

A. R. HAVENER.
SINGLE HEAD MULTIPLE RIVET SETTING MACHINE.
APPLICATION FILED APR. 3, 1909.

959,738.

Patented May 31, 1910.

3 SHEETS—SHEET 1.

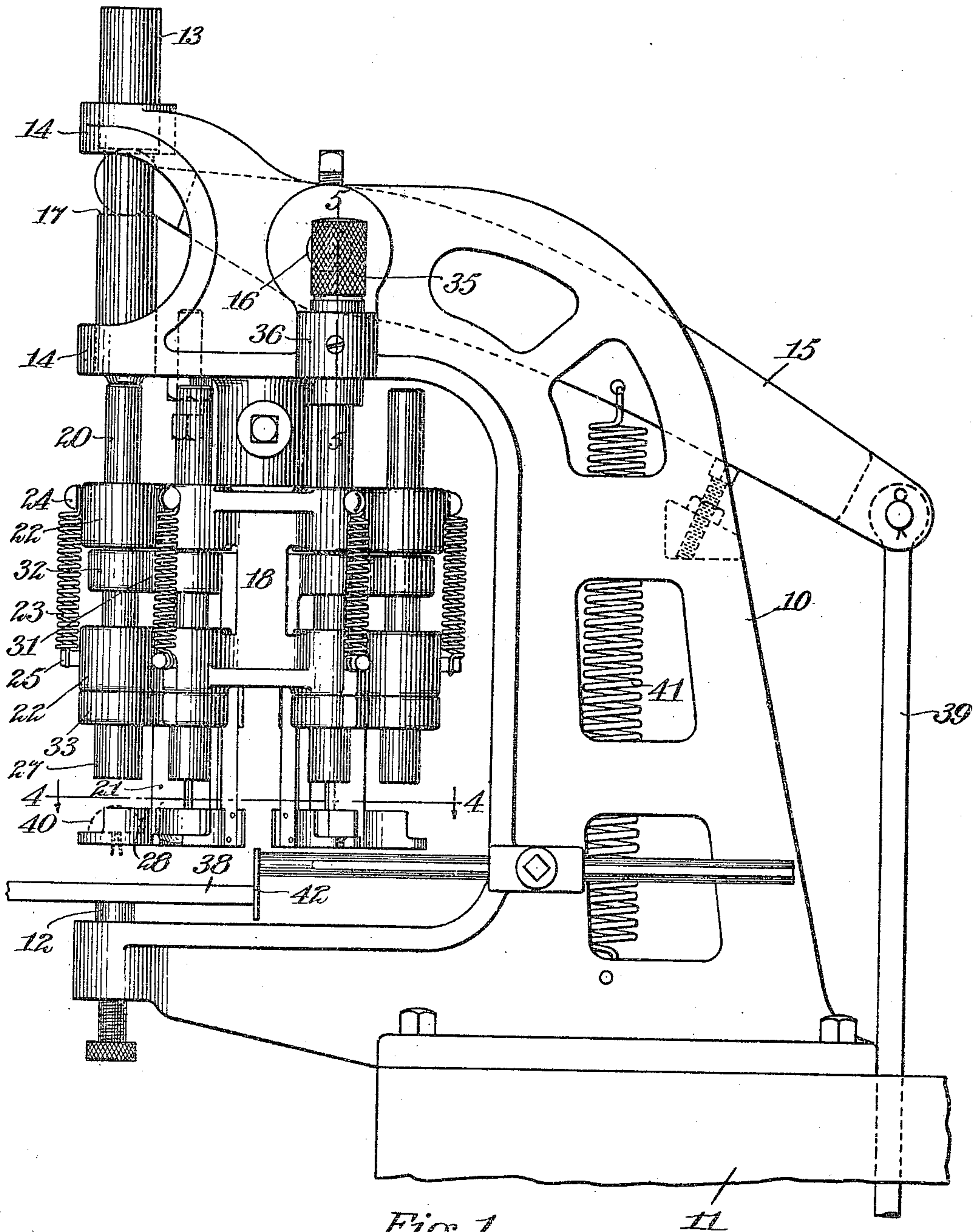


Fig. 1.

Witnesses:
Sydney E. Taft.
Franklin E. Low.

