

No. 656,782.

Patented Aug. 28, 1900.

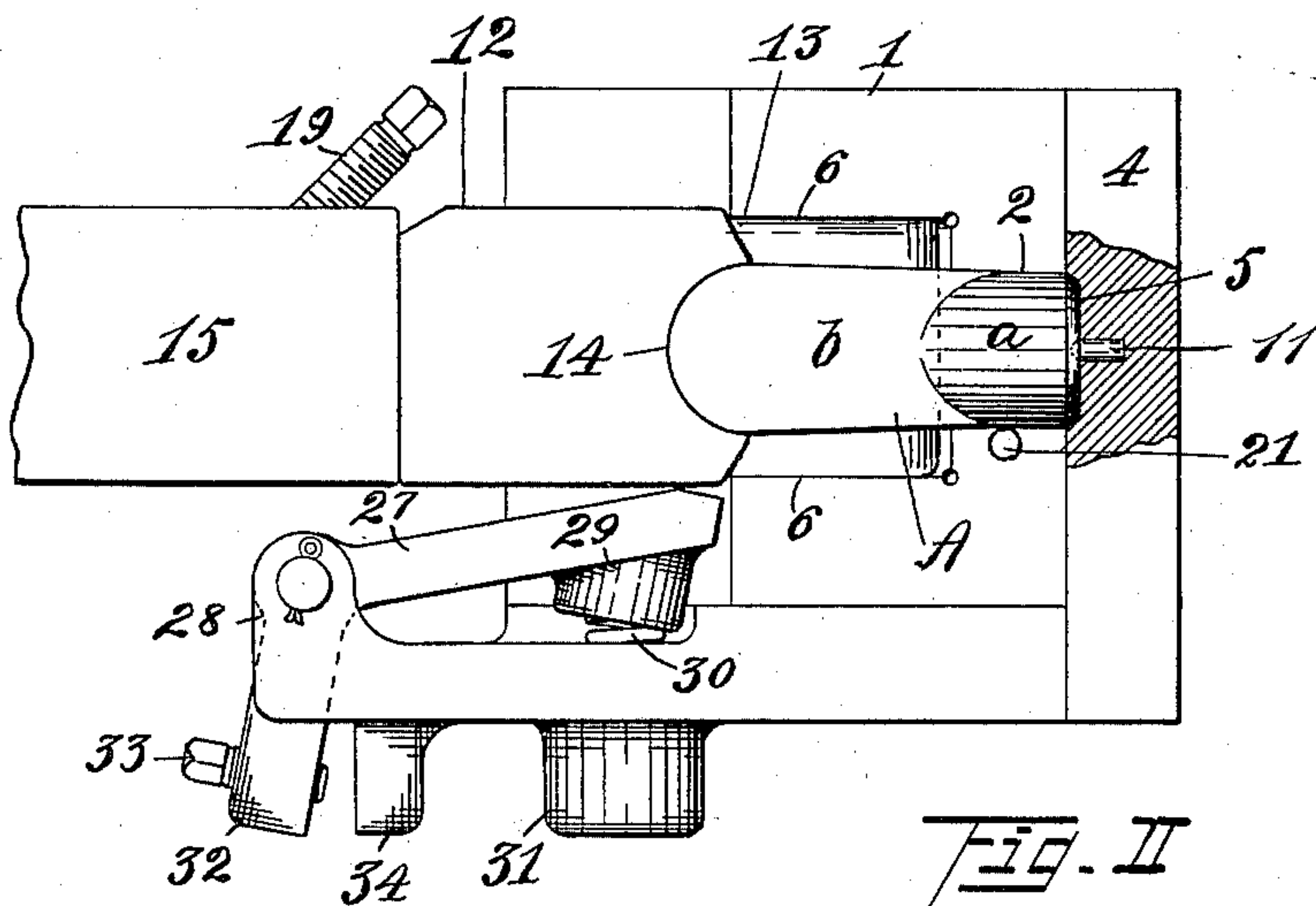
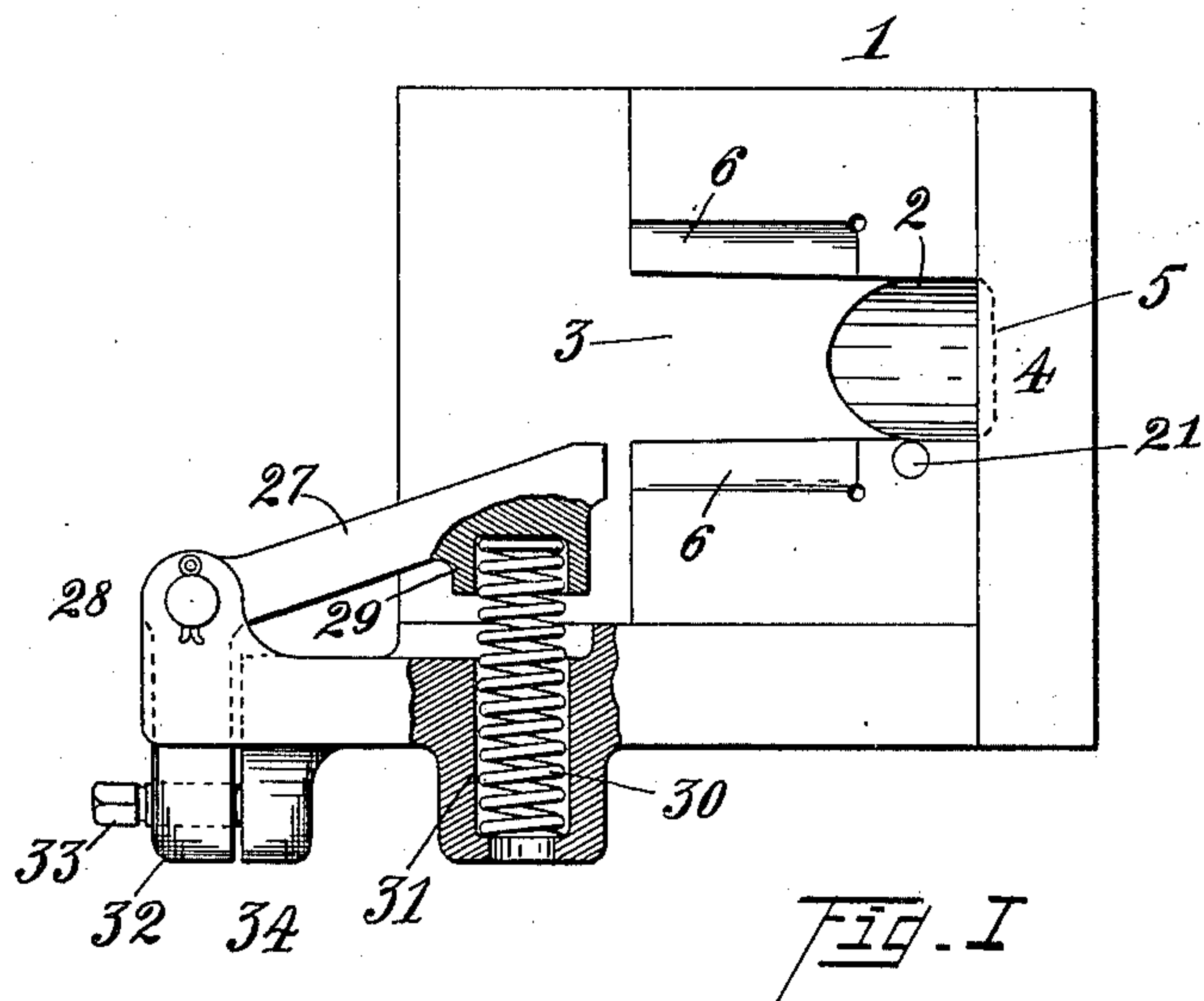
C. W. DURCHSCHLAG.

