

J. M. LEWIS.

WISE.

APPLICATION FILED OCT. 29, 1910.

993,181.

Patented May 23, 1911.

2 SHEETS-SHEET 1.

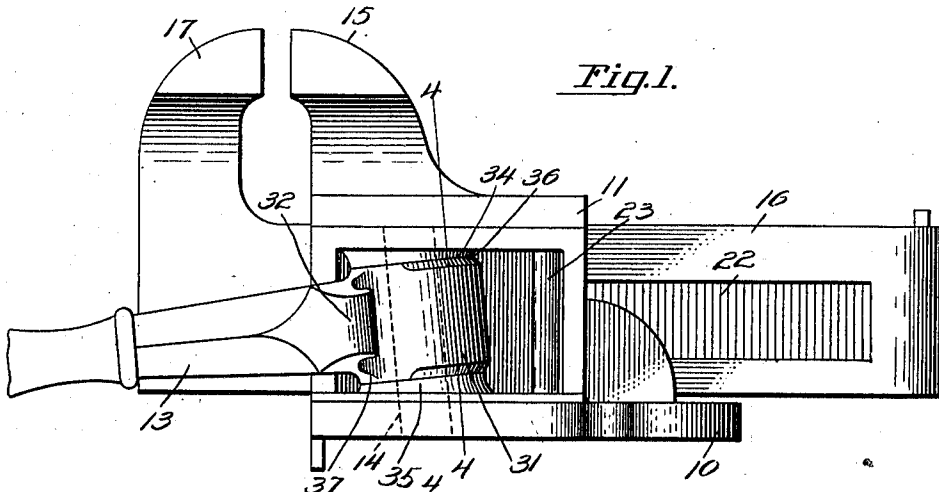


Fig. 1.

Fig. 2.

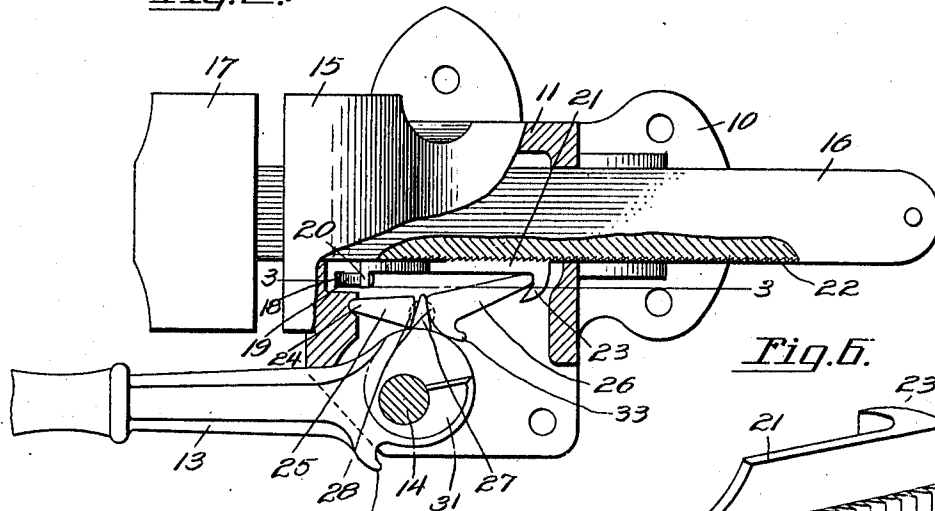
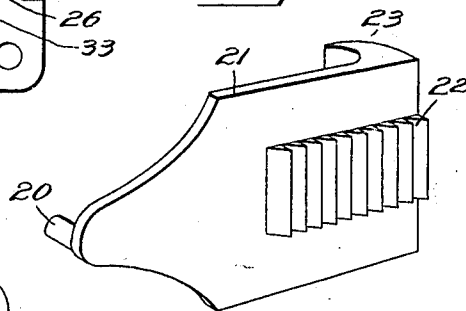
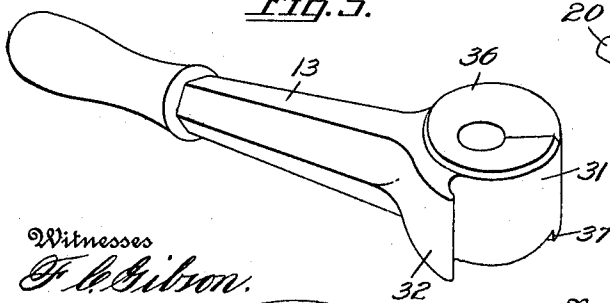


Fig. 5.

