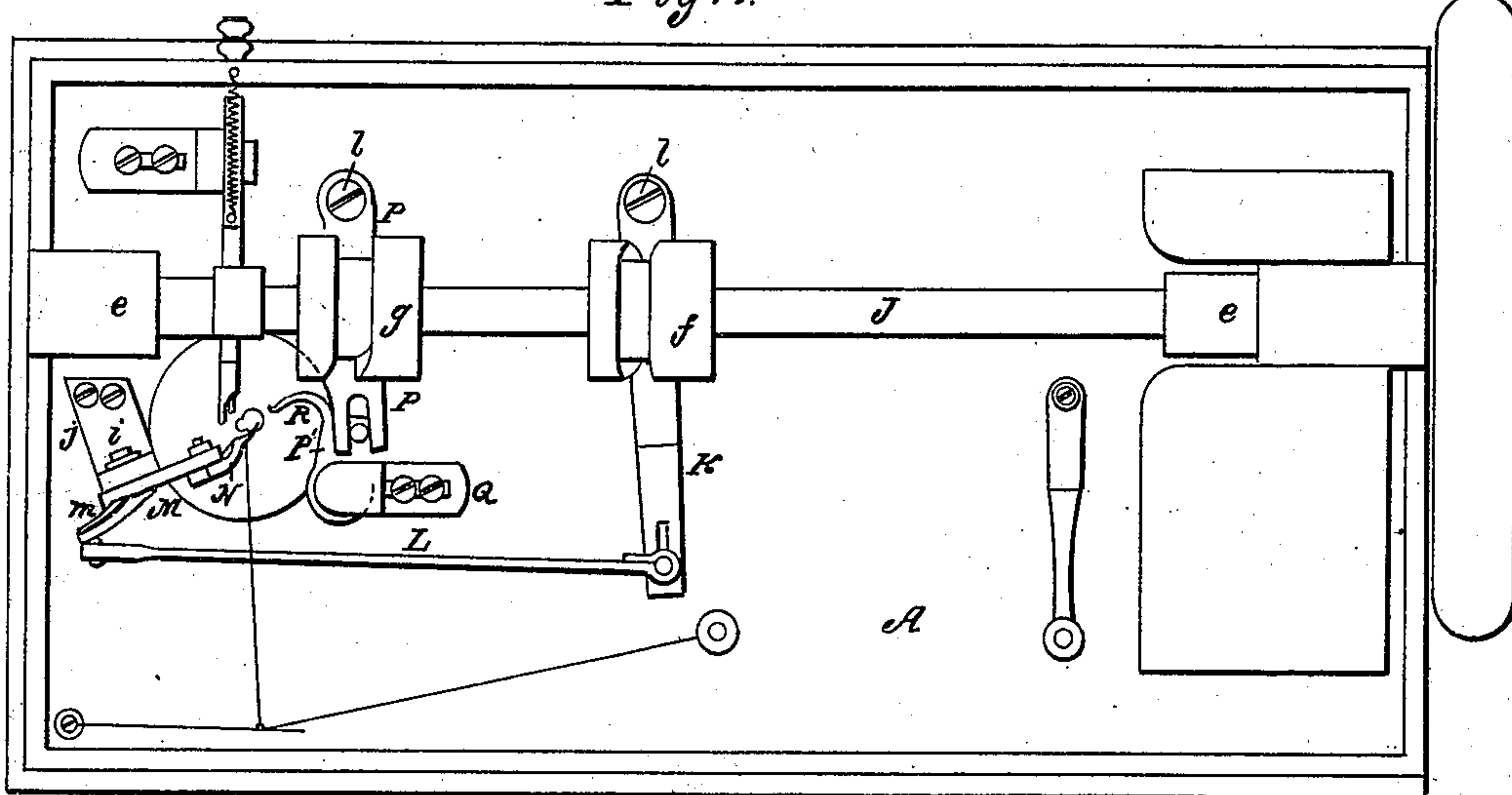


G. REHFUSS.  
Sewing Machine.

