

No. 750,648.

PATENTED JAN. 26, 1904.

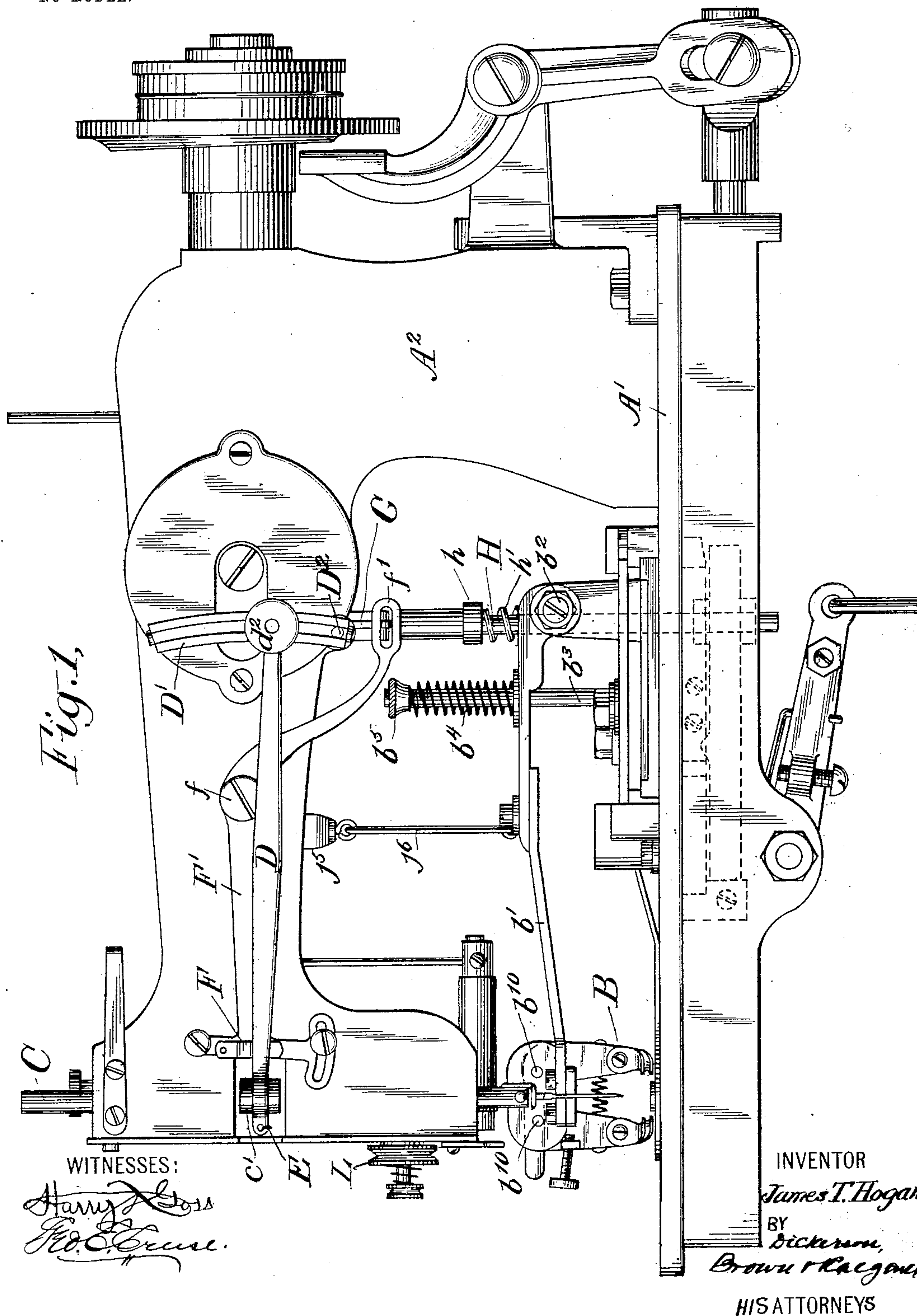
J. T. HOGAN.

NEEDLE VIBRATING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED MAR. 29, 1902.

NO MODEL.

