F. W. STROH.

VISE.

APPLICATION FILED JAN. 8, 1919.

1,385,504.

Patented July 26, 1921.

4 SHEETS—SHEET 1.

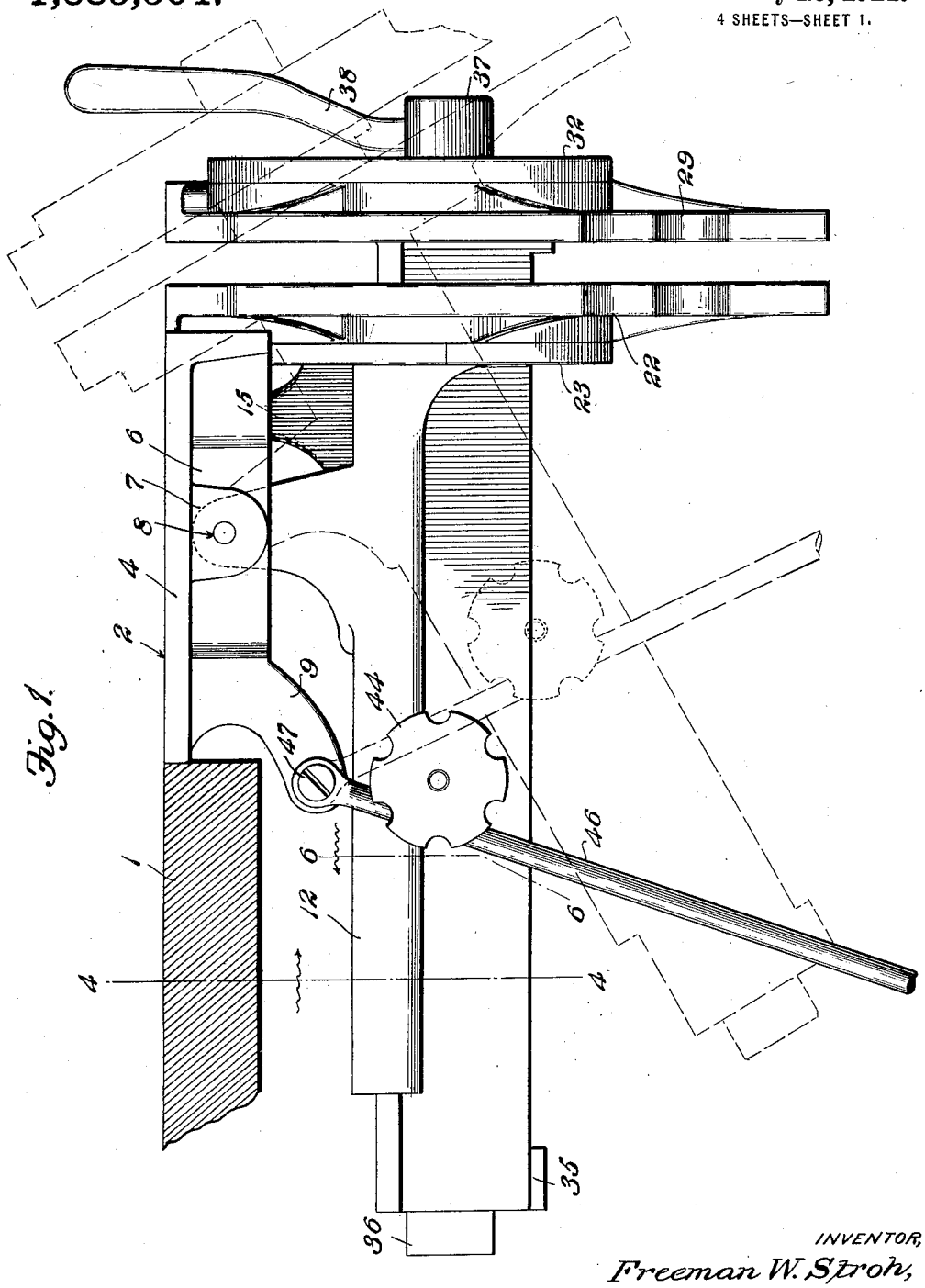


Fig. 1.

INVENTOR,

Freeman W. Stroh,

BY Frease, Merkel, Saywell & Bond

ATTORNEYS.

