

**No. 675,098.**

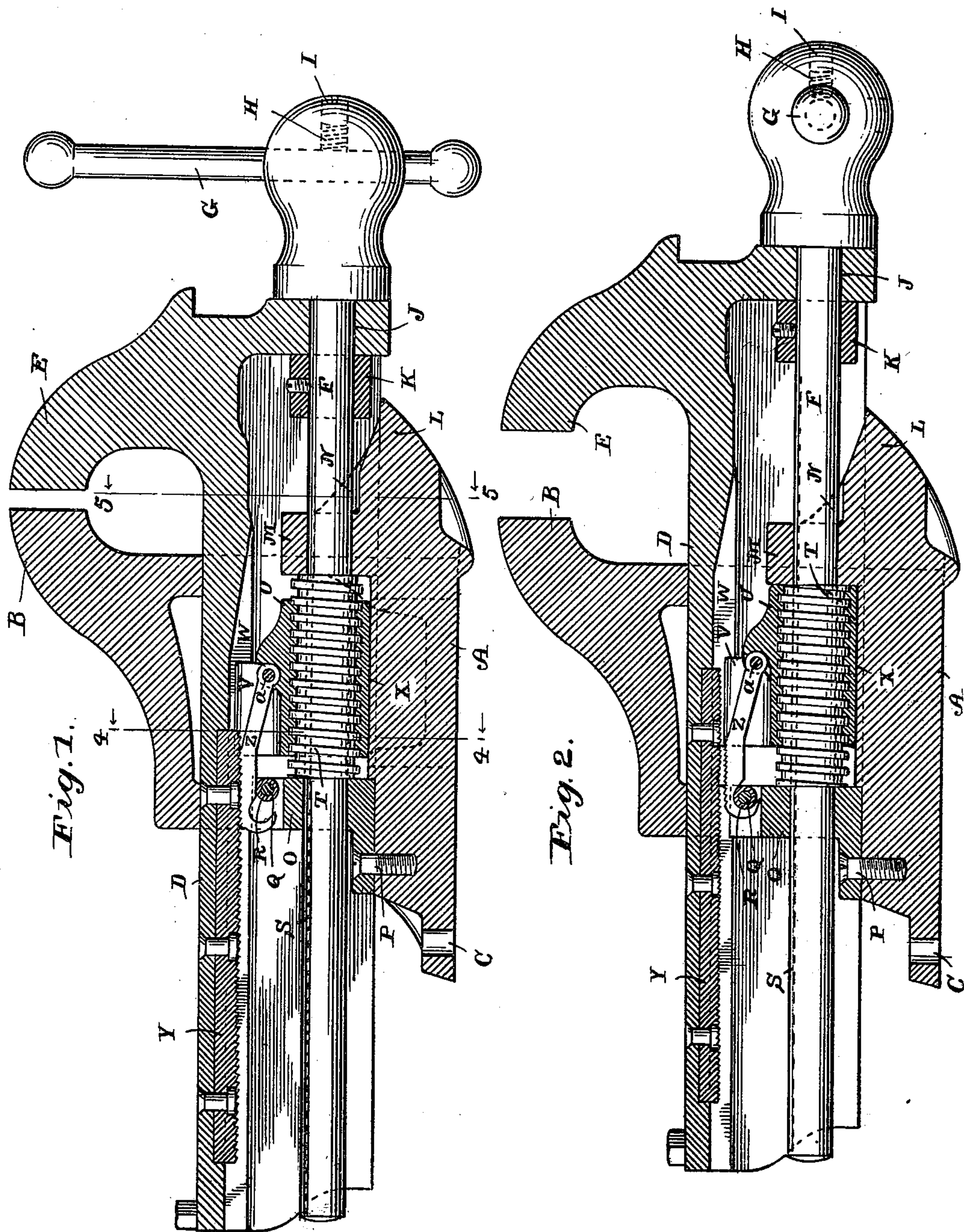
**Patented May 28, 1901.**

**M. G. LEWIS.**  
**BENCH VISE.**

(Application filed Jan. 5, 1901.)

(No Model.)

