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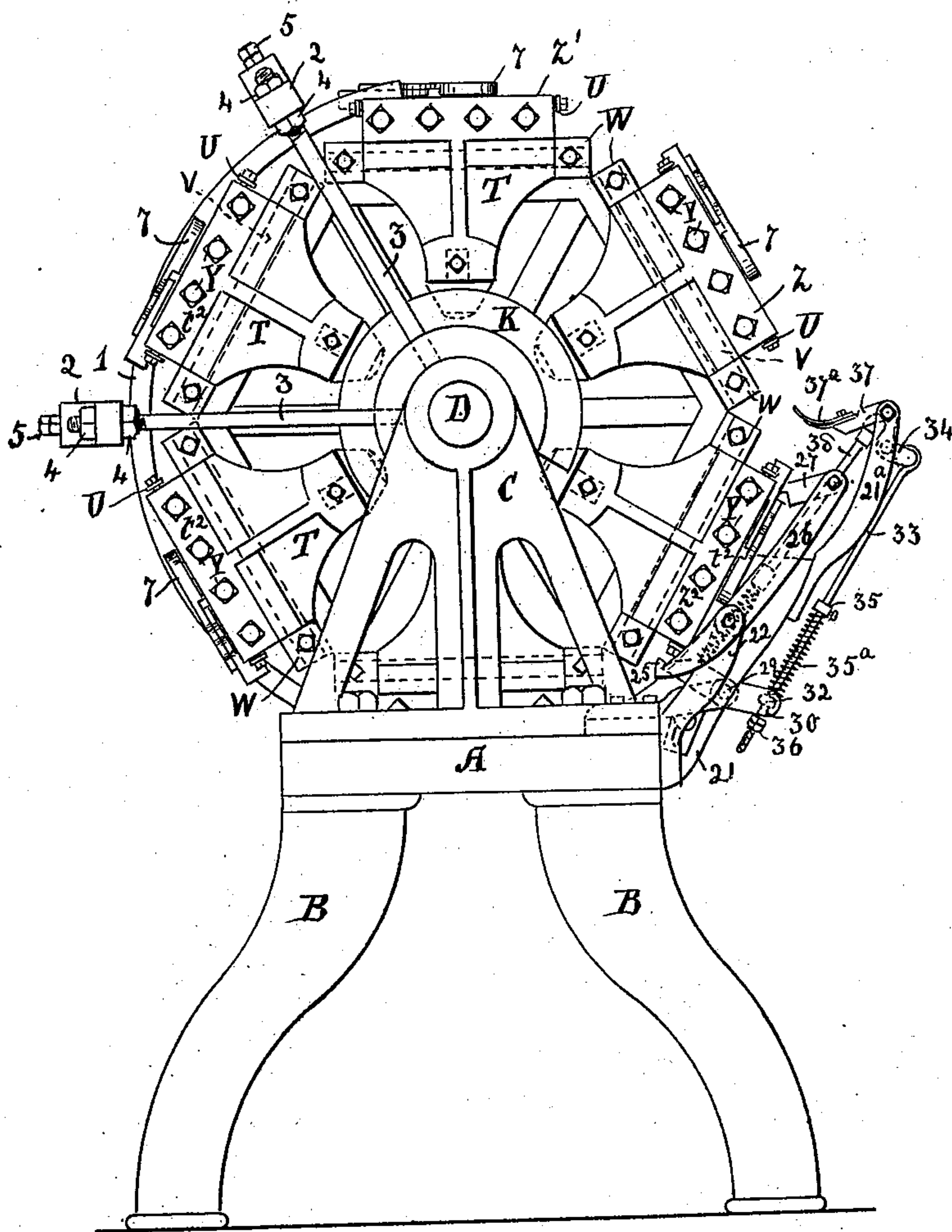
7 Sheets—Sheet 1.

M. CHASE & M. H. FOSTER.
HEEL STIFFENER MACHINE.

No. 504,327.

Patented Sept. 5, 1893.

Fig. 1.



Witnesses.

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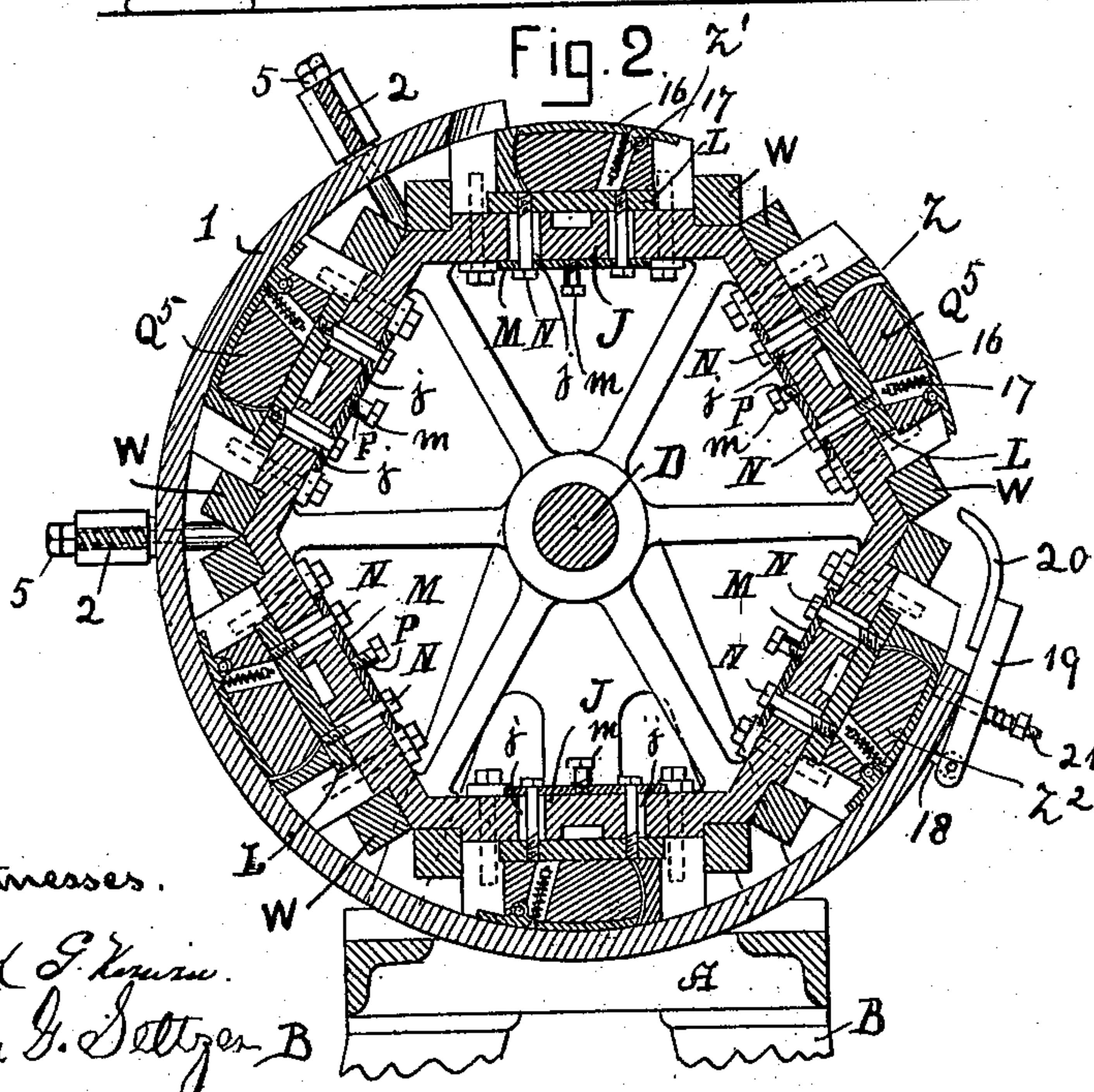
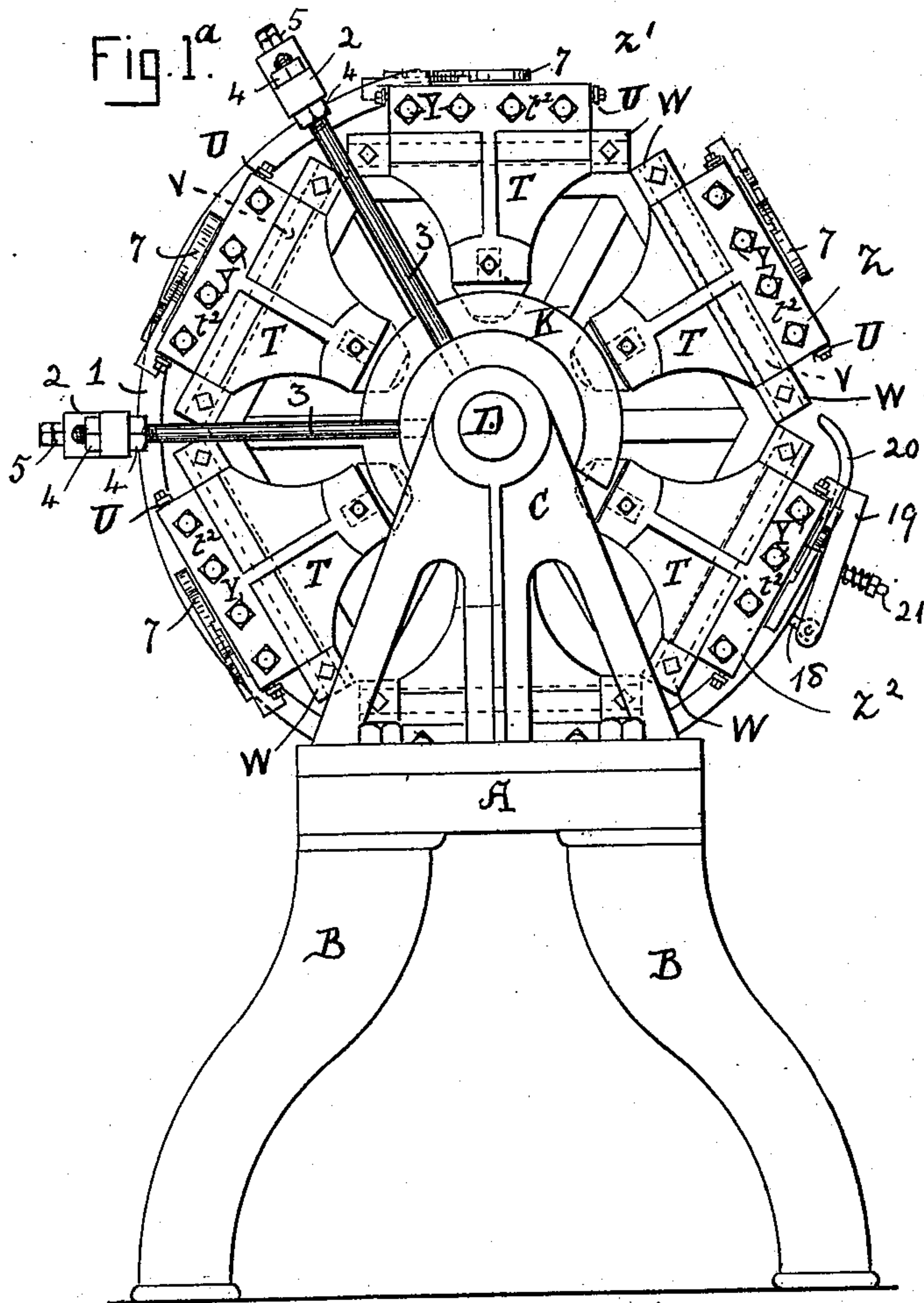
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7 Sheets—Sheet 2.

M. CHASE & M. H. FOSTER.
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Witnesses.

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7-Sheets—Sheet 3.

