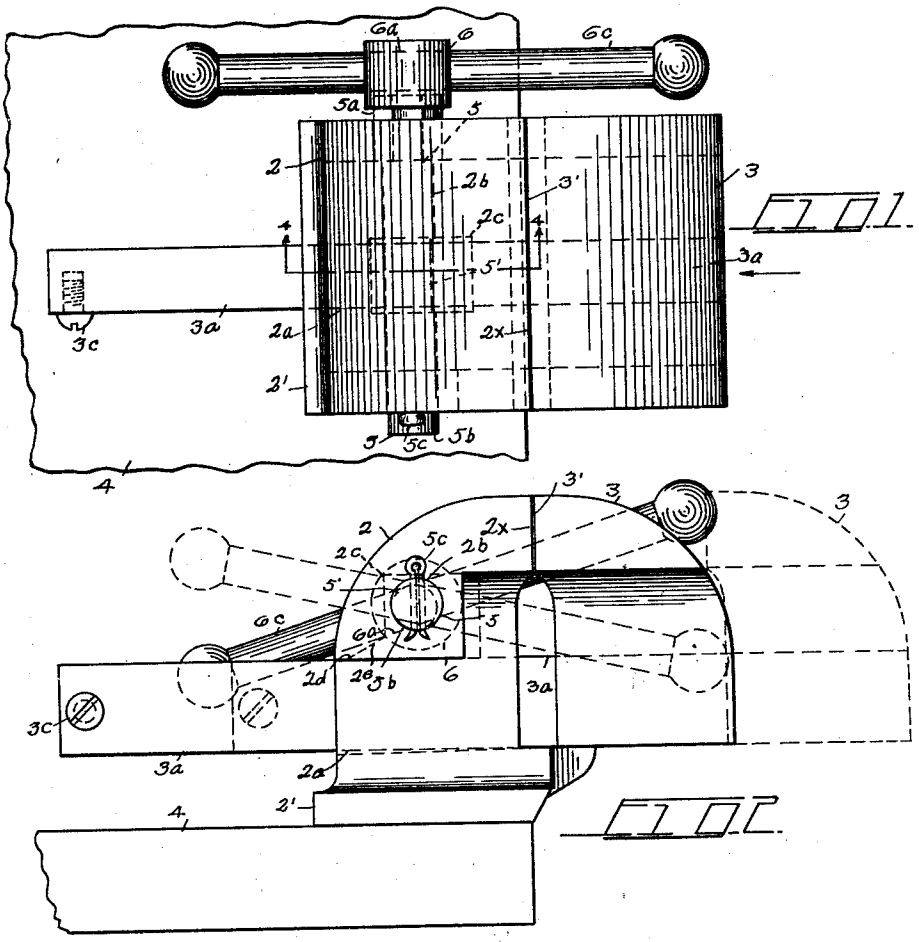
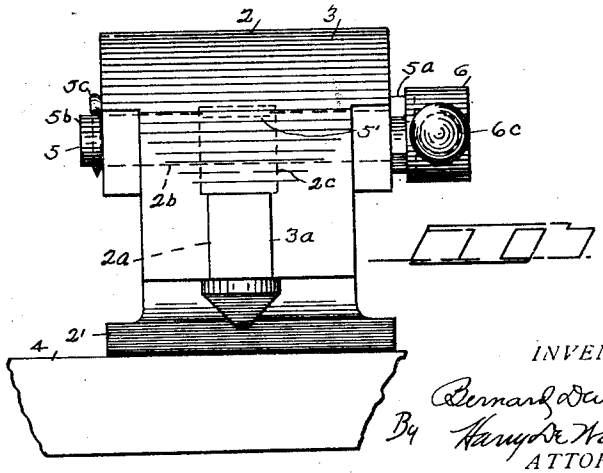
April 19, 1932. B. DWOFSKY 1,854,891

