

No. 667,824.

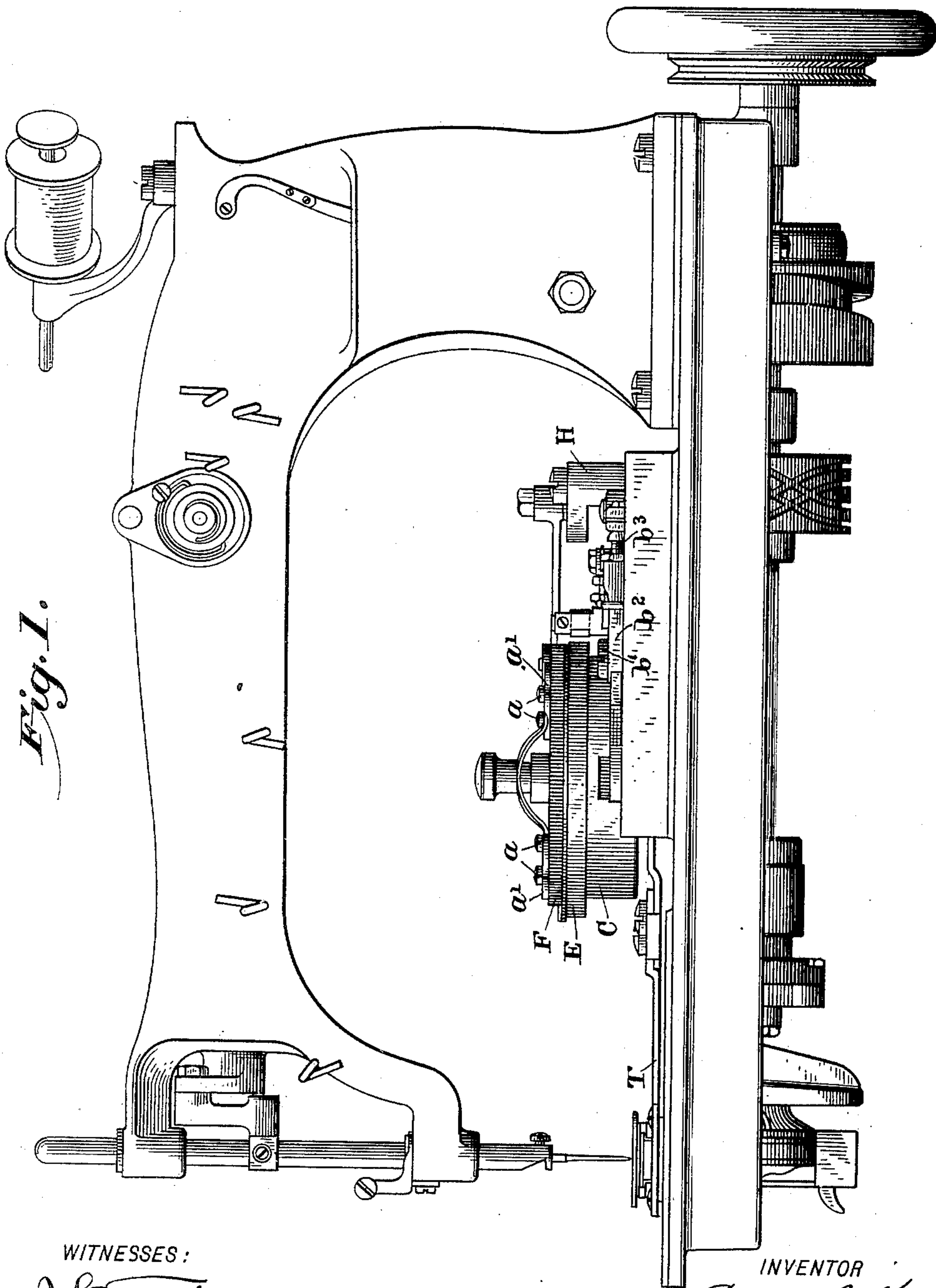
Patented Feb. 12, 1901.