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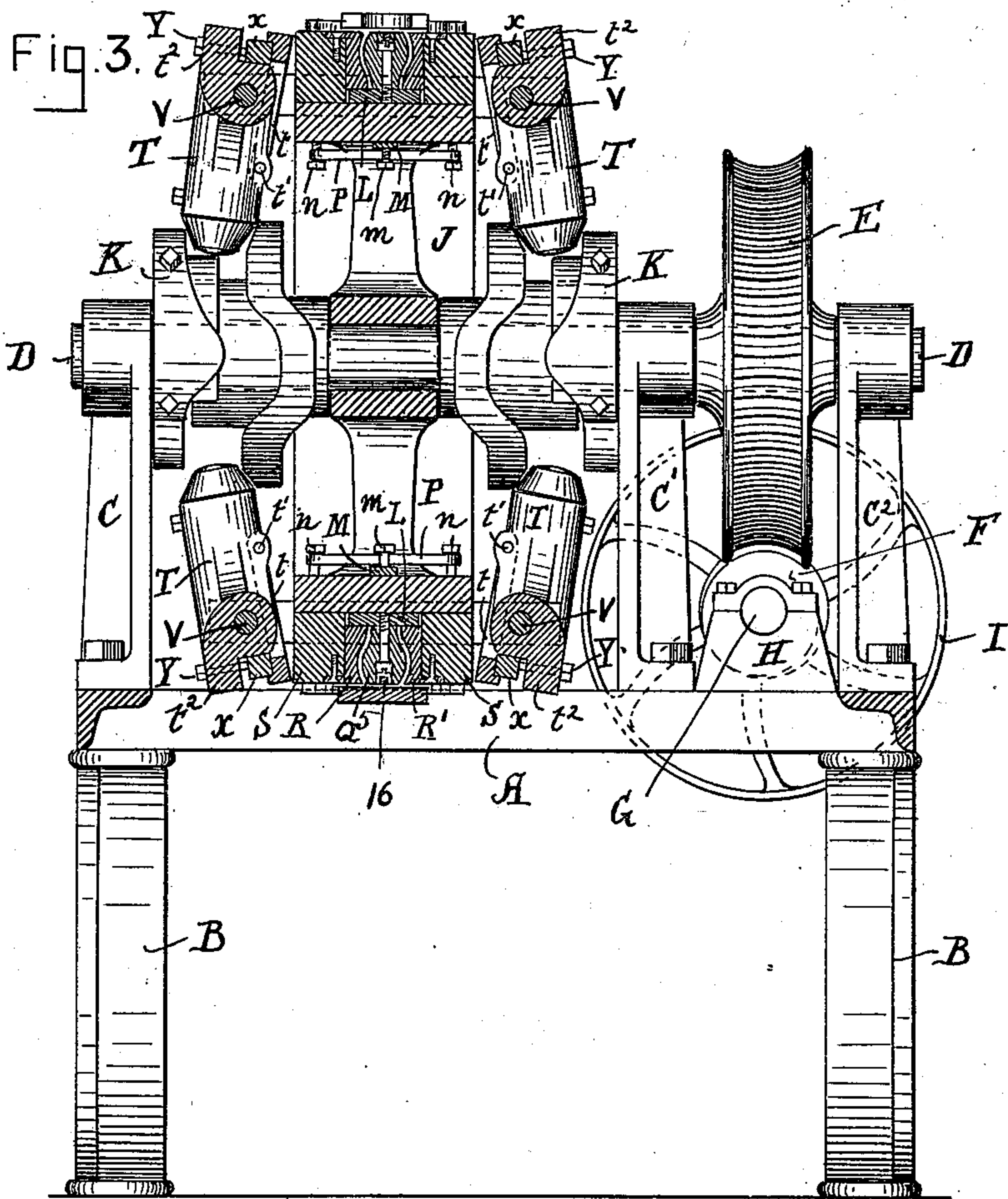
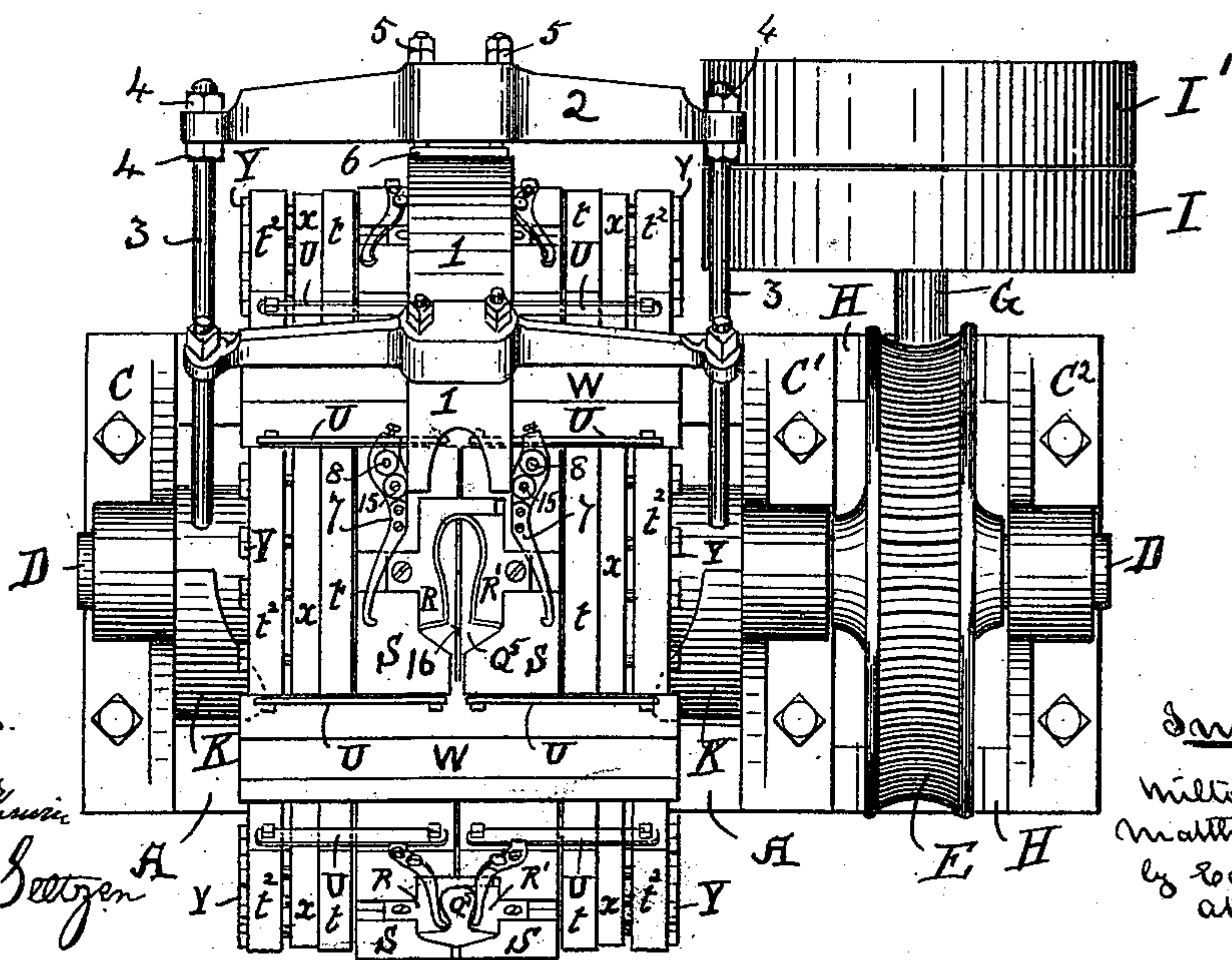


Fig. 4.



Witnesses.

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(No Model.)

7 Sheets—Sheet 4.

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Fig. 5.

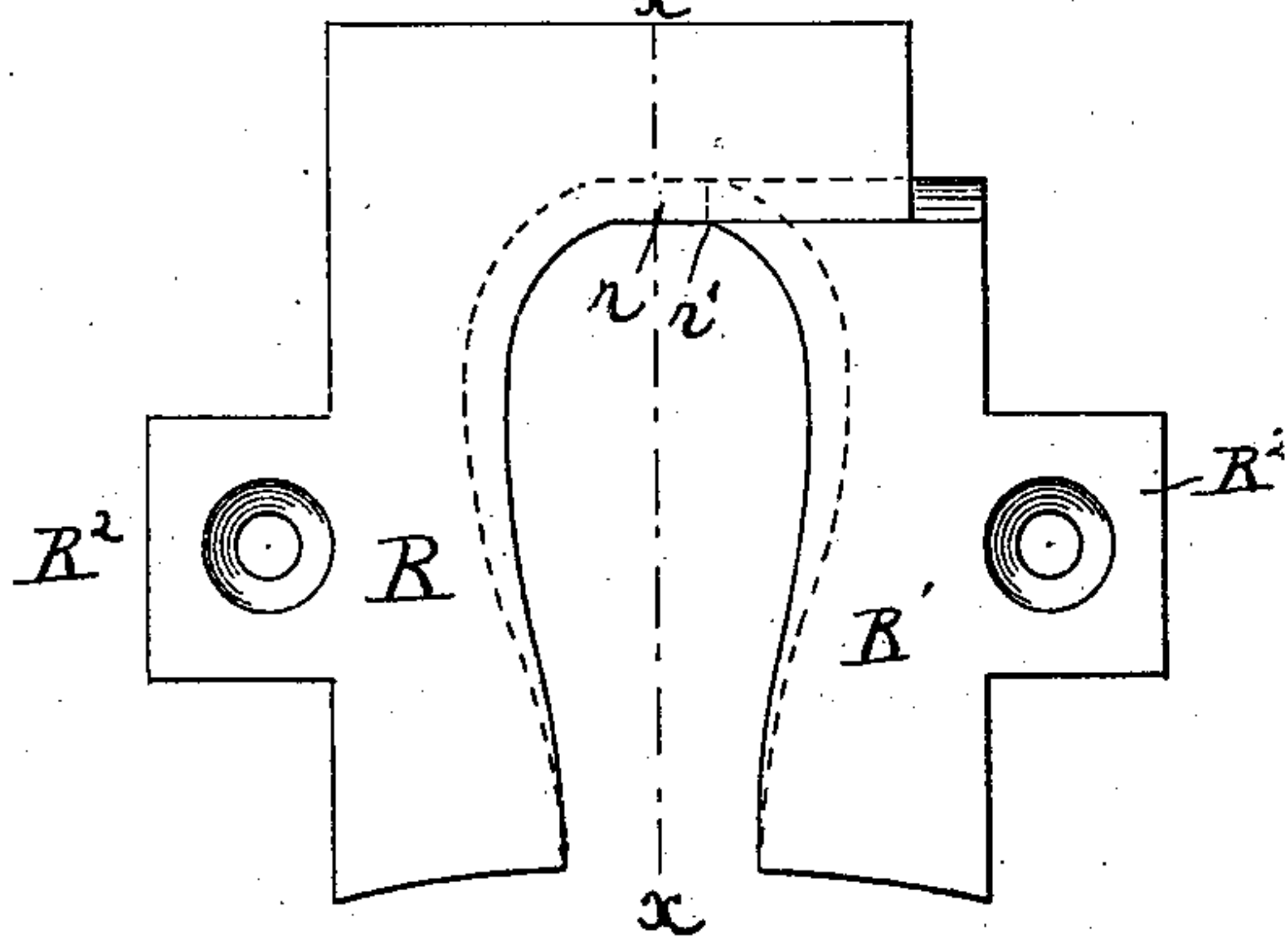


Fig. 7.

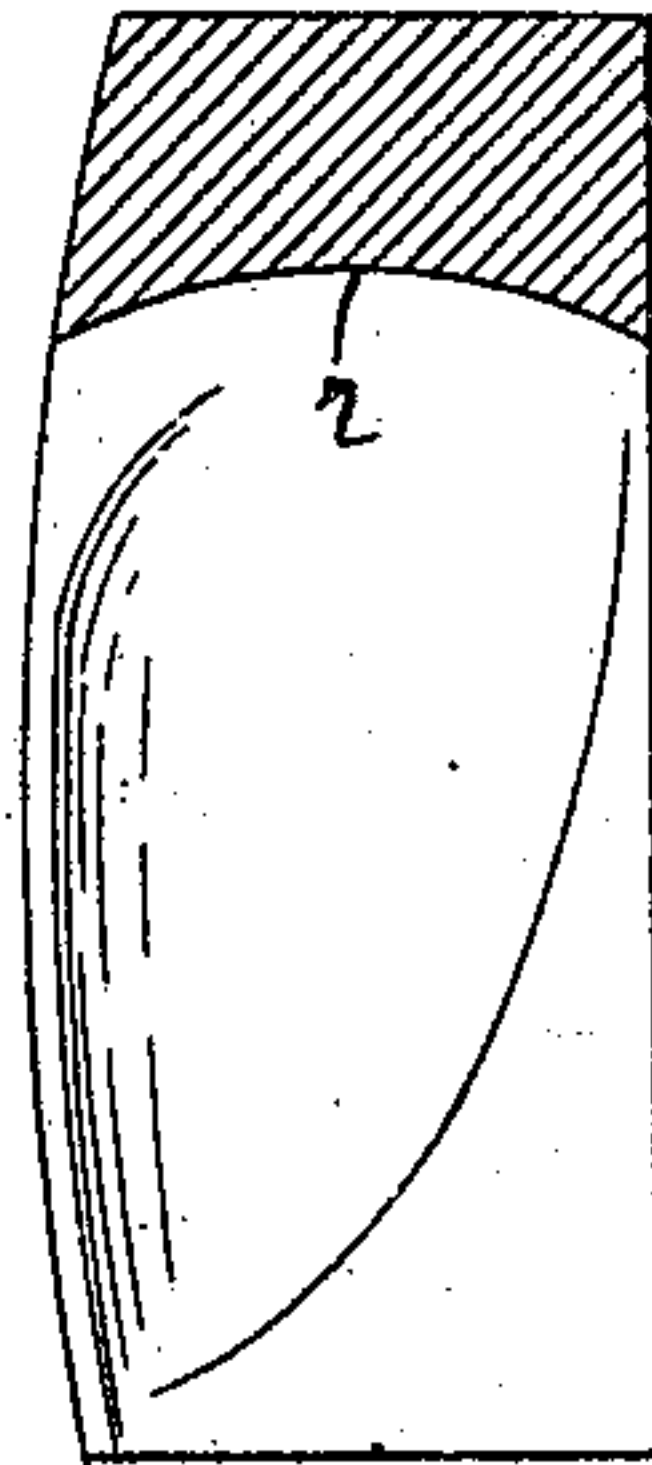


Fig. 6.