Fig. 6.



Witnesses

G. L. Gibson.

W. O. Anderson,

Inventor
Joseph M. Lewis.

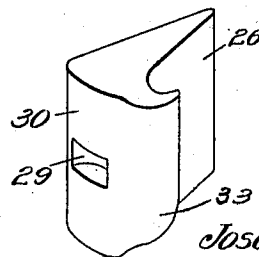
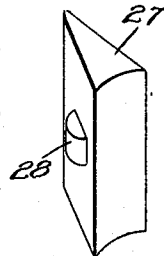
By *Victor J. Evans*

Attorney

VISE.

993,181.

2 SHEETS--SHEET 2.



33 Inventor
Joseph M. Lewis.

Witnesses

F. C. Gibson.

H. O. Tucker,

By Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

JOSEPH M. LEWIS, OF TRENTON, NEW JERSEY.

VISE.

993,181.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed October 29, 1910. Serial No. 589,753.

To all whom it may concern:

Be it known that I, JOSEPH M. LEWIS, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented new and useful Improvements in Vises, of which the following is a specification.

The invention relates to a vise and more particularly to an improvement in vises forming the subject matter of the Letters Patent issued to me March 27th, 1894, Number 517,347.

The primary object of the invention is the provision of a vise in which the adjustable jaw therefor will be held fast against any slight movement should excessive pressure be applied thereto during the working of the vise.

Another object of the invention is the provision of a vise in which the eccentric lever for controlling the adjustable jaw of such vise may be locked so as to prevent it from accidentally swinging in a direction to unlock the said adjustable jaw when in position for gripping a piece of work in the vise.

A further object of the invention is the provision of a vise of this character in which the working parts thereof are generally improved with a view of simplifying the construction and increasing its efficiency in operation, and also reducing the cost of manufacture thereof.

With these and other objects in view, the invention consists in the construction, combination and arrangement of parts, as will be hereinafter more fully described, illustrated in the accompanying drawings, and pointed out in the claims hereunto appended.

In the drawings:—Figure 1 is a side elevation of a vise constructed in accordance with the invention, the lever being shown in position to hold the jaws locked. Fig. 2 is a horizontal sectional view on the line 2—2 of Fig. 1. Fig. 3 is a vertical sectional view on the line 3—3 of Fig. 2. Fig. 4 is a sectional view on the line 4—4 of Fig. 1. Fig. 5 is a perspective view of the eccentric lever. Fig. 6 is a perspective view of the slidable toothed plate. Fig. 7 is a perspective view of one of the cam members. Fig. 8 is a perspective view of another cam member. Fig. 9 is a perspective view of a further cam member.

Similar reference characters indicate cor-

responding parts throughout the several views of the drawings.

Referring to the drawings by numerals, 10 designates the vise bed provided with an integral slide box 11 and spaced laterally extending ears 12 projecting from one side of the said box, and between these ears is pivoted the operating or eccentric lever 13, the latter being eccentrically mounted upon a turning pivot 14 journaled in the ears 12. This vise bed 10 has also the usual stationary jaw 15 formed thereon and projections or brackets which support the slide-bar, as will be hereinafter more fully described.

The slide box is provided with suitable alining openings through which is passed a slide bar 16, upon which is formed at one end a gripping jaw 17, which latter is adapted to coöperate with the stationary jaw 15 when gripping work in the vise. The bottom of the slide box 11 is provided with any suitable number of suitable openings which afford ready means for removing any filings or dirt which may collect in the slide box.

Contiguous to the front wall of the slide box 11 formed in the top and bottom walls thereof are alining notches 18 in which are engaged the ends of the leaf spring 19, the latter contacting medially of its length with an out-turned lug 20 formed on a slidable toothed plate 21, arranged within the slide-box 11 adjacent to one side wall of the sliding bar 16, the teeth of said plate 21 being adapted for meshing engagement with rack teeth 22 formed on the side wall of the sliding bar 16 adjacent to the said plate. This plate is normally acted upon by the spring 19 so that the same is sustained retracted from the sliding bar 16, whereby the teeth on the said plate will be disengaged from the rack teeth on the slide-bar thus permitting the latter to move freely in the slide-box for adjustment of the slide-bar. The toothed plate 21 is formed with a curved nose or hook projection 23, and the front wall of the slide-box 11 is provided with a recess 24 in which latter is engaged and also with the nose 23 are toggle blocks 25 and 26, the block 25 being of considerably less length than the block 26 and interposed between the said blocks is a wedge member 27 provided on opposed faces with rounded wings 28 extending laterally therethrough, the wings being loosely engaged in correspondingly shaped pockets 29 formed in the inner

rounded ends 30 of the said toggle blocks, the wings 28 engaging in the said pockets 29 of the toggle blocks serving to retain the wedge member between the said blocks.

