

(No Model.)

J. ERNST.

WISE.

No. 368,575.

Patented Aug. 23, 1887.

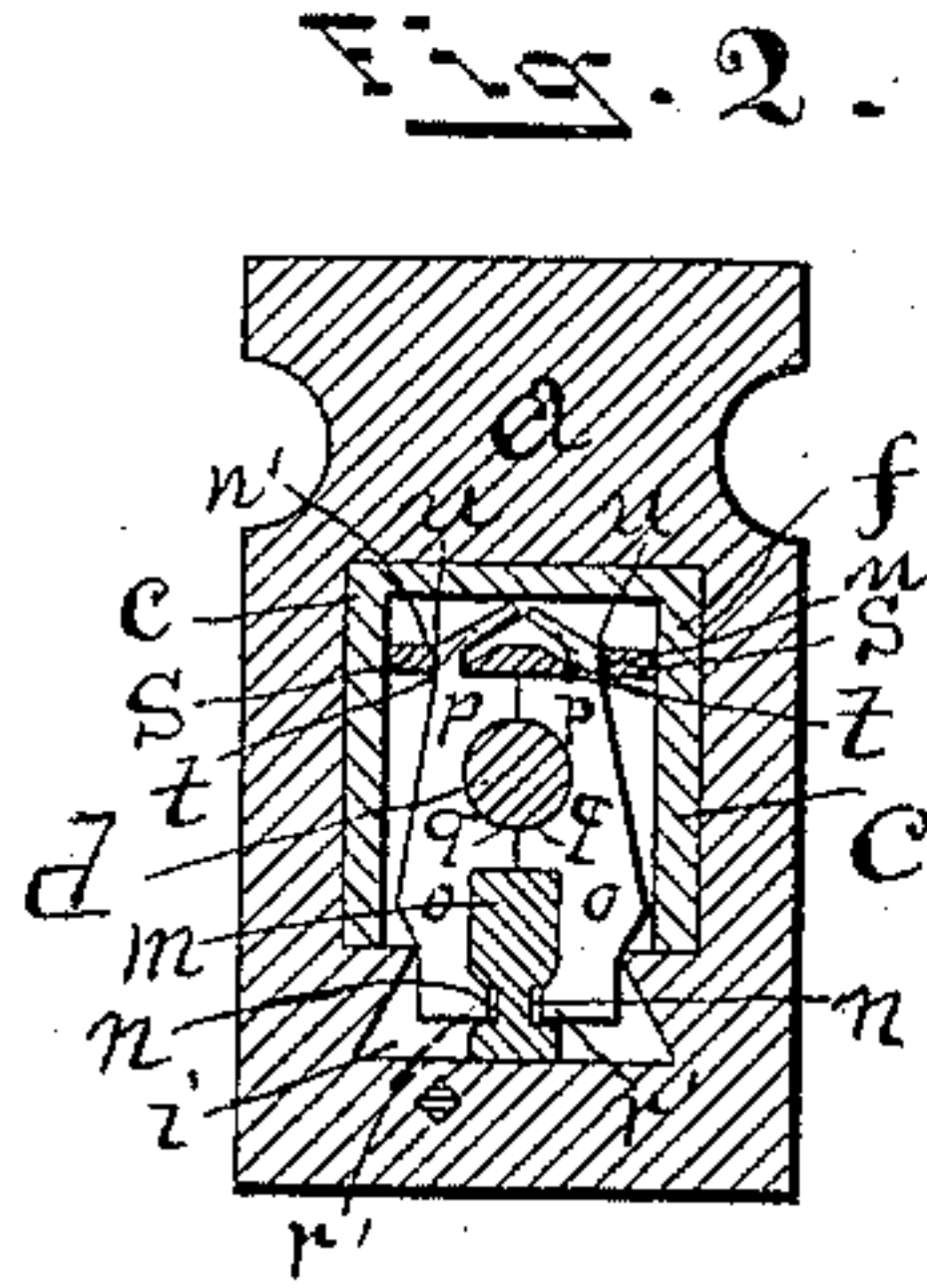
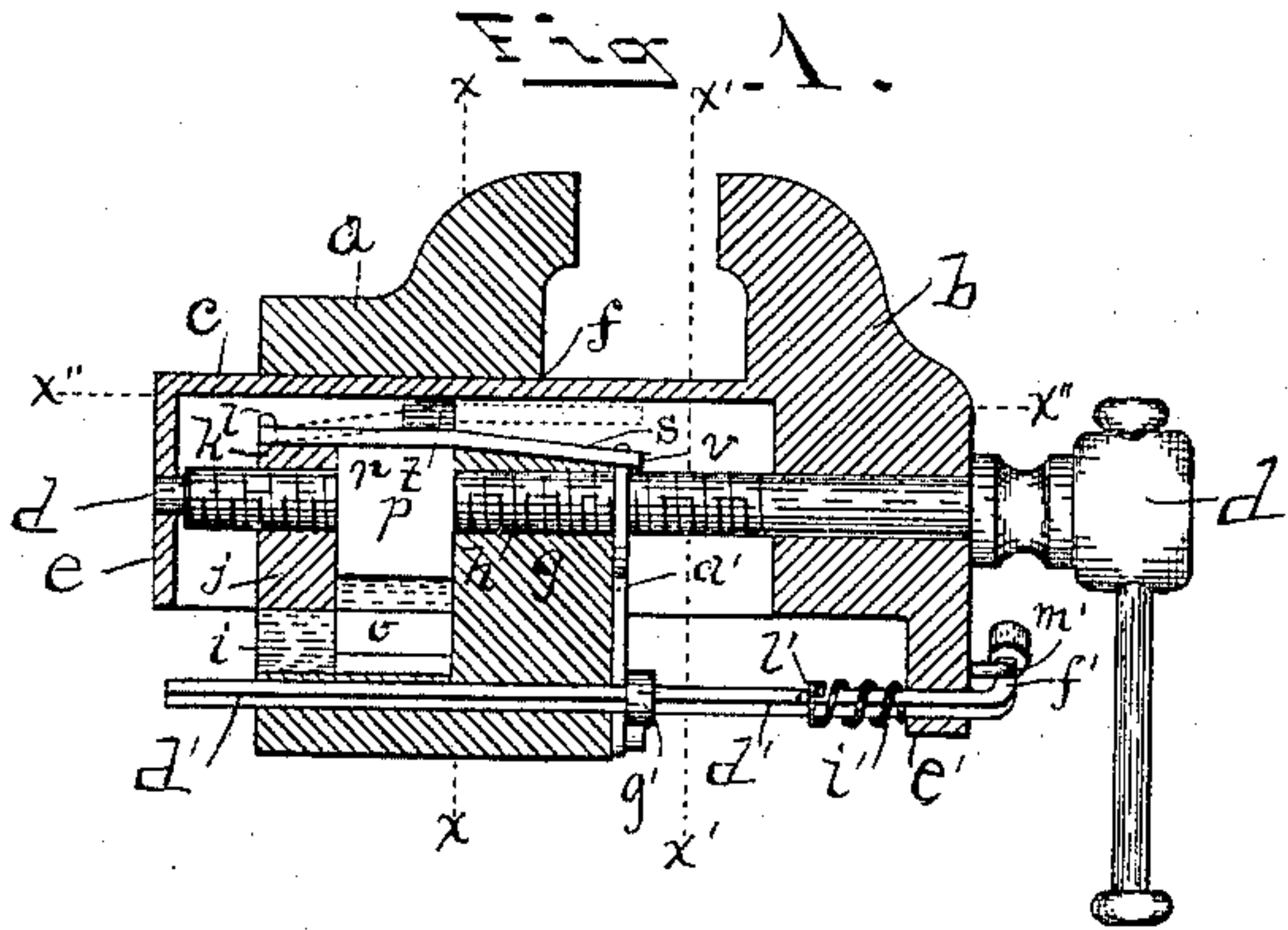


Fig. 3.