**2 Sheets—Sheet 1.**



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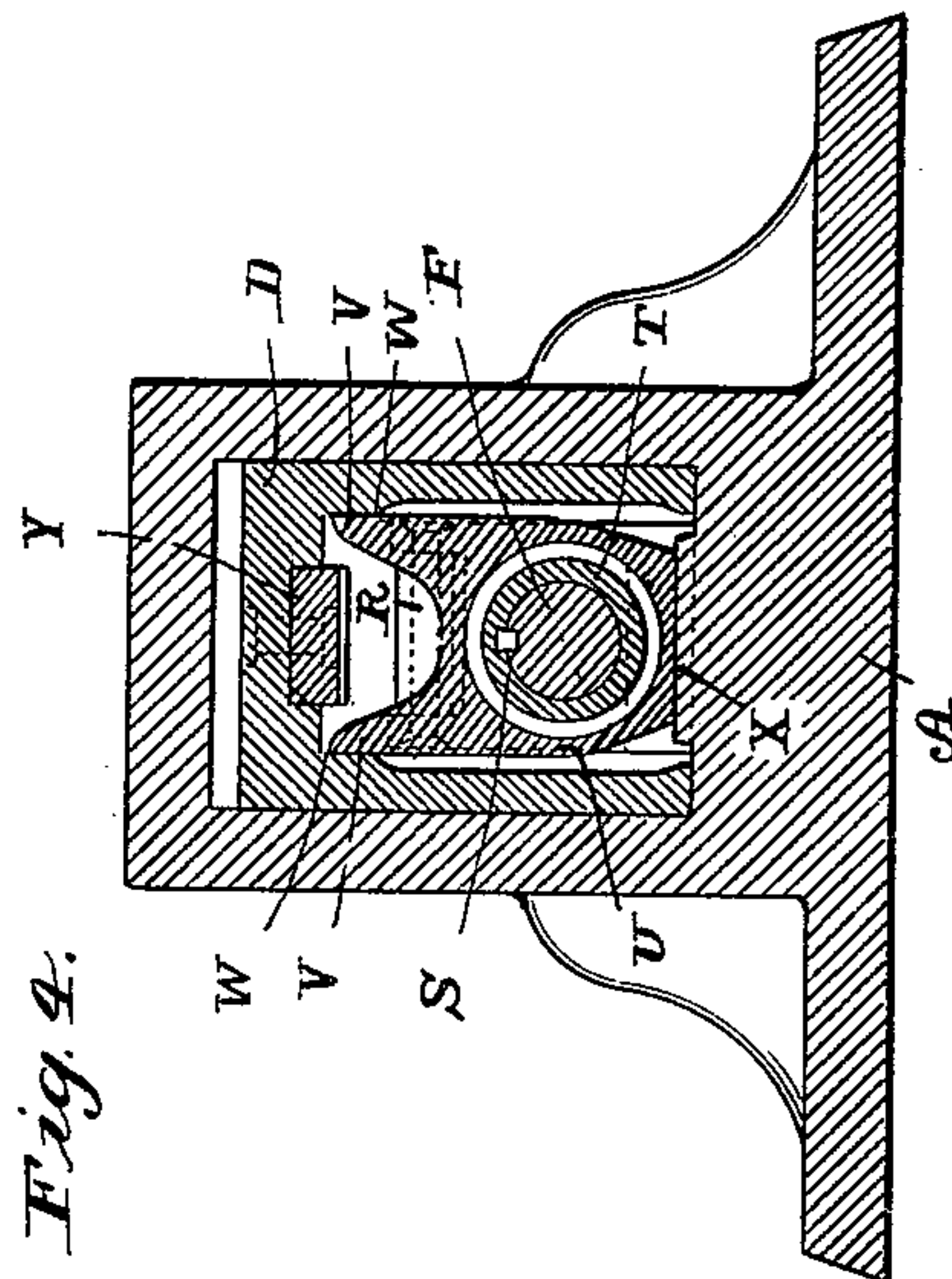
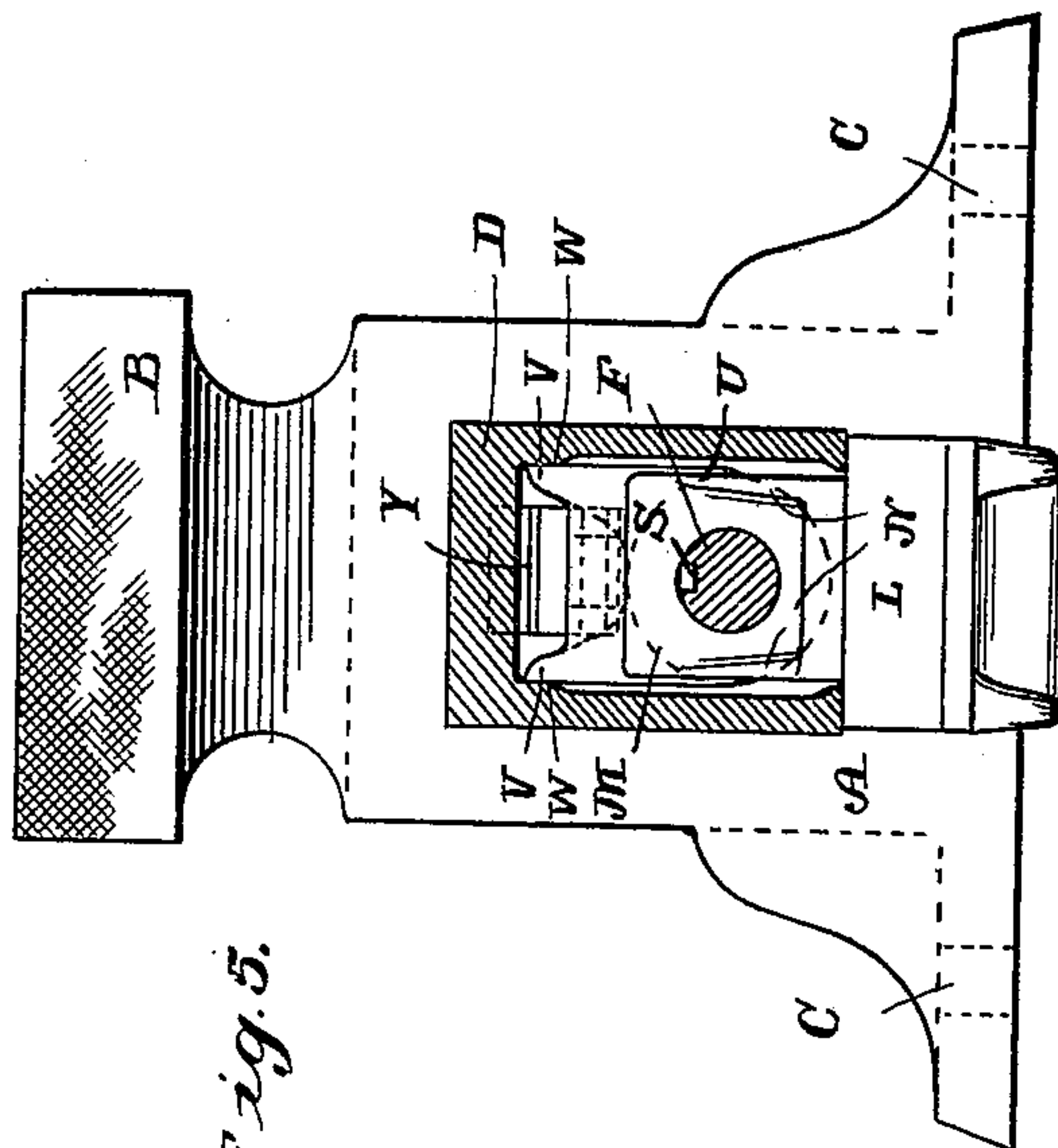
