Aug. 14, 1951 R. J. DUFFY 2,564,566

ANGULARLY ADJUSTABLE VISE

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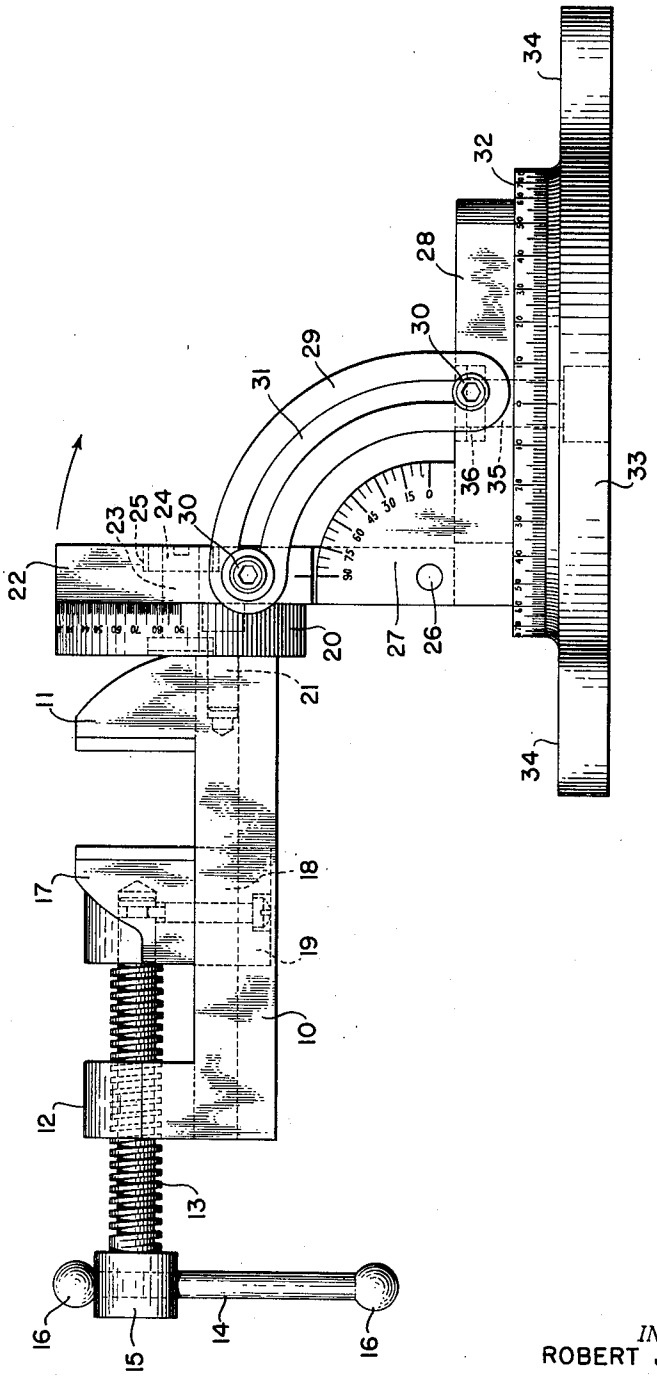


FIG. 1

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