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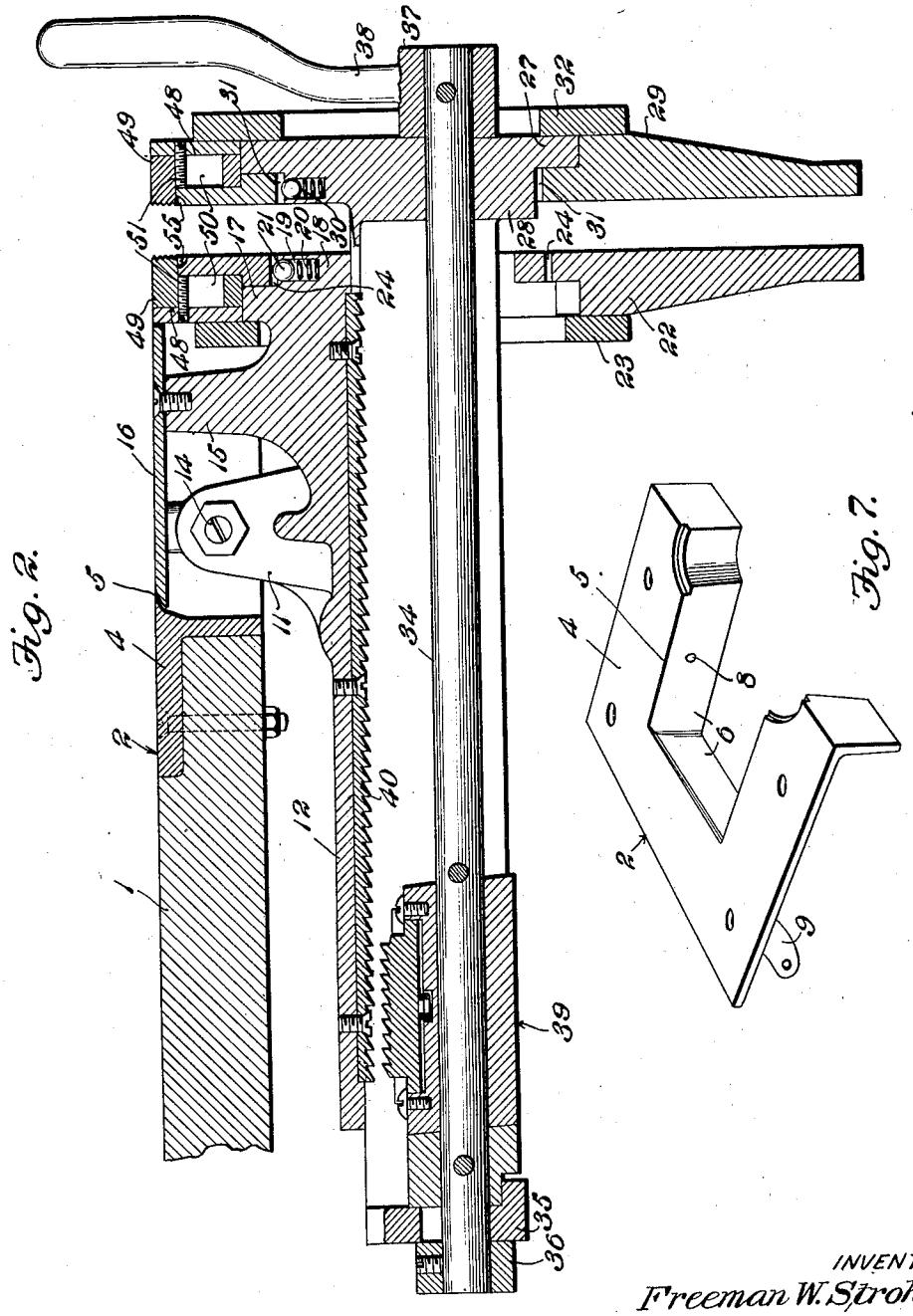


Fig. 2.

Fig. 7.