R. S. KELSO.
BUTTONHOLE SEWING MACHINE.

(Application filed Mar. 1, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:
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E. A. Finckel.

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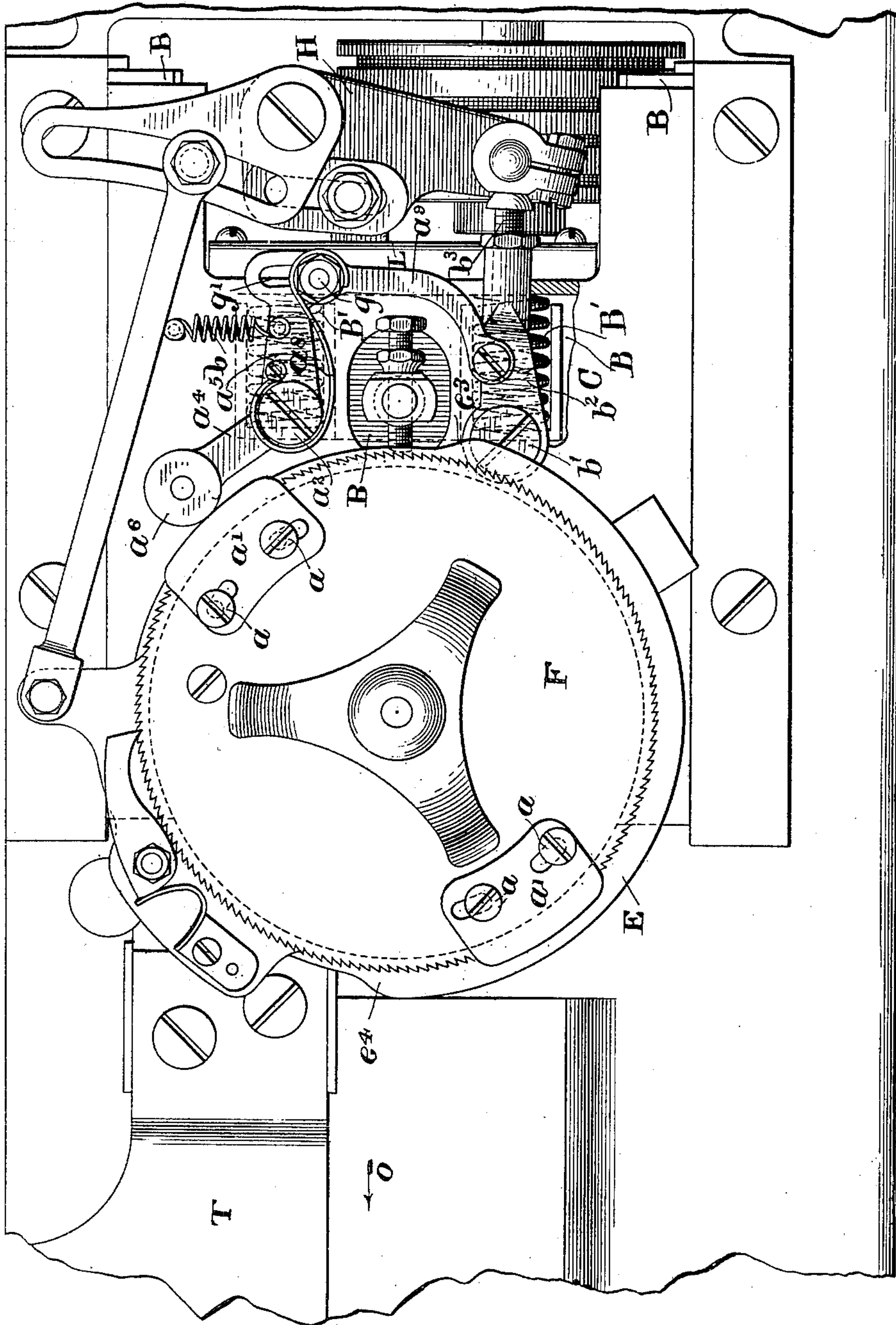
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Fig. 2.