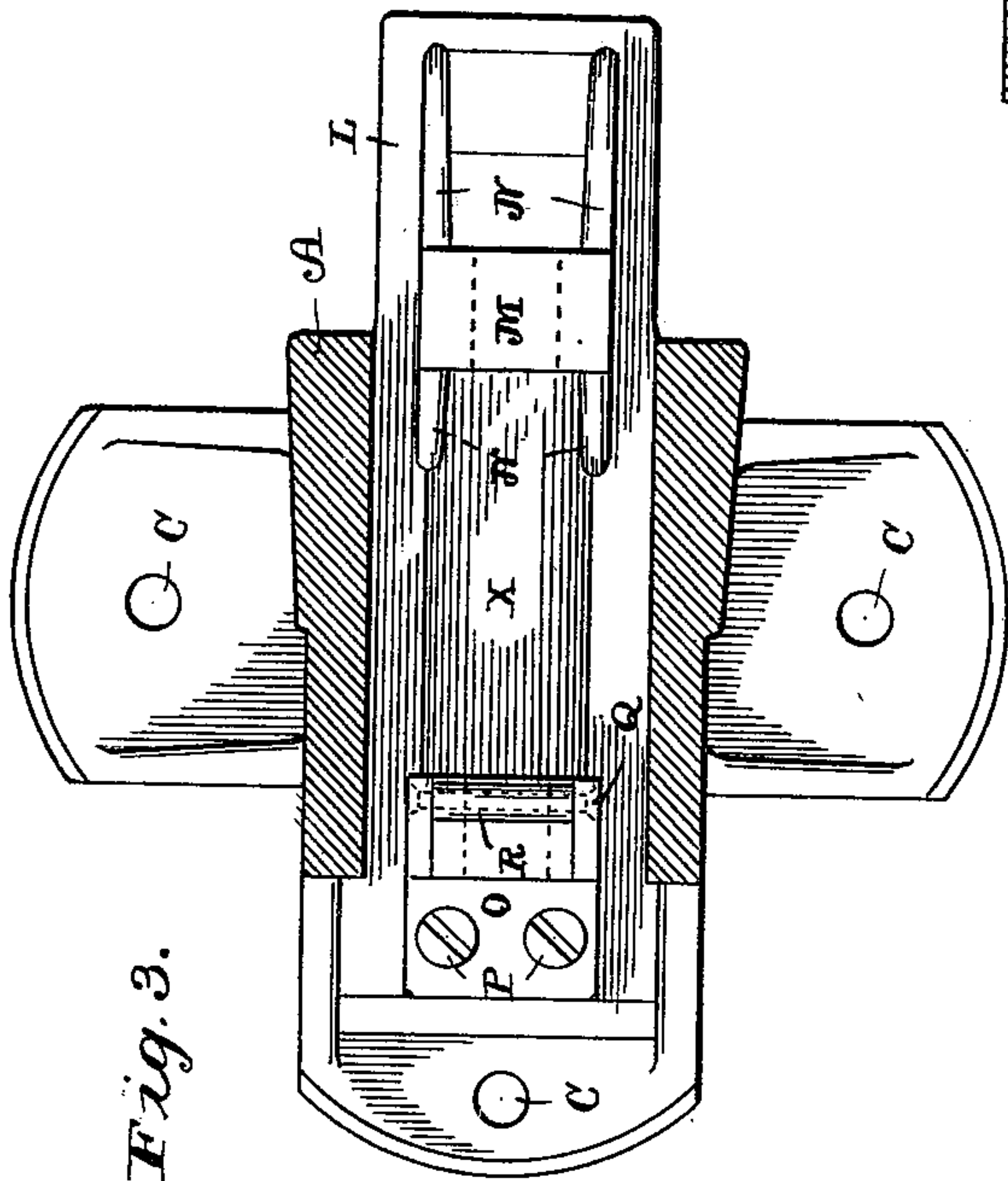
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# UNITED STATES PATENT OFFICE.

