Feb. 9, 1926. 1,572,279

A. F. FLORENCE

VISE

Filed Feb. 3, 1925

Fig 1

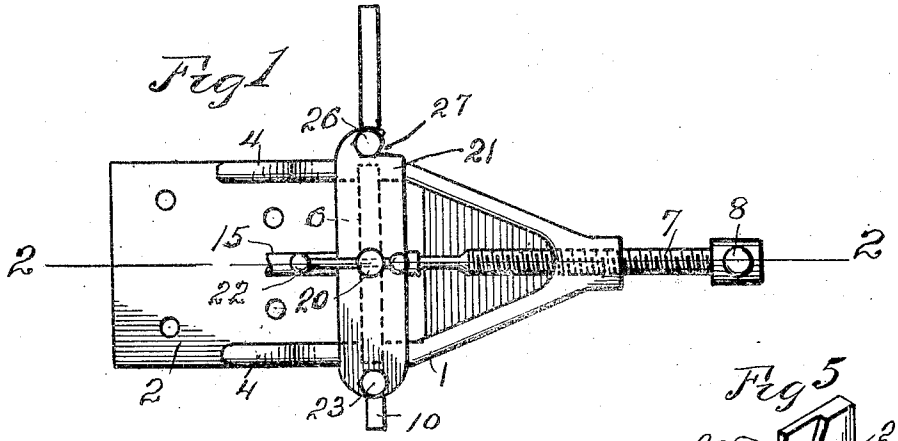


Fig 5

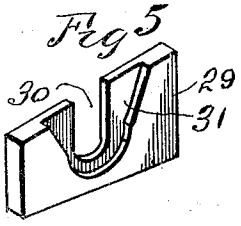


Fig 2

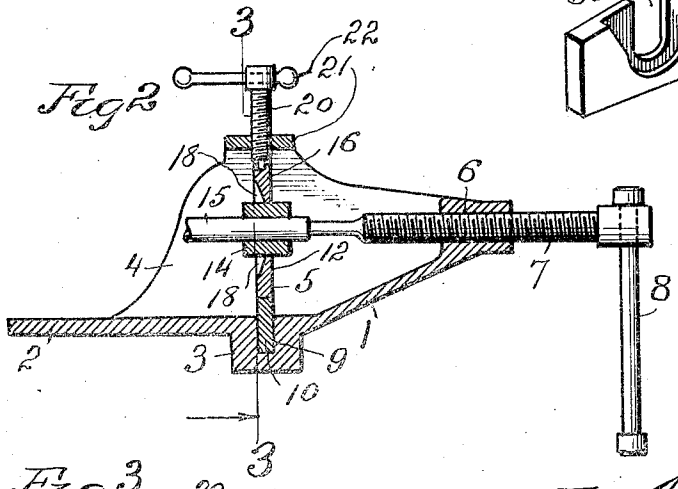


Fig 3

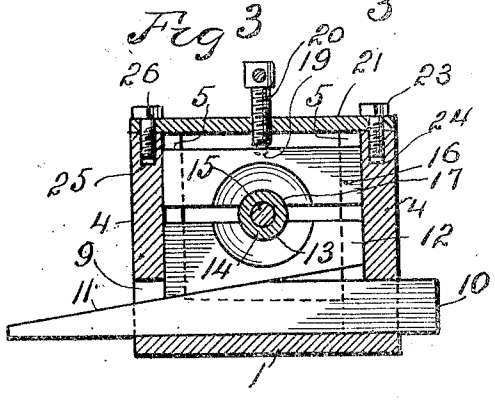
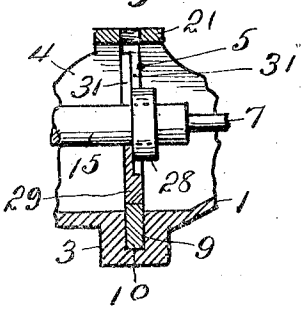


Fig 4



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UNITED STATES PATENT OFFICE.

ALBERT F. FLORENCE, OF KANSAS CITY, MISSOURI, ASSIGNOR OF ONE-HALF TO LEO G. BECKER, OF KANSAS CITY, MISSOURI.

