

**No. 696,289.**

**Patented Mar. 25, 1902.**

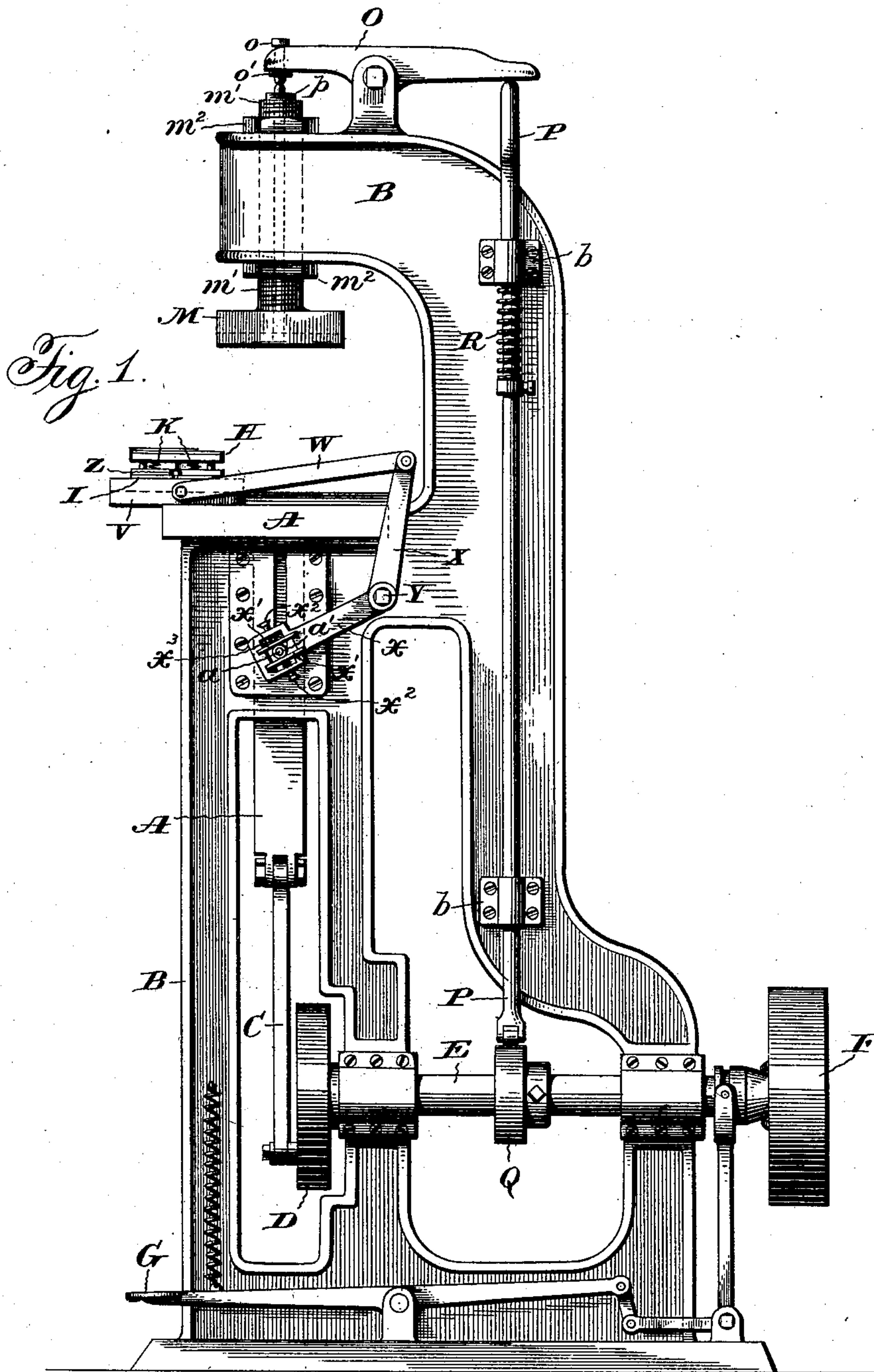
**A. G. WILLIAMS.**

# MACHINE FOR INSERTING PROTECTORS IN HEELS AND SOLES OF SHOES.

(Application filed July 26, 1901.)

(No Model.)

**3 Sheets—Sheet 1.**



Witnesses:  
Jas E Hutchinson  
Henry C. Hazard

Inventor.  
Allen S. Williams, by  
Prindle and Russell his Atty.

