

No. 616.331.

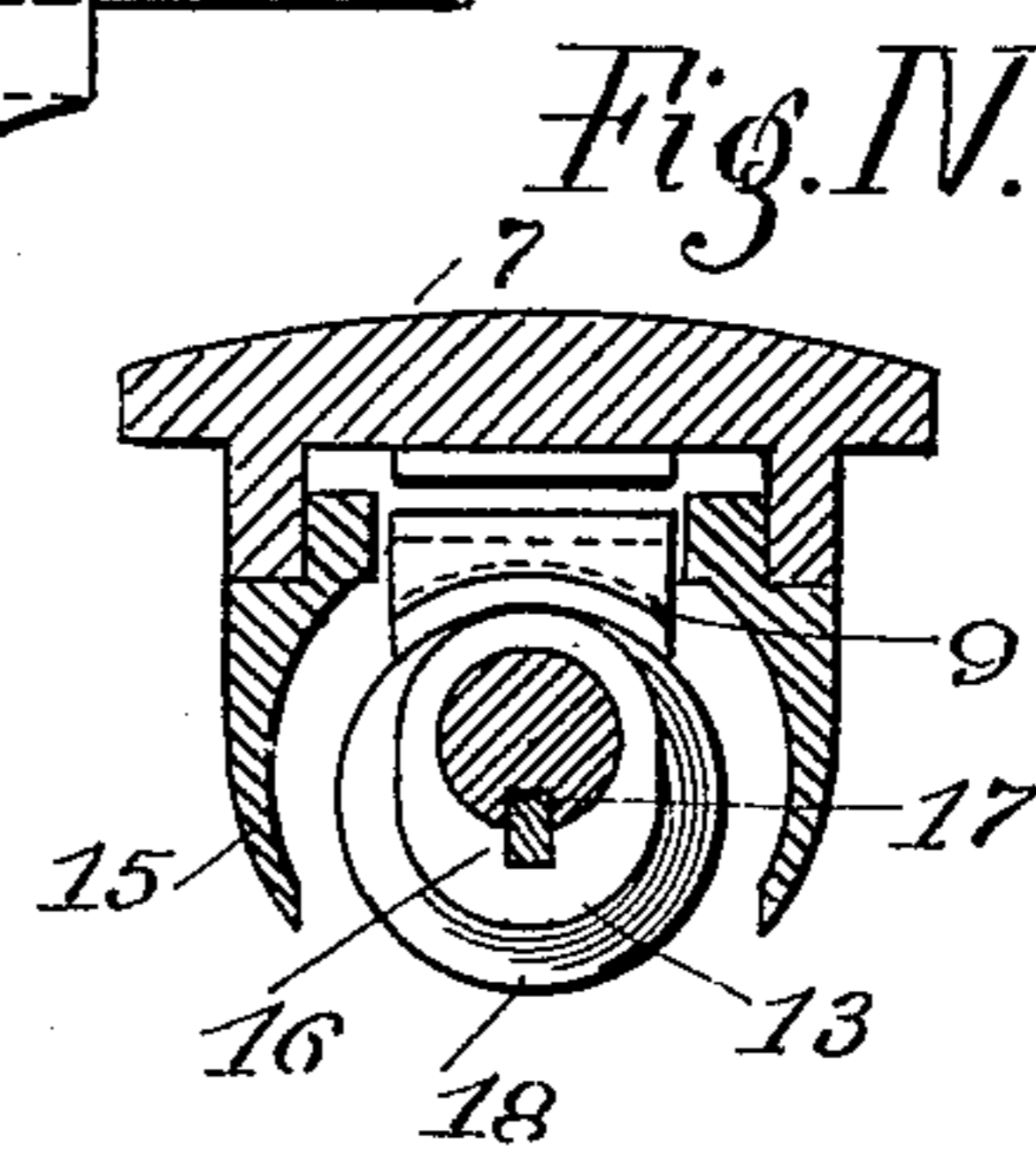
