

E. M. WALKER.
SWIVEL BASE VISE.
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976,521.

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2 SHEETS—SHEET 1.

Fig. 1.

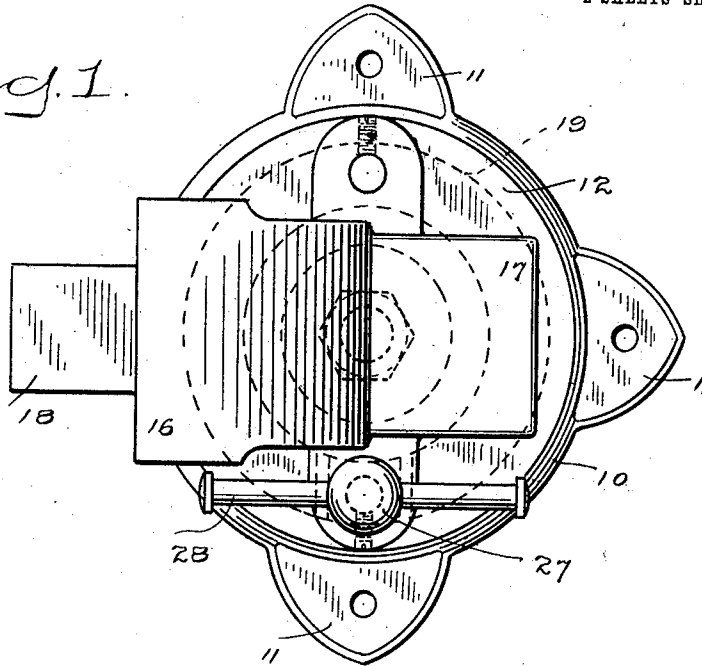
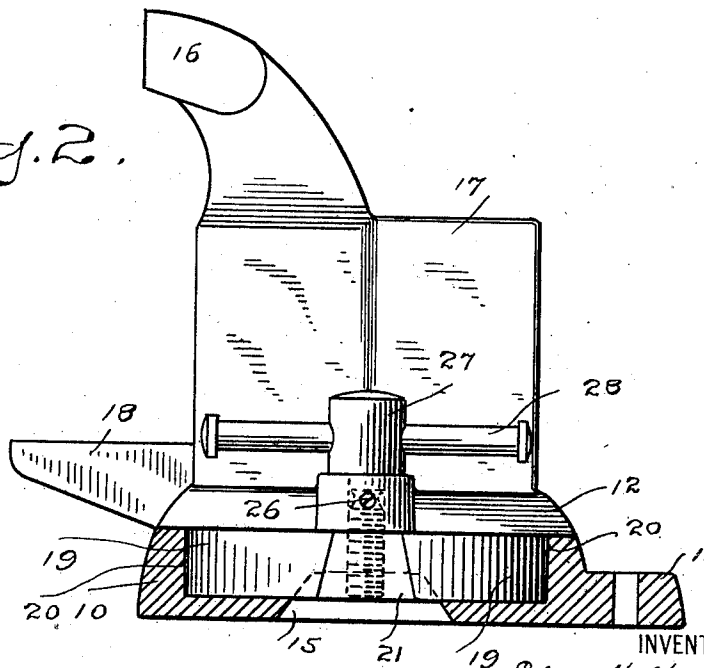


Fig. 2.



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SWIVEL-BASE VISE.

976,521.

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To all whom it may concern:

Be it known that I, ELI M. WALKER, a citizen of the United States, residing at Meriden, county of New Haven, State of Connecticut, have invented an Improvement in Swivel-Base Vises, of which the following is a specification.

This invention relates to swivel base vises and has for its object to produce a vise of this character whose jaws may be readily rotated to any desired position in the horizontal plane and locked there and in which the locking screw may be readily shifted from right to left or vice versa to accommodate a right or left hand operator.

With these and other objects in view I have devised the simple and novel swivel base vise which I will now describe, referring to the accompanying drawings forming a part of this specification and using reference characters to indicate the several parts:

Figure 1 is a plan view of my novel vise with the movable jaw removed; Fig. 2 a side elevation corresponding therewith, the bed being in section; Fig. 3 a central transverse section of the bed and base on a line at right angles to the section line of the bed in Fig. 2; Figs. 4, 5 and 7 are plan views of variant forms of the expanding locking ring; Fig. 6 a detail elevation corresponding with Fig. 5; and Fig. 8 is a detail elevation corresponding with Fig. 7.

10 denotes the bed which is provided with ears 11 for attachment to a bench or in any suitable position for use.

12 denotes the base which is swiveled to the bed, as by means of a shouldered stud 13 which is tapped into the base, turns freely in the bed and is provided with a head 14 which lies in a recess 15 in the under side of the bed. The base carries the fixed jaw 16, a guide block 17 for the slide bar and a rest 18 for the movable jaw.

The movable jaw, slide bar and the operating mechanism are not shown, as they form no portion of the present invention, which relates to the means for locking the base and fixed jaw at any required adjustment in the horizontal plane.

The essential feature of the invention is an expansible locking ring 19 which lies in

a circular groove 20 in the bed and will contract when released and means for expanding the ring to lock the base. For use in heavy vises the ring may be in two parts if preferred.

In the form illustrated in Figs. 1 to 4, inclusive, the ends of the locking ring are separated and undercut and the ring is expanded by means of a wedge 21 lying between the ends thereof. The ends of the wedge incline from the bottom upward and inward and the ends of the ring are inclined upward and outward from the bottom to correspond therewith. Upon the side of the ring opposite to the wedge is an upwardly extending stud 22. The base is provided on opposite sides with holes 23 one of which receives stud 22 and the other a locking screw 24 which passes freely through the hole and is tapped into the wedge. The shank of the locking screw is provided with a circumferential groove 25 which is engaged by the tip of a set screw 26. Both holes 23 in the base have threaded holes for a set screw leading thereinto. The locking screw is provided with a head 27 which rests upon the bed and is provided with a transverse hole to receive a double-headed operating pin 28 which slides freely therein in the usual manner.