MORTIMER G. LEWIS, OF NEW YORK, N. Y.

## BENCH-VISE.

SPECIFICATION forming part of Letters Patent No. 675,098, dated May 28, 1901.

Application filed January 5, 1901. Serial No. 42,220. (No model.)

*To all whom it may concern:*

Be it known that I, MORTIMER G. LEWIS, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Bench-Vises, of which the following is a specification.

My invention relates to vises, and especially to bench-vises of the quick-acting class, as will later be more particularly described.

It is the object of my invention to improve upon vises of the above class by producing a form which has increased gathering qualities, is simple in construction, inexpensive to manufacture, and quick of operation, and finally whereby it may be operated quickly and easily with but few manipulations by an ordinary operator.

With the above and other minor objects in view my invention resides and consists in the novel construction and combination of parts shown upon the accompanying two sheets of drawings, forming a part of this specification, upon which similar letters of reference denote like or corresponding parts throughout the several figures, and in which—

Figure 1 shows a central vertical longitudinal section of my improved vise, the same being in a locked position. Fig. 2 is a similar longitudinal sectional view with the parts in an unlocked position, as will be apparent. Fig. 3 is a sectional plan view of the stationary member of the vise. Fig. 4 is a vertical cross-section on line 4 4 of Fig. 1. Fig. 5 is a similar cross-sectional elevation on line 5 5 of Fig. 1.

