

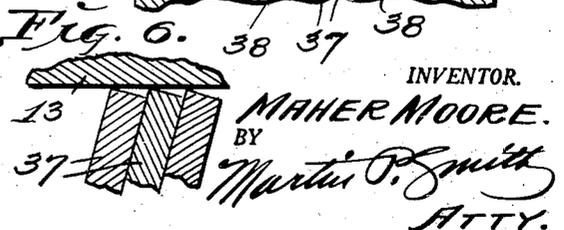
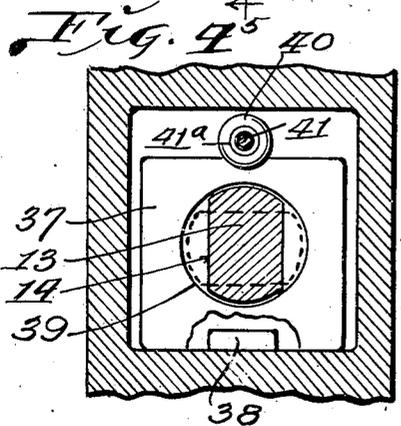
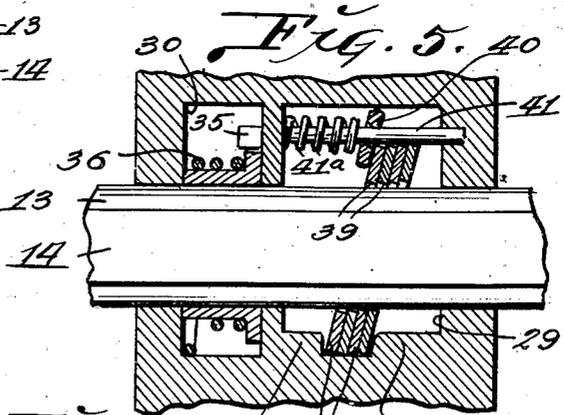
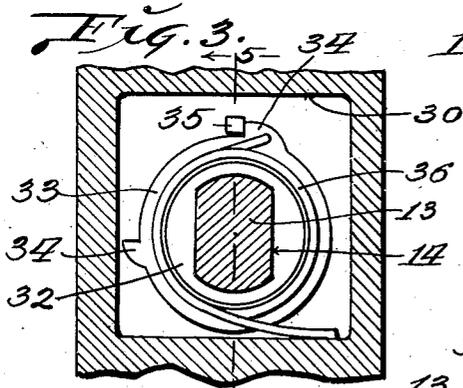
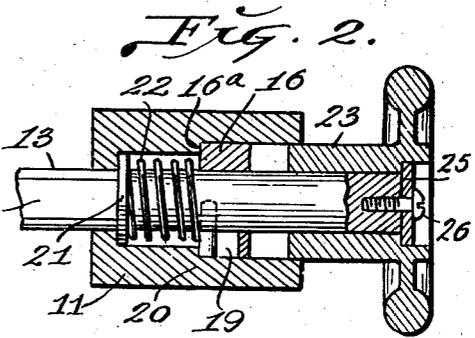
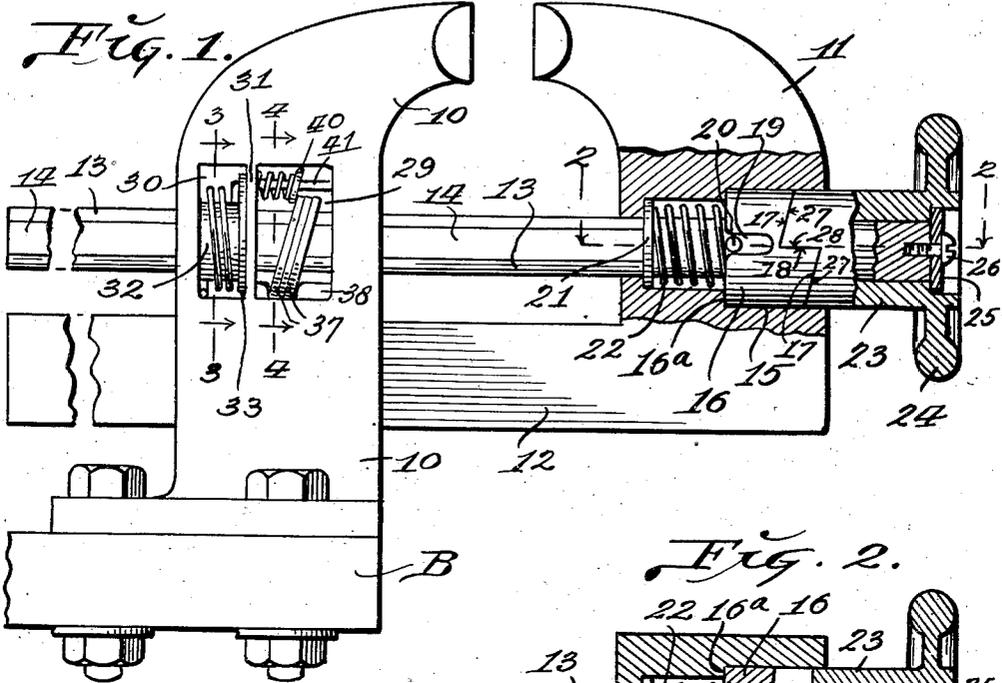
Feb. 4, 1947.