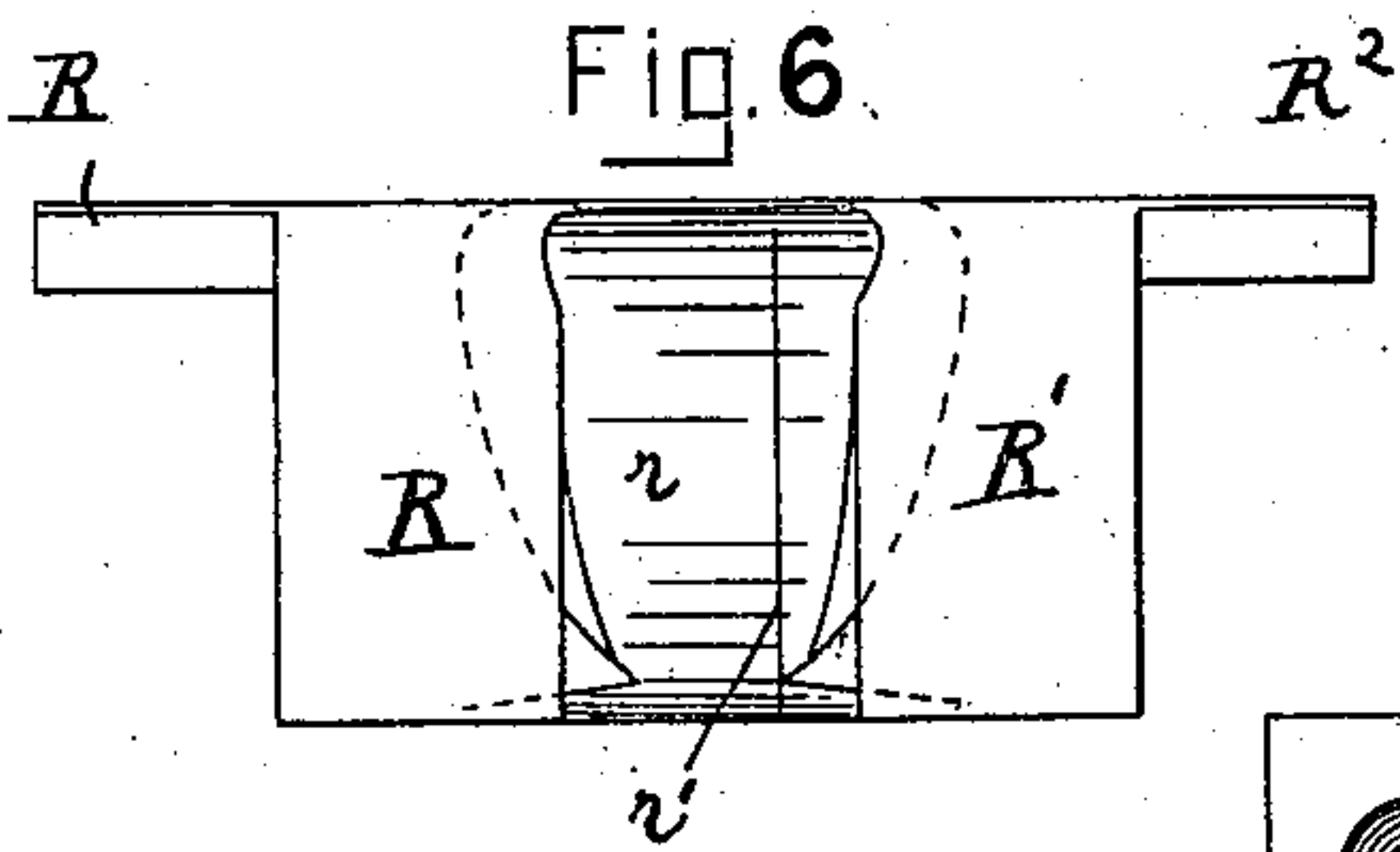


Fig. 8.

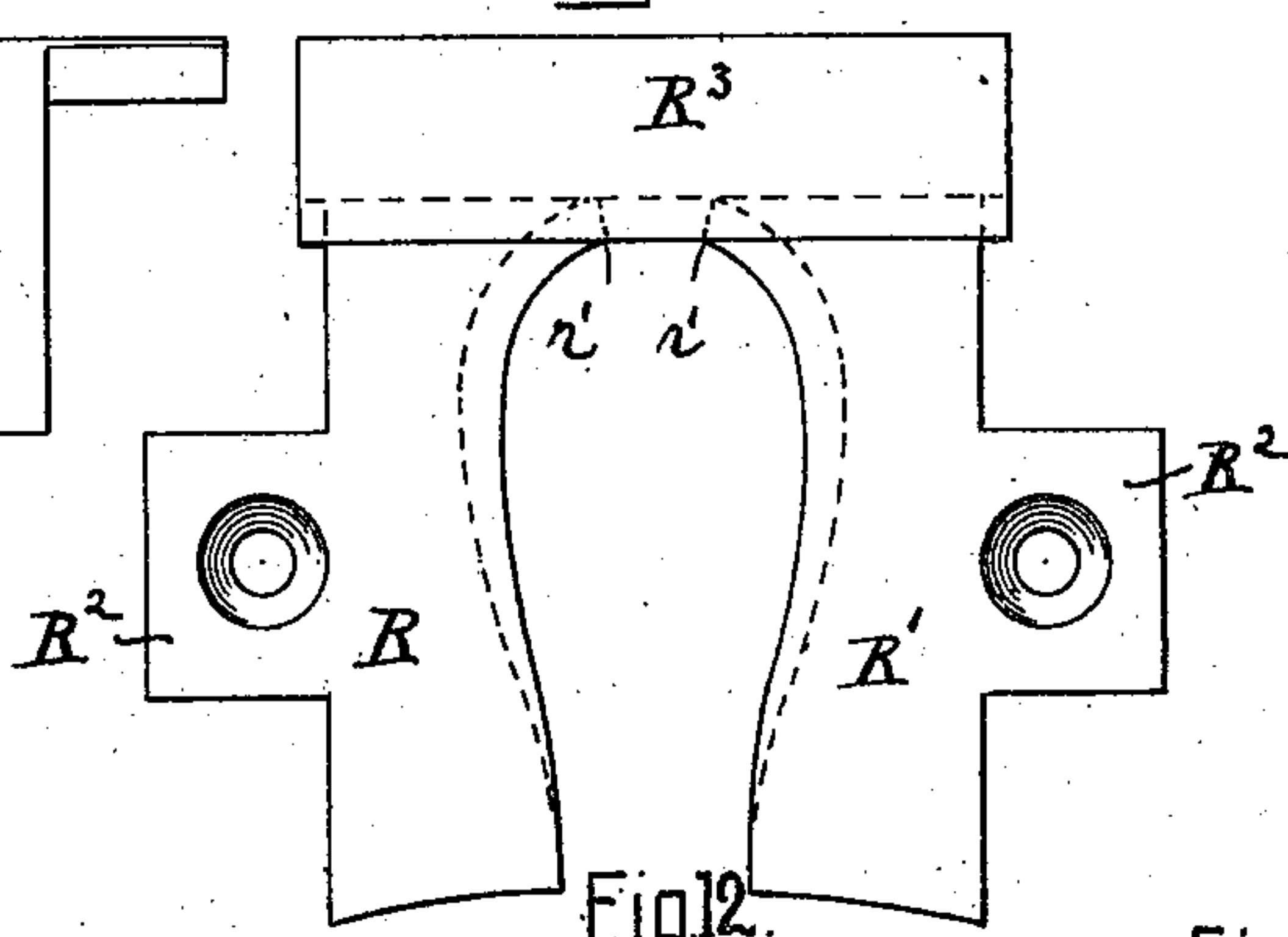


Fig. 9.

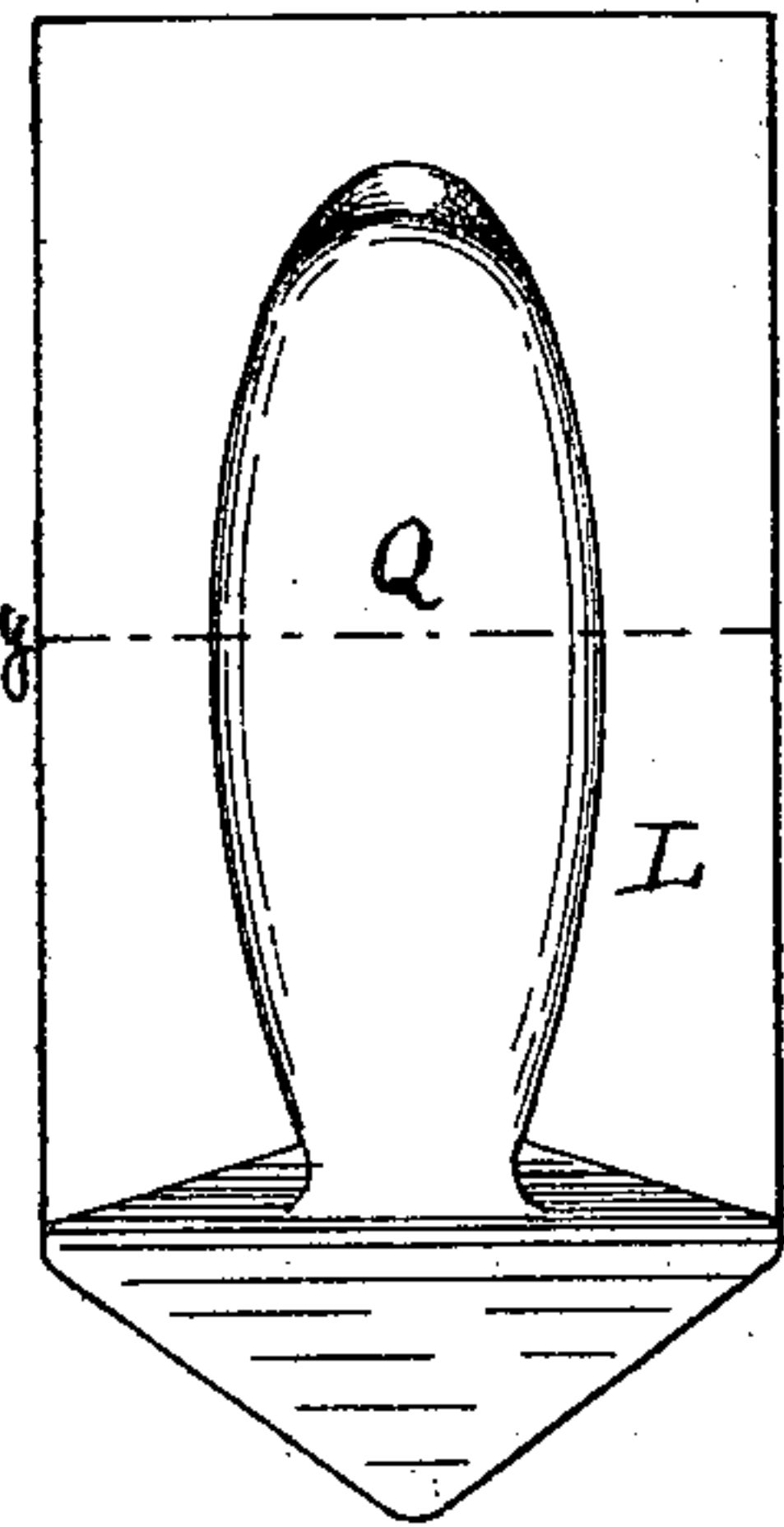


Fig. 10.

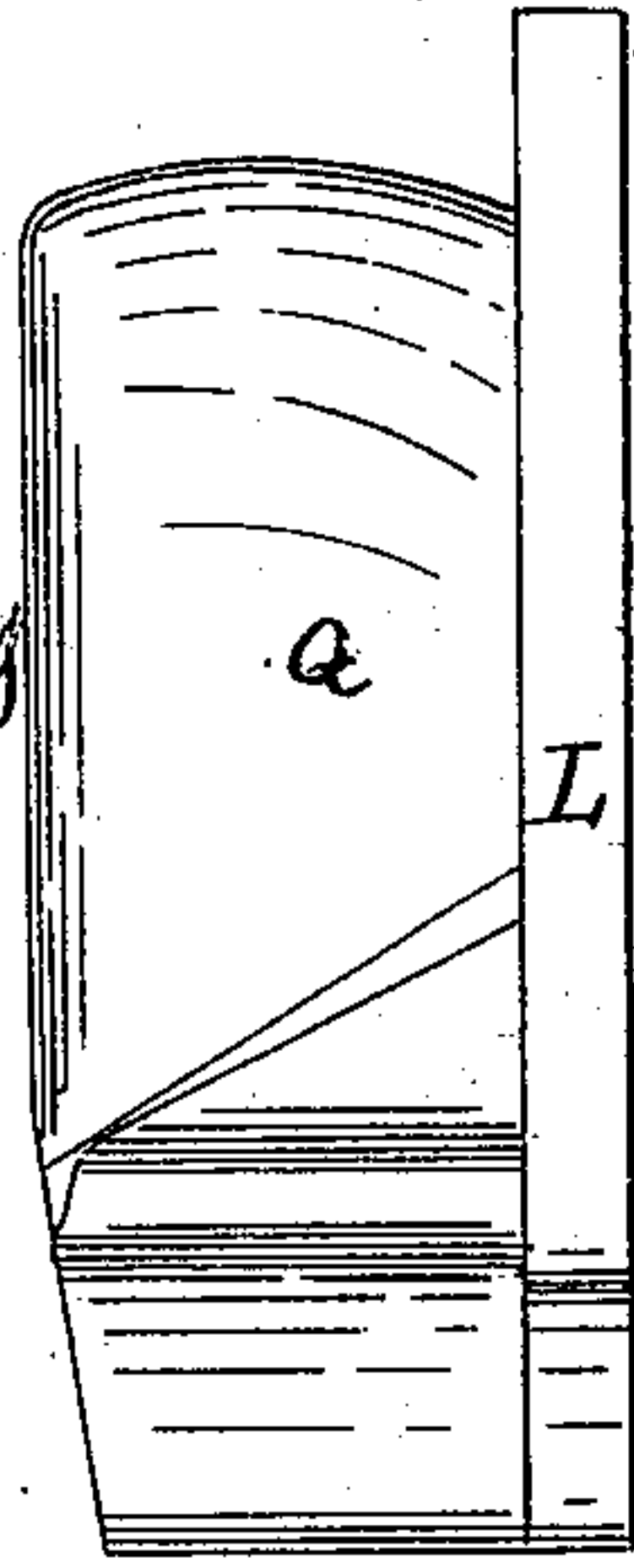


Fig. 11.

