July 8, 1952 J. E. YINGER 2,602,359

SCREW-OPERATED VISE HAVING DISPLACEABLE HALF NUT FOR QUICK ADJUSTMENT

Filed Feb. 13, 1950

2 SHEETS—SHEET 1

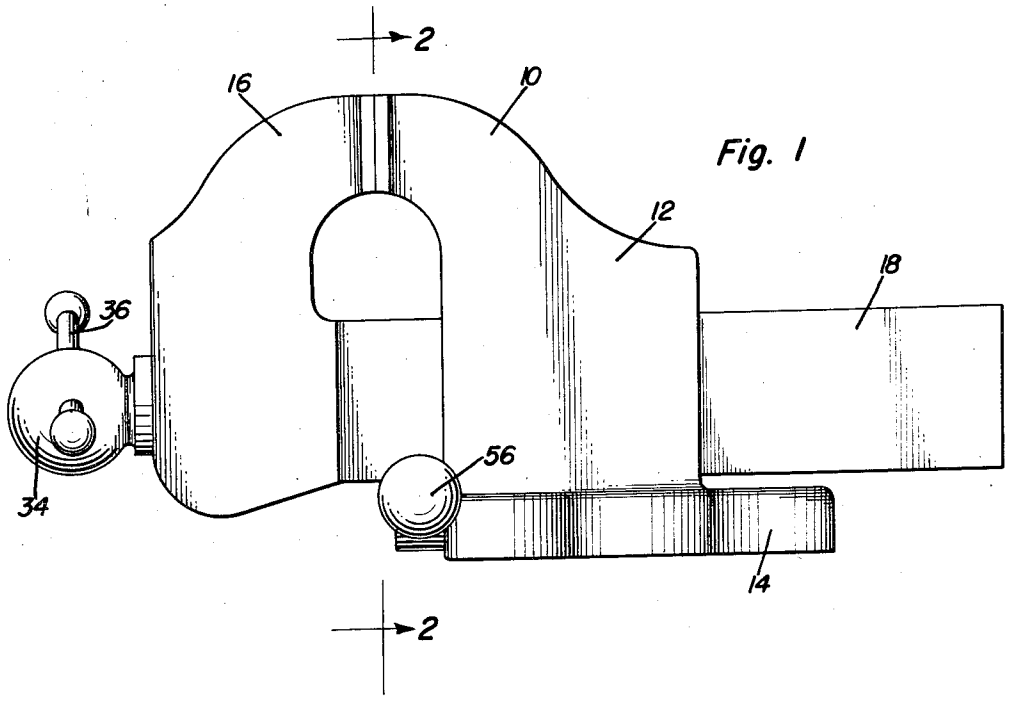


Fig. 1

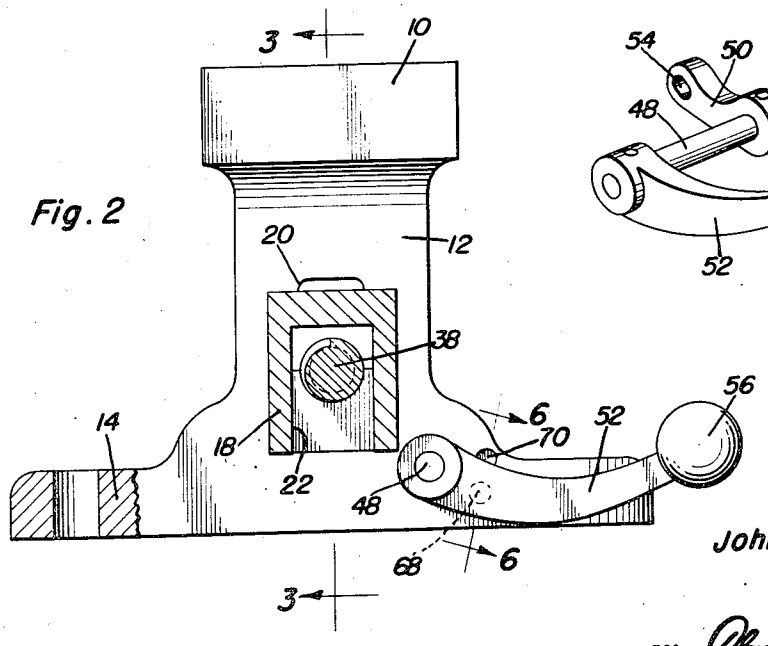


Fig. 2

Fig. 7

John E. Yinger

INVENTOR.

