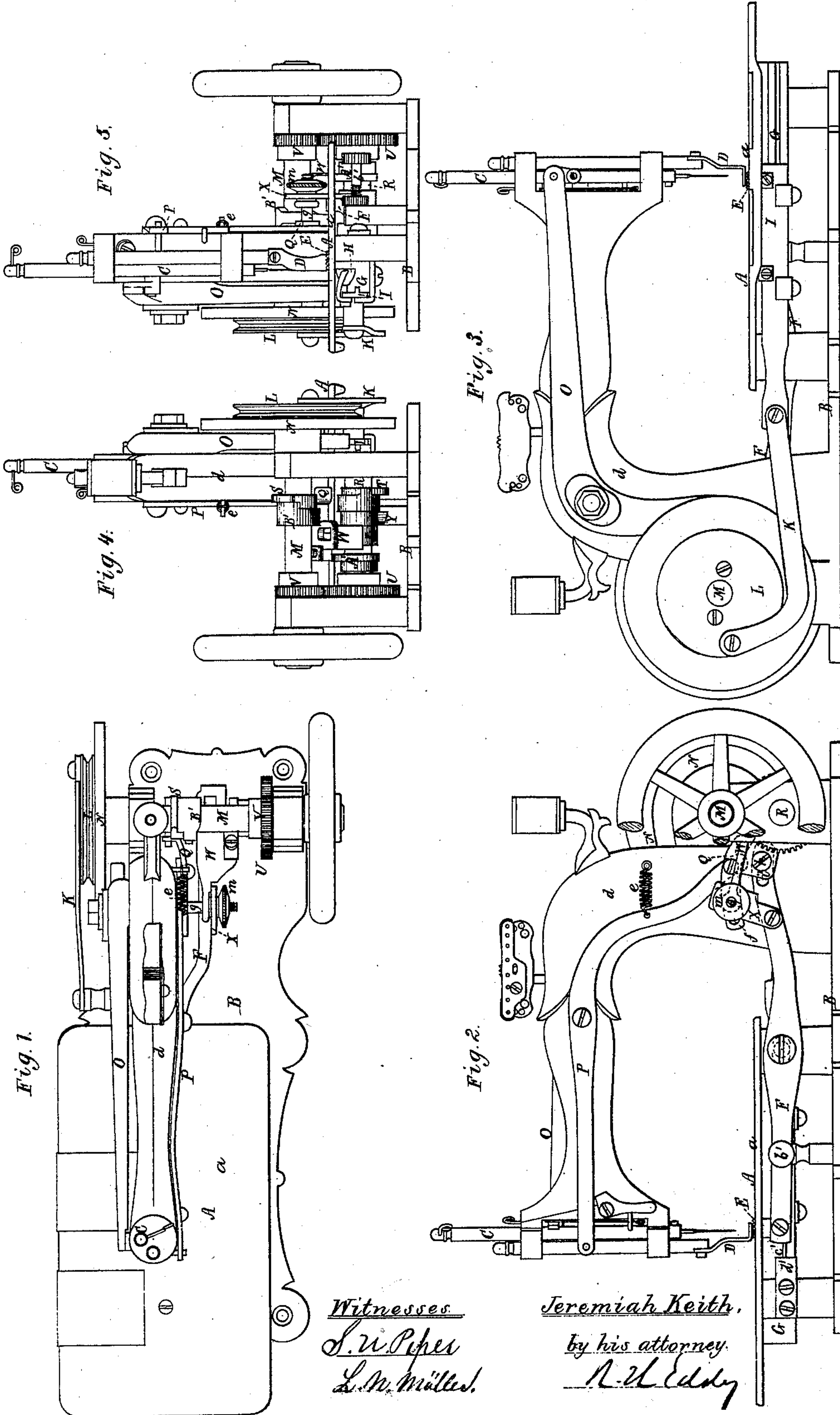


J. KEITH.  
SEWING-MACHINE.

No. 170,741.