HEADING MACHINE.

(Application filed Nov. 14, 1899.)

(No Model.)

4 Sheets—Sheet 1.



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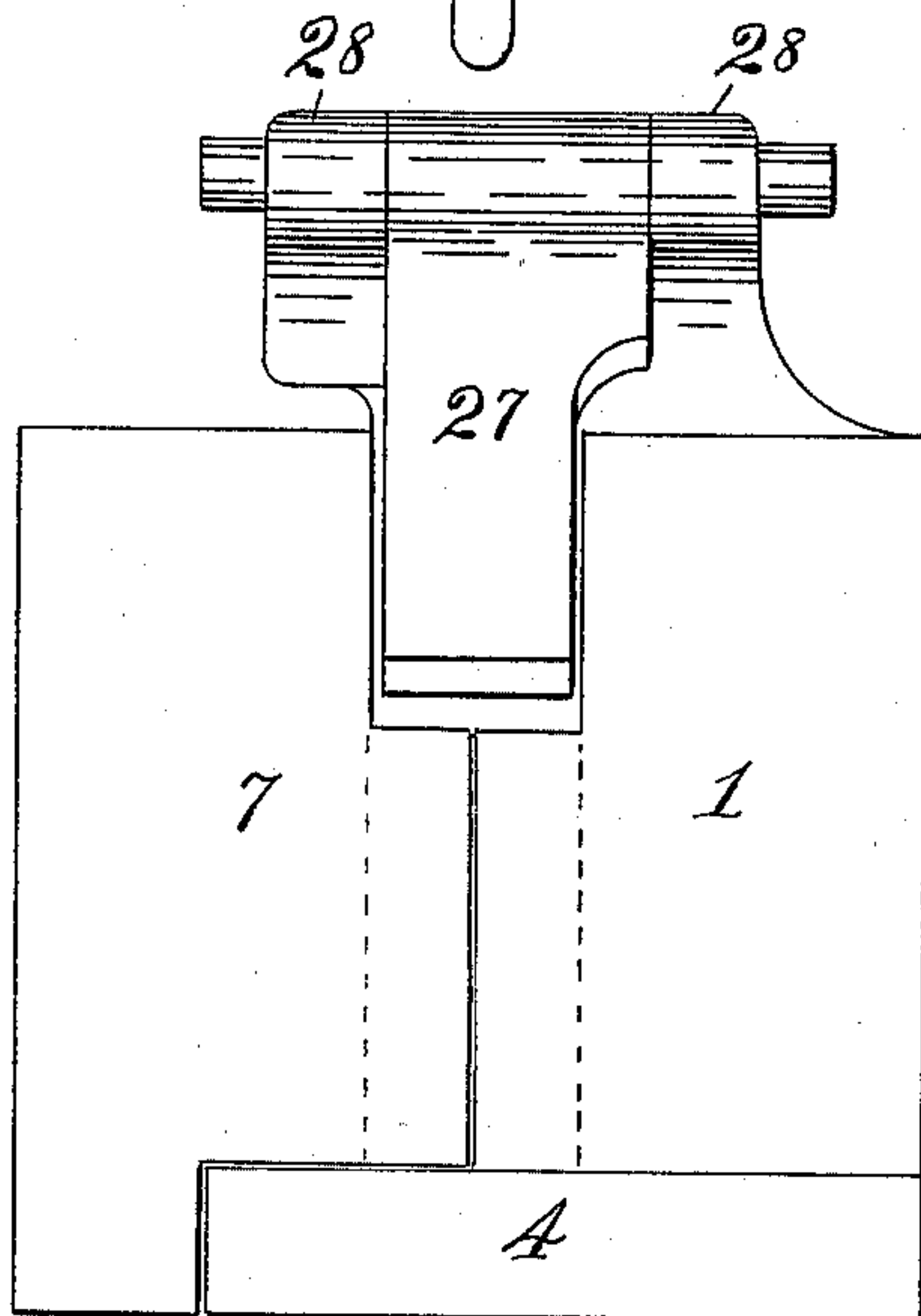