INVENTOR,
Freeman W. Stroh,

BY Frease, Merkel, Daywalt & Bond

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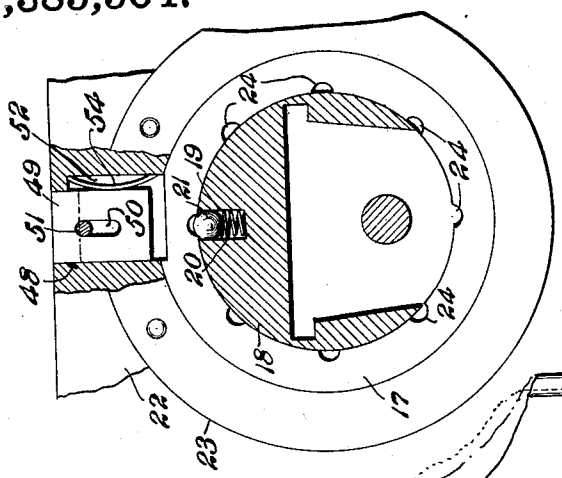


Fig. 5.

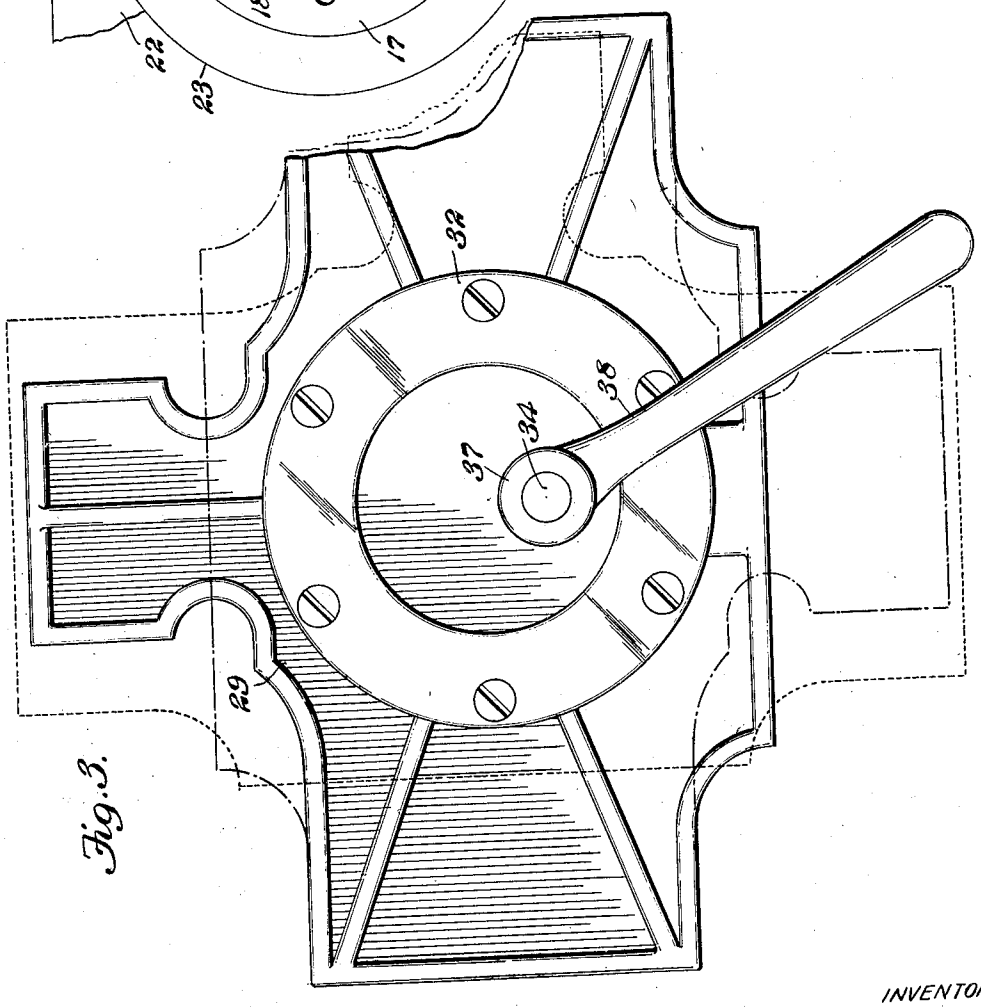


Fig. 3.

