

1,298,146.

G. M. YOST.  
VISE,  
APPLICATION FILED AUG. 17, 1916.

Patented Mar. 25, 1919.  
2 SHEETS—SHEET 1.

Fig. 1.

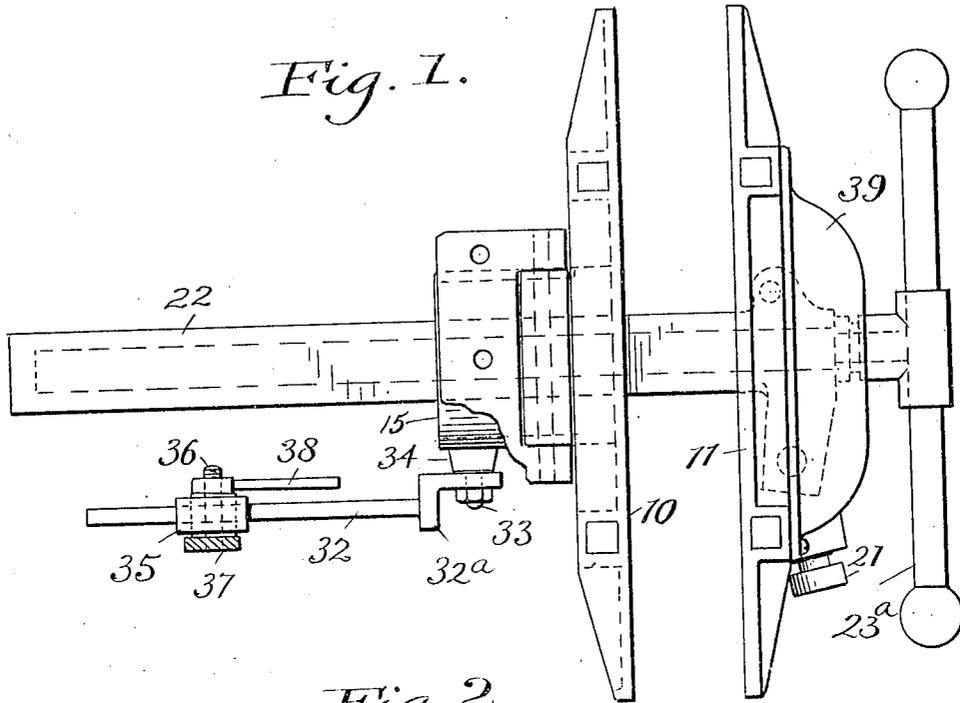


Fig. 2.

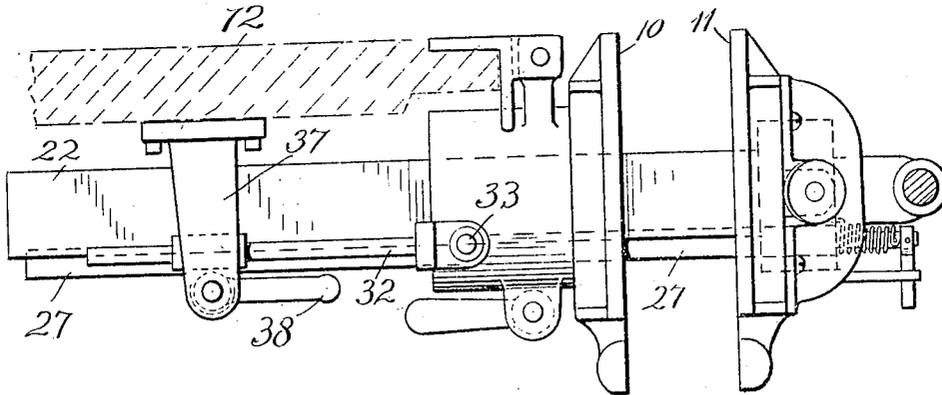
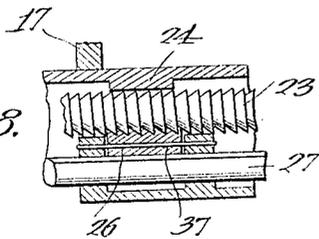


Fig. 8.