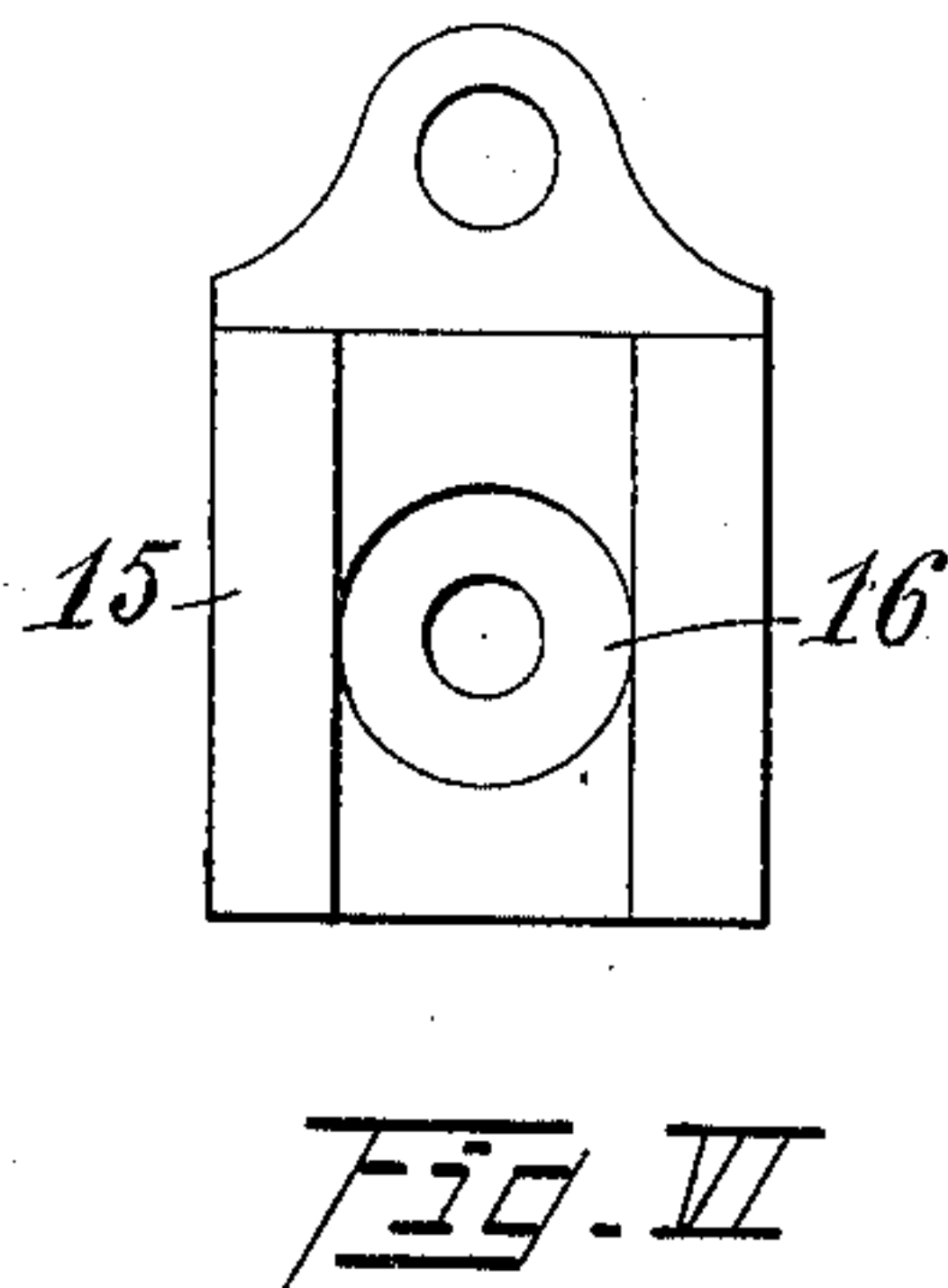
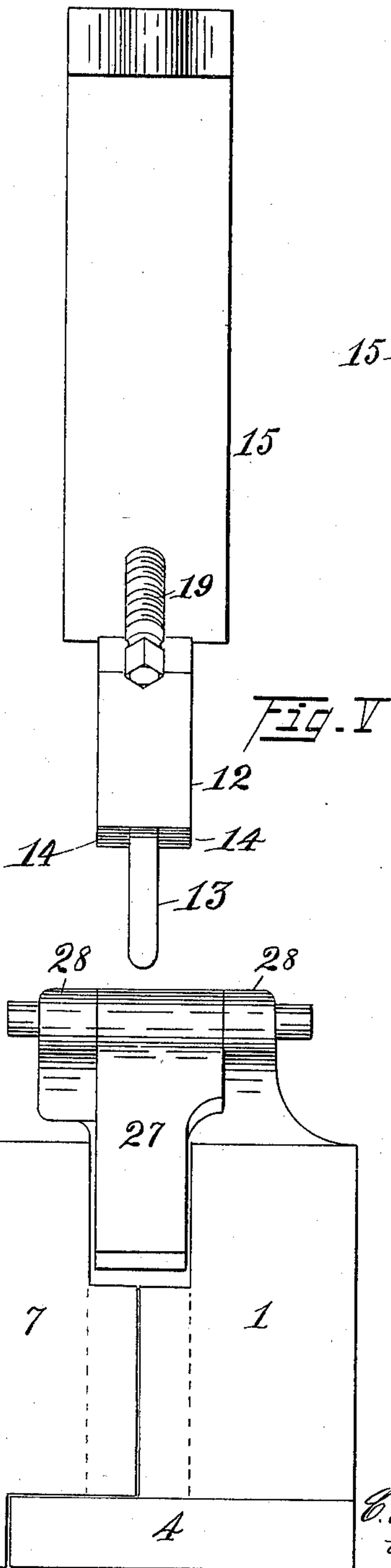
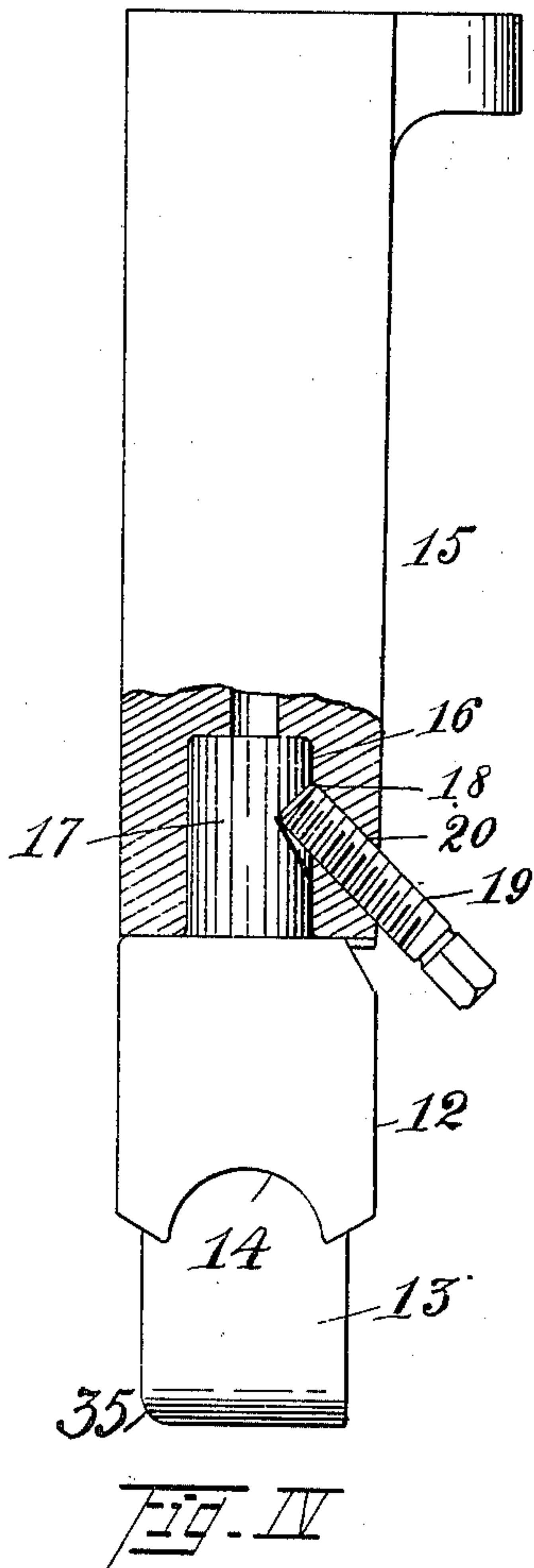
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4 Sheets—Sheet 2.