Inventor:
Arthur R. Havener,
by his attorney, Walter J. Gooding

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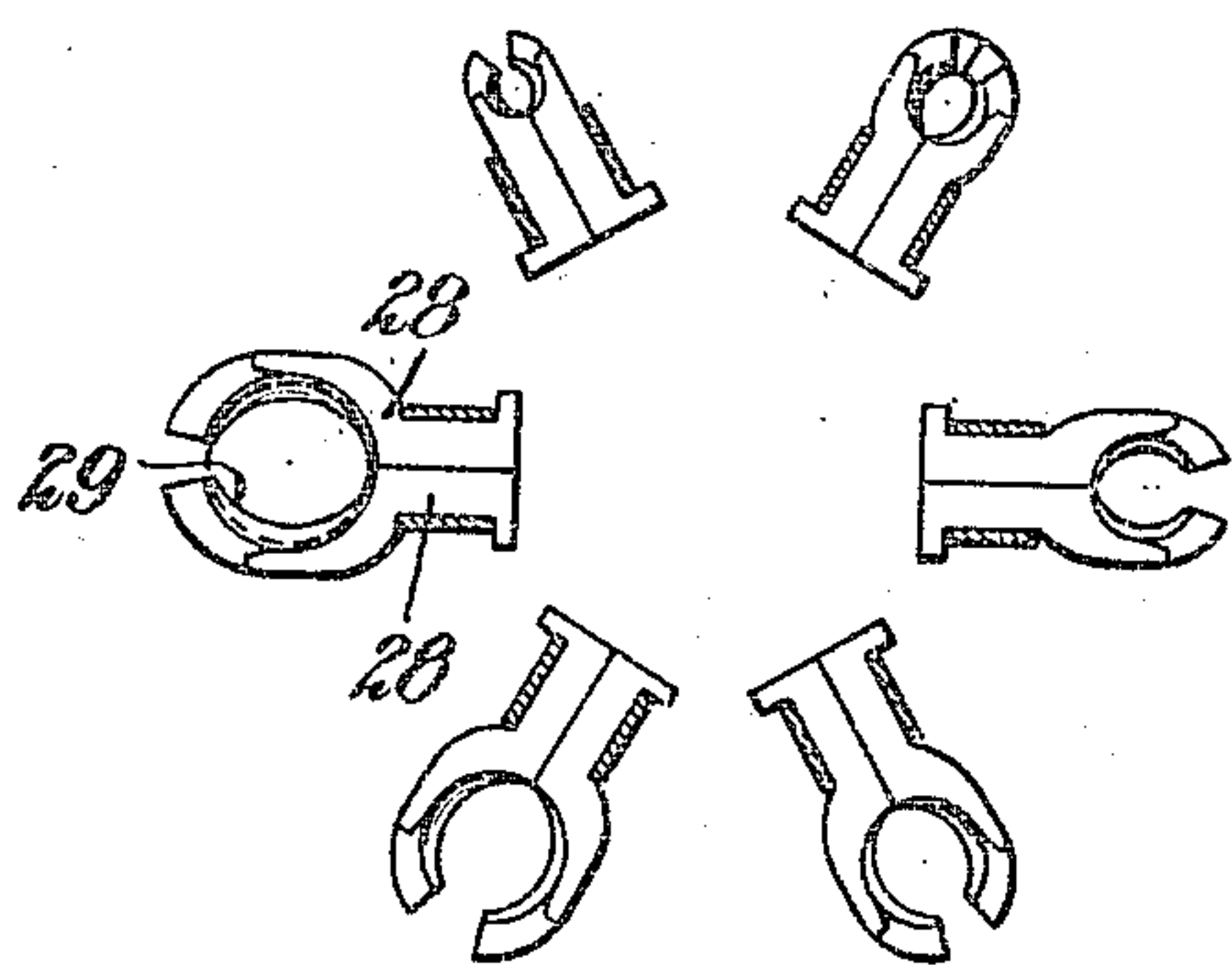
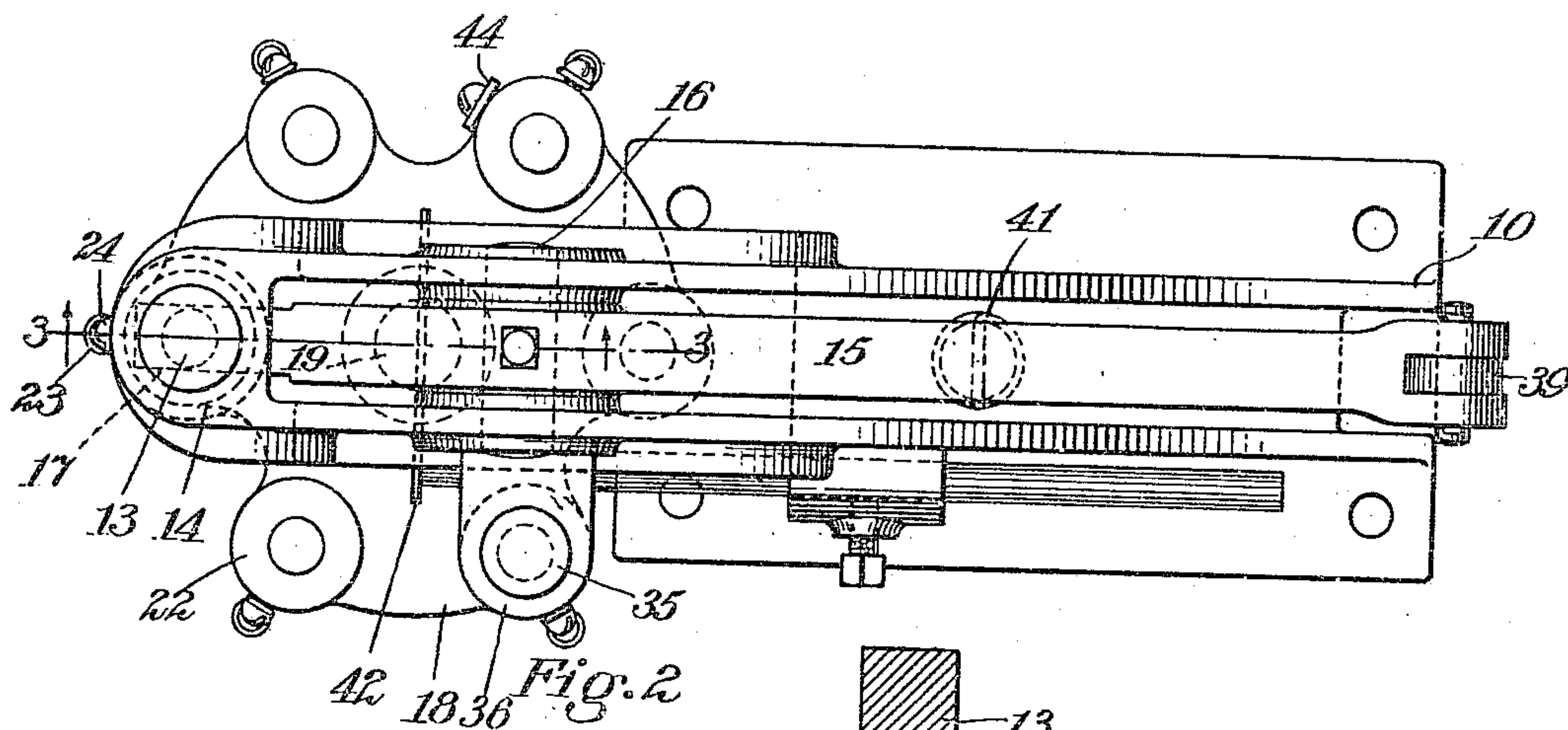