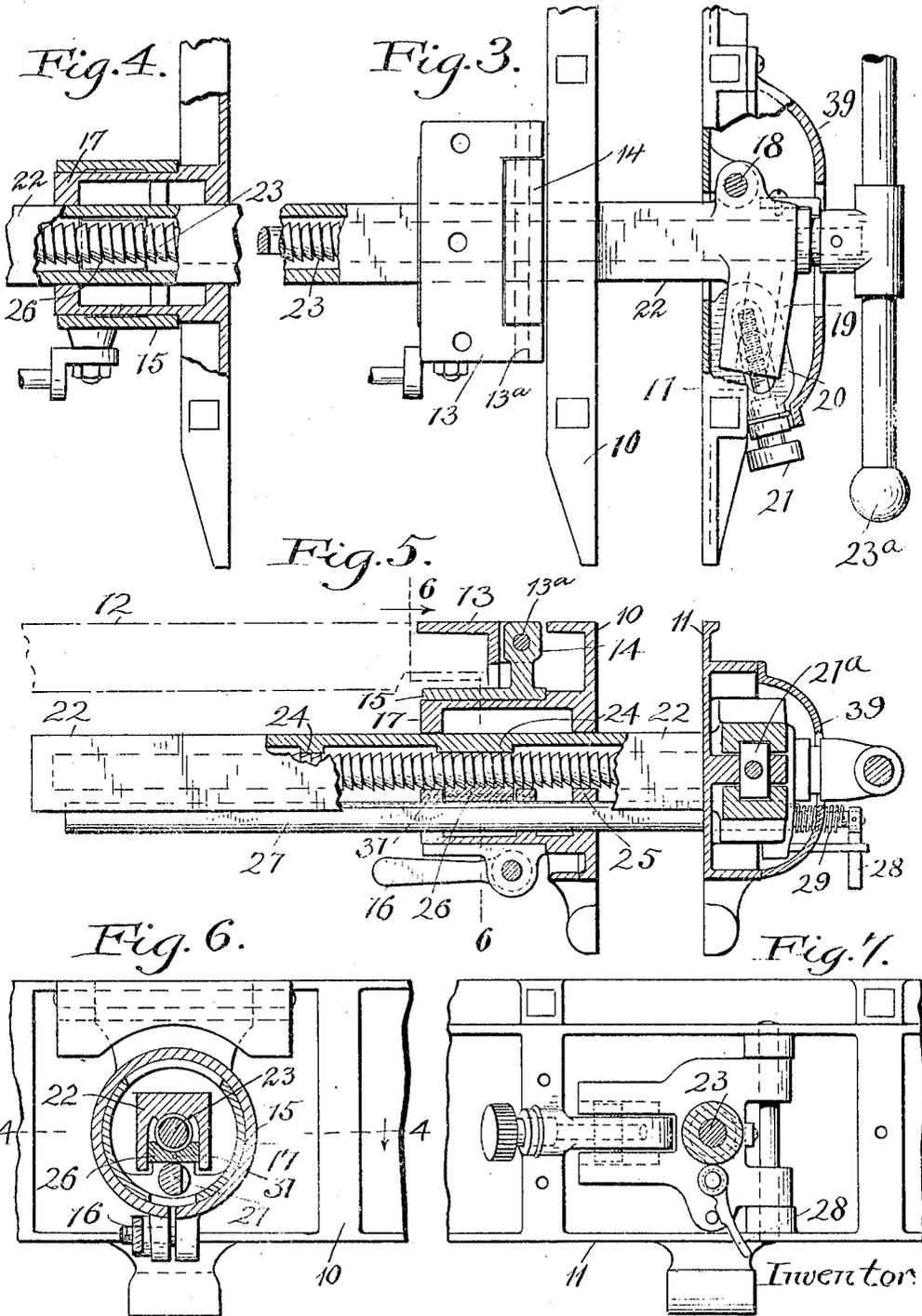
Inventor:  
Gilmore M. Yost  
by Thurston & Kwis  
Attys.

