

D. KOVACS.

WISE.

APPLICATION FILED MAR. 23, 1909.

Patented Feb. 1, 1910.

2 SHEETS—SHEET 1.

947,919.

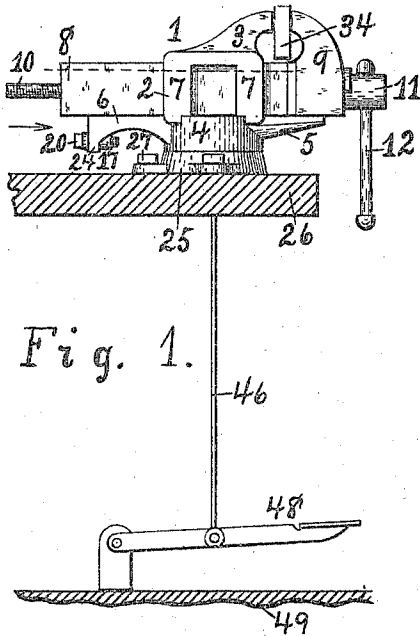


Fig. 1.

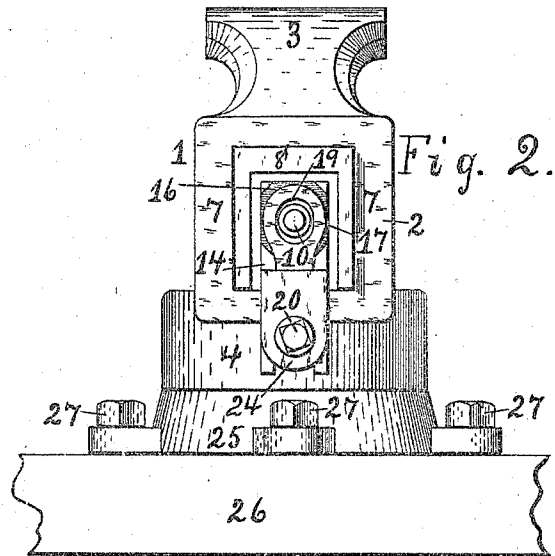


Fig. 2.

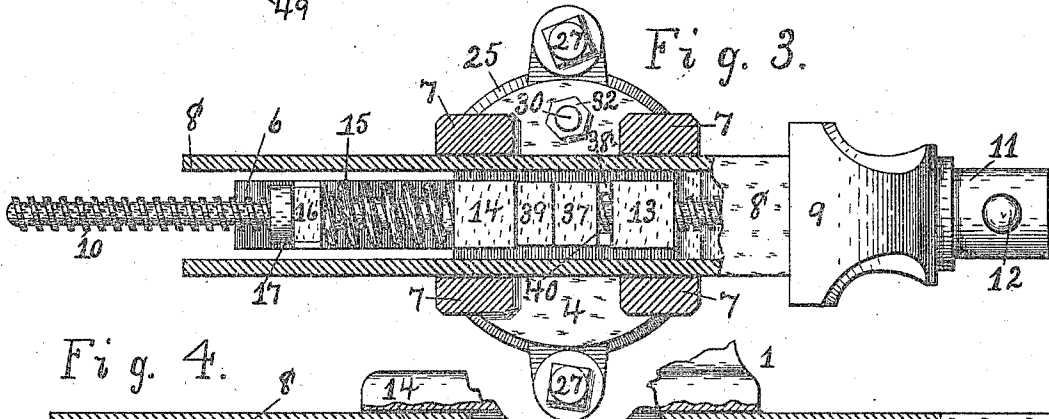


Fig. 3.