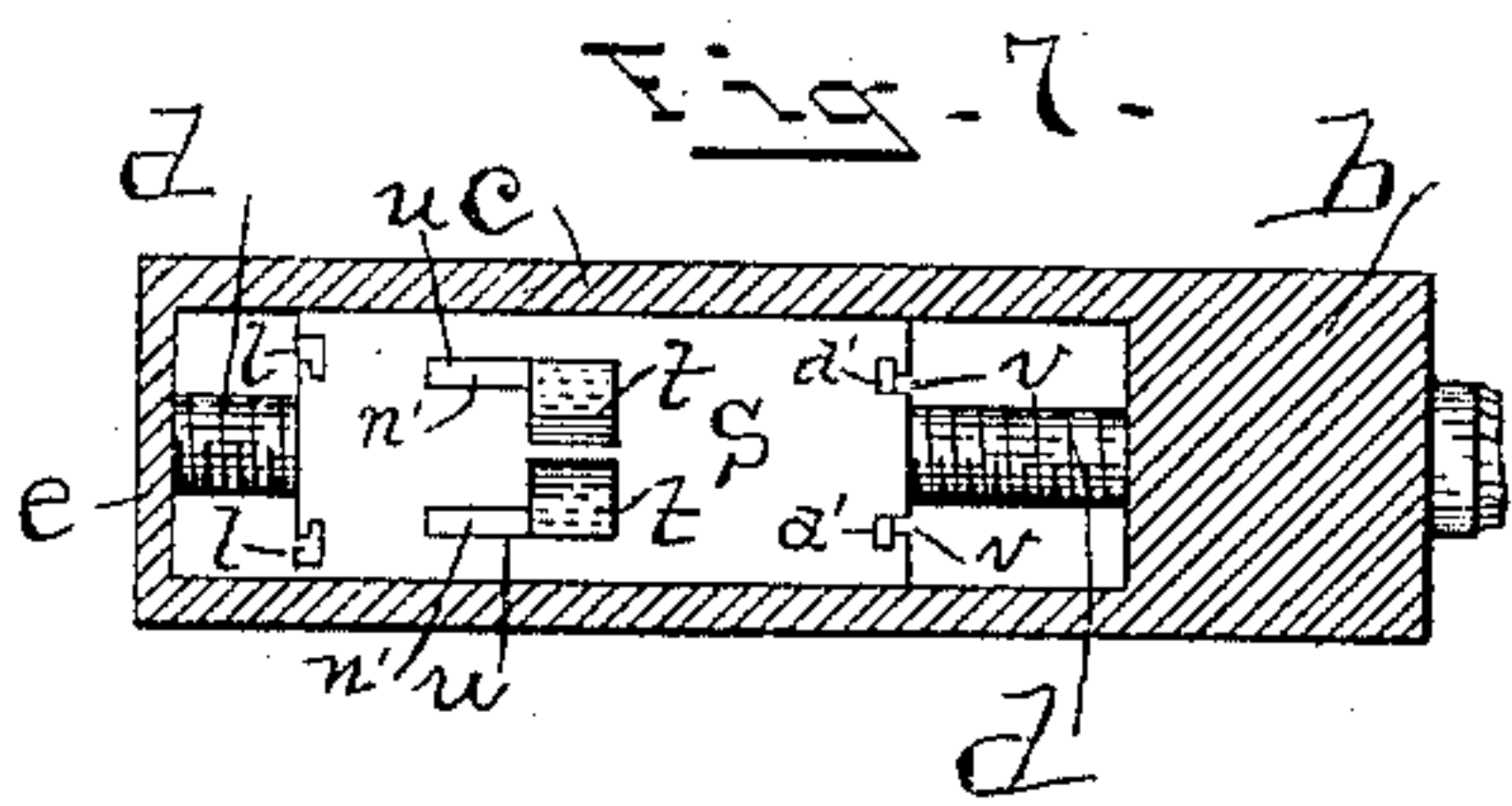