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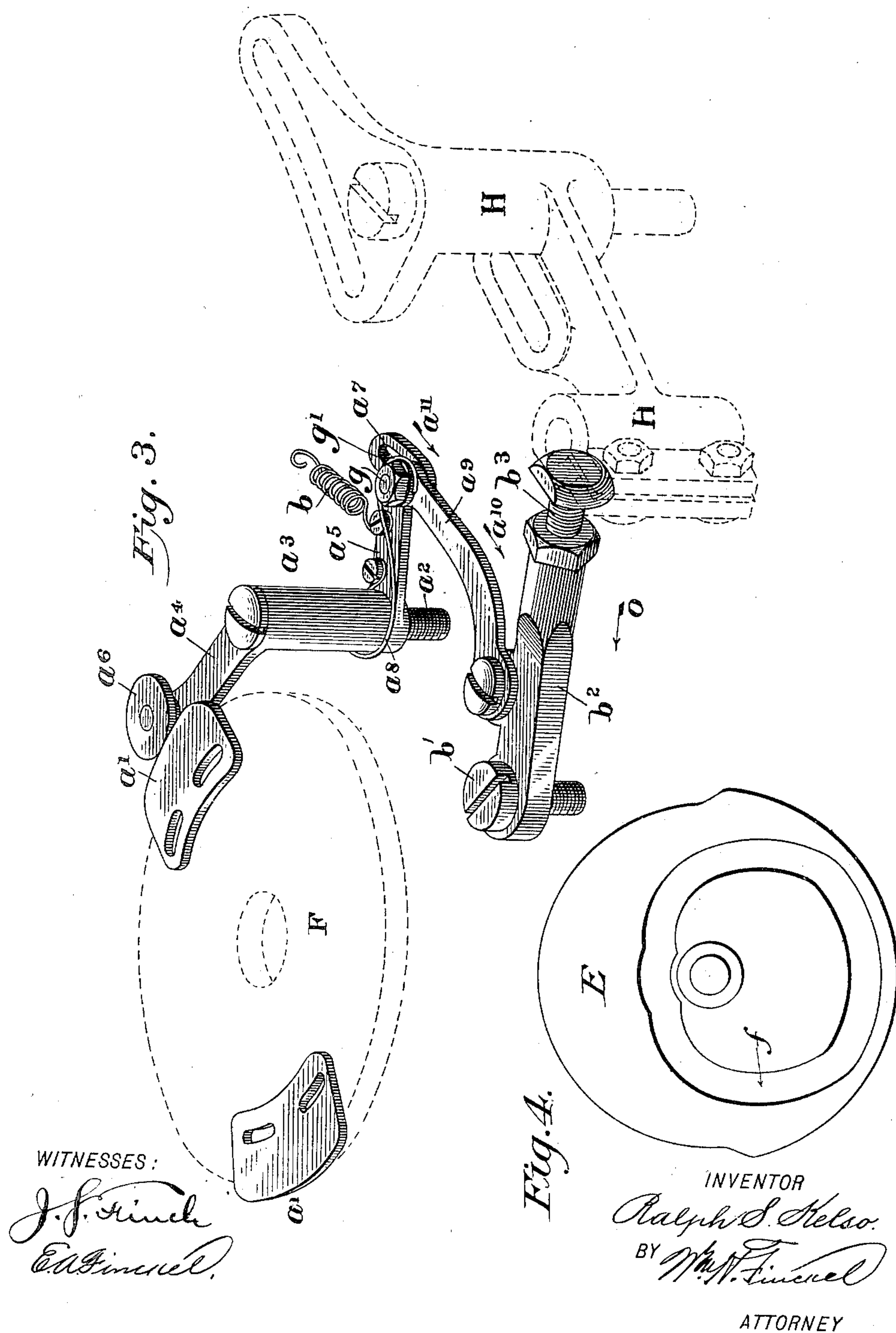
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3 Sheets—Sheet 3.



