Dec. 1, 1931. J. A. GILES 1,834,697

VISE

Filed Dec. 1, 1928

Fig. 1.

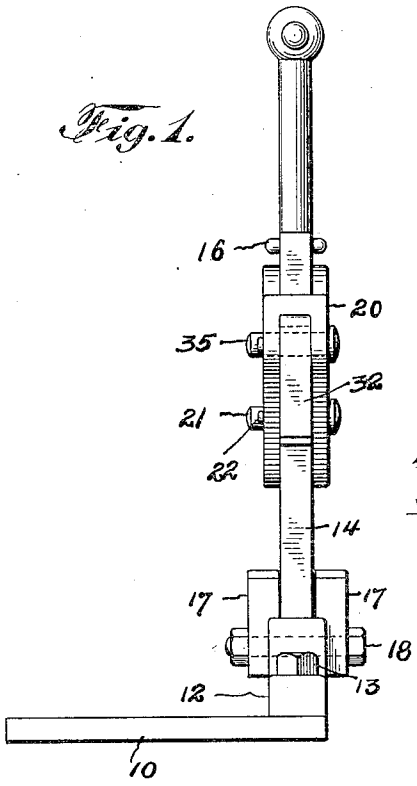


Fig. 2.

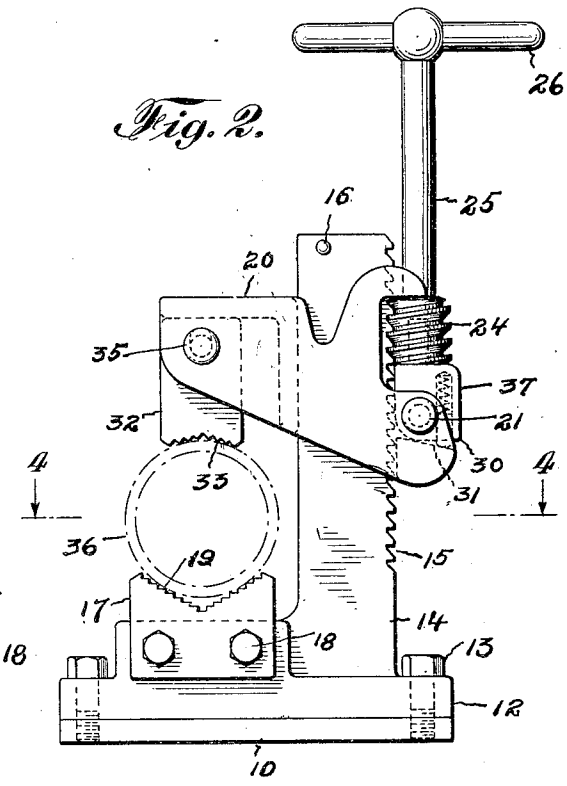


Fig. 3.

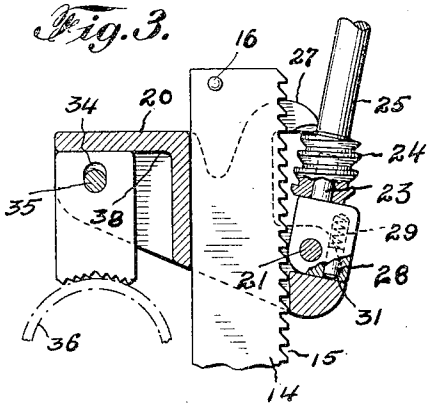


Fig. 4.

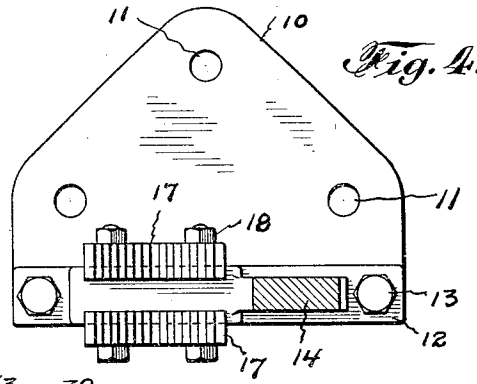


Fig. 5.

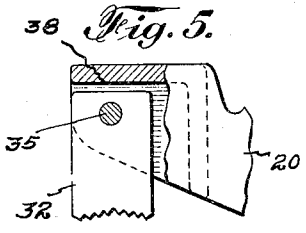
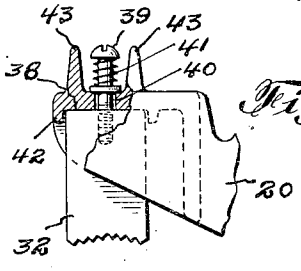


Fig. 6.



INVENTOR
Julian A. Giles
BY George E. Hall
ATTORNEY

Patented Dec. 1, 1931

1,834,697

UNITED STATES PATENT OFFICE

JULIAN A. GILES, OF DERBY, CONNECTICUT

VISE

Application filed December 1, 1928. Serial No. 323,055.