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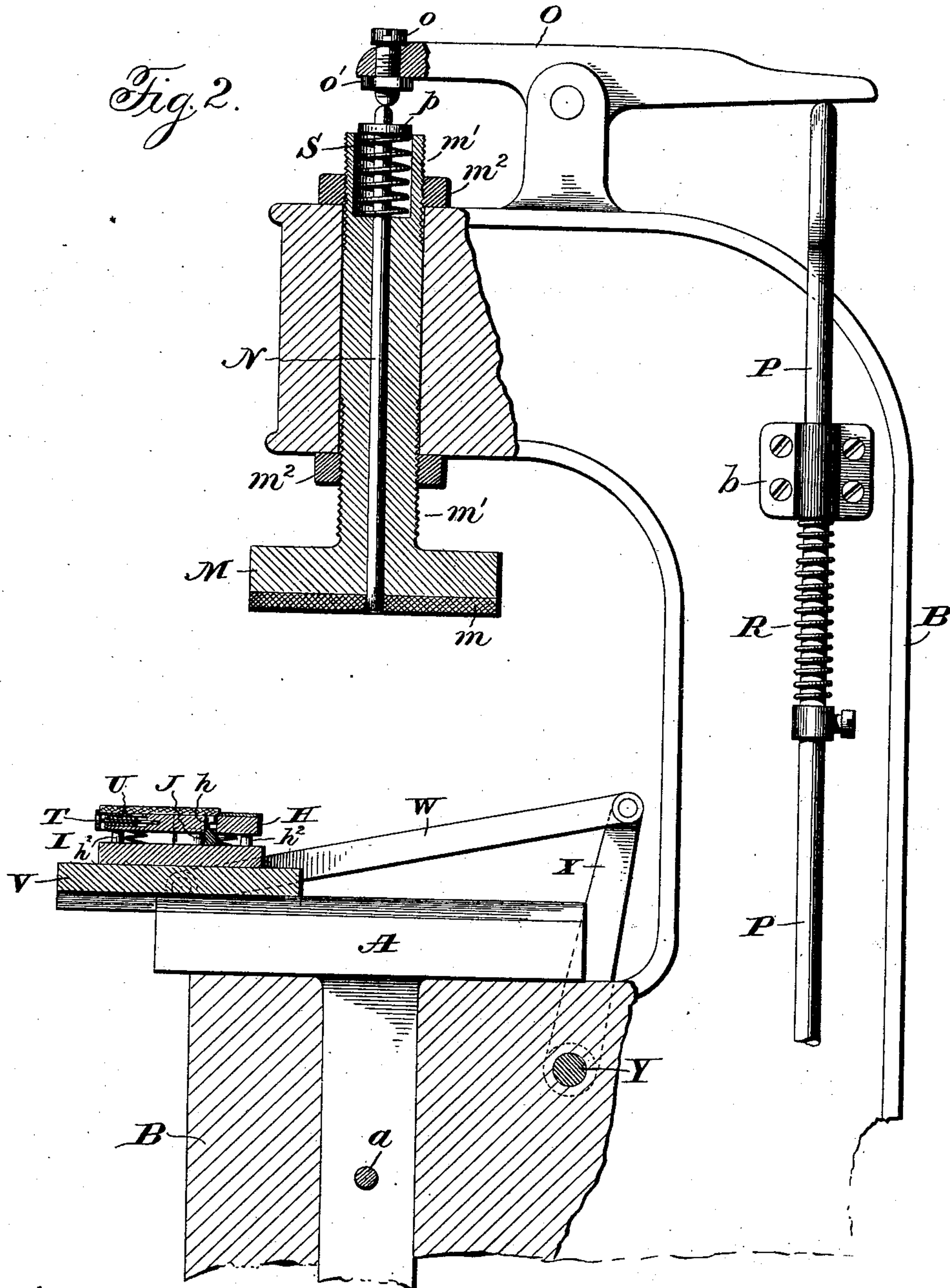