BY Thomas A. Wilson and Harvey B. Jackson

Attorneys

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Fig. 3

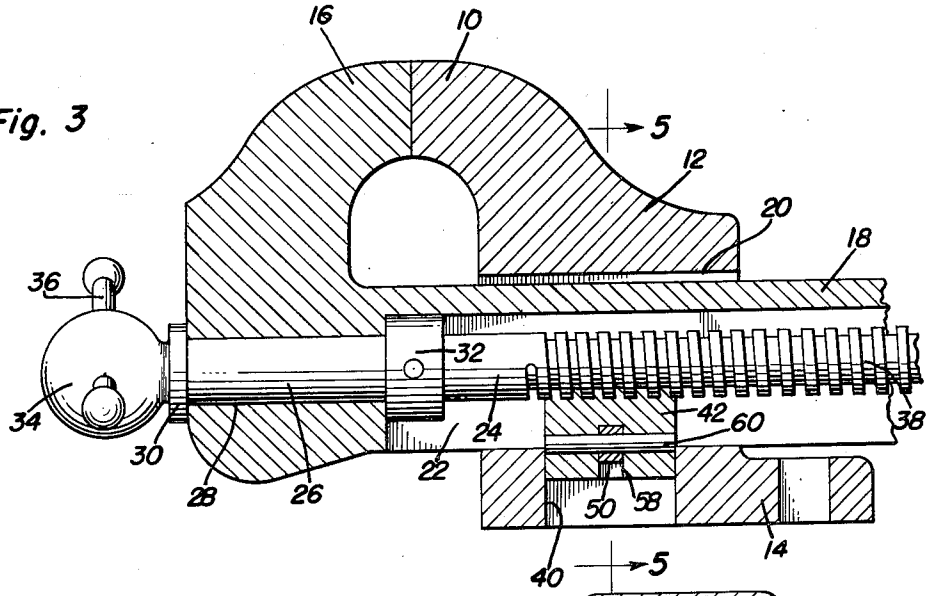


Fig. 4

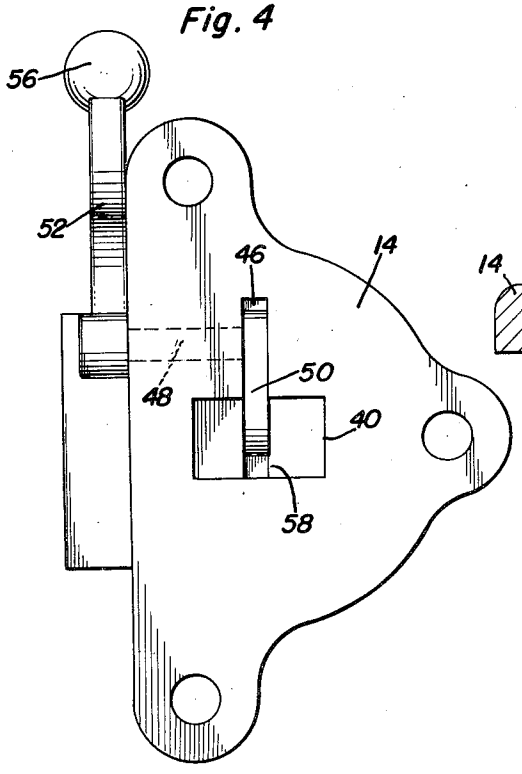


Fig. 5

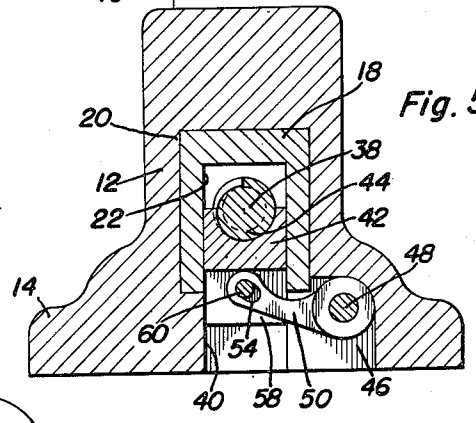
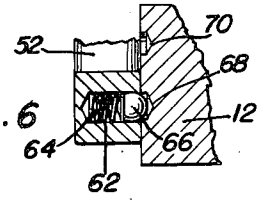