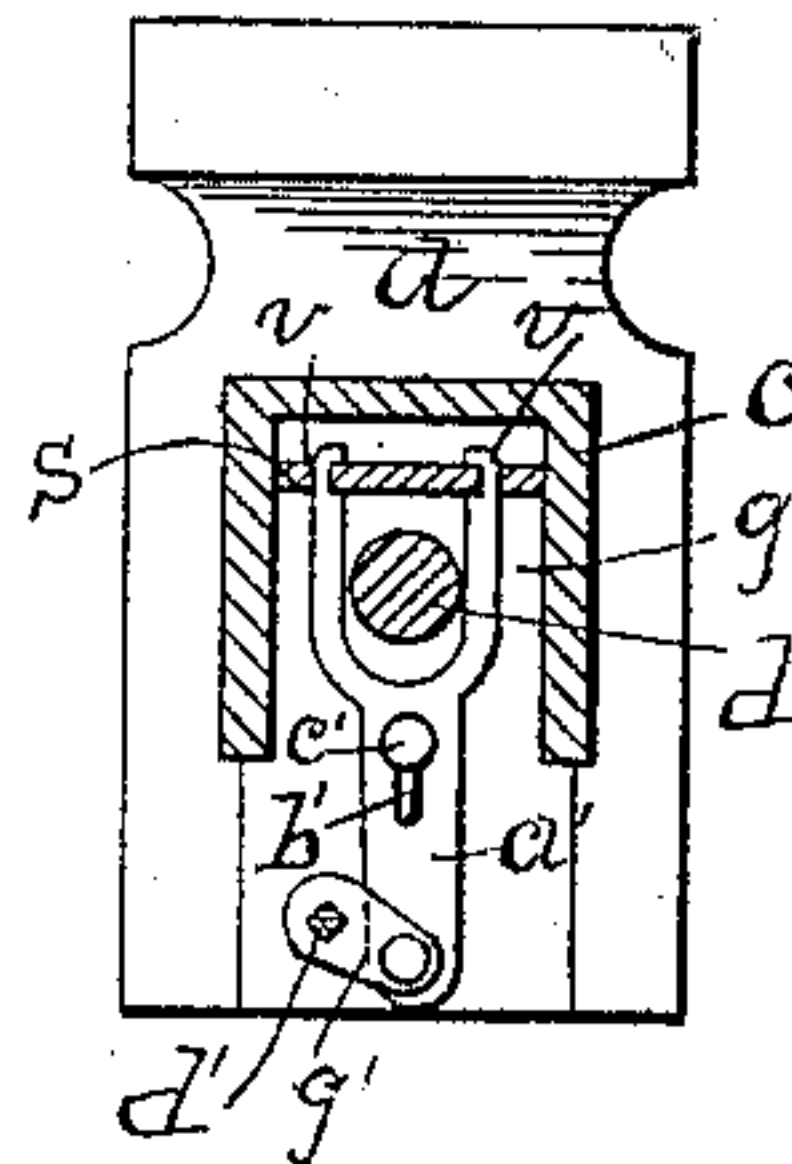