VISE

Filed May 19, 1931 2 Sheets-Sheet 1





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VISE

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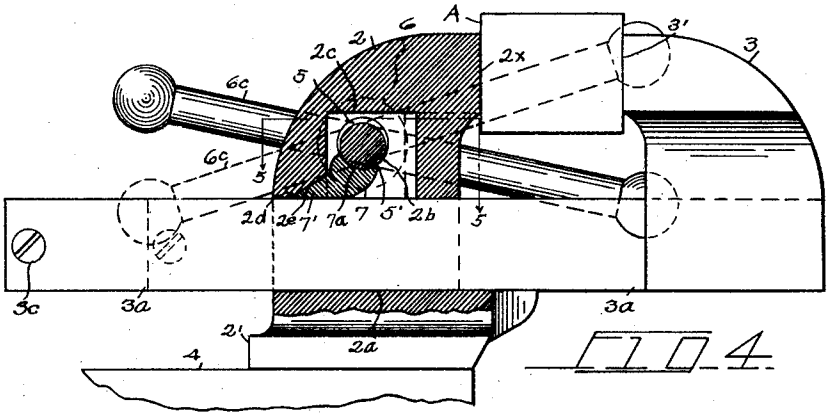


FIG 4

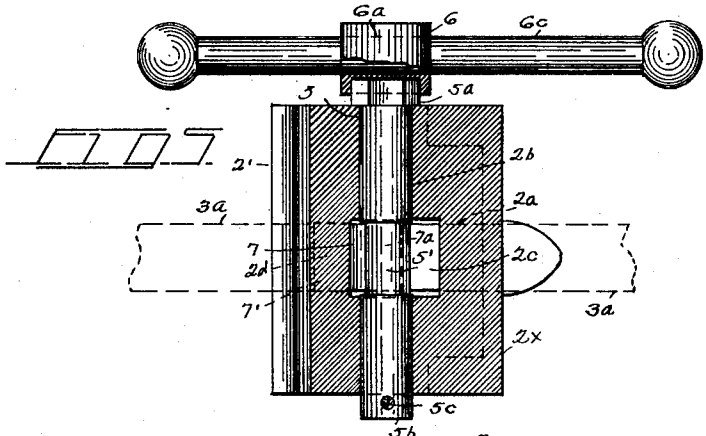


FIG 7

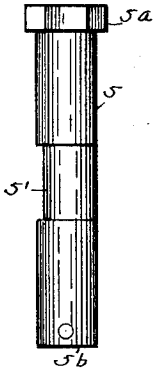


FIG 7

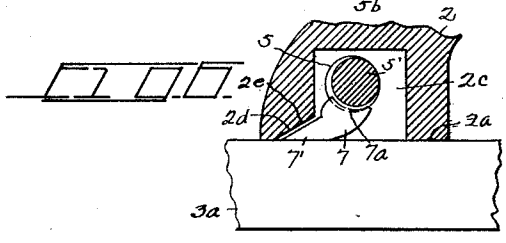
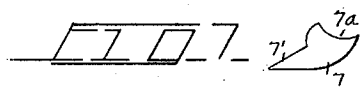


FIG 7



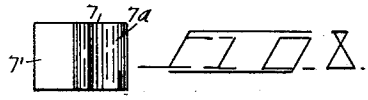


FIG 7

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Patented Apr. 19, 1932

1,854,891

UNITED STATES PATENT OFFICE

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VISE

Application filed May 19, 1931. Serial No. 538,496.

This invention relates to improvements in bench and other vises, and has for its object to provide novel, powerful and quick-acting means for locking the complementary parts of the vise. A further object is to provide a vise having the customary stationary and gripping jaws, the latter being movable relatively to the fixed jaw, with which it connects by a guide-bar which plays reciprocally in a slotted opening that extends through the fixed body below the plane of the jaws proper. The body of the fixed jaw is bored at right angles to the guide-bar opening to receive and afford a bearing for an operating shaft, the said shaft being formed with an eccentric portion which is positioned directly over said bar and controls the locking and releasing of the movable jaw. A further object is to provide a novel and simple locking member which is normally loosely disposed within a cavity that communicates with said opening, the said member resting upon the top face of said bar, and registering with the eccentric portion of the shaft which holds said member in place, and said member being movable towards the locking position by simply rocking the shaft in either direction. And a further object is to provide a vise whose jaws may be readily and quickly adjusted and locked without depending upon screws or other threaded means, and without changing the angles of the complementary gripping surfaces of the jaws.

I attain these objects by the means set forth in the detailed description which follows, and as illustrated by the accompanying drawings, in which—

Figure 1 is a top plan view of the vise when closed. Fig. 2 is an end elevation of the same. Fig. 3 is a front side elevation, taken in the direction of the arrow in Fig. 1. Fig. 4 is a partial end elevation and central vertical section, the latter being taken on line 4—4 of Fig. 1, showing the jaws gripping a piece of work; also showing the locking member held in the locking position by the eccentric. Fig. 5 is a horizontal section, taken on line 5—5 of Fig. 4. Fig. 6 is a fragmentary section, showing the locking member released. Fig. 7 is an end view of the locking member. Fig. 8 is a top plan view of the same. And Fig. 9 is a side elevation of the operating shaft.