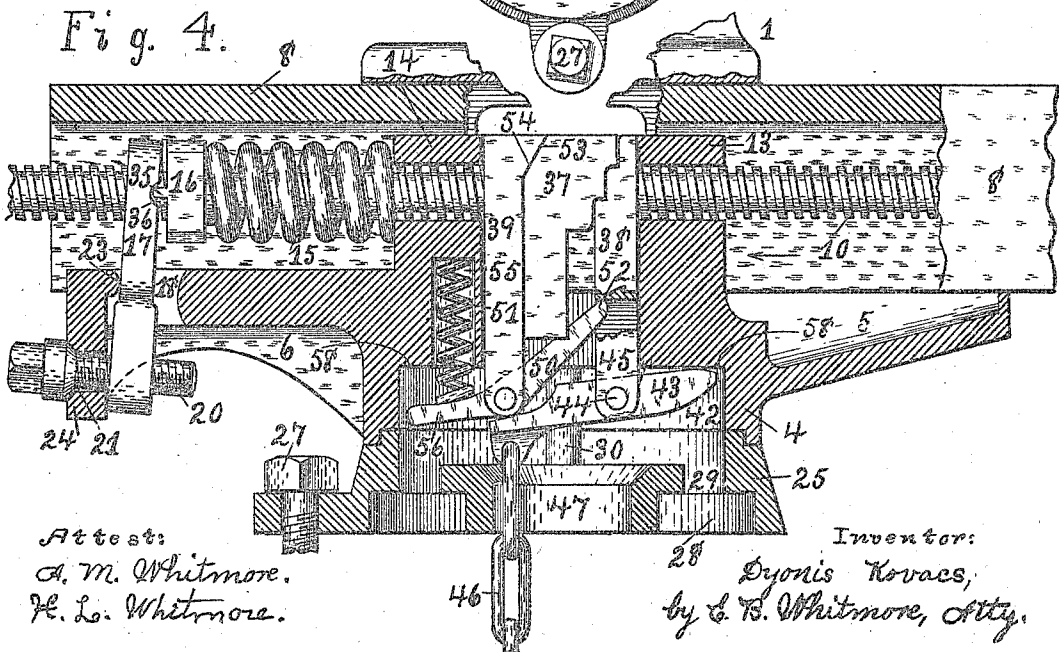


Fig. 4.

Attest:
A. M. Whitmore.
H. L. Whitmore.

Inventor:
Dionis Kovacs,
by E. B. Whitmore, atty.

D. KOVACS.

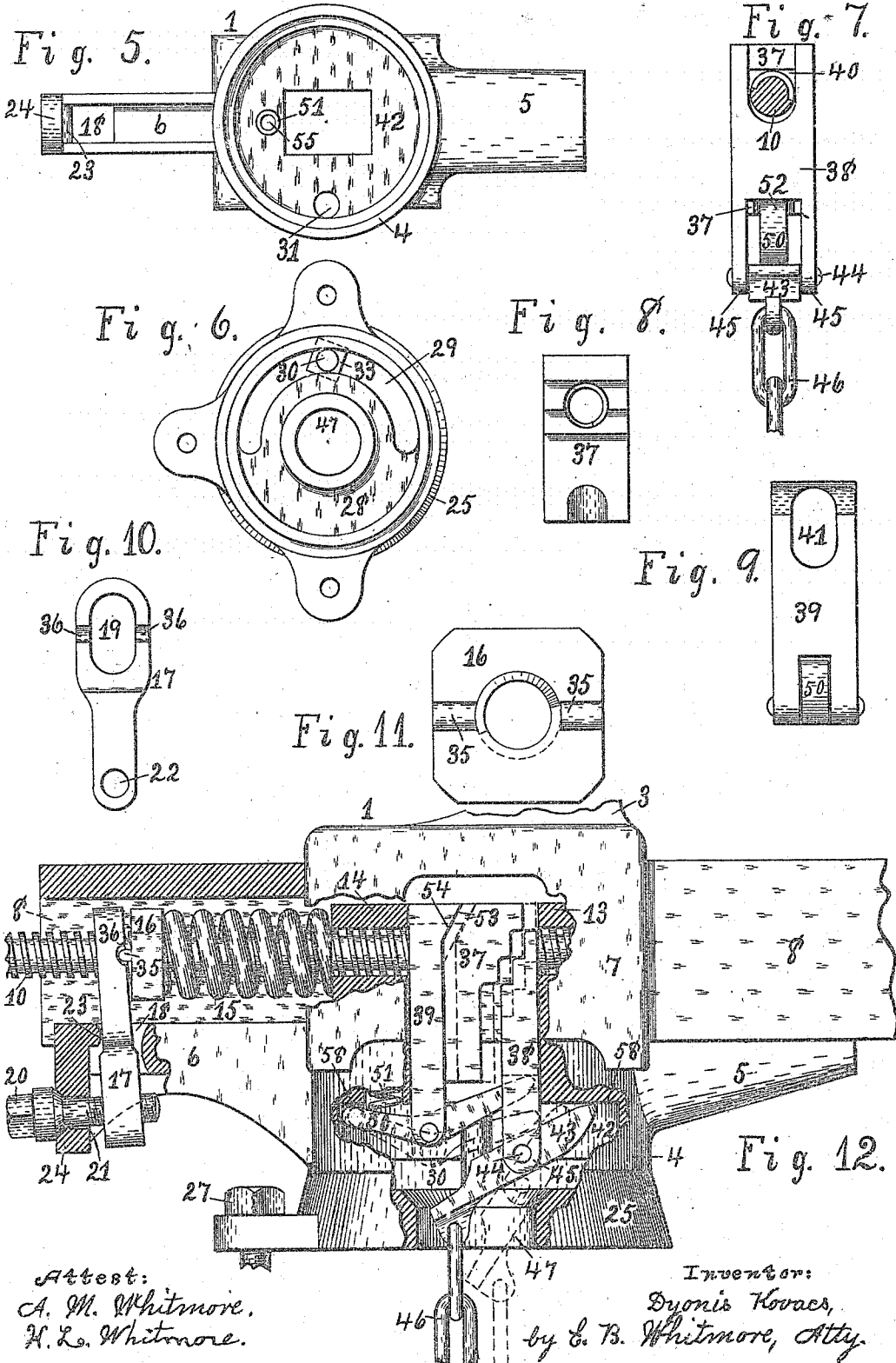
WISE.