Fig. 6.

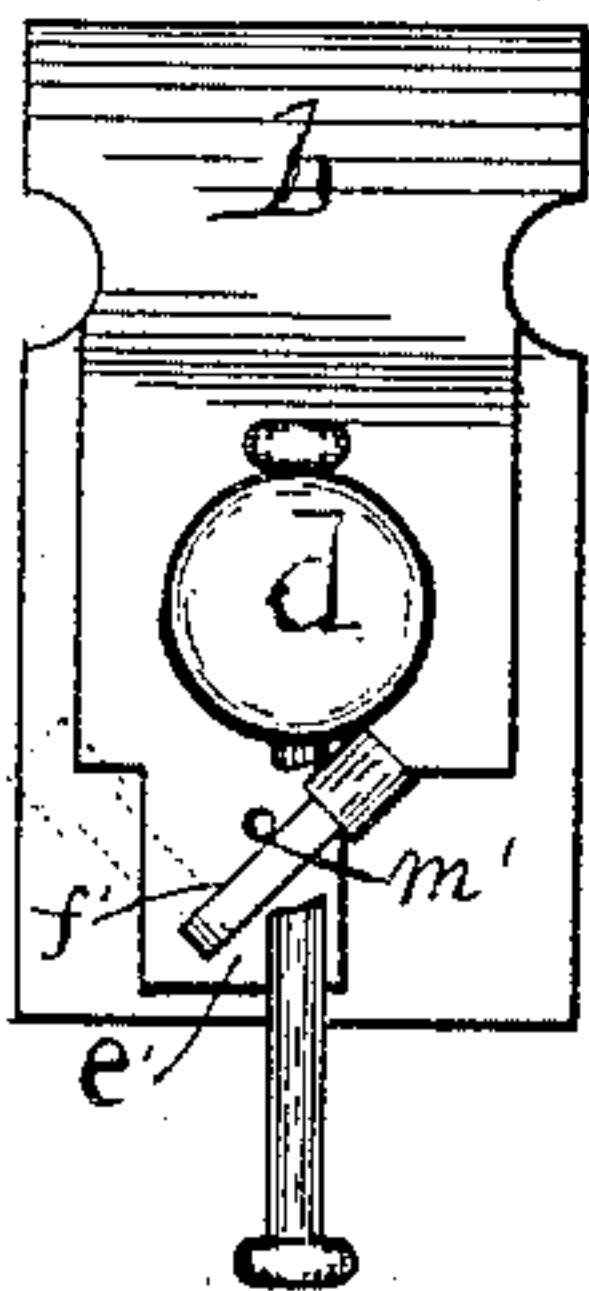


Fig. 5.