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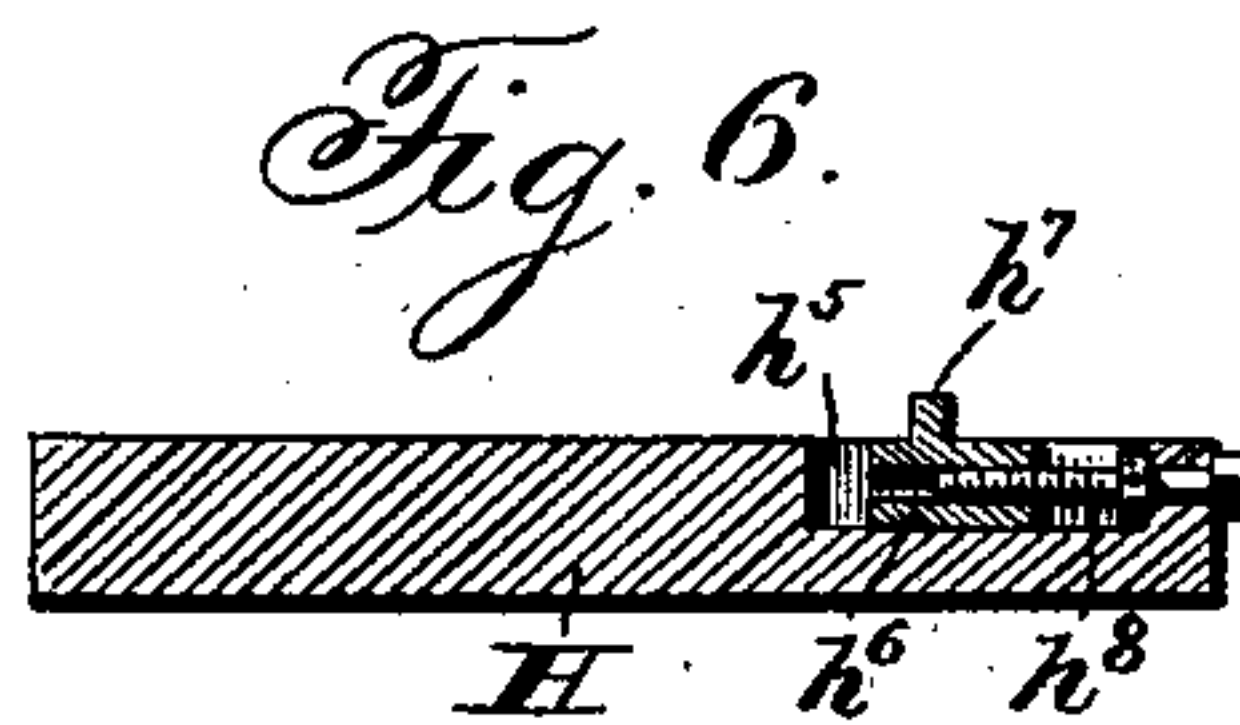