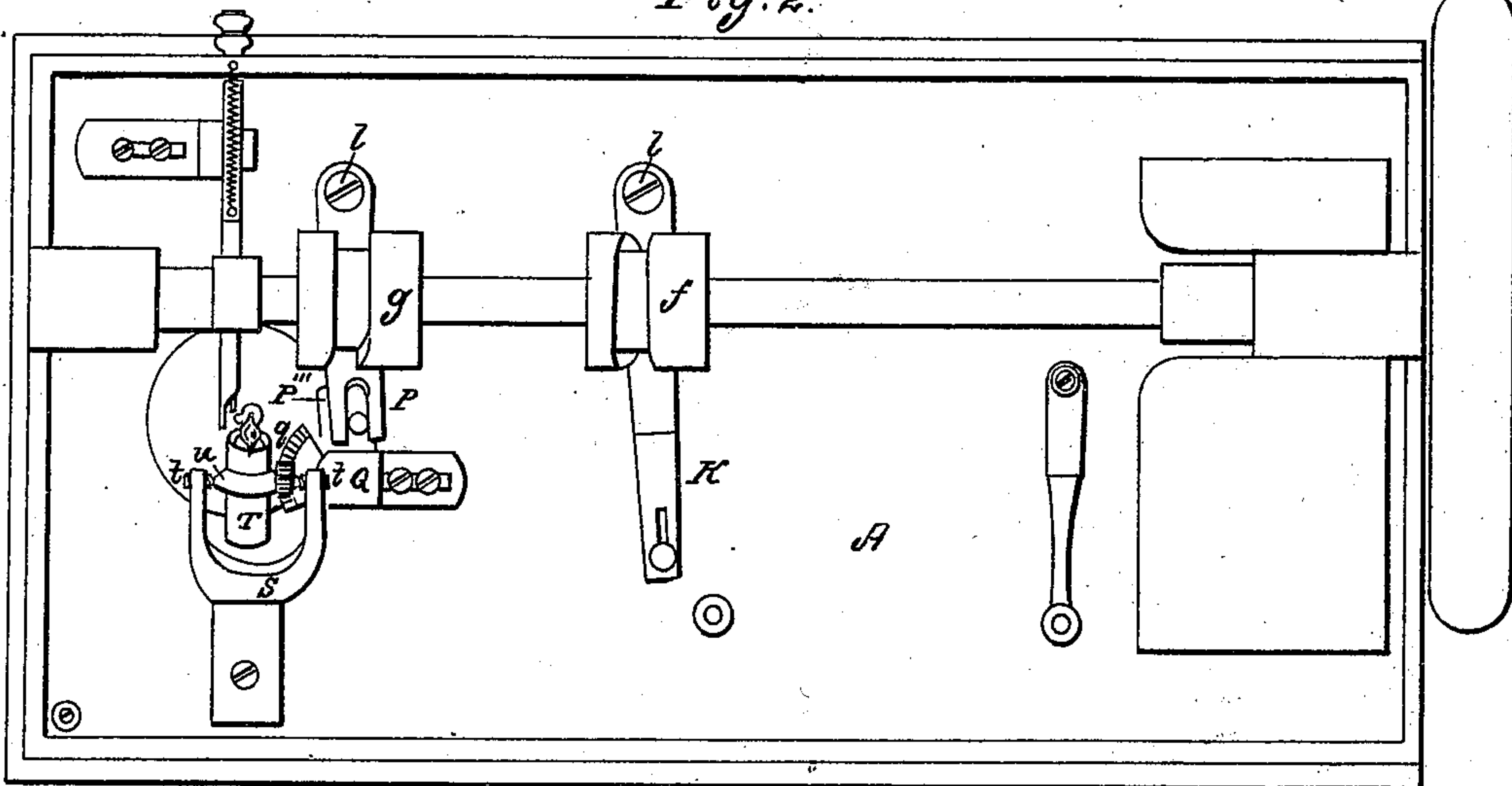
No. 43,742.

Patented Aug. 2, 1864.

