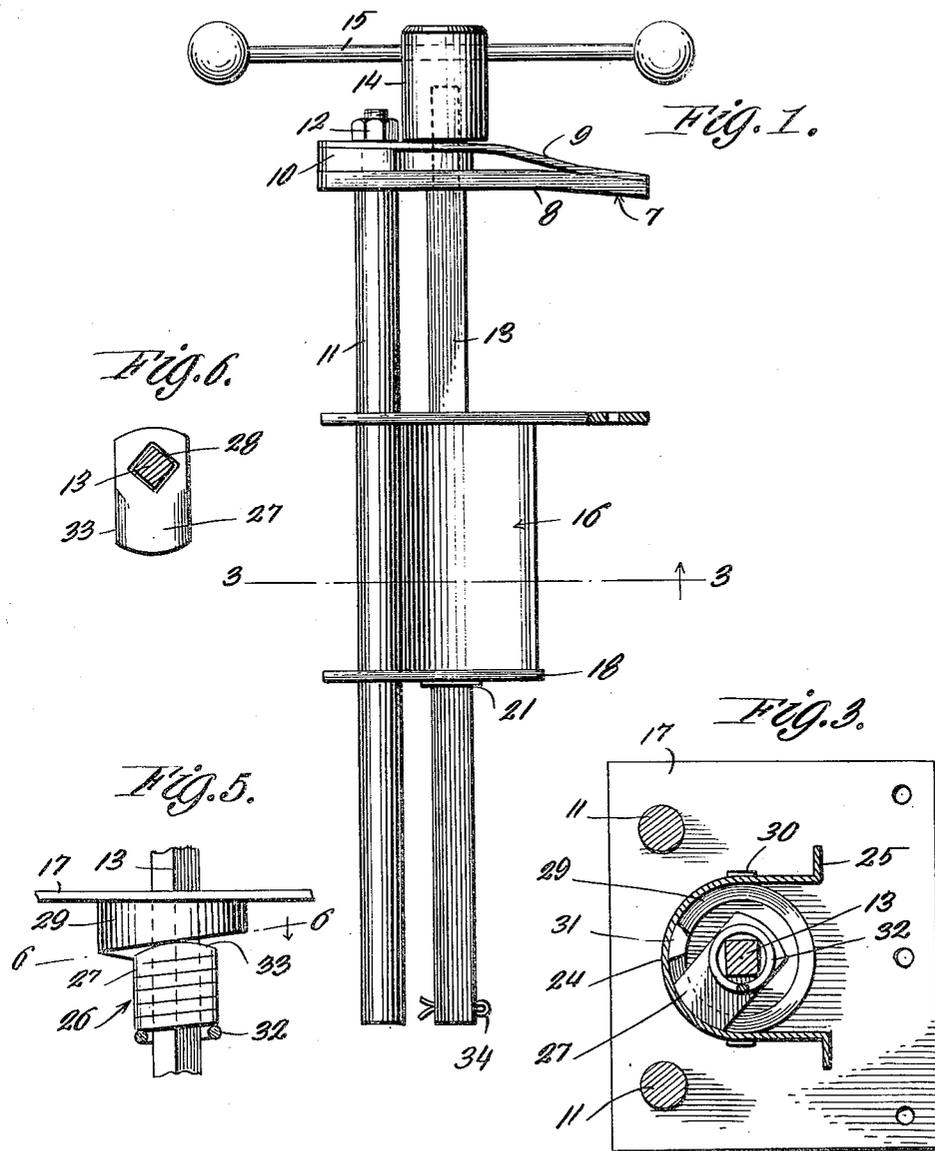


Dec. 26, 1922.

1,439,822.

F. JOHNSON.
VISE GRIP.
FILED MAY 7, 1920.

2 SHEETS—SHEET 1.



WITNESSES

Guy M. Spring
W. H. Smith

FRANK JOHNSON INVENTOR.