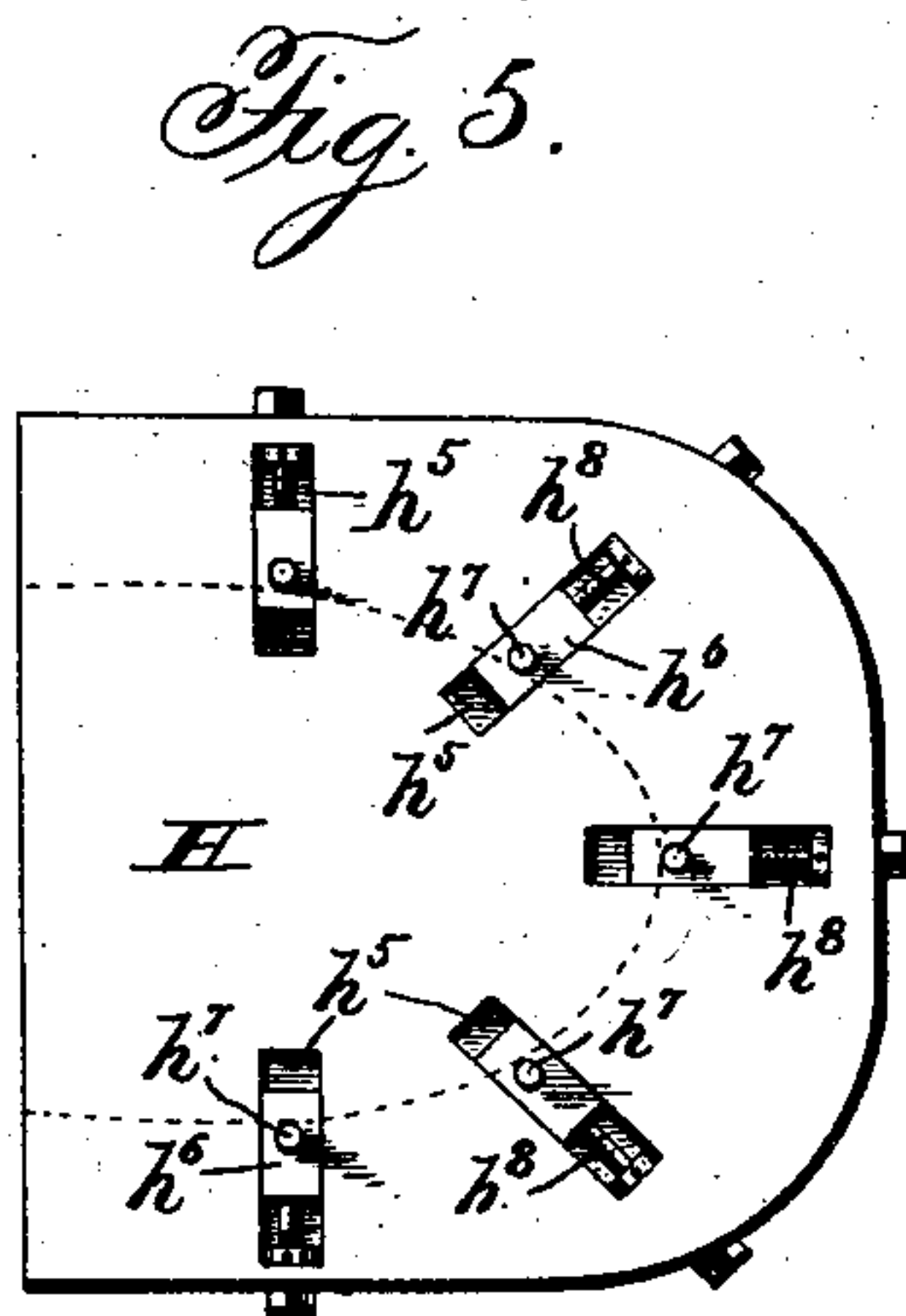
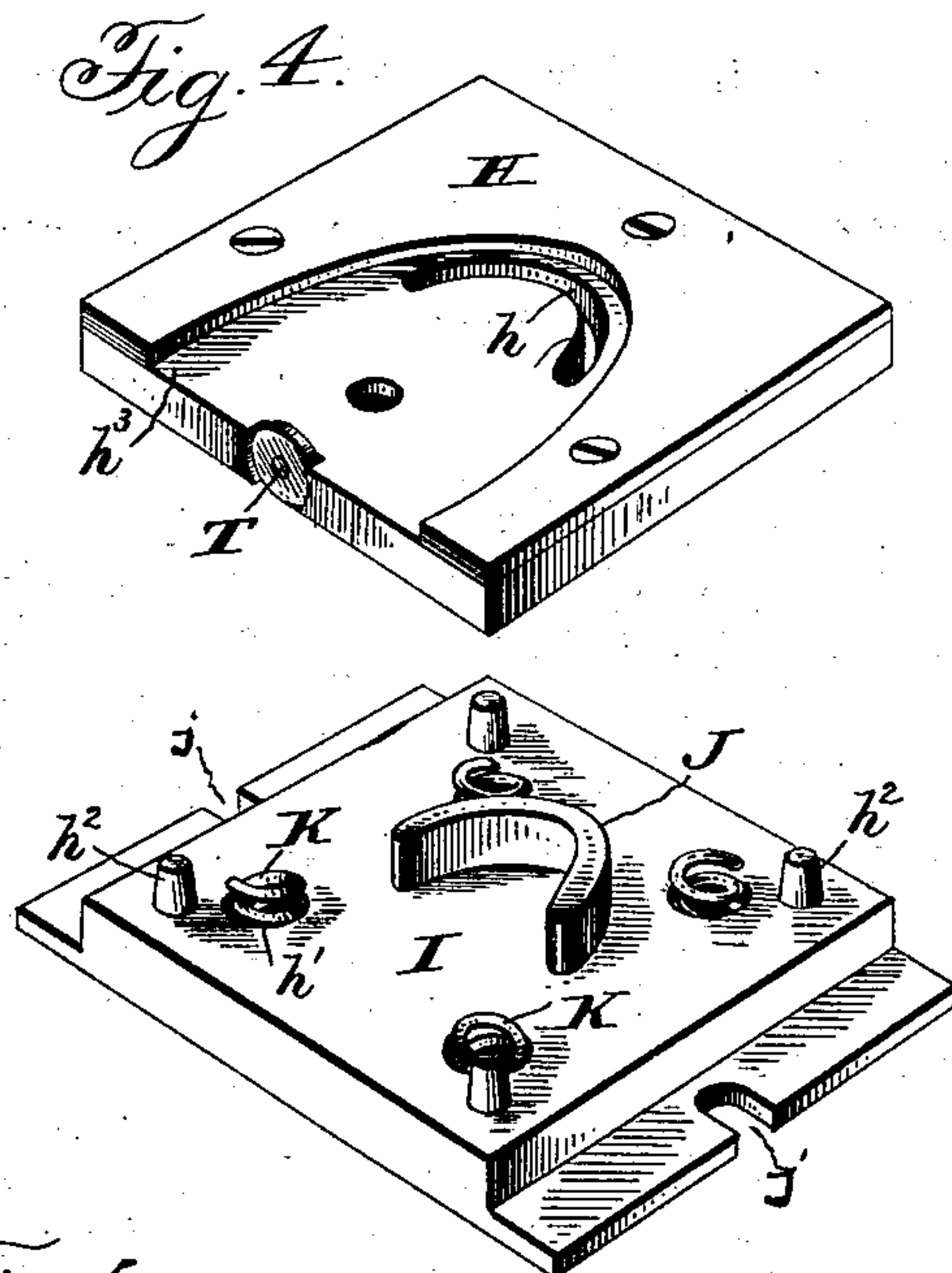