VISE.

Application filed February 3, 1925. Serial No. 6,525.

To all whom it may concern:

Be it known that I, ALBERT F. FLORENCE, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Improvement in Vices, of which the following is a specification.

My invention relates to improvements in vises.

It is particularly adapted for forcing shafts, from collars, rings or bearings, which are tightly fitted thereon. It is well adapted for forcing armature shafts out of ring bearings, which are tightly fitted thereon.

One of the objects of my invention is to provide a novel vise of the kind described, which is simple, cheap, strong, durable, not liable to get out of order, and with which an armature shaft may be very quickly forced out of a ring bearing tightly fitted thereon.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawing, which illustrates the preferred embodiment of my invention,

Fig. 1 is a plan view of my improved vise;

Fig. 2 is a vertical section on the line 2—2 of Fig. 1, showing a shaft mounted on the vise in position for extracting the shaft from a ring bearing fitted thereon;

Fig. 3 is a sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a fragmental vertical sectional view of the vise, in which the shaft supporting plate is used, when the ring bearing on the shaft is a roller bearing; and

Fig. 5 is a perspective view of the supporting plate shown in Fig. 4.

Similar reference characters designate similar parts in the different views.

The vise is provided with a base 1 which has a flat lip 2, adapted to be bolted to the top of a bench or other suitable support. The lower side of the base is provided with a transverse rib 3, adapted to bear at its rear sides against the bench.

The base 1 is provided with two upright parallel walls 4, respectively provided on their inner sides with two oppositely disposed vertical guides, which may be two vertical grooves 5.

The base 1 is provided with a forward extension having a longitudinal threaded hole 6, in which is fitted a screw 7 having the usual slidable handle 8 mounted therein. The base is provided with a transverse guiding groove 9, which is in alinement transversely with the grooves, and which is adapted to receive therein a transverse slidable wedge 10 having an inclined upper surface 11, adapted to bear against the lower inclined edge of a clamping plate 12, the upper edge of which is provided with an arcuate notch 13, adapted to receive a ring bearing or collar 14, tightly fitted on a shaft 15, which may be an armature shaft.

Slidable in the guiding grooves 5 is an upper clamping plate 16, the lower edge of which is provided with an arcuate notch 17 adapted to receive the bearing 14. The plates 12 and 16 are respectively provided on their inner sides to the arcuate recesses 18 adapted to receive the adjacent end of the winding of an armature having the shaft 15.

For forcing the clamping plate 16 downwardly, it has in its upper edge a recess 19 adapted to receive therein the lower ends of a screw 20, which is fitted in a vertical threaded hole provided in a transverse plate 21, which is mounted on the top of the walls 4. The screw 20 may have the usual slidable handle 22.

The transverse plate 21 is pivotally mounted on a bolt 23, fitted in a threaded hole 24, in the upper edge of one of the walls 4. The other wall 4 is provided in its upper edge with a similar threaded hole 45, in which is fitted a clamping screw 26, adapted to pass into a notch 27, Fig. 1, which is provided in the front edge and adjacent to one end of the transverse plate 21.

In the operation of the invention, the ring bearing is placed in the arcuate groove 13 of the plate 12, and the wedge 10 is driven to the left, as shown in Fig. 3, so as to lift the ring bearing 14, and with it the armature shaft 15 until the latter is in axial alinement with the screw 7. The screw 20 is then turned so as to force the plate 16 downwardly so as to clamp the ring bearing 14 tightly against the plate 12. The screw 7 is then turned in a direction such that the reduced inner end of the screw, which engages the shaft 15 will force the latter out of the bearing 14, said reduced end being small to pass through the bearing 14.

When the shaft 15 is provided with a roller bearing 28, such as is shown in Fig.

