

(No Model.)

2 Sheets—Sheet 1.

C. ERNST.
VISE.

No. 475,760.

Patented May 31, 1892.

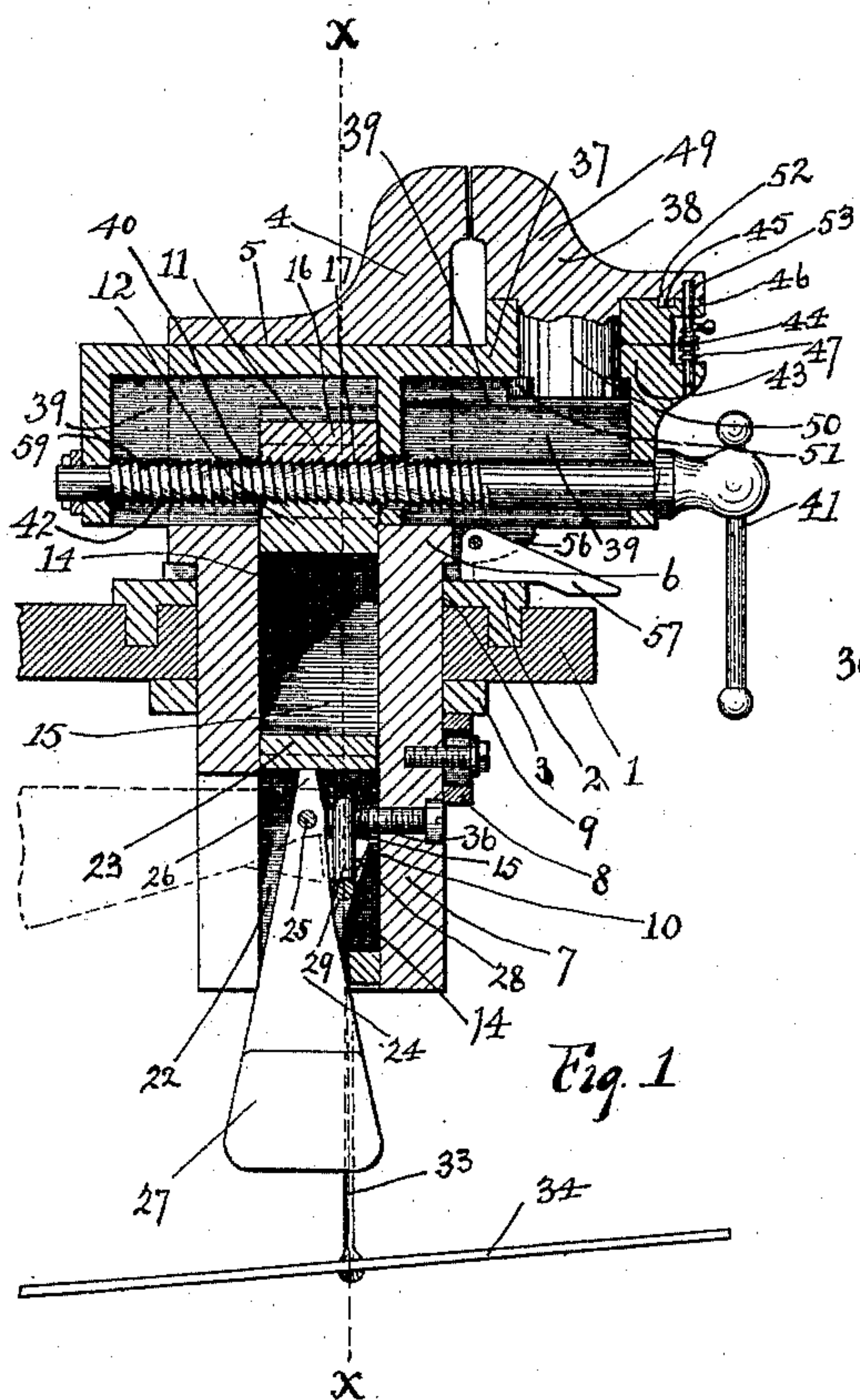


Fig. 1

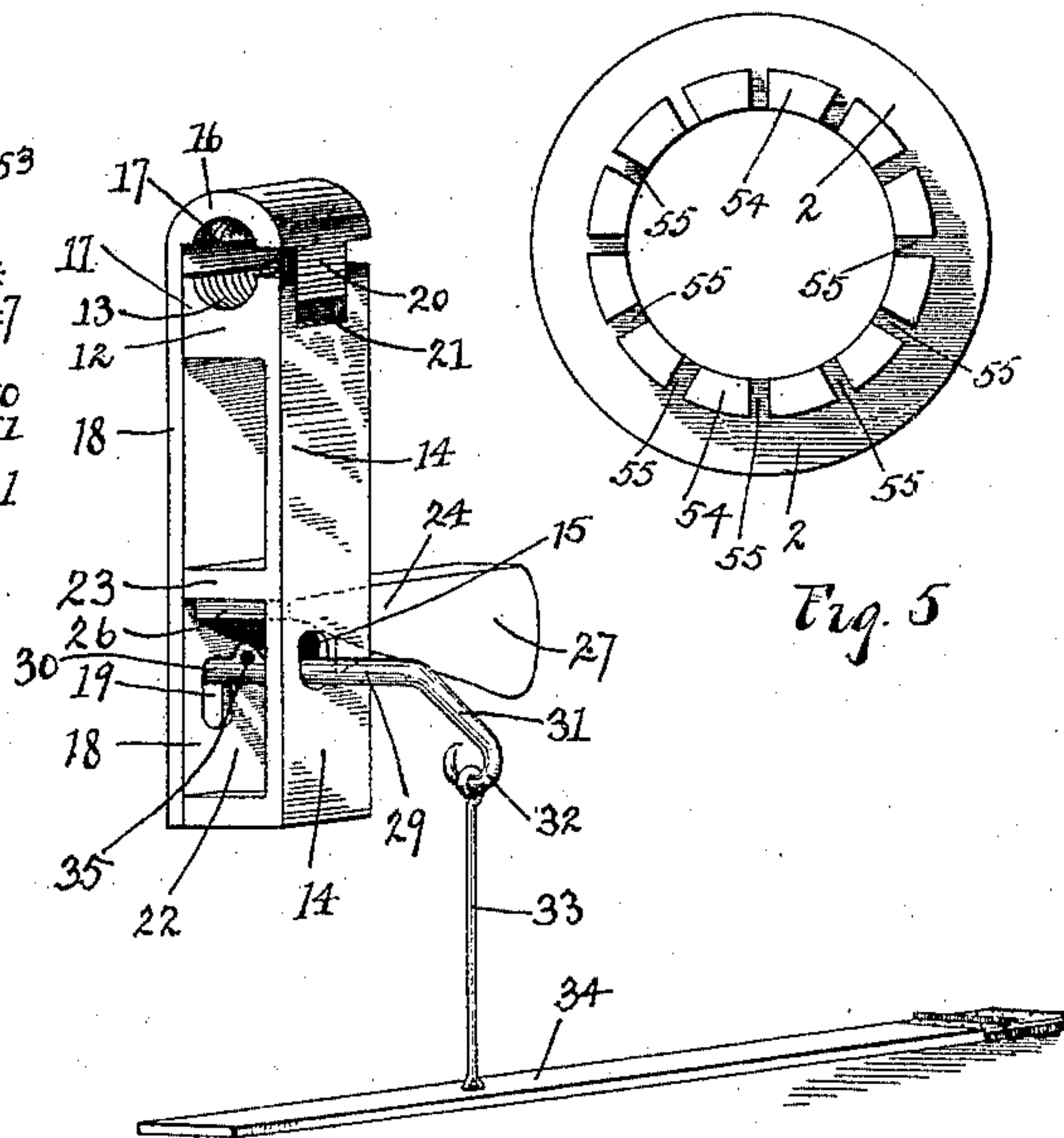


Fig. 4