Referring in detail to the characters of reference marked upon the drawings, A indicates the base of the stationary member B of my vise, which member may be of substantially the usual exterior construction, embodying means for attachment to a work-bench, such as lateral webs containing screw-bolt holes C, as shown in the drawings. Within suitable ways of this base is fitted a sliding bar D of the movable jaw E, which latter is adjusted to and from the fixed jaw for the purpose of engaging and disengaging the article to be operated upon.

Within the bar D is arranged a shaft F, having a manipulating-handle G upon its outer end, the same being adjustably mounted

within a head on said shaft and adapted to be retained in any desired position by means of a small spiral spring H, which is seated in a hole, with one end frictionally engaging said handle and the other abutting against an adjustable screw I. One end of this shaft F is journaled in the end of the bar D, before mentioned, as at J, and is provided with a collar K, adjacent thereto, to hold it in place against endwise movement. Further bearings for this shaft are formed in the fixed member of the vise and consist of the following: A forwardly-projecting table L is formed upon the front lower face of this fixed member of the vise, forming an extended bearing surface or support for the movable bar, as will be clearly apparent from Figs. 1, 2, and 3. Upon the top side of this extension and substantially midway of its breadth is located a lug M, which in practice is cast integral with the base and afterward drilled to form a second bearing for the shaft F and otherwise finished off to suit further requirements. Thin webs N are provided between this lug and the base, so as to strengthen it, as will be obvious from Fig. 3 of the drawings. Upon the rear upper face of the base portion of this fixed member is formed a third bearing for the shaft in a detachable bracket O, which is secured to the base by means of screws P, (see Figs. 2 and 3,) said bearing necessarily being in line with that of the lug M before mentioned and that at J in the front of the movable jaw. This detachable bracket O is further provided with upward extensions on either side, between which is secured a pin Q, having thereon a friction-roll R for engagement with a pawl Z, which will later be referred to again. This pin may be secured in place by means of riveting, screw-threads, or otherwise, and the roll thereon is obviously free to turn when engaged by the pawl to reduce friction. Upon either side of these bearings M and O and upon the base is arranged a smooth horizontal surface, upon which the lower forward edges of the bar D are slidably mounted, thus affording ample space to support the bar in position, at the same time permitting the bearings to project up inside of the bar, so as to line with the outer bearing for the shaft.

In the assembling of the parts the operat-



ing-shaft is first inserted through the movable member, then through the fixed lug M, next through the threaded sleeve, and finally into the detachable bracket O, which in practice  
5 would be secured in place after the forward end of the shaft had been inserted in the bearing of said bracket.

The shaft F before mentioned contains a longitudinal keyway S, and upon this shaft  
10 and between the bearings M and O is arranged a threaded sleeve, which is keyed to the keyway of the shaft in a manner to permit the shaft to slide freely back and forth therein, and yet insure a rotary movement of one with  
15 the other. The external surface of this sleeve is provided with a left-hand thread, upon which is fitted an operating-nut U, adapted to be shifted lengthwise upon said sleeve between the two bearings aforesaid by a rotary  
20 movement of the shaft secured by the manipulation of the handle G. This nut is provided with three guides to retain it in a vertical position and to strengthen its operative position. Two of these guides comprise ver-  
25 tically-disposed members V V on either side to engage suitable ways W W within the upper side walls of the bar D, all of which serves to permit of a lateral movement of the bar irrespective of the nut and likewise permit  
30 the nut to shift within the bar and be guided thereagainst. The third guide or support consists in finishing off the underside of the nut, as clearly appears in Fig. 4, and providing a corresponding horizontal finished sur-  
35 face upon the base. The special purpose of this construction of guide is to brace the nut and its shaft against downward pressure caused by the locking of the vise, as will be later referred to and more clearly explained.  
40 Upon the under surface of the top of the bar I locate a rack Y, which may be formed integral therewith or secured therein by means of rivets, as shown. This rack contains a series of transverse serrations or teeth for en-  
45 gagement by a correspondingly-serrated-faced pawl Z, pivoted to the nut U, as at *a*. This pawl is provided with a smooth under surface to engage the roll R, (shown in Fig. 1,) so as to retain the pawl in an engaged position with  
50 the rack. The forward end of this pawl is provided with a pocket having inclined edges to engage the roll and insure the pawl's dropping out of engagement with the rack, thus disconnecting the bar from the base, permit-  
55 ting the latter to be adjusted directly forward and backward by means of the manipulating-handle.