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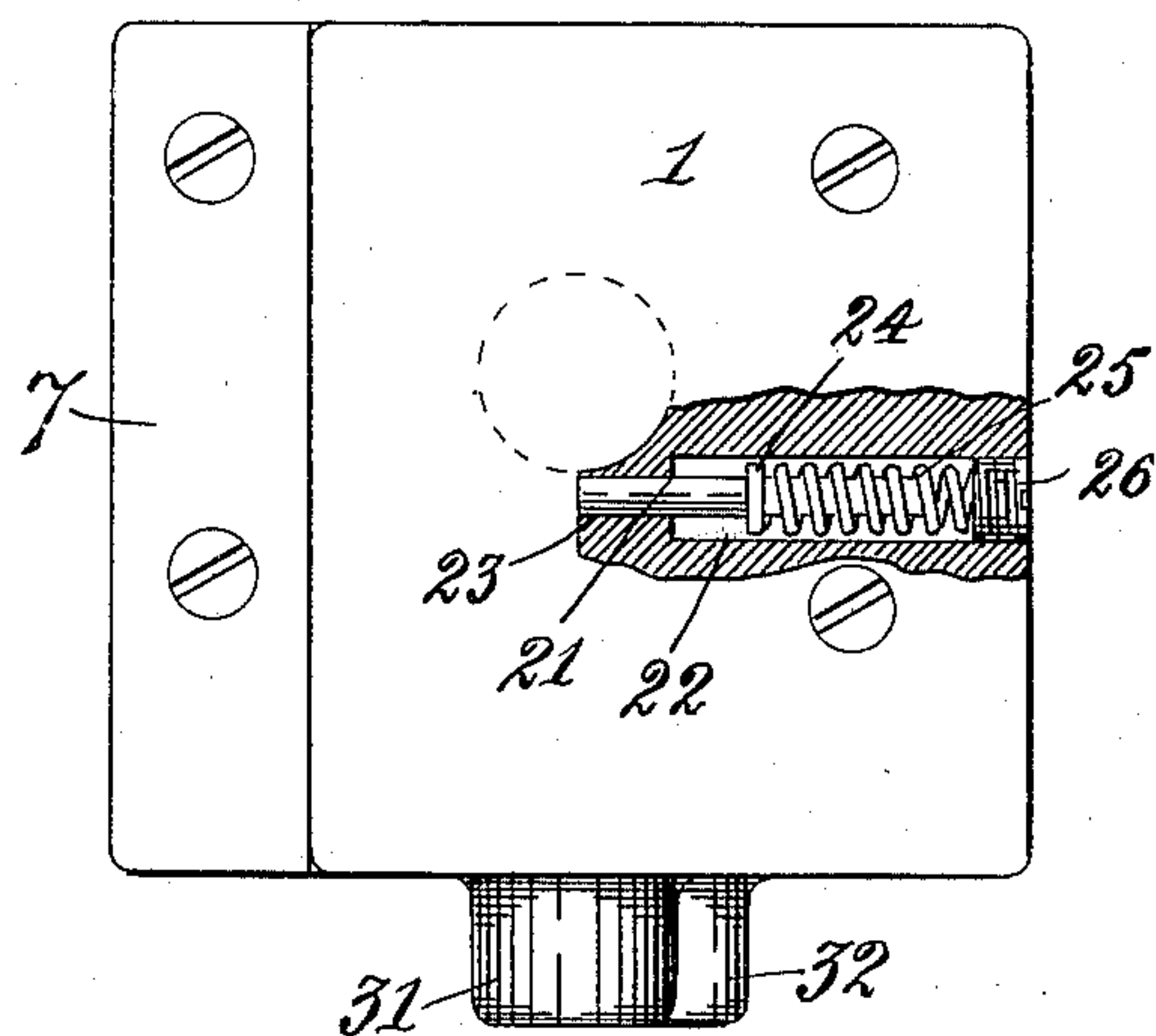