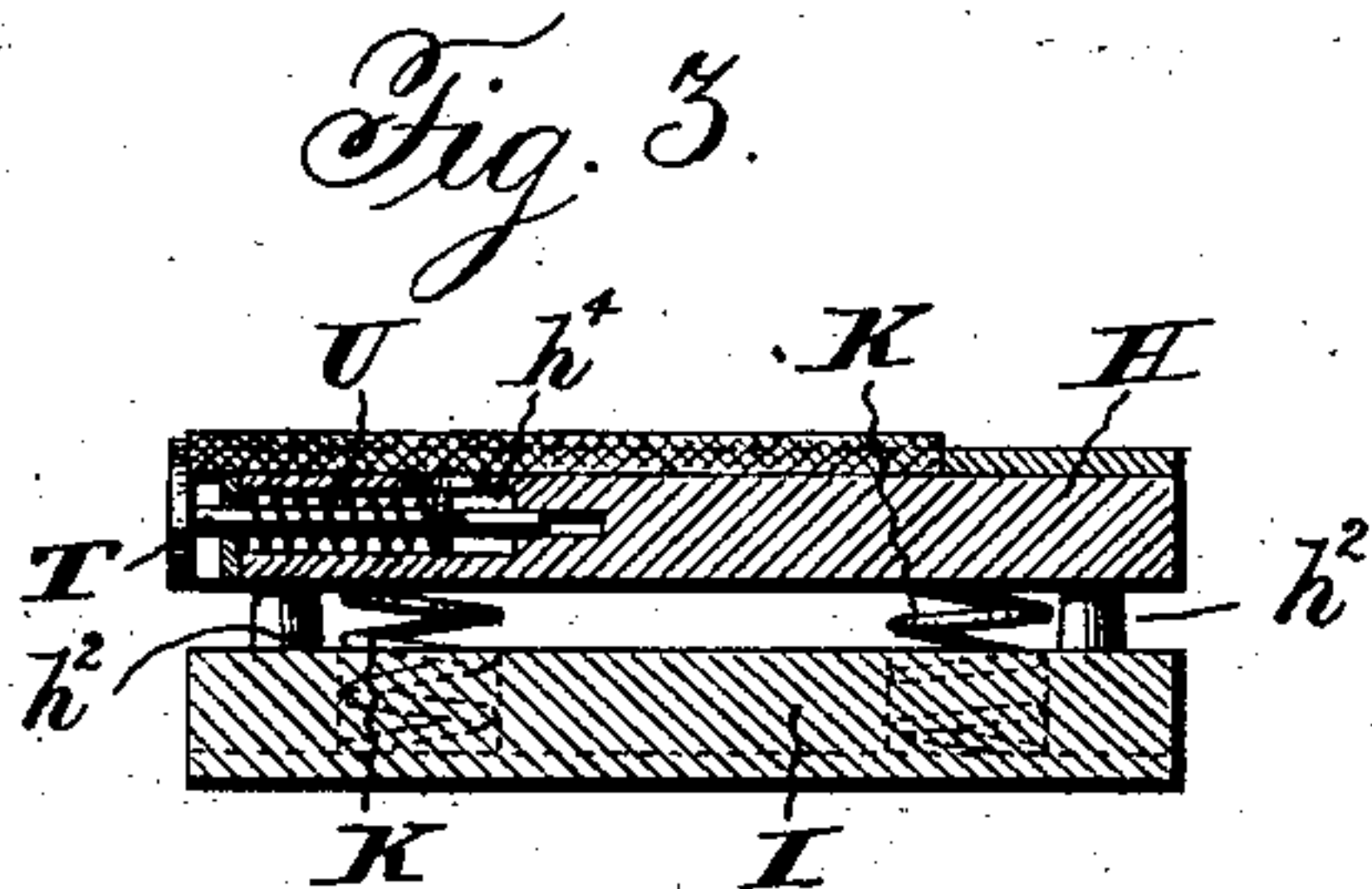
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(No Model.)