5 SHEETS—SHEET 1.



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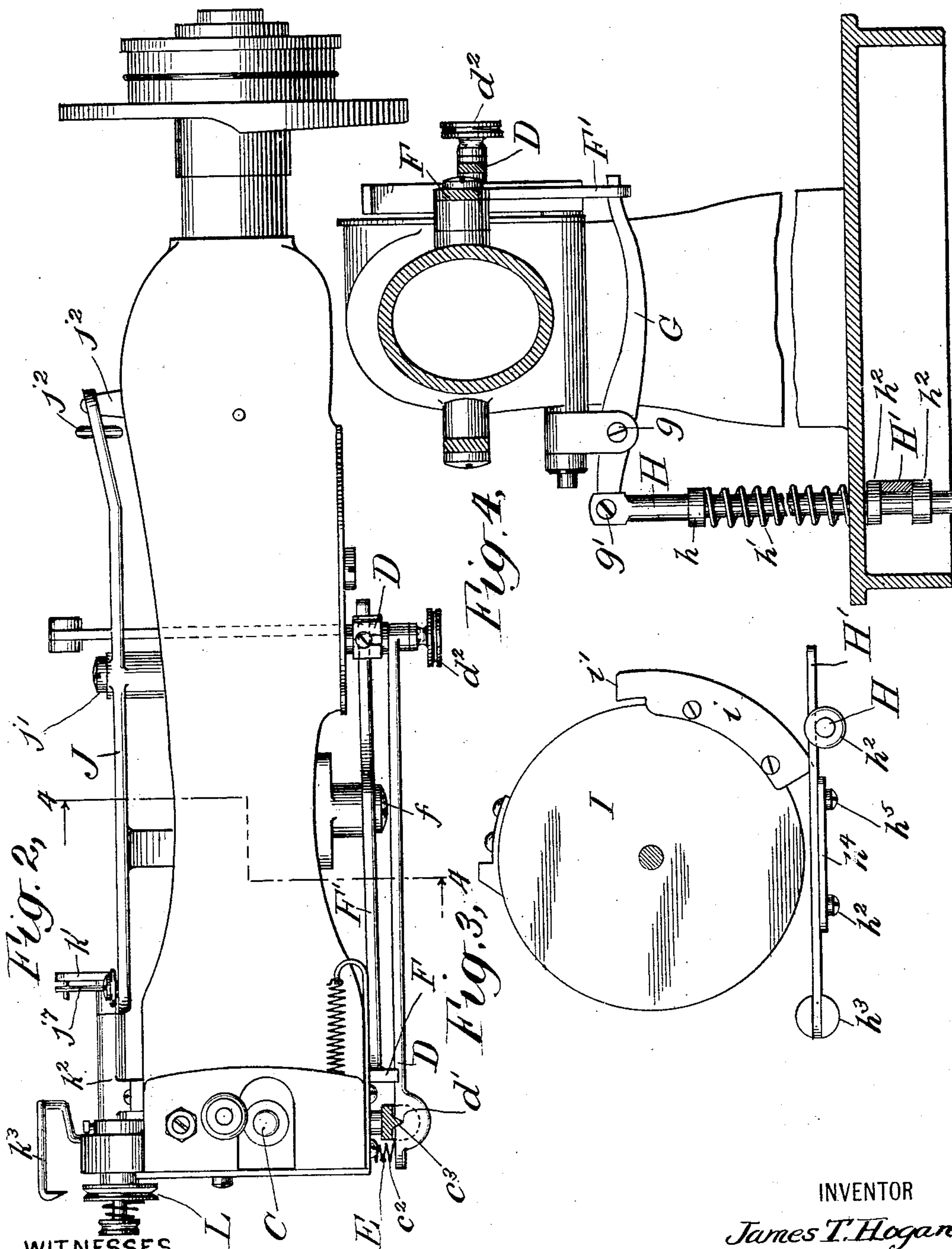
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5 SHEETS—SHEET 2.