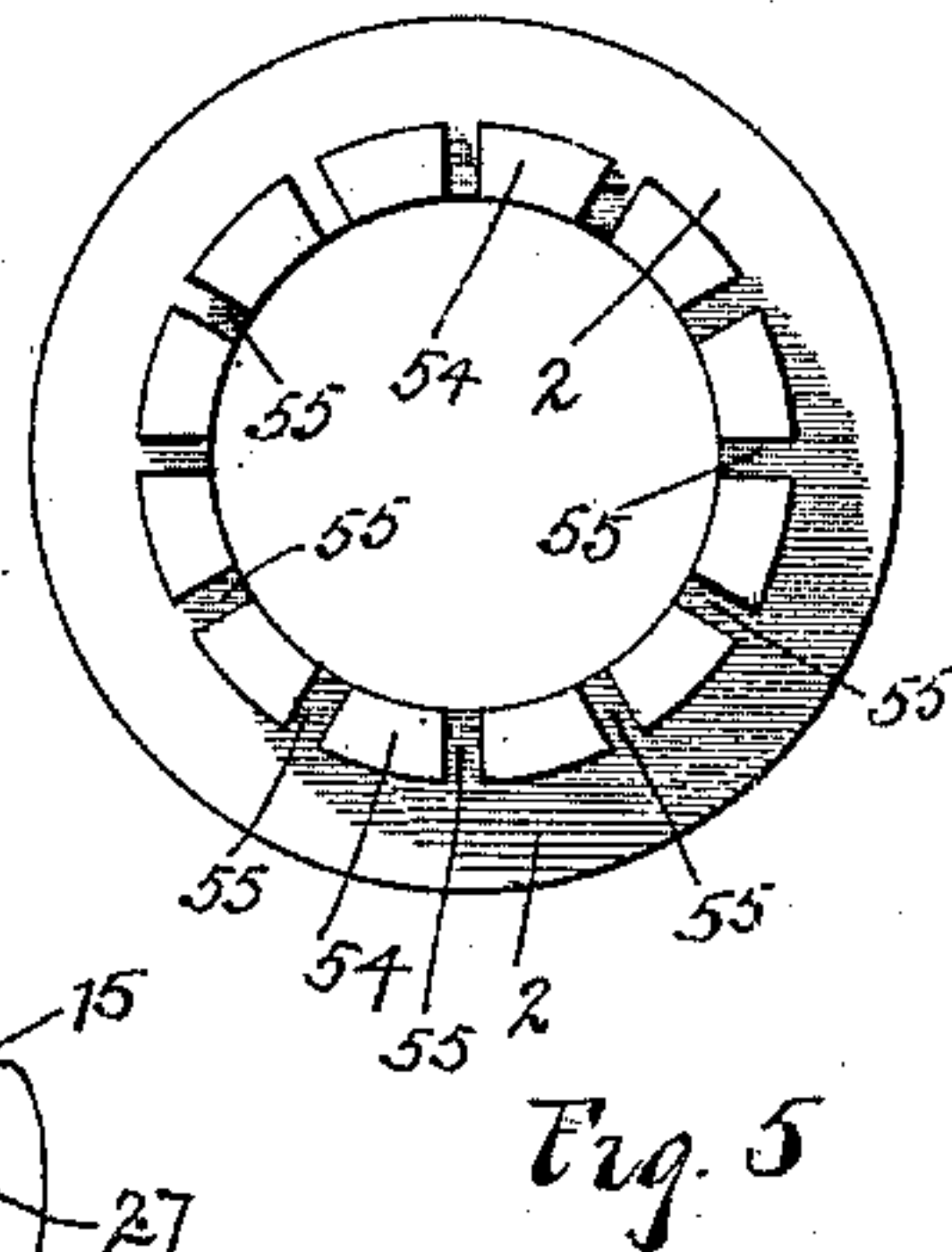


Fig. 5

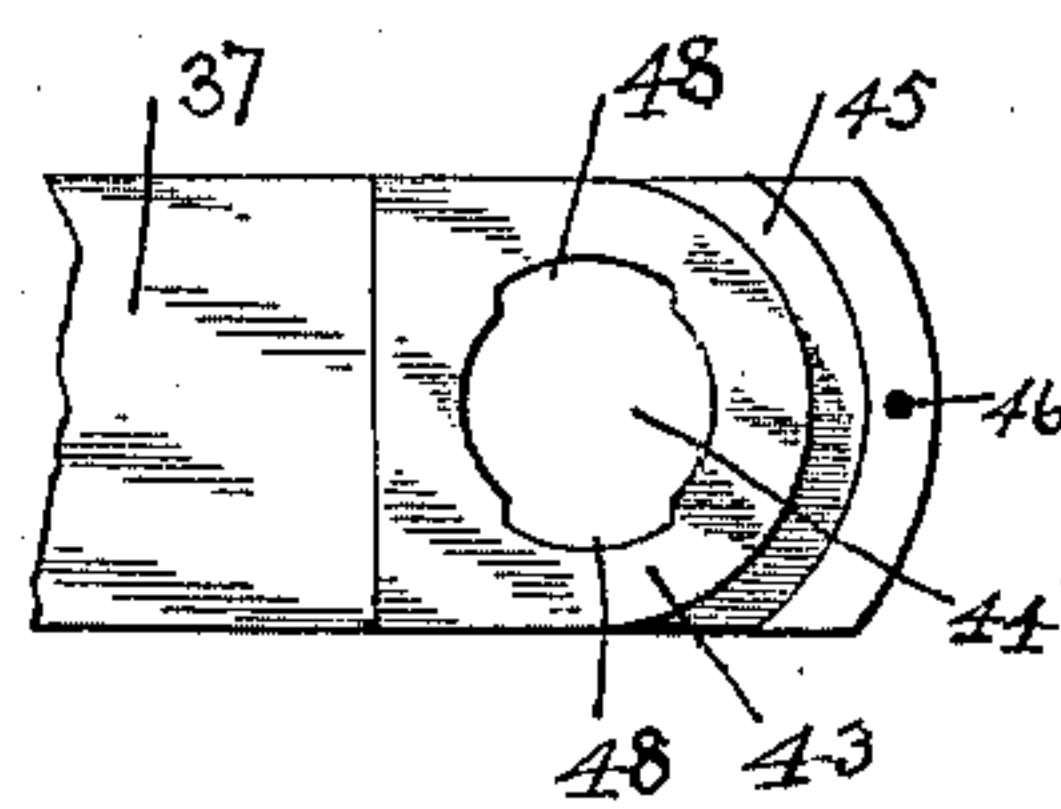


Fig. 6

