

No. 684,537.

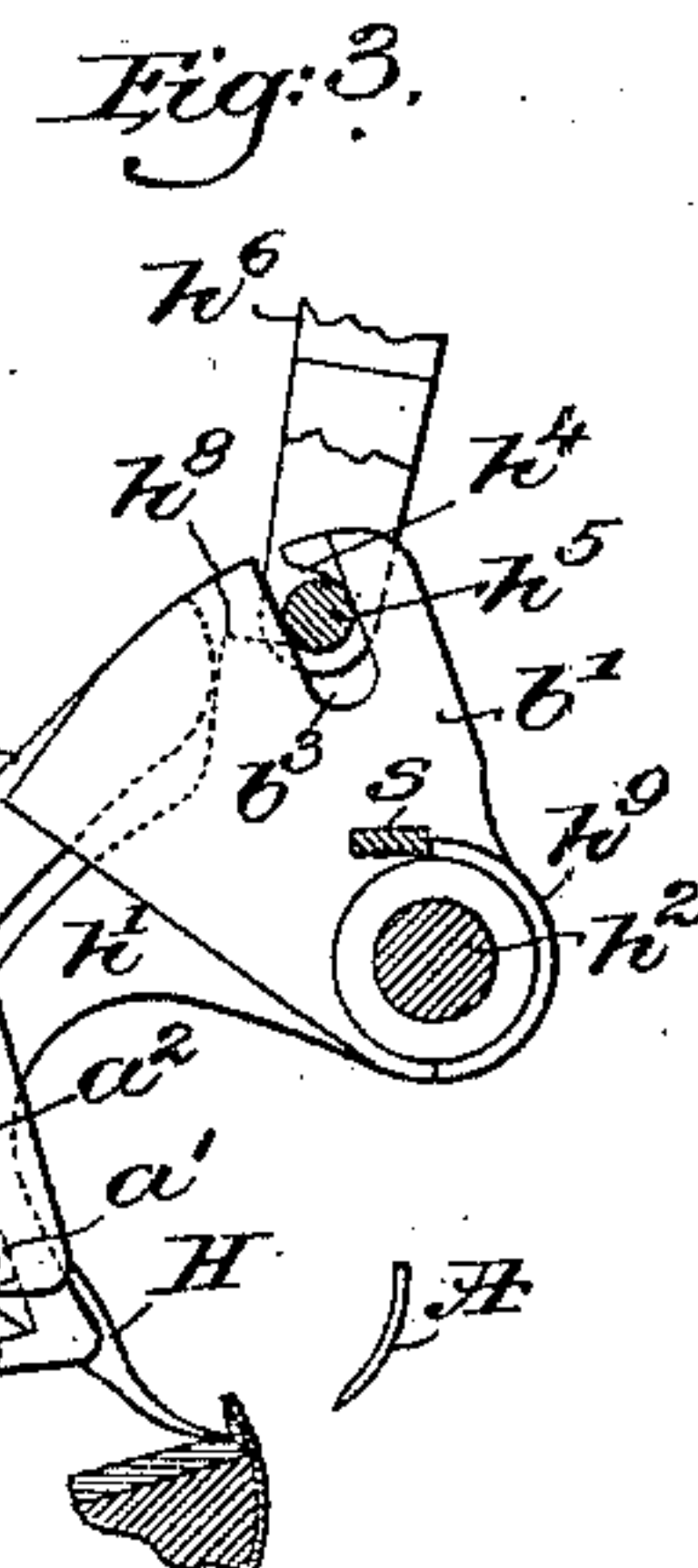