Patented Dec. 7, 1875.



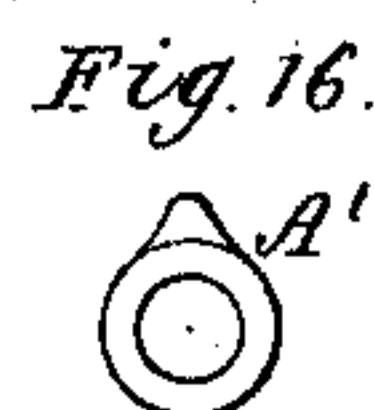
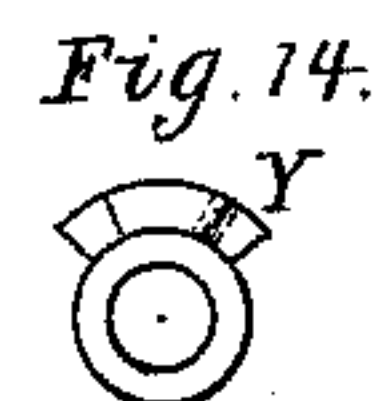
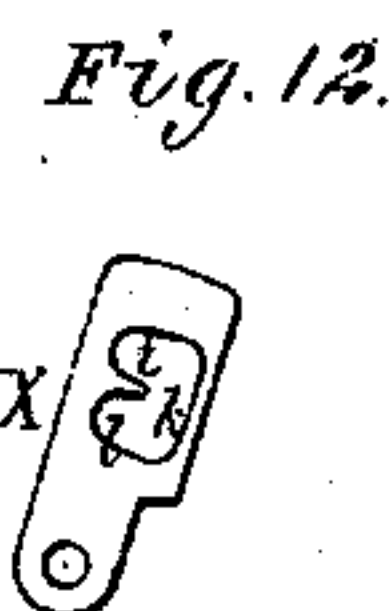