Fig. 6



John E. Yinger

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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SCREW-OPERATED VISE HAVING DISPLACEABLE HALF NUT FOR QUICK ADJUSTMENT

John E. Yinger, Frederick, Md., assignor of fifty per cent to Dora Yinger, Frederick, Md.

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1 Claim. (Cl. 81—36)

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This invention comprises novel and useful improvements in an adjustable vise and more specifically pertains to a bench vise together with improved means facilitating the adjustment of the jaws of the vise.

A further object of the invention is to provide an improved bench vise together with an improved mechanism for manually selectively releasing or engaging a vise screw with a half nut reciprocably carried by the fixed jaw of the vise so as to permit rapid manual adjustment of the vise jaws while the vise screw is operatively disconnected.

Figure 1 is a side elevational view showing a preferred construction of bench vise embodying the principles of this invention;

Figure 2 is a vertical transverse sectional view taken substantially upon the plane indicated by the section line 2—2 of Figure 1;

Figure 3 is a vertical longitudinal sectional view taken substantially upon the plane indicated by the section line 3—3 of Figure 2 and illustrating more particularly the construction of the vise screw, together with the means for operatively connecting or disconnecting the vise screw and the fixed and movable vise jaws;

Figure 4 is a bottom plan view of the invention;

Figure 5 is a vertical transverse sectional view taken substantially upon the plane indicated by the section line 5—5 of Figure 3 and illustrating more particularly the connecting mechanism for the vise screw and the vise jaws;

Figure 6 is a fragmentary detail view taken substantially upon the plane indicated by the section line 6—6 of Figure 2 and disclosing the yieldable locking means for maintaining the adjusting mechanisms in selective engaged or disengaged positions; and

Figure 7 is a perspective view of a lever forming a part of the vise disconnecting means.

Referring now more specifically to the accompanying drawings, wherein like numerals designate similar parts throughout the various views, it will be seen that there has been disclosed at 10 the fixed jaw of a vise, the same being provided with a base 12 having a mounting flange 14 by means of which the vise may be secured to a bench or any other suitable supporting surface. The vise further includes a movable jaw 16, the same being provided with an elongated body 18 which is slidably received in a correspondingly shaped horizontally extending channel 20 in the base 12.

As shown more clearly in Figures 2, 3 and 5,

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the elongated body 18 is provided with an elongated channel 22 which is open on the bottom surface of the elongated body, this channel receiving the conventional vise screw 24 which is rotatably journaled and secured in the movable jaw 16 as by a journaled portion 26 which is rotatably received in a bore 28 and retained therein as by an integral collar 30 and a detachable collar 32 on opposite sides of the bore 28.

In accordance with conventional practice, the vise screw 26 is provided with a ball-headed end 34 provided with a handle 36 which is slidably received in a diametrical bore in the ball-headed end in a conventional manner.

The vise screw 24 is provided with the customary threaded portion 38 which extends throughout substantially the length of the same which is disposed within the elongated channel 22.

It will now be seen that during operation, the guided and sliding movement of the elongated body 18 within the channel 20 of the base 12 causes a movement of the movable jaw 16 with respect to the fixed jaw 10. This customary movement is commonly effected by rotating the vise screw 24 which customarily has a threaded engagement with the base 12 of the fixed jaw. However, in the present invention, this customary fixed engagement is replaced by a selectively releasable screw-threaded engagement by a means to be now described.