Fig. 4.

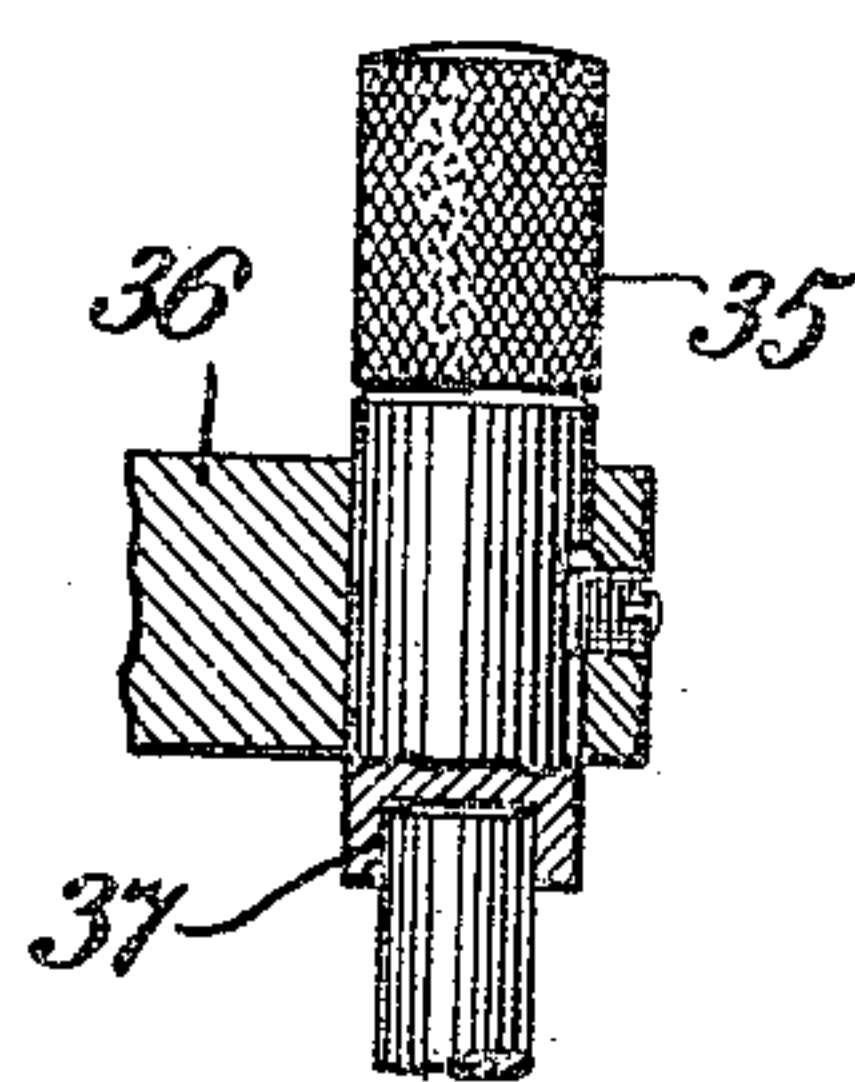


Fig. 5.