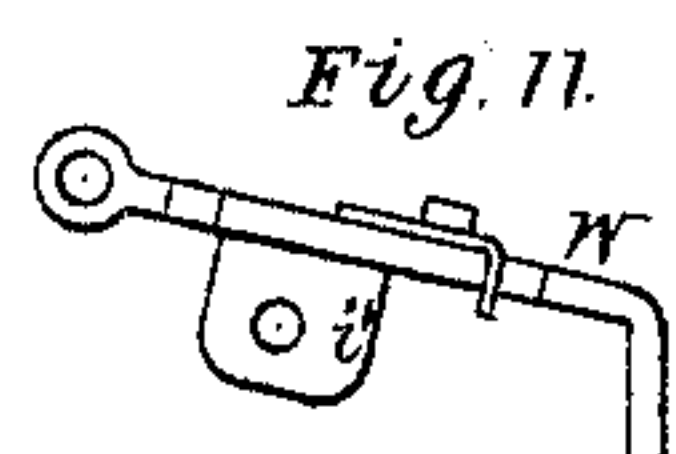
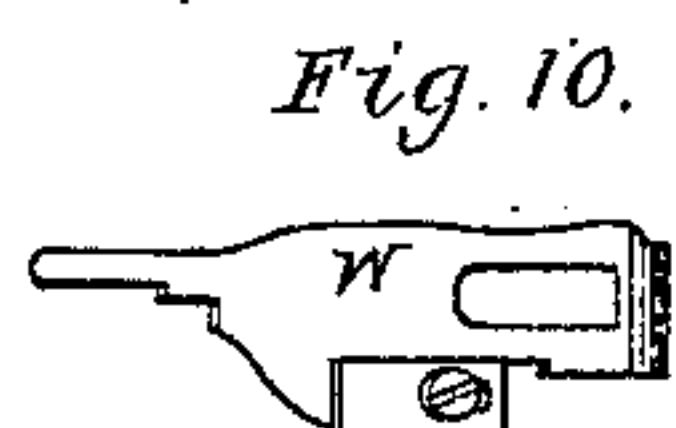
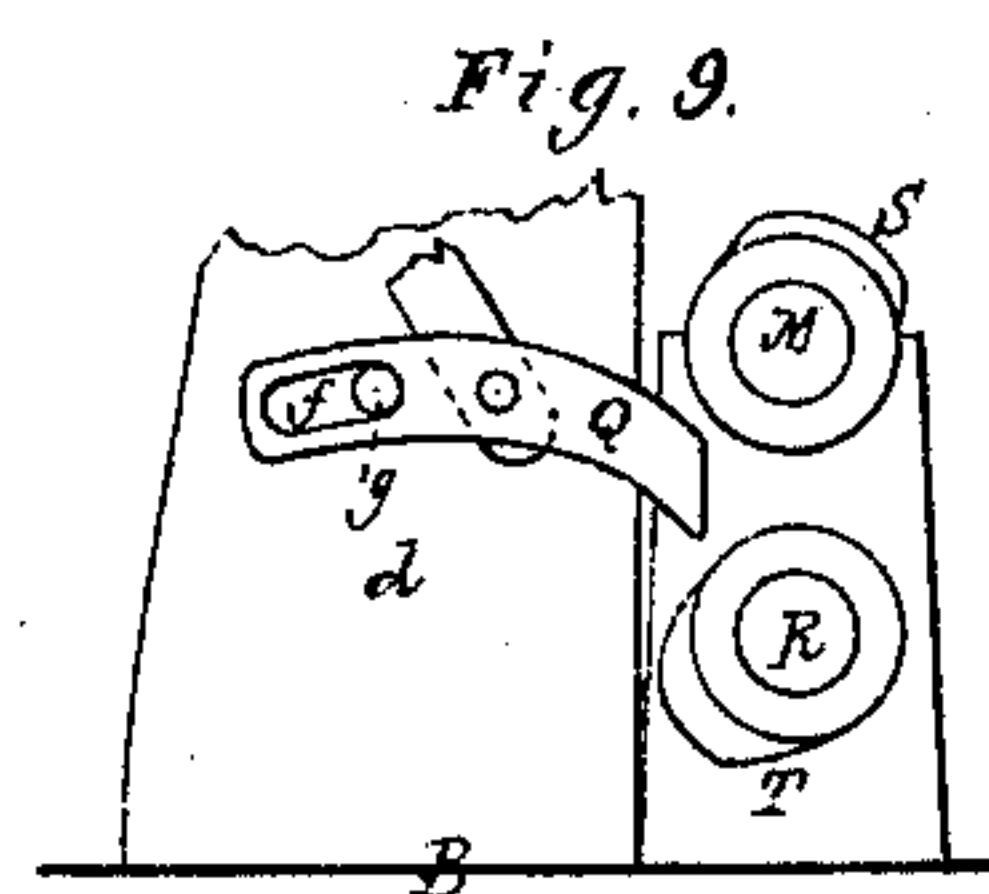