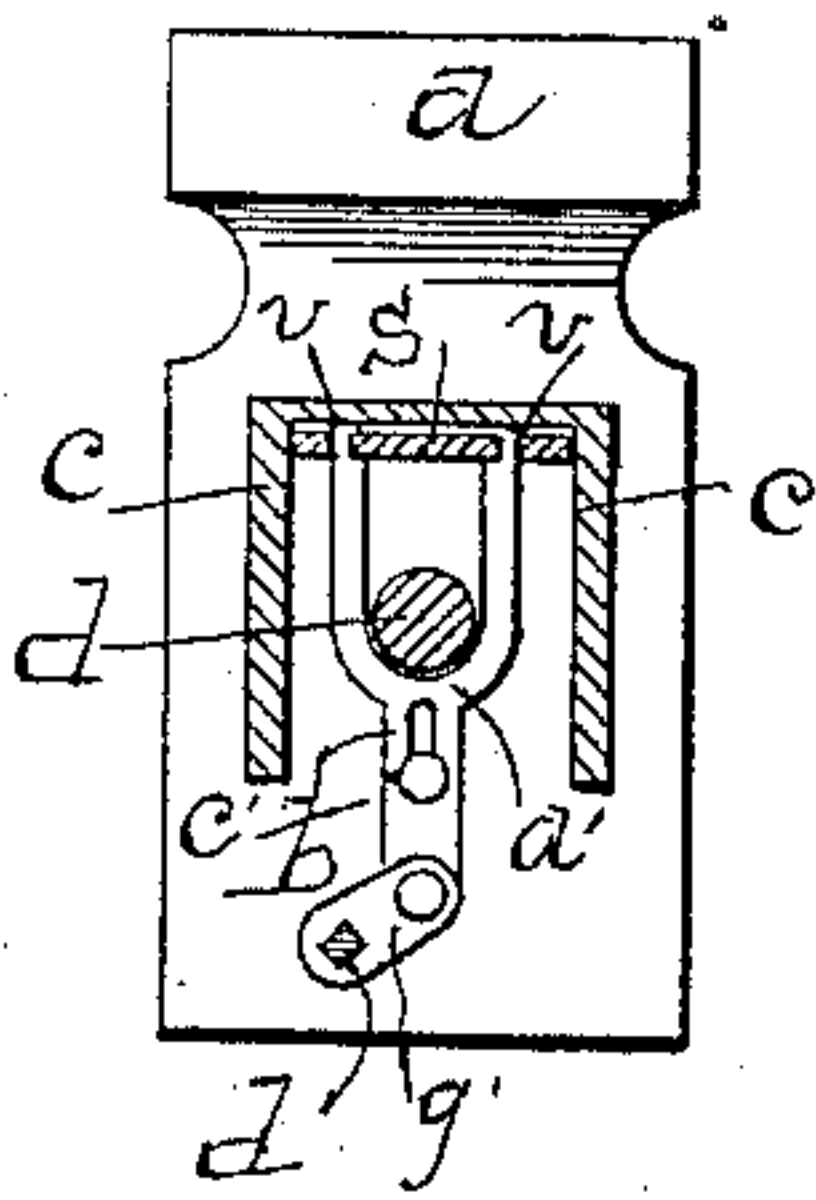
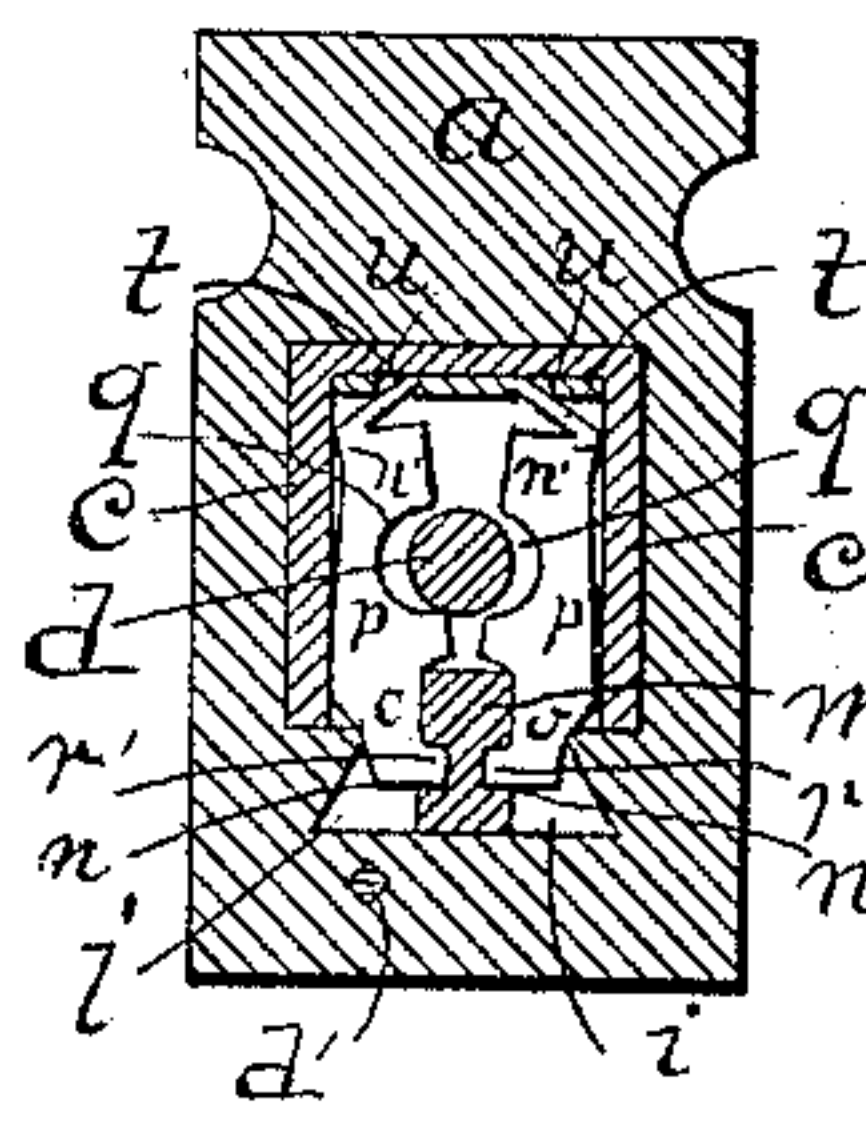


Fig. 4.