*Fig: 1.*



*Fig: 2.*



*Witnesses:*

*Charles Foster*  
*Charles Howson.*

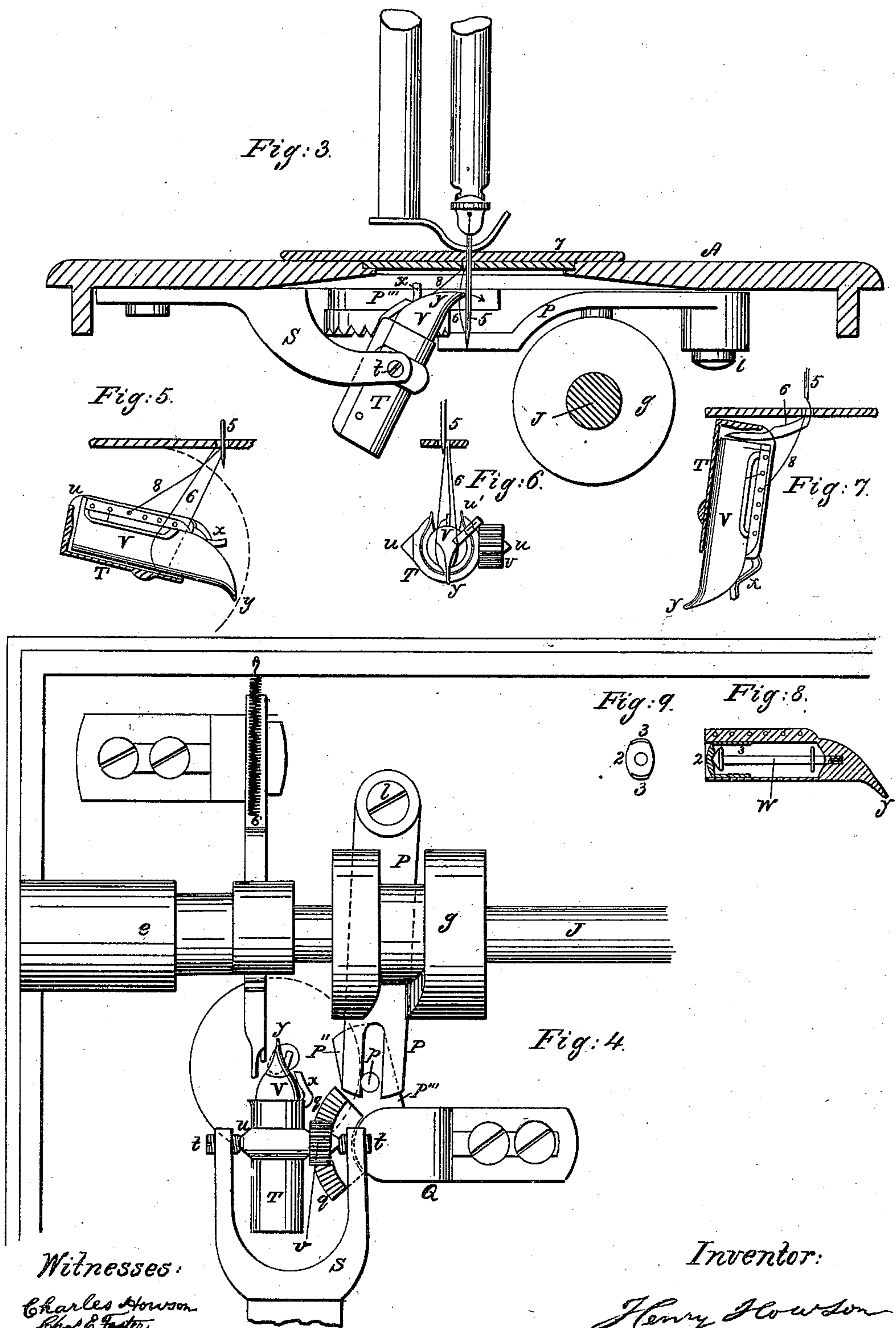
*Inventor:*

*Henry Howson*  
*Atty for G. Rehfuß*

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Witnesses:  
Charles Howson  
Chas. & Foster.

Inventor:  
Henry Howson  
Atty for G. Rehfuß.



# UNITED STATES PATENT OFFICE.

GEORGE REHFUSS, OF PHILADELPHIA, PA., ASSIGNOR TO THE AMERICAN  
BUTTON HOLE SEWING MACHINE COMPANY.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 43,742, dated August 2, 1864.

*To all whom it may concern:*

Be it known that I, GEORGE REHFUSS, of Philadelphia, Pennsylvania, have invented certain Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of certain improvements, fully described hereinafter, in the button-hole sewing-machine for which Letters Patent were granted to my assignees, C. S. Patterson, E. Pincus, A. Hart, M. Moore, A. Mitchell, and H. H. Reed, on the 13th day of October, A. D. 1863, my present improvements being such that an expert operator can readily convert the machine from a button-hole sewing-machine to a lock-stitch sewing-machine, and vice versa.

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

On reference to the accompanying drawings, which form a part of this specification, Figure 1, Drawing No. 1, represents an inverted plan view of the sewing-machine for which Letters Patent were granted to my assignees, C. S. Patterson, E. Pincus, A. Hart, M. Moore, A. Mitchell, and H. H. Reed, on the 13th day of October, 1863; Fig. 2, the same as Fig. 1, with some of the parts removed to make way for my present improvements; Fig. 3, Drawing No. 2, a vertical section of part of the machine; Fig. 4, an inverted plan view of Fig. 3, and Figs. 5, 6, 7, 8, and 9 views of the shuttle.

Similar letters refer to similar parts throughout the several views.

Before I proceed to describe my present improvements it will be well to refer briefly to the said patented invention of October 13, 1863, which consists of certain mechanism for making a button-hole stitch from two threads, and which is illustrated in Fig. 1, Drawing No. 1, J being a shaft, turning in suitable bearings, *e e*, on the under side of the base-plate A. On this shaft is secured a cam, *f*, into the curved groove of which fits a pin on the horizontal lever K, the latter having its fulcrum on a pin, *h*, secured to the base-plate. The outer end of the lever K is connected by a ball-and-socket joint to one end of a rod, L, the opposite end

of which is connected by a similar joint to a projection, *m*, on the arm M, which is hung to a pin, *i*, on the plate *j*.