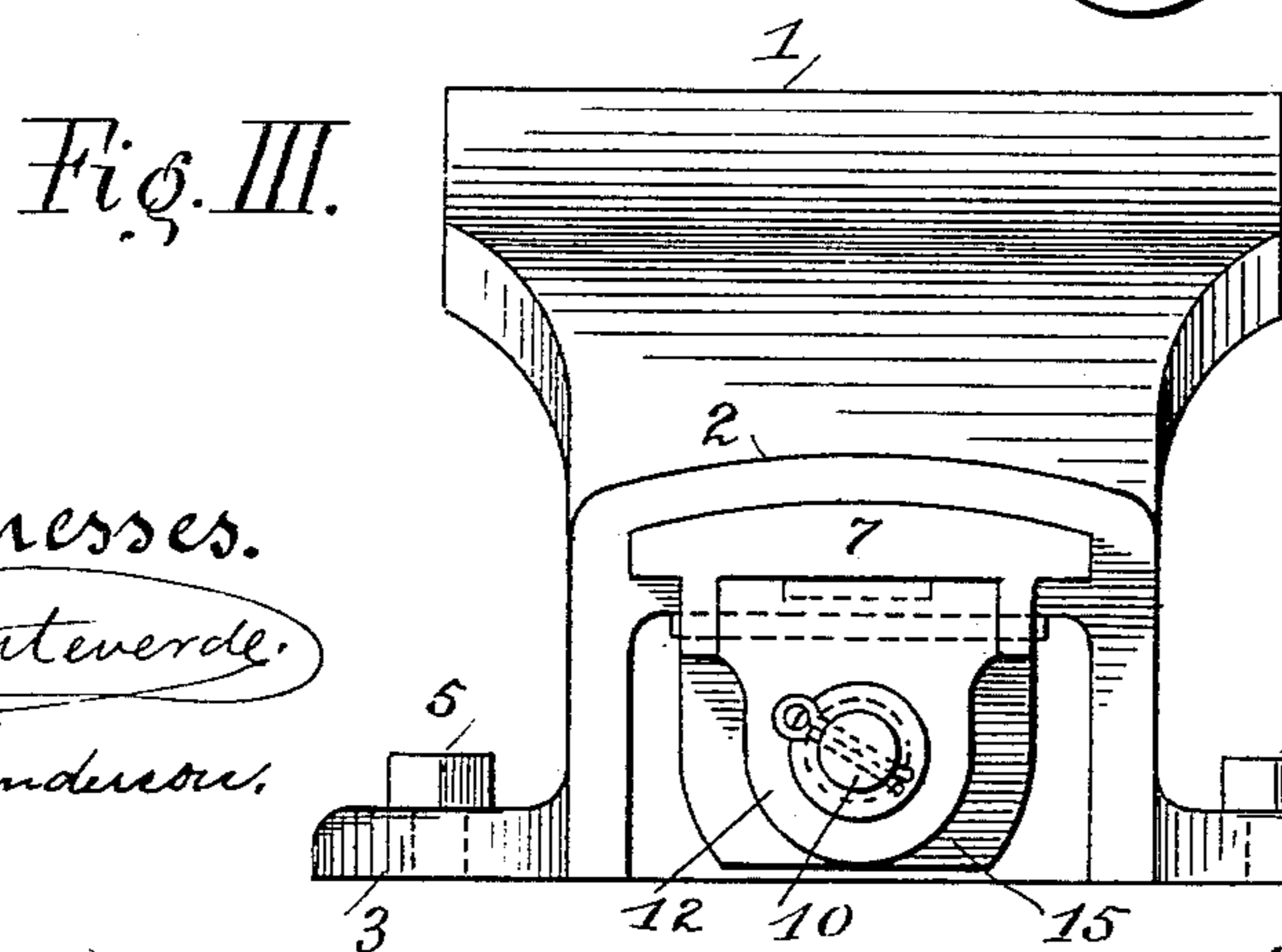
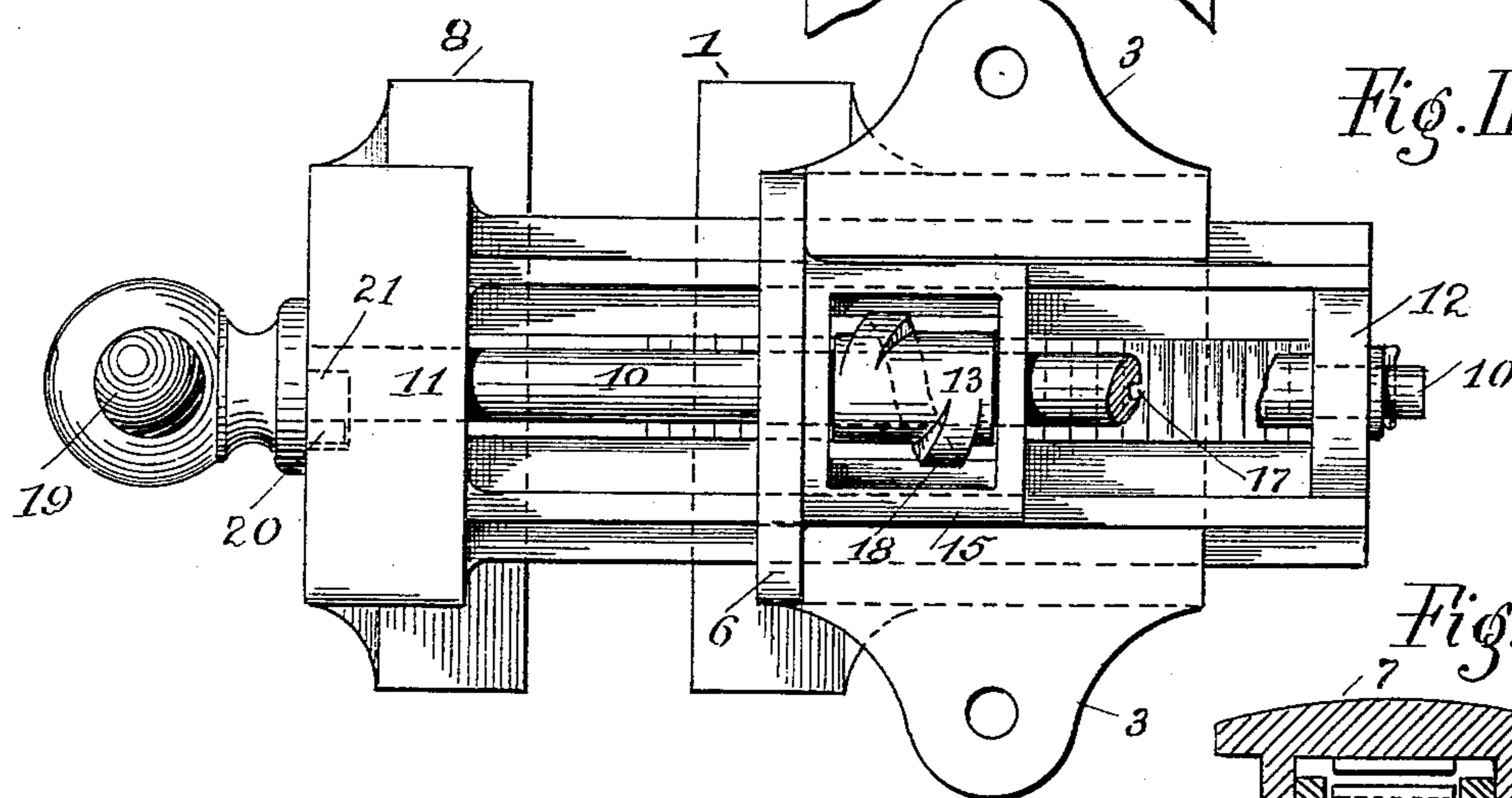