ATTEST:

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To all whom it may concern:

Be it known that I, JOHN 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; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in vises; and it consists in the combination, with the jaws and screw, of a two-part nut having diagonal arms and a plate provided with openings passing over the arms and operating to open and close the nut, and suitable means of moving the plate to open or close the nut by the action of the hand at the screw-lever, and also in the general construction and arrangement of the parts forming the device.

The objects of the invention are to construct a vise that will be more rapid and more durable and easily operated and repaired, and that will allow a quicker adjustment of the jaws to the desired position, and to produce a device that will hold the two-part nut firmly and securely to the screw. The devices I employ to attain these objects are illustrated in the accompanying drawings, in which—

Figure 1 is a vertical central section of my improved vise, showing the position of the parts when the nut is closed. Fig. 2 is a transverse section at $x\ x$, with the nut closed. Fig. 3 is a section at $x' x'$, showing the position of the parts when the nut is closed. Fig. 4 is the same as Fig. 2, with the nut open. Fig. 5 is the same view as shown in Fig. 3 when the nut is open. Fig. 6 is a front view of the outer portion of the vise. Fig. 7 is a horizontal section at $x'' x''$.

a is the rear or stationary jaw of the vise, and b is the front or movable jaw, provided with a hollow arm, c , which passes through an opening, f , in the lower portion of the jaw a ; and d is the screw which is passed through the jaw b and longitudinally through the central part of the hollow arm, and is supported at its inner end by the portion e , which closes the inner end of the arm.

The front portion of the opening f is partially closed by a portion, g , extending upward from the base of the jaw into the hollow arm, and is provided with a hole, h , through which passes the screw. The bottom of the opening f is provided with a dovetail groove, i , extending from the rear edge thereof to the portion g . Into this dovetail groove is placed a supporting-piece, j , the rear portion, k , entirely filling the hollow space in the arm and extending nearly to the top thereof, and is provided on its upper or rear edge with the lugs or hooks l . The inner portion, m , of the piece j is reduced in width and depth, and is provided with the grooves n on its opposite sides, and leaving spaces between the inner edges of the dovetail groove i and the part m , and into these spaces are placed the lower ends, o , of the parts p of a divided nut, r . These portions p are placed on opposite sides of and extend above the screw d , and are provided with threaded recesses q , which fit over the screw, and the lower ends, o , are provided with inwardly-projecting portions r' , which fit into the grooves n , while the outer sides bear against the edges of the dovetail and hold the pieces in position.

The upper ends of the parts p are provided with arms t , extending diagonally inward, the upper sides of the arms meeting at an angle the outside edges of the pieces, and a plate, s , provided with openings u , fitting over the arms t , is placed horizontally above the screw and extends rearward above the part k , and is hinged by its rear end to the part k by catching over the hooks l , while the opposite end, extending forward and above and beyond the part g , is provided with notches v , into which are caught the upper ends of the lifting-piece a' , which is placed vertically in front of the part g below the screw, and provided with upward-extending arms, which pass on opposite sides of the screw to the plate s . A slot, b' , is formed in the piece a' , and a screw, c' , is passed through the slot and into the part g , holding the piece in position, and allowing it to move vertically and raise and lower the front end of the plate s . Below and on one side of the screw is a rod, d' , passed through the lower portion of the jaw a , and extends forward through a portion, e' , which projects downward from the jaw b , and is provided with a

handle, f' , projecting from one side of the rod. This rod is of a square form, and is secured to the portion e' in a manner to move with the jaw b and slide through the jaw d ; and g' is an arm provided with an opening, h' , in one end, of square form, through which is passed the rod, and the opposite end of the arm is pivoted to the lower end of the lifting-piece a' .