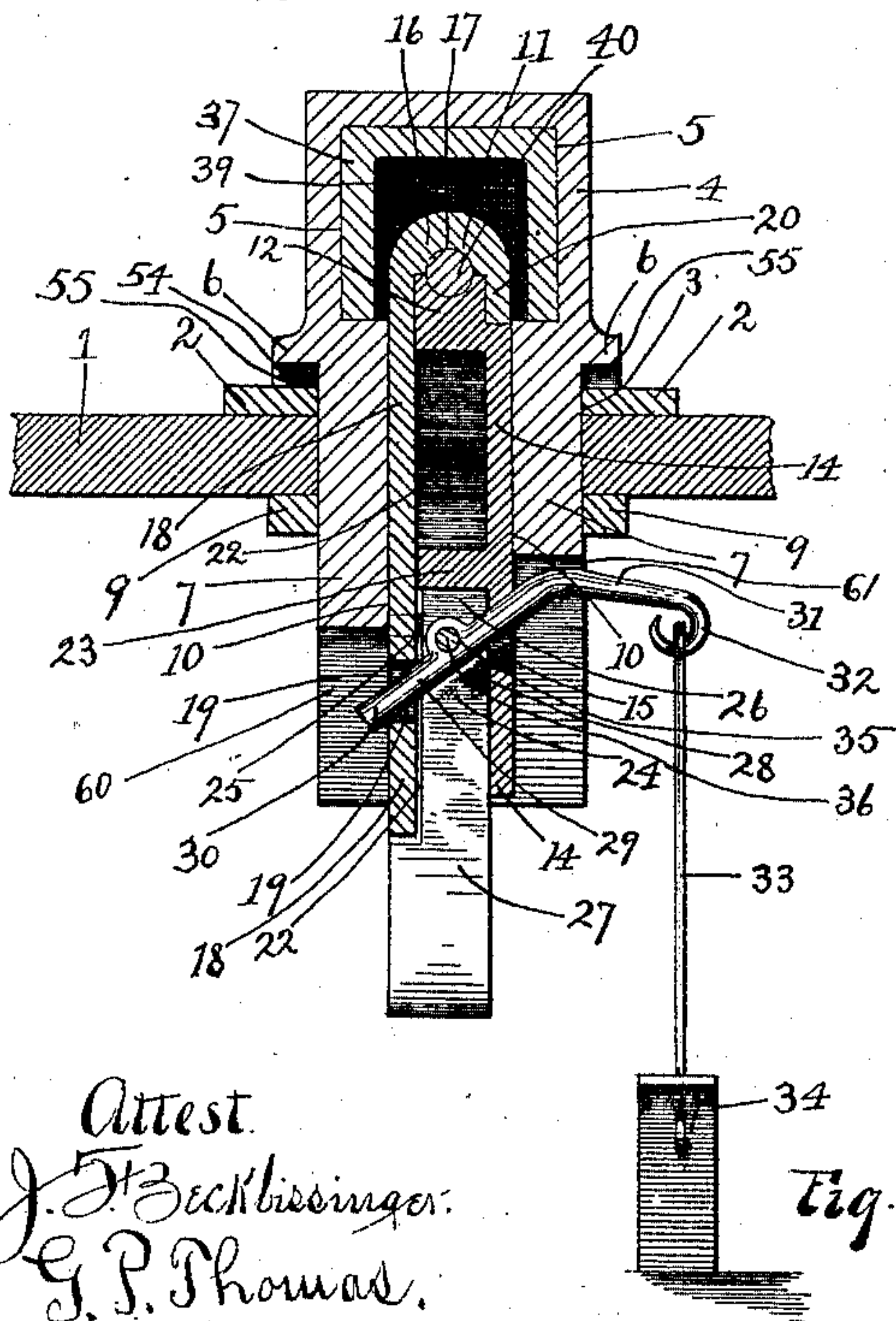


Fig. 2

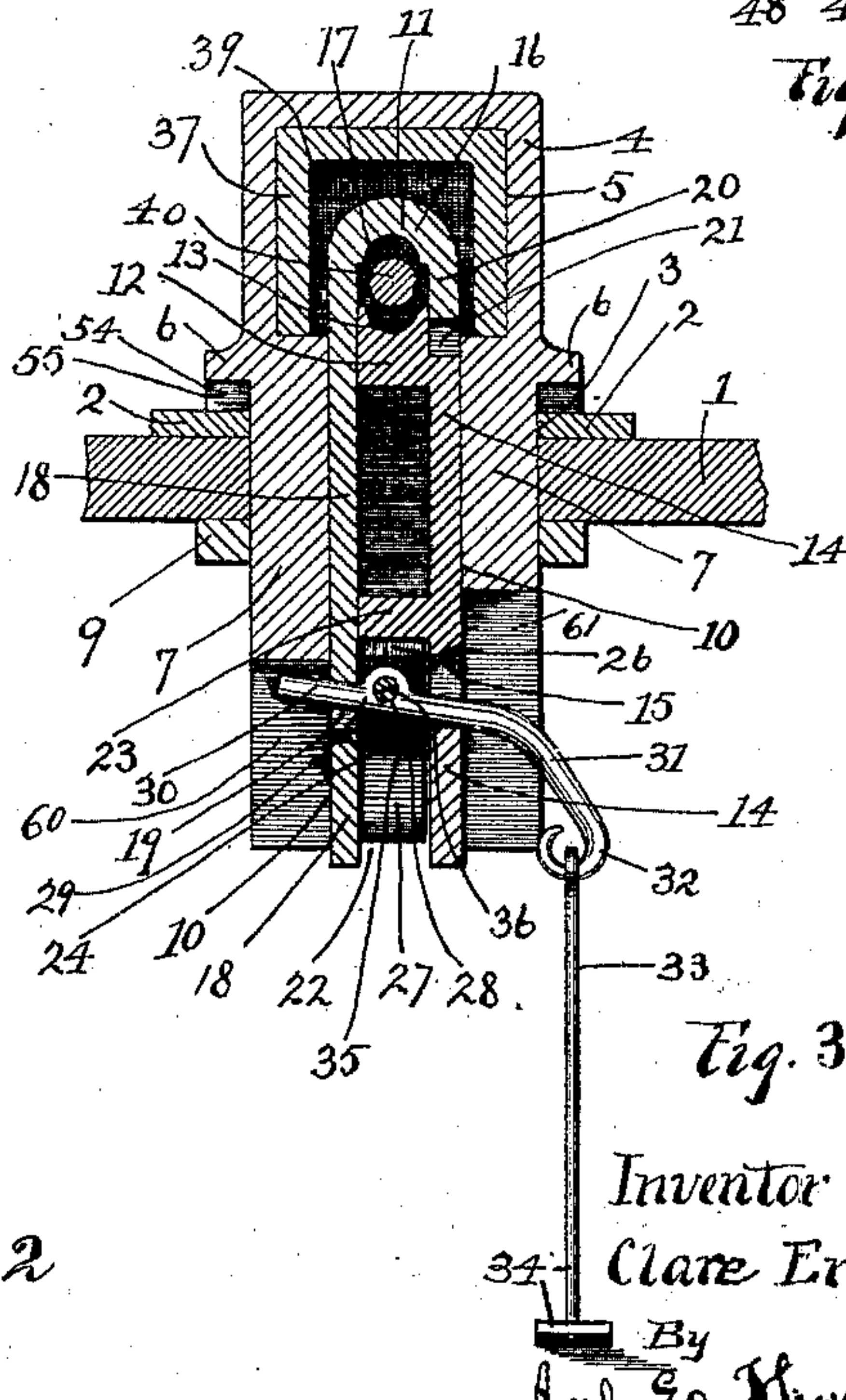


Fig. 3

Attest
J. H. Beckhisinger.
G. P. Thomas.

Inventor
Clare Ernst.
By
Jas. E. Thomas

(No Model.)