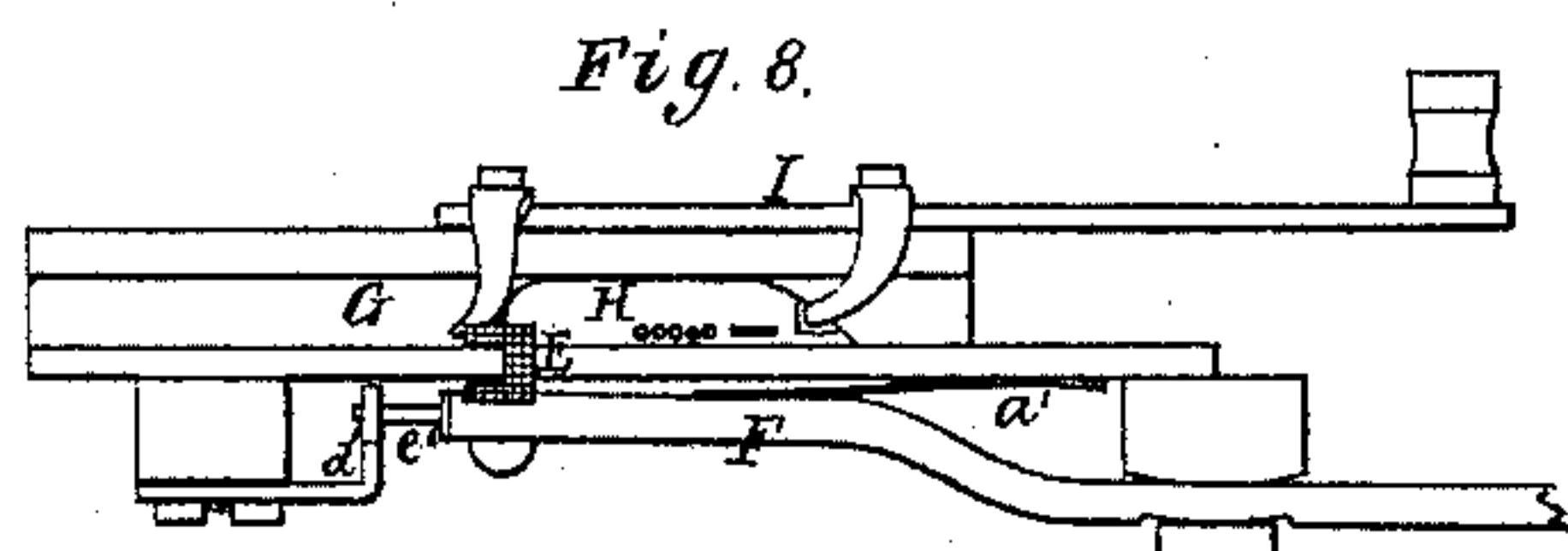
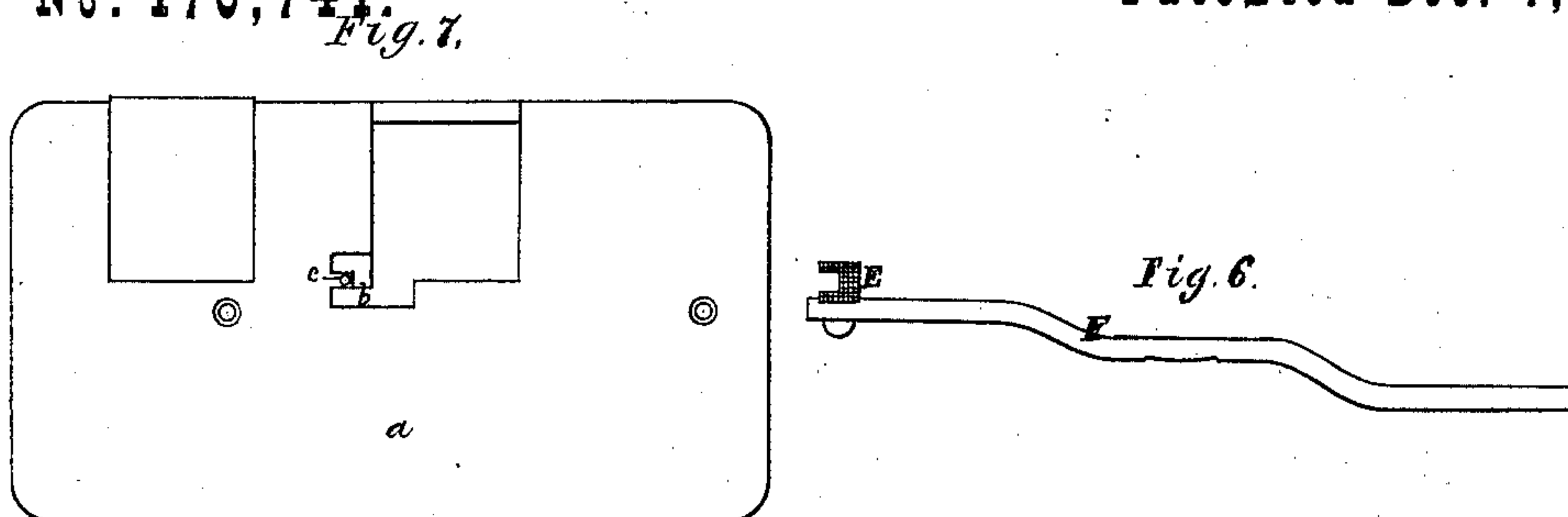
Witnesses  
*L. V. Piper*  
*L. M. Müller.*