WITNESSES

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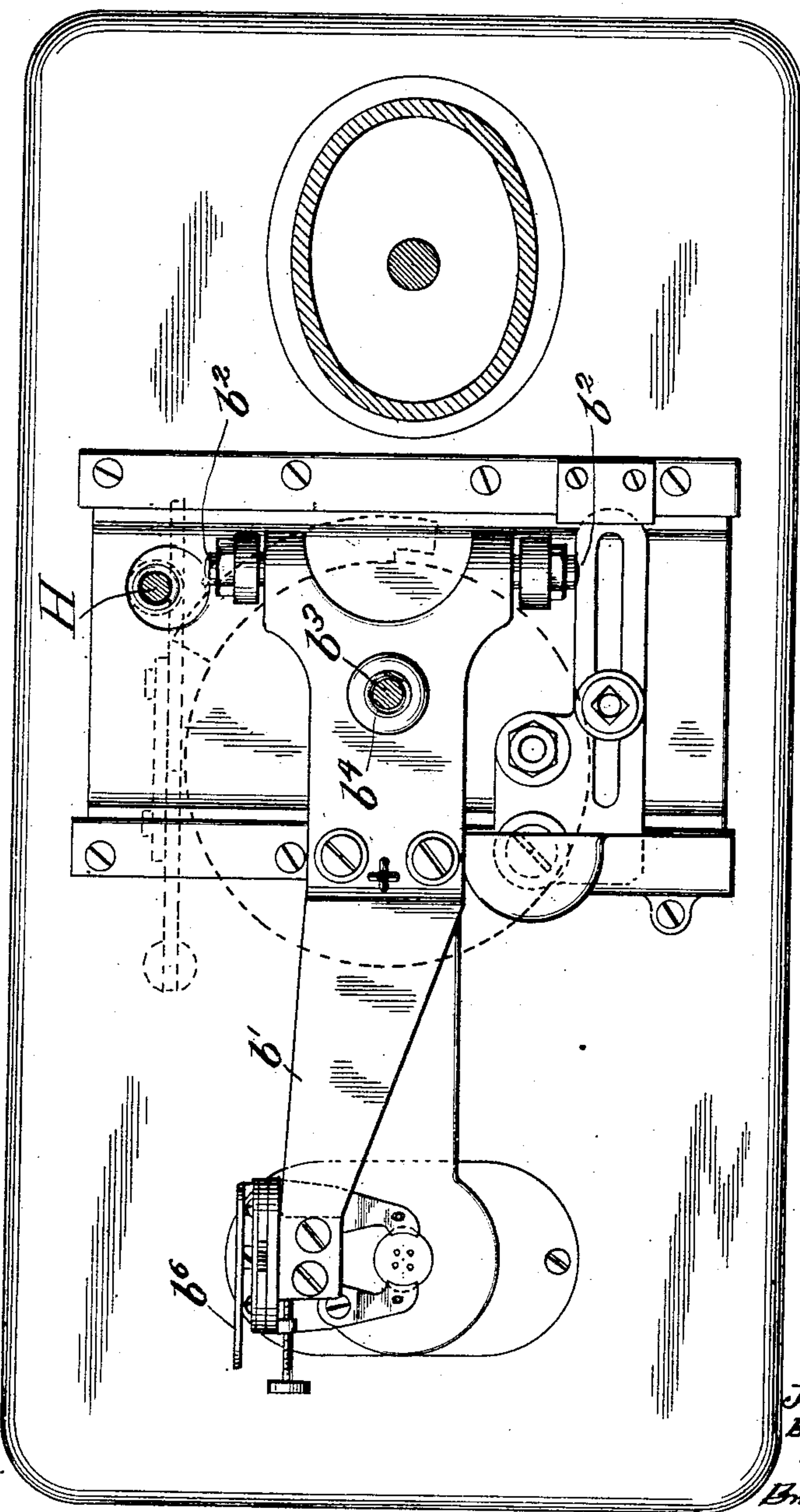
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5 SHEETS—SHEET 3.

Fig. 5.