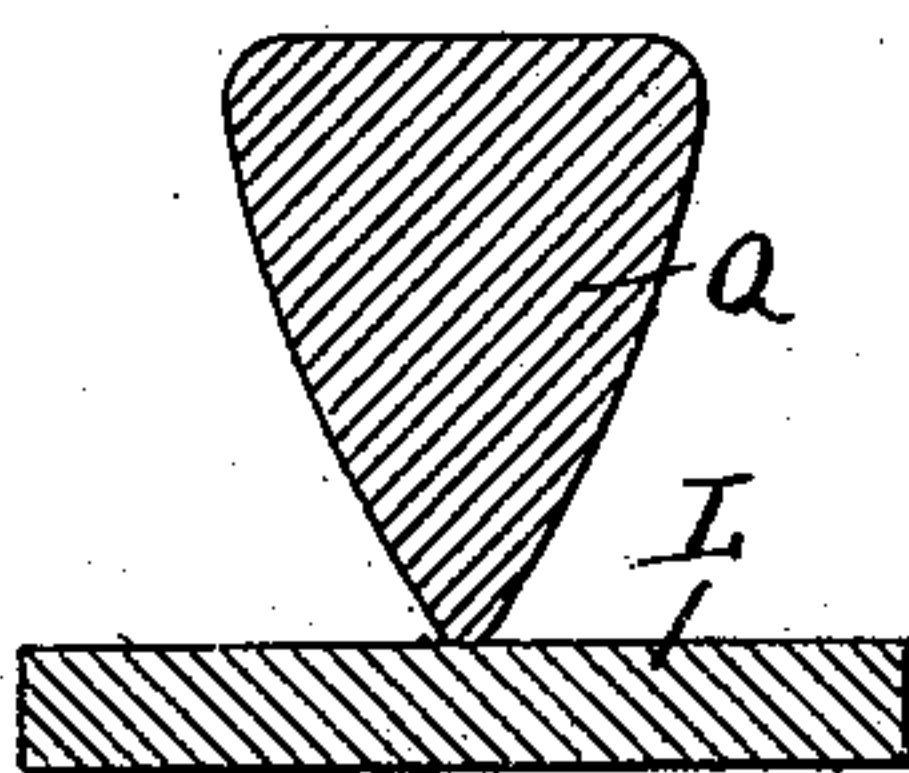


Fig. 14.

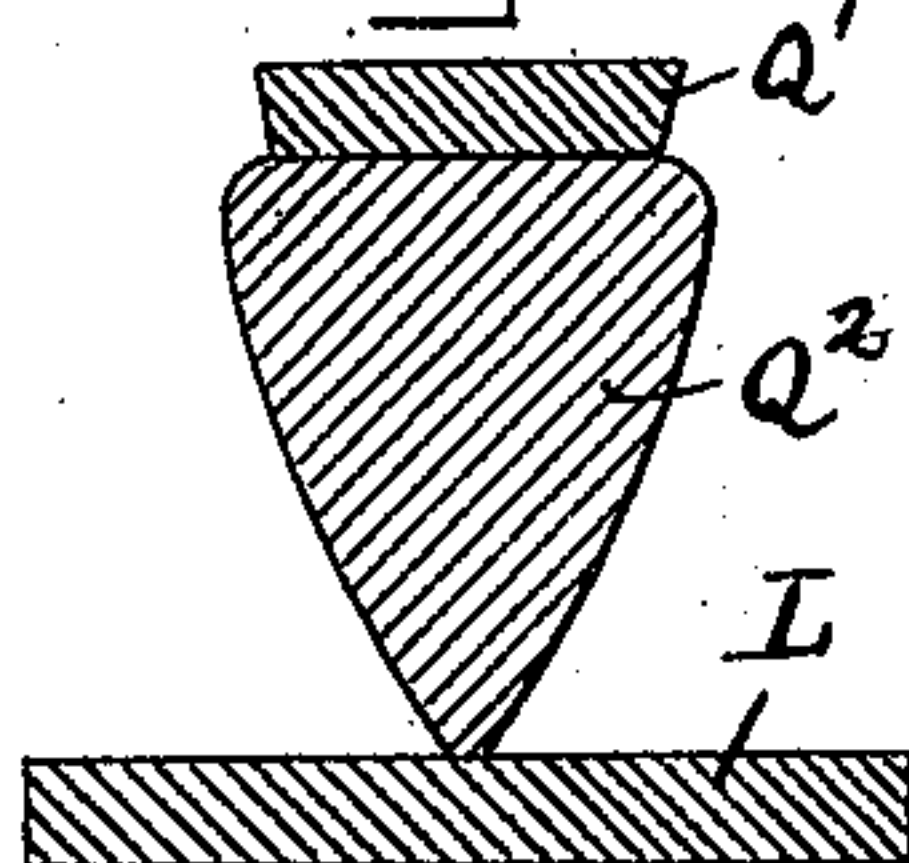


Fig. 12.

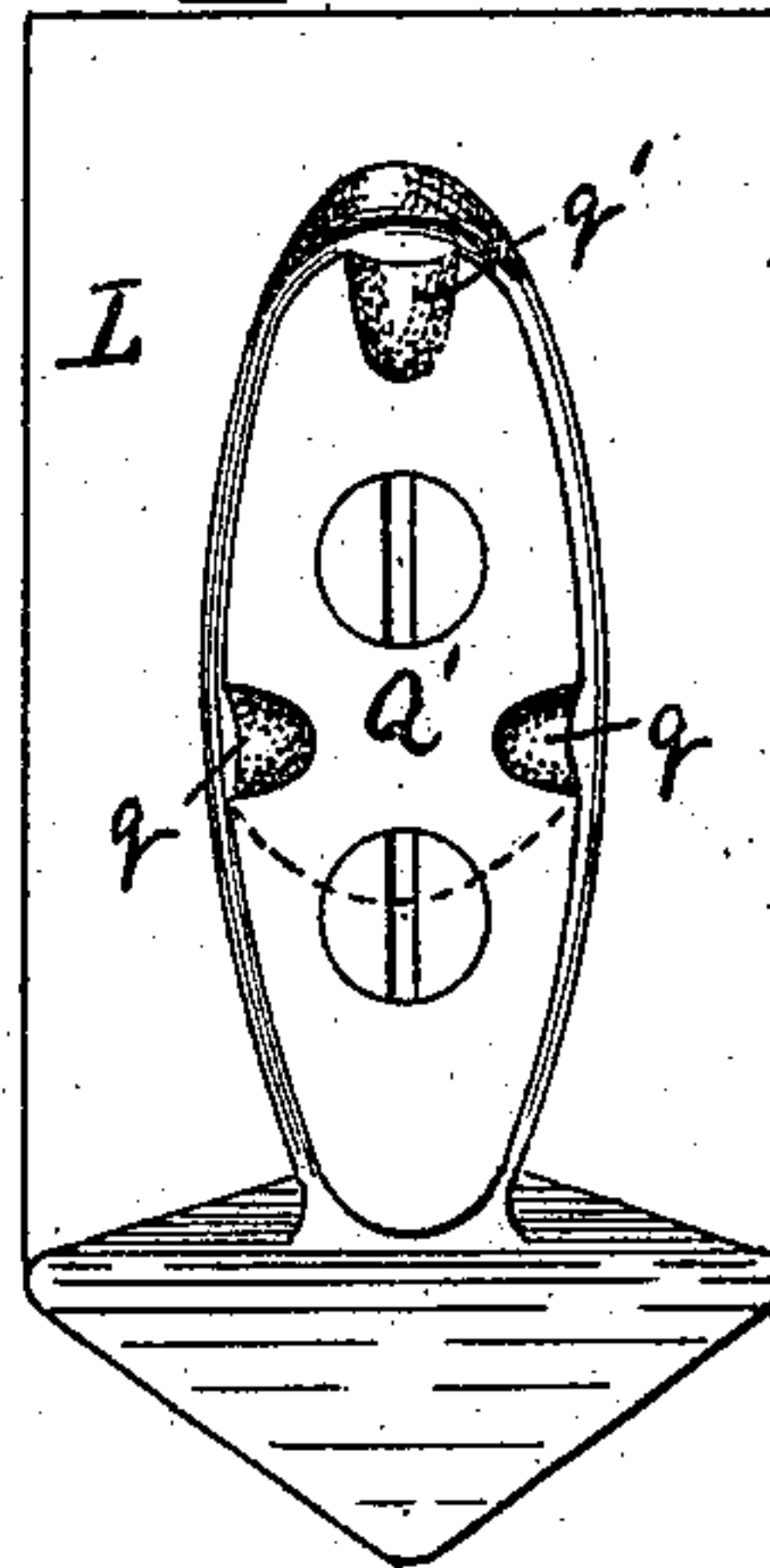
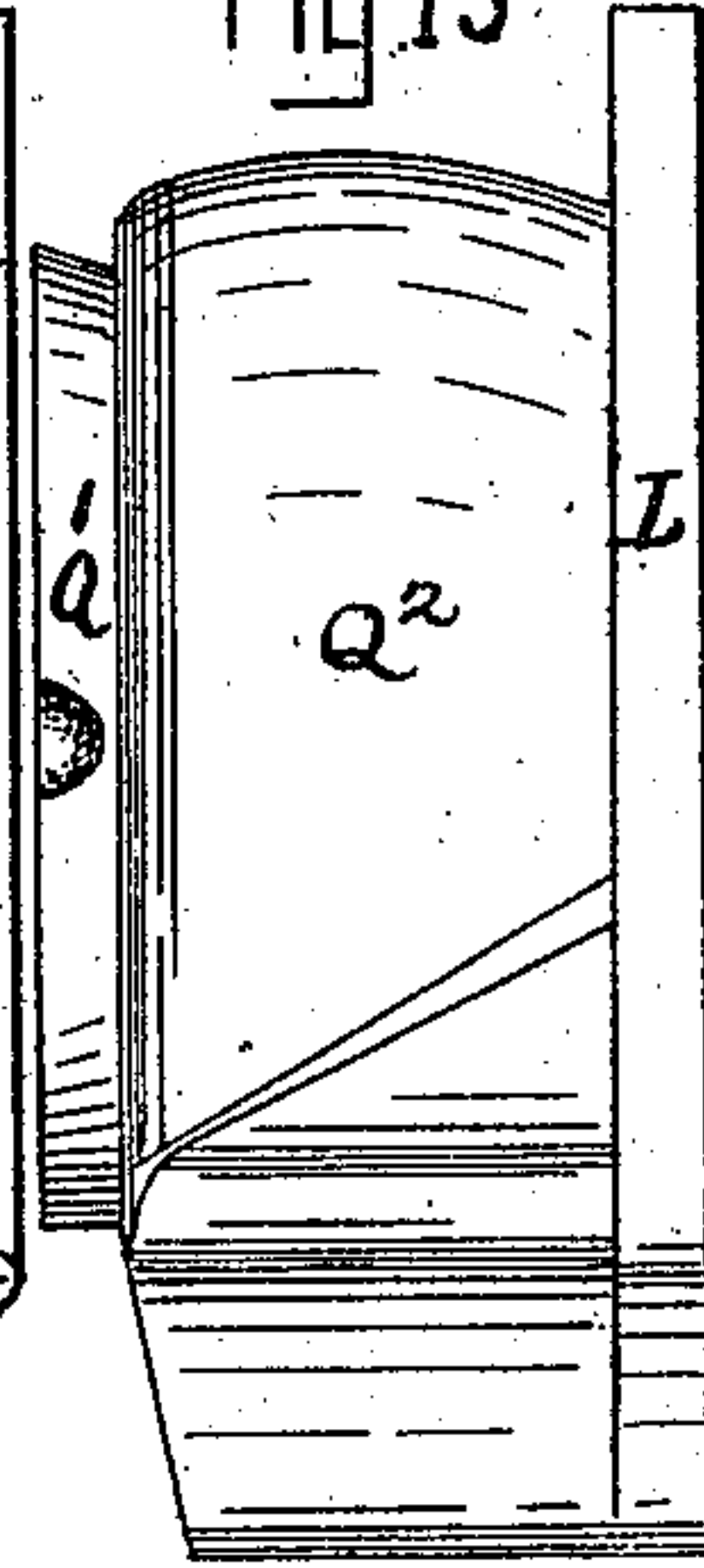


Fig. 13.



Witnesses.

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(No Model.)

7 Sheets—Sheet 5.

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Fig. 20.

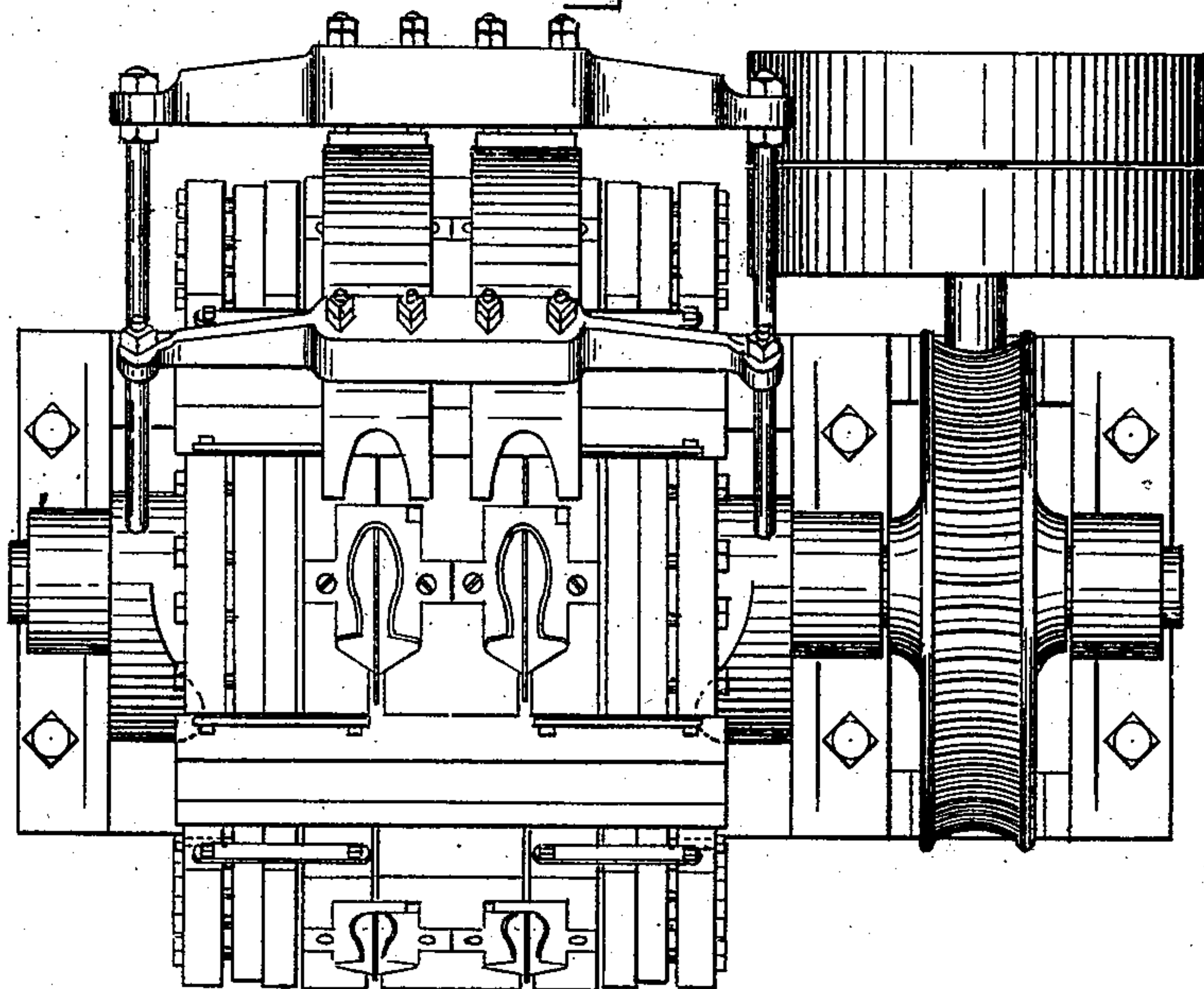


Fig. 15.