Fig. VII

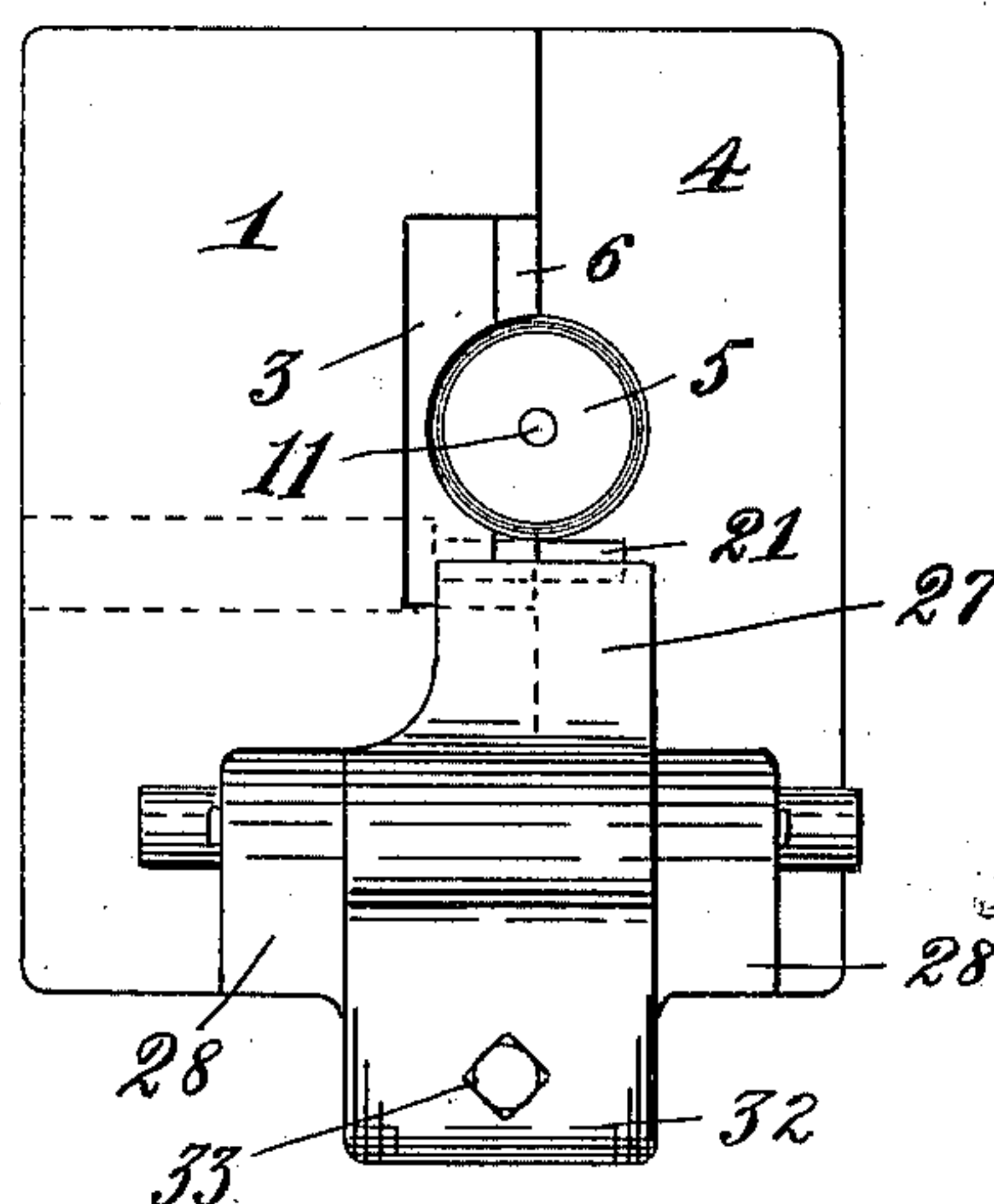


Fig. VIII

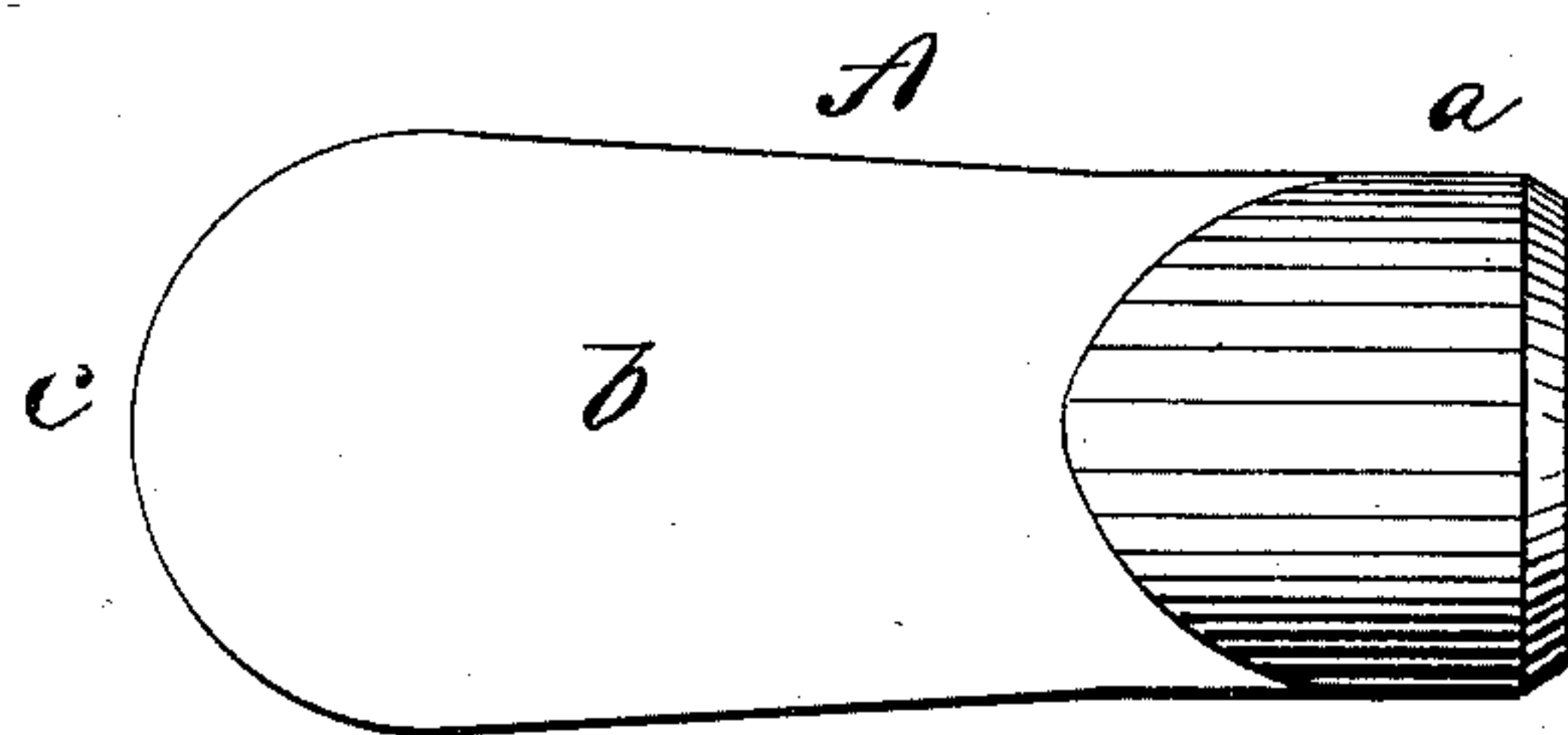


Fig. IX

