the hook is a compound of a reciprocating rotating and reciprocating rectilinear motion.

V represents the feed-bar for feeding the cloth to the needle. The feed-bar is hung to the lower side of the table by means of a screw, *g*, which passes through the slot *h*. The cam W, which is secured to the main shaft B, at each revolution of said shaft pushes the bar forward as it strikes the projection *k*, and the bar is then forced back by the action of the spring X until it comes in contact with the set-screw Y, which latter serves to regulate the length of the feed, and consequently of the stitch. The cam D is so formed as to give the shuttle its peculiar motions in the race, which is not simply a uniform traveling motion, for the shuttle first advances a portion of the distance, stops, then recedes, and again advances, the object being to slack up its thread, then take up the slack, and finally to carry its thread through the loop of the needle-thread.

The operation of the machine is as follows: When the machine is to be used for plain work, the lever U is turned to the position represented in red lines, and is secured to the pin *m*. The hook Q then remains stationary. When the machine is set in motion and the needle *n* and shuttle K only operated, making what is called a "single lock-stitch," the shut-



the passing between the needle and its thread forming a stitch and causing an operation in machine-sewing which is well known, and which does not require a minute description.

The needle-thread is represented in the drawings in red lines and the shuttle-thread in blue lines.

For making button-hole work the arm U is connected with the lever T, and the needle, shuttle, and hook are all operated when the machine is set in motion. When the needle *n* is in its highest position, as represented in Figs. 4 and 6, the hook and shuttle assume the positions represented in those figures. As the needle descends the hook Q makes a quick turn and catches the slackened shuttle-thread 1, Figs. 4 and 6, in its prongs, and as it rises during its turning motion it carries the thread upward and around the edge of the cloth until the prongs of the hook are right under the needle *n*. The needle now descends and its point passes between the shuttle-thread and the prongs of the hook Q, as represented in Figs. 5, 7, and 8. As soon as the needle has taken hold of the shuttle-thread the hook Q returns to the position represented in Figs. 4 and 6, while the needle enters the cloth. The shuttle K, which during this time has been advancing slowly toward the needle, recedes from the moment or just after the needle has entered the cloth and until it has reached its lowest position, for the purpose of taking up the slack of and tightening the shuttle-thread after it has been turned over the edge of the cloth,

and as the needle *n* commences to rise the shuttle K passes through between the needle and its thread, carrying through the shuttle-thread and completing and tightening the stitch on its return motion.

In Fig. 9 the stitch is represented in perspective view, and in Fig. 10 in a section or side view, showing the blue thread around the edge of the cloth.

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

1. Imparting to the shuttle K a receding motion from the needle the moment after said needle has entered the cloth and before it has arrived at the lowest position, for the purpose of taking up the slack of the shuttle-thread after the latter has been turned over the edge of the cloth to work a button-hole, substantially in the manner and for the purpose herein described.

2. So combining the hook Q with a needle and shuttle as that it may be readily coupled to or uncoupled from the driving part of a sewing-machine, by means substantially such as herein described, for the purpose of changing the machine from a button-hole to a plain-work sewing-machine, and vice versa, substantially in the manner herein described.

JACOB S. STEINER.

Witnesses:

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JULIUS HIRSCH.