INVENTOR,

Freeman W. Stroh,

BY Fraser, Merkel, Sayrell and Bond

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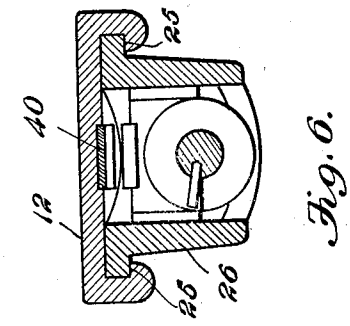


Fig. 6.

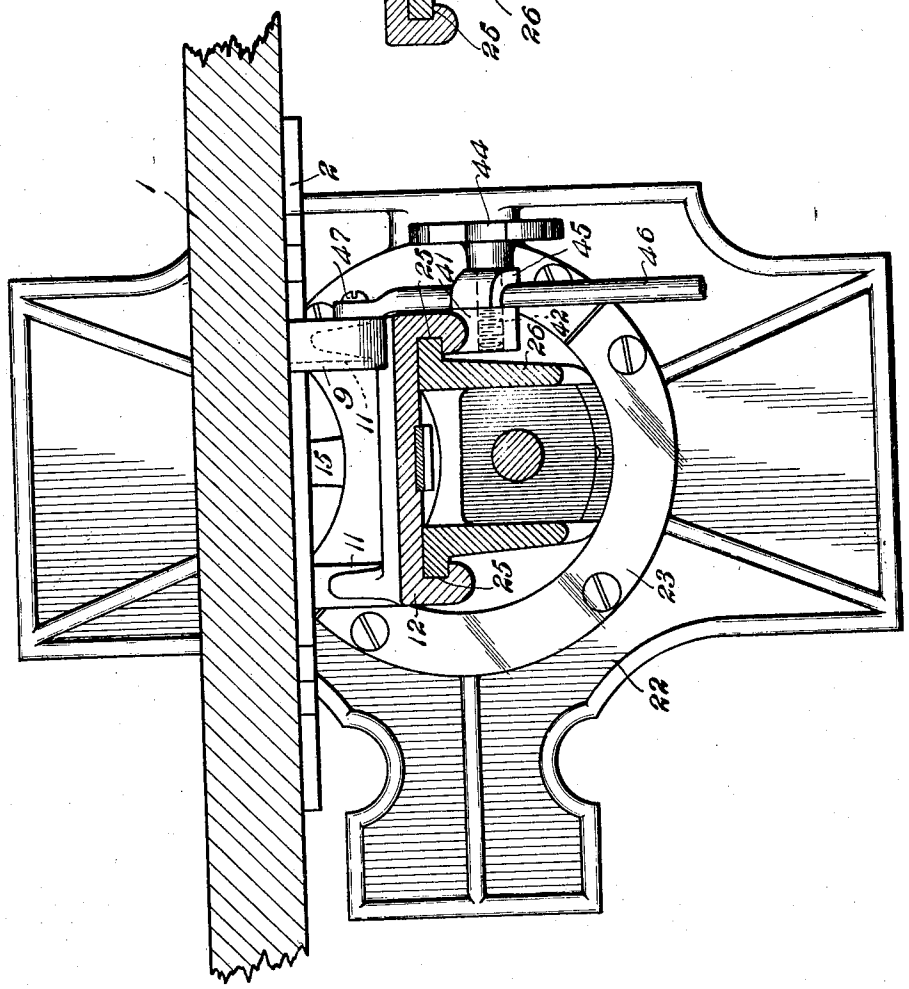


Fig. 4.

INVENTOR.

Freeman W. Stroh,

BY Fraser, Merkel, Sayrell and Bond

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FREEMAN W. STROH, OF BARBERTON, OHIO.

VISE.

1,385,504. Specification of Letters Patent. Patented July 26, 1921.

Application filed January 8, 1919. Serial No. 270,245.

To all whom it may concern:

Be it known that I, FREEMAN W. STROH, a citizen of the United States, residing at Barberton, in the county of Summit and State of Ohio, have invented a new and useful Vise, of which the following is a specification.

This invention relates to vises and is designed to embody the quick release feature set forth in my Patent No. 872,310 of November 26, 1907, together with certain other novel features.