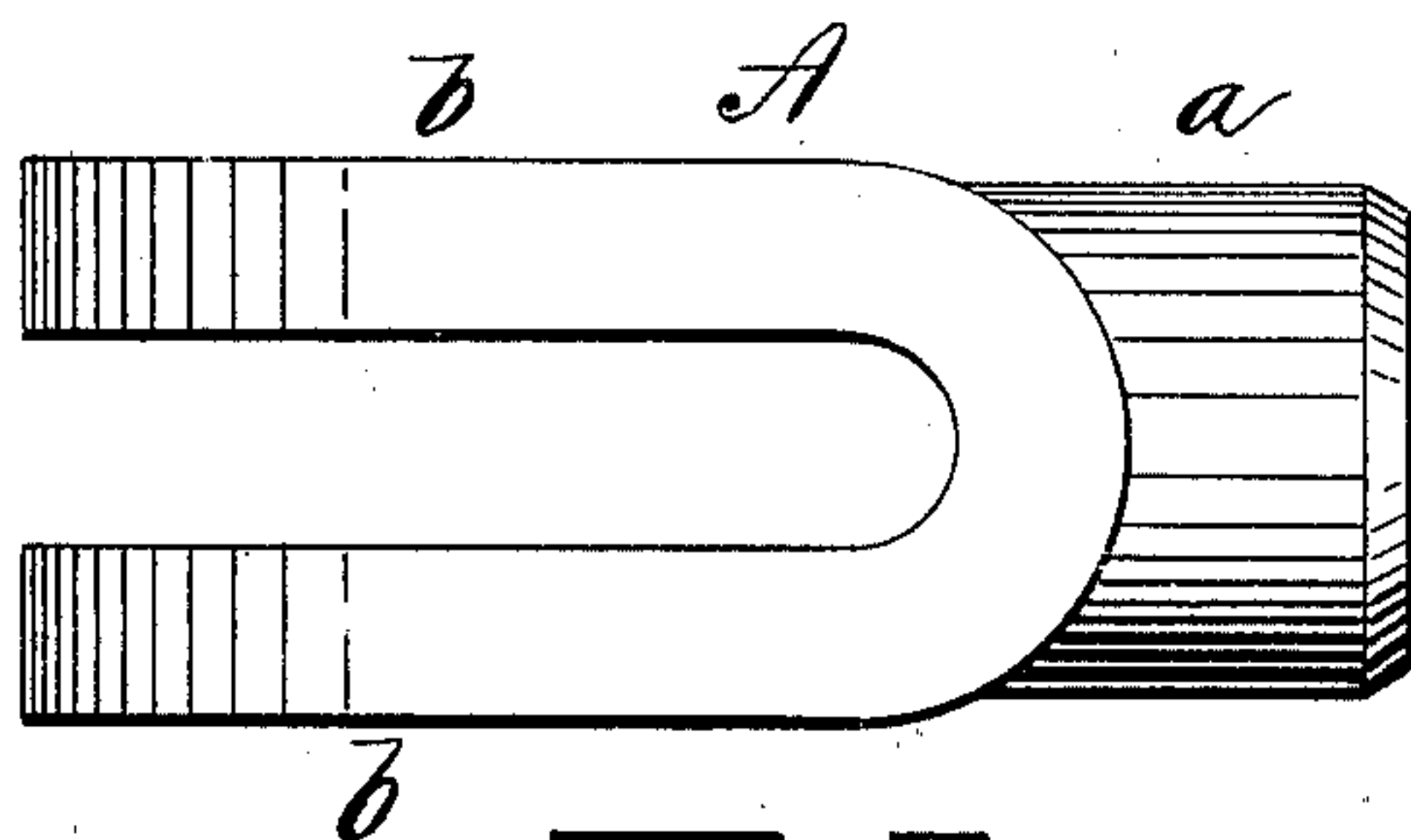


Fig. X

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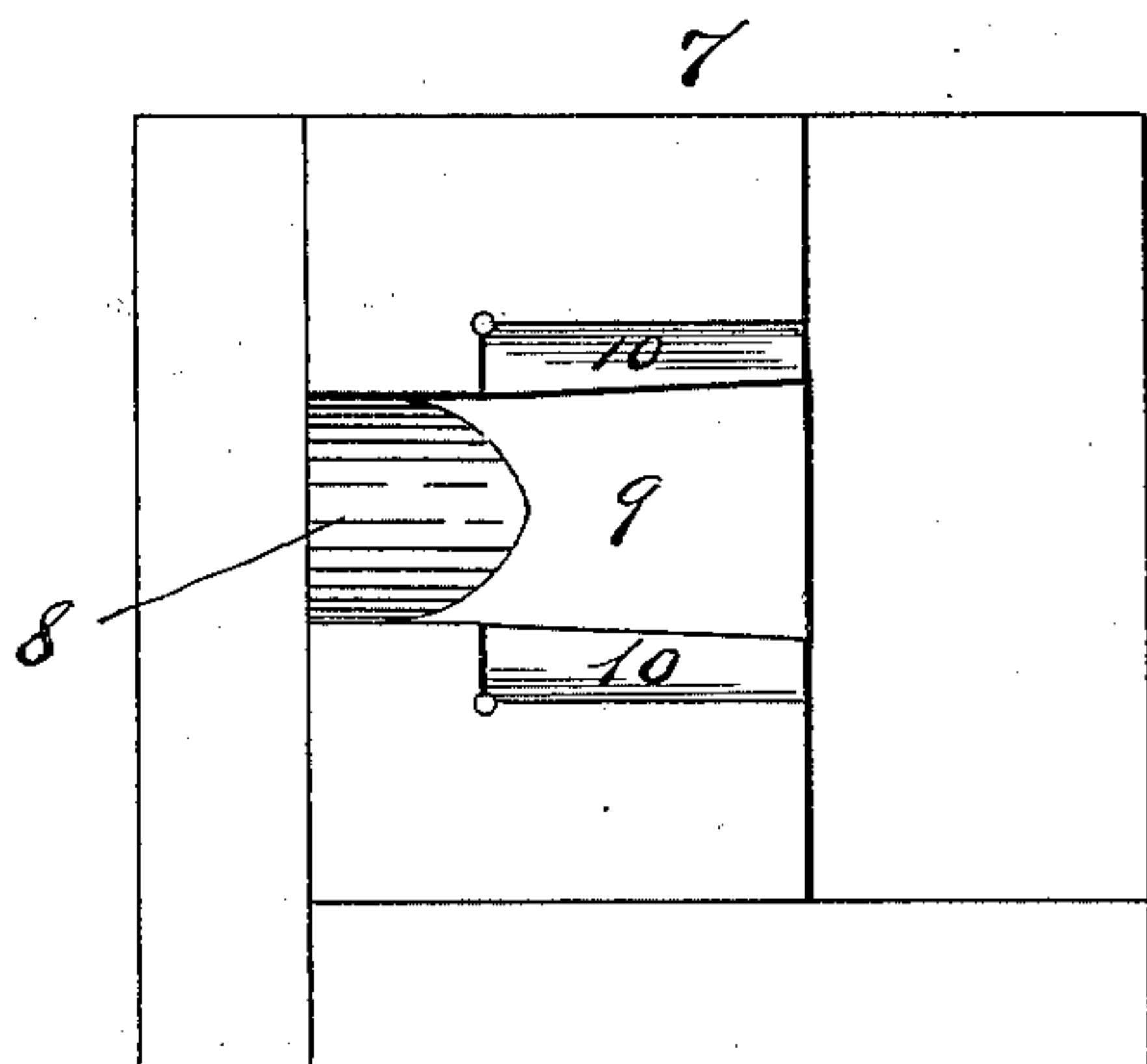