This invention relates to a new and improved vise and particularly to the type of vise known as a pipe vise.

It is the object of this invention, among other things, to provide a vise of this character that is very strong in its structure, will have maximum efficiency, is relatively small in size compared to its capacity, light in weight, adapted to be used in either a right or left hand position, conveniently adjustable for all sizes of work-pieces, and has the jaws thereof arranged so that the grip is increased by operations upon the workpiece held thereby.

To these, and other ends, my invention consists in the vise having certain details of construction and arrangement of parts as will be apparent from an inspection of the accompanying drawings, in connection with the description hereinafter contained, wherein a preferred embodiment of the invention is disclosed for the purpose of imparting an understanding of the same.

In the drawings;

Figure 1 is a side view of my new and improved device;

Figure 2 is a front view thereof;

Figure 3 is a fragmentary view of the upper portion of the standard and adjacent parts;

Figure 4 is a plan view;

Figure 5 is a fragmentary view of a portion of the slide with one form of upper jaw connected therewith; and

Figure 6 is a view of another modified form of such jaw and slide.

Referring to the drawings, in connection with which like reference characters indicate corresponding parts in the several figures; 10 is the bottom plate, which is secured in a fixed position by bolts or the like, which pass through the openings 11 therein; 12 is the base member separately secured to the bottom plate 10 by bolts 13 or the like; 14 is the standard forming part of the base member having teeth 15 thereon and a stop pin 16 projecting therethrough. By reversing the position of the base member upon the bottom plate, the vise is readily changed from a right to a left hand position. Secured to the base member by the bolts 18 or the like, are the fixed jaws 17, which are preferably spaced apart as shown, and provided with toothed faces 19.

Movable upon the standard 14 is the slide 20, the cross sectional area of the opening therein through which the standard projects being slightly larger than the cross sectional area of the standard so as to provide for free movement of the slide, to minimize machining of parts and insure a strong, firm connection between the slide and standard.

The worm block 37, the teeth of which mesh into the teeth 15 on the standard 14, is pivotally secured to the slide by the pintle 21, held against endwise movement by the cotter pin 22 or the like.

Rotatably mounted upon the stud 23 on the worm block 37 is the worm 24, which is preferably integral with the rod 25. A handle bar 26 provides convenient means for manually rotating the rod 25 and worm 24.

The side walls of the slide 20 project rearwardly at 27 over the worm 24, which prevent endwise movement of the worm in any of its positions without interfering with the rotation thereof.

In the worm block 37 is a plug 28 moved in one direction by a spring 29, the tension of which has a tendency to rock the worm block and move the worm 24 so that its teeth will mesh with the teeth 15 and maintain the same in such position.

In Figure 2 the worm is shown with its teeth in engagement with the teeth 15 and in Figure 3 out of engagement therewith, the worm then being in its extreme outward position limited by the engagement of the shoulder 30 on the block 37 with the shoulder 31 upon the slide.

The movable jaw 32 is provided with a toothed face 33 similar to the toothed faces 19, except that it is desirable that the angle of curvature thereof be less than that of the toothed faces 19. This movable jaw is preferably, although not necessarily, of slightly less width than the open space between the fixed jaws 17, so that a workpiece of the smallest possible size may be held between

the jaws. In such case a portion of the movable jaw 32 will pass between the fixed jaws 17. In the form of movable jaw 32 shown in Figures 2 and 3, a slot 34 is provided for the pintle 35.

When the workpiece 36 is placed in the fixed jaw 17 the slide 20 is moved to a position wherein the toothed portion of the movable jaw 32 is adjacent to the outside wall thereof, during which movement the worm 24 is in the position shown in Figure 3. When in this position the worm 24 is moved into mesh with the teeth of the standard, and then the slide, through rotation of the worm 24, is moved to its final position with the teeth of the movable jaw 32 in engagement with the workpiece and the movable jaw 32 shifts to the position substantially as shown in Figure 3. In this position one wall of the movable jaw 32 abuts against the wall 38 on the slide 20.

Rotary pressure applied to the workpiece by tooling operations rocks the movable jaw 32 upon the pintle 35 in the direction of such pressure, whether the same be right or left. This action causes one of the upper corners of the movable jaw to form a pivot for the latter and the teeth on the face 33 are further imbedded in the work-piece. Hence the greater the rotary pressure upon the workpiece the tighter the jaws will hold.

In the form of jaw disclosed in Figure 5, the opening in the jaw to receive the pintle 35 is substantially the same diameter as the pintle so that there is no endwise movement thereon but an open space between the wall 38 and the adjacent wall of the jaw. Thus the same rocking movement of the movable jaw 32 is obtained and an increased grip upon the workpiece without a wall thereof engaging the wall 38.