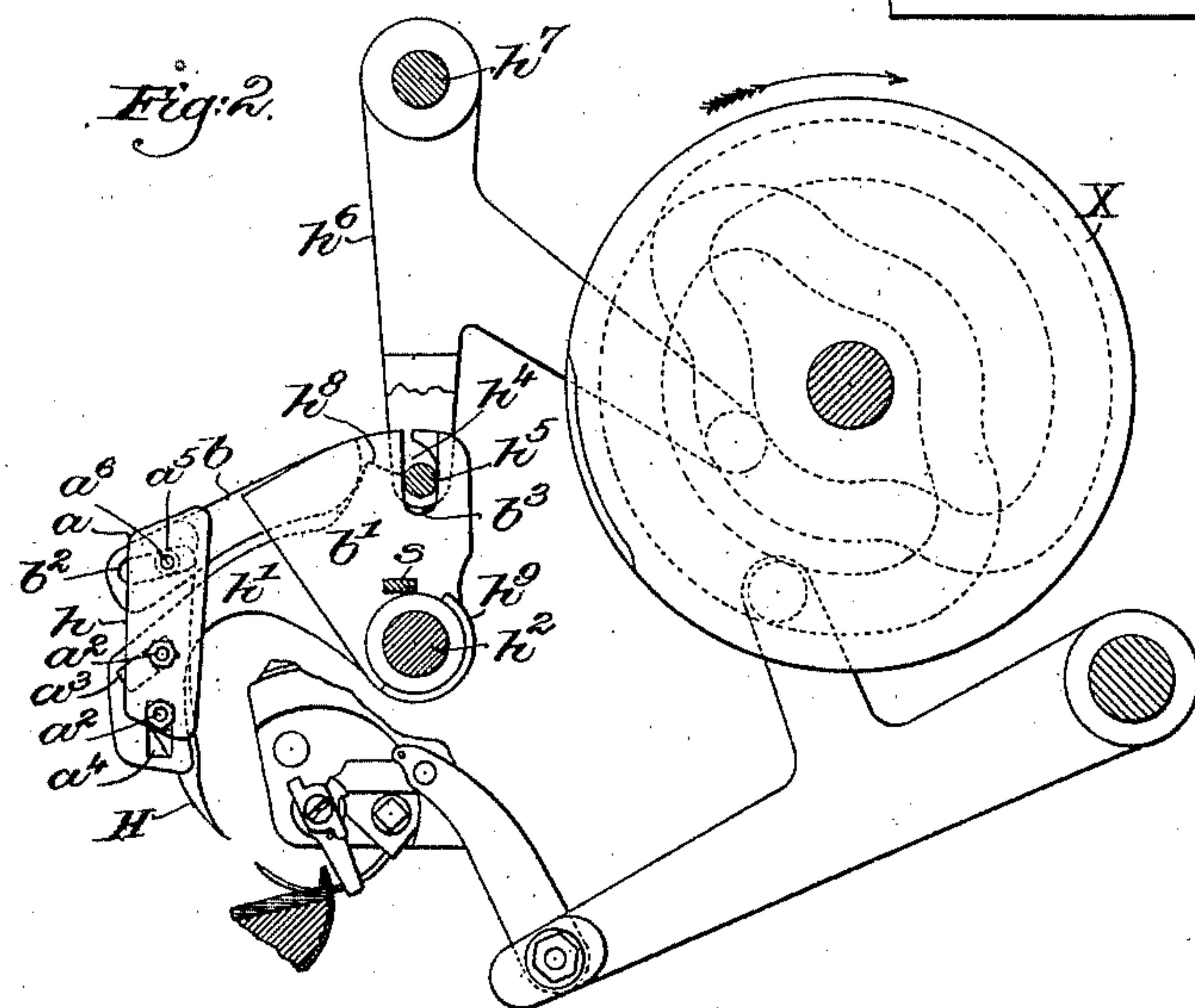