Fig. XI

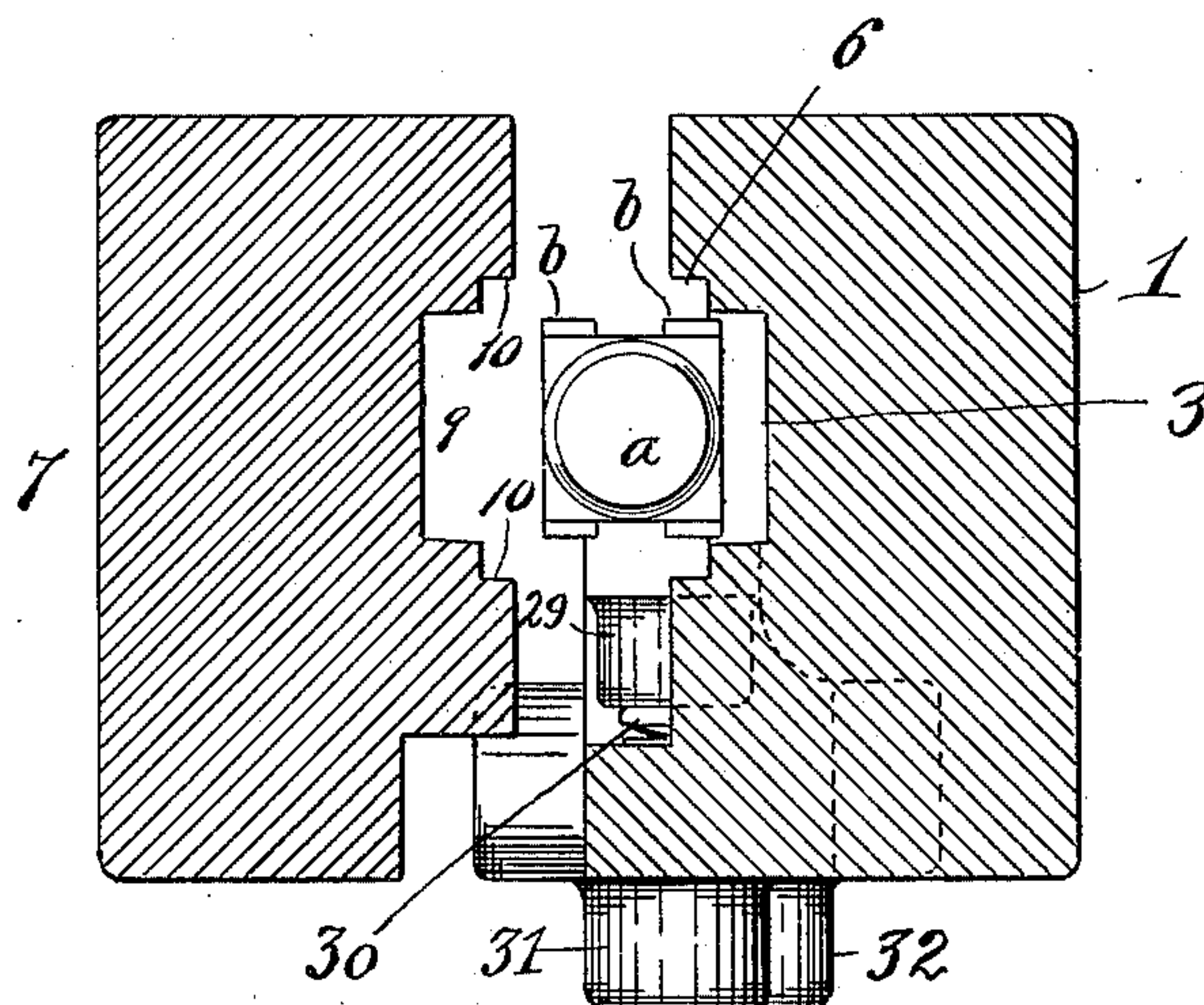


Fig. XII

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UNITED STATES PATENT OFFICE.

CHARLES W. DURCHSCHLAG, OF CLEVELAND, OHIO, ASSIGNOR TO THE
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HEADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 656,782, dated August 28, 1900.

Application filed November 14, 1899. Serial No. 736,973. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. DURCHSCHLAG, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Heading-Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents an elevation of the stationary die for a heading-machine embodying my invention and the movable support for the clevis to be acted upon, showing a portion broken away and removed; Fig. II, a view of the stationary die, the movable support, and the plunger, showing the clevis in position in the die and acted upon by the plunger; Fig. III, a top plan view of the stationary die, the moving die, and the movable support; Figs. IV and V, respectively, a side view and a top view of the plunger and hammer-stock; Fig. VI, an end view of the hammer-stock; Fig. VII, a rear end view of the dies, showing a portion of the stationary die broken away and removed to show the sliding pin-support for the inner end of the clevis; Fig. VIII, a front end view of the stationary die; Figs. IX and X, respectively, a side and a top view of the clevis.

The devices embodying my invention are designed for use in the ordinary heading-machine, in which the bar of metal to be upset or otherwise shaped is clamped between a stationary and a moving die and thereupon is struck endwise by a reciprocating hammer or plunger. When operating upon a bar of metal, such bar has been fed from one end in between the dies and held while the dies closed about the end of the bar and clamped such end, whereupon the hammer acted from the other end upon the clamped end of the bar. In such case the bar can be manually

or otherwise supported while its end is being clamped by the dies; but when a short piece of metal, such as the illustrated clevis, was to be acted upon a heading-machine was useless, as the short piece could not be held while the dies clamped upon the same. The clevis A, for which the present device is designed, is used in the construction of boilers, although, of course, other uses may be made of the same, and consists of a short forked piece of metal having a round shank *a* and flat cheeks *b*, having rounded end edges *c*, as illustrated in Figs. IX and X. In the completely-finished clevis a threaded hole is made in the shank and the forked flat cheeks have eyes formed through them. Heretofore this style of clevis has only been capable of being forged by hand, as it could not be held in a heading-machine, so that its manufacture was comparatively expensive. By the present devices the clevis may be made in a heading-machine and may be made at a comparatively-low expense. The blank clevis is simply a short piece of metal having one end roughly forked.

The stationary die 1 has a die-cavity consisting of a semicylindrical portion 2, forming the cylindrical shank, and a flat-sided portion 3, forming the cheeks. The rear wall 4 of the die has a circular bevel-edged recess 5 for forming the end of the shank, and rabbets 6 are formed at the upper and lower edges of the flat-sided portion. The moving die 7 is an exact counterpart of the stationary die, excepting for the fact that the open end of the semicylindrical portion 8 of its cavity bears against the face of the rear wall 4 of the stationary die, completing the cylindrical die-cavity around the beveled recess. The flat-sided portion 9 and rabbets 10 are similar to, register with, and correspond to the same parts of the stationary die. The bottom of the beveled circular recess in the rear wall has preferably a central pin 11, which serves to mark the center for drilling and threading the hole in the shank. The plunger 12, which shapes the slot in the clevis and the end edges of the clevis, is formed with the tongue 13, the forward edge of which is rounded to form the round inner end of the slot and which is wider than

