J. R. LONG.
AUTOMATIC SWIVEL BOTTOM BENCH VISE.
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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

WITNESS

G. Fisher

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BY

Patentees

ATTORNEYS.
To all whom it may concern:

Be it known that I, John R. Long, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Automatic Swivel-Bottom Bench-Vises, of which the following is a specification.

This invention consists in an automatic swivel-bottom bench vise, and is an improvement in the type or construction of vise shown in my original vise patent of January 29, 1901, and numbered 667,151.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of the complete vise with the parts locked together. Fig. 2 is a horizontal sectional plan view on line 2—2, Fig. 1. Fig. 3 is a bottom view of the body member b of the vise. Fig. 4 is a cross section on line 4—4, Fig. 1. Fig. 5 is a perspective detail of the wedge or key member.

Automatic locking of the fixed jaw or body of the vise on the base or standard by tightening the operating screw is shown in the patent above referred to and hence the invention in any such broad sense is not claimed herein. However, in the said construction the locking becomes an incident in the tilting of the pivoted dog 15 by reason of slight looseness in the guide-bar 10 of the free jaw. Apart from objection to this construction mechanically and operatively, as is more or less obvious, I have constructed the present vise on what I regard as a materially improved plan and with totally different means in so far as locking and operating the vise is concerned.

Thus, a represents the base proper, which is adapted to be fixed to a bench or other support and provided with an annular seat or socket of a suitable depth to receive the corresponding annular and comfortably fitting hub 2 on the bottom of the body b of the vise. The said body has a flange 3 about the top of said hub resting on said base and is rotatable thereon as well as being adapted to be locked in said base as will presently be seen.

The said body has the inner jaw 4 as an integral portion thereof and is provided with an opening through the same front to rear for the outer or slidable jaw member having a channeled shank 6 projecting through the said opening and slidable therein between square walls, in this instance. The jaw operating screw s projects through said outer jaw into said shank and is operatively engaged therewith, as usual or in any preferred way, and the said screw is threaded into and through a barrel-shaped nut 7 on the top and front of what otherwise is a key or wedge member w.

The hub 2 of the body b is split front and rear at 8, and the said split is amplified or extended upward through the flange 3 in the form of a substantially V-shaped recess 9 therein at the rear and thence enlarges into the opening for the shank 6 of the outer jaw, so that there is ample expansibility in said body for the comparatively slight locking expansion required, in hub 2 to frictionally tighten the same without in any measure impairing the efficiency or operation of the vise.

It will be seen that the said V-shaped or flaring recess 9 through the flange 3 opens into the hollow interior of the body b relatively as seen in Fig. 2, and that the split lines 8 in hub 2 provide for the spreading of the hub by means of said wedge to effectually lock the body in base a.

Respecting the wedge and nut member w, it will be seen that the nut is on a plane above the wedge between the sides of shank 6, and that the web portion of the wedge which carries the relations of a length to reach across the well in the base onto the opposite landing where it is engaged or penetrated by the screw 10 in a threaded hole therein. The said screw is of a length adapted to pass through the bore in the tubular projection 12 integral with body b and has a winged head to grip and turn the same and thereby draw the said wedge into tightening relations, or to release the same when the vise is to be rotated on its base. Ordinarily, however, when the vise is in use and set in a fixed position the said screw and wedge are in tightened relations and the vise is thus made solid with its base. But both tightening and releasing of the vise presume as a first step the tightening of the parts by operating screw s. This being done and the wedge being tightened thereby the screw 10 is set and the parts are locked, so that then the vise can be used as ordinarily without affecting the wedge, and the nut serves the same usual function, say as the nut in the patent above referred to. It will be seen that upon withdrawal of the said screw 10 theween member w is again available for use.

It will of course be understood that the vise must be free to move across the base a when in use, and that the latter must be provided with a means of movement or motion as is shown and as will be evident from the drawings. The movement may be of the usual types, one of which is shown in the drawing.

The usual types of movement or motion may be utilized in connection with the above described device, and it is not intended to limit the same to the specific details shown in the drawing and described hereinabove; it being understood that I claim as my invention the improvement in automatic swivel-bottom bench vise here described and herein set forth.
be noticed, also, that the wedge ω rests on the fixed base a at both ends and the sides of the shank 6 rest on its flat flaring top, and this brings said shank into bearing relations at its top with the flat top and side walls in the body b, thus providing a straight back and forth sliding movement for said shank. Obviously the automatic locking of the vise on its base will follow the tightening of the operating screw through engagement of or by jaws 4 and 5 regardless of any looseness there may be in adjusting screw 10, and said screw 10 is employed chiefly to fix the jaws in any preferred working position on the base, as when the same kind of work is to be done more or less continuously and fixedness of the parts is desired.

By having the shank 6 of the outer jaw resting on the flat top of wedge 8 and said shank confined along its top in body b the wedge is prevented from tilting when tightened by screw 8.

In general use the adjusting screw 10 is kept just sufficiently tight to take up the lost motion occasioned by the clamping or unclamping of the vise jaws.

What I claim is:

1. In vises, a base having an annular seat, a vise body constructed to be expanded in said seat and provided with a flaring recess in its side above said base, a flaring wedge in said base having a nut on its top and a jaw operating screw engaged in said nut.

2. In vises, a base having an annular seat, a vise body having a split annular bottom occupying said seat and provided with a tapering recess for a wedge open to the split in said body, a wedge in said recess and a jaw operating screw engaged with said wedge and adapted to tighten and loosen the same.

3. A vise as described, having an annular seat, a body with a split hub occupying said seat and having a flaring recess open to said split, a wedge in said recess and an adjusting screw engaged in the end of said wedge through the wall of said body and adapted to expand said hub.

4. A vise as described having a base with an annular seat, a body member provided with an annular split hub occupying said seat and having a tapered recess next above said base open to a split in said hub, in combination with a tapered wedge in said recess having a nut on its top and a threaded hole in its end, a jaw controlling screw engaged through said nut and an adjusting screw engaged in said hole.

5. A vise as described having a base with a socket and a vise body having a split bottom, seated in said socket and a flange resting on said base, and said body tapered recess through said flange open to the split in the said bottom, a wedge in said recess and an adjusting screw engaged in the end of said wedge and in tightening relations therewith.

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

JOHN R. LONG.

Witnesses:

F. C. HARROLD,
H. T. FISHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."