Opening through the lower end of the flange 14 and the base 12 is a vertically disposed transverse guideway 40 which intersects the channel 20 and which registers with and consequently intersects the elongated channel 22 in the movable elongated body 18. Preferably the width of the guideway 40, as viewed in Figure 5, is the same as the width of the elongated channel 22 for a purpose which will now become apparent. Slidably received in the guideway 40 and selectively extensible into and movable into the elongated channel 22 is a half nut member 42 having a cylindrical, longitudinally extending trough or channel 44 in its upper surface, the same being internally threaded for registering and mating engagement with the adjacent portions of the screw threads 38. It will be seen that the half nut 42 is prevented from any movement except a transverse sliding movement with respect to the longitudinal axis of the vise screw 38, so that when the half nut is engaged with the vise screw, rotation of the latter will cause a movement of the movable jaw 16 towards and from the fixed jaw as desired.

However, when the half nut is retracted into the guideway 40 and disengaged from the screw threads 38, the vise screw 24 and consequently the movable jaw 16 may be manually and readily adjusted longitudinally of the channel 20 in the base 12 to position the vise jaws at approximately the desired position. When the half nut is again engaged with the vise screw, the latter may be tightened to positively lock and clamp the jaws upon each other or upon a member interposed therebetween.

In order to selectively effect the locking or releasing engagement of the half nut from the vise screw, there is provided a chamber 46 in the bottom portion of the base 12, this chamber intersecting the guideway 40. An operating lever is provided consisting, as shown in Figure 7, of a shaft 48 which is journaled in the base 12 between the chamber 46 and a forward side of the base, this shaft having rigidly but detachably secured to its outer end a handle 52, and to its inner end an arm 50 which extends from the chamber 46 into the guideway 40, the handle 52 and the arm 50 extending in opposite directions from the axis of the shaft 48.

At one end, the arm 50 is provided with an elongated slot 54, while the free end of the handle 52 is provided with a ball 56. The latter provides a finger-grip portion by means of which the lever may be manipulated. As shown best in Figures 3 and 5, the lower end of the half nut 42 is provided with a slot 58 which receives the end of the lever 50, a pivot pin 60 being disposed through the half nut 42, the slot 58, and the elongated slot 54 in the arm 50. It will thus be seen that upon oscillation of the lever, the half nut 42 will be vertically reciprocated in its guideway 40 and thus moved selectively into and out of operative engagement with the screw-threaded portion 38 of the vise screw.

In order to selectively lock the lever into or out of operative positions, a yieldable locking means is provided as shown in Figures 2 and 6. For this purpose, that surface of the handle 52 which is adjacent to the base 12 is provided with a socket or recess 62, receiving a compression spring 64 which yieldingly urges a locking ball 66 outwardly of the socket and against the adjacent surface of the base 12. The latter is provided with a pair of shallow recesses 68 and 70 which are adapted to receive a portion of the surface of the ball 66 when the socket 62 is in selected registry with either of the sockets 68 and 70. The sockets 68 and 70 are so placed that they will register with the socket 62 and the ball 66 carried thereby when the lever is in either the nut-engaging or the nut-releasing positions, as will be readily understood.

It will thus be seen that the lever may be selectively and yieldingly retained in position in operative or inoperative position as desired, so that the operative connection of the vise screw with the vise jaws may be established or broken as desired.

From the foregoing, the construction and operation of the invention, together with its many advantages will be readily apparent, and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art after a consideration of the foregoing specification and accompanying drawings, it is not desired to limit the invention to the exact construction shown and described, but all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claim.

Having thus disclosed and described the invention, what is claimed as new is as follows:

A bench vise comprising a base having a fixed jaw, a movable jaw, a vise screw carried by said movable jaw, a half nut slidably mounted in said base for radial movement toward and from said screw and engageable selectively with said vise screw, a lever journaled on said base, an arm on said lever pivotally connected with said half nut for effecting controlled movement of the latter, said split nut having an open-ended slot extending across one side of the half nut, said arm being received in the open end of said slot, a pivot extending across said slot and through the arm and split nut for connecting said arm to said split nut.

JOHN E. YINGER.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
288,722	Morris	Nov. 20, 1883
1,428,996	Starrett	Sept. 12, 1922
2,424,313	Heinrich	July 22, 1947

FOREIGN PATENTS

Number	Country	Date
170,355	Great Britain	Oct. 14, 1921
292,381	Great Britain	June 21, 1928
304,024	Great Britain	Jan. 17, 1929