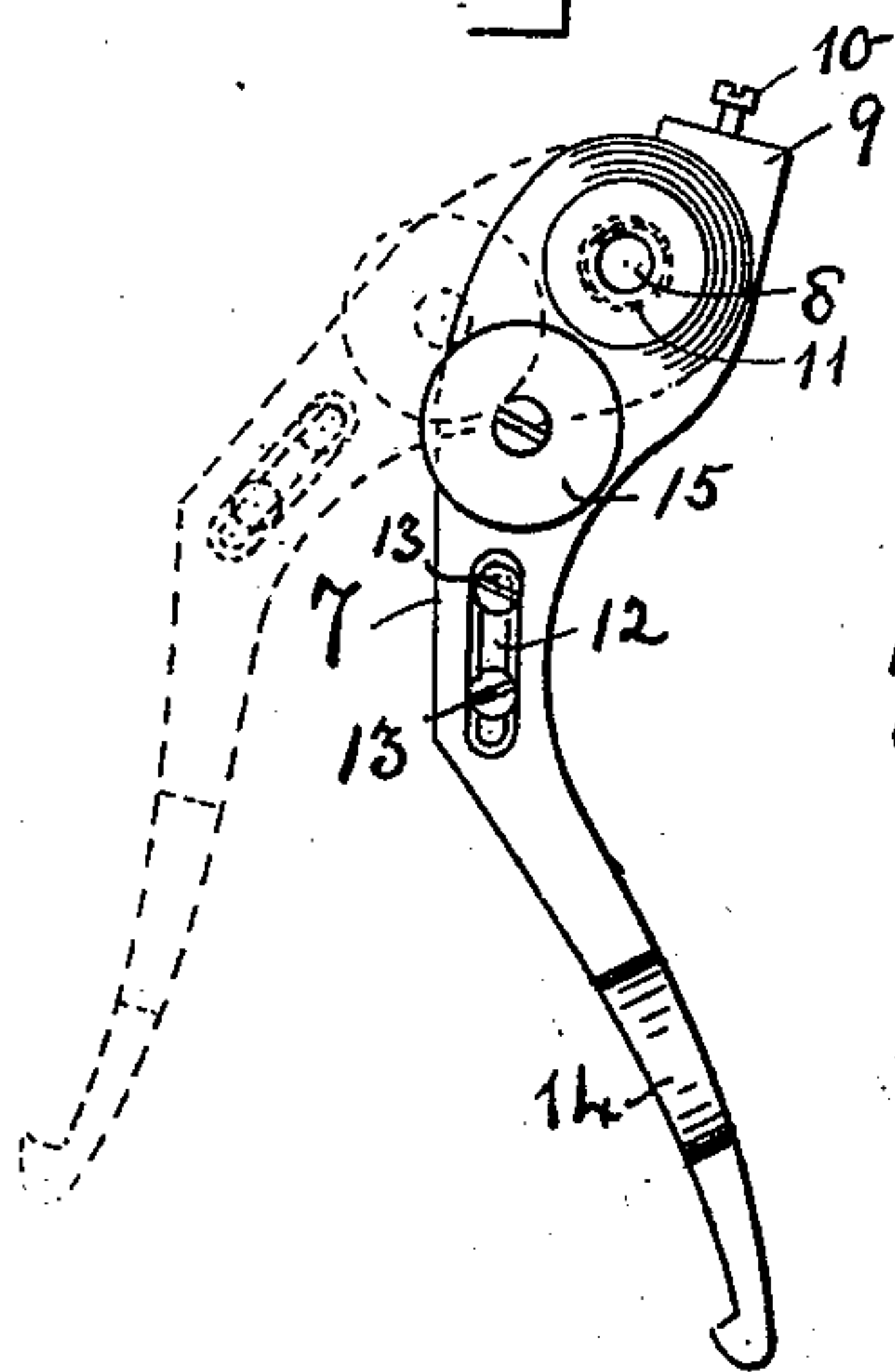


Fig. 16.

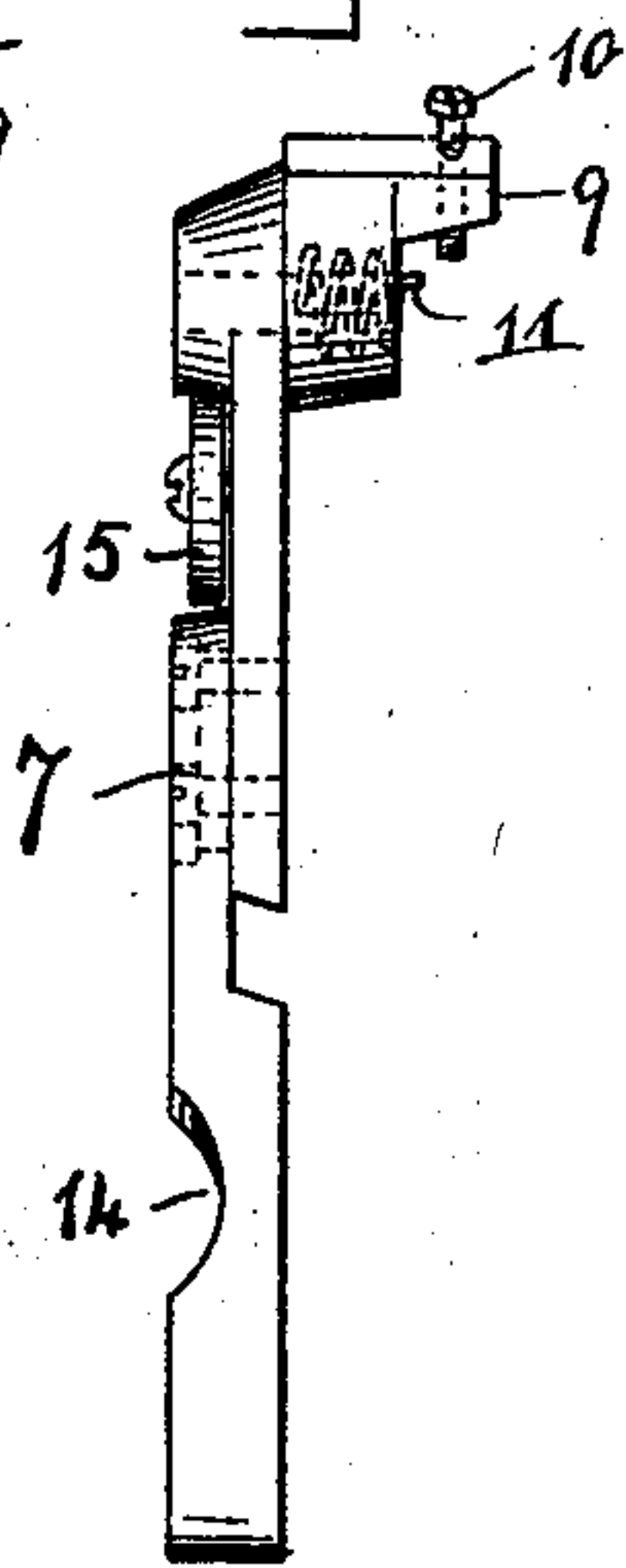


Fig. 17.

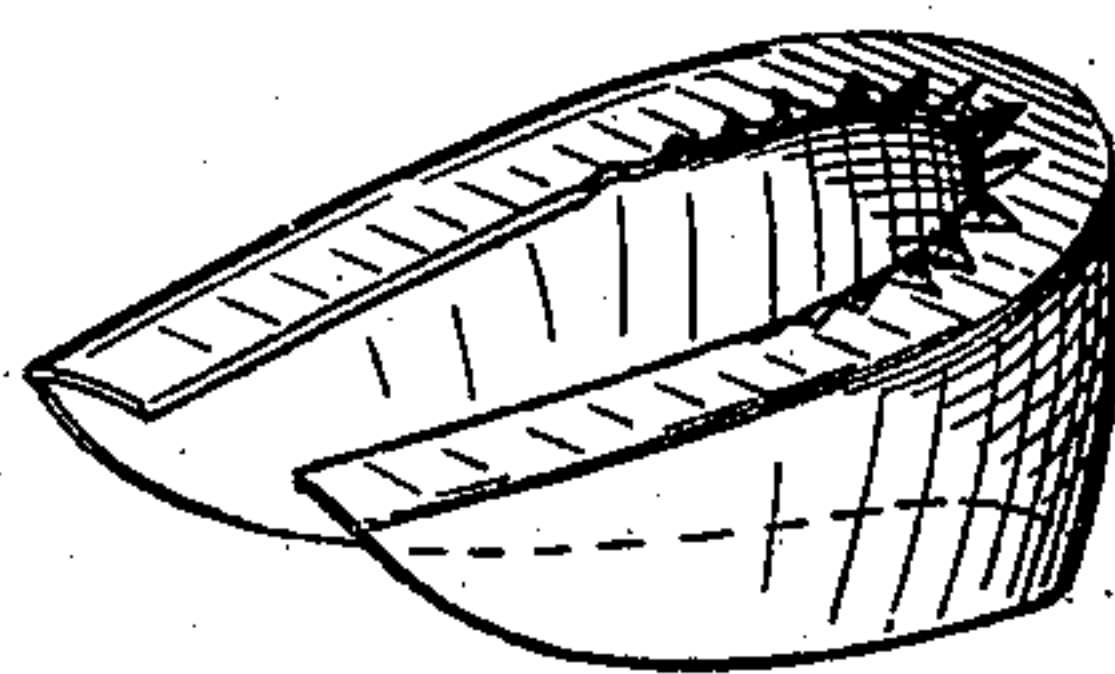


Fig. 18.

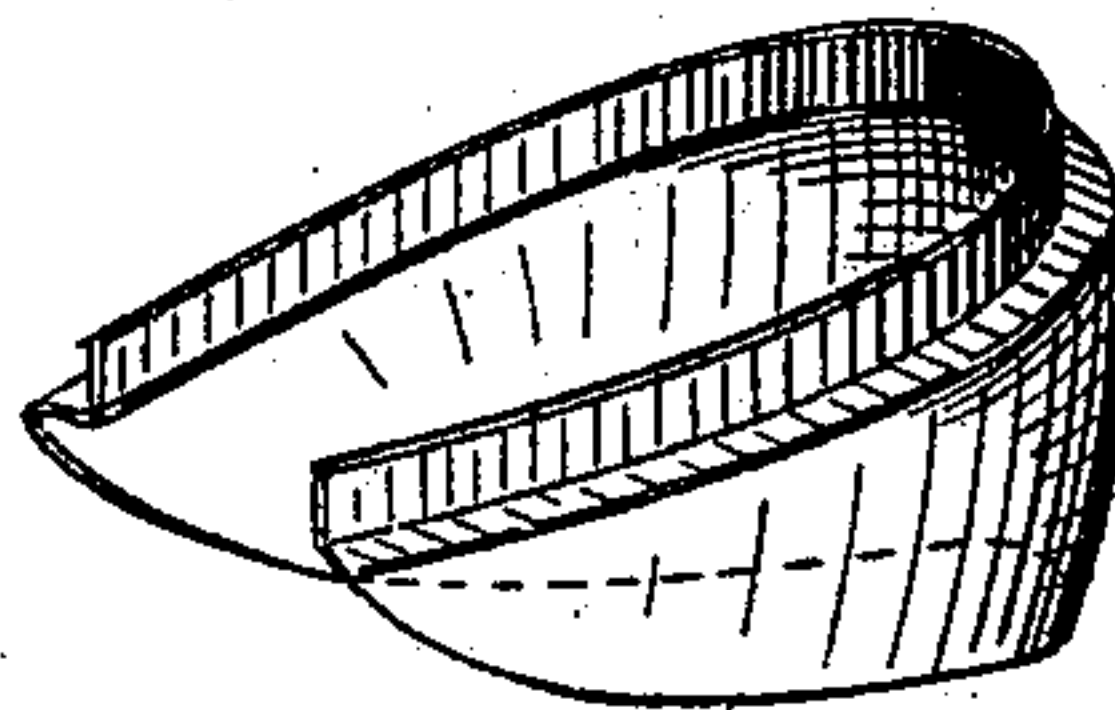
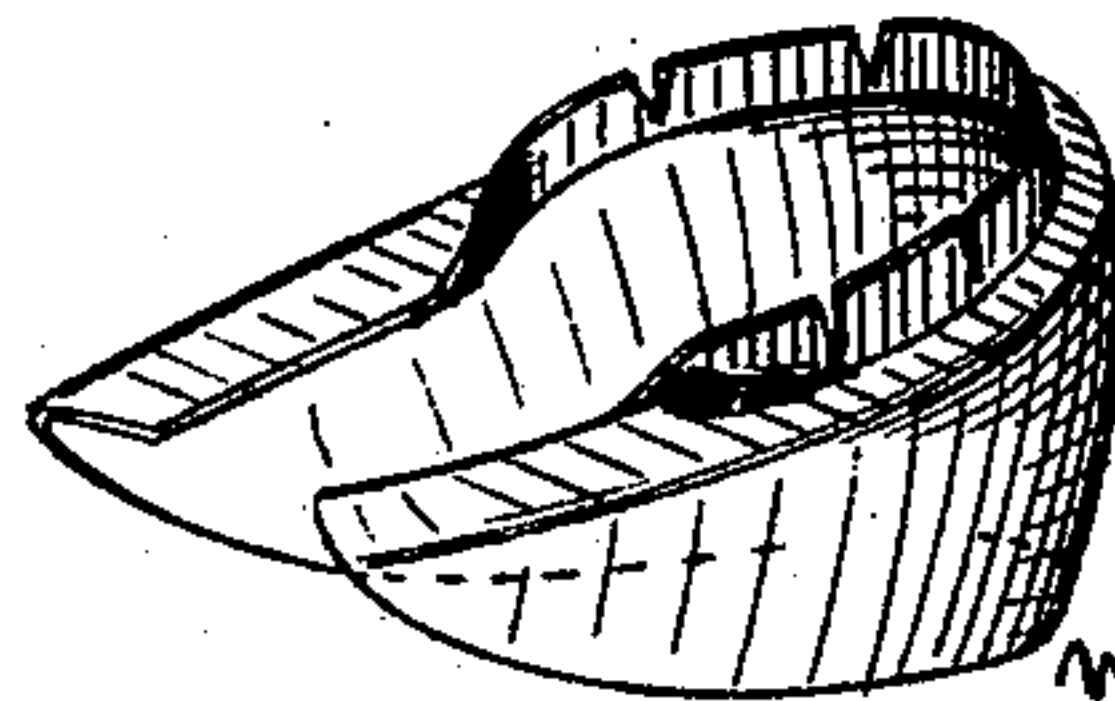


