

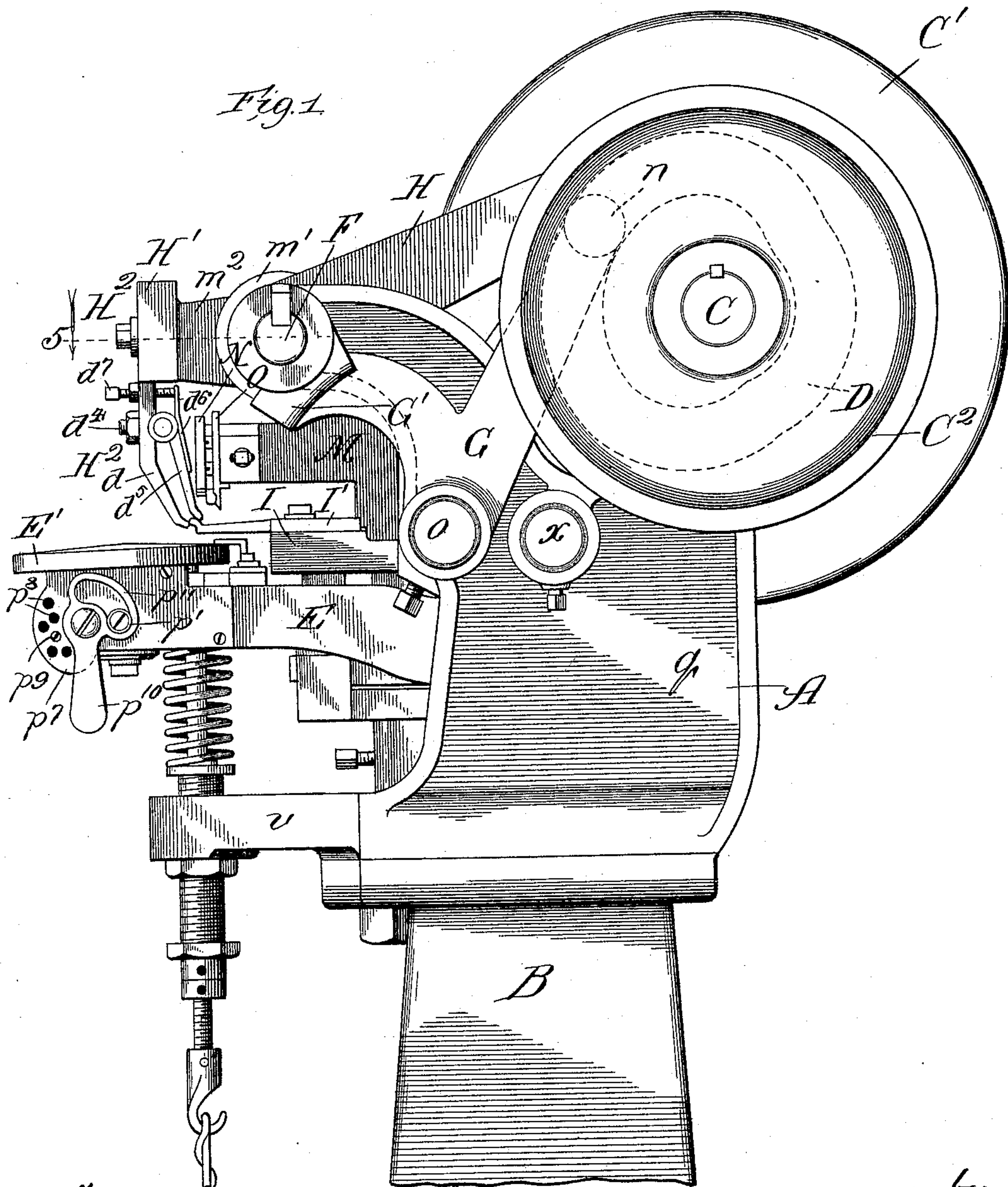
(No Model.)

6 Sheets—Sheet 1.

J. B. HADAWAY.
INSOLE REINFORCING MACHINE.

No. 603,764.

Patented May 10, 1898.



Witnesses:
E. S. Gaylord,
Lute J. Allen.

Inventor:
John B. Hadaway.
By Dyrnforth & Dyrnforth,
Attys.

(No Model.)

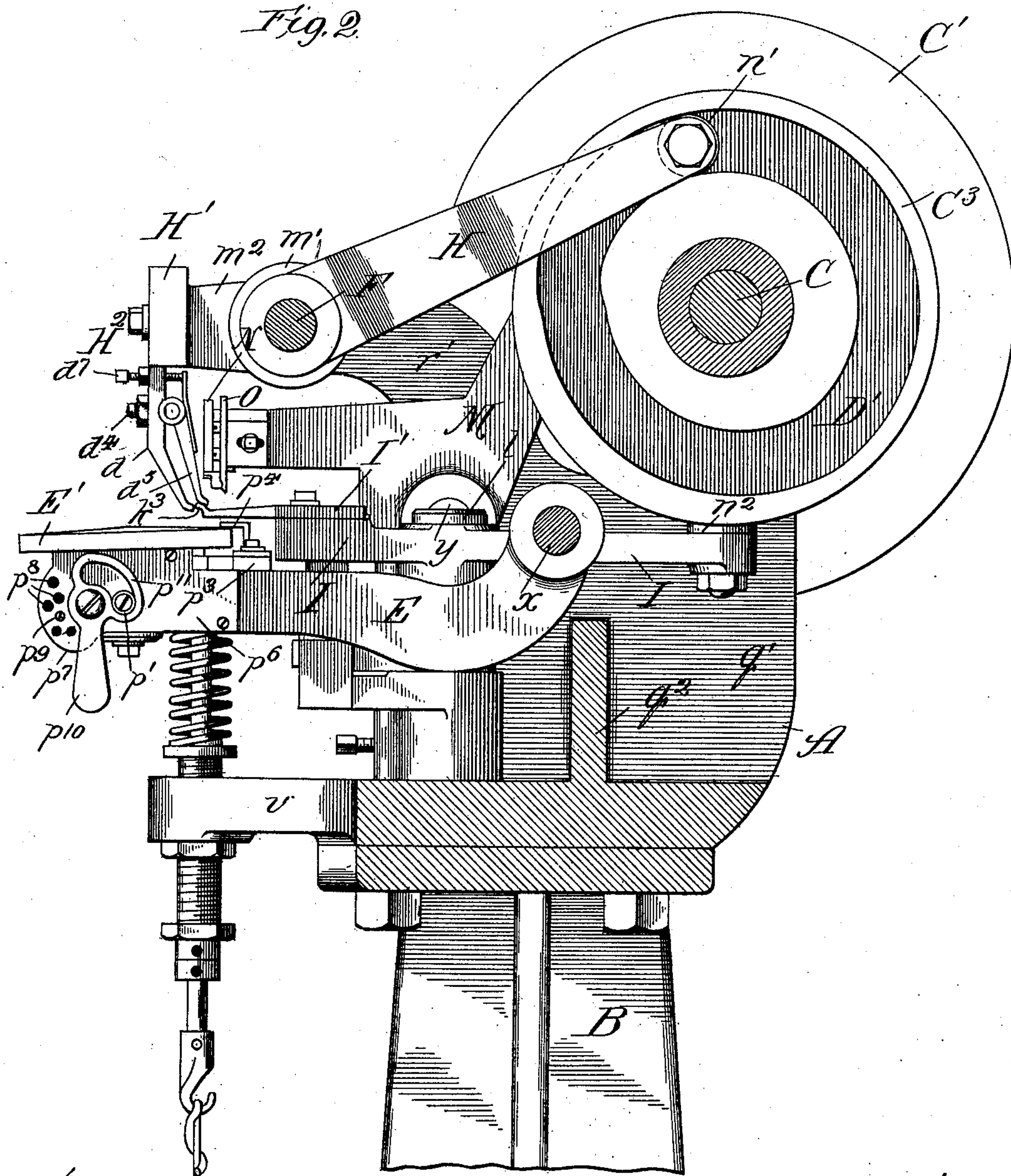
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J. B. HADAWAY.
INSOLE REINFORCING MACHINE.

No. 603,764.

Patented May 10, 1898.

Fig. 2.