WITNESSES:

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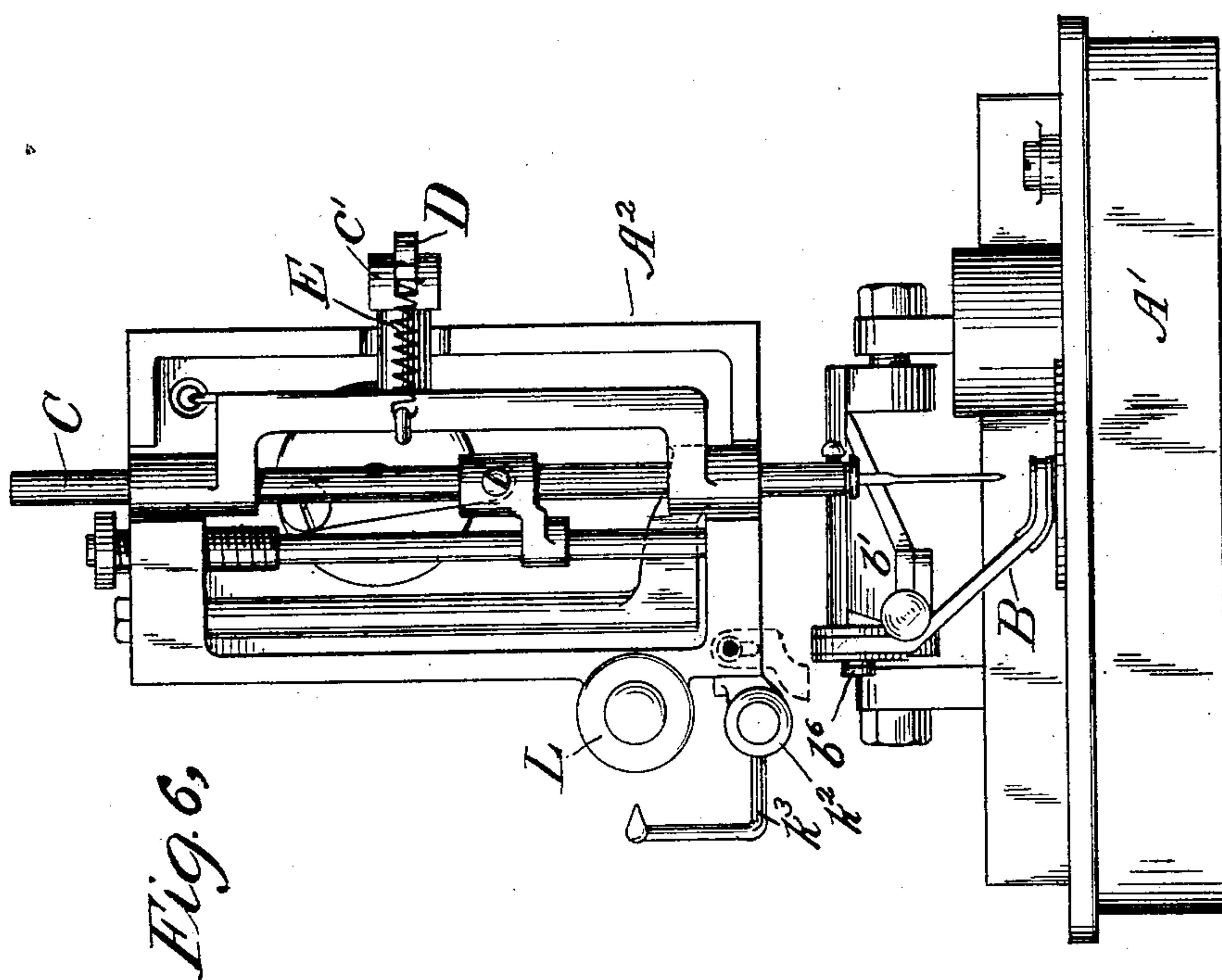
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5 SHEETS—SHEET 4.



WITNESSES:

Harvard Univ.
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5 SHEETS—SHEET 5.