Fig. 19.



Witnesses.

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7 Sheets—Sheet 6.

M. CHASE & M. H. FOSTER.
HEEL STIFFENER MACHINE.

No. 504,327.

Patented Sept. 5, 1893.

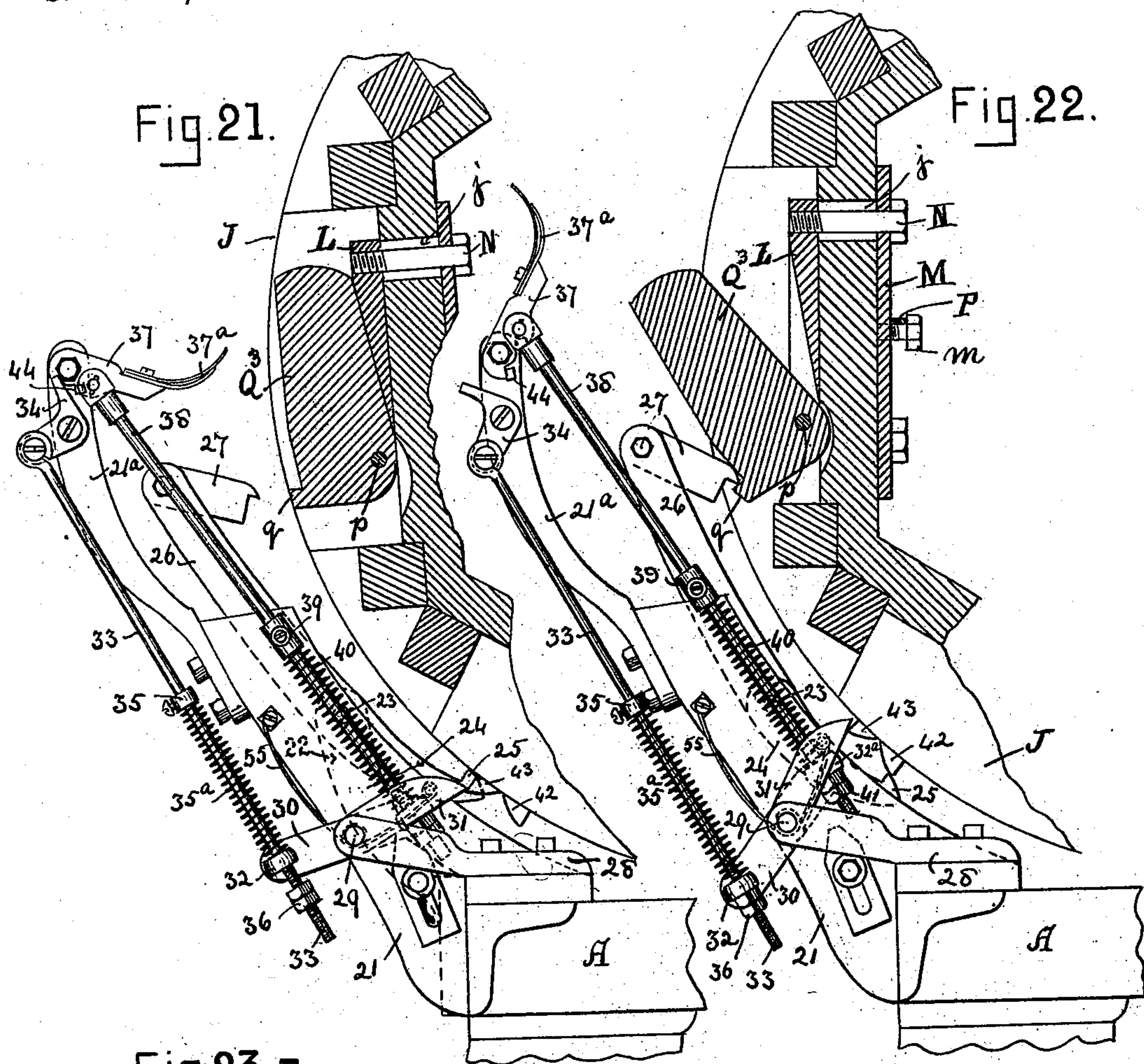
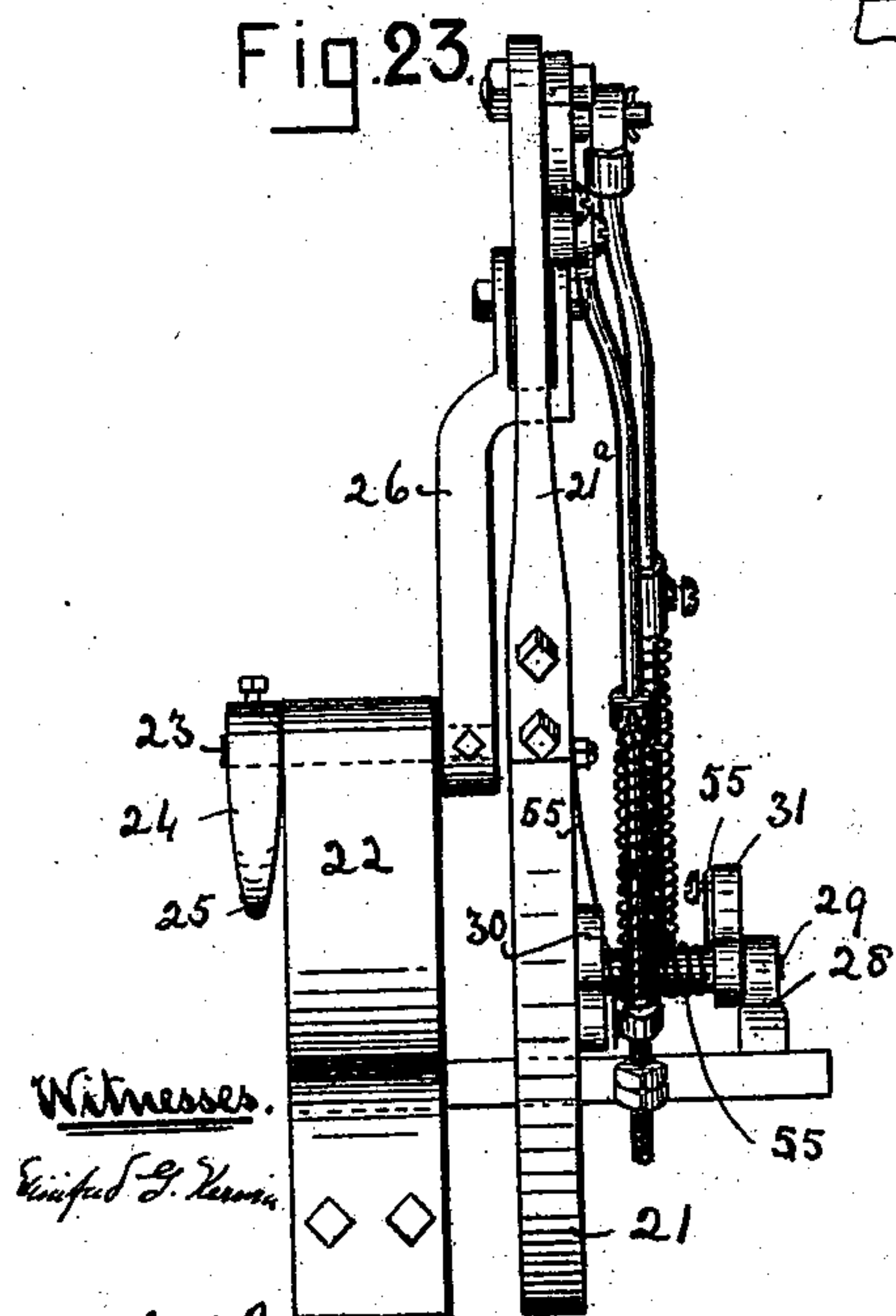


Fig. 23.

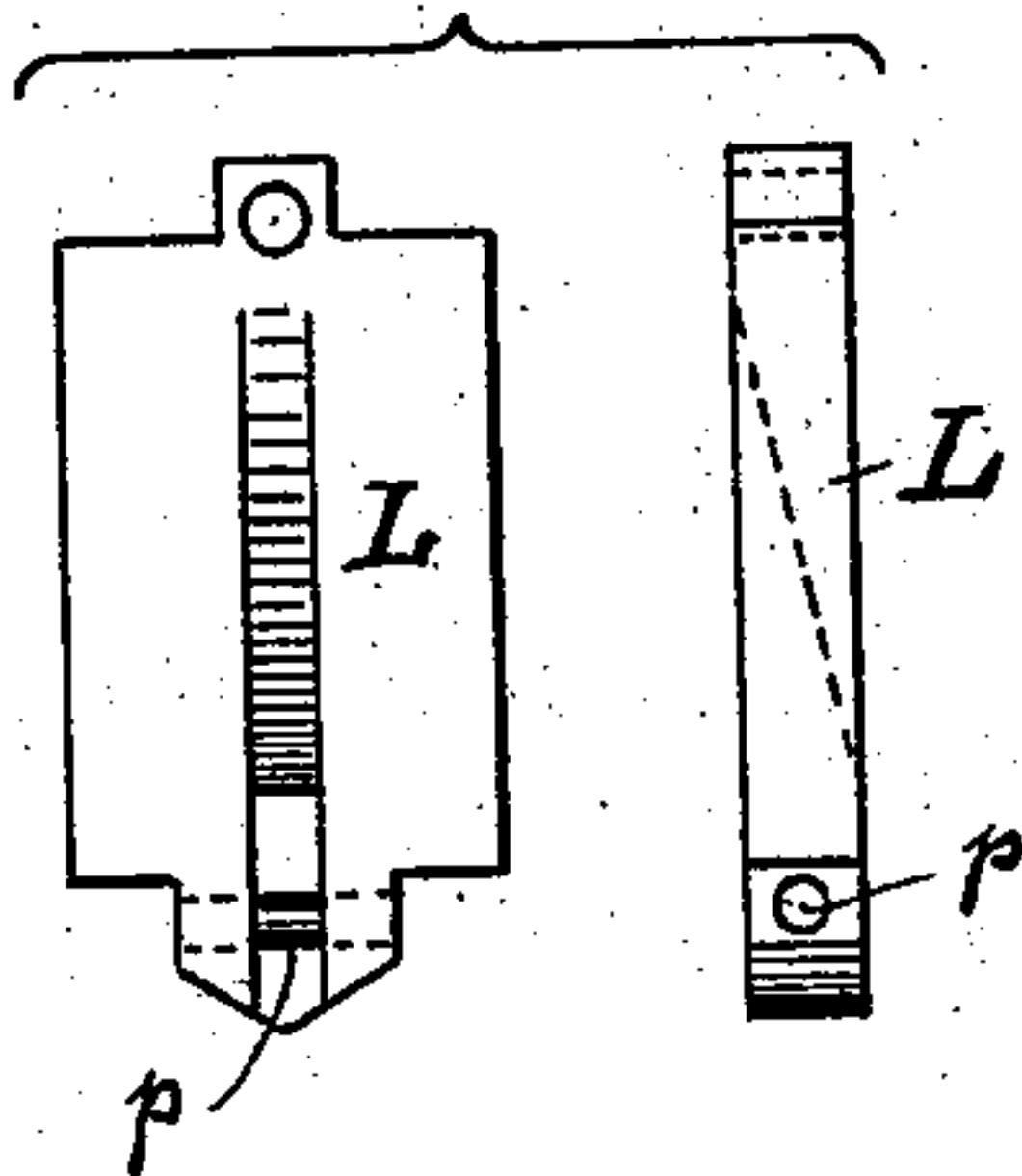


Witnesses.