UNITED STATES PATENT OFFICE.

RALPH S. KELSO, OF PEORIA, ILLINOIS, ASSIGNOR TO THE WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT.

BUTTONHOLE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 667,824, dated February 12, 1901.

Application filed March 1, 1900. Serial No. 7,017. (No model.)

To all whom it may concern:

Be it known that I, RALPH S. KELSO, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented a certain new and useful Improvement in Buttonhole-Sewing Machines, of which the following is a full, clear, and exact description.

The object of my invention is to improve the construction of buttonhole-sewing machine cloth-clamp-actuating mechanism, and to make clear to others the construction and operation of my improved mechanism I herein show it in connection with the cloth-clamp-actuating mechanism illustrated and described in United States Patent No. 303,557, dated August 12, 1884, granted to A. C. Campbell, assignor to the Wheeler & Wilson Manufacturing Company, said mechanism comprising a part of the well known Wheeler & Wilson automatic buttonhole-sewing machine.

The mechanism illustrated and described in the patent referred to is designed to bar the end of a buttonhole with short stitches placed substantially parallel to the side overseam-stitches, but distributed by the feed of the material in a somewhat semicircular form around the end of the buttonhole. My improved construction eliminates the short barring-stitches and effects a barring consisting of stitches substantially twice the length of the side overseam-stitches, such long barring-stitches being placed equidistant across the center line of the buttonhole, producing what is commercially known as "square-bar-end buttonholes."

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a front side elevation of the buttonhole-sewing machine employing the cloth-clamp-actuating mechanism illustrated and described in aforesaid patent, No. 303,557, with my improvement added. Fig. 2 is a plan view of the same construction, the overhanging arm being removed to better illustrate the application of my invention. Fig. 3 is a perspective view showing my improvement in full lines. Fig. 4 is an under side view of the feed-cam on a smaller scale.

In the patent referred to the feed-cam E is constructed to make a practically continuous feed, while in my improvement it is constructed with a peculiarly-shaped cam-groove *f*, Fig. 4, which effects a dwell of the feed of the material lengthwise of the buttonhole during the time that the clamp is vibrated for the placing of the long barring-stitches, and the peripheral cam portions *e*³ *e*⁴ of the cam E (see Fig. 2) are materially shortened to permit of the increased vibration of the cloth-clamp for the formation of the long barring-stitches, and the ratchet-wheel F is suitably drilled and tapped for the screws *a* for securing the cam-plates *a'* *a'*.

Referring to Fig. 2, secured to the upper slide-frame C by a suitable bolt *a*² is a rock-lever *a*³, constructed with extended portions *a*⁴ and *a*⁵. The portion *a*⁴ carries a roller *a*⁶, which at a predetermined time in the rotation of the ratchet-wheel F coöperates alternately with the cam-plates *a'* *a'*, the extended portion *a*⁵ being provided with a slot *g'*, which coacts with a pin *g*, suitably secured in a connection *a*⁹. Secured at one end of the extended portion *a*⁵ is a spring *a*⁸, its opposite end acting to force the connection *a*⁹ in the direction indicated by the arrow *a*¹⁰, thus permitting a movement of the rock-lever *a*³ and its extended portion *a*⁵ in the direction indicated by the arrow *a*¹¹ without compelling a movement of the connection *a*⁹ in a like direction for a purpose to be hereinafter explained. A second spring *b* is attached at its inner end to the extended portion *a*⁵, its opposite end secured to the upper slide-frame C for the purpose of returning the rock-lever *a*³ to its normal position after the roller *a*⁶ has been actuated by one or the other of the cam-plates *a'*.