One object is to hinge the vise to the bench in such a way that it can be quickly and easily moved to bring the jaws into any position from vertical to horizontal.

Another object is to provide both the stationary and movable jaws with a plurality of corresponding engaging members and to make the said jaws rotatable so that any pair of the corresponding engaging members may be brought into position to be used.

With these objects in view the invention consists in the novel construction and arrangement of parts, hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of construction may be made within the scope of the appended claims, without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Figure 1 is a side elevation of my improved vise and the full line position of the said vise showing the jaws held vertically and the dotted line position showing the device swung upon its hinged point to bring the jaws into an inclined position.

Fig. 2 is a longitudinal section through my vise.

Fig. 3 is a front elevation of my vise with the rotatable jaws shown in full lines in one position and dotted lines in another position and in dot and dash lines in still another position, to which the engaging members may be moved.

Fig. 4 is a cross section on the line 4—4, of Fig. 1.

Fig. 5 is a detail section showing the ball ratchet for holding the rotatable heads in any position of adjustment and also showing the sliding jaw extensions.

Fig. 6 is a similar view on the line 6—6 of Fig. 1.

Fig. 7 is a detail perspective on a reduced scale of the stationary casting.

Similar numerals of reference indicate corresponding parts throughout the several figures of the drawings.

The top of a work bench, table or the like is shown at 1 and secured to the said table is the stationary member 2 of my vise. This stationary member is in the form of a casting with a flat top portion 4 in which is formed a square opening 5, the said opening extending to the front edge of the casting. A downwardly depending flange 6 upon the casting extends across the said casting substantially in a line with the inner extremity of the square aperture for the width of the said aperture and thence turns and follows the sides of the said aperture to the front of the casting (see Fig. 7). Upon the outer side of each of the side portions of the flange 6 is formed an integral lug 7 and a round aperture 8 extends through each of the said lugs and through the flange, the said apertures being in alinement with each other for a purpose to be hereinafter specified. At the rear of the casting 2 at one side thereof, is formed a downwardly and rearwardly projecting lug 9, which lug is formed integral with the flange 6 and the top portion 2 and is for a purpose to be hereinafter described.

A pair of oppositely disposed upwardly extending lugs 11 formed integral with a guide member 12, are hinged to the casting 2 by bolts 14 which are inserted through apertures in the lugs 11 and through the apertures 8 and a lug 15 disposed forwardly and centrally of the lugs 11, is also made integral with the guide 12 and has secured to its upper extremity by means of a screw or the like, a plate 16 which plate is designed to lie flush with the top 4 of the casting 2 and to fit within the aperture 5, thus presenting a smooth surface. At the forward extremity of the guide 12 is formed an annular flange 17 with a reduced portion 18. A radial aperture 19 is formed in the reduced portion 18 and within the aperture is seated a coiled spring 20 and a ball 21 and mounted to rotate upon the flange 17 and reduced portion 18 is the stationary jaw 22, the said jaw being held in place upon the flange 17 by a split collar 23, which is se-

cured to the rear side of the said jaw. A series of notches 24 is formed around the inner face of that portion of the jaw which fits upon the reduced portion 18, the said notches being designed to be engaged by the ball 21 as the jaw is rotated, the said ball and notches thus acting as a ratchet and pawl.

The guide member 12 is formed with guide grooves 25 in which grooves is designed to move the sliding member 26 and the flange 17 and reduced portion 18 are cut away as shown in Fig. 5 to permit the sliding member 26 to be inserted in the guide. Formed upon the forward end of the sliding member 26 is a flange 27 and an inwardly projecting reduced portion 28, said flange and reduced portion 28 being substantially identical with the flange 17 and reduced portion 18 respectively and upon the flange 27 and reduced portion 28 is rotatably mounted the movable jaw 29 of the vise. A ball ratchet 30 similar to the ball ratchet 21 is seated in the reduced portion 28 and is designed to engage notches 31 in the movable jaw, the said movable jaw being secured in place upon the flange by a collar 32 attached by screws or the like.