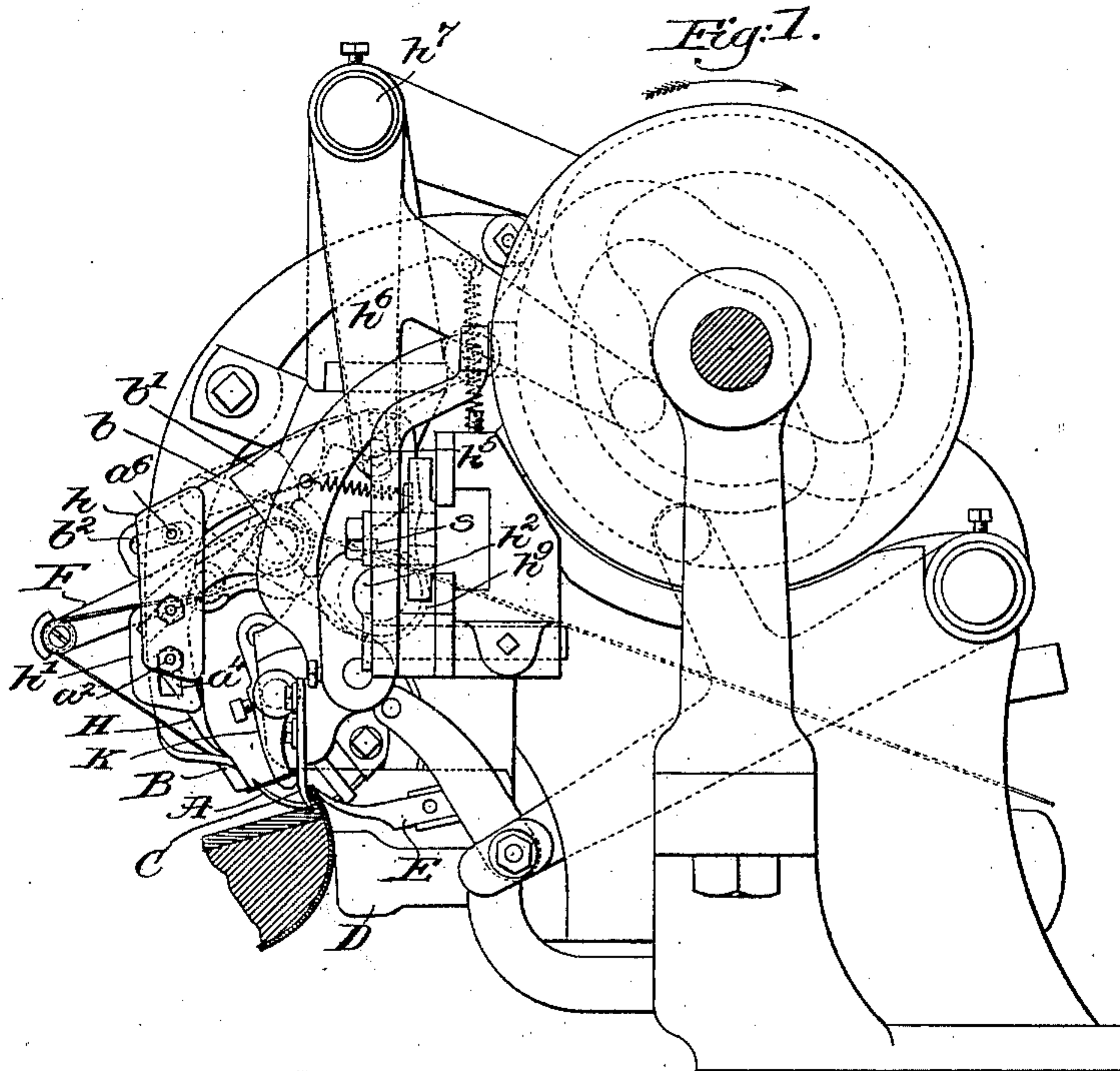
Patented Oct. 15, 1901.