The operation will be obvious from the drawings. The engagement of the set screw with the locking screw retains the latter against longitudinal movement; consequently, rotation of the locking screw must raise or lower the wedge. In setting up, stud 22 on the locking ring is placed in engagement with one of the holes 23 in the base, the locking screw is passed through the other hole 23 and turned into engagement with the wedge and then the set screw is turned into engagement with the groove in the locking screw. To adjust the vise in the horizontal plane, it is simply necessary to turn the locking screw backward which lowers the wedge and permits the locking ring by its own resiliency to contract slightly in the groove and leaves the base and ring free to be rotated to place the jaws in any required position. After placing the jaws in position, the base and jaws are locked

there by turning in the locking screw, the effect of which is to raise the wedge and expand the locking ring in its groove, thereby locking the base and jaws rigidly to the bed so that they cannot be shifted without again operating the locking screw. To shift the locking screw from a right to a left hand adjustment or vice versa, the set screw is turned out to release the locking screw, the locking screw is turned out of engagement with the wedge, the base is lifted out of engagement with stud 22 and given a half turn and the stud placed in engagement with the other hole 23 in the base, the locking screw is passed through the hole 23, which has previously been engaged by the stud, and turned into engagement with the wedge and then the set screw is turned into engagement with the groove in the locking screw.

20 In the form illustrated in Figs. 5 and 6, which is adapted for heavy vises, a two-part locking ring is used, which is indicated as a whole by 29. Instead of a single wedge, two wedges are used shaped as before to engage the corresponding ends of the parts of the ring. Both wedges have threaded holes tapped therein for engagement by a locking screw. Stud 22 is dispensed with and a dust plug 30 is placed in the hole 23 opposite to the locking screw. To shift from right to left adjustment and vice versa, it is simply required to transpose the locking screw and dust plug.

In the form illustrated in Figs. 7 and 8, the ring is expanded by a cam instead of by a wedge. 32 denotes the ring, the ends of which are separated as in the first form and are provided with curved recesses 33 facing each other, which receive the correspondingly-curved faces of a cam 34. The cam is provided with a round shank 35 which rotates freely in a hole 36 in the base and is provided with an angular head 37 which is adapted to receive a wrench. Opposite to the cam is a stud 38 which engages the opposite hole 36 in the base as in the first form. As the long diameter of the cam is greater than the diameter of the shank, no set screw is required to retain the cam in place. The locking ring is expanded to lock the base and jaws in any required position by rotation of the cam, as indicated in Fig. 7, a slight backward turn of the cam relieving the tension upon the ring which contracts of its own resilience as in the first form. The shifting of the jaws from right to left, or vice versa, is effected substantially as in the first form, the base is lifted out of engagement with shank 35 and stud 38 and the stud and shank are each placed in the hole 36 in the base previously occupied by the other.

Having thus described my invention I claim:

1. A device of the character described comprising a bed having a circular groove, a split locking ring disposed therein, a base swiveled to the bed, and means disposed between the ends of said ring and movable in a line parallel to the axis of said ring for spreading the same to lock the base to the bed.

2. A device of the character described comprising a bed having a circular groove, a split locking ring disposed therein, a base swiveled to the bed and connected to said ring, and means on the bed and movable in a line parallel to the axis of said ring for spreading the same into locking engagement with the bed.

3. A device of the character described comprising a bed having a circular groove therein, a base swiveled in said bed, a split locking ring disposed in said groove, a wedge disposed between the ends of said ring and an operating screw passing through said base into said wedge to raise the latter whereby the ring is extended into engagement with said bed to lock said base in adjusted position.

4. A device of the character described comprising a bed having a circular grooved base swiveled in said bed provided with openings, a split locking ring disposed in said groove and having a stud disposed in one of said openings, a wedge disposed between the ends of said ring and a locking screw disposed in the other opening and entering said wedge to raise the latter whereby said ring is expanded into engagement with said bed.

5. A device of the character described comprising a bed having a circular groove, a base swiveled to said bed and provided with openings, a locking ring disposed in said groove and having a stud disposed in one of said openings, a wedge disposed between the ends of said ring and a locking screw disposed in the other opening and entering said wedge to move the latter in a line parallel to the axis of the ring to lock the base in adjusted position, and a set screw for holding the locking screw against longitudinal movement.

6. A device of the character described comprising a bed having a circular groove therein, a base swiveled thereto, a split locking ring disposed in said groove and having a stud connecting the same to said base, and means disposed between the ends of said wedge movable in a line parallel to the axis of said ring to spread the latter in engagement with said bed.

7. In a vise of the character described, a bed having a circular groove therein, a base carrying a stationary jaw swiveled to said bed, a split locking ring disposed in said groove, a wedge disposed between the ends of said ring, and means independent of the

movable jaw-operating means to raise said wedge and expand the ring into engagement with said bed.

5 8. In a vise of the character described, a bed having a circular groove, a base carrying a stationary jaw swiveled to said bed, a locking ring disposed in said groove, and means independent of the movable jaw-oper-

ating means for spreading said ring in engagement with said bed.

In testimony whereof I affix my signature in presence of two witnesses.

ELI M. WALKER.

Witnesses:

WILLIAM H. LYON,

C. F. PARKER.

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