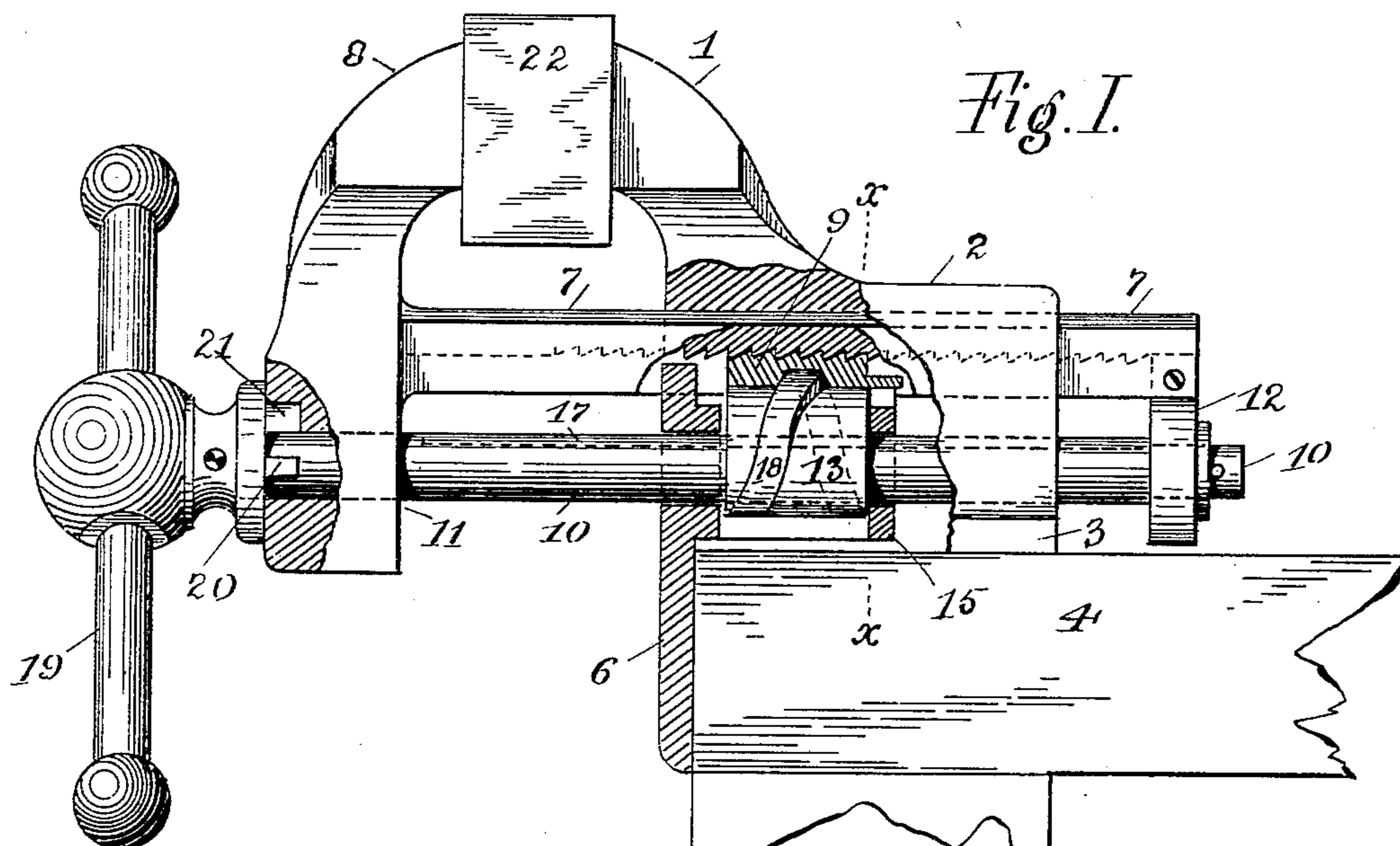
Patented Dec. 20, 1898.