G. M. YOST.  
VISE.

APPLICATION FILED AUG. 17, 1916.

Patented Mar. 25, 1919.  
2 SHEETS—SHEET 2.

1,298,146.



Inventor:  
Gilmore M. Yost  
by Thurston & Knud Attys

# UNITED STATES PATENT OFFICE.

GILMORE M. YOST, OF CLEVELAND, OHIO, ASSIGNOR TO THE COLUMBIAN HARDWARE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## WISE.

1,298,146.

Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed August 17, 1916. Serial No. 115,363.

*To all whom it may concern:*

Be it known that I, GILMORE M. YOST, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Vises, of which the following is a full, clear, and exact description.

This invention relates to vises, particularly wood workers' vises, and has especial reference to the so-called universal and quick acting vise, the jaws of which can be turned and tilted and, in fact, given a substantially universal movement with respect to the bench or other support on which the device is mounted, and the movable jaw of which can be adjusted by the regular screw or can be released and slid bodily in or out relative to the normally stationary jaw.

The present application covers a modification of the vise shown in a companion application, Serial No. 115,362, filed of even date herewith, and in which certain features are more broadly claimed than herein, the object of the present invention being to provide certain improvements which increase the efficiency and durability of vises of this character, and also to provide more efficient means for effecting the various adjustments or movements, especially the means for engaging and disengaging the nut and screw so as to permit the front jaw to be shifted either by the screw-adjusting means or to be bodily slid in or out toward or from the relatively stationary jaw.

The present construction differs from that shown in the companion application largely in the form and shape of the guide which extends from the front jaw through the rear jaw, and in the arrangement and disposition of the nut which engages the screw, and of the cam rod which is designed to be turned to cause the nut to engage or move out of engagement with the feed screw.

The invention herein may be briefly summarized as consisting in certain novel details of construction and combinations and arrangements of parts which will be described in the specification and set forth in the appended claims.

In the accompanying sheet of drawings, Figure 1 is a top plan view with the vise detached from the bench and with the supporting bracket for the brace rod in section; Fig. 2 is a side elevation of the same

with the bench shown in outline section; Fig. 3 is a top plan view of the major portion of the vise with parts broken away, the vise being shown detached from the bench; Fig. 4 is a plan view of the major portion of the rear jaw and parts immediately associated therewith, portions being broken away and the annular split bearing and annular projection on the jaw which fits there-in being in section substantially along the line 4—4 of Fig. 6, looking in the direction indicated by the arrow; Fig. 5 is a partial side view and partial vertical sectional view, the section being taken longitudinally through the vise and indicating in outline the bench or other support to which the vise is here shown attached; Fig. 6 is a transverse sectional view substantially along the line 6—6 of Fig. 5, and Fig. 7 is a front view with the cap or cover removed from the movable jaw and with the screw and operating handle in section; Fig. 8 is a partial elevation showing a detail of construction.

The vise includes a rear jaw 10 which is normally stationary, and a front relatively movable jaw 11. The jaws and in fact the vise as a whole, is adapted to be secured to a bench 12 or other suitable support by a pair of hinged members including a hinge leaf 13, which is designed to be secured to the upper face and front edge of the bench, and a second hinge member 14, which is pivoted to the first by a pivot pin or similar securing means 13<sup>a</sup>. The hinge member 14 is provided beneath the bench with a rearwardly turned cylindrical split clamping and supporting or bearing sleeve 15 which can be loosened or tightened by a clamp lever 16 and receives a rearwardly extending annular boss 17 on the rear jaw 10. The construction is such that when the bearing sleeve is loosened, the jaws and parts which are associated therewith may be turned to any desired angle, and when the split sleeve is tightened the parts will be held firmly in the adjusted position.