H. BRIGGS.

AWL ACTUATING MECHANISM FOR SHOE SEWING MACHINES.

(Application filed Feb. 23, 1899.)

(No Model.)



UNITED STATES PATENT OFFICE.

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AWL-ACTUATING MECHANISM FOR SHOE-SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 684,537, dated October 15, 1901.

Application filed February 23, 1899. Serial No. 706,478. (No model.)

To all whom it may concern:

Be it known that I, HENRY BRIGGS, a citizen of the United States, residing at Hasbrouck Heights, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Awl-Actuating Mechanism for Shoe-Sewing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates generally to shoe-sewing machines, and more particularly to shoe-sewing machines of the wax-thread chain-stitch type, of which the commercial turn and welt sewing machines are examples.

The present invention consists of improvements in the construction, organization, and mode of operation of the awl mechanism arranged to impart to the awl a positioning movement to bring its point into the channel of the sole and to thereafter impart to the awl a work-puncturing movement.

As machines of the class above designated have been commonly heretofore constructed the awl, besides its feeding function, has a further function of puncturing the "between substances" at required intervals to receive the needle, said awl-punctures being intended to guide the needle entering the same and to insure its emergence from the base of the channel in the sole. Prior machines of this class provided with the several forms of awl-actuating mechanism of the prior art have been defective, in so far as I am advised of the practical operation thereof, in that the awl, particularly when a thin insole is being operated upon, failed to puncture the between substances in such manner that the needle would be properly guided to emerge, as above stated. This defect is owing to the fact that in order to give the awl a sufficient extent of movement to insure its removal out of the way of the working parts of the machine, particularly the looper, it is given a movement on so long a radius that it does not properly enter the channel, or, if it does properly enter the channel, it emerges from the work at a point below or above the point at which the

needle enters the work. It has been proposed in the prior art to obviate this difficulty by shifting the position of the center of motion of the awl-carrying lever to give the awl an eccentric movement and to cause the path of the awl and the needle to be more nearly coincident when passing through the material; but such expedient, in so far as I am advised of the art, has not been successful and would be impractical where the awl enters the channel side of the work.

It is the object of my improved awl-actuating mechanism to remedy the defect above noted, and to this end I mount the awl in an awl-carrier which is mounted upon an awl-carrier lever, by means of which it is actuated during a part of its movement, preferably until the point of the awl has entered the channel. The awl-carrier is movable independently of the awl-carrier lever, and such independent movement actuates the awl during its puncturing movement. By this arrangement the awl is given a positioning movement adapted to bring it into position in the channel, and thereafter is given an independent puncturing movement, the path of which may be determined in accordance with the thickness of the stock operated upon, so that the awl will form its puncture at the proper position to receive and guide the needle, so that the needle will emerge at the base of the channel.

The present invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of a wax-thread sewing-machine, such as the machine disclosed in Letters Patent of the United States issued to French and Meyer, No. 412,704, of October 8, 1889, with my improved awl-actuating mechanism applied thereto. Figs. 2, 3, and 4 represent details of the improved awl-actuating mechanism, showing the same in side elevation and the awl in different positions. Figs. 5 and 6 are sectional details of the awl-actuating mechanism.

Similar reference characters will be employed to designate corresponding parts throughout the specification and drawings.

Referring to the drawings, A represents the needle, B the looper, C the channel-guide,

D the back rest or sliding gage, E the back gage, F the take-up, and K the thread-finger, all of which parts, together with their actuating mechanism, except as hereinafter specified, may be and conveniently are the same as corresponding parts of said patented machine and in themselves form no part of my present invention.

In the preferred form of my invention illustrated in the drawings, H represents the awl, which is mounted upon the awl-carrier h , which is mounted upon the awl-carrier lever h' . The awl-carrier h , as hereinbefore suggested, is movable both with and independently of the awl-carrier lever h' , its motion with the awl-carrier lever h' being about the shaft h^2 as a fulcrum and being the positioning movement which brings the awl H into position in the channel (see Fig. 3) and gives it its return movement to bring it into a position out of the way of other working parts of the machine, (see Fig. 2,) and the independent movement of the awl-carrier h being the movement which after the awl H has been brought into position in the channel gives it its final puncturing movement, which carries it through the material to the limit of its stroke. (See Fig. 4.) In the form of my invention illustrated in the drawings these movements are accomplished as follows: The awl-carrier lever h' is in the form of a bell-crank lever fulcrumed at its angle on the shaft h^2 and in the upwardly-extending arm of which is formed a slot h^4 , which receives an elongated stud h^5 , carried by one arm of a lever h^6 , which is fulcrumed on the shaft h^7 and the other arm of which carries a cam roll or truck which engages a cam-groove in the lateral face of the cam-disk X, the arrangement of the lever h^6 and its actuating-cam being substantially that of said patented machine. It will be also understood that the shaft h^2 , on which the awl-carrier lever h' is fulcrumed, is mounted upon the feed-slide, and the feeding movement of the awl is imparted thereto substantially as in said patented machine. In front of the slot h^4 the arm h^3 of the awl-carrier lever h' is cut away, as shown at h^8 , for the purpose hereinafter described.

The awl-carrier h is preferably formed of two plates a , which embrace the lower end of the awl-carrier lever h' , and is movably supported on the awl-carrier lever by means of the blocks a' carried by bolts a^2 secured in plates a . The blocks a' engage, respectively, the slots a^3 and a^4 , formed in the awl-carrier lever h' and angularly disposed relatively to each other for a purpose to be hereinafter described. The plates a of the awl-carrier h also embrace the lower end of an arm b , which is carried by a segment b' , fulcrumed on the shaft h^2 . The lower end of the arm b is provided with a slot b^2 , which receives a roller a^5 , carried by a pin a^6 , secured in the plates a . The segment b' is provided with a slot b^3 , which receives the elongated stud

h^5 on the lever h^6 . The lever h' carries a shoulder h^9 , which is arranged to contact with a stop s , secured to a fixed part of the bearings of shaft h^2 .