M. MOORE

2,415,303

CAM OPERATED VISE

Filed Sept. 2, 1944



INVENTOR.

MAHER MOORE.

BY

Martin P. Smith

ATTY.

# UNITED STATES PATENT OFFICE

2,415,303

## CAM OPERATED VISE

Maher Moore, Los Angeles, Calif.

Application September 2, 1944, Serial No. 552,495

4 Claims. (Cl. 81-26)

1

My invention relates to a new and improved vise for gripping and firmly holding work of various kinds, and the principal object of my invention is to provide a simple, compact and convenient vise of the quick acting type which does not involve the threaded rod or shaft common to the conventional forms of vises now in general use.

A further object of my invention is to provide a vise of the character referred to, having simple and efficient means for firmly clamping and securing work and which requires turning of the operating handle or knob only through an arc of approximately 90 degrees.

A further object of my invention is to generally improve upon and simplify the construction of the existing forms of quick acting bench vises now in general use.

With the foregoing and other objects in view, my invention consists in certain novel features of construction and arrangement of parts which will be hereinafter more fully described and claimed and illustrated in the accompanying drawing in which:

Fig. 1 is a side elevational view of the improved vise with parts broken away and in section.

Fig. 2 is a horizontal section taken on the line 2-2 of Fig. 1.

Fig. 3 is an enlarged cross section taken on the line 3-3 of Fig. 1.

Fig. 4 is an enlarged cross section taken on the line 4-4 of Fig. 1.

Fig. 5 is a section taken on the line 5-5 of Fig. 3.

Fig. 6 is an enlarged detail view showing the gripping plates in engagement with the sliding and rotating rod.

Referring by numerals to the accompanying drawing which illustrates a preferred embodiment of my invention, 10 designates the fixed jaw of the vise which may be fixed or swivelled to a bench B or like support and 11 designates the movable jaw, which is formed integral with or fixed to a horizontal bar 12 that is arranged for sliding movement through the lower portion of said fixed jaw.

A horizontal rod 13, disposed above and parallel with bar 12, is arranged for sliding and partial rotary movement in the two jaws and the greater portion of said rod has portions on opposite sides cut away so as to form flat faces 14.

Mounted for rotation on rod 13, in a bearing 15 in jaw 11, is a ring 16 having on its outer end a pair of inclined cam faces 17 separated by

2

shoulders such as 18 and formed in the inner end of said ring is short longitudinally disposed slot 19 which receives a pin 20 seated in rod 13.

Interposed between a flange 21 on rod 13 and the inner end of ring 16 is an expansive coil spring 22. The inner end of sleeve 16 bears against a shoulder 16<sup>a</sup> on the movable jaw.

Loosely mounted on the outer end portion of rod 13, is a short sleeve 23 provided on its outer end with a hand wheel 24 and said sleeve being retained on said rod by a disc 25 and screw 26.

The inner end of sleeve 23 is provided with inclined cam faces 27, which oppose cam faces 17, with shoulders 28 opposing shoulders 18.

That portion of jaw 10 through which rod 14 passes, is provided with two openings 29 and 30 separated by a wall 31; and mounted to rotate with and slide upon said rod, within opening 30, is a sleeve 32 provided on one end with a flange 33 and projecting from said flange 90 degrees apart, are shoulders 34. (See Fig. 3.)

A stop lug 35 is formed on wall 31 in vertical alignment with the axis of rod 13, between the shoulders 34, thus limiting the rotary motion of said sleeve in either direction.

A torsional spring 36 surrounding sleeve 32, with one end connected thereto and the other end bearing on the bottom of opening 30, biases rotary movement of said sleeve in one direction.

Loosely mounted on rod 13 within opening 29 is a series of hard metal plates 37, the lower edges of which rest on the bottom of said opening between lugs 38 and said plates normally occupy slightly inclined positions as illustrated in Fig. 5.

These discs are provided with openings 39 for the accommodation of rod 13 and the horizontal diameters of these openings are slightly greater than their vertical diameters and thus when rod 13 is rotated 90 degrees so as to position the flat faces 14 at top and bottom, the curved faces of said rod between said flat faces, will be out of contact with the horizontal ends of the openings 39 as shown by dotted lines, Fig. 4.