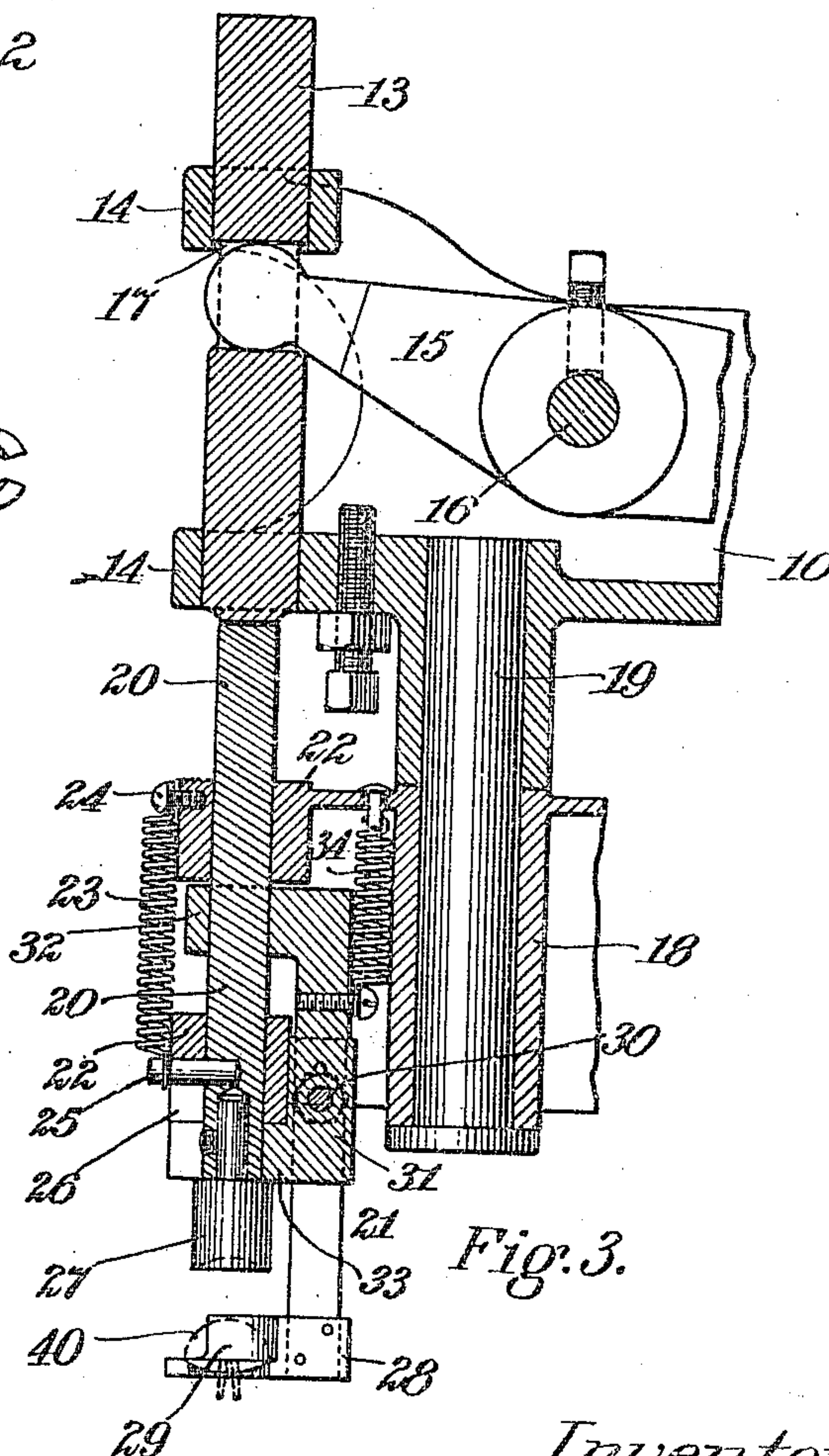


Fig. 3.

Witnesses:

Sydney E. Taft.
Franklin E. Low.

Inventor:

Arthur R. Havener,
By his attorney, Charles J. Gooding.

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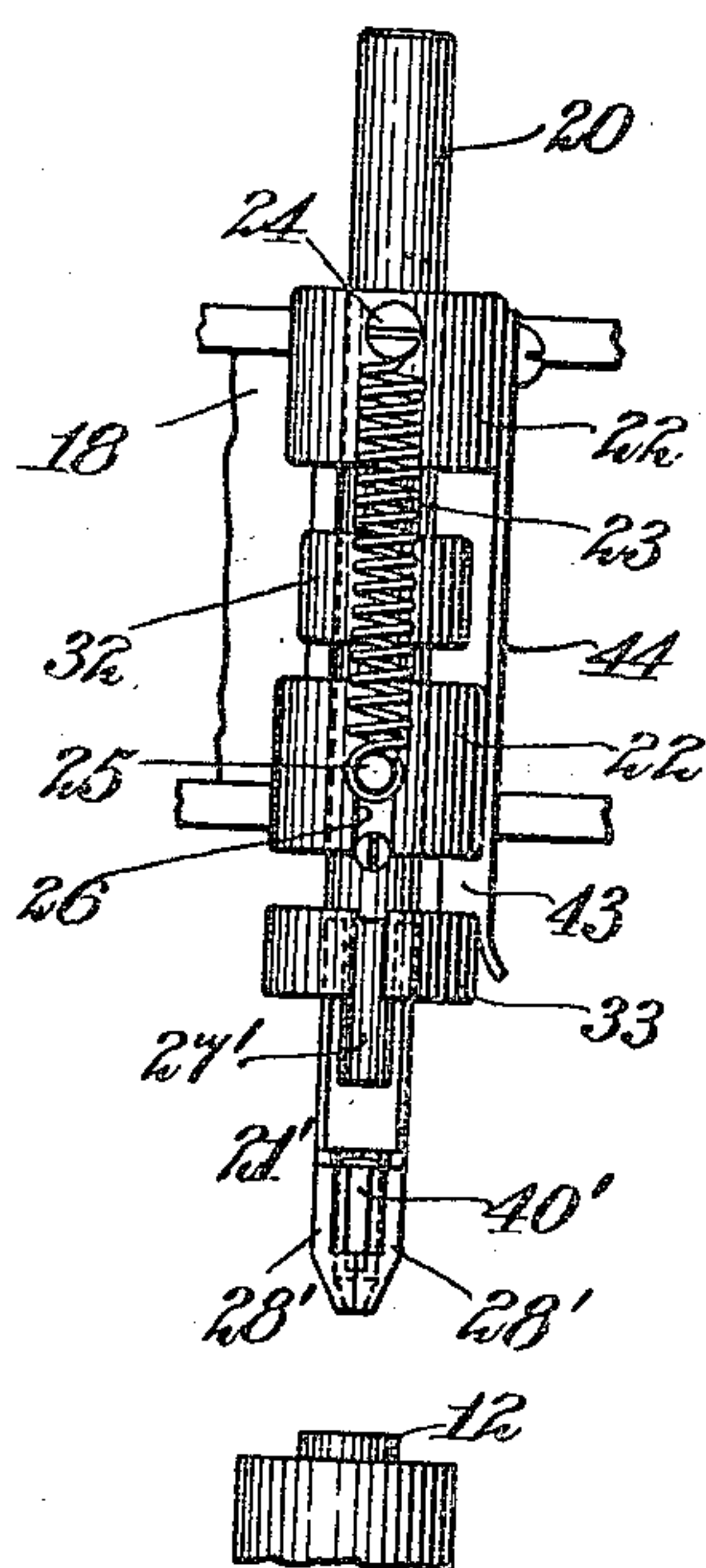


Fig. 6.