As seen in Fig. 3 the jaw 29 is provided with four gripping members, one extending radially from the said jaw in each direction. It will be observed that each of the members is of a different shape and is especially designed for holding a different piece of work. The full line position shown in Fig. 3 illustrates one of the gripping members turned uppermost in position to be used while the dotted line and dot and dash line positions of the jaw show the said jaw rotated to bring others of the said gripping members uppermost. Reference to Fig. 4 will disclose that the jaw 22 is provided with gripping members corresponding identically with the grippings members on the jaw 29 and since the jaw 22 is also rotatable, any one of the gripping members can be brought uppermost into position to be used. The notches 24 and 31 in the jaws 22 and 29 respectively are arranged to position each of the gripping members at either the top, bottom, right or left side or at an angle of 45° between any of these positions.

A shaft 34 journaled at one end in the sliding jaw 29 and at the opposite end in a cross piece 35 formed integral with the sliding member 26, is secured in place by a collar 36 at one extremity and a second collar 37 at the opposite extremity. An operating handle 38 is formed integral with the collar 37 at the front end of the vise and is designed to be employed to rotate the shaft 34 to operate the quick release mechanism 39 carried by the said shaft. A rack 40 carried by the guide member 12 is designed to be engaged by the quick release mechanism, the details of which are clearly set forth in my Patent No. 872,310 previously referred to herein.

Formed integral with one of the side rails of the guide 12 is a downwardly extending lug 41 through which is formed a threaded aperture designed to receive the threaded end 42 of an adjusting screw, a hand wheel 44 being provided for operating the said adjusting screw. Fitting upon the adjusting screw is a clamp block 45 which has an aperture through which the adjusting screw extends, but which aperture is not threaded nor engaged by the threads of the adjusting screw and a swinging arm 46 pivoted at 47 to the lug 9, passes between the lug 41 and the clamp block 45 as shown in Fig. 4 and is designed to be tightly gripped by the said clamp block when the hand wheel 44 is turned to force the adjusting screw 42 inwardly. The object of the swinging arm and adjusting screw just described is to permit the vise to be swung into any position from that shown by the full lines in Fig. 1 to a position which would bring the jaws from the vertical position shown in this figure to practically horizontal position and to temporarily lock the said vise in said tilted position.

Attention is now called to Figs. 2 and 5. In corresponding gripping members in each the stationary and movable rotating jaws is formed a recess 48 in which is fitted a sliding block 49 with a slot 50 formed therein. A screw 51 threaded through the gripping member enters said slot to limit the movement of said sliding block 49 to the length of the slot. At one side, the aperture 48 is off-set as shown at 52 and seated in this off-set is a leaf-spring 54 which is designed to exert a constant tension against the sliding block 49. A small notch 55 is formed in the face of each of the gripping members and is designed to allow the user of the vise to insert any suitable instrument to force the sliding blocks 49 outwardly from the gripping members. It will be seen by reference to this figure that the sliding blocks when thus extended will permit a piece of material being worked upon such as a ring or the like to lie upon the face of the plate 16 or top of the work bench while one portion of it is gripped between the blocks 49.

Having fully described my invention what I claim as new and desire to secure by Letters Patent, is—

1. A vise including a supporting bracket, a guide bracket pivotally connected to the supporting bracket, a jaw rotatably mounted on the guide bracket, and provided with a plurality of gripping members having relatively different shapes, a movable jaw supporting member operatively connected to said guide bracket and movable toward and away from said jaw, and a second jaw rota-

tably mounted on the jaw supporting member and provided with a plurality of gripping members of relatively different shapes, each jaw being rotatable independently of the other jaw to bring either of the gripping members of the jaw into position to coöperate with either of the gripping members of the other jaw, a pendent ear upon the supporting bracket, a rod pivotally connected to said ear, and a clamp carried by said guide bracket and adjustably connected to said rod.

2. A vise comprising a supporting bracket, a guide bracket pivotally connected to the supporting bracket and movable about a horizontal axis, said guide bracket being provided with an elongated guide groove, the bracket being also provided at its forward end with an annular flange having a reduced portion, a jaw rotatably mounted on said flange, a movable jaw supporting member having a shank movably mounted in said groove, the movable jaw supporting member being also provided with an annular flange, a movable jaw rotatably mounted on the last mentioned flange, and means for locking said jaws in various adjusted positions.

In testimony that I claim the above, I have hereunto subscribed my name.

FREEMAN W. STROH.