4, the screw 20 is loosened, as is the screw 26 from which the plate 21 is swung on the screw 23, so that the clamping plates 12 and 16 may be removed, and a lower plate 29, Figs. 4 and 5, is slid into the grooves 5, as shown in Fig. 4. The plate 29 has an inclined lower edge adapted to have the wedge 10 bear against it. The upper edge of the plate 29 is provided with a slot 30, which is adapted to receive therethrough the shaft 15, but which is not wide enough to permit the passage therethrough of the ring bearing 28, which is disposed in a recess 31 provided in the outer side of the plate 29. The wedge 9 is then operated to lift the plate 29 and with it the shaft 15, until the latter is axially alined with the screw 7. The latter is then turned so as to force the shaft 15 to the left, as viewed in Fig. 4, so as to force the shaft out of the roller bearing 28.

When the plates 12 and 16 are again to be used, the plate 29 is removed, and the plates 12 and 16 substituted therefor in the positions in Fig. 3, after which the plate 21 is swung to the position shown in Fig. 1, following which the bolts 23 and 26 are tightened, and the device is then operated as described in the first instance.

I do not limit my invention to the structure shown and described, as many modifications, within the scope of the appended claims, may be made without departing from the spirit of my invention.

What I claim is:—

1. In a vise of the kind described, a base adapted to be mounted on a suitable support and having oppositely disposed vertical guides, and provided with a longitudinal threaded hole and a transverse guide, a screw fitted in said threaded hole, a supporting plate slidably mounted in said vertical guides and adapted to support a shaft in end alinement with said screw and to engage and hold a ring or a bearing tightly fitted on said shaft, when the latter is forced endwise by the screw, said plate having an inclined lower edge, and a wedge mounted in said transverse guide and having an inclined surface for slidable engagement with the inclined edge of said plate, by which the latter is forced upwardly, when the wedge is driven in the proper direction.

2. In a vise of the kind described, a base having two oppositely disposed vertical guides and having a longitudinally threaded hole, a plate slidable in said guides and having an inclined lower edge and adapted to receive and support on its upper edge a ring or bearing tightly fitted on a shaft with the latter in endwise alinement with said screw, an upper plate slidable in said guides and adapted to have its lower edge engage and clamp said ring or bearing, means for forcing downwardly said upper plate, and a wedge adapted to be mounted transversely on said base with its upper inclined surface engaging the inclined lower edge of said lower plate, for forcing the latter upwardly when the wedge is driven transversely in the opposite direction.

3. In a vise of the kind described, a base having two oppositely disposed vertical guides and a transverse guide, a lower plate having an inclined lower edge and adapted to support a ring or bearing tightly fitted on a shaft, with the latter in alinement with a threaded hole with which the base is provided, a screw fitted in said hole and adapted to bear against said shaft, at the adjacent end thereof, an upper clamping plate slidable in said vertical guides and adapted to have its lower edge clampingly engage the upper side of said ring or bearing, a transverse plate mounted on said base, a screw fitted in a vertical threaded hole with which said plate is provided and adapted to bear at its lower end against said upper clamping plate, and a wedge slidable in said transverse guide and having an inclined upper edge adapted to engage the inclined lower edge of said lower plate for forcing the latter upwardly, when said wedge is driven in the transverse guide in the proper direction.

4. In a vise of the kind described, a base having two oppositely disposed vertical guides and a transverse guide and a longitudinal hole, a lower clamping plate slidable in the vertical guides and adapted to clampingly support a ring or bearing tightly fitted on a shaft and to hold the latter in end alinement with said longitudinal hole, the latter being threaded, a screw fitted in said hole and adapted to bear against the adjacent end of said shaft to force the latter from said ring or bearing when the screw is turned in the proper direction, an upper clamping plate slidable in said vertical guide and adapted to have its lower edge clampingly engage said ring or bearing, a transverse plate pivoted adjacent to one end on a vertical axis and having an edge slot, a clamping bolt adapted to pass through said slot and to releasably hold said transverse plate in the transverse position against said base, said transverse plate having a threaded vertical hole extending therethrough, a clamping screw fitted in said hole and having its lower end adapted to engage and force downwardly said upper clamping plate, and a wedge adapted to be mounted in said transverse guide and having an inclined upper surface adapted to slidably engage the inclined lower edge of said lower plate for forcing the latter upwardly, when the wedge is driven lengthwise in the proper direction.

In testimony whereof I have signed my name to this specification.

ALBERT F. FLORENCE.