BY

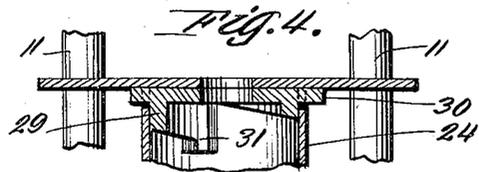
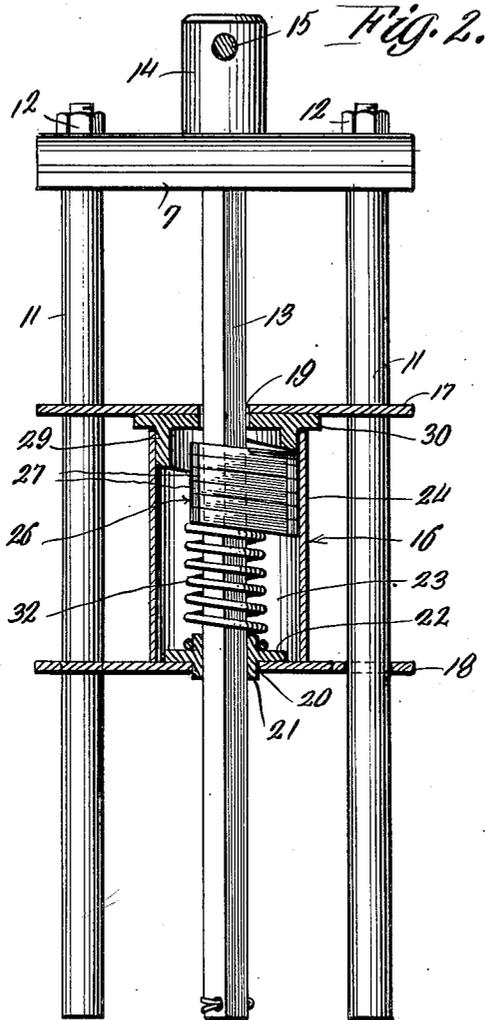
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UNITED STATES PATENT OFFICE.

FRANK JOHNSON, OF AURORA, ILLINOIS.

WISE GRIP.

Application filed May 7, 1920. Serial No. 379,566.

To all whom it may concern:

Be it known that I, FRANK JOHNSON, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Vise Grips, of which the following is a specification.

This invention relates to new and useful improvements in vises, the primary object of the invention being to provide a device which obviates the necessity of executing the tiresome turning of the usual screw employed in vises in order that the adjustment of the jaws may be quickly and easily accomplished.

Another object of the invention is to provide a jaw having a bar associated therewith, and means which are caused to bind upon the bar when the latter is turned, thereby locking the jaws in the desired adjusted position.

Another object of the invention is to provide a device of this nature which is strong, durable, inexpensive to manufacture and highly efficient in practice.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the accompanying drawings forming a part of the application and wherein like numerals are employed to designate like parts throughout the several views,

Figure 1 is a side elevation of the invention

Figure 2 is a top plan of the same, the stationary jaw being shown in longitudinal section

Figure 3 is a transverse sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a fragmentary sectional view through a portion of the stationary jaw illustrating the cam means

Figure 5 is an elevation of the cooperating cam and locking means, and

Figure 6 is a view illustrating one of the locking elements associated with its bar.

Referring to the drawings, wherein for the purpose of illustration is shown the preferred embodiment of the invention, the numeral 7 designates the movable jaw which consists of a back plate 8, and a face plate 9, riveted at its upper edge to the upper end of the back plate whereby a spacing block 10 may be positioned between these two plates at their lower ends. This construction provides an exceedingly light and du-

rable jaw. A pair of spaced parallel guide rods 11 extend transversely through the movable jaw and are secured thereto by means of nuts 12. A polygonal bar 13, in the present instance being square in cross section is disposed an equal distance between the two guide rods 11 and arranged in spaced parallel relation thereto. The forward end of the locking bar or element 13 is reduced as shown in Figure 1 whereby it is rotatably connected with the movable jaw 7 and adapted for the reception of an enlarged head 14 which carries the usual gripping handle 15.

The stationary jaw of the vise is designated in its entirety by the numeral 16 and consists of spaced, parallel face and back plates 17 and 18 respectively, both of which are equipped in the present instance with three openings for the passage of the guide rods 11 and the locking bar 13. The opening 19 in the face plate 17 which receives the locking bar 13 is an enlarged circular opening to permit rocking movement or rotation of the locking bar. The opening 20 in the back plate 18, through which the bar 13 is adapted to extend, is of a circular shape to receive a rotatable bushing 21, the flange 22 of which engages with the relative forward face of the back plate 18 and consequently prevents rearward movement of the bushing. This bushing snugly fits on the locking bar whereby the latter is rotatably and slidably associated with the stationary jaw.

A chamber 23 is formed between the two plates of the stationary jaw by a web member 24 having its transverse edges secured to the plates 17 and 18 in any desired manner. The free longitudinal edges of the web member 24 are designated by the numeral 25 most clearly shown in Figure 3, and are bent outwardly for the purpose of securing the stationary jaw to the under side of the bench top, while the face plate 17 of the stationary jaw may be secured in a counter sink in the front edge of the bench top in a manner well understood. From this, it will be apparent that the movable jaw 7 may be adjusted with relation to the stationary jaw, by simply pushing or pulling upon the gripping handle so that the locking bar slides through the stationary jaw.