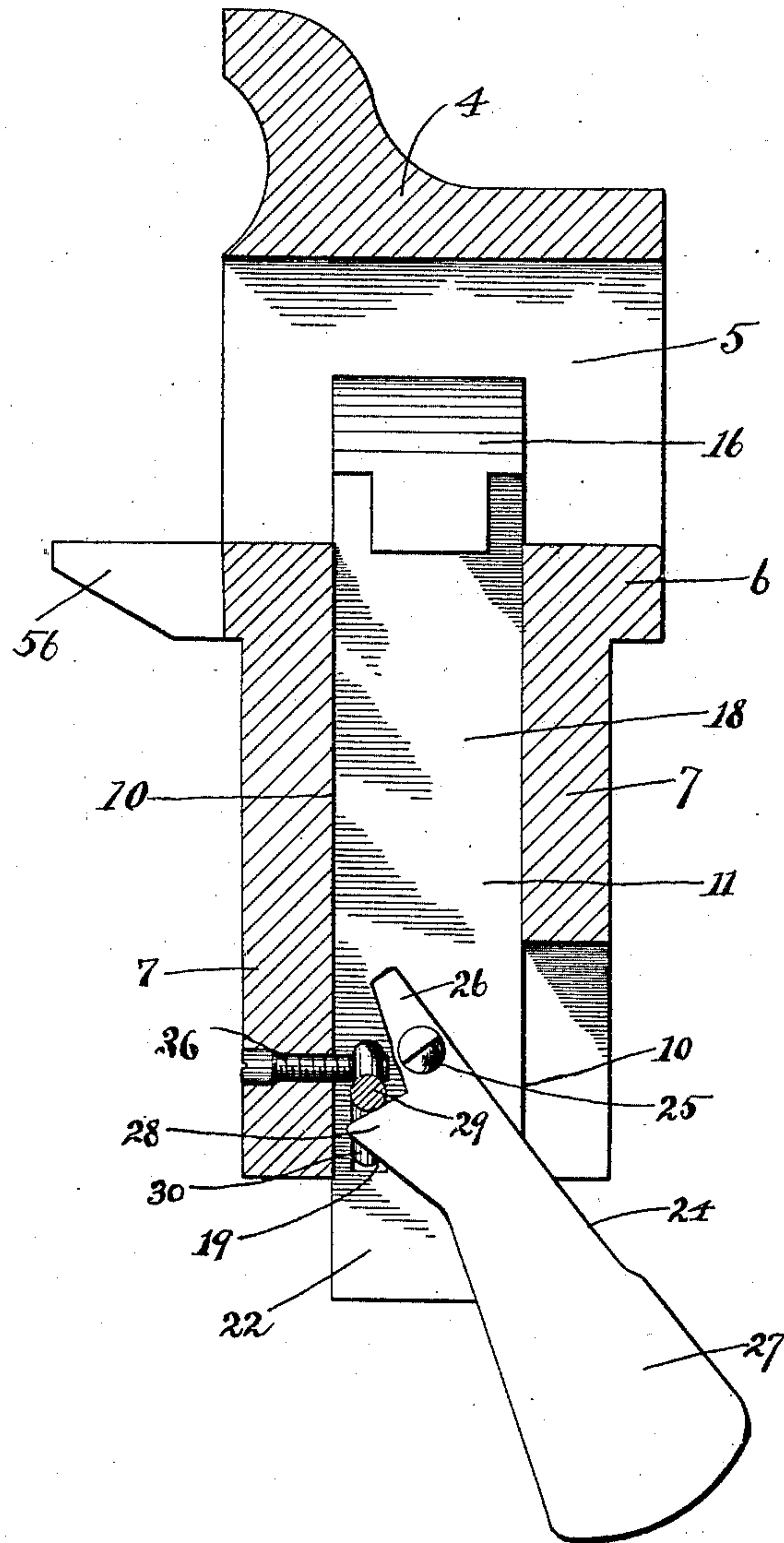
2 Sheets—Sheet 2.

C. ERNST.
VISE.

No. 475,760.

Patented May 31, 1892.

Fig. 7.



Attest
J. O. Bissinger
Geo. P. Thomas

Inventor
Clare Ernst.
By *Geo. P. Thomas* Atty.

UNITED STATES PATENT OFFICE.

CLARE ERNST, OF BAY CITY, MICHIGAN.

WISE.

SPECIFICATION forming part of Letters Patent No. 475,760, dated May 31, 1892.

Application filed November 20, 1891. Serial No. 412,465. (No model.)

To all whom it may concern:

Be it known that I, CLARE ERNST, a citizen of the United States, residing at Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Vises, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in vises; and the improvement pertains more especially to that class of vises in which the nut is composed of two sections capable of opening or moving away from each other, so as to disengage the screw therefrom to allow the screw to be quickly moved to and fro through the nut; and the objects of the invention are to provide a vise of the class mentioned which will be easy of manipulation, cheap, and durable in construction, and efficient and rapid in its operation.

The invention consists in the combination and arrangement of the several parts, together with the operation and construction of the same, which will be specifically explained and described in the following specification, and also clearly pointed out in the claims following.

My invention will be found illustrated in the accompanying drawings, which form a part of and are to be considered in connection with this specification, and in which the several figures of reference used in the following description will be found designating the same elements and parts in each of the several views.