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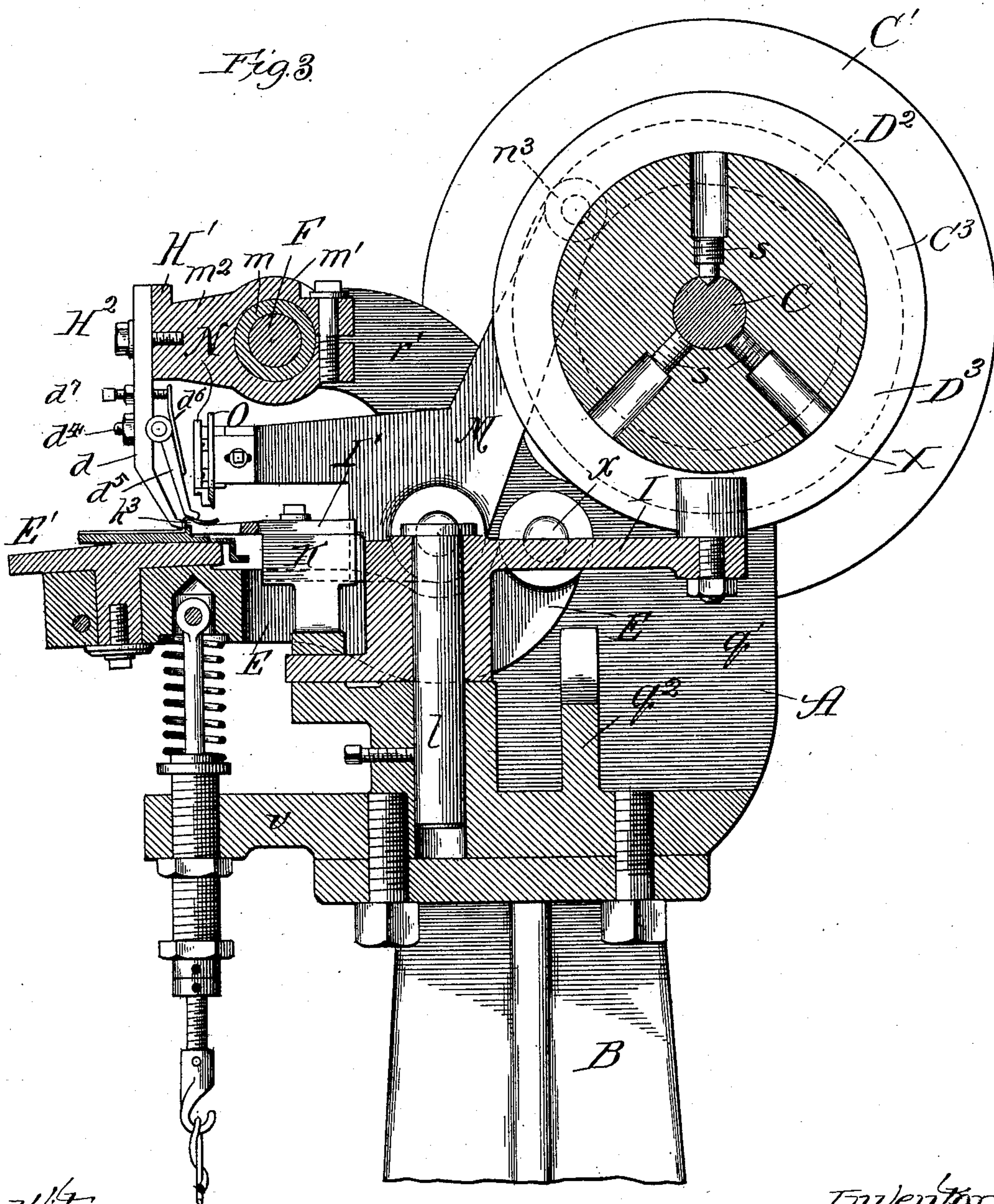
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6 Sheets—Sheet 3.

J. B. HADAWAY.
INSOLE REINFORCING MACHINE.

No. 603,764.

Patented May 10, 1898.



Witnesses:
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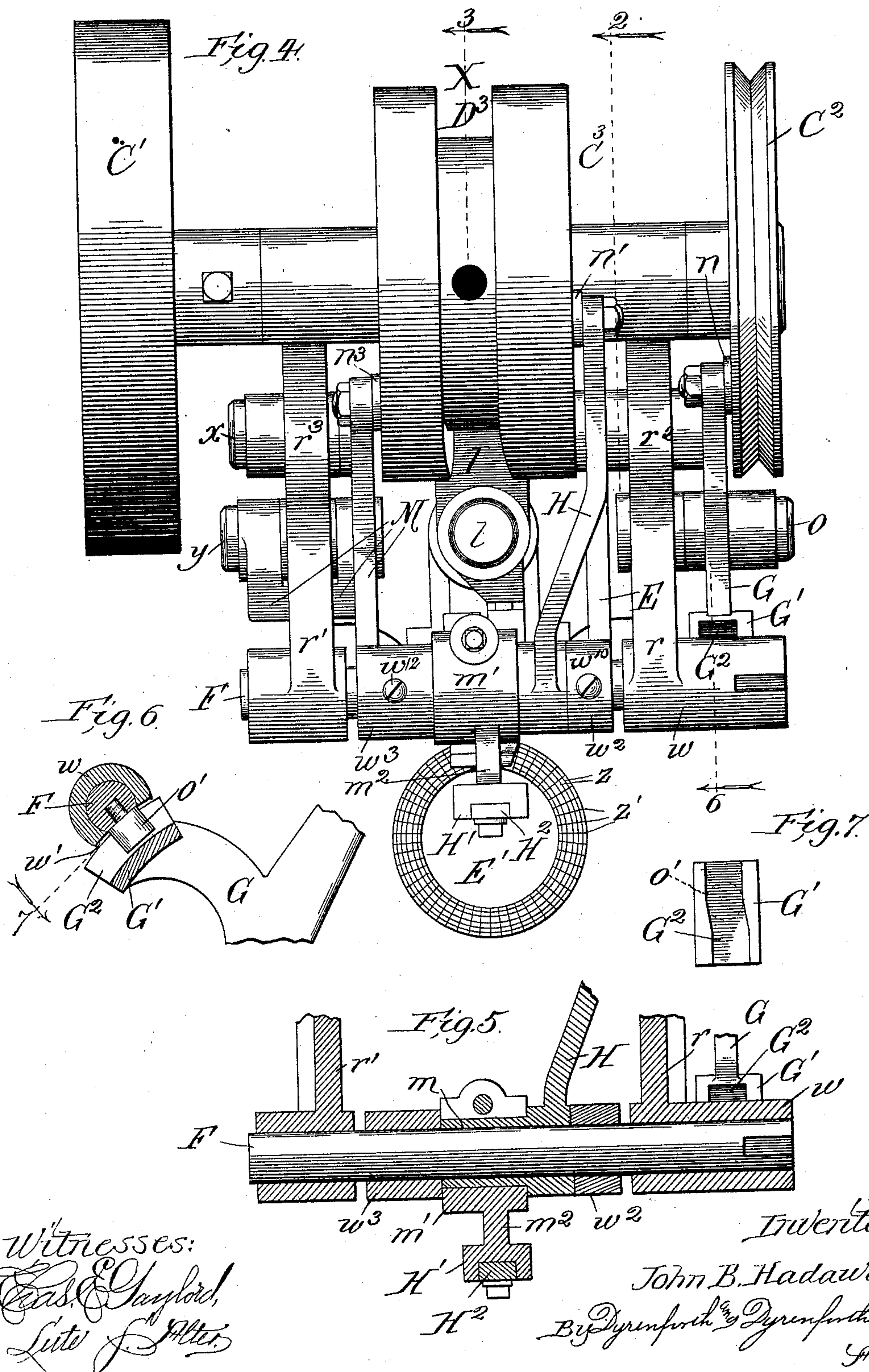
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6 Sheets—Sheet 4.

J. B. HADAWAY.
INSOLE REINFORCING MACHINE.

No. 603,764.

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6 Sheets—Sheet 5.

J. B. HADAWAY.
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Fig. 8.

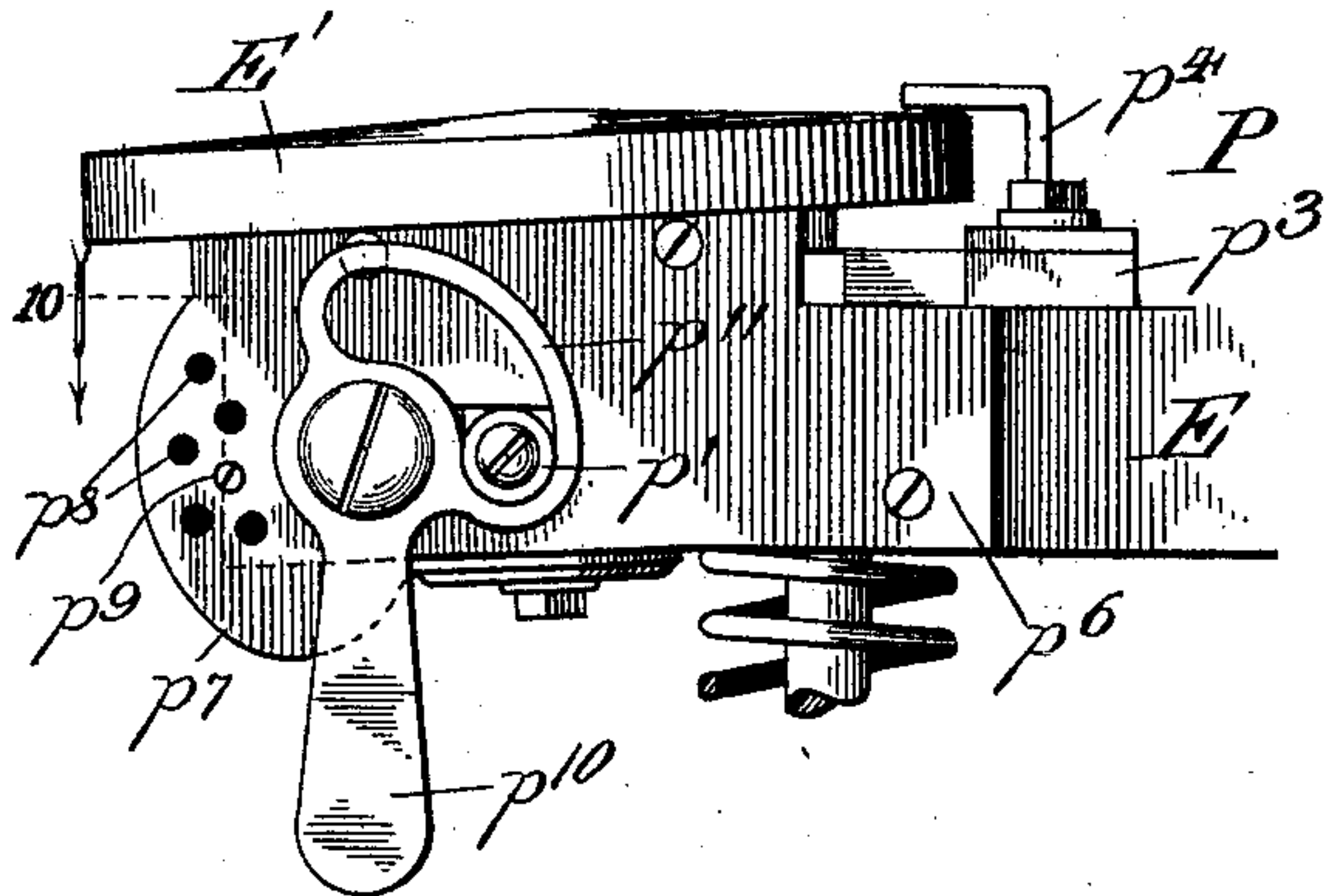


Fig. 9.

