

Oct. 9, 1951

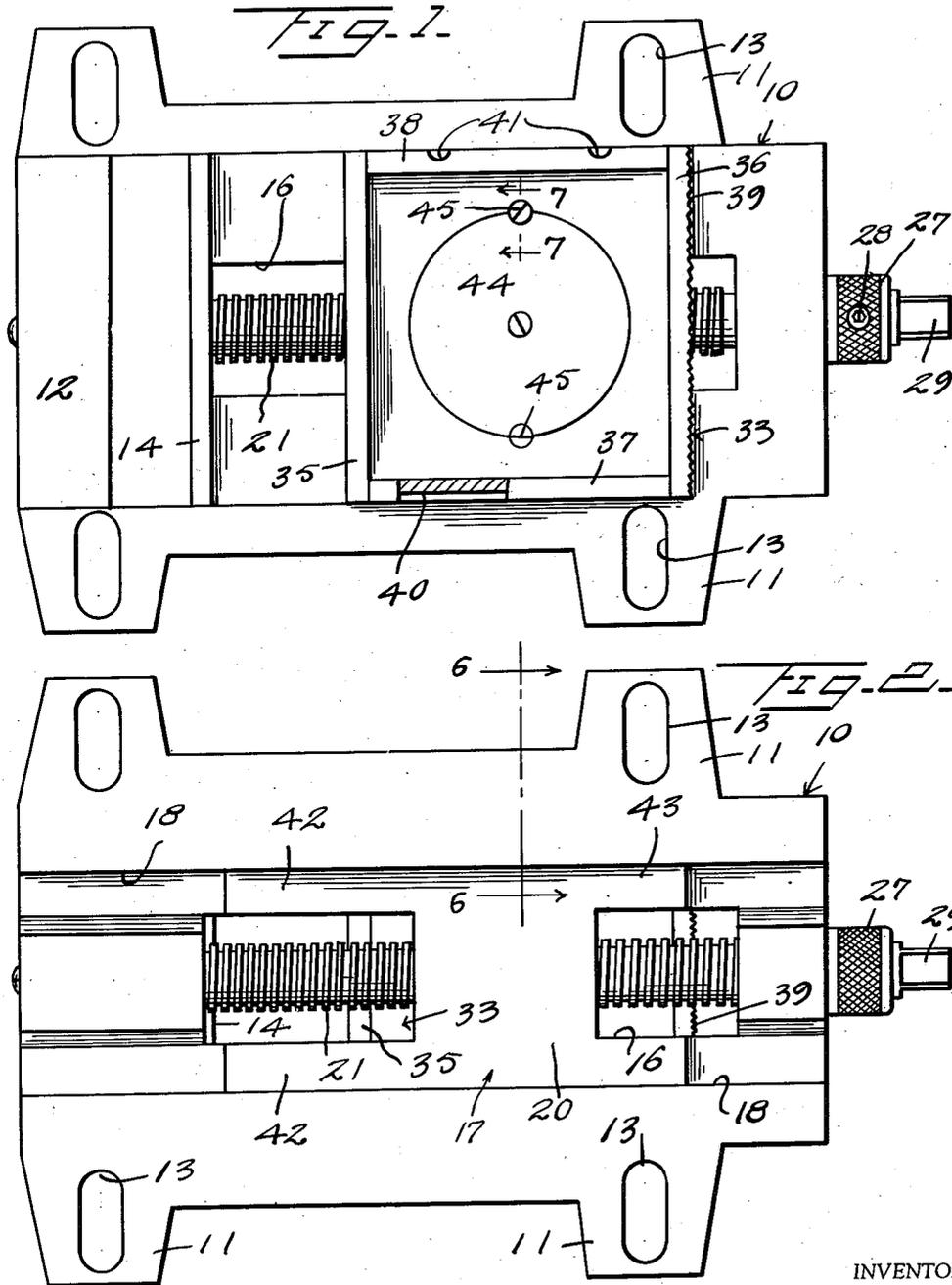
L. PURPURA

2,570,857

VICE HAVING SWIVEL JAW CLAMPED TO BASE IN PROPORTION  
TO CLAMPING PRESSURE ON WORKPIECE

Filed Nov. 4, 1949

2 Sheets-Sheet 1



INVENTOR

Liborio Purpura

BY *Kimmel & Crowell*  
ATTORNEYS



# UNITED STATES PATENT OFFICE

2,570,857

## WISE HAVING SWIVEL JAW CLAMPED TO BASE IN PROPORTION TO CLAMPING PRESSURE ON WORKPIECE

Liborio Purpura, Wheeling, W. Va.

Application November 4, 1949, Serial No. 125,501

1 Claim. (Cl. 81—20)

1

This invention relates to swivel vise having means to vary the clamping of the swivel jaw to the base in proportion to the pressure exerted on the work.

A primary object of this invention is to provide a swivel vise which is so constructed and arranged that the swivel jaw will be tightly clamped to the bed or base in proportion to the pressure exerted on the work piece.

With the above and other objects in view, my invention consists in the arrangement, combination and details of construction disclosed in the drawings and specification, and then more particularly pointed out in the appended claim.

In the drawings,

Figure 1 is a plan view partly broken away and in section, of a swivel vise constructed according to an embodiment of this invention,

Figure 2 is a bottom plan view of the vise,

Figure 3 is a longitudinal section taken through the vise,

Figure 4 is an outer end elevation of the vise,

Figure 5 is a perspective view of the swivel jaw,

Figure 6 is a fragmentary sectional view taken on the line 6—6 of Figure 2,

Figure 7 is a fragmentary sectional view taken on the line 7—7 of Figure 1.