APPLICATION FILED MAR. 23, 1909.

Patented Feb. 1, 1910.

2 SHEETS—SHEET 2.

947,919.



Attest:
A. M. Whitmore.
H. L. Whitmore.

Inventor:

Dyonis Kovacs,
by E. B. Whitmore, Atty.

UNITED STATES PATENT OFFICE.

DYONIS KOVACS, OF ROCHESTER, NEW YORK.

WISE.

947,919.

Specification of Letters Patent.

Patented Feb. 1, 1910.

Application filed March 23, 1909. Serial No. 485,258.

To all whom it may concern:

Be it known that I, DYONIS KOVACS, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Vises, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My present invention relates to bench vises, and more particularly to the class used by machinists and similar tradesmen, this invention being designed as an improvement of the vise shown and set forth in Letters Patent No. 849,904, issued to me April 9th, 1907.

This improved vise is mounted upon a horizontal circular base-plate rigidly fixed to the bench, and so held as to have horizontal swivel motion on the plate through an arc of 180 degrees, a clamping bolt being provided for the parts to hold the vise in any position in its swivel movements. This improved vise is also further constructed to be conveniently used, either by turning the screw for moving the movable jaw through long distances by means of the handle rod in common use, or quickly and rapidly through short distances by the combined means of a pedal mechanism to open the vise and a stiff operating spring for closing it. Means are also provided for putting the operating spring temporarily out of action when it is wished to use the vise in the ordinary way by means of the handle.

Other objects and advantages of the invention will be brought out and made to appear in the following description, and the novel features particularly pointed out in the appended claims, reference being had to the accompanying drawings which, with the reference characters marked thereon, form a part of this specification.

Figure 1 is a left side elevation of my improved vise as in use on a work-bench. Fig. 2 is a rear view of the vise, indicated by arrow in Fig. 1. Fig. 3 is a plan of the vise with parts horizontally sectioned as on the dotted line in Fig. 1, parts being broken away. Fig. 4 is a side sectional elevation of parts of the vise further showing the interior structure, parts being broken away. Fig. 5 is a plan of the body portion of the vise, inverted. Fig. 6 is a plan of the base piece with the upper parts removed. Fig. 7 is a front elevation of the releasing key and associated parts seen as indicated by arrow in

Fig. 4, the operating screw being in transverse section. Fig. 8 is a front elevation of the main nut for the operating screw, detached, seen as in Fig. 7. Fig. 9 is a front elevation of the wedge and pivoted lifting tongue, detached. Fig. 10 is a front elevation of the lever controlling the actuating spring, detached. Fig. 11 is a front elevation of the minor nut, detached. Fig. 12 is a side elevation of central parts of the device further showing the internal mechanism, parts being in central vertical section and parts broken away and shown in various positions by full and by dotted lines. Fig. 1 is drawn to a scale of one-eighth full size; Figs. 2, 3, 5 and 6 to a scale of one-third; Figs. 4, 7, 8, 9, 10 and 12 one-half size, and Fig. 11 full size.