*Jeremiah Keith,*  
by his attorney  
*R. H. Eddy*

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R. H. Eddy



# UNITED STATES PATENT OFFICE.

JEREMIAH KEITH, OF PROVIDENCE, RHODE ISLAND.

## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **170,741**, dated December 7, 1875; application filed September 9, 1875.

*To all whom it may concern:*

Be it known that I, JEREMIAH KEITH, of the city and county of Providence and State of Rhode Island, have made a new and useful Invention, having reference to Sewing-Machines; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings.

By means of my said invention, a sewing-machine of the needle and shuttle kind may be used not only for the performance of plain, but button-hole, stitching, as well as embroidery, my said invention being a combination of instrumentalities to effect or aid in effecting such.

Of the drawings, Figure 1 denotes a top view; Figs. 2 and 3, opposite side elevations; Fig. 4, a rear end elevation, and Fig. 5 a front end view, of a machine embodying my invention.

Such other figures as may be necessary to a further representation of such invention are hereinafter referred to and explained.

In the machine, as shown by the said drawings, the work-feeder has, for feeding the work lengthwise of it, a reciprocating or forward and backward motion, without any vertical motion, and besides it has, when used for embroidering or button-hole stitching, lateral or transverse movements. The presser is provided with mechanism for raising it and holding it off the work, when the needle may be therein, the same being for the feeder, to be moved backward under the work, while the latter may be held stationary by the needle.

In embroidering, or in making the button-hole stitching, the presser, after a retreat of the feeder, drops down upon the work. The needle next rises out of the work, and the feeder is moved laterally a short distance, and moves the work laterally such distance. Next, the needle descends and passes into the work, and the shuttle passes through the loop of the needle. Next, the needle rises out of the work, and the feeder is moved laterally in the opposite way, to which it previously moved laterally. In the meantime such feeder is advanced, the compound motion of the feeders giving to it and the cloth an oblique movement, the resultant of the advance and lateral

movements. Next, the needle descends and passes into the work, the shuttle passes through the loop of the needle, the presser rises off of the work, and the feeder retreats. The product of their operations is the button-hole or embroidery stitch.

In making plain stitching, the feeder has no lateral movements, but only an intermittent reciprocating and forward and backward motion, there being combined with the mechanism for producing this latter motion one for effecting, in conjunction with it, the intermittent lateral motions of the feeder, as hereinbefore stated.

In the drawings, A denotes the table, and B the frame, of the machine. C is the needle bar or carrier, D the presser, and E the feeder. The said feeder is fixed to a lever, F, which, with the feeder, is shown in top view in Fig. 6. Furthermore, the feeder projects through the table-top *a*, which has in it an opening, *b*, of sufficient width and length to allow of the necessary longitudinal and lateral movements of the feeder, (see Fig. 7, which is a top view of the table-top,) there being projected into the opening a perforated needle-guide, *c*, down through which the needle passes.

Fig. 8 denotes a view of the shuttle and its race, and the parts beneath the table-top, the said race being shown at G, the shuttle at H, and its driver at I. The said driver is pivoted to a connection-rod, K, that in turn is pivoted to one side of a grooved pulley or driving-wheel, L, fixed on the main shaft M. Aside of the wheel L, and fixed on the said shaft M, is the grooved cam N, for actuating the lever O of the needle-carrier C.