Referring to the drawings, the numeral 10 designates generally a bed or base of substantially rectangular configuration in plan, which has projecting from the opposite longitudinal edges thereof pairs of ears 11 formed with elongated openings 13 through which fastening means are adapted to be extended for securing the base 10 to a supporting element.

The base 10 has formed at the outer or forward end thereof an upstanding fixed clamping jaw 12 and a plate 14 is fixed to the inner or rear side of the jaw 12 by fastening means 15. The base 10 is provided with a longitudinally extending opening 16 equally spaced between the longitudinal edges of the base and a slide member generally designated as 17 is disposed partly within the opening 16 and within a pair of longitudinally extending parallel guide grooves 18 which are formed in the lower side of the base 10.

The slide member 17 includes a nut portion 20 having a threaded bore through which a slide adjusting screw shaft 21 engages. The shaft 21 loosely engages through an opening 22 formed in the forward end of the base 10, and the forward end of the shaft 21 is provided with an annular head 23 which engages in a recess 24 formed in the forward end of the base 10.

2

A plate or cap 25 normally closes the opening 24. The head 23 provides for holding the shaft 21 against rearward movement when the slide member 17 is under pressure from the movable jaw, as will be hereinafter described.

The rear or inner end of the shaft 21 loosely engages through an opening 26 provided in the rear portion of the base 10, and a cylindrical collar 27 is secured by fastening means 28 to the shaft 21 and bears against the rear end of the base 10. The shaft 21 is provided at its rear end with a polygonal head or member 29 which may be engaged by a wrench, handle or other means for effecting rotation of the shaft 21.

The nut portion 20 has projecting upwardly therefrom a threaded stud 30 on which a conical nut 31 is threaded. The conical nut 31 is adapted to be locked in its adjusted position on the stud 30 by means of one or more set screws 32 which are threaded through the nut 31 and are adapted to bear against the upper side of the nut portion 20.

A swivel or rotary jaw generally designated as 33 is rotatably mounted on the nut 31 and is formed with a conical opening 34 extending downwardly therethrough, within which the nut member 31 is adapted to engage. The jaw 33 is substantially square in plan and has secured to the outer faces thereof plates 35, 36, 37 and 38. The face plate 35 is preferably smooth on its outer side, which side is adapted to confront the plate 14, whereas the plate 36 is formed with a knurled or serrated outer side 39. The plate 37 is formed with a longitudinally extending groove 40, whereas the plate 38 is formed with at least a pair of vertically disposed grooves 41.

The slide member 17 also includes a forward pair of elongated slide bars 42 engageable in the guide grooves 18, and also includes a pair of relatively short slide bars 43 projecting from the opposite or rear end. These bars 42 and 43 provide a means whereby the nut member 19 will be held against tilting and also provide a means for frictionally gripping the downwardly facing surfaces of the guide grooves 18 at the time the work piece is clamped between the jaws 12 and 33.

A disc-shaped plate 44 is secured in the upper end of the jaw 33 by countersunk fastening members 45.

In the use and operation of this vise, the base 10 is secured by suitable fastening means passing through the openings 13 and into the bed of a machine or other supporting element. The work piece is disposed on the upper side of the base 10 between the jaws 12 and 33. When the screw

3

shaft 21 is rotated to move the jaw 33 toward the jaw 12, the work piece will be tightly clamped between the two jaws. In the event the work piece is formed with non-parallel opposite sides, the jaw 33 will swing on the conical nut 31. As pressure is applied to the work piece, the swivel jaw 33 will be forced downwardly on the nut 31 to frictionally bind against the upper side of the base 10, and at the same time an upward pressure will be exerted on the nut 31 which will be communicated through the nut portion 20 to the slide bars 42 and 43. These slide bars will frictionally bind against the under surfaces of the grooves 18.

I do not mean to confine myself to the exact details of construction herein disclosed, but claim all variations falling within the purview of the appended claim.

What I claim is:

A swivel jaw vise comprising a base formed with an elongated opening therethrough, a fixed jaw carried by said base adjacent one end of said opening, a movable jaw engaging the upper side of the base, said movable jaw having an inverted conical passageway extending there-through from top to bottom, said base having guide grooves in the lower side thereof, said guide grooves extending parallel to said opening, a slide engaging said guide grooves, said slide having a threaded opening, a screw shaft rotatably

4

carried by said base and engaging through said threaded opening; a threaded stud fixed to and extending upwardly from said slide, passing through said elongated opening, and terminating in said passageway; an inverted conical nut threaded on said stud and positioned in said passageway so that the conical surface of the latter engages only the conical surface of the nut whereby clamping pressure against said movable jaw effects a binding thereof against the upper side of said base and simultaneously effects binding of said slide in said grooves, and said movable jaw comprising a rectangular body rotatable on said stud.

LIBORIO PURPURA.

#### REFERENCES CITED

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

#### UNITED STATES PATENTS

Number	Name	Date
1,751,329	Hancock	Mar. 18, 1930
2,318,487	Horn, Jr.	May 4, 1943

#### FOREIGN PATENTS

Number	Country	Date
171,435	Great Britain	Nov. 14, 1921
177,843	Great Britain	Apr. 3, 1922