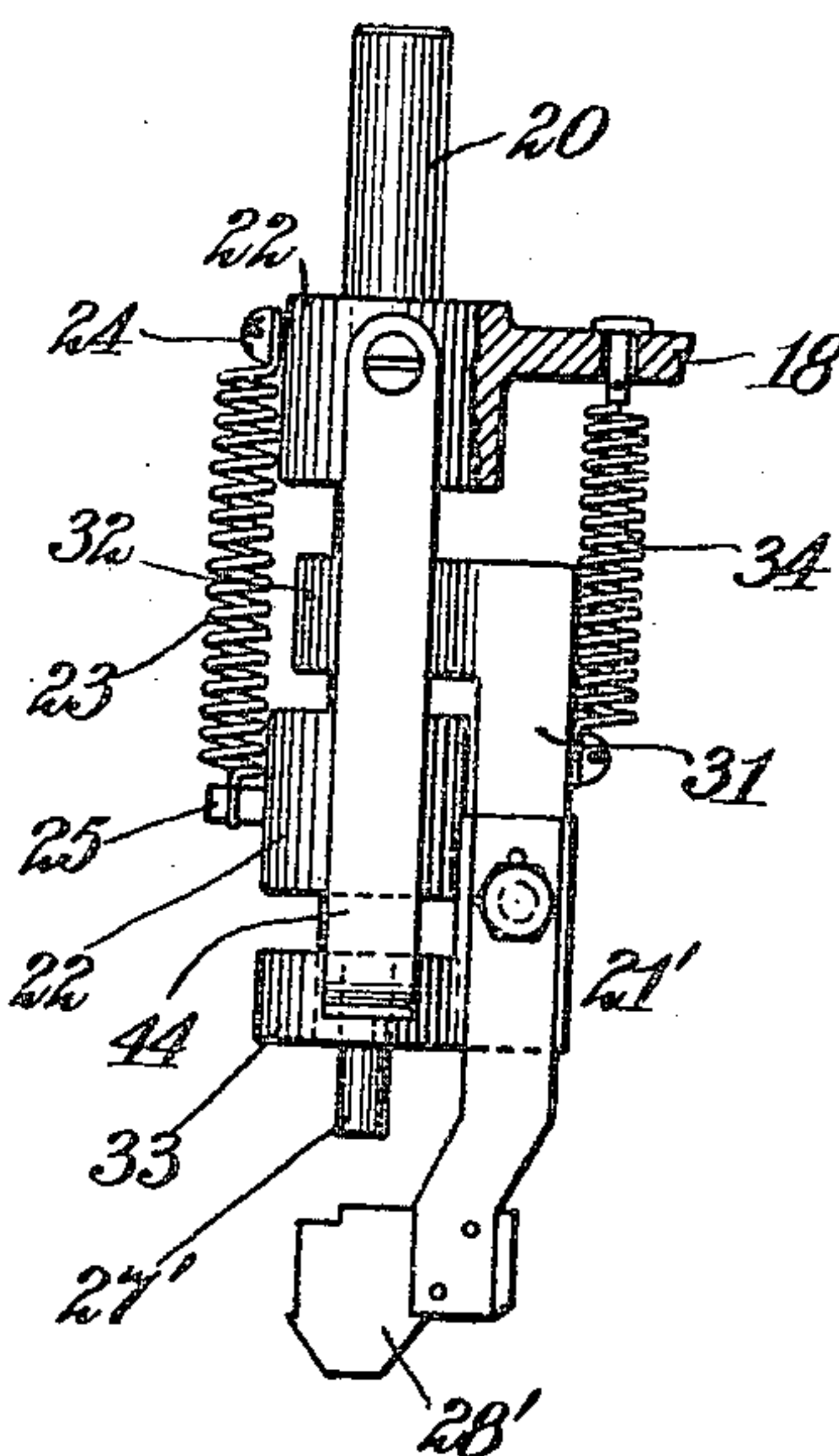


Fig. 7.