Figure 1 is a vertical central section of a vise containing my improvement. Fig. 2 is a transverse section of the vise, taken at xx in Fig. 1 and showing the parts in position when the sectional nut is closed. Fig. 3 is the same with the sectional nut open. Fig. 4 shows the sectional nut in perspective and detached. Fig. 5 is a plan view of the base-plate. Fig. 6 is a plan view of the movable arm with a lower portion of the movable jaw. Fig. 7 is a vertical longitudinal section of the stationary jaw enlarged and showing one of the nut-sections in position therein.

1 represents a work-bench upon which the vise is to be used, and 2 is a base-plate secured to the surface of the bench and pro-

vided with a central opening 3, which also extends through the bench.

4 is the rear or stationary jaw, which is provided in its middle portion with a transverse opening 5, preferably of rectangular form, and below this opening is provided a shoulder 6, which rests upon the base-plate 2, while 7 is a cylindrical portion which extends through the opening 3 and is provided on its lower end portion with removable lugs 8, which rest against a collar 9 below the bench 1 and prevent a withdrawal of the portion 7 from the opening and at the same time allow the part to turn therein. The portion 7 is provided with a longitudinal opening 10 of rectangular form, which extends to the opening 5, and in this opening is placed a sectional nut 11, composed of the section 12, having on its upper end a threaded recess 13, which composes the lower half of the nut, while a portion 14 extends downwardly through the opening 10 and is provided with an elongated transverse opening 15.

16 is the upper nut-section and is provided on its under side with a threaded recess 17, which opposes the recess 13, so that the two form a threaded circular opening for the screw, and upon one side of the recess 17 the section is provided with a downwardly-extending portion 18, which is in turn provided with an elongated transverse opening 19, located on a plane below the opening 15, and upon the opposite side of the recess 17 is arranged a downwardly-extending portion 20, which slides into a groove 21, formed in the upper end portion of the outer side of the section 12.

Between the lower portions of the parts 14 and 18 is a space 22, and a shoulder 23 is arranged to project into the space from the part 14, while 24 is a locking-lever pivotally secured at 25 to the inner side of the portion 18 in a position that when the lever is in an upright position the end of its short arm 26 will rest against the shoulder 23, while its opposite arm 27 is provided with a weight, which retains the arm 26 in contact with the shoulder and lifts the nut-section 12, and at the same time, through the pivot 25, operates the section 16 downwardly and locks the parts in position with the nut-sections closed together,

when the short arm stands in a vertical position.

Upon the front side of the arm 27 and near its pivot and directly below the opening 15 is arranged a forwardly-projecting lug 28, and upon this lug rests a transverse lever 29, one end 30 of which passes through the opening 19 and slot 60 in the part 7, while the opposite end portion 31, first passing through the opening 15 and slot 61 in the part 7, is provided with a hook 32 or other suitable means for pivotally attaching the upper end of a rod 33 thereto, the opposite end of the rod being pivoted to a foot-lever 34 beneath the bench.

Between the openings 15 and 19 the lever 29 is provided with an opening 35, into which is passed the inner end of a pivot 36, which is sustained in position by being passed through the side wall of the cylindrical part 7, the pivot serving to retain the lever in position and to form a fulcrum upon which to oscillate the lever by means of the rod 33 and the foot-lever.

37 is a rectangular arm passed through the opening 5 in the stationary jaw and is provided on its outer end with an upwardly-extending movable jaw 38, and in the under side of this arm is arranged an open chamber 39, into which the nut-sections extend, and 40 is a screw passed longitudinally through the arm and through the threaded opening formed by the threaded recesses in the nut-sections, the threads of the recesses engaging with the threads of the screw when the nut-sections are closed together, and upon the outer end of the screw is arranged a handle 41 for revolving the screw in the ordinary manner. The threads on this screw are preferably formed with an abrupt outer side 42 and with a sloping inner side 43, the slope of the inner side beginning at the V edge of the outer periphery of the thread and sloping to meet the bottom of the abrupt side 42, so that the threads upon the nut-sections, which are correspondingly shaped, will easily pass into engagement with the screw-threads and at the same time present a full bearing for clamping when the vise is in use.

The jaw 38 is composed of a lower section 43, provided on its upper side with a vertical opening 44, which extends into the chamber 39, and with a groove 45, having a curve struck from the center of the opening 44, and on the outer side of this section is arranged a recess into which is placed a vertical bolt 46, the upper end of the bolt being passed through and projected above the upper wall of the recess and with its lower end passed into the lower wall thereof, and a spring 47 is arranged for actuating the bolt upwardly.