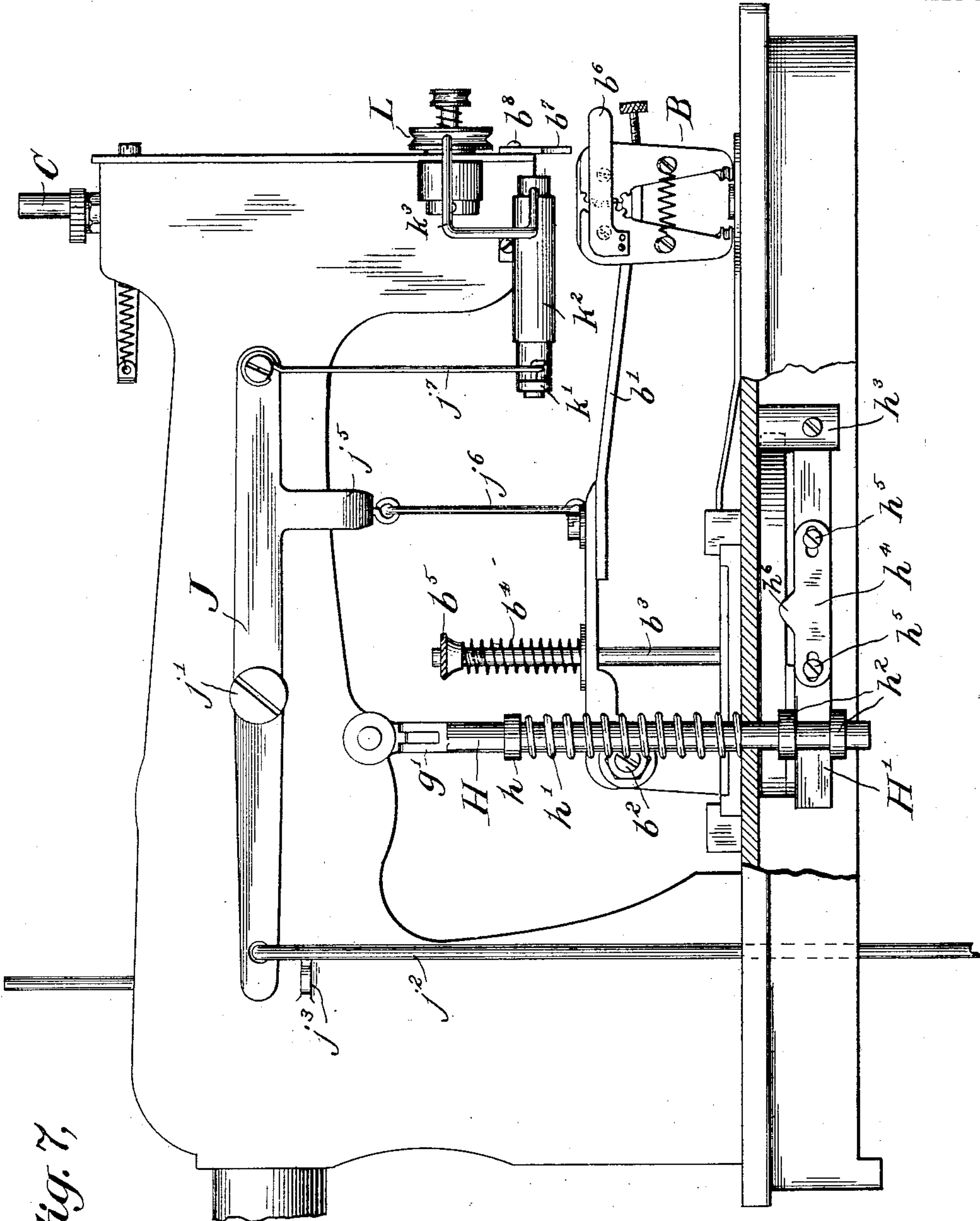


Fig. 7.

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UNITED STATES PATENT OFFICE.

JAMES T. HOGAN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE NATIONAL MACHINE COMPANY, OF TROY, NEW YORK, A CORPORATION OF NEW YORK.

NEEDLE-VIBRATING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 750,648, dated January 26, 1904.

Application filed March 29, 1902. Serial No. 100,538. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. HOGAN, of Jersey City, Hudson county, New Jersey, have invented a new and useful Improvement in Sewing-Machines, of which the following is a specification.

This invention relates to sewing-machines; and its objects are to improve upon the construction and efficiency of such machines and afford improved means for carrying out some of the essential operations of the mechanism.

Further objects of the invention will hereinafter appear; and to these ends the invention consists of a sewing-machine for carrying out the above objects, embodying the features of construction, combinations of elements, and arrangement of parts, having the general mode of operation substantially as hereinafter fully described and claimed in this specification and shown in the accompanying drawings.