5 When the wedge member 27 is moved in one direction it causes the said toggle block 26 to move in unison for bringing the toothed plate 21 in locked engagement with the slide-bar 16 of the movable jaw, thus locking the latter in adjusted position. This wedge member is acted upon by the cam 31 of the eccentric lever 13 when the latter is turned in one direction on its pivot 14.

The eccentric lever 13 is provided with a hook bill 32, the latter being adapted to engage with a projection 33 on the toggle block 26 when the said lever is thrown in the opposite direction for releasing the slide-bar.

The ears 12 are formed at their inner faces with inclined bearing surfaces 34 and 35, respectively, which latter are disposed at similar angles with respect to the vise bed 10 while the eccentric lever 13 is provided with cam surfaces 36 and 37, respectively, which contact with the said bearing surfaces 34 and 35 so that when the said lever 13 is moved into a position for locking the movable jaw, these bearing and cam surfaces will cooperate with each other, whereby a binding action will be had upon the lever, thus retaining it in locked position and against accidentally swinging in the opposite direction.

In operation, when the handle or lever 13 is thrown in one direction the reduced portion of the cam end of the lever will permit the toothed plate 21 to be moved by the spring 19 to rock the toggle block and disengage the said toothed plate 21 from the slide bar within the slide box, and by causing the engagement of the projection 32 of the lever 13 with the projection 33 on the toggle block, the toothed plate will be further moved to hold the same away from the slide bar. When the parts are thus positioned, the slide bar can have a perfectly free movement within the slide box and can be readily adjusted to approximate the distance between the jaws to suit the work to be clamped. When the lever is moved on its pivot so as to disengage the projection 32 from the projection on the toggle block 26, the toothed plate will immediately engage with the rack teeth on the slide bar so that the slide bar can be moved to bring the movable jaw toward the stationary jaw, the teeth sliding over each other and being kept in engagement by the spring 19. The work is placed between the jaws and held between them by moving the movable jaw, and by moving the lever the cam face thereof bearing upon the wedge 27 will tend to move the

toggle blocks 25 and 26 on a line which will cause the toothed plate 21 to engage the slide bar and move the same to firmly clamp the work. The handle when turned to secure the work in the vise will assume its lowest position and will be retained by gravity. However, to further assure the locking of the work, the handle when in its lowest position will bind between the bearing surfaces 34 and 35 by reason of the presence of the cam surfaces 36 and 37 on the said lever, and thus sustain it against accidental release.

When it is desired to release the work from between the jaws, the handle is turned upon its pivot releasing pressure upon the end of the wedge 27 and the spring drawing upon the toothed plate 21 will move the slide bar with the said toothed plate until the teeth on the latter disengage from the teeth on the slide bar, thus freeing the latter for the release of the work. The wedge and toggle combined with the cam-end of the lever form a very powerful leverage so that a great amount of pressure can be exerted upon the work in drawing the jaws to each other and the parts are so constructed that the spring not only acts upon the toothed plate 21 but also through the same upon the toggles and wedge so that the wedge is held in contact with the cam surfaces of the lever.

Having thus described the invention what I claim as new is:—

1. In a vise, a vise bed, a stationary and movable jaw carried by the bed, spaced ears on the bed, inclined bearing surfaces formed on said ears, and a locking lever for the movable jaw eccentrically pivoted between the said surfaces and cam surfaces formed on the said lever for cooperation with the bearing surfaces to bind the lever when shifted to locked position.

2. In a vise, a slide-box, a slide-bar mounted for movement therein, a spring controlled toothed plate adapted for engagement with the said bar, a lever pivoted to said slide-box, toggle blocks mounted within the box and having engagement with the said plate, a wedge member interposed between the toggle blocks and acted upon by the said lever, and cooperative cam surfaces on the lever and slide-box respectively for binding the said lever when shifted to locked position.

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

JOSEPH M. LEWIS.

Witnesses:

GEORGE W. CASE,
ANDREW T. CASE.