To the end of the arm M is secured the curved loop-carrier N, through two eyes, near the end of which passes the under thread.

Another cam, *g*, is secured to the cam-shaft J, and into the groove of this cam projects a pin on the horizontal arm P, which is hung to a pin, *l*, on the base-plate, the forked end of this arm embracing a pin on another horizontal arm, P', which is hung to a pin on the bracket Q, and which carries what I term the "curved loop-holder" R.

The loop carrier or holder N moves in the arc of a circle, and conveys a loop of thread from the under side of the fabric and upward across the edge of the same, the loop-holder, with its under thread, the loop-catcher R, and the eye-pointed needle, with its upper thread, by their joint action serving to form on the edges of the fabric a button-hole stitch, as described in the said patent of October 13, 1863, which patent relates to devices for carrying out the invention for which Letters Patent were granted to E. A. Goodes and E. L. Miller, July 26, 1859, and reissued February 9, 1864.

In applying my present improvements to the machine illustrated in Fig. 1 with the view of converting it from a button-hole sewing-machine to an ordinary lock-stitch sewing-machine, I remove the connecting-rod L, the plate *j*, with its arms *m* and M, and loop-carrier N, and then detach the arm P', with its looper R, from the plate Q. To this plate I now hang an arm, P'', having a projection, *p*, which is embraced by the forked end of the arm P, as best observed on reference to Fig. 4, Drawing No. 2. I then attach to the under side of the base-plate a forked plate or bracket, S, which carries the spool-case holder T, the latter having two journals or trunnions, *u*, which fit into set-screws *t* on the forked ends of the said bracket S, one of these journals or trunnions being furnished with a cog-wheel, *v*, which gears into a segment, *q*, the latter being secured to or forming a part of the above-mentioned arm P''.

The peculiar construction of the spool-case and spool-case holder will be best observed on reference to Figs. 5, 6, 7, 8, and 9. The spool-case holder T consists of a hollow cylinder,



open at one end and closed at the other, and has a longitudinal slot, *w*, from end to end. Into this holder the spool-case V fits freely, and is retained in its proper position by a delicate spring, *x*. The case V also consists of a hollow cylinder, open at the rear end for the introduction of the spool, and having at the opposite end a hooked point, *y*. The spool W fits freely in the chamber formed within the case, one journal of the spool fitting loosely in an orifice in the end of the chamber and the other journal into a recess in the inside of the cap 2, which fits into the open end of the case, and which has two yielding projections, 3 3, the latter serving to retain the said cap in its proper position, but permitting it to be readily withdrawn when required.

As the shaft J revolves a vibrating motion will be imparted by the cam *g* to the horizontal arm P, and thence to the arm P''', which, through the segment *q* and wheel *v*, causes the spool-case holder T to oscillate on its trunnions *u* from the position shown in Fig. 3 to that seen in Fig. 7, and back again. The needle 5, Fig. 3, having penetrated the fabric 7, and a loop of needle-thread having been formed beneath the same, the spool-case holder begins to operate, the point *y* of the spool-case moving in the arc of a circle and passing between the needle 5 and the loop 6, thereby distending the loop, which passes the spring *x* and surrounds the body of the spool-case, as seen in Fig. 5, the portion of the loop above the case passing through the slot *w* of the holder. The under thread, 8, passes from the spool W through a slot in the case, and through one or more holes in a flange which projects above the case, so that by the time the holder has reached the position seen in Fig. 7 the under thread will have

been carried through the loop of needle-thread, the latter escaping at the rear of the spool-case prior to the return movement of the same and a repetition of the above operations.

Without further description, it will be seen that the ordinary lock-stitch is thus produced. On removing the bracket S, with the spool-case holder and its appurtenances, and detaching the arm P''', with its segment, and on replacing the connecting-rod L and plate *j*, with its loop-carrier, as well as the arm P', with its loop-catcher R, as seen in Fig. 1, Drawing No. 1, the machine is again converted into a button-hole sewing-machine, and the detachable parts are so constructed and arranged that this conversion can be promptly accomplished by any expert operator of sewing-machines.

I claim as my invention and desire to secure by Letters Patent—

1. The spool-case holder T, operated by the scroll-cam *g*, arms P and P''', segment *q*, and wheel *v*, or other equivalent devices for communicating an oscillating motion to the said spool-case holder.

2. The spool-case holder T, with its journals or trunnions *u*, in combination with the detachable bracket S, or its equivalent, the whole being constructed substantially as and for the purpose herein set forth.

3. The detachable arm P''', and its segment, in combination with the spool-case T and the wheel *v* on one of the trunnions of the said case.

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

GEO. REHFUSS.

Witnesses:

HENRY HOWSON,  
JOHN WHITE.