In the accompanying drawings, Figure 1 is a front elevation of a sewing-machine embodying my improvement and organized for sewing buttons to fabrics. Fig. 2 is a top view of the same with one part represented in horizontal section. Fig. 3 is a bottom view of a detail of the machine. Fig. 4 is a transverse section upon the plane of the dotted line 4 4, Fig. 2, and looking in the direction indicated by the arrows at the ends of said dotted line. Fig. 5 is a top view of the parts immediately above the bed-plate, certain parts below the bed-plate being shown in dotted lines and the neck of the machine in section. Fig. 6 is a view at one end of the machine with the end plate removed. Fig. 7 is a view of the side of the machine opposite to that shown in Fig. 1.

Similar letters of reference designate corresponding parts in all the figures.

The bed A^1 and arm A^2 of the machine-head, the button-holding clamp B, and the means for imparting motion to the same during sewing, the mechanism for vertically reciprocating the needle-bar C, and the stop mechanism may be of any suitable construction.

The needle-bar C not only has the usual vertically-reciprocating motion, but it also has a

to-and-fro motion in a horizontal plane. It is unnecessary to illustrate or describe the means for supporting the needle-bar C so as to permit of this to-and-fro motion, as such means are well known in the art. For transmitting the to-and-fro motion to the needle-bar the frame of the latter, A^3 , is provided with a horizontally-extending arm c^1 , which at its outer extremity has a horizontal groove c^2 , from the back of which extends outwardly a rib c^3 . A rod D extends into the groove c^2 and is provided with a notch d' for engagement with the rib c^3 . This rod D is reciprocated in an approximately horizontal plane and when engaged with the arm c^1 will impart to the needle-bar the to-and-fro horizontal movement of which mention has been made.

The rib c^3 and the notch d' provide for engagement and disengagement of the rod D and the arm c^1 of the needle-bar. A spring E, here shown as of helical form, is engaged at one extremity with that end of the rod D which is adjacent to the arm c^1 of the needle-bar and at the other extremity with the needle-bar frame A^3 . It tends to hold the rod D in engagement with the arm c^1 of the needle-bar frame. The other end of the rod D is connected to an arm D^1 , which at the lower end is fixed to a rock-shaft D^2 , mounted in the sewing-machine arm A^2 . The arm D^1 is preferably arc-shaped and the contiguous end of the rod D adjustably connected to it, so as to vary the amplitude of the to-and-fro horizontal movement of the needle-bar. A screw d^2 serves as a convenient means for adjustably connecting the rod D with the arm D^1 . Any suitable mechanism may be employed for oscillating the rock-shaft D^2 . Such mechanism is well known in the art, and as the arm D^1 and the combination of the rod D with that arm are also well known no further description nor any detailed illustration will be necessary.

A vertically-sliding cam F serves when moved downwardly to force the rod D outwardly, so as to disengage its notch d' from the rib c^3 , formed upon the arm c^1 of the needle-bar.

dle-bar frame, to disengage said rod from the needle-bar. As shown, the cam F is formed at one end of a lever F', which is fulcrumed between its ends upon a screw f , that is engaged with the sewing-machine arm A². The other end of the lever F' is provided with a longitudinal slot f' , in which is received one end of a lever G. This lever G is fulcrumed between its ends by a pin or screw g to an appurtenance of the sewing-machine arm A². The other end of this lever G is pivotally connected by a pin or screw g' to a vertically-movable rod H. This rod is provided with a collar h and has coiled around it between such collar and the bed A' of the sewing-machine head a helical spring h' , which has a tendency to raise the rod. The rod H extends downwardly through the bed A' of the sewing-machine head, and its lower end has affixed to it collars h^2 , between which extends the free end of a lever H', fulcrumed at the other end upon a stud h^3 , which extends downwardly from the bed A' of the sewing-machine head.

A cam-disk I is arranged below the bed A' of the sewing-machine head and has affixed to it a segmental plate i . The forward end i' is inclined upwardly on the under side and contacts with an upward projection upon the lever H'. This upward projection h^6 will preferably have one inclined side and may be advantageously made as a part of a plate h^4 , provided with longitudinal slots through which pass screws h^5 for securing it to the lever H', so that the said projection may be adjusted lengthwise of said lever.