The front jaw is in this case composed of two relatively movable parts by which the jaw proper may be tilted with reference to the fixed jaw so as to cause the adjacent faces of the jaws to assume an angular position instead of the parallel relationship. In this instance the jaw 11 is pivoted by means of a pin 18 to a so-called head 19, which is forked as best shown in Figs. 3 and

5, the slot of the fork receiving a lug or rib 20 projecting outwardly from the jaw. An adjusting screw 21 is provided in this rib and it engages a nut 21<sup>a</sup> in the form of a cylindrical pin, (see particularly Fig. 3). The nut is adapted to travel in a slot of the rib when the screw is turned, and the ends of the nut travel in a slot in the head 19, which slot is disposed at an angle with reference to the slot in the rib so that when the screw is adjusted the jaw proper is turned on the axis of the pivot pin 18, thus tilting it with reference to the rear jaw.

The front jaw is supported from the rear jaw by a guide in the form of a rectangular beam 22 which is integral with the head 19 previously referred to, and projects rearwardly from the latter through the rear jaw and cylindrical boss 17 in which the beam has a bearing for sliding movement. This beam is hollow so that it may receive the main adjusting screw, one side of the beam being open and this being preferably the lower side so that dirt and other foreign matter will not collect in the beam and obstruct the movement of the screw.

The front jaw is adapted to be adjusted relatively to the rear jaw by a screw or threaded shaft 23 which extends through the front jaw and longitudinally through the hollow guide beam 22. The upper wall of the beam is provided at intervals with bearing lugs such as shown at 24, and the cylindrical boss is also provided with bearing lugs or ribs such as shown at 25, which are engaged by the screw so that the latter will be well supported in the beam.

The screw is normally engaged by a nut 26 or nut segment in the form of a block, which is seated in the cylindrical boss 17 between a pair of ribs thereof, as clearly shown in Fig. 5. This nut is adapted to be pressed upwardly against or in engagement with the screw 23 by a cam shaft 27 which preferably extends substantially the length of the beam and is directly beneath the screw. This cam shaft has a portion or segment removed therefrom for substantially its entire length forming a flat face and when the cam shaft is turned so that the flat face is opposite the nut the latter may drop downwardly away from or out of engagement with the screw, but when the cam shaft is turned to another position so that the round part thereof engages the nut the latter is pressed and held against or in engagement with the screw, so that when the screw is turned by the usual operating handle 23<sup>a</sup> at the forward end thereof the front jaw will be moved inward or outward with respect to the rear relatively stationary jaw. This cam shaft which extends through openings in the ribs of the cylindrical boss 17 and has bearings therein extends through and forwardly beyond the front jaw where

it is provided with a handle 28 which is turned by the operator when he desires to release the nut from the screw. A coil spring 29 which surrounds the forward portion of the cam shaft returns the latter to normal position when the handle is released by the operator, this normal position being that shown in Fig. 6 with the round part of the shaft holding the nut up against the screw. It will be understood of course that this cam shaft as well as the adjusting screw 23 turns in or relative to the jaw, but are held from movement longitudinally with respect thereto so that the cam shaft and screw as well as the beam move with the jaw inward or outward, the parts being guided in their movement by the beam 22 and also to some extent by the cam shaft 27.

Although the nut tends to drop by gravity from the screw when the cam shaft is turned so as to present the flat face thereof to the nut, preferably a spring is utilized to force the nut downwardly when the cam shaft is turned so as to release the screw from the nut. Although the form and disposition of this spring may be varied I have here shown a spring in the form of rather stiff wire 31 which passes longitudinally through the nut and has its ends received in the ribs of the cylindrical boss 17 at opposite ends of the nut. It will be understood that the ribs of the cylindrical boss 17 between which the nut is located, will have sufficient clearance for the spring 31 to permit the necessary movement to carry the nut into and out of engagement with the threads of the screw. When the nut is pressed upwardly by the cam shaft the spring is put under tension so that when the flat face of the cam shaft is opposite the nut the spring will lower the nut.