Referring to the parts shown, 1 in the various figures, is the body of the vise, consisting of a hollow frame 2 formed with the rear jaw 3 and cylindrical portion 4 and with forward and rear lateral extensions 5 and 6, all in a single piece or body. This body 1 rests upon a circular plate 25, Figs. 1, 2, 3, 4, 6 and 12, secured rigidly to the bench 26 by bolts 27, the body being mounted upon said plate in a manner to have swivel motions thereon in horizontal directions. The under side of the plate 25 is formed with an annular cavity or depression 28, best shown in Fig. 6, and with a semicircular slot or opening 29 upward through which extends vertically a clamping bolt 30, Figs. 3, 4, 6 and 12, through an opening 31, Fig. 5, in the floor of the body 1, and provided with a tightening nut 32, Fig. 3, above the floor. The head 33 of the bolt occupies the annular space 28 in the base-plate, as appears in Fig. 6, and by tightening the nut 32 the vise is held rigidly to the base-plate 25 and so to the work-bench 26. The semicircular slot 29 and the coacting opening 31 in the body 1 are so relatively disposed that when the vise stands in its usual or normal position upon the bench, as shown in Fig. 1, the clamping bolt 30 will be at the middle of the slot, as appears in Fig. 6. On account of this it will be understood that the vise may be turned or swung horizontally in either direction, to the right or to the left, through any distance up to ninety degrees of arc.

The frame or hollow portion 2 of the body 1 comprises four equal corner posts or parts 7, best shown in Figs. 1, 2 and 3, between

which the hollow beam or slide 8 of the front movable jaw 9 of the vise is fitted to slide in horizontal directions forward and back when the vise is in use. The ordinary threaded rod or screw 10 for actuating the forward jaw pierces the latter horizontally and rests axially in the hollow beam 8, said screw being formed with a head 11 provided with the usual handle 12 for turning the screw, as in many forms of vises.

Within the frame 2 and integral with the body 1, and projecting upward from the floor of the body, is a pair of equal opposing standards 13 and 14, front and rear, pierced by the screw 10 though moving freely there through, as clearly shown in Figs 4 and 12. Mounted upon the screw 10, in rear of and with front end abutting against the rear standard 14, is a stiff spiral spring 15, Figs. 3, 4 and 12, for automatically closing the front jaw 9 on to the block or body 34, Fig. 1, being held by the vise when the latter is operated by means of a pedal, presently described. A minor nut 16, Figs. 2, 3, 4, 11 and 12, is loosely threaded upon the screw 10 against which the rear end of the spring 15 continuously presses, the screw having slight longitudinal motion through the nut. An actuating arm or member 17, shown detached in Fig. 10, extends upward from the rear part of the rear extension 6 through an opening 18 therein, see also Fig. 5, with its upper expanded end formed with a vertically elongated opening 19, Fig. 10, for receiving through it the screw 10, as clearly appears in Figs. 2, 3, 4 and 12.

20, Figs. 1, 2, 4 and 12, is an actuating or controlling screw for the member 17, passing inwardly through an opening 21 in a downwardly extending or pendent portion 24 of the extension 6, having its inner end threaded through an opening 22 in the lower end of said member 17, Fig. 10. By turning the screw 20 one way and the other the member 17 will be caused to sway in a vertical plane forward and back, its action being that of a lever of the first order, serving in a way to regulate the tension of the spring 15, the rounded edge 23, Figs. 4, 5 and 12, of the opening 18 constituting the fulcrum bearing for this lever-action of said member 17. When the screw 20 is turned sufficiently into the member or lever 17, as appears in Fig. 4, the lower end of the lever will be drawn back against the pendent part 24, with its upper end inclining forward to hardly press the nut or member 16 and so compress the actuating spring 15 between the nut and the rear standard 14. This prevents said spring from having any endwise play or motion and holds it in temporary inaction and idleness so that it can have no control of or in any way affect the actuating screw 10 of the forward jaw 9 of the vise.