3 Sheets—Sheet 3.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ALLEN G. WILLIAMS, OF BALTIMORE, MARYLAND, ASSIGNOR TO THE  
MARYLAND SHOE MACHINERY COMPANY, OF BALTIMORE, MARY-  
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MACHINE FOR INSERTING PROTECTORS IN HEELS AND SOLES OF SHOES.

SPECIFICATION forming part of Letters Patent No. 696,289, dated March 25, 1902.

Application filed July 26, 1901. Serial No. 69,829. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN G. WILLIAMS, of the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Machines for Inserting Pro-  
5 protectors in the Heels and Soles of Shoes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in  
10 which—

Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a longitudinal sectional view of the upper part of the machine illustrated in Fig. 1. Fig. 3 is a  
15 sectional view of the die-plate. Fig. 4 is a perspective view of the parts forming the die. Fig. 5 is a plan view of an alternative construction of die-plate, and Fig. 6 is a sectional view of the die-plate shown in Fig. 5.

20 Letters of like name and kind refer to like parts in each of the figures.

The object of my invention has been to provide an efficient and simple machine for inserting protectors in the heels and soles of  
25 shoes, and especially such a machine that shall be adapted to insert protectors of various sizes into heels and soles of various sizes; and to such ends my invention consists in the machine for inserting protectors hereinafter  
30 specified.

In the drawings I illustrate my invention embodied in a machine for driving or inserting into the top lifts of heels the protector for which I obtained Letters Patent No. 661,883  
35 November 13, 1900; but it is to be understood that I do not limit myself to the use of the machine for driving or inserting any particular form of protector nor to the driving or inserting of protectors in heel-lifts, as it is well  
40 adapted for driving or inserting protectors or like devices into soles as well as heels.

In the embodiment of my invention for driving or inserting the protector of my patent above mentioned into the top lift of a  
45 heel I employ a die having the construction hereinafter described, that is mounted on a vertically-movable ram or plunger A, which reciprocates in a suitable guide in a frame B, the ram being connected at its lower end by

a pitman C with a crank D on a horizontal 50 shaft E, journaled in bearings in the frame B, the shaft being driven by a band-wheel F, loosely mounted on the shaft and adapted to be clutched to and unclutched from the shaft, the clutching being effected by means of a 55 treadle G, while the unclutching is done automatically in any well-known way at the completion of one revolution of the shaft.

The die comprises a plate H, having a slot or cavity *h*, corresponding in form to the form 60 of the protector to be driven, and a base or bed I, on which, either attached thereto or loose therefrom, (for a reason hereinafter given,) is a rib or raised part J of the same shape as and coinciding with the slot or cavity *h*. Interposed between the plate H and the bed or base are several (preferably four) 65 coiled springs K and K, that are each seated in a round hole or depression *h'* in the base or in the plate H and yieldingly support the 70 plate above the bed or base. Dowel-pins *h*<sup>2</sup> and *h*<sup>3</sup>, projecting from the bottom into openings or holes in the plate, slidably connect the plate and base. In the upper side of the plate H is a recess *h*<sup>3</sup> of the contour of a top lift and 75 of a depth preferably less than the thickness of the lift, into which the lift is placed for the driving of the protector therein. The plate H is lifted by the springs K and K sufficiently above the base, so that a protector when placed 80 in the cavity or slot will not project above the plane of the bottom of the lift-receiving recess.

Above the die on the frame B is a head M, against which a top lift placed in the recess *h*<sup>3</sup> will strike when the die-supporting ram or 85 plunger is raised. The ascent of the lift-bearing plate H being thus arrested, further upward movement of the ram will result in the rib J driving the protector into the lift until what is the outer edge of the protector 90 when in the heel will be perfectly flush with the outer surface of the lift and the inner edge or the tangs of the protector protrude or project beyond the inner surface of said lift. To prevent injury to the protruding or 95 projecting portion of the protector, the head M is faced with some suitable material, such as a piece of leather *m*. For convenience in



attaching said facing to and removing it from the head the latter may be provided with a recess in its under side having a dovetailed form and the facing be given a corresponding shape, it being inserted into and removed from such recess by an endwise movement. To permit adjustment to suit lifts of different thickness, the head M is attached to the frame B by a threaded shank or stem  $m'$ , on which, respectively above and below the portion of the frame through which said shank passes, are nuts  $m^2$  and  $m^3$ . By this arrangement the head can be raised or lowered, as may be necessary to suit the thickness of the lifts.

On the descent of the ram or plunger the lift will frequently remain attached to the head by reason of the entry of the protector edge or tangs into the facing, and for the removal of the lift therefrom I provide a rod N, that is moved downward by a lever O, which is pivoted to the frame B and at one end acts on the upper end of said rod, while at its other end it is engaged by the upper end of a vertical rod P, that is lifted by a cam Q on the shaft E, said rod having at its lower end a cam-engaging roller. The rod P is supported by guide-lugs  $b$  and  $b'$  on the frame B, and preferably a spring R is provided to move the rod in opposition to the cam, said spring being interposed between one of the lugs  $b$  and a collar on the rod.

The lift-removing rod N is raised, after it has been depressed by the lever O, by means of a coiled spring S, which is placed in a cavity in the upper end of the shank  $m'$  of the head M and bears at one end against the collar  $p$  on the rod and at its other end against the bottom of the cavity in said stem. As the vertical adjustment of the head M changes the relative position of the rod P and the lever O, the lever is preferably provided with a screw  $o$  to constitute its bearing on the rod to enable such adjustment as may be necessary to compensate for such alteration of the relative position of rod and lever as may be caused by vertical adjustment of the head. On the screw is a nut  $o'$  for securing or locking it in the position to which it may be adjusted.