The operation of the above-described awl-actuating mechanism is as follows: Assuming the parts to be in the position shown in Fig. 2, the awl being then in its raised position, a rotation of the cam X causes a forward movement of lever h^6 , which by means of the stud h^5 , which engages both of the slots h^4 and b^3 in the awl-carrier lever h' and segment b' , causes the lever h' and segment b' to move forward about their fulcrum h^2 until the parts have been brought into substantially the position shown in Fig. 3, in which position the point of the awl H is in the channel and substantially in contact with the base. The above-described movement is the positioning movement of the awl heretofore referred to. When the parts have reached the position last referred to, the shoulder h^9 comes in contact with the fixed stop s , which prevents a further forward movement of the lever h' , and the continued forward movement of the lever h^6 causes the stud h^5 to ride out of the slot h^4 over the cut-away portion h^8 , and since it remains in engagement with the slot b^3 of the segment b' it produces a further and independent forward movement of the segment b' . This independent forward movement of the segment b' causes the arm b by means of the slot b^2 and roller a^5 to impart a downward movement to the awl-carrier h , which downward movement by means of the angularly-disposed slots a^3 and a^4 and blocks a' imparts to the awl a movement along a curved path downward and inward, the resultant of the relative angular position of said slots, causing the point of the awl to enter and emerge from the between substance, said movement being the work-puncturing movement hereinbefore referred to. At the end of said movement the parts are substantially in the position shown in Fig. 4. By varying the relative inclination of the slots a^3 and a^4 the curve of the path of the awl during its puncturing movement may be either flattened or made more abrupt, as the work may require. It is not, however, contemplated that a necessity for such regulation will frequently arise, but interchangeable awl-carrier levers having slots of varying angularity may be conveniently provided.

While I have illustrated my improved awl-actuating mechanism in connection with the machine of the French and Meyer patent hereinbefore referred to, I desire to state that said patented machine has been selected merely for the purpose of describing my invention and that the present invention is in no wise limited to its embodiment in said machine, for it is equally useful in many other forms of wax-thread shoe-sewing machines. I would further state that I do not consider my invention as limited to the details of

mechanism hereinbefore described whereby I secure the work-positioning and work-puncturing movement of the awl; but,

5 Having described the construction and mode of operation of my invention, I claim as new and desire to secure by Letters Patent of the United States—

10 1. In a shoe-sewing machine, the combination with an awl, of mechanism for actuating said awl to impart thereto a positioning movement toward the work, and mechanism to thereafter impart to said awl an independent puncturing movement, substantially as described.

15 2. In a shoe-sewing machine, the combination with a curved needle and its actuating mechanism, of an awl-carrier lever, an awl-carrier movable with and independently of said lever, an awl mounted in the carrier and 20 mechanism for actuating the awl-carrier lever to impart to said awl a positioning movement toward the work, and mechanism to impart to the awl-carrier its independent movement to cause the awl to puncture the work, 25 substantially as described.

3. In a shoe-sewing machine, the combination with an awl-carrier lever and an awl-carrier movable with and independently of said lever, of mechanism arranged to impart a simultaneous movement to the awl-carrier le-

ver and awl-carrier toward the work, and to thereafter impart an independent puncturing movement to the awl-carrier, substantially as described.

4. The combination with an awl-carrier lever and an awl-carrier movable with and independently of said lever, of mechanism for simultaneously moving the awl-carrier lever and awl-carrier toward the work to position the awl, a stop to limit the movement of the awl-carrier lever after the awl has been positioned, and means to thereafter advance the awl-carrier to impart to the awl a work-puncturing movement, substantially as described. 35 40

5. In a shoe-sewing machine, the combination with an awl having a positioning movement toward the work along a curved path, and an independent puncturing movement along a curved path angularly disposed to the path of its positioning movement, and 50 successively-acting mechanisms for actuating the awl to move it along said paths, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY BRIGGS.

Witnesses:

E. M. ANSON,
F. H. KINNICUTT.