i' is a spring coiled around the rod d' , and arranged with one end bearing against the inner side of the part e' , and with its opposite end bearing against a stop or pin, l' , on the rod, and the outside of the part e is provided with a catch or stop, m' , beneath which the outer end of the handle f' catches when the two-part nut is closed, from engagement with which, however, the handle may be released by pulling it forward, the spring i' allowing the rod to move forward for a short distance for that purpose.

As shown in Figs. 1, 2, and 3, when the parts p are closed together the plate s rests horizontally upon the upper portions thereof, the openings u being arranged so that when in that position they rest over a reduced portion, n' , the outer side of which is perpendicular or slightly inclined under, so that the inclines p cannot be in any way strained apart, so as to operate to lift the plate s ; and in order to open the nut the handle f' is turned to the position shown by the dotted lines in Fig. 6, which operates to lift the front end of the plate s by means of the arm g' and the piece a' , and the openings u , sliding upward on the arms t , move the upper ends of the pieces p outward and disengage the screw d from the pieces, when the front jaw can be moved to any desired position, and when the handle f' is operated in the opposite direction the plate s returns to its former position and closes the pieces p , with the openings u over the portion n' , which locks the pieces firmly together.

The advantages of the device are, that a great saving of time is the result of its use, and by the construction shown the cost of the improved vise will be but a trifle more than an ordinary vise, as the parts can be nearly all cast and will require but little, if any, machine-work to form a first-class implement.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a vise, the combination of the jaw a , having an opening, f , through its body, and provided with a groove, i , in the bottom of the opening and the portion g in the front portion of the opening, a screw, d , passing through the opening, with a supporting-piece within the opening and fitting into the groove i , and provided with a reduced portion, m , having

the groove n , the pieces p on opposite sides of the screw and provided with the threaded recesses q , and having their lower ends, o , within the groove i and the portions r' in the groove n , the diagonal arms t on the upper end of the pieces p , the plate s , hinged at its rear end, and having the openings u , passed over the arms t , the lifting-piece a' , secured to the front end of the plate by one end, and the rod d' , provided with an arm, g' , pivoted to the lower end of the lifting-piece, substantially as and for the purpose set forth.

2. In a vise, the combination, with the screw d and the pieces p on opposite sides of the screw, and provided in their central portion with the threaded recesses q , of the diagonal arms t , extending from the upper ends of the pieces p , the plate s , hinged to a rigid support at its rear end, and provided in its central portion with the openings u , passed over the arms t , the lifting-piece a' , secured to the front end of the plate by its upper end, and the rod d' , provided with an arm, g' , having its outer end pivoted to the lower end of the lifting-piece, substantially as and for the purpose herein set forth.

3. In a vise, the combination, with the screw d , the divided nut r , engaging with the screw and provided with the inclined arms t on its upper portion, and the plate s , having the openings u , passed over the arms of the piece a' , adjustably secured at its upper end to the plate s , and a rod, d' , passing through the jaws and provided with an extended arm, g' , having its outer end pivoted to the lower end of the piece a' , substantially as and for the purpose set forth.

4. In a vise, the combination, with the screw d , the divided nut r , hinged at its lower end, and having the inclined portions t projecting from their upper ends, the plate s , hinged at its rear end, and provided with the openings u , passed over the arms t , a lifting-piece, a' , provided with the slot d' , and with its upper end secured to the plate, an arm, g' , with one end pivoted to the piece a' , a rod, d' , passed through the jaws and through the arm g' , and provided on its outer end with a handle, f' , of a spring, i' , pushing the rod inward, and a catch, m' , on the jaw b , engaging with the handle f' , substantially as and for the purpose herein set forth.

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

JOHN ERNST.

Witnesses:

JAS. E. THOMAS,
W. H. POWER.