Plates 37 are normally retained in their inclined positions by a disc 40 loosely mounted on a pin 41, in the upper portion of opening 29 and forced against said plates by an expansive coil spring 41<sup>a</sup>.

Under normal conditions, rod 13 and jaw 11 carried thereby, are held against movement away from fixed jaw 10, by the "biting" engagement of the edges of plate 37 at the lower ends of openings 39, with the underside of said rod, (see Fig. 6).

To open the vise for the reception of work

and then close said vise and clamp the work, hand wheel 24 is rotated anti-clockwise 90 degrees, thereby correspondingly rotating rod 13 so as to position the rounded faces thereof in the ends of the substantially oval openings 37, thus enabling the movable jaw to be drawn away from the fixed jaw, to permit the work to be placed between the jaws.

When hand wheel 24 is released, torsional spring 36 will act to rotate rod 13 to its normal position, such rotary movement being controlled by shoulders 34 and stop lug 35.

Inward pressure on hand wheel 24 moves jaw 11 against the work and during such movement rod 13 moves outwardly past the biting edges of plates 37.

To apply final pressure to the movable jaw, and securely clamp the work, hand wheel 24 is rotated clockwise and as a result of the engagement of the cam faces 17 and 27, sleeve 16 will be moved inward and correspondingly move jaw 11, during which movement pin 20 traverses slot 19.

When the work is gripped as just described, jaw 11 will maintain its set position, for the inclination of faces 17 and 27 is insufficient to enable sleeve 23 and hand wheel 27, to automatically rotate backward after having been rotated clockwise, to exert the final gripping pressure on the work.

In practice, it is only necessary to move jaw 11 a fraction of an inch when gripping the work as just described, and for this reason the inclination of the faces 17 and 27 may be very slight, so that considerable force and pressure may be developed when the hand wheel is rotated. By turning hand wheel anti-clockwise, the cam action pressure between sleeve 23 and ring 16 is released and as rod 13 is rotated a quarter turn, jaw 11 may be drawn away from the work.

The means for locking the rod 13 against sliding movement, viz. the spring pressed inclined plates 37, may be used to advantage in various structures, for instance in quick acting wrenches and for locking any sliding members against movement in one direction.

Thus it will be seen that I have provided a quick acting vise which is simple in structure, inexpensive of manufacture, and very effective in performing its intended functions.

It will be understood that minor changes in the size, form and construction of the various parts of my improved vise may be made and substituted for those herein shown and described, without departing from the spirit of the invention, the scope of which is set forth in the appended claims.

I claim as my invention:

1. In a quick acting vise having fixed and movable jaws, a rod mounted for rotating and sliding movement in and through both jaws, means on the fixed jaw for holding the rod against sliding movement in one direction a member mounted to slide upon and rotate with said rod, shoulders on said member, a fixed stop between said shoulders, a torsional spring between said member and said fixed jaw, a hand wheel mounted on said rod for rotating same and cooperating means between said hand wheel, rod and sliding jaw for exerting clamping pressure on said sliding jaw.

2. A quick acting vise as set forth in claim 1 and means whereby said rod holding means is rendered ineffective when said rod is partially rotated from its normal position.

3. A quick acting vise, as set forth in claim 1 including means for yieldingly resisting sliding movement of said rod in one direction through said jaws.

4. In a quick acting vise having fixed and movable jaws, a rod mounted for rotary and sliding movement in and through said jaws, manually operable means for actuating said rod, a perforated plate mounted on said rod within said fixed jaw for engaging and holding said rod against movement in one direction, the shape of the opening in said plate and the cross sectional shape of said rod being such as to permit sliding movement of the rod through said plate and fixed jaw in both directions, when said rod has been partially rotated means on the fixed jaw for receiving and holding said plate against sliding movement on said rod, a spring pressed member bearing on the upper end of said plate for tilting same, a sleeve mounted to slide upon and rotate with said rod, shoulders on said sleeve, a fixed stop between said shoulders, a torsional spring between said sleeve and said fixed jaw.

MAHER MOORE.

#### REFERENCES CITED

The following references are of record in the file of this patent:

#### UNITED STATES PATENTS

Number	Name	Date
550,388	Griffiths	Nov. 26, 1895
831,919	Abernathy	Sept. 25, 1906
866,296	McIntyre	Sept. 17, 1907
1,283,192	Hughes	Oct. 29, 1918
1,439,822	Johnson	Dec. 26, 1922
2,089,625	Smith	Aug. 10, 1937
809,882	Wrigley	Jan. 9, 1906
2,316,073	Kellogg	Apr. 6, 1943
2,372,727	Manning	Apr. 3, 1945