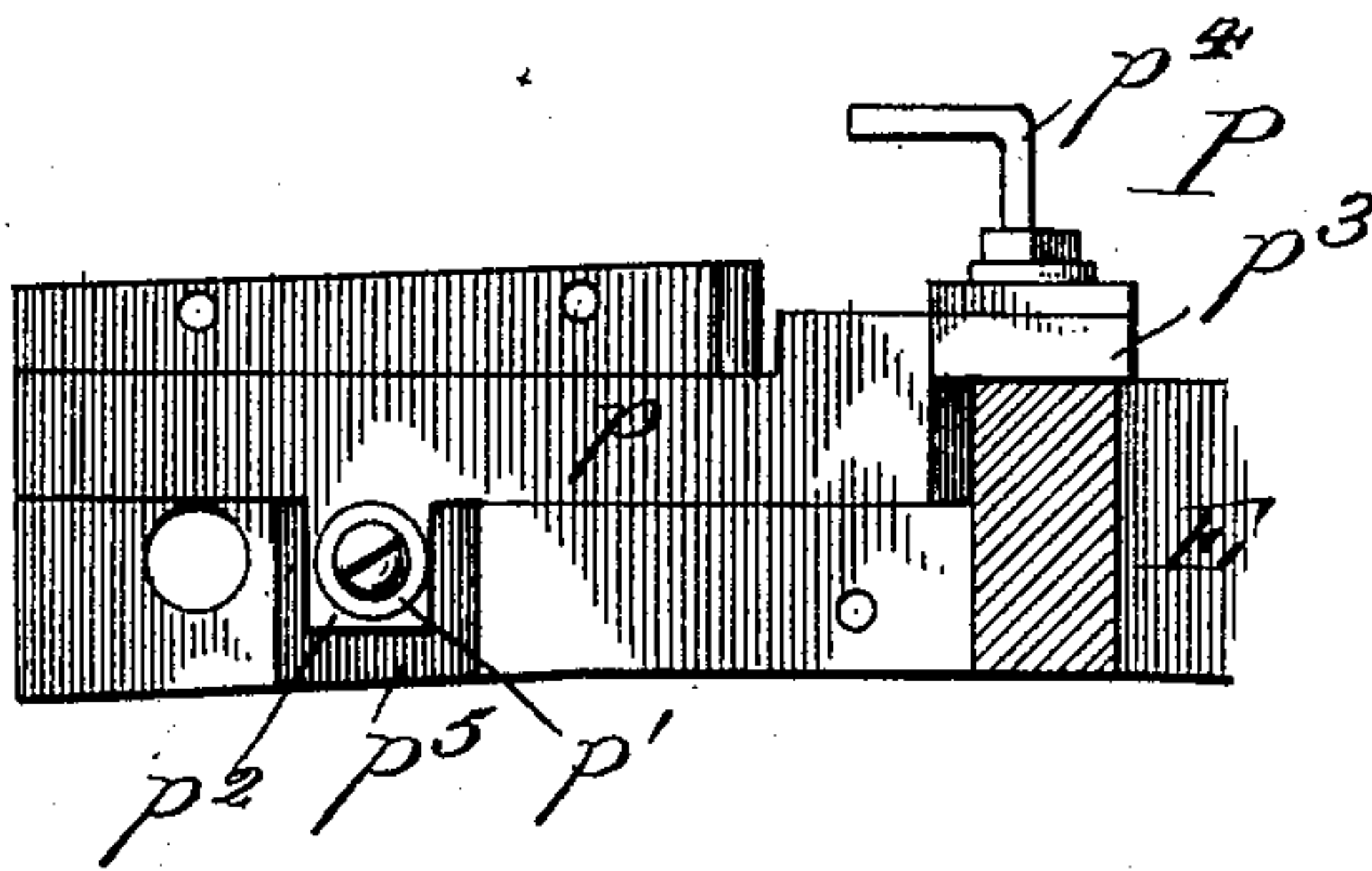


Fig. 10.

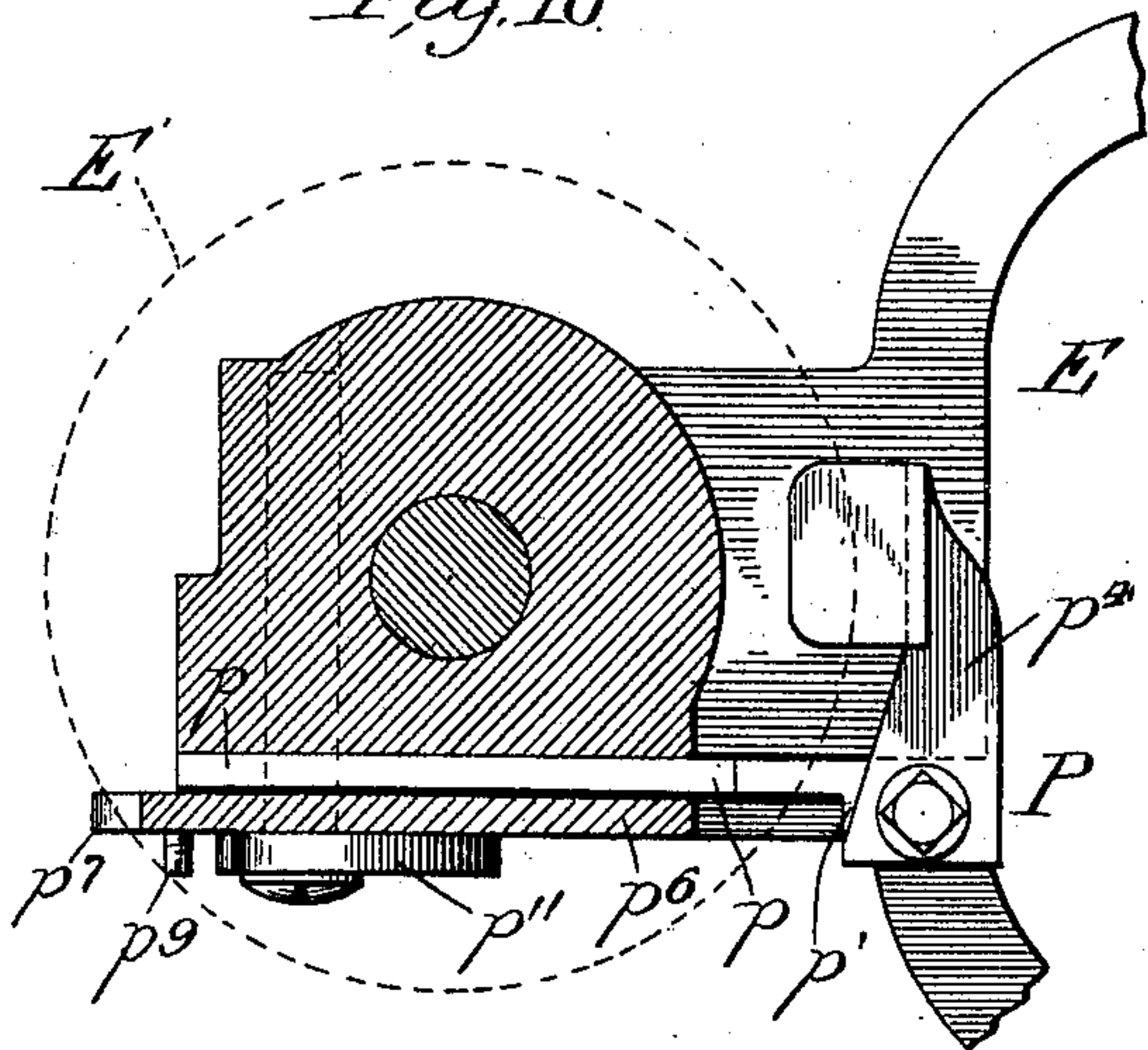


Fig. 12.