The member 16 is internally threaded so

as to loosely engage the thread on the screw 10. On account of the loose fit, the nut 16 does not interfere to any appreciable extent, on account of friction, in the turning of the screw by means of the handle 12, as would a nut fitting snugly to the screw 10. The rear face of this member 16 is formed at the middle with a horizontal transverse rib or bar 35, Figs. 4, 11 and 12, the opposing face of the lever 17 having a corresponding transverse groove 36—see Fig. 10—in which to receive the rib 35, as shown. By means of this forming of the parts the lever will always bear centrally against the body 16 without regard to the position or inclination of the lever, which is desirable in the matter of holding said member at all times evenly upon the screw; and, further, when the parts are thus constructed the member 16 will be prevented from turning with the screw. The nut or member 16 is fitted upon the screw so as to allow the latter to have slight longitudinal motion through it so that it will not appreciably bind or press the thread of the screw when the latter is revolved or operated by means of the handle 12 in using the vise as ordinary vises are used.

In Figs. 3, 4, 7, 8 and 12 is shown the main or real nut, 37, for the screw 10, acting with the latter when turned by the handle 12 and while the spring 15 is held in position of idleness, as above described, and shown in Fig. 4, and the vise is used by manipulating the handle 12 in the usual manner. This nut 37 is disposed between the standards 13 and 14 and is engaged by a key 38, see Fig. 7, in front and a wedge 39, see Fig. 9, in the rear, these three parts being each pierced by the screw 10 and filling the space between the standards 13 and 14, as clearly shown in Figs. 3, 4 and 12. The key 38 is formed at its upper end with a vertically elongated slot 40, Figs. 3 and 7, for receiving the screw 10, the wedge 39 being likewise formed near its upper end with a vertically elongated opening 41, Fig. 9, for the screw to pass through, these two members 38 and 39 being thus permitted to have short vertical motions between the opposing standards 13 and 14.

The main nut 37 has slight longitudinal motion between the standards 13 and 14, but this motion, it is to be understood, is not independent of the screw, the latter partaking of the longitudinal movement; that is to say, in these slight longitudinal motions the screw and the nut move as a single body, the screw during these movements not turning upon its axis, but simply moving endwise with the nut. It will be understood that the nut 37 is controlled in these slight forward and backward motions by a key 38 in front and a wedge 39 in its rear, as fully explained later on. The nut does not move independent of the screw longitudinally between the standards 13 and 14. The con-

struction is such that the nut, the screw and the movable jaw 9 all move as a single body, when the vise is operating in one manner, through short distances, just enough to release the body held between the jaws and reclamp the body between the jaws, all this being done by the pedal mechanism.

If the coacting parts 38 and 39 in front and in rear of the nut 37 were removed, the latter might move forward or backward longitudinally between the standards. The nut is not as big or as wide as the space between these standards. The parts 38 and 39 act to allow the nut to move forward or backward.

In the circular cavity 42, Figs. 4, 5 and 12, within the cylindrical portion 4 of the body 1, is placed a short lever 43, Figs. 4, 7 and 12, pivoted at 44 between branches 45 at the lower end of the key 38 in a manner to swing in a vertical plane and resting normally near its forward end up against the under surface 58 within the part 4, as shown. To the rear end of this lever is attached a chain or cable 46, Figs. 1, 4, 7 and 12, extending downward through a central opening 47, see Fig. 6, in the base-plate 25, to a pedal 48 near the floor 49, convenient for the foot of the one using the vise. By means of this construction the key 38 may be at any time drawn downward by the foot of the workman through various distances, as indicated by the full-line and dotted-line positions shown in Fig. 12.