In Figure 6 I have shown another form of movable jaw that is connected with the slide 20 by a screw 39 that passes through an opening 40 in the slide and is encircled by a spring 41. The tension of this spring is exerted so as to hold one wall of the movable jaw against the wall 38. This movable jaw, however, will rock relatively to the slide 20 in the same manner as the other form of die, the spring 41 yielding to permit such action. For convenience, when this form of jaw is used a lug 43 is provided upon each side of the jaw and integral with the slide 20, so that the screw 39 and adjacent parts may be protected against injury.

On the slide 20 are the lugs 42 which project beyond the end of the jaw 32, but spaced slightly therefrom.

As the pintle 21 is spaced from the standard 14, the movement of the worm 24 about the pintle 21 is eccentric to the teeth 15. Hence the greater the pressure upon the slide through the movable jaw 32, the more certain will be the engagement of the worm in the teeth of the standard.

My invention is not limited to any specific construction, arrangement or detail of parts, as it is capable of modifications and changes without departing from the spirit of the claims.

What I claim as new is:—

1. In a vise of the character described; a base member having a fixed jaw; a standard secured to the base member and provided with teeth on its side opposite the fixed jaw and in all of its positions being above the base member; a slide received over the standard and having projecting portions upon opposite sides of the standard, the portion upon one side of the standard having a substantially flat face, and those portions upon the other side of the standard being spaced from each other; a worm pivotally associated with one of said spaced portions and held against axial movement by the other of said spaced portions, the teeth thereof meshing into those of the standard; spring means to urge the worm into engagement with the teeth of the standard; and a jaw movably connected with the slide upon one side of the standard with its end substantially parallel with the flat face thereof, and held against lateral movement but capable of swinging toward and away from the standard with the jaw fulcruming at one of its corners against said flat face while the jaw is under labor.

2. In a vise of the character described; a base member having a fixed jaw; a standard secured to the base member and provided with teeth on its side opposite the fixed jaw; a slide received over the standard with one face thereof in contact with that face of the standard adjacent to the fixed jaw and having an overhanging portion with a pocket in its underside, the bottom of which is substantially flat; a worm pivotally associated with the slide with the teeth thereof meshing into those of the standard; spring means associated with the worm and slide to urge the worm into engagement with the teeth of the standard; and a jaw having a substantially straight end, movably connected with the slide within said pocket, with its straight end substantially parallel with the bottom of the pocket, the jaw while under labor fulcruming at one of its corners against the bottom of the pocket.

3. In a vise of the character described; a base member; a standard thereon; a fixed jaw on the base member; a slide on the standard, having a fixed substantially flat wall thereon; a pintle carried by the slide; and a movable jaw on the pintle, the substantially flat end face of the movable jaw contacting with the flat wall of the slide when the jaw engages the workpiece, and rocking relatively thereto fulcruming upon one corner thereof, when

rotary pressure is applied to the workpiece, at which time the portion of the jaw in contact with the workpiece will be projected into the workpiece to provide a tighter grip thereon.

4. In a vise of the character described; a base member; a fixed jaw on the base member; a slide movably associated with the base member; and a toothed jaw mounted on the slide and adapted to move relatively thereto, such movement being derived in part from pressure thereon by a workpiece held between the jaws, during which time the jaw will fulcrum against the slide upon one corner thereof and the teeth thereon be projected into the workpiece.

5. In a vise of the character described; a base member; a fixed jaw on the base member; a slide movably associated with the base member with an aperture therein; a toothed jaw mounted on the slide and adapted to move relatively thereto, such movement being derived in part from pressure thereon by a workpiece held between the jaws, during which time the jaws will fulcrum against the slide upon one corner thereof and the teeth thereon be projected into the workpiece; a pin connected with the movable jaw that projects through the aperture; and means for holding the movable jaw against the slide under a yielding pressure and permit a rocking movement relatively thereto.

6. In a vise of the character described; a base member; a fixed jaw on the base member; a slide having a wall with a substantially flat face that is rigid relative to the other portions of the slide; a pintle carried by the slide in spaced relation to the wall; a movable jaw having a substantially flat face at one end provided with a slot to receive said pintle, the adjacent flat face of the slide being substantially parallel with the flat end face of the jaw, and the latter while under labor rocking upon said pintle with one corner of the flat end face serving as a fulcrum therefor.

7. In a vise of the character described; a base member; a fixed jaw on the base member; a slide movably associated with the base member; a toothed jaw mounted on the slide and adapted to move relatively thereto, such movement being derived in part from pressure thereon by a workpiece held between the jaws, during which time the jaw will fulcrum against the slide upon one corner thereof and the teeth thereon be projected into the workpiece; and means for associating the movable die with the slide by a yielding pressure.

In testimony whereof, I have hereunto affixed my signature.

JULIAN A. GILES.