A. HOWARD.

WISE.

(Application filed June 6, 1898.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 616,331, dated December 20, 1898.

Application filed June 6, 1898. Serial No. 682,638. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS HOWARD, a subject of the Queen of Great Britain, residing at San Francisco, county of San Francisco, and State of California, have invented certain new and useful Improvements in Vises; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to clamping vises or presses employed to hold material being operated upon by workmen or for other purposes and to an improved construction of such vises.

My improvements consist in fixed and movable jaws, the latter instantly adjustable to receive pieces of various thicknesses, a partially-rotating stem, and a helix thereon set eccentric to the axis of the stem acting as a cam to engage a serrated block with a toothed rack, all the operations, including the gripping movement of the jaws, being performed by the turning handle alone and without other supplementary devices.

The objects of my invention are to perform the various functions of a quick-moving vise, as before named, with a single motion, and thus dispense with the usual supplementary adjustments for vises of this kind, rendering them more simple, durable, and rapid in application.

Referring to the drawings herewith and forming a part of this specification, Figure I is a side view, partially in section, of a vise constructed according to my invention. Fig. II is a bottom view of the same vise. Fig. III is an end view of Figs. I and II, looking from the rear. Fig. IV is a cross-section through a portion of Fig. I on the line $x x$, showing the eccentric helix and block disengaged from the rack.