Fig. 4 shows the normal positions of the parts when the spring 15 is out of action and the pedal 48 idle, the vise being operated by means of the handle 12 in the usual manner, the screw 10 rotating loosely within the nut 16. Fig. 12 shows the parts when the spring 15 is acting to close the movable jaw 9 on to the work 34, the handle 12 being temporarily out of use and idle. As shown in this figure and in Fig. 9, the lower end of the wedge 39 is bifurcated, holding pivotally between its branches a tongue or lever 50 adapted to swing in a vertical plane. This lever is actuated by a spiral spring 51, Figs. 4, 5 and 12, held in a vertical cavity 55 in the body 1, pressing downward upon the rear or short end 56 of the lever to keep the opposite extreme point 52 normally high, as appears in Figs. 4 and 7. The upper portion 53 of the rear face of the nut 37 is beveled, as clearly shown in Figs. 4 and 12, to receive and fit the beveled portion 54 of the wedge 39 so that if the latter be at any time pulled downward it will push the nut 37 forward or toward the right. The said nut cannot, however, be thus moved while the key 38 is in its normal position, as shown in Fig. 4.

It will be noted that the spring 51 acts to hold the point 52 of the lever 50 normally up against the body of the key 38 between the branches 45, this being clearly shown

in Figs. 4 and 7, and that the short end 56 of the lever is held by the spring some distance below the under surface 58 of the cylindrical part 4 of the body 1. From this it will be understood that if the pedal 48, (Fig. 1), be at any time depressed by the foot of the workman the lever 43, the key 38 and the lever 50 will be brought to the respective positions shown by full lines in Fig. 12 the rear or short end 56 of the lever 50 bearing upward against the under surface 58 of the part 4, and the spring 51 compressed within the cavity 55. Now, when the key 38 is in this position the nut 37 is at liberty to move toward the right, and a further or continued downward pull of the pedal will serve to further depress the key 38 and also, by means of the lever 50, depress the wedge 39 and thus crowd the nut toward the right, these several parts assuming the positions shown by dotted lines in Fig. 12. This forcible moving of the nut 37 slightly forward or toward the right, and with it the screw 10 and the movable jaw 9, will be made against the action of the stiff spring 15, and temporarily release the work or body 34 so that it may be removed from the jaws 3 and 9. Replacing the work between the jaws and releasing the pedal will cause the spring 15 to again quickly close the movable jaw against the body, simultaneously lifting the pedal and returning all of the connected parts to their positions as shown in Fig. 4. This action of the powerful spring 15 draws the nut 37 back against the wedge 39 which, on account of the inclined surfaces 53 54 bearing against each other, lifts the wedge to its normal position shown in Fig. 4, which, by means of the lever 50 and the spring 51 raises the key 38 and the lever 43 to their normal positions, shown in Fig. 4.

When the vise is used for general or miscellaneous work, requiring frequent long movements of the jaw 9 forward and back, the handle 12 is employed, in the usual manner, the spring 15 being thrown out of action by means of the lever 17, as stated. When, however, the vise is used to hold a piece or body, as 34, required to be frequently removed from and replaced between the jaws, or to hold in succession many pieces all alike or of similar dimensions, as frequently occurs in manufacturing or treating an article in quantities, and requiring only slight motions of the movable jaw each time to release and to pinch the piece, the spring 15 and the pedal are brought into use, the handle 12 being temporarily idle. In this use of the vise the screw 20 is first turned to allow the lever 17 to incline slightly back, as shown in Fig. 12, partially releasing the spring 15 to allow it to take control of the screw 10 and the movable jaw. In these positions of the parts the vise

may be operated quickly and rapidly by the pedal, as stated, the jaw being supported at all times by the forward extension 5 from the cylindrical part 4 of the body, beneath.

5 Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as my invention and desire to secure by Letters Patent is:—

10 1. A vise having a hollow main body with corner posts, a movable gripping jaw with hollow beam between the corner posts, a pair of standards projecting into the hollow beam, a threaded rod in the movable
15 jaw piercing the standards, and a vertically disposed key, a vertically disposed wedge, a nut for the threaded rod between the standards, and means for actuating the threaded rod.

20 2. A vise having a hollow main body with fixed gripping jaw, a movable gripping jaw with hollow beam held in said main body, front and rear standards projecting into the beam, an operating screw held by the movable jaw and passing independently through
25 the standards, a vertically disposed key, a vertically disposed wedge, a nut for the screw between the standards, and means on the screw back of the rear standard for sliding the beam longitudinally backward
30 through short distances.