Secured to the upper slide-frame C by a suitable stud-screw *b'* is a lever *b*², operatively connected to the extended portion *a*⁵ by the connection *a*⁹. One end of the lever *b*² is provided with an adjusting-bolt *b*³ to vary the movement of the cloth-clamp in the direction indicated by the arrow *o* (see Fig. 2) whenever it is desired to change the length of the long barring-stitches, such movement of the clamp being effected by the relative action of the vibrating lever H and the adjusting-bolt

b^3 , as is illustrated in Fig. 2. The movement of the clamp in the opposite direction during the barring operation is controlled by the springs B' , so designated herein and in the patent referred to, which modes of operation will be fully understood from the subsequent recital of the operation of the combined construction for effecting the results claimed.

In the operation of the machine the roller a^6 coacts with the cam-plates a' only when the lengthwise feed of the material is suspended at the opposite ends of the buttonhole, at which time one or the other of the cam-plates a' , dependent upon the end being operated upon, rocks the lever a^3 in opposition to the resiliency of the spring b , to move the extended portion a^5 , connection a^9 , and lever b^2 in the direction indicated by the arrow a^{10} ; but should the movement of the vibrating lever H interfere with the movement of the lever b^2 the spring a^8 will permit the lever b^2 and connection a^9 to yield to such interference and suspend the operative hitchup between the vibrating lever H and lever b^2 until the next subsequent movement of the lever H in the same direction.

As is illustrated and described in the aforesaid patent, the cloth-clamp T, through the connection L, is given a uniform vibration during the overseaming of the two sides of the buttonhole. In the present invention at the completion of the side overseaming one of the cam-plates a' will rock the rock-lever a^3 and through the connection a^9 move the lever b^2 into a position to be struck by the vibrating lever H, causing the upper slide-frame C to be moved independently of the lower slide-frame B a distance dependent upon the adjustment of the bolt b^3 , which bolt should be so adjusted as to move the upper slide-frame, and consequently the cloth-clamp, a distance sufficient to bar the end of the buttonhole with long barring-stitches reaching from depth to depth stitch of the two sides of overseaming, as already explained in the statement of the object and purpose of my invention. The return movement of the cloth-clamp employed is spring-

controlled, as by coiled springs constructed and arranged substantially as are springs B' in the Campbell patent referred to, as hereinbefore stated.

What I claim is—

1. In a buttonhole-sewing machine, stitch-forming mechanism, a cloth-clamp, actuating mechanism therefor including superposed slide-frames capable of independent movements, and a vibrating lever, in combination with mechanism for effecting an automatic hitchup between the vibrating lever and cloth-clamp, to increase the movement of said clamp in one direction, and means independent of said vibrating lever to move said clamp in the opposite direction, substantially as described.

2. In a buttonhole-sewing machine, stitch-forming mechanism, a cloth-clamp, actuating mechanism therefor including superposed slide-frames capable of independent movements, and a vibrating lever, in combination with mechanism for effecting an automatic hitchup between the vibrating lever and cloth-clamp to increase the movement of said clamp in one direction, the return movement of said cloth-clamp being spring-controlled, for the purpose specified, substantially as described.

3. In a buttonhole-sewing machine, a stitch-forming mechanism, a cloth-clamp, actuating mechanism therefor including a rotating cam-disk and vibrating mechanism, in combination with means to effect an operative hitchup between the vibrating mechanism and cloth-clamp at predetermined intervals, to increase the movement of the cloth-clamp in the formation of the barring-stitches, and means independent of the vibrating mechanism to give to the cloth-clamp its return movement, substantially as described.

In testimony whereof I have hereunto set my hand this 26th day of February, A. D. 1900.

RALPH S. KELSO.

Witnesses:

ROBERT I. DAVIS,
ROBERT SCHOLER.