Upon the lateral sides of the opening 44 are arranged the vertical grooves 48, while 49 is the upper section of the jaw, provided on its under side with a downwardly-extending journal 50, having on the front and rear sides of its lower end portion the outwardly-pro-

jecting lugs 51 and with an outwardly projecting bead 52, having a curve corresponding to the curve of the groove 45, arranged on the outer part of its lower surface, and this section is turned to a right angle with its usual working position, and the journal is then passed into the opening 44, with the lugs 51 passing into the grooves 48, and the section is then turned to a working position, with the bead 52 passed into the groove 45, and when the section has reached its proper position for operating as a jaw the lugs 51 will be turned to a position beneath the inner edges of the opening 44, which retains the parts solidly in position, while the upper end of the bolt 46 engages with a recess or notch 53 in the upper jaw-section for locking the parts in position, and which being withdrawn allows the jaw to turn on the journal and permit tapering pieces to be held between the jaws.

Upon the upper side of the base-plate 2 is arranged a rim 54, surrounding the opening 3 and upon which the shoulder 6 rests when the parts are in working position, and in this rim is arranged a series of notches 55, and to a projecting portion 56 on the front of the jaw 4 is pivotally secured a dog 57, which, when coincident with one of the notches, engages its lower inner portion therewith, and the outwardly-extending portion 58 of the dog provides a weighted lever for holding the dog into engagement with the notch, and also forms a convenient means for lifting the dog from engagement, so that the part 4 may be turned within the opening to bring the jaws to any oblique position desired by the operator, the dog engaging with any one of the notches.

The vise-screw may be operated in the ordinary way and the vise will then fulfill all of the capabilities of an ordinary vise, and as a quick means of actuating the movable jaw to or from the stationary jaw the operator depresses the lever 34 by his foot. This oscillates the lever 29 on the pivot 36, so that the portion of the lever in contact with the lug 28 moves downwardly and the lug, projecting from the front side of the lever 24, near its pivot 25, oscillates the lever on its pivot and throws the weighted arm 29 rearward and moves the short arm 26 forward for releasing the nut-sections from the locking action of the arm 26, and the portion 30 of the lever 29 then comes in contact with the upper edge of the opening 19 and moves the part 18 and nut-section 16 upward, while the part 31 comes in contact with the lower edge of the opening 15 and moves the part 14 with the nut-sections 12 downwardly until both sections are free from engagement with the screw, and the movable jaw, together with the arm and screw, may then be moved to any desired position, either inwardly or outwardly, and then on the foot-lever being released the nut-sections at once return to their normal position through the action of the weighted lever, which operates

to firmly lock the parts in position, when the portion 26 assumes an upright position beneath the shoulder 23.

It will be seen that a firm and solid lock for the nut-sections is provided by means of the arm 26, so that the parts are held firm and solid in position, and are so constructed that all of the parts are made by casting, so that little or no machine-work is needed to assemble the parts together into a perfect and complete working device that can be quickly placed in any desired position for holding the work and for holding pieces having a tapering or uneven dimension.

Having described my invention, what I claim is—

1. In a vise, the combination of the jaw 4, having a lower portion 7, provided with a vertical opening 10 and with a transverse opening 5, with the nut-section 12 within said opening 5 and having a portion 14 extending into said opening 10 and provided on its lower portion with opening 15 and with a shoulder 23, the upper nut-section 16 in the opening 5 and having a portion 18 extending into the opening 15 and provided with an opening 19 on its lower portion, with the lever 24 pivoted to the inner side of the portion 18 and having an arm 26 extending upward to contact with said shoulder 23 and with a weighted opposite arm, and means for oscillating the lever to free the arm from said shoulder and for moving the nut-sections in opposite directions, the screw between the nut-sections, and the transverse arm for carrying the screw and

passed into said opening 5 and provided on its outer end with a jaw 38, substantially as set forth.

2. The combination, in a vise, of the stationary jaw provided with a transverse opening 5 and with a vertical opening 10 in its lower portion, a hollow arm 37, passed into the opening 5 and carrying a jaw 38 on its outer end and a screw 40 extending through the arm, a sectional nut 11 for engaging the screw within the opening and composed of the lower section 12, having a portion 14 extending into said opening 10 and provided with a shoulder 23 and with an opening 15, the upper section 16, provided with a downwardly-extending portion 18, having an opening 19, the lever 24 between said portions 14 and 18 and pivoted to the portion 18 and having an upwardly-extending arm 26 in contact with shoulder 23, and with an oppositely-extending weighted arm 27 and with a forwardly-extending lug 28, with the transverse lever 29, having its inner end passed through the openings 15 and 19 and pivoted at 36 to the wall of the opening 10, and a rod 33, pivotally secured by its one end to the outwardly-extending arm of lever 29 and a foot-lever pivoted to the opposite end of the rod, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CLARE ERNST.

Witnesses:

JAS. E. THOMAS,
JOHN ERNST.