To avoid accidental displacement of a lift after it has been placed in the recess  $h^3$  of the plate H and insure that the lift will be in proper position to receive the protector, I place in a recess  $h^4$  in said plate a rod T, having on its outer end a lip or projection to engage the straight edge of the lift and which is drawn or pressed against such edge by means of a coiled spring U on the rod. Preferably the lip or projection is in the form of a disk, so that it will always be in position to overlap and engage the edge of the lift and require provision of no part to hold the rod against turning, as would be necessary if the lip or projection were in the form of a simple radial extension or finger. Enough movement of the lip or projection is provided for

to insure engagement of the straight edge of the lift even though it might lie within the edge of the plate H by reason of shrinkage or otherwise.

The die is attached to a plate V, which is slidably mounted on the ram or plunger, and for moving such plate to shift the die into and out of position beneath the head M said plate is connected by two links or levers W and W', respectively attached at its opposite sides to levers X and X' on a shaft Y, passing through the frame B from side to side, one of which levers has an arm  $x$ , that projects along the side of the frame opposite the ram or plunger A. Such arm is provided with a preferably rectangular loop, and in the opening of the loop are mounted two plates  $x'$  and  $x''$ , which are guided by sides of the opening and are forked to engage the opposite faces of the lever. The plates  $x'$  and  $x''$  are preferably provided with stems  $x^2$  and  $x^3$ , which pass through sides of the loop. Springs  $x^3$  and  $x^4$  are mounted on the stems to force the plates  $x'$  and  $x''$  toward the center of the loop, and heads are formed on the stems to limit the movement of the plates toward each other. A pin  $a$  is secured to the ram, and a roller  $a'$  is mounted on such pin. The roller  $a'$  is located between the plates  $x'$  and  $x''$  and serves to communicate the movement of the ram A to the arm  $x$ . The normal distance apart of the plates  $x'$  and  $x''$  is preferably greater than the diameter of the roller, so that there will be a dwell of the arm  $x$  at each end of the stroke of the ram A. Thus on the ascent of the plunger the die-carrying plate will be moved into position for driving a protector, and on its descent said die-carrying plate will be moved away from such position, the timing of the parts being such that the die will be in position for a driving operation before the lift is moved against the head M and its movement from such position begun as soon as the ram or plunger has extended far enough to free the lift. The springs  $x^3$  and  $x^4$  permit the die-carrying plate to rest as soon as the lift comes in contact with the head M and while the protector is being driven. By the outward movement of the die or its movement from position for driving a protector into a lift the die is placed in a position for the more convenient placing therein of a protector and a lift, and by its inward movement it will push out of the machine the lift previously operated on, which will have been removed from the head and dropped where it will be engaged by the die.

The die is preferably attached to the plate V by two screws Z and Z', that respectively pass through open-ended slots in flanges  $i$  and  $i'$  on opposite sides of the bed or base I. I employ open-ended slots for the screws, preferably because for the separation of the parts it is necessary to remove but one of the screws Z and Z'.

The operation of my machine is as follows:



With the ram or plunger in its lowest position a protector is first placed in the die slot or cavity  $h$  with its penetrating edge or tangs upward, and then a top lift is placed in the recess  $h^3$  in the die-plate H. By operating the treadle G the band-wheel is clutched to the shaft E, and the ram or plunger being moved upward will first cause the die to be moved to position for proper coaction with the head M, and by being in such position the top lift will be moved against and it and the die-plate arrested by the head M. Should the heel-lift not be of uniform thickness, the die-plate H will adjust itself to accommodate the variation in thickness by reason of the several separated yielding points of support which the coiled springs K and K afford, such rocking of the plate as may be necessary for this purpose being possible by having the dowel-pins tapering in shape. The fit of the driver-rib J in the slot or cavity  $h$  is sufficiently loose to enable this rocking of the die-plate without interfering with the proper seating of the driver-rib on the bed-plate. The ascent of the ram or plunger continuing, the rib or driver J will force or drive the protector into the top lift and partially through the same, as hereinbefore described, the movement of the ram or plunger being continued until the base or head H abuts against the under side of the die-plate and the upper face of the driving-rib is flush with the bottom of the lift-holding recess  $h^3$ , and thereby insuring that the outer edge of the protector will be flush with the outer surface of the lift. The ram now descends and having moved far enough to free the lift the outward movement of the die commences, and when it has been moved fully outward the lift, attached to the facing of the head M by the portion of the protector forced therein, is detached therefrom by the cam-actuated rod N and falls to a position in the path of the die so that it may be expelled when the latter is again moved inward. The descent of the plunger or ram being completed, the band-wheel is automatically unclutched from the shaft E, and the machine is ready for a repetition of the operation.

I prefer to make the protector-driving rib J separate from the base-plate in order to enable one base-plate to be used for driving protectors that vary in shape or size, such construction conducing to economy, as with the driver-rib attached to the base or bed a separate base or bed would be necessary for each different shape or size of protector.