According to the drawings, the present vise comprises two jaws, as 2 and 3. The jaw 2 is preferably stationary or fixed, and may be rigidly mounted upon a bench or table, as 4, and for this purpose the body 2 is formed with a flange base 2′. Above this base, the body 2 is formed with an angular horizontal opening, as 2*a*, and also with a cavity or chamber 2*c* that communicates with said opening. The body 2 is bored, as at 2*b*, to intersect said cavity at right angles to the ing 2*a*, to receive and provide bearings for a shaft 5, the latter having a medial eccentric portion 5′ that is disposed in the cavity 2*c*. One end of the shaft may be formed with a head, as 5*a*, which bears against the adjacent end of body 2, while its opposite end 5*b* projects slightly beyond the corresponding end of the body and is perforated to receive a cotter-pin 5*c*, by which the shaft is removably held in place, as shown in Figs. 1 to 6 inclusive. The shaft 5 may be rotated by any suitable handle, that may comprise a cylindrical body 6, which is formed with an axial socket to receive the head 5*a*, and said body is also perforated diametrically, as at 6*a*, to slidably receive an operating rod 6*c*, by which the shaft 5 may be rocked to effect the locking, as well as to facilitate various adjustments of the movable jaw 3. The jaw 3 has a gripping surface 3′ that registers with the corresponding surface 2*x* of body 2. Below the gripping face 3′, body 3 is fitted with a relatively long horizontal bar or guide guide, as 3*a*, one end of which is preferably cast in the lower portion of said body, the said bar preferably being made of steel and having the same angularity in cross-section as the opening 2*a*, in which said bar is adapted to slide when the body 3 is moved towards or from the body 2, as may be understood by comparing Fig. 1 with Figs. 2 and 4. The bar 3*a* is the only means to connect the bodies 2 and 3, and said bar may be provided with a stop, as 3*c*, to prevent the complete detachment of the parts. The bar 3*a* substantially closes the lower side of the cavity 2*c*, as shown in Figs. 1 and 6.

The locking of the movable or gripping jaw 3 in different positions relatively to the body 2 is preferably effected by a peculiarly shaped member or dog 7, which is loosely and rockably disposed in the cavity 2*c*, and rests by gravity upon the top face of the bar 3*a*, as best seen in Figs. 4 and 6. The member 7 is formed at one end with a wedge-shaped portion 7′, which is normally disposed in a similarly shaped recess or crotch 2*d*, that is defined by an inclined surface or wall 2*e* of the cavity 2*c* and the top face of the bar 3*a* (see Figs. 4 and 6). The body of dog 7 curves upwardly rocker-like from the bar 3*a* and its opposite end is formed with a concave socket 7*a*, which is concentric to and normally loosely engages the eccentric 5′, as when the parts are in the unlocked position, shown in Fig. 6. The movements of the locking member 7 in the cavity 2*c* are therefore limited to the extremely short throw of the crank 5′ and the slight looseness of the wedge 7′, so that said member is not liable to accidentally escape from either the crotch 2*d* or the eccentric 5′. When the eccentric 5′ and the dog 7 are in the inoperative positions of Fig. 6, the jaw 3 may be freely moved towards or away from body 2, without disturbing the dog 7, and when the said jaw is suitably adjusted for clamping a piece of work, as A, shown in Fig. 4, the jaw 3 may be instantly and securely locked in the clamping position, as by the swinging of the handle 6*c* from the full-line position of Fig. 2 to the full-line position of Fig. 4. This relatively slight movement of the hand rod 6*c* causes the eccentric or crank 5′ to swing downwardly and laterally and force the wedge 7′ into crotch 2*d* for making the guide bar 3*a* rigid to body 2, as shown in Fig. 4, and whatever the direction of motion of the member 7 during the locking operations may be, the said member being in constant frictional engagement with the bar 3*a*, tends always to draw said bar towards the body 2 to tighten the grip upon the work.