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Fig. 24.



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7 Sheets—Sheet 7.

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HEEL STIFFENER MACHINE.

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Fig. 25.

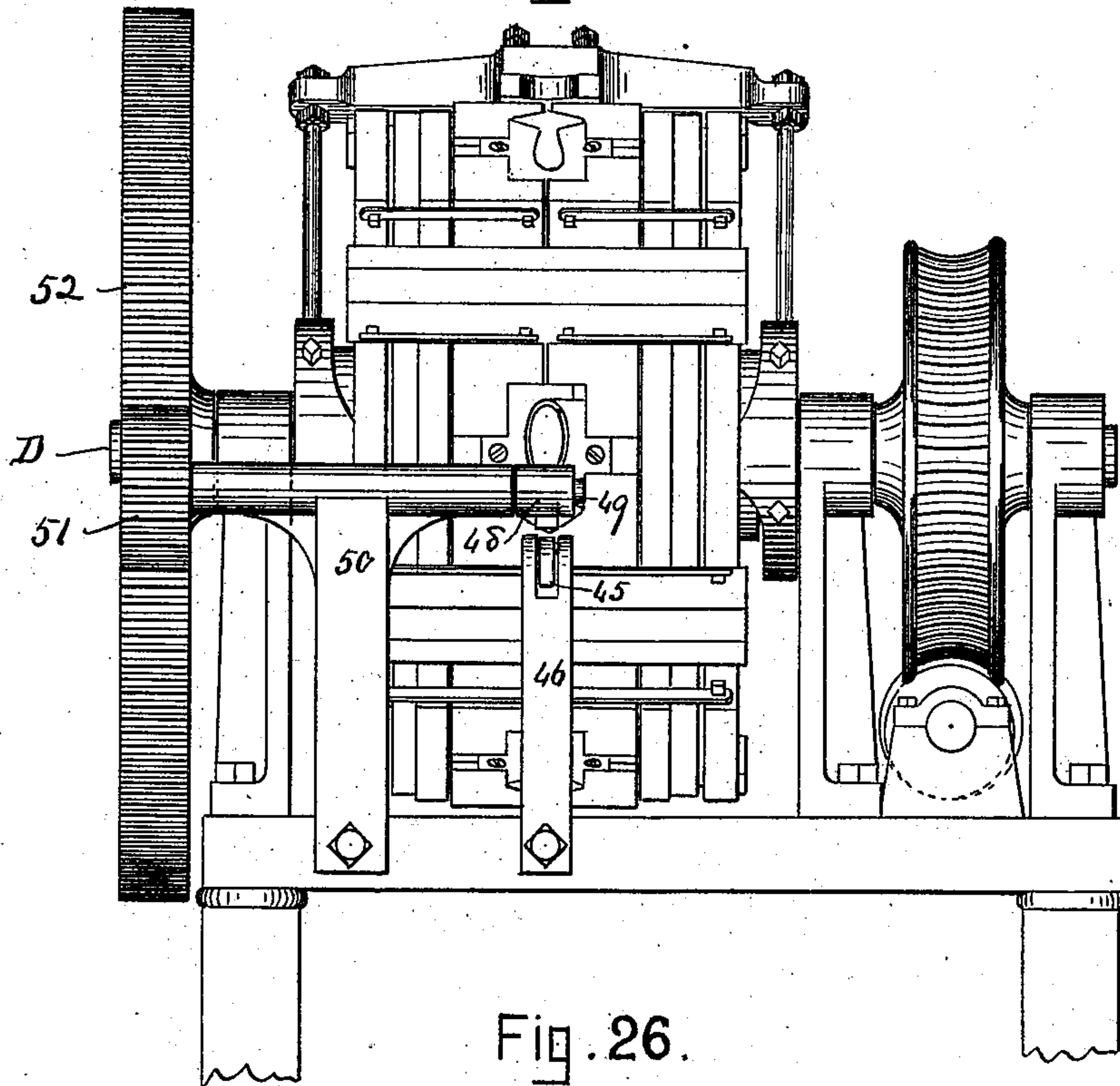
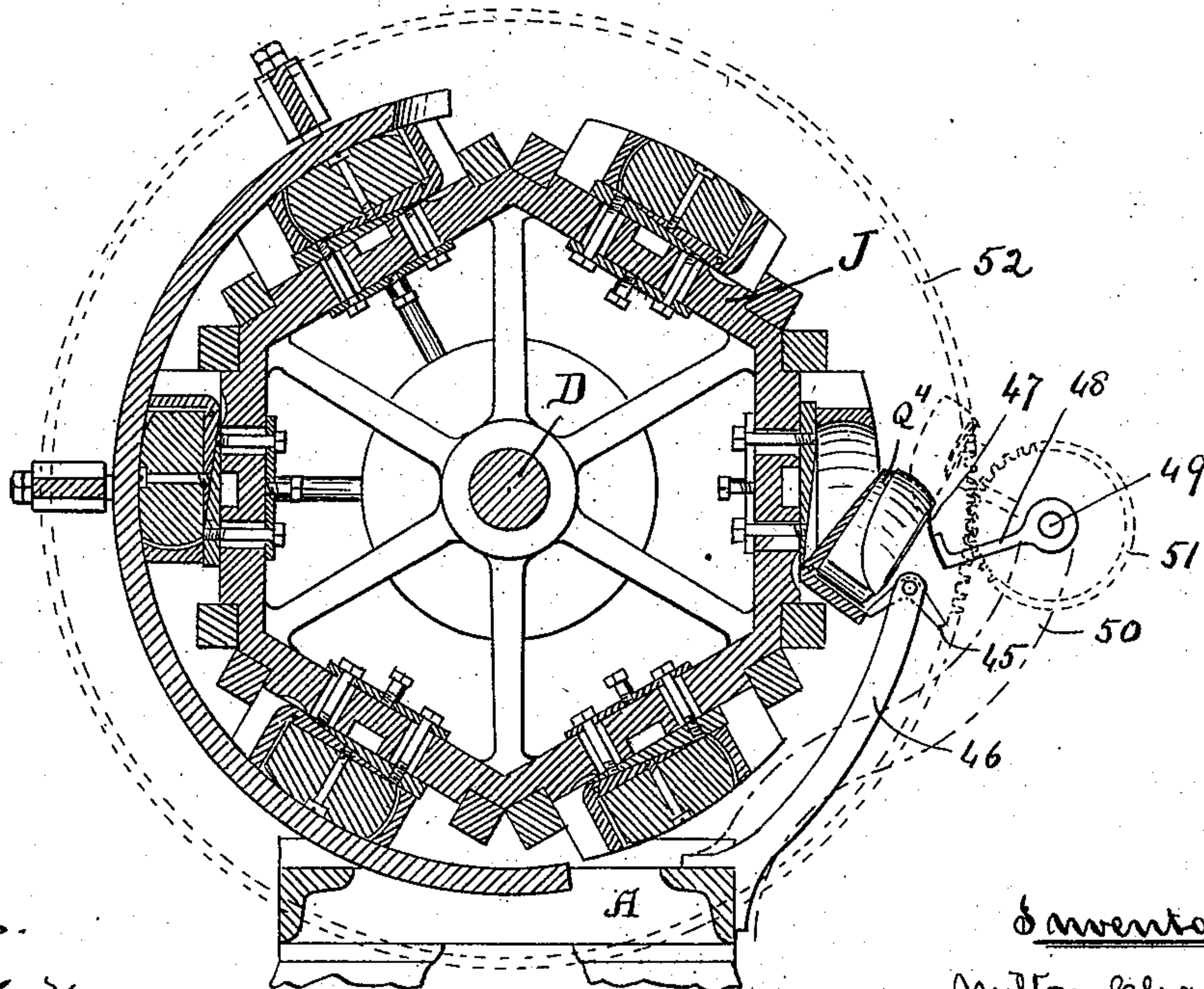


Fig. 26.



Witnesses.

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UNITED STATES PATENT OFFICE.

MILTON CHASE AND MATTHEW H. FOSTER, OF HAVERHILL, MASSACHUSETTS.

HEEL-STIFFENER MACHINE.

SPECIFICATION forming part of Letters Patent No. 504,327, dated September 5, 1893.

Application filed June 10, 1892, Serial No. 436,191. (No model.)

To all whom it may concern:

Be it known that we, MILTON CHASE and MATTHEW H. FOSTER, citizens of the United States, and residents of Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Machines for Molding Boot or Shoe Counters, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of our invention is to produce a machine whereby a number of boot or shoe counters are molded or bent into form at one and the same time.

The invention consists of a wheel secured upon a shaft mounted in suitable bearings and having a slow rotary motion imparted thereto, said wheel having upon its face a series of dies each consisting of a central block, and the two side jaws that are caused to slide to and from said central portion by suitable cams and connections, and also in certain details of construction as hereinafter fully described and pointed out in the claims.

Referring to the accompanying drawings: Figure 1—represents an end view of a machine for forming boot or shoe counters embodying our invention. Fig. 1^a is a similar view of a machine embodying another form of stripping mechanism. Fig. 2—is a vertical transverse section through the same. Fig. 3—is a front view partly in section. Fig. 4—is a plan or top view. Figs. 5 to 14—are detail views of the sliding jaws and central block, with modifications thereof. Figs. 15 and 16—are detail views of the feed gage. Figs. 17 to 19—are views of various forms of counters that may be produced by our machine. Fig. 20—is a plan or top view of a double machine. Fig. 21—is a detail view of the preferred form of the device for automatically removing the counters from the machine, showing it in the position just ready to throw off a counter. Fig. 22—is a similar view just after the counter has been thrown off. Fig. 23—is a front view of said device. Fig. 24—shows a plan and side view of the sliding plate to which the central block or die is fulcrumed. Fig. 25—is a front view of the machine showing another means for removing the counters. Fig. 26—is a vertical transverse section of the same.

A, represents a frame or bed supported by legs B. To the top of the frame are secured bearings C, C', C², in which is mounted a shaft D. Upon the shaft between the bearings C', C², is mounted a worm wheel E, in gear with a worm F, secured on a shaft G, that is mounted in suitable bearings H, secured to the top of the frame A. Upon the rear end of the shaft G, is mounted a fast and loose pulley I, I', to which motion is imparted from any suitable source. On the shaft D, between the bearings C, C', is mounted a wheel J, the perimeter of which is preferably of hexagon form and on each side of said wheel are arranged cams K, K, which are secured to the bearings C, C'. Upon each face of the hexagon wheel J, is a plate L, and on the inside of the rim is a narrow plate M, the two plates being secured together by bolts N, passing through the slots *j*, in the rim (see Fig. 2.) In the center of the plate M, is secured a bolt or stud *m* (see Figs. 2 and 3) and on each side of the said plate M, in the rim of the wheel is a bolt or stud *n*, a spring P, being arranged on these bolts so as to draw the plates M, and L, forward to release the heel of the counter when the dies are open; or spiral springs might be inserted in the end of the plate L, to throw it into position. To the plate L, is secured the central block or die Q, on each side of which is arranged a sliding jaw or die R, R'. (These parts are shown in detail on Sheet 4, and will be more fully explained hereinafter.) Each of the dies R, R', is secured to a block S, to which motion is imparted from the cams K, through cam levers T, and connecting rods U, the cams being so arranged that the jaws R, R' will be drawn open to receive the counter blanks and to deliver the molded counter at the desired point but hold all the other molds in the closed position. These cam levers are of the form shown (see Figs. 1 and 3), and are fulcrumed upon bolts or rods V, secured at their ends in bars W, that rest upon the periphery of the wheel J, each of the said levers being formed with a loose jaw *t*, fulcrumed at *t'*, and also a jaw or projection *t*², formed in one with the main body T. Between these two jaws is placed a square bar *x*, held in place by a lip on the loose jaw *t*, and by set screws Y, passing through the jaw *t*², by

means of which the amount of travel of the blocks S, can be adjusted according to the thickness of the material employed for forming the counters.

1, is a curved plate the inner face of which just fits against the periphery of the dies R, and blocks S. This plate is supported by cross heads 2, carried by rods 3, secured at one end to a boss on the bearings C, C', and screw threaded at the other end to receive nuts 4. Through the center of each of the cross heads are bolts 5, that carry a plate 6, (see Fig. 4) so that by adjusting the bolts 6, the amount of pressure exerted by the plate 1, can be regulated. The upper end of this plate is cut out to about the form of a counter and beveled inwardly as will be seen in Figs. 2 and 4.

To each of the blocks S, is pivoted a feed gage 7 (shown in detail in Figs. 15 and 16) by means of which the operator will be enabled to place the counter blanks in the dies evenly and the required depth. Each gage is at its forward end of such shape as to conform to the shape of the dies, and it is fulcrumed to the block S, at 8, a lip 9, projecting over the edge of the block, through which lips a set screw 10 passes, so that by adjusting the set screw 10, the distance, the forward end of the gage is thrown in by the spring 11, can be regulated as required. The gage is made in two parts, one part having a slot 12, and secured to the rear part by set screws 13, so that it can be lengthened or contracted to the size of the counter to be formed. 14 is a recess to allow the thumb and finger of the operator to place the counter blank so that its edge will be level with the top of the gage. 15 is a small wheel or disk which as the wheel J, rotates comes into contact with the plate 1, after the blank has been placed in the die, and throws the forward end of said gage out of the way of the plate 1, as will be best seen in Fig. 4.