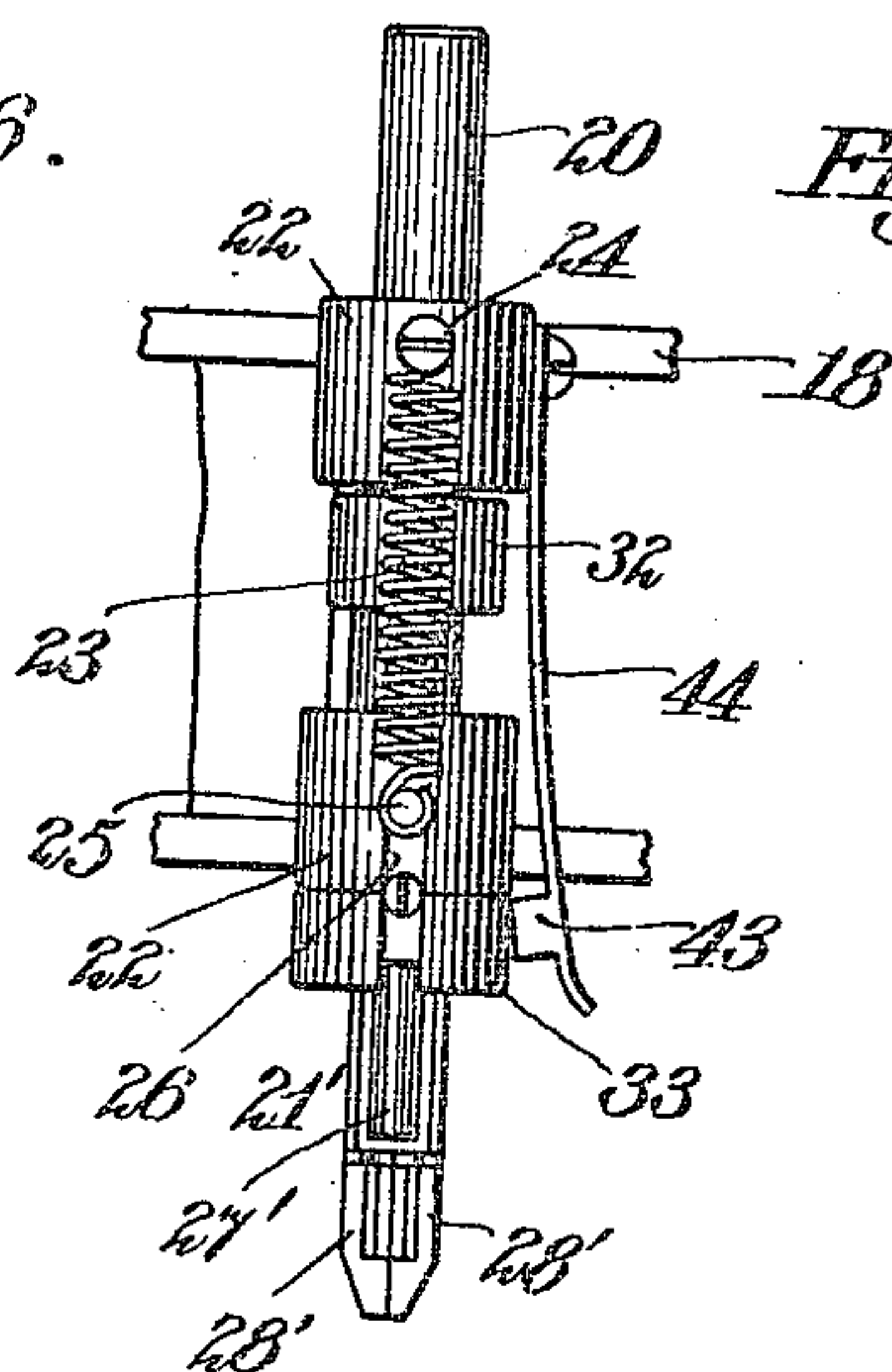


Fig. 8.

Witnesses:

Sydney E. Taft.

Franklin E. Low.

Inventor:

Arthur R. Havener.

By his attorney Charles S. Gooding.

UNITED STATES PATENT OFFICE.

ARTHUR R. HAVENER, OF WALTHAM, MASSACHUSETTS, ASSIGNOR TO JUDSON L. THOMSON M'FG CO., A CORPORATION OF MAINE.

SINGLE-HEAD MULTIPLE RIVET-SETTING MACHINE.

959,738.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed April 3, 1909. Serial No. 487,666.

To all whom it may concern:

Be it known that I, ARTHUR R. HAVENER, a citizen of the United States, residing at Waltham, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Single-Head Multiple Rivet-Setting Machines, of which the following is a specification:

This invention relates to an improved multiple rivet setting machine, the object of the invention being to provide, in a single machine, a plurality of rivet setting instrumentalities movably mounted upon a single frame having a single anvil and a single mechanism for operating each of the different setting instrumentalities, said setting instrumentalities being mounted, preferably, upon a rotatable carrier, so that the same may be brought one after another into alignment with the anvil and a rivet placed in the holder by hand and driven by the mechanism hereinbefore described. Each of the holders is preferably of different size or shape to accommodate different sizes and shapes of rivets, so that by one machine a variety of rivets can be driven or set, and thus accomplish a great saving in expense and in space as compared with a number of separate machines, each one of which can drive one particular size or style of rivet.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

While I have described and illustrated my invention as particularly adapted to the setting of rivets, I do not wish to be understood as limiting my invention to that particular embodiment thereof, as the same may be used for attaching buttons to garments or for any other use where it is desirable to use a variety of sizes or styles of articles and to attach them to a piece of material.

Referring to the drawings: Figure 1 is a right hand side elevation of my improved multiple rivet setting machine, the column being broken away to save space in the drawings. Fig. 2 is a plan view of the same. Fig. 3 is a sectional elevation taken on line 3—3 of Fig. 2. Fig. 4 is a detail sectional plan taken on line 4—4 of Fig. 1,

illustrating the different sized rivet holders. Fig. 5 is a sectional elevation taken on line 5—5 of Fig. 1. Fig. 6 is a front elevation of one of the rivet setting mechanisms adapted particularly for use in setting long rivets. Fig. 7 is a side elevation of the same. Fig. 8 is a front elevation, similar to Fig. 6, illustrating the rivet holder raised to its uppermost position, and the stop thrown out.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 10 is the frame of the machine fast to a suitable column or base 11.