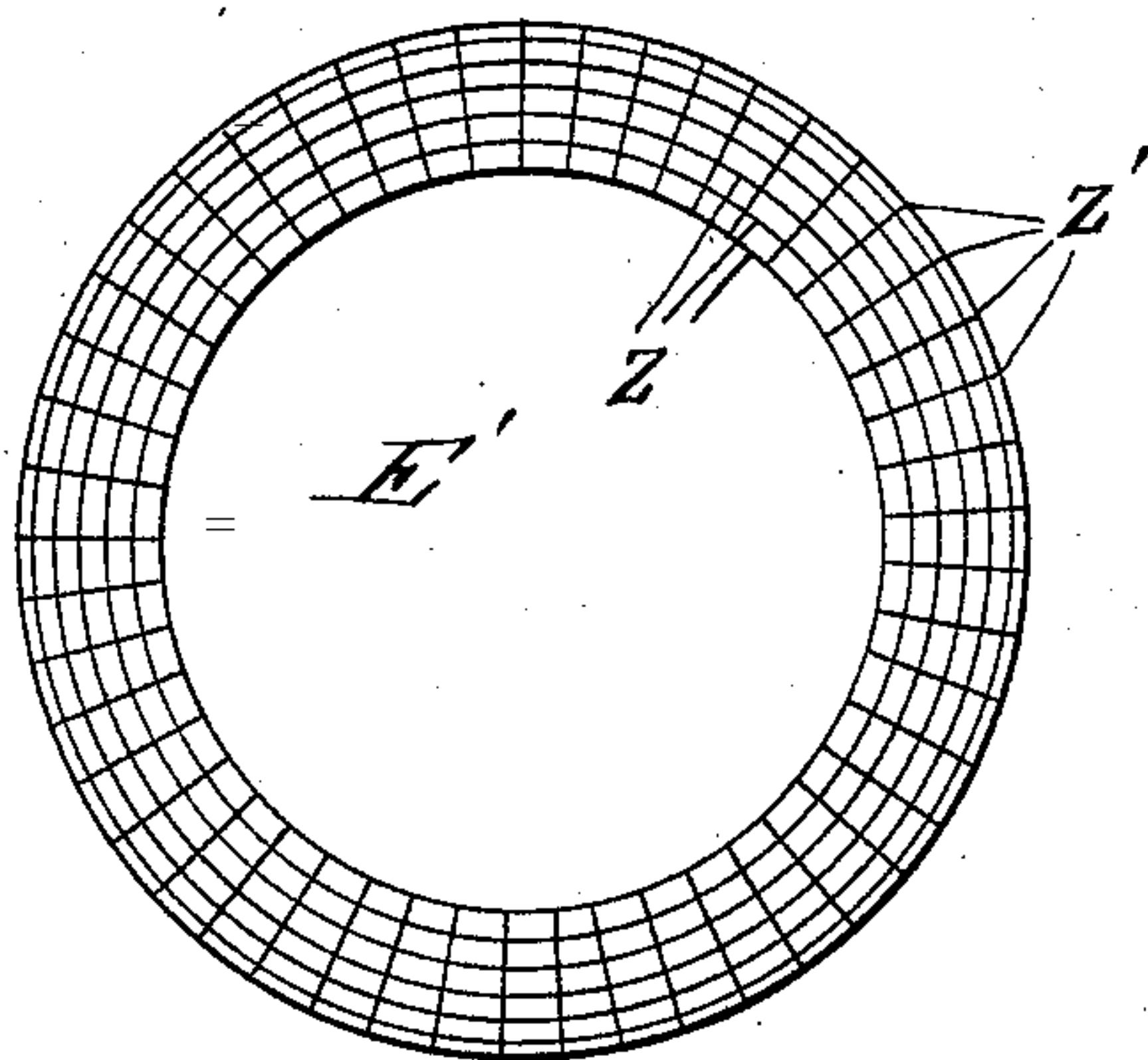
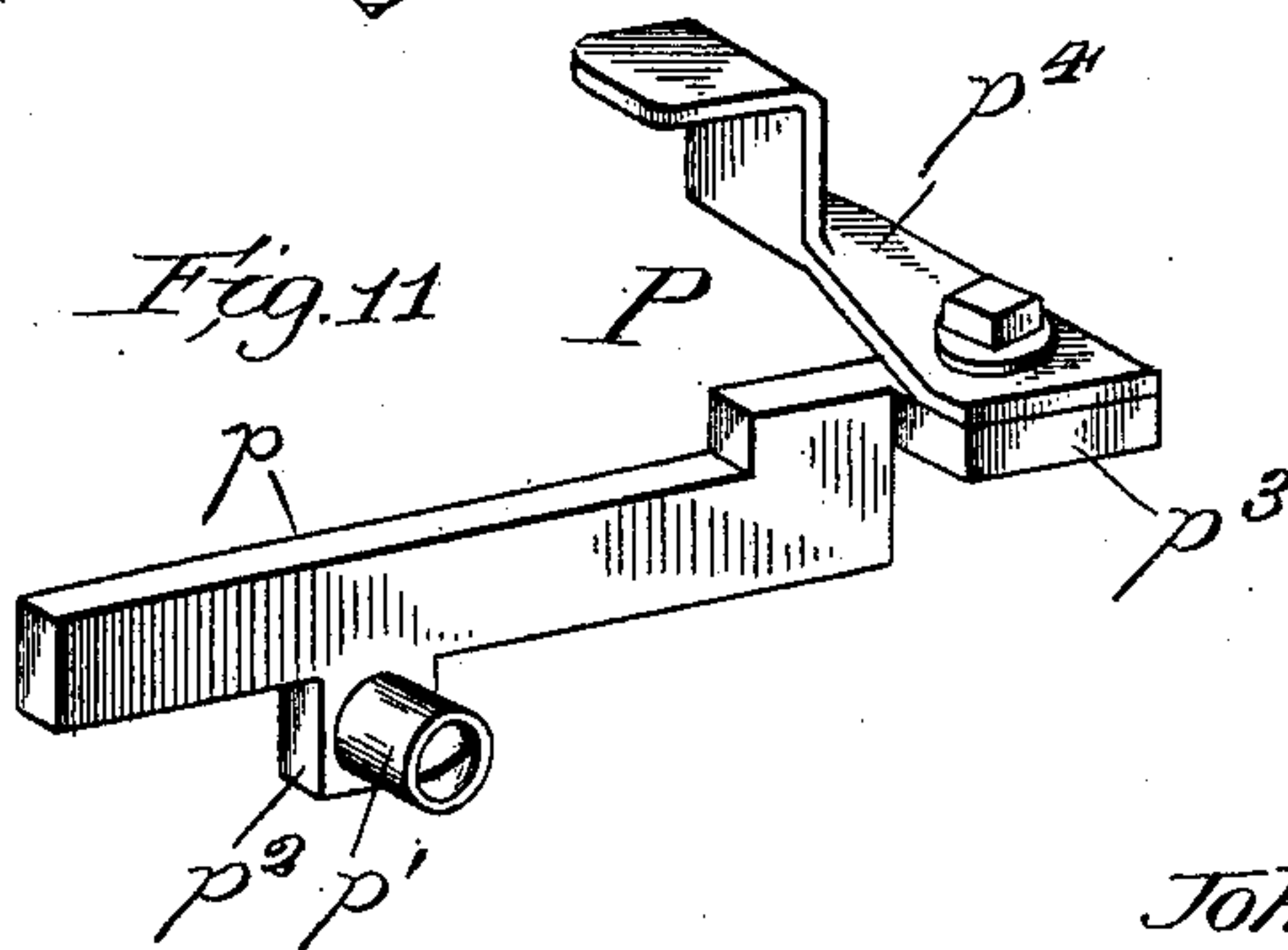


Fig. 11.