Referring to Sheet 4, in which the dies are shown, it will be seen that the die R is at its rear portion r , rounded out and extends beyond the center line as shown in Figs. 5 and 7, the latter being a section taken on line x , x , of Fig. 5, and the die R', is at its rear made to fit the same, its inner rear portion r' coming to a knife edge, so that when the two dies come together around the central die or block Q, the leather forming the counter will not be nipped in the center and form a ridge as would be the case if the die R', did not fit into the die R, and was not formed with a knife edge. Fig. 6— is a front view of Fig. 5. Each die R, R', is formed with a wing R², having a screw hole therein by which it is secured to its sliding block S.

In Fig. 8 we have shown a modified form of the die. In this case both the dies are formed with a rear rounded knife edge r' as before described with reference to the die R'. The rear portion of these dies slide in a fixed block

R³, that on its inner side is rounded to conform to the shape of the rear of the dies.

The central die Q, of which Fig. 9 is a plan view, Fig. 10 a side view and Fig. 11 a cross section taken on line y , y , of Fig. 9, is of the form it is desired to mold the counter and is mounted upon the plate L, upon which the dies R, R', slide. The forward end of this die is of a wedge shape so that when the jaws R, R', are opened the plate L, will be drawn forward by the spring P, and thus release the heel portion of the counter, and when the jaws R, R', are forced together the die Q, and plate L, will be pushed back so as to bring them into proper position to press the leather into form. The central die Q, and plate L as shown in Figs. 9, 10 and 11 are adapted for a counter of the form shown in Fig. 17, the plate 1, bending over and pressing the upper edge of the leather as it passes under the same.

The dies Q² shown in Figs. 12, 13 and 14 have an upper plate Q', secured thereto or formed in one therewith; this description of die is used when it is desired to produce a counter with a turned up edge as shown in Fig. 18; recesses q , are formed on the sides of the plate Q' so as to allow the thumb of the operator to place the counter blank in place and a recess q' , is also formed at the heel for the automatic remover to catch and lift the molded counter from the die. Should it be desired to produce a counter with a turned up edge at the rear, and a turned down portion at the front (as shown in Fig. 19) then the plate Q', would have to be cut away in front as shown by the dotted lines in Fig. 12.

When it is desired to produce a counter of either of the forms shown in Figs. 18 or 19, the plate 1 is dispensed with.

To remove the counters from the machine after they have been molded, we prefer to use the device as shown in Sheet 6, in which Fig. 21 is a side view of an automatic counter remover showing it in the position just ready to be operated upon. Fig. 22 is a similar view but showing it in the position after the counter has just been removed. Fig. 23 is a front view of the removing device. Fig. 24 is a plan and side view of the plate L.

21, represents a bracket secured to the frame A, in front of the machine, and 22, another bracket also secured to said frame.

In the upper end of the bracket 22, is mounted a shaft or spindle 23, upon which is secured on one side of the bracket 22, an arm 24, the lower edge of which is formed with a cam shaped hook 25, and on said spindle 23, on the other side of the bracket 22, is mounted an arm 26, the upper end of which is bifurcated and has mounted therein a catch or latch 27. The two arms 24, and 26, are adjustable upon the spindle 23, and when in the desired position are secured by set screws or pins.

To the upper portion of bracket 21, is secured (or it might be formed into one there-

with) an extension 21^a, and to the lower or base portion is secured an arm 28.

29, is a short shaft mounted at its end in the arms 21, and 28, and upon this shaft is secured an arm 30, and also an arm 31. The arm 30 is provided at each end with eyes 32, 32^a, and through the eye 32, is passed a screw threaded rod 33, the upper end of which is attached to a bell crank 34, fulcrumed on the extension 21^a. At about the center of the rod 33, is secured a boss 35, and a spiral spring 35^a, is interposed between said boss and the eye 32, and on the said rod 33, below the eye 32, are two nuts 36, which can be adjusted as required.

To the upper portion of the extension 21^a, is fulcrumed a latch lever 37, the outer end of which is fitted with springs 37^a, that when in operation catches and removes the counters from the dies. To the latch lever 37, is fulcrumed a rod 38 the lower end of which passes through the eye 32^a. A boss 39 is secured at about the center of this rod, and a spiral spring 40 is interposed between the boss 39, and the eye 32^a, nuts 41 on the rod below the eye 32^a, regulating the tension of the spring 40. 55 is a grass hopper spring for resetting this mechanism one end of which is attached to the arm 21. It is then twisted around the shaft 29, and its other end secured to the arm 31.

To operate this removing mechanism a cam 42, and a catch 43, are secured to the periphery of the wheel J, and so arranged that the cam 42, will come into contact with the cam hook 25, on the arm 24, thereby forcing it away from the face of the machine, and at the same time throwing the arm 26, forward so that the catch latch 27, will come into contact with a projection *q* formed on the front end of the block or die Q³, which in this case is fulcrumed to the plate L, at *p*, so that the block Q³ is free to be tilted out as shown in Fig. 22. While the block is thus being thrown out, the catch 43, takes hold of the end of the arm 31, which compresses the spring 40, and at the same time brings the arm 30, down so that the eye 32, strikes the nuts 36, thereby drawing upon the rod 33 and withdrawing the end of the bell crank 34, out of contact with the latch lever 37, which as soon as it is free is by means of the spiral spring 40, pushed quickly upward into the position shown in Fig. 22. The springs 37^a, in their movement coming into contact with the face of the block Q³, and catching the molded counter draws it off at an angle so that the counter will not be stretched but retain the same shape as when on the die, and as soon as the catch 43, is free from the arm 31, the spring 55 forces down the inner end of arm 30, thus drawing the arm 38, down and lowering the catch lever 37, at the same time compressing the spring 35^a, which forces up the rod 33, and pushes the bell crank lever 34, so as to hold the latch lever 37, thus resetting the apparatus ready for the next coun-

ter to be removed. 44 is a stop to prevent the lever 37, from being thrown over too far.

Although we prefer the device thus described, it is obvious that the arrangement shown in Figs. 25 and 26 might be employed, but in it the counter is liable to be stretched as it is removed. In that shown in Figs. 25 and 26 the central die or block Q⁴, is tilted automatically by a right angled piece 45, mounted in the end of a bracket 46, secured to the frame A, which piece may be held in its normal position by any suitable spring. The counter is removed by a spring 47, on an arm 48, mounted on an end of a shaft 49 carried by a bracket 50, secured to the frame A. On the outer end of this shaft 49 is mounted a pinion 51, in gear with a large cog wheel 52, secured on the end of the main shaft D. In this case where there are six dies upon the perimeter of the wheel J, the large wheel 52, would have to be just six times larger in diameter than the pinion 51, so as to bring the arm 48, round to meet each and every one of the dies as they come opposite thereto.

Still another means for removing the counter is shown in Figs. 1 and 1^a in which the central die Q⁵ may be recessed longitudinally and a narrow bar 16 inserted and fulcrumed near the front end, said bar also projecting over the ends of the die as shown in Fig. 2 and held in normal position by a spring 17. To the end of the bar 16 a stud 18 is secured to which is fulcrumed a bar 19, having at its upper end a hook 20. The bar 19 is held in its normal position by a spiral spring interposed between the bar and a nut on the stud 21, secured to the bar 19 so that as the wheel J rotates, the hook 20 will catch upon the end of the bar 16 and throw its rear end outward which will also carry the counter with it.

The operation is as follows: Supposing it is desired to mold counters of the description shown in Fig. 17, the machine being put in motion the dies on the perimeter of the wheel J, that are in about the position shown at Z, Figs. 1 and 2 will be open to receive the counter blanks. The attendant then takes a blank and bends it round so as to enter the dies, the ends of the blank fitting against the projections on the ends of the feed gage. He then presses it down until the top edge is on a level with top of said gage, the dies being held open a sufficient length of time, but by the time the dies have reached the position Z', they have been closed by means of the cams K, and connections so as to firmly press upon the counter blank. The rollers 15, on the feed gage then come into contact with the sides of the plate 1, and throw said gage out of the way of the plate (see Fig. 4). The edge of the counter blank projecting above the dies then comes into contact with the under-side of the plate 1, and it is bent or turned over upon the top of the central die or block Q³, and is subjected to the rubbing action of the plate 1, during its passage under same. When the die comes into about

the position Z^2 , the side dies or jaws R, R' , commence to open, the cam 42 comes into contact with the cam hook 25 thus throwing the catch latch 27 forward so as to come into contact with the projection q , on the block or die Q^3 , thus tilting it forward as shown in Fig. 22, at the same time the catch 43 comes into contact with the arm 31 raising it until the rod 33 withdraws the bell-crank 34 from the latch lever 37, which is then thrown up by rod 38 and spring 40, the end of the spring 37^a coming into contact with the face of the block Q^3 , and lifting the counter therefrom. After the counter has thus been removed and the block Q^3 , passed beyond the control of the catch lever 27, it is drawn back into its normal position by means of the spring P , and is ready to receive another blank.

Although we have only described the operation of one die it is obvious that the same operation is being repeated by as many dies as may be upon the face of the wheel which we have shown as six. In Fig. 21 we have shown a plan view of a double machine in which case the portions of the dies that are in the center of the machine would be fixed, the side dies and central blocks having the required motion imparted to them.

What we claim is—

1. In a machine for forming boot or shoe counters, a wheel, a series of male dies secured thereto, each die being movable circumferentially of the wheel, a pair of female dies for each male die, said female dies engaging with the male die and moving it upon the wheel, and means for rotating the wheel and moving the female dies, substantially as set forth.

2. In a machine for forming boot or shoe counters, a wheel, a series of spring actuated male dies adjustably secured thereto, and movable circumferentially of the wheel, a pair of laterally movable female dies for each male die, said female dies engaging with the male die and moving it in one direction whereby the spring is compressed for moving the male die in the opposite direction, and means for rotating the wheel and moving the female dies, substantially as set forth.

3. In a machine for forming boot or shoe counters, a wheel, a series of male dies secured thereto, a pair of laterally moving female dies for each male die, and an adjustable presser for operating the female dies, substantially as set forth.

4. In a machine for forming boot or shoe counters, dies consisting of a central block, and two sliding jaws, one of which has an extension beyond the center line and rounded on its inner rear portion, the other one fitting into said round portion and having a knife edge as and for the purposes set forth.

5. In a machine for forming boot or shoe counters, a wheel, a series of spring actuated male dies secured thereto, and movable circumferentially of the wheel, one end of each of said dies being rounded and the opposite end provided with a wedge shaped projection,

a pair of laterally movable female dies for each male die, one end of each of said female dies being concaved to correspond with the rounded end of the male die, and with a knife edge, and the opposite end of said female dies being adapted to engage with the wedge-shaped projection of the male die, and forcing its rounded end into the concave portion of the female dies, substantially as set forth.

6. In a machine for forming boot or shoe counters, a central block or die fulcrumed to a plate free to slide upon its bed, the front portion of said die having a lip or projection, and means for tilting said block substantially as set forth.

7. In a machine for forming boot or shoe counters, a central block or die the forward end of which is of a wedge shape two sliding dies secured to plates having wedge shaped portion to correspond with and fit against the front of the central die and a spring to draw the central block or die forward when the side dies are open said block being forced back by the wedge shaped portion when the dies close as set forth.

8. In a machine for forming boot or shoe counters, a wheel, a series of forming dies thereon, the male portion of which is pivotally secured thereto, a bracket adjacent to the periphery of the wheel, a latch lever, pivotally secured to the upper end of the bracket, and means for simultaneously moving the latch lever and the male die, whereby the counter is removed from the die, substantially as set forth.

9. In a machine for forming boot or shoe counters a wheel, having a series of forming dies, the male portion of which is provided with a projection and is pivotally secured to the wheel, a bracket adjacent to the periphery of the wheel, a latch lever and a catch latch pivotally secured to the bracket, and means for moving the catch latch into engagement with the male die and operating the latch lever, whereby the counter is removed from the die, substantially as set forth.

10. A machine for forming boot or shoe counters consisting of a wheel J , mounted upon a shaft D , to which a slow rotary motion is imparted, dies Q, R, R' , secured on the periphery of said wheel, fixed cams K , cam levers T , and connecting rods U , for transmitting motion from the cam levers to the sliding jaws of the dies substantially as set forth.

11. In a machine for forming boot or shoe counters such as described, the central block or die Q , wedge shaped at its forward end and attached to a plate N , a spring P , for drawing said plate and block forward in combination with dies R, R' , secured to and carried by sliding plates L , having wedge shaped portions corresponding to that on the block Q , whereby said block will be drawn forward when the dies are opened, and forced back when they are closed as set forth.

12. In a machine such as described the cam levers T , having a loose jaw t , and adapted to

carry a bar α , and set screws Y, whereby the amount of travel imparted to the sliding jaws or dies R, R', can be adjusted as set forth.

13. In a machine for forming boot or shoe counters a feed gage consisting of two parts 5 each fulcrumed at 8, to the blocks S, carrying the sliding dies and having their forward ends adjustably connected to the rear portion by set screws 13, the rear portion having a lip 9, 10 in which is an adjusting screw 10, for regulating the distance it is thrown in by the spring 11, and a wheel or disk 15, for throwing the gage open when passing the plate 1, as set forth.

15 14. In combination with a machine of the character described for forming boot or shoe counters, the automatic device for removing the finished counters consisting of an arm 24 having a cam shaped hook 25 at its lower end

and an arm 26, and latch 27, said arm being 20 mounted upon a shaft 23, carried by suitable brackets, bracket 21, arm 28, shaft 29, mounted therein, the arms 30, 31, secured to said shaft 29, eyes 32, 32^a, rod 33, bell crank 34, boss 35, spiral spring 35^a and nuts 36, the latch lever 25 37 having springs 37^a, rod 38, boss 39, spring 40, and nuts 41, in combination with a cam 42 and a catch 43, secured to the periphery of the wheel J, substantially as set forth.

In testimony whereof we have signed our 30 names to this specification, in the presence of two subscribing witnesses, on this 2d day of June, A. D. 1892.

MILTON CHASE.

MATTHEW H. FOSTER.

Witnesses:

CHAS. STEERE,

EDWIN PLANTA.