In practice, owing to the peculiar shape of the locking member 7, the arrangement of the crotch 2*d*, and the relation of the eccentric 5′ to said member, the locking of the guide 3*a* may be effected equally well by rocking the rod 6*c* in either clockwise or reverse-clockwise directions. The constant nesting of the eccentric 5′ in the concentric socket 7*a*, not only renders failure of the locking action impossible, but enables the shaft 5 to effect the quick and powerful locking of the guide 3*a* to the body 2, whether or not the vise is disposed as shown in the drawings, or tilted or disposed in any other position. The slight looseness of member 7, as shown by comparison of Figs. 4 and 6 renders the locking means so sensitive that it only requires a very slight rocking of the handle 6*c* to perform the locking work. The complete detachment of the member 7 from either the body 2 or shaft 5 obviates all danger of said member becoming cramped or dislocated and thereby rendering it inoperable. When the parts 2 and 3 are locked, as shown in Fig. 4, the vise will withstand extremely rough usage, such as heavy blows, prying or wrenching of the work A, without danger of loosening the member 7.

Having thus described my invention, what I claim, is—

1. A vise, comprising a fixed and a movable jaw, the fixed jaw having a transverse opening, the movable jaw having a guide-bar slidable in said opening, whereby the latter jaw may be moved relatively to the fixed jaw, said fixed jaw being bored at right angles to said bar to receive a rock shaft, said shaft being formed with an eccentric portion that registers with said bar, a locking member resting upon said bar and having a socket in which said eccentric nests, and means to rock said shaft.

2. A vise, including a stationary and a movable jaw, said movable jaw having a guide-arm that passes loosely through the stationary jaw, a shaft journaled in the stationary jaw at right angles to said arm, having an eccentric portion that registers with the arm, and a locking member resting upon said arm and loosely engaging said eccentric, adapted to lock said arm rigidly to the stationary jaw by the rocking of said shaft in opposite directions.

3. A vise, including a fixed jaw and a gripping jaw, said gripping jaw having a guide-arm that operatively passes through the body of the fixed jaw, a shaft journaled in the fixed jaw at right angles to said arm, having an eccentric portion that conincides with the top face of the arm, and a locking member resting upon said arm adapted to be engaged with said eccentric portion to lock said arm to the fixed jaw by the manual rocking of said shaft.

4. A vise, including a fixed jaw having an opening therethrough and a gripping jaw, the latter jaw having a guide-bar loosely disposed in said opening to enable the said jaw to be moved relatively to the fixed jaw, a shaft disposed in the body of the fixed jaw at right angles to said guide bar, having an eccentric portion above and spaced from the top face of said bar, and a floatable locking member riding upon said bar and loosely engaging said eccentric portion adapted to lock said bar to the fixed jaw by the rocking of said shaft.

5. A vise, including a fixed and a movable jaw, said fixed jaw being formed with a transverse opening, said movable jaw being formed with a guide-bar adapted to slide in said opening to enable the movable jaw to be adjusted relatively to the fixed jaw, a shaft journaled in the fixed jaw above and

at an angle to the guide-bar, said shaft being formed with a crank portion, and a floatable locking member mounted upon the top face of said bar adapted to be moved longitudinally on said bar by the rocking of said shaft to lock said jaws in different positions relatively to each other.

6. A vise, including a fixed jaw having a transverse opening, and a movable jaw having a guide-bar slidable in said opening, said opening having a wall that inclines upwardly from said bar to provide a crotch, a shaft journaled in said fixed jaw above and at right angles to said bar, said shaft having an eccentric portion that registers with said bar and said crotch, a locking member resting frictionally upon said bar having a socket loosely engaged by said eccentric and having a wedge-shaped portion loosely disposed in said crotch, and means to rock said shaft for forcing said wedge-shaped portion tightly into said crotch to effectually lock said jaws in work-gripping positions.

7. A vise, comprising a fixed and a movable jaw, the fixed jaw having a transverse opening, a portion of said opening being defined by an inclined surface, the movable jaw having a guide-bar slidable in said opening whereby the latter jaw may be moved relatively to the fixed jaw, the top face of said guide-bar and said inclined surface forming a crotch, said fixed jaw being bored at right angles to said bar to receive a rock shaft, said shaft being formed with an eccentric portion that registers with said bar and said crotch, a locking member mounted upon said bar and having a socket at one end in which said eccentric nests, and means to rock said shaft to enable said eccentric portion to move the opposite end of said member into said crotch to effect the locking of said jaws.

In testimony whereof I affix my signature.

BERNARD DWOFSKY.