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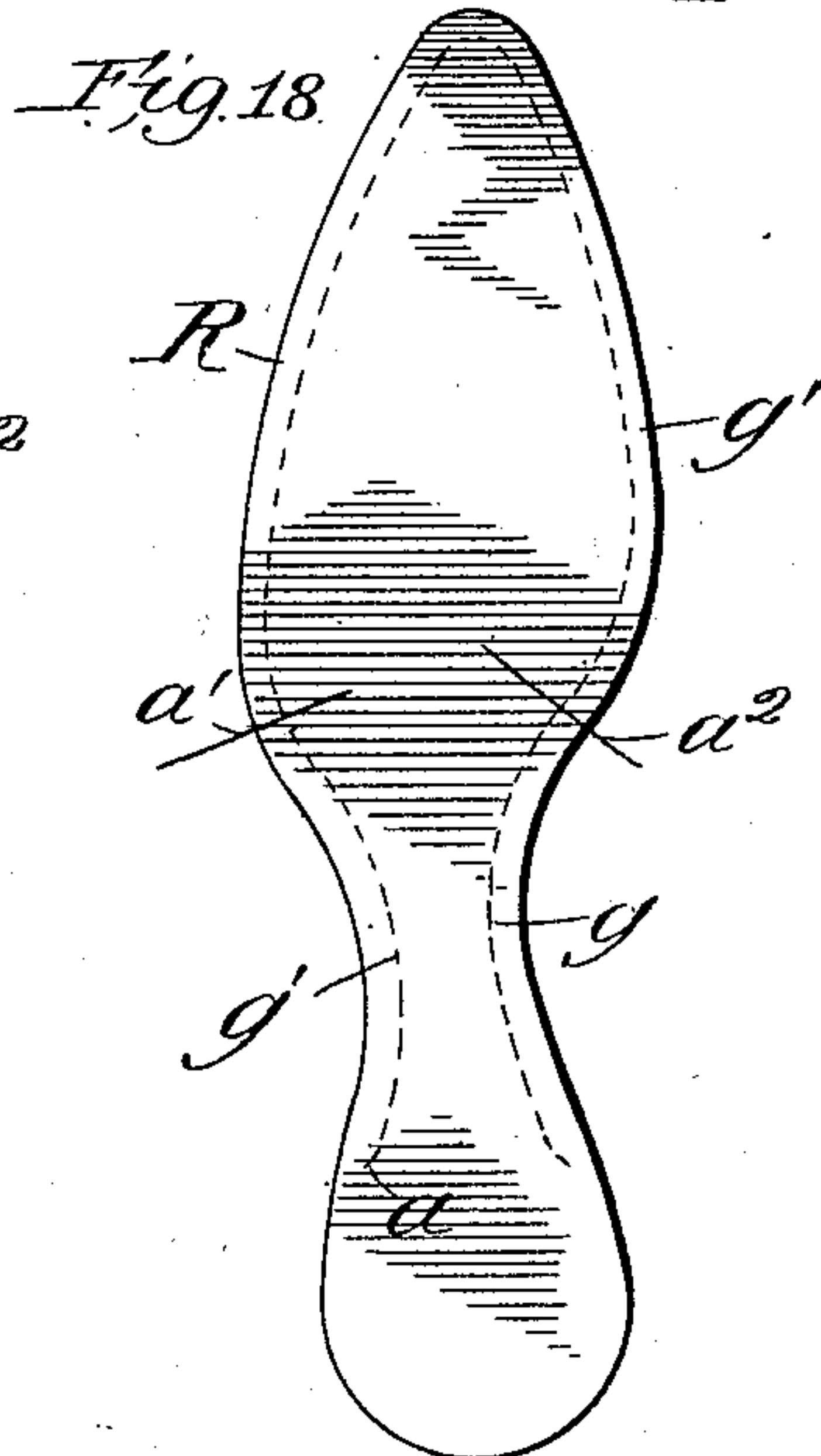
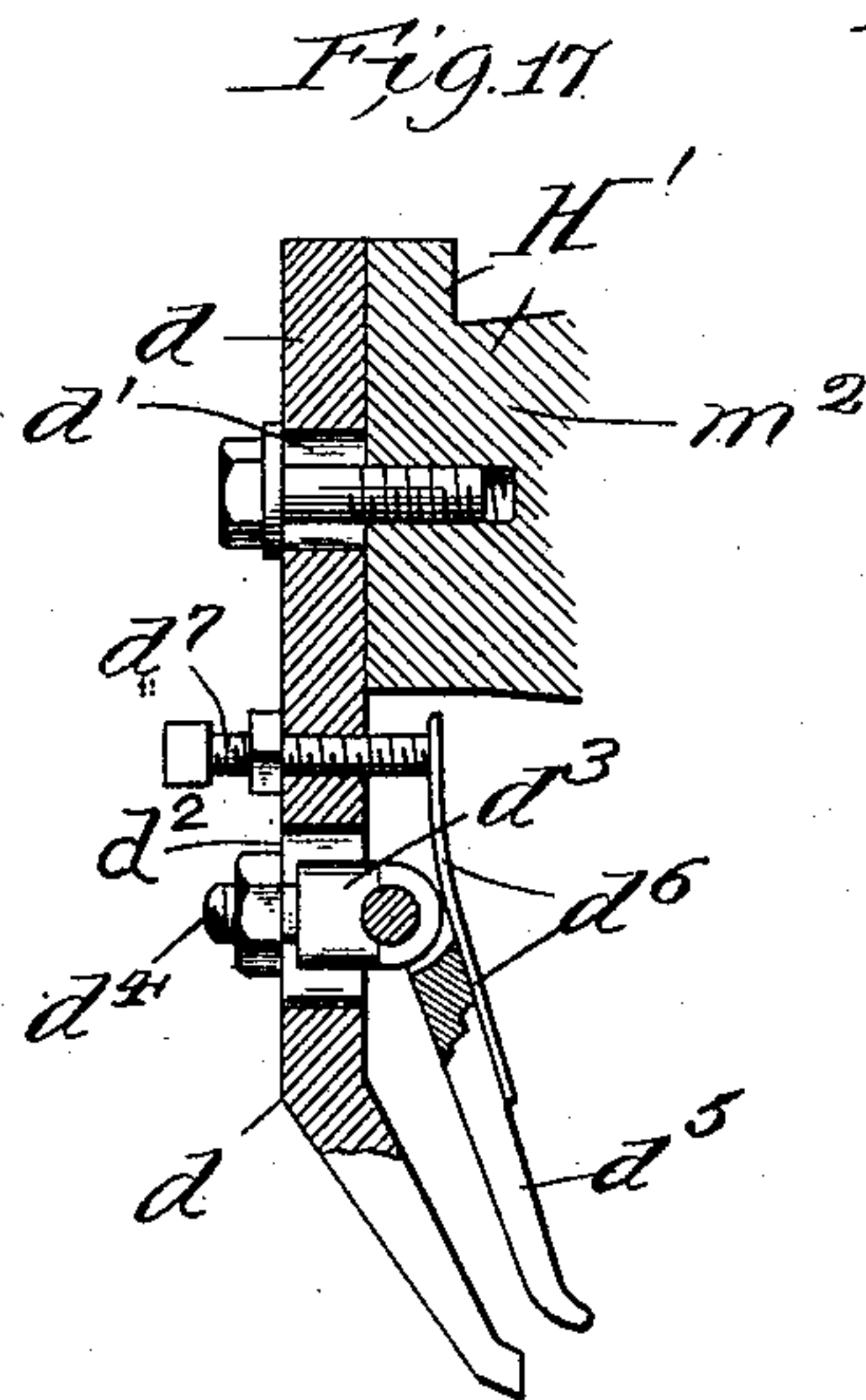
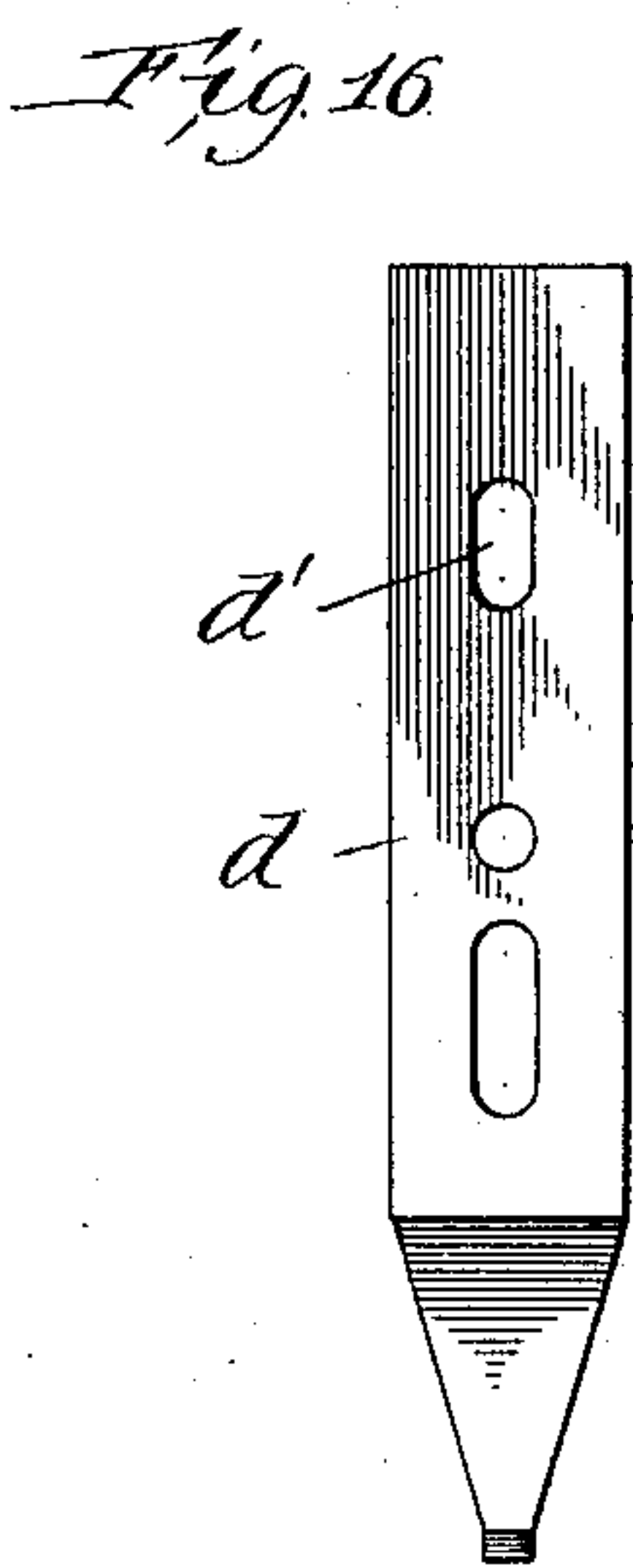
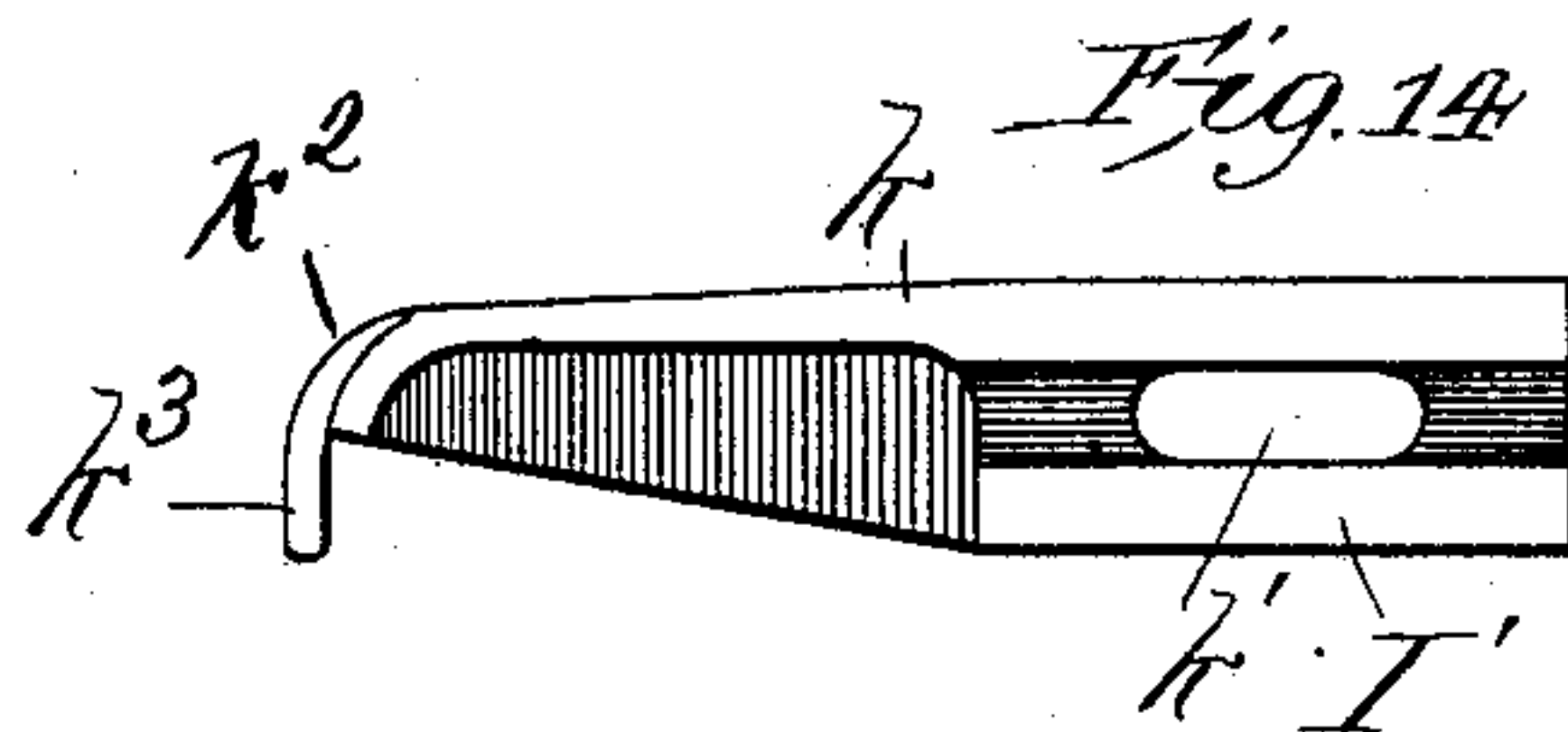