12 is an anvil adjustably fastened to the frame 10 and in alinement with said anvil is a slide 13 preferably cylindrical and adapted to slide in bearings 14, 14 in the frame 10. A lever 15 is pivoted at 16 to the frame of the machine and at its front end is rounded and projects into a slot 17 extending through the slide 13, whereby said slide may be moved longitudinally thereof.

A carrier 18 is rotatably mounted upon a stud 19 fast to the frame of the machine (see Figs. 1, 2 and 3) and mounted upon said carrier is a plurality of rivet setting mechanisms. Each of these rivet setting mechanisms consists of a rivet setting plunger and a rivet holder 21. The plungers 20 are each adapted to slide in bearings 22, 22 in the rotary carrier 18 and are normally held upwardly in the position illustrated in Figs. 1 and 3 by spiral springs 23, 23, the upper end of each of these springs being fastened to screws 24 fast to the rotary carrier 18, the lower end of said springs being fastened to pins 25, each pin projecting through a slot 26 and into its respective plunger 20, said pin serving as a stop to limit the upward movement of the plunger 20. The plungers 20 have attached to the bottom thereof a driver 27 which may be of any desired size.

The holders 21 each consist of two spring fingers 28, 28, suitably recessed at 29, 29 to receive the head of the button, the prongs of the button extending downwardly therefrom, as illustrated in Fig. 3. The spring fingers 28 are fastened at their upper ends by a bolt 30 to a slide 31 which is provided

with two ears 32 and 33 which slide upon the plunger 20. The holder 21 and the slide 31 are held normally in the position illustrated in Fig. 3, or in their uppermost position, by a spring 34. The distance to which the slide 31 can be raised by the spring 34 is limited by the lower bearing 22. It will be seen by reference to Fig. 4 that the fingers or jaws of the different holders are of different sizes to accommodate different sizes and styles of rivets. It will, therefore, be seen that the carrier 18, with its different rivet setting instrumentalities hereinbefore specifically described, may be rotated about the stud 19, until the plunger of any rivet setting mechanism which it may be desired to use is brought into alinement with the slide 13 and the anvil 12. The carrier is then locked in this position by means of a locking pin 35 (Fig. 5) which is adapted to be raised and lowered in the boss 36 upon the frame of the machine. The locking pin 35 is recessed at its lower end at 37 to receive the upper end of any one of the plungers 20 which may be in alinement therewith, thus locking the carrier 18 rigidly in position, in order that the setting mechanism may be operated in the manner which I will now proceed to describe.

The material 38 into which it is desired to drive the rivet is placed upon the anvil 12. The operator operates a treadle (not shown in the drawings) which pushes upwardly on the rod 39 which is connected to the lever 15, thus rocking said lever upon its pivot 16 and moving the slide 13 downwardly, thus driving the plunger 20, which is in alinement with said slide, downwardly until the driver 27, which is attached thereto, engages the head of the rivet 40 which the operator has placed between the fingers 28 of the holder. The plunger, rivet and holder will then descend together, overcoming the tension of the springs 23 and 34, until the legs of the rivet begin to pierce the material 38. At this time the rivet holder will be stopped by the ear 32 on the slide 31 coming into contact with the upper end of the lower bearing 22, whereupon the spring fingers 28 will be forced apart and the rivet driven downwardly, with its prongs clenched against the anvil 12 in a manner well known to those skilled in this art. When the operator releases the treadle, a spring 41 (Fig. 1) will move the lever 15 downwardly at its rear end, thus moving the slide 13 upwardly, and the plunger 20, together with the holder 21, will be carried upwardly by their respective springs 23 and 34 until the stop pin 25 strikes the bearing 22 and the ear 33 strikes the lower bearing 22. The parts are now in the respective positions illustrated in Figs. 1 and 3, and another

rivet may be placed by the operator in the holder 21 between the spring fingers 28 and the operation hereinbefore described repeated. When it is desired to drive a different style or size of rivet, the operator lifts the locking pin 35, disengaging the plunger 20, and rotates the carrier with its respective rivet setting instrumentalities until the plunger 20 of the rivet setting instrumentality which he desires to operate is brought into alinement with the anvil 12, whereupon the operator lowers the locking pin 35, locking the carrier again in position, and the machine is then in position to drive a new rivet of a different size or style.

The material into which the rivet is to be driven and clenched is positioned upon the anvil 12 by the aid of a gage 42. When the rivets are short, like the rivet illustrated in Fig. 1 in dotted lines, the same may be inserted between the fingers 28 and the driver 27 of any of the plungers without difficulty, but in some cases it is desirable to drive a long rivet, and in such cases there is no room to insert the rivet between the spring fingers without colliding with the driver 27, and in such cases I provide a special construction which enables me to use in the same machine and with the same rivet holder long or short rivets. This particular construction is illustrated in Figs. 6, 7 and 8, in which all of the parts, as the plunger 20, the slide 31, the springs 23 and 34 and the carrier 18 are the same as hereinbefore described, but the spring fingers 28', 28' are made longer to receive and hold a comparatively long rivet 40' (Fig. 6). It will be seen that this rivet could not be inserted between the upper edges of the fingers and the lower end of the driver when the holder is in its uppermost position, if said holder were allowed to move upwardly to the distance illustrated in Fig. 1. On the other hand, the holder must rise to this distance in order to clear the gage 42 when the carrier 18 is rotated, as hereinbefore described, and, therefore, to adapt the machine to set long and short rivets, one or more of the rivet setting instrumentalities may be made as illustrated in Figs. 6 to 8 inclusive and provided with a movable stop 43, preferably fast to the lower end of a spring 44 which is fastened at its upper end to the upper bearing 22. When the stop 43 is in use, as shown in Fig. 6, the same is located between the lower side of the lower bearing 22 and the upper side of the ear 33 on the slide 31, so that when the spring fingers 28' are in their uppermost position, there is room left to insert the long rivet 40' between said spring fingers without interfering with the driver 27'. The spring supported stop 43 is left in the position illus-