In addition to the adjustments which may be given to the front jaw relatively to the rear jaw, and in addition to the adjustments which may be given to both jaws by turning the same in the cylindrical bearing sleeve 17, both jaws and the parts which move therewith including the guide beam, cam rod and screw, may be tilted or swung to any desired position above the axis of the hinging pin 13<sup>a</sup>. In order that the parts may be given this adjustment and may be held in any desired adjusted position, I provide a brace rod 32 provided at one end with a head 32<sup>a</sup> which is pivoted by a bolt or screw 33 to a boss 34 on the split bearing sleeve 15. This brace rod 32 passes through a split bearing and clamping sleeve 35 which is pivotally supported by a bolt or screw 36, on a bracket 37 which is secured to the lower side of the bench 12, said sleeve being designed to be tightened by a clamp lever 38 so as to tightly grip the rod or to be loosened so that the rod may slip therethrough. If it is desired to tilt the

5 vise, the brace rod 32 is released by opening the split clamping sleeve 35, and after the vise has been tilted or adjusted to the desired position the sleeve is tightened on the rod by the clamp lever 38. The rod then holds the vise firmly in position.

Preferably the major middle portion of the front jaw including the forked head 19 is inclosed in a cover plate 39.

10 The construction above described is durable and at the same time it is very convenient, for the vise as a whole can be turned about the axis of the hinged members 13 and 14; both jaws and the guide beam 22, screw 23 and cam shaft 27 may be turned  
15 in the split bearing 15 to any desired position; the parts of the front jaw may be turned relative to each other, and by means of the nut and screw releasing mechanism the front jaw can either be moved  
20 slowly by means of a screw or it can be slid in or out with reference to the rear jaw, this releasing mechanism being particularly efficient, durable and convenient of operation.

25 Having described my invention, I claim:—

1. In a vise, a pair of jaws including a rear normally fixed jaw and a front movable jaw, a hollow rectangular guide beam extending from the front jaw through the rear jaw, an annular bearing for the jaws, an annular support for the rear jaw and received in said bearing whereby both jaws may be turned about the axis of the bearing, a feed screw extending from the front jaw and through the said guide beam longitudinally thereof, a nut within the said beam and adapted to engage the feed screw, the said nut being movable with the guide beam, said guide beam being formed with  
40 a longitudinal slot, a cam shaft extending lengthwise of the beam and occupying said slot, said cam shaft engaging the nut and moving the same into engagement with the said feeding screw, the cam shaft when  
45 turned in one direction releasing the nut from the screw.

2. In a vise, a pair of jaws including a rear normally fixed jaw and a front mov-

able jaw; a hollow rectangular guide beam extending from the front jaw through the rear jaw; an annular bearing for the jaws, an annular support on the rear jaw which is received in said bearing, whereby both jaws may be turned about the axis of the bearing; a feed screw extending from the front jaw through the hollow guide beam and longitudinally thereof, said guide beam being formed with a slot in the lower portion thereof, a nut mounted within the said guide beam and adjacent the said slot, said nut being adapted to engage the feed screw and movable to and from the same, a cam shaft extending lengthwise of the beam within the said slot in the guide beam and beneath the nut said cam shaft being adapted to be turned to move the nut to engage the feed screw or to release the nut from the screw.

3. In a vise, a pair of jaws including a rear normally fixed jaw and a front movable jaw, a hollow rectangular guide beam extending from the front jaw through the rear jaw, an annular bearing for the jaws, an annular support on the rear jaw which is received in said bearing whereby both jaws may be turned about the axis of the bearing, a feed screw extending from the front jaw through the hollow guide beam and longitudinally thereof, said guide beam being formed with a slot in the lower portion thereof, a nut mounted within the said guide beam and adjacent to the said slot said nut being adapted to engage the feed screw and movable to and from the same, a cam shaft extending lengthwise of the beam within the said slot in the guide beam and beneath the nut, said cam shaft being adapted to be turned to move the nut to engage the feed screw or to release the nut from the screw, and spring means engaging the said nut to move the nut away from the feed screw when the nut is released by the cam shaft.

In testimony whereof, I hereunto affix my signature.

GILMORE M. YOST.