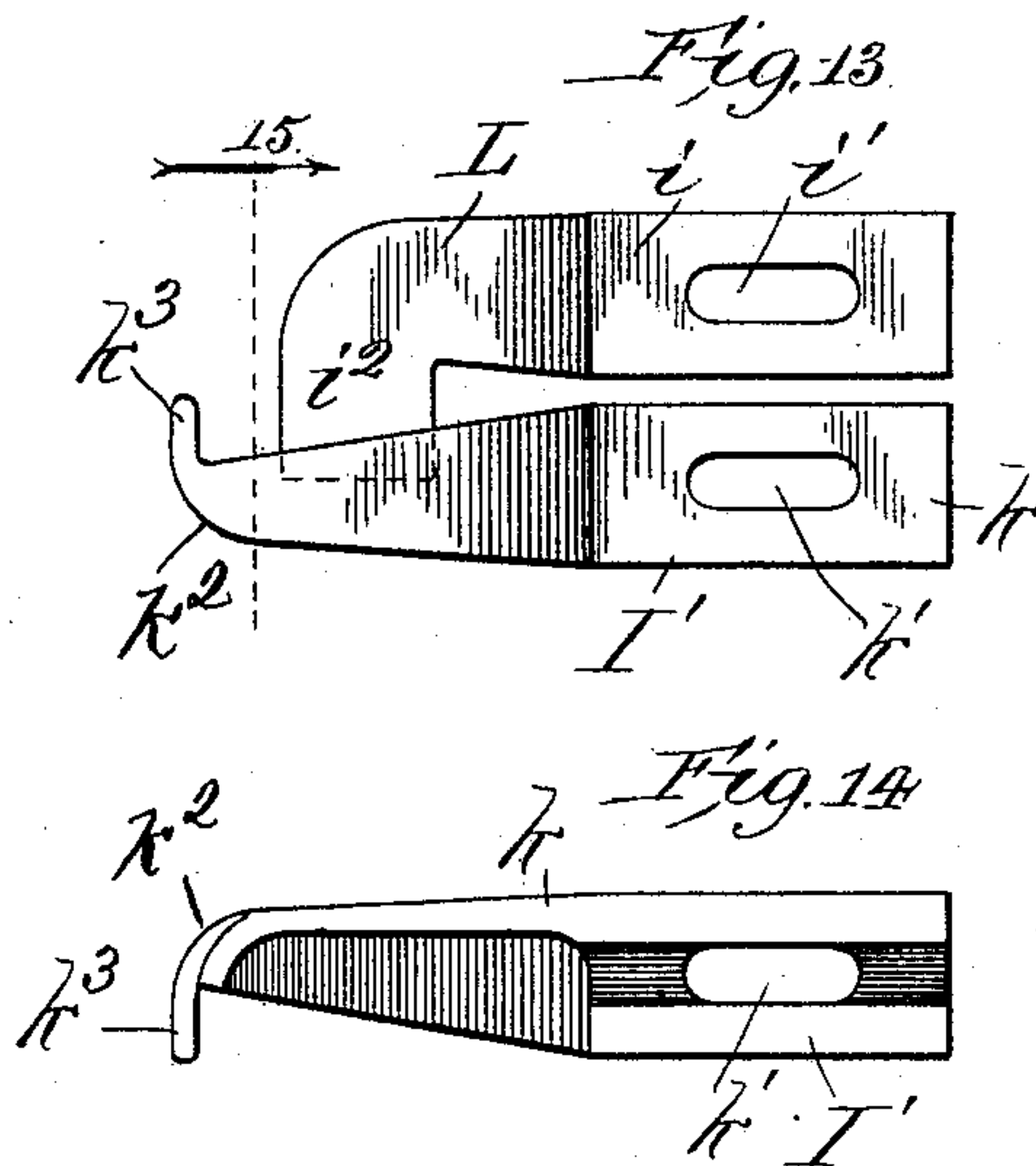
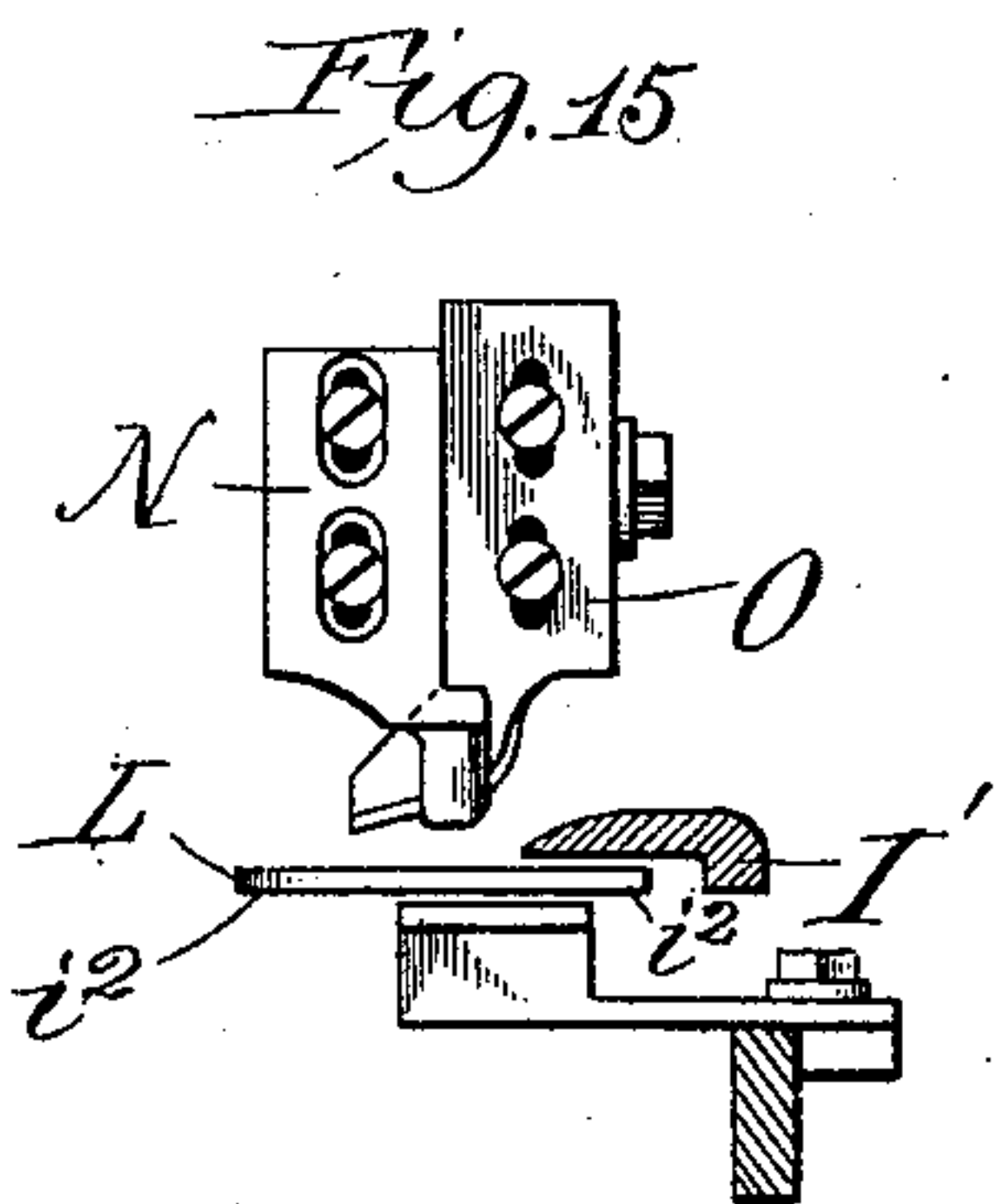
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J. B. HADAWAY.
INSOLE REINFORCING MACHINE.