3. A vise having a hollow body with rearward extension and fixed gripping jaw, a
35 coacting movable gripping jaw with part in said hollow body, a threaded rod for operating the movable jaw, a spring on the rod to move the latter longitudinally, and means on said rearward extension for controlling the spring.

40 4. A vise having a hollow body with rearward extension and fixed gripping jaw, a coacting movable gripping jaw with part slidable in said hollow body, a threaded rod carried by and for operating the movable
45 jaw, a spring on the rod for giving the movable jaw slight longitudinal motion, a nut on the rod in contact with the spring, and means held by said rearward extension for controlling the nut.

50 5. A vise having a hollow main body with rearward extension and a fixed gripping jaw, a movable gripping jaw with hollow beam held to slide in said main body, front and rear standards projecting into the beam,
55 an operating screw held by the movable jaw and piercing said standards, a nut for the screw between the standards, a spring on the screw back of the rear standard for moving the screw, a minor nut on the screw in position to press the spring against the rear
60 standard, and movable means on the said extension for controlling the minor nut.

6. A vise having a hollow main body with rearward extension and integral gripping
65 jaw, a movable gripping jaw with hollow

beam held slidably in said main body, front and rear standards projecting from the floor of the main body into the beam, an operating screw held by the movable jaw and piercing said standards, a nut for the screw between the standards, a spring on the screw back of the rear standard, means for
70 pressing the spring against the rear standard, the minor nut being formed with a transverse rib and the lever having a corresponding valley to receive said rib, and means for controlling said lever.

7. A vise having a body with rearward extending and fixed gripping jaw, front and rear standards pierced by the operating
80 screw for the movable jaw, a spiral spring on the screw to give said movable jaw a slight longitudinal motion, a nut to press the spring against the rear standard, a lever carried by said rearward extension bearing
85 against the nut, and means to tilt the lever.

8. A vise having a relatively fixed jaw and a coacting movable jaw, a controlling screw for the movable jaw, a spring on the screw to move the latter and the connected
90 jaw, means on the screw for regulating the tension of the spring and to throw the spring out of action.

9. A vise having a body portion with front and rear standards, a movable jaw
95 with part in said body, a screw for the movable jaw piercing the standards, a nut on the screw between the standards adapted to have longitudinal motion, a member between the nut and the front standard, and
100 a member between the nut and the rear standard adapted to shift the nut, and means for actuating said two members.

10. A vise having a body portion with standards, a movable jaw with extended
105 part held slidably in said body portion, a screw controlling the movable jaw and piercing the standards, a nut on the screw between the standards, a key in front of the nut and a wedge in rear of the nut, and
110 means for actuating said key and the wedge successively.

11. A vise having a body portion with standards, a movable jaw with extended
115 part held slidably in said body portion, a screw within said movable jaw piercing the standards, a nut on the screw between the standards, a key and a wedge respectively in front and in rear of the nut, the meeting faces of the latter and the key being formed
120 with corresponding steps, and the surfaces of the nut and the wedge in contact having correspondingly inclined portions touching, and means for pulling the key and the wedge downward.

12. A vise having a body portion with standards, a movable jaw slidable in said
125 body, a screw carried by the movable jaw piercing the standards, a nut on the screw between the standards, a key and a wedge in

front and in rear of the nut respectively
extending below the screw, levers held pivot-
ally in the lower ends respectively of the
key and the wedge in positions to swing in
5 vertical planes, and means to operate said
levers.

13. A vise having a body portion with
standards, a movable jaw held in said body,
a screw held by the movable jaw to pierce
10 the standards, a nut on the screw between
the standards, a key and a wedge in front
and in rear respectively of the nut extend-
ing downward from the screw with bifur-

cated lower ends, a lever pivoted in the
bifurcation of the key with end engaged by 15
the body portion, and means at the opposite
end for tilting the lever, and a lever in the
bifurcation of the wedge actuated by the key
to move the wedge.

In witness whereof, I have hereunto set 20
my hand this 19th day of March, 1909, in
the presence of two subscribing witnesses.

DYONIS KOVACS.

Witnesses:

E. B. WHITMORE,

A. M. WHITMORE.