trated in Fig. 6 while the work is being done by the driver 27', and then when it is desired to rotate the carrier 18 for the purpose of inserting a different size or style of rivet, the operator moves the spring supported stop 43 outwardly and allows the spring fingers 28' and the holder 21' to move upwardly into the position illustrated in Fig. 8, in which position, it will be noted, the lower ends of the spring fingers are sufficiently raised above the top of the anvil 12 to allow said fingers to clear the top of the gage 42 when the carrier is rotated. It will, therefore, be seen that the stop 43 is a movable stop while the lower bearing 22 constitutes a stationary stop for the purpose of limiting the distance to which the holder 21' may be moved upwardly by its spring.

The general operation of my improved multiple rivet setting machine is as follows: The material 38, in which it is desired to set rivets is placed upon the anvil 12, with the edge of said material resting against the gage 42, the parts being in the position illustrated in Figs. 1 and 3. The operator then presses upon the treadle, pushing the rod 39 upwardly and rocking the lever 15 to push the slide 13 downwardly. This pushes the plunger 20, which is in alignment with said slide 13 and with the anvil 12, downwardly until the driver 27 engages the rivet 40 which has been previously placed between the spring fingers 28, 28' upon the holder 21. A continued downward motion of the plunger 20 causes the holder 21 to move downwardly with the plunger 20 until the ear 32 strikes the lower bearing 22, whereupon the slide 31, together with the holder attached thereto, will stop its downward motion, and the plunger 20, continuing its downward motion, will force the legs of the rivet into and through the material 38, clenching said legs against the anvil 12, while the spring fingers will be forced apart to allow the head of the rivet to pass therebetween. Now, upon releasing the treadle, the lever 15 will be drawn downwardly at its right hand end (Fig. 1) by the spring 41, thus moving the slide 13 upwardly and the plunger 20 and the holder slide 31 will be moved upwardly by their respective springs 23 and 34 until the parts assume the positions hereinbefore described and shown in Figs. 1 and 3. The rotary carrier 18 is locked in position during the setting of the rivets by the locking pin 35, as hereinbefore described. When it is desired to set a comparatively long rivet, as 40' (Fig. 6), the operator pulls the slide 31 downwardly and allows the spring-supported stop 43 to snap into the position illustrated in Fig. 6. He then inserts the long rivet 40' in position between the fingers 28', 28' and proceeds as

hereinbefore described. After setting the rivets, he moves the stop 43 outwardly, as hereinbefore described, and the parts assume the relation illustrated in Fig. 8 in order that the carrier may be rotated and the fingers 28', 28' pass over the gage 42.

Having thus described my invention, what I claim and desire by Letters Patent to secure is:

1. A machine for setting rivets and the like having, in combination, a stationary anvil, a stationary frame, a slide adapted to slide vertically on said stationary frame, a carrier, a vertical shaft upon which said carrier is rotatably mounted relatively to said frame, a plurality of rivet setting plungers mounted to slide vertically upon said carrier, and a plurality of rivet holders adapted to slide vertically upon said carrier, whereby one of said rivet setting plungers and one of said rivet holders at a time may be moved into alinement with said anvil between said slide and anvil, and a lever adapted to impart a reciprocatory motion to said slide.

2. A machine for setting rivets and the like having, in combination, a stationary anvil, a stationary frame, a slide adapted to slide vertically on said stationary frame, a carrier, a vertical shaft upon which said carrier is rotatably mounted relatively to said frame, a plurality of rivet setting plungers mounted to slide vertically upon said carrier, a plurality of rivet holders adapted to slide vertically upon said carrier, whereby one of said rivet setting plungers and one of said rivet holders at a time may be moved into alinement with said anvil between said slide and anvil, a lever adapted to impart a reciprocatory motion to said slide, and means to selectively lock said carrier to said frame with any one of said plungers in alinement with said anvil.

3. A machine for setting rivets and the like in sheet material having, in combination, an anvil, a rotary carrier, a plurality of spring-supported rivet setting plungers mounted to slide upon said carrier, a plurality of independently spring-supported rivet holders adapted to cooperate, respectively, with said rivet setting plungers, whereby one of said plungers at a time may be moved into alinement with said anvil, a gage for said material, and a movable stop adapted to limit the distance to which one of said holders may be moved upwardly by its respective spring.

4. A machine for setting rivets and the like in sheet material having, in combination, an anvil, a rotary carrier, a plurality of spring-supported rivet setting plungers mounted to slide upon said carrier, a plu-

ality of independently spring-supported rivet holders adapted to coöperate, respectively, with said rivet setting plungers, whereby one of said plungers at a time may
5 be moved into alinement with said anvil, a gage for said material, a stationary stop to limit the distance to which one of said holders may be moved upwardly by its respective spring, and a movable stop adapted to be
10 interposed between said holder and said

stationary stop to reduce the extent of said upward movement of said holder.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ARTHUR R. HAVENER.

Witnesses:

CHARLES S. GOODING,
LOUIS A. JONES.