Though I have described the die as formed for driving but a single protector, yet, if desired, the die can be formed for driving a number of protectors at the same time without departure from the scope of my invention, it being necessary merely to provide the necessary additional protector-receiving slots and drivers. It is also to be understood that I do not restrict the use of my machine to

any particular form, design, or construction of protector, as my invention is not limited in this respect. I also wish it understood that I regard the scope of my invention as extending to machines adapted for driving protectors into the soles of shoes as well as heels. I also wish it understood that I do not limit myself to a machine having the construction and arrangement of parts herein shown and described, as changes in construction and arrangement can be made which will involve no departure from my invention. For instance, the die-plate instead of having a cavity formed in its upper side or having a recess cut out of a plate attached to its upper side for the purpose of holding the heel-lift may be provided with guideways  $h^5$ , preferably five in number, which are perpendicular to the edges of the lift in its normal position. In such guideways blocks  $h^6$  and  $h^6$  are mounted to slide, and such blocks are provided with pins  $h^7$  and  $h^7$ , which project above the surface of the plate H and which engage the edges of the lift. The blocks are engaged by screws  $h^8$  and  $h^8$ , which are journaled in the plate H and are threaded into holes in the blocks, and by turning the screws the pins may be adjusted to fit lifts of various sizes.

Having thus described my invention, what I claim is—

1. In a machine for inserting protectors, the combination of a base having a substantially plane surface, a driver for a protector resting freely upon said surface, and a support for a lift yieldingly mounted above said driver, and having a slot for the passage of the latter, said support being easily removable from the base, substantially as described.

2. In a machine for inserting protectors, the combination of a base, a driver for a protector, a spring-sustained support for a lift, and vertical guides for maintaining said support over said base, said guides having a loose engagement with the support so that said support can tilt in operating upon lifts of uneven thickness, substantially as described.

3. In a machine for inserting protectors, the combination of a base, tapered dowel-pins secured to said base, a driver on said base, and a spring-sustained support for a lift, said support consisting of a plate being readily removable from said base, having a slot to receive the driver, having means for retaining a lift in position over said slot, and having holes to receive the dowel-pins, whereby the support can tilt in operating upon lifts of uneven thickness, substantially as described.

4. In a machine for inserting protectors, the combination of a base, dowel-pins secured to said base, a driver on said base, and a spring-sustained support for a lift, said support consisting of a plate having holes to receive the dowel-pins, having a slot to receive the driver, having means for retaining a lift in position over said slot, and being readily removable from said base, said holes for the dowel-pins



being larger than the dowel-pins so that the support can tilt in operating upon lifts of uneven thickness, substantially as described.

5 In a machine for inserting protectors, the combination of a frame having a head, the lower surface of the head being constructed of soft material, a ram movable toward and from said head, and a driver rigidly supported by said ram, whereby, when a protector is  
10 inserted into a lift between said ram and head, the protector can be driven flush with the lower surface of the lift, and the tangs of the protector can be received in the soft material on the head, substantially as described.  
15

6. In a machine for inserting protectors, the combination with a ram, a die-plate, reciprocable across the upper face of said ram, a pin on said ram, a slotted arm which is adapted  
20 to receive motion from said pin and impart it to said die-plate, a spring-plate mounted in guides in the slot of said arm, said plate being adapted to engage said pin, a headed stem projecting from said spring-plate, and  
25 a spring coiled upon said stem, substantially as and for the purpose described.

7. In a machine for inserting protectors, the combination with a rigid head having a soft face, means for inserting the protectors into  
30 lifts while the latter are resting against said soft face, a rod reciprocably mounted in said head, a spring for raising said rod above the soft face of the head, and means for forcing

said rod below the face of said head after the protector has been inserted, substantially as  
35 and for the purpose described.

8. In a machine for inserting protectors, the combination with a rigid head having a soft face and having a bore opening through said face, means for inserting protectors in lifts  
40 while the latter are resting against said soft face, a rod mounted in a bore in said head, a spring for withdrawing the rod within the head, a lever adapted to bear upon the opposite end of the rod, and a cam for swinging  
45 said lever after the protectors have been inserted, to cause said rod to detach the protectors from the soft face, substantially as and for the purpose described.

9. In a machine for inserting protectors, the combination with a plate for supporting a lift, a gage on said plate, a rod seated in a bore in said plate parallel to the lift-supporting surface, a spring on said rod tending to force the latter toward said gage, and a disk  
55 on the outer end of said rod, said disk being adapted to engage the edge of the lift and press it toward the gage, substantially as and for the purpose described.

In testimony that I claim the foregoing I  
60 have hereunto set my hand this 10th day of July, A. D. 1901.

ALLEN G. WILLIAMS.

Witnesses:

HARRY HECHHEIMER,  
WILLIAM J. MURRAY.