During a considerable portion of the operation of the needle-bar the connection of the rod D with the arm c' of the needle-bar is maintained, and consequently the needle-bar is moved to and fro horizontally; but at a certain time, which will be determined by the position of the segmental plate i on the cam-disk I, the rod H will be raised and the levers G F' oscillated, so that the cam F will move the rod D out of engagement with the arm c' of the needle-bar, whereupon the to-and-fro horizontal movement of the needle-bar will be suspended. After the segmental plate i shall have fulfilled its function the rod H will be allowed to descend and the levers G and F' will be oscillated, so that the cam F will permit the spring E to reengage the rod D with the arm c' of the needle-bar.

The button-holding clamp B, as already stated, may be of ordinary construction and is shown as supported by a bar or plate b' , which is fulcrumed at one end upon pins or screws b^2 , so as to be free to move up and down. Near the fulcrum this bar or plate is provided with a hole through which passes an upright pin b^3 , around which is coiled a helical spring b^4 above the bar or plate and beneath a nut b^5 , which engages with a thread on the upper end portion of the rod. This

spring serves to press down the bar or plate, so as to maintain the button-holding clamp in its operative position.

J designates a lever fulcrumed by a pin or screw j' to an appurtenance of the sewing-machine arm A². At the rear end this lever J has connected with it the upper end of a rod j^2 , which extends downwardly to a treadle and serves to pull down the end of the lever J, to which it is connected. A stop j^3 , secured to the sewing-machine arm so as to be vertically adjustable, serves to limit the downward motion which the rod j^2 is capable of transmitting to the rear end of the lever J. Near the forward end the lever J is provided with a downwardly-extending arm j^5 , which is connected by a rod j^6 to the bar or plate b' . Hence when the rear arm of the lever J is depressed by the treadle and the forward arm elevated the arm j^5 will lift the bar or plate b' and with it the button-holding clamp B. When the button-holding clamp B is sufficiently raised, a finger b^6 , with which it is provided, will come in contact with a finger b^7 . This is preferably attached to the sewing-machine arm so as to be vertically adjustable—as, for instance, by means of a screw b^8 passing through a vertical slot b^9 . When the finger b^6 collides with the finger b^7 , the two arms of the button-holding clamp will be oscillated upon their pivots b^{10} , so as to release the button. The forward extremity of the lever J is connected by a rod j^7 to an arm k' , extending from a rock-shaft journaled in a bracket k^2 , attached to the sewing-machine arm A². The other extremity of the rock-shaft is provided with an arm k^3 , which when the lever J is actuated will separate the two disks of a tension device L, so as to relax the tension upon the needle-thread.

The two jaws of the button-holder are geared together, as shown, so that the movements of the jaws toward or from each other are simultaneous.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a sewing-machine the combination of stitch-forming mechanism comprising a needle-bar, a work-support, means to impart a vibratory movement to said needle-bar comprising a rod, and means comprising a cam carried by the arm of the machine and engaging said rod to disconnect said rod from the needle-bar frame.

2. In a sewing-machine the combination of stitch-forming mechanism comprising a needle-bar, a work-support, means to impart a vibratory movement to said needle-bar, and means comprising a normally stationary cam and an opposing spring for making and breaking connection between said rod and needle-bar and means for operating said cam to move said rod.

3. In a sewing-machine the combination of stitch-forming mechanism comprising a needle-

dle-bar, a work-support, a rod for imparting a vibratory movement to the needle-bar and means comprising a cam and a lever arranged lengthwise of the sewing-machine arm for making and breaking connection between said rod and needle-bar.

4. In a sewing-machine the combination of stitch-forming mechanism comprising a needle-bar, a work-support, a rock-lever, a rod connecting said lever to the needle-bar frame, means for making and breaking connection

between said rod and needle-bar frame comprising a cam and lever and another lever extending transversely to the sewing-machine arm and a cam for actuating the latter.

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

JAMES T. HOGAN.

Witnesses:

K. G. LE ARD,
GEO. E. CRUSE.