The operation, therefore, of my vise is as follows: Beginning with the parts in the po-  
60 sition shown in Fig. 2—namely, in an unlocked position—the article to be grasped would be placed between the jaws and then the movable member shoved thereagainst by direct inward pressure until said movable jaw is  
65 brought up against the article, whereupon by a rotary movement of the handle and its shaft the nut upon the sleeve would be forced back-

ward, sending the pawl up the inclined side wall of the pocket in a manner to insure the engagement of the teeth of the pawl with  
70 those of the rack until the parts reach the position shown in Fig. 1, where they are firmly engaged. At this particular point it will be noted that there is a considerable forward  
75 and downward strain upon the nut, which might have a tendency to spring the shaft if it were not for the guide or bearing which I have provided for the base of the nut, as clearly appears at X in Fig. 4. If it is desired  
80 to unlock the vise, the movements just mentioned would be reversed—that is to say, the manipulating-handle would be drawn down from the position shown in Fig. 1, which move-  
85 ment would draw the nut forward, releasing the engagement of the pawl, as shown in Fig. 2, whereupon the movable jaw, its bar, and shaft would be drawn back and freed for lat-  
90 eral adjustment within the fixed member of the vise.

With the construction as herein shown my  
90 vise may be quickly operated by two natural movements of the operator and without any special knowledge or practice of manipula-  
95 tion. By the construction shown the locking mechanism is substantially stationary, being mounted in the base, while the rack or mem-  
100 ber for engagement is movable, being carried by the movable bar. A construction of this kind is possessed of some advantages which are not apparent in other constructions where  
105 the opposite condition of affairs exists.

Having thus described my invention, what I claim, and desire to secure by Letters Pat-  
ent, is—

1. In a vise of the character described, the  
105 combination with a fixed and movable jaw, of a rack secured to said movable member, an operating-shaft, a sleeve slidably keyed on said shaft, a nut threadably engaged to said  
110 sleeve, a pawl interposed between said nut and the rack in a manner to permit the engagement and disengagement thereof, sub-  
stantially as shown and described.

2. In a vise of the character described, the  
115 combination with a fixed jaw and a sliding bar with jaw mounted thereon, a rack secured to said movable bar, an operating-shaft, bear-  
120 ings for said shaft in both the fixed and movable members of the vise, an externally-threaded sleeve mounted on said shaft with means  
125 for insuring its turning therewith but permitting said shaft to freely slide therethrough, a nut engaging said sleeve, a pawl interposed between the nut and rack and means for in-  
suring its engagement and disengagement  
130 therewith, as and for the purpose set forth.

3. In a vise of the character described, the  
combination with a fixed and movable jaw, a  
bar secured to said movable jaw, a rack mount-  
135 ed in said bar, a shaft mounted in both said fixed and movable members, a sleeve slidably  
keyed to said shaft and retained between  
bearings of the fixed member, a nut thread-  
ably engaging said sleeve and provided with



ways to retain it in a vertical position, a pawl interposed between said nut and the rack and means for insuring its engagement and disengagement by a turn of the shaft, substantially as shown and described.

4. In a vise of the class described, the combination with a stationary member, a movable jaw mounted therein, a rack secured to one of said members, a rotating shaft secured in an opposite member, a nut upon said shaft, means interposed between the nut and shaft whereby the former is operated by the latter, a pawl interposed between said nut and the rack, means for insuring the engagement and disengagement of the pawl with said rack, a bearing on the opposite side of the nut from the pawl, for bracing said nut against the resistance of the pawl and preventing the springing of the shaft, substantially as described.

5. In a quick-acting vise of the character de-

scribed, the combination with a fixed and movable member, of a rack carried by said movable member, a lug containing a shaft-bearing secured to said fixed member, a detachable bracket forming a second bearing for said shaft, a sleeve interposed between said bearings and operatively keyed to the shaft, a nut mounted on said sleeve and adapted to be operated thereby, means for retaining said sleeve in a vertical position, a roll mounted in the detachable bracket before mentioned adapted to engage and disengage the pawl in a manner to lock and unlock it from the rack, substantially as shown and described.

Signed at Bridgeport, in the county of Fairfield and State of Connecticut, this 2d day of January, A. D. 1901.

MORTIMER G. LEWIS.

Witnesses:

C. M. NEWMAN,  
WILLIAM V. DEVITT.