The stationary jaw 1 is made integral with the housing 2 and provided at the bottom with flanges 3, by means of which the vise is attached to and stands above a bench 4, held by bolts 5 in the usual manner for vises employed in metal-working, and a plate 6, extending downward against the front of the bench to give stability.

The sliding guide-bar 7 is made integral

with the movable jaw 8 and fits through the fixed housing 2, as seen in Fig. III.

On the bottom of the sliding bar 7 are angular teeth, as shown in Fig. I, engaged by teeth of a reverse angle on the block 9, so the two become immovably locked in one direction when meshed together, as seen in Fig. I.

Mounted in the movable jaws 8 and sliding bars 7 is a revoluble stem 10, having one bearing at 11 and another in the lug 12, attached to the sliding bar 7. This stem 10 is arranged to slide through a helical cam 13, which engages a serrated block 9, both placed in and held longitudinally and laterally by a box-housing 15, the latter formed integral with the fixed jaw 1 and housing 2, the cam 13 being turned by a feather 16, sliding in the groove 17 in the stem 10. This cam 13, which is in effect a section of a screw, is eccentric in its cross-section, as seen in Fig. IV, and provided with a thread 18, consisting in the present case of a single convolute, so that when this pinion 13 is turned downward or in the position shown in Fig. IV the serrated block 9 falls by its gravity and is disengaged from the toothed rack on the slide-bar 7.

The stem 10 is operated by a cross-lever 19 and is provided with a detent or stop 20, that fits in a segmental recess 21, so as to permit half or so much of a revolution of the stem 10 as is required, so the cam will be turned with its long radius upward, as seen in Fig. I, thereby raising and engaging the block 9, with the rack on the slide-bar 7, as seen in Fig. I. In this manner it will be seen that by turning the stem 10 one-half a revolution, or so much as required to clamp a piece 22 in the vise, the block 9 is raised and engaged, and the convolute 18, acting as a screw-thread and bearing against the end of the housing 15, forces the sliding stem 7 inward and closes the jaws of the vise upon a piece 22, as seen in Fig. I. When the stem 10 is turned oppositely, the block 9 is disengaged from the rack on the slide-bar 7, so the jaws 8, stem 10, and the slide-bar 7 can be instantly moved outward or inward to receive between the jaws 1 and 8 pieces of any size within range of the vise, all motions and adjustments being performed by simply turning the stem 10.

It will also be understood that while I have

illustrated my improvements as applied to a vise for metal-work set on and above the bench 4 my invention is equally applicable to vises arranged to be set flush with the top of a bench, as for woodworking, or to any other of the common forms of gripping-vises operated by screws, the essential parts remaining the same.

Having thus explained my improvement in vises, with the manner of constructing and applying the same, I claim as my invention—

1. In a vise, the combination of the fixed jaw 1, sliding jaw 8, having sliding bar 7, serrated to form an angular toothed rack, serrated block 9, and revoluble helical cam 13 engaging said block and bringing it into and out of engagement with the rack, substantially as specified.

2. In a vise, the fixed jaw 1, adapted to be fastened to a bench, the sliding bar 7 having a toothed rack thereon, a serrated block 9 engaging this rack in combination with the helical cam 13, eccentric in form, meshing into, raising and engaging the block 9 by a single motion of the stem 10 in the manner substantially as specified and shown.

3. In a vise, fixed and movable jaws 1 and 8, the latter provided with a sliding bar 7 and

a toothed rack thereon, a revoluble stem and cam 13 the latter adapted to raise and engage the block 9, and provided with the helical thread or convolute 18 to engage the same block and force the movable jaws of the vise inward in the manner, substantially as specified.

4. In a vise, fixed and movable jaws 1 and 8, a sliding guide-bar 7 to support the latter, the revoluble stem 10 arranged to slide through and partially revolve the helical cam 13, a convolute thread or threads upon the latter raising and engaging the movable block 9 and at the same time forcing the movable jaw inward to clamp and hold pieces in the vise, substantially as specified.

5. In a vise, the combination of the fixed and movable jaws, the sliding guide and rack 7, revoluble stem 10, helical cam 13 and movable block 9, all operating in the manner and for the purposes, substantially as specified.

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

AUGUSTUS HOWARD.

Witnesses:

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