In order to lock the two jaws in any desired position and the locking bar against movement I have provided means within

the stationary jaw to bind against the locking bar 13. This means consists of a locking element designated in its entirety by the numeral 26 and which consists of a plurality of plates or washers 27. Each plate 27 is equipped with a square opening 28 larger than a cross section of the locking bar 13, and is mounted upon the locking bar within the chamber 23 by means of this opening. Merely six plates 27 have been illustrated in the drawings but when a more severe binding action between the locking element and locking bar is desired, more plates similar to 27 may be added. When the plates 27 or locking element 26 is arranged at right angles to the locking bar, or approximately so, the edges of the openings in the plates 27 are free from the locking bar and consequently no binding action is set up. However, when the plates are disposed at other angles with relation to the locking bar, the edges of the openings 28 in the plates 27 engage with the locking bar and set up a binding action which prevents movement of the bar and consequently movement of the movable jaw 7.

In order that the angles of the locking element may be governed by the turning of the locking bar 13, a cam element 29 is positioned within the chamber 23 to surround the bar, and is maintained in position by lateral extension 30 of the cam member extending through slots in the web member 24, which holds the cam element in engagement with the face plate 17 of the stationary jaw. As seen most clearly in Figure 4, the juncture of the highest and lowest portion of the cam element is provided with an abutment or stop 31 to limit the turning movement of the locking bar. A coiled spring 32 is positioned upon the bar 13 within the chamber 23, and one end of the coiled spring abuts with the adjacent plate 27 of the locking element, while the opposite end of the spring abuts with the flange 22 of the bushing 21, whereby the locking element 27 is normally urged into engagement with the cam element 29. The plate 27 adjacent the cam member has its side edges 33 beveled off so as to reduce friction therebetween and the cam element.

When the locking bar is in a position to cause the locking element to engage with the lowest portion of the cam, the openings through the locking plates permit ready movement of the locking bar whereby the movable jaw 7 may be adjusted the desired distance from the stationary jaw. When the proper adjustment has been obtained, the locking bar is turned until the locking element, 26 engages the stop 31 at the highest part of the cam element, this of course causing the edges of the openings 28 in the locking plates 27 to bind against the locking bar and consequently prevent movement

of the movable jaw, or in other words, the movement of the locking bar through the stationary jaw.

A noteworthy feature of the invention is that fine adjustments may be made with this improved device by simply rocking the locking bar back and forth until the desired adjustment has been obtained. As the bar is rocked, the locking element is caused to travel toward the highest part of the cam and to bind against the locking bar and consequently move the latter so that the movable jaw approaches the stationary jaw. Then, as the shaft is rocked back to its original position, the locking element travels toward the lowest part of the cam and at the same time releases its binding engagement with the locking bar thereby permitting the latter to remain in its new adjusted position. By continuing this operation it will be apparent that any fine adjustment may be obtained. In order that the locking bar and guide rods will not slide entirely through the stationary jaw to become disengaged therewith, a cotter pin 34, or any other suitable abutment is provided upon the extreme inner end of the locking bar to abut with the back plate 18 of the stationary jaw when the movable jaw is disposed its maximum distance from the stationary jaw.

The foregoing description and the drawing has reference to the preferred or approved form of my invention. It is to be understood however, that such changes may be made in the construction and operation of parts, materials, dimensions, etc., as may prove expedient and fall within the scope of the appended claims.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In a vise, the combination, a movable jaw comprising a face plate and a back plate, a pair of parallel spaced guide rods passing through said jaw, a spacing block secured to said rods between said face and back plates, a polygonal locking bar disposed between said guide rods and rotatably associated with the movable jaw, a handle connected with said locking bar, a stationary jaw including parallel front and back plates, each having a plurality of openings for the passage of said rods and bar, a bushing held in one of said openings formed in the back plate to receive said locking bar, a locking element including a plurality of plates mounted on said locking bar for rotary movement therewith, a chamber formed between said stationary jaw plates, a cam disposed about said locking bar and secured within said chamber, said cam having a stop to limit the turning movement of said bar, and an expansion spring on said bar in said chamber engag-

ing the bushing and said locking plates, whereby said plates are held in engagement with said cam at all times, irrespective of the adjustment of said locking bar.

5 2. A quick adjusting vise comprising a rigid jaw including a face plate and a spaced back plate, a casing secured to and disposed between said plates, attaching members carried by the casing for engaging a bench, a
10 movable jaw, guide rods carried by the jaw and slidably associated with the rigid jaw, a locking bar rotatably associated with the movable jaw and slidably and rotatably associated with the rigid jaw and extending
15 axially through the casing, an annular cam disposed about said bar and secured to the face plate of the rigid jaw, a plurality of locking plates rockably mounted on the lock-

ing bar disposed within the casing and arranged for rotary movement with the locking bar, an expansion spring coiled about said locking bar and engaging the innermost plate of the plurality of locking plates and the back plate of the rigid jaw for normally maintaining the plates in engagement with
25 the cam, and a stop lug formed on the highest point of the cam for limiting the rotary movement of the locking plates with said locking bar.

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

FRANK JOHNSON.

Witnesses:

CHARLES V. KERR,
V. A. KERR.