To the presser another lever, P, is jointed, the fulcrum of the said lever being projected from the neck *d* of the frame. This lever has attached to its rear arm, and to the said neck *d*, a retractive spring, *e*.

Furthermore, the lever P, at or near its lower end, is pivoted to the middle of another and shorter lever, Q. (See Fig. 1, and also Fig. 9, which is a section taken through the said lever Q, and its operative cams S and T of the main and auxiliary shafts M and R.) The lever is slotted, as shown at *f*, and pivots on a stud, *g*, that projects from the reverser W and goes through the slot *f*.



Besides the cam S for actuating the lever Q, there is, aside of such cam, and fixed upon the shaft M, another cam, B', which serves to operate the feeder-lever or move it laterally on its fulcrum, a spring, *a'*, arranged as shown, serving to produce counter motion of the feeder.

The auxiliary shaft R has fixed to it a gear, U, to engage with a pinion, V, fixed on the main shaft M, the wheel having double the number of teeth that the pinion has, whereby the shaft M, while being turned, makes two revolutions to one of the shaft R.

The reverser W (shown in Figs. 1, 2 and 4, and also in top view in Fig. 10, and in front elevation in Fig. 11) is connected with the feeder-lever F by a screw, *h*, which goes through the part *i'* of the said reverser and screws into the lever. The reverser is also connected with the feeder-lever by a slotted latch, X, pivoted to the lever and formed, as shown in side view in Fig. 12. The stud *g*, provided with a screw, goes through the locking-slot *ikl* of the latch, and receives upon the screw a clamp-nut, *m*. There is fixed on the auxiliary shaft R a series of cams, T Y Z A'.

Fig. 13 is a top view, and Fig. 14 a side view, of the cam Y. Fig. 15 is a side view of the cam or wiper Z, Fig. 16 being a side view of the cam A'.

The reverser W and lever Q are moved simultaneously, by moving the stud *g* either downward or upward within the slot *ikl* of the latch X. When the stud is in the notch *i* of the slot, the reverser W and lever Q will be in positions for being operated by the cams for effecting the button-hole or embroidery stitch, but when the said reverser W and lever Q are turned down so as to carry the stud into the notch *l* of the slot of the said latch, the feeder, presser, and needle will be operated so as to produce with the shuttle the plain stitch.

In making the embroidery or button-hole stitch, the auxiliary cam T and the levers Q and P are to raise the presser at the proper

times, the spring *e* being to produce a counter movement of it, and to press it down upon the work. The feeder derives its advance movement from the cam Y acting upon the reverser, the counter movement or retreat of the feeder being produced by the spring *a'*. The lateral movements of the feeder are effected by the cams Z A' acting against the reverser, one moving it forward and the other backward at the proper times.

To adapt the machine for the production of plain-stitch sewing, the reverser W and lever Q have to be moved so as to carry the stud *g* down into the notch *l*. This having been done, the auxiliary lever Q will be thrown out of action with the cam T, and into action with the cam S of the main shaft.

The reverser will also be thrown out of action with the cam Y, and into action with the cam B', which is to aid in causing the feeder to advance, its rearward movement being effected in part by the spring *a'*.

The feeder-lever is to be so applied to its fulcrum as to be capable of sliding lengthwise, as well as of swinging horizontally thereon, an adjustable stop, *b'*, serving to limit the back motion of the said feeder-lever. To support the front end of the said lever it is provided with a straight projection, *c'*, to enter and move in a stationary guide, *d'*, all being arranged as represented.

I claim—

In a sewing-machine, the combination of the auxiliary shaft R, its cams T Y Z A', the latch X, stud *g*, reverser W, and lever Q, with the main shaft M, its cams S B', the presser D, and feeder E, and their operative levers P F, all being arranged, connected, and applied in manner and by means substantially as set forth.

JEREMIAH KEITH.

Witnesses:

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L. O. ROCKWOOD.