the cheek-cavities of the dies, so as to fit and slide in the rabbet portions of the dies. Two concave segmental shoulders 14 are formed at the sides of the inner end of the tongue to shape the round edges of the clevis-
 5 cheeks. Suitable means, the same as used in all heading-machines, are used to support the stationary die, to move the moving die against the latter, and to move the plunger
 10 endwise into the joined dies after the moving die has closed in upon the stationary die. The plunger is secured in a reciprocating hammer-stock 15, formed with a cylindrical recess 16 in the end for the reception of the
 15 cylindrical shank 17 of the plunger. A notch 18 is formed in the shank of the plunger, having its forwardly-facing side inclined at an angle of about forty-five degrees to the axial line of the plunger, and a set-screw 19 is inserted
 20 through an oppositely-inclined bore 20 in the hammer-stock, so that the end of the inclined set-screw will bear plumb against the inclined face of the notch in the plunger-shank. This
 25 fastening will serve to draw the plunger tightly into the hammer-stock and will prevent injury to the end of the set-screw from the blow of the plunger, as the jar upon the latter will be in the same direction as the
 30 incline of the screw and the strain upon the end of the screw in withdrawing the plunger from the dies and clevis will come square against the end of the screw. For the purpose of supporting the inner end of the
 35 clevis-blank while the dies are open and up to the time they are completely closed a disappearing pin 21 projects from and slides into the face of the stationary die beneath the semicylindrical portion of the die-cavity in the same. A large bore 22 is transversely
 40 formed from the outside of the die, ending in a smaller bore 23, opening through the face of the die. The pin fits to slide in said smaller bore and has a collar 24 upon it which limits its outward movement and
 45 against which a spring 25 bears, which spring is coiled around the inner portion of the pin within the large bore. The end of said bore is closed by a screw-plug 26, against which the other end of the spring bears. Said pin
 50 will thus project beneath the die-cavity to provide a support for the clevis-blank when the dies are open, and the face of the moving die will force the pin into its bore against the spring as the moving die is forced
 55 against the stationary die, the pin, however, supporting the blank until the dies are closed. The spring will immediately project the pin when the dies are again opened.

A disappearing platform-support is provided for the cheek portion of the clevis, and consists of a flat arm 27, fulcrumed between two lugs 28 and extending toward the forward faces of the dies. Said arm has a socket 29 upon its under side, in which socket one
 60 end of a spring 30 fits. The lower end of the spring is fitted in a socket 31 in the foundation for the stationary die. Said spring

serves to support the end of the arm normally at a level with the lower edges of the cheek-cavities of the dies and permits the
 70 arm to be depressed and to again return to its position. For the purpose of limiting the upward throw of the platform-arm a short arm 32 extends downward from the fulcrum of said arm and has an adjusting stop-screw
 75 33 threaded through it, the end of which screw bears against a stop-lip 34 upon the die-foundation. By means of said adjustable-stop device the platform-arm may be adjusted to have its end at the desired level
 80 with the lower edges of the cheek-cavities of the dies, so as to support the outer end of the clevis-blank at the proper height. The lower corner 35 of the rounded edge of the plunger is preferably rounded, so that the advancing
 85 plunger may bear with said corner against the inclined upper face of the platform-arm and force the same down out of the way of the plunger entering the dies.

In practice, the dies and hammer-stock
 90 and plunger being supported and actuated in the manner usual in heading-machines, the heated clevis-blank is placed between the open dies, with the shank resting upon the disappearing pin and the end of the cheek
 95 portion upon the end of the disappearing platform. The dies are thereupon closed, whereupon the plunger advances, entering between the cheeks and driving the blank into the dies, where the shank is shaped and
 100 the center marked by the centering-pin, while the tongue and shoulders of the plunger shape the slot and cheeks. When the plunger recedes and the dies open, the clevis drops out or is removed and the platform and pin re-
 105 appear, ready to again support another blank. In this manner short objects may be shaped in a heading-machine of the ordinary construction, and the advantages of strength and compactness caused by the compression of
 110 the heated metal, contrasted to the drawing out of the metal in forging, may be attained.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be
 115 made as regards the mechanism thus disclosed, provided the principles of construction set forth, respectively, in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a machine for shaping short metal objects, the combination with a stationary die and a movable die and a plunger operating
 125 endwise into the joint die-cavity formed by said dies, of a blank-support arranged beneath the inner portion of said cavity to disappear in and enter the face of one of said dies, and a movable blank-supporting platform at the outer end of the die-cavity and
 130 constructed to be moved out of the way of the plunger by the latter, substantially as set forth.

2. In a machine for shaping short metal

objects, the combination with a stationary die and a movable die and a plunger operating endwise into the joint die-cavity formed by said dies, of a blank-supporting pin sliding through the face of one die beneath the inner portion of said cavity against the face of the opposed die and having means for forcing it outward, and a movable blank-supporting platform at the outer end of the die-cavity having an inclined face to be engaged and depressed by the advancing plunger and means for again raising it, substantially as set forth.

3. In a machine for shaping short metal objects, the combination with a die structure and a plunger operating endwise into the die-cavity of said structure, of a movable blank-supporting platform at the entrance to said die-cavity having an inclined face to be engaged and depressed by the advancing plunger and means for again raising it, substantially as set forth.

4. In a machine for shaping short metal objects, the combination with a stationary die and a moving die, having vertically-opposed faces, of a blank-support arranged to project horizontally beneath the die-cavity and constructed to disappear in and enter the face of one of said dies, substantially as set forth.

5. In a machine for shaping short metal objects, the combination with a die structure and a reciprocating plunger operating endwise into the die-cavity of said structure, of a platform-arm fulcrumed to incline upward toward the end of the die-cavity to be struck and depressed by the advancing plunger, and having means for again raising it, substantially as set forth.

6. In a machine for shaping short metal objects, the combination with a die structure and a reciprocating plunger operating endwise into the die-cavity of said structure, of a platform-arm fulcrumed to incline upward toward the end of the die-cavity to be struck and depressed by the advancing plunger and having means for again raising it, and an adjustable stop device for controlling the upward movement of the platform-arm, substantially as set forth.

7. In a machine for shaping short metal objects, the combination with a die structure and a reciprocating plunger operating endwise into the die-cavity of said structure, of

a platform-arm fulcrumed to incline upward toward the end of the die-cavity to be struck and depressed by the advancing plunger, a spring bearing upward against the free end of said arm, a stop-arm projecting from the fulcrum of the platform-arm, an adjusting stop-screw through said stop-arm, and a rigid stop opposed to the end of said screw, substantially as set forth.

8. In a machine for shaping short metal objects, the combination with a stationary die and a movable die and a reciprocating plunger operating into the joint die-cavity of said dies, of a spring-actuated blank-supporting pin sliding through the face of the stationary die beneath the inner portion of its die-cavity and engaged and forced back by the face of the moving die, and a movable blank-supporting platform fulcrumed to incline upward toward the outer end of the under side of the die-cavity to be depressed by the advancing plunger and having a spring for again raising it and an adjustable stop device for controlling the upward movement of the platform, substantially as set forth.

9. In a machine for shaping clevises, the combination with a stationary and a movable die, the joint cavity of said dies having a cylindrical inner portion and a beveled end and flat cheek-forming portions, and a reciprocating plunger having a tongue formed with a rounded forward edge and concave segmental shoulders, of a spring-actuated pin sliding through the face of the stationary die beneath the cylindrical portion of its die-cavity and engaged and forced back by the face of the moving die, and a movable blank-supporting platform fulcrumed to incline upward toward the outer end of the under side of the die-cavity to be depressed by the advancing plunger and having a spring for again raising it and an adjustable stop device for controlling the upward movement of the platform, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 27th day of October, A. D. 1899.

CHARLES W. DURCHSCHLAG.

Witnesses:

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ALFONSO H. CARPENTER.