No. 603,764.

Patented May 10, 1898.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN B. HADAWAY, OF BROCKTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE GEM FLEXIBLE INSOLE COMPANY, OF MAINE.

INSOLE-REINFORCING MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,764, dated May 10, 1898.

Application filed February 14, 1896. Serial No. 579,296. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. HADAWAY, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented a new and useful Improvement in Insole-Reinforcing Machines, of which the following is a specification.

The present invention relates to machines for applying reinforcing material to insoles, and more specifically to certain improvements of the machine disclosed in my pending application filed December 23, 1895, Serial No. 572,972. In the machine as disclosed in the application referred to there is a suitable spring-supported work-support, which supports the work in position to be acted upon by certain tools which form a bead or crimp in the reinforcing material and trim and conform such material to the insole.

In lipped insoles it is common to form the lip thereon farther in from the edge at the shank portion than around the ball and fore part of the sole; and in the present machine I have provided a suitable gage controlling the position of the insole with relation to the bead-forming tools, which gage can be shifted by the operator during the running of the machine, whereby the lip of the insole can be set in at the shank and properly reinforced and covered by the reinforcing material. I have also improved the work-support and trimming mechanism and have added an auxiliary presser-tool which presses the edge of the reinforcing material upon the upper surface of the bead-forming head of the former or anvil, which tool is arranged to have a backward movement as it engages the edge of the reinforcing material in a direction which tends to draw upon the edge of the reinforcing material from the medial line of the insole toward the edge thereof, and thus smooths out the material before the beading and crimping tool acts thereon, whereby the reinforcing-covering of the insole will have no folds or puckers when cemented to the insole.

The present invention therefore consists of the devices and combinations of devices which will now be described in the following specification and finally pointed out in the claims appended hereto.

The present invention is illustrated in the accompanying drawings, which show a machine substantially like that disclosed in the application referred to with the improvements added thereto.

Figure 1 is a view in side elevation of the machine looking at the right side thereof; Fig. 2, a section of the same, taken at the line 2 on Fig. 4 and viewed in the direction of the arrow; Fig. 3, a section taken at the line 3 on Fig. 4 and viewed in the direction of the arrow; Fig. 4, a plan view of the machine; Fig. 5, a broken section taken at the line 5 on Fig. 1 and viewed in the direction of the arrow; Fig. 6, a broken section taken at the line 6 on Fig. 4 and viewed in the direction of the arrow; Fig. 7, a view in elevation of a cam detail, taken at the line 7 on Fig. 6 and viewed in the direction of the arrow; Fig. 8, a broken enlarged view showing the work-table and gage-adjusting mechanism in side elevation; Fig. 9, a broken sectional view showing the gage device in side elevation; Fig. 10, a section taken at the line 10 on Fig. 8 and viewed in the direction of the arrow; Fig. 11, a perspective view of the gage; Fig. 12, a plan view of the work-table; Fig. 13, a plan view of the anvil or former and lower cutter, showing their relative operative positions; Fig. 14, a bottom plan view of the anvil or former; Fig. 15, a section taken at the line 15 on Fig. 13, viewed in the direction of the arrow and showing, besides the lower cutter and anvil or former, the upper cutter and beading or crimping tool in elevation; Fig. 16, a face view of my improved presser-tool; Fig. 17, a broken view showing my improved presser-tool and the auxiliary pressing and smoothing tool in sectional elevation; and Fig. 18, a plan view of an insole-blank, showing the bead formation thereon by dotted lines as being farther from the edge of the insole adjacent to its shank portion and nearer the edge throughout the remainder of its extent.

Similar letters of reference designate corresponding parts throughout the specification and drawings.

In the drawings, A is the frame, which is substantially the same as the frame of the machine shown in my application referred to and comprises sides q and q' , brace q^2 , for-

wardly-extending arms r and r' , and rearwardly-extending arms r^2 and r^3 . In the bearings supported by the arms r^2 and r^3 is the main shaft C, which carries the fly or hand wheel C' on one end and a belt-pulley C² on the opposite end, and also a cam-drum X, which is fixedly secured to said shaft by screws and which has upon opposite ends the cam-grooves D' and D² and a peripheral cam-groove D³, which with a cam-groove D, formed in the inner face of the pulley C², actuates all the bead forming and securing mechanism of the machine, as in the application referred to.

The work-support E' comprises a plate of metal having a slightly-rounded top and is supported to freely revolve in the outer end of a frame E, which is bifurcated or provided with arms which are fulcrumed at x to the sides q and q' of the frame, and said frame is supported by a spring and arranged to be depressed to lower the work-support E' by mechanism which is the same as that illustrated and described in my application hereinbefore mentioned and which need not be herein fully described, as in and of itself it forms no part of the present invention.

In order to insure to the work which rests upon the work-support a tendency to move toward the positioning-gage (which will be described) as it is fed along over the surface of the work-support, I have provided the upper surface of the work-support E' with a series of radial grooves z' and a series of concentric circular grooves z , the grooves z' and z crossing each other and located near the edge of the work-support, whereby said grooves as the work-support is rotated by the work, which is moved along by the tools, will have a tendency to cause the work to move backward against the edge of the gage and thus always be properly positioned for the action of the tools thereon.

The presser-tool H² is, except as hereinafter described, substantially the same as the presser-tool H² of the former application, and, like said tool, the tool H² herein has at its lower end an intumed finger d , which is arranged to press the reinforcing material into the angle formed by the inner face of the lip of the insole and the upper surface of said sole within the lip.

The tool H² is secured by a bolt to the head H' of an arm m^2 of a pinch-collar m' , which by a suitable bolt is clamped upon a sleeve m of a lever H, which is fulcrumed upon a shaft F and which at its opposite end carries a cam-roll n' , engaging the path-cam D', by means of which the lever H is rocked to cause the presser-tool H² to have a movement toward and from the work.

The lever H is prevented from having a lateral movement along its shaft F by means of collars w^2 and w^3 , which are fixed to said shaft by means of screws w^{10} and w^{12} . The shaft F is arranged to have a longitudinal movement in suitable bearings supported by the arms r and r' , and it is reciprocated in said bearings

to impart a lateral reciprocation to the presser-tool H² by means of a cam-groove G², formed in a head G' of a lever G, which is fulcrumed at o upon a stud and which at its other end carries a cam-roll n , which engages the cam-path D and by means of which the lever is rocked.

The cam-groove G² engages a cam-roll O', carried by a stud projecting from the shaft F through a slot in the bearing carried by the arm r , whereby as the lever G is rocked the shaft F is caused to reciprocate in its bearings and thus impart a lateral reciprocation to the presser-tool H² to cooperate with the anvil or former in feeding the work.

Coöperating with the presser-tool is a former or anvil I', which is shown in Figs. 13 and 14 and which comprises a shank portion k , having a forward tapered end, which at the extreme forward end has a bead-forming head k^2 , which is preferably provided with the laterally-extending finger k^3 . As shown in Fig. 14, the forward tapered portion is undercut and open upon its left side, and in the recess thus formed the end of the lower cutter projects, as will be hereinafter described. The anvil or former is slotted at k' , and through said slot passes a set-screw by means of which the anvil or former is secured to the front end of the lever I, which is fulcrumed upon the post l and which at its rear end carries a cam-roll n^2 , engaging the cam-path D³ in the cam-drum X, whereby a rotation of the cam-drum will impart a laterally-vibrating motion to the anvil or former I', which projects forward over the work-support E' to extend beneath the reinforcing material and in position to cooperate with the beading or crimping tool in forming a head or crimp in the reinforcing material and also to cooperate with the presser-tool in feeding the work, all as fully described in the application hereinbefore referred to.

The beading or crimping tool of the present invention may be the same as the beading and crimping tool of the machine of the application referred to—that is, it may have a yoke-shaped forming end to embrace the lip of the insole—or, as shown in the accompanying drawings, the beading and crimping tool N may have but a single pressing portion at its lower end, arranged to press the reinforcing material upon the feather of the insole and against the outer surface of the lip, the presser-tool H² conforming the reinforcing material to the inner face of the lip and the surface of the insole adjacent thereto.

The beading and crimping tool N is secured by set-screws passing through slots therein (see Fig. 15) to the forward end of a lever M, which is fulcrumed at y upon a stud and which at its opposite end carries a cam-roll n^3 , engaging the path-cam D² in the cam-drum X, whereby as said cam-drum rotates the beading and crimping tool N will be given a vertical movement toward and from the work to cooperate with the former or anvil

I' in forming a bead or crimp in the reinforcing material and pressing it upon the lip and feather of the insole.

In order to press and smooth the edge of the reinforcing material, I have provided an auxiliary pressing and smoothing tool, which is arranged to engage the edge of the reinforcing material and have a rubbing contact therewith while pressing said material against the upper surface of the bead-molding head h^2 of the anvil or former, and thus cause the reinforcing material to be freed from wrinkles or puckers as it is finally applied to the insole. This auxiliary tool is in the illustrated embodiment of the present invention carried by and actuated with the presser-tool H^2 , although it will be clear that I am not limited to such a construction. The auxiliary pressing and smoothing tool is shown at d^5 , and at its lower end is provided with a finger slightly bent inwardly and backwardly, said tool being mounted upon a head d^3 , which is carried upon the inner end of a bolt secured in an elongated slot d^2 , formed in the presser-tool H^2 . Secured to the auxiliary pressing and smoothing tool d^5 is a spring d^6 , the upper end of which is acted upon by an adjusting-screw d^7 , the adjusting-screw being set up to normally hold the auxiliary pressing and smoothing tool d^5 with its lower end adjacent to and slightly above the bent finger of the presser-tool H^2 . The above-suggested arrangement is such that upon the depression of the presser-tool H^2 the auxiliary pressing and smoothing tool d^5 will be carried downward and brought into contact with the edge of the reinforcing material, which overlaps the former or anvil, and the continued downward movement thereof will cause the spring d^6 to yield, thus permitting the lower end of the auxiliary tool d^5 to have a dragging backward movement over the reinforcing material, pressing said material against the upper surface of the former or anvil, thus pressing and smoothing such material to cause it to lie smoothly upon the insole.

The lower or fixed cutter is shown at L and consists of a shank portion i , which is slotted at i' and which at its forward end has an angular head i^2 , the extreme forward edge of which, as shown in Fig. 15, forms a shear edge which coöperates with the moving cutter in severing the edge of the reinforcing material.

The cutter L is fixedly secured by a bolt which passes through the slot i' to the fixed stand K, and by making the angular end extend beneath the forward undercut end of the former or anvil the piece of material cut off from the reinforcing material is prevented from getting down between the shank of said cutter and the former or anvil and clogging the machine. The end i^2 of the cutter L projects far enough beneath the former or anvil I' so that the lateral vibrations of the former or anvil will not uncover said end of the cutter.

The movable cutter O is secured by means of suitable set-screws passing through slots in the shank thereof to the front of the lever M, adjacent to the beading or crimping tool N, and the cutting edge of cutter O extends down back of the pressing end of the beading and crimping tool, as clearly shown in Figs. 1 and 15, in position to coöperate with the cutter L as the beading and crimping tool descends upon the feather of the insole.

Inasmuch as it is necessary in some insoles to set the lip at different distances from the edge of the feather of the insole I have provided a gage against which the edge of the insole bears to position the same with relation to the bead forming and trimming mechanism, and I have arranged said gage so that it can be readily shifted as the work progresses to position the work beneath the tools according to the distance of the lip of the insole from the edge of the feather of the insole. This gage mechanism is shown at P and comprises an angular piece of metal p^4 , the free end of which extends over the edge of the work-support E' . (See Figs. 8 and 9.) The gage p^4 is mounted upon the head p^3 of a slide p , which is fitted to have a sliding movement in a guide-groove formed in the side of the front portion of the frame E, (see Figs. 9 and 10,) and is provided with a lug p^2 , which is fitted in a slot p^5 , which communicates with the guide-groove, and said lug p^2 carries a roller p' , which projects through a slot formed in a plate p^6 , which is secured in place upon the side of the frame E' and retains the slide p in place. Pivoted to the plate p^6 is a lever p^{10} , provided with an eccentric slotted head p^{11} , which embraces the roll p' of the slide p , whereby upon turning the lever p^{10} the slide p will be moved back or forth along the guide-groove, thus causing the gage p^4 to project more or less over the work-support and adjusting its position with relation to the bead forming and trimming mechanism. The plate p^6 has an enlarged end p^7 , which is provided with holes p^8 , in which may be placed a stop-pin p^9 , whereby to form an abutment to stop the lever p^{10} as it is shifted to shift the gage, and thereby by placing the pin p^9 in the desired hole p^8 the operator can have two fixed abutments to stop the lever at two points; (the end of the slot in the cam-head p^{11} forming one and the pin the other,) and thus while the machine is in operation accurately position the gage p^4 at either of two positions according as the lip of the insole is near the edge of the feather, as around the ball and forepart, or farther in from the edge of the feather, as at the shank.

The operation of the machine is as follows: The insole R, (see Fig. 18,) having the usual lip g (see dotted lines) and feather g' , has its lipped face suitably coated with cement, and the reinforcing-covering is laid thereon and temporarily held thereto by pressure applied along its medial line within the lip, (as by running the finger or thumb over the rein-

forcing material;) but the edge of the reinforcing material is left free, extending over the lip and feather. The insole R is now placed upon the upper surface of the work-support E', with the edge of its feather g' beneath the forward end of the former or anvil I' and bearing against the end of the gage p⁴ in position to commence work upon one side of the sole near the heel portion or at the end of the shank, as at a, the gage being retracted to its extreme rearward position. The edge of the reinforcing material extends over the bead-molding head of the former or anvil in position to be beaded or crimped to conform to the lip of the insole. Power is now applied to the shaft to rotate the cam-drum X, which by means of the cam-path D' oscillates the lever H and forces the presser-tool H² down to engage the reinforcing material and force it into the angle formed by the inner face of the lip and the surface of the insole at the same time the auxiliary pressing and smoothing tool d⁵ engages the edge of the reinforcing material, pressing it closely against the upper surface of the former or anvil, and the lower end thereof moves backwardly with a rubbing and smoothing action over the edge of the reinforcing material, as fully described. The anvil or former I' now moves laterally toward the beading and crimping tool N by the sidewise rocking of the lever I, and simultaneously therewith the shaft F is moved laterally by the rocking of the lever G, thus imparting a lateral feed of the work toward the beading and crimping tool, which is then depressed by the rocking of the lever M to conform the reinforcing material to the outer side of the lip and to the feather. The downward movement of the lever M brings down the cutter O, which coöperates with the cutter L in severing a small section of the surplus edge of the reinforcing material even with the edge of the feather. The presser-tool H² and the auxiliary tool d⁵ are now raised and returned with the former or anvil to the starting-point, when the operations are repeated. When the side of the shank is completed to the point a', the gage p⁴ is shifted or advanced farther outward over the work-support E' and the ball and fore part of the sole reinforced to the point a², at which point the gage p⁴ is retracted and the other side of the shank acted upon.

I have described the operation of the machine when acting upon a lipped insole when such lip is at variable distances from the feather; but it is obvious that the machine may act upon a lipped insole when the lip is at a uniform distance from the edge, the gage p⁴ being allowed to remain in a fixed position.

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—

1. In a machine for applying reinforcing material to insoles, the combination of a rotating work-support having circular and radial

grooves crossing each other upon its surface, an anvil or former to sustain the free edge portion of the reinforcing material on the insole, a beading or crimping tool coöperating with said anvil or former to bead or crimp the said reinforcing material, and means for actuating said tool, substantially as described.

2. In a machine for applying reinforcing material to insoles the combination with a work-support, of an anvil or former, an oscillatory presser-tool, and a spring-controlled auxiliary pressing and smoothing tool, coöperating with said anvil or former, a reciprocating beading or crimping tool, also coöperating with said anvil or former to bead or crimp the said reinforcing material, and means for actuating the presser-tool and beading and crimping tools, substantially as described.

3. In a machine for applying reinforcing material to insoles, the combination with a work-support, of an anvil or former, an oscillatory presser-tool having a bent finger, and a spring-controlled auxiliary pressing and smoothing tool pivotally supported on said presser-tool, said presser-tool coöperating with said anvil or former, a reciprocating beading or crimping tool also coöperating with said anvil or former to bead or crimp the said reinforcing material, and means for actuating the presser-tool and beading or crimping tool, substantially as described.

4. In a machine for applying reinforcing material to insoles, the combination with a work-support, of a vibratory anvil or former, an oscillatory presser-tool comprising a bent finger d⁴ adjustably secured upon its oscillatory support and carrying a set-screw d⁷, an auxiliary pressing and smoothing tool d⁵ pivotally supported on a head d³ carried by a set-screw d⁴ in a slot in said presser-tool and a spring d⁶ engaging the set-screw d⁷, said presser-tool coöperating with said anvil or former, a reciprocating beading or crimping tool coöperating with said anvil or former to bead or crimp the said reinforcing material, and means for actuating the presser-tool, and beading or crimping tools, substantially as described.

5. In a machine for applying reinforcing material to insoles, the combination with a work-support, a former or anvil, a beading or crimping tool, and a presser-tool to bear against the inner side of the lip on the insole, of a gage device independent of the former or anvil arranged to bear against the edge of the insole, and adjustable to force the insole in opposition to said presser-tool, substantially as and for the purpose set forth.

6. In a machine for applying reinforcing material to insoles, the combination with a work-support and a presser-tool to bear against the inner side of the lip of an insole, of a gage device adjustably supported to bear against the edge of the insole and having an operating-lever for moving it to force the in-

sole in opposition to said presser-tool, and an adjustable abutment for the lever, substantially as and for the purpose set forth.

7. In a machine for applying reinforcing material to insoles, the combination with a work-table on a yielding support, and a presser-tool to bear against the inner side of the lip of an insole, of a gage device P comprising a slide p adjustably confined in a recess in said support and carrying a roller p' , and a finger p^4 to extend over said table and bear against the edge of said insole, a plate p^6 for confining said arm in place and having an extension p^7 provided with holes p^8 for the adjustment of a stud p^9 and a lever p^{10} fulcrumed on said plate and having a slotted head p^{11} engaging said roller, substantially as and for the purpose set forth.

8. In a machine for applying reinforcing material to insoles, the combination with a work-support, of a vibratory anvil or former, a lower cutter adjacent to and extended beneath the said anvil or former, an oscillatory vibrating presser-tool cooperating with said anvil or former to hold and feed the work, a beading or crimping tool cooperating with said anvil or former to bead the said reinforcing material, an upper cutter, and means for actuating the beading or crimping tool, upper cutter, presser-tool and anvil or former, substantially as described.

9. In a machine for applying reinforcing material to insoles, the combination with a work-support, of a vibratory anvil or former I' cut out on its under side, a lower cutter L having a head l^2 and supported to extend said head under the said anvil or former, an oscillatory vibrating presser-tool cooperating with said anvil or former to hold and feed the work, a reciprocating beading or crimping tool cooperating with said anvil or former to bead or crimp the said reinforcing material, an upper cutter, and means for actuating the presser-tool and anvil or former alternately with the beading or crimping tool, and upper cutter, substantially as described.

10. In a machine for applying reinforcing material to insoles, the combination with bead-forming mechanism arranged to form a bead or crimp in the reinforcing material, of a presser-tool, and an auxiliary pressing and smoothing tool to press and smooth the reinforcing material to cause it to lie smoothly upon the insole, substantially as described.

11. In a machine for applying reinforcing material to insoles, the combination with an anvil or former and the bead-forming tool, of a presser-tool and an auxiliary pressing and smoothing tool, substantially as described.

12. In a machine for applying reinforcing material to insoles, the combination with an anvil or former and the bead-forming tool, of a presser-tool and a yielding auxiliary pressing and smoothing tool, substantially as described.

13. In a machine for applying reinforcing material to insoles, the combination with a presser-tool and an anvil or former, of a beading and crimping tool and an auxiliary pressing and smoothing tool carried by the presser-tool, substantially as described.

14. In a machine for applying reinforcing material to insoles, the combination with the bead-forming tool, of a presser-tool, and a pressing and smoothing tool arranged to have a movement toward the work with the presser-tool and a movement across the work independent of said tool, substantially as described.

15. In a machine for applying reinforcing material to insoles, the combination with bead-forming mechanism comprising an anvil or former, adapted to form a bead or crimp in the reinforcing material, of a movable guide or gage to position the work relatively to such anvil or former, substantially as described.

JOHN B. HADAWAY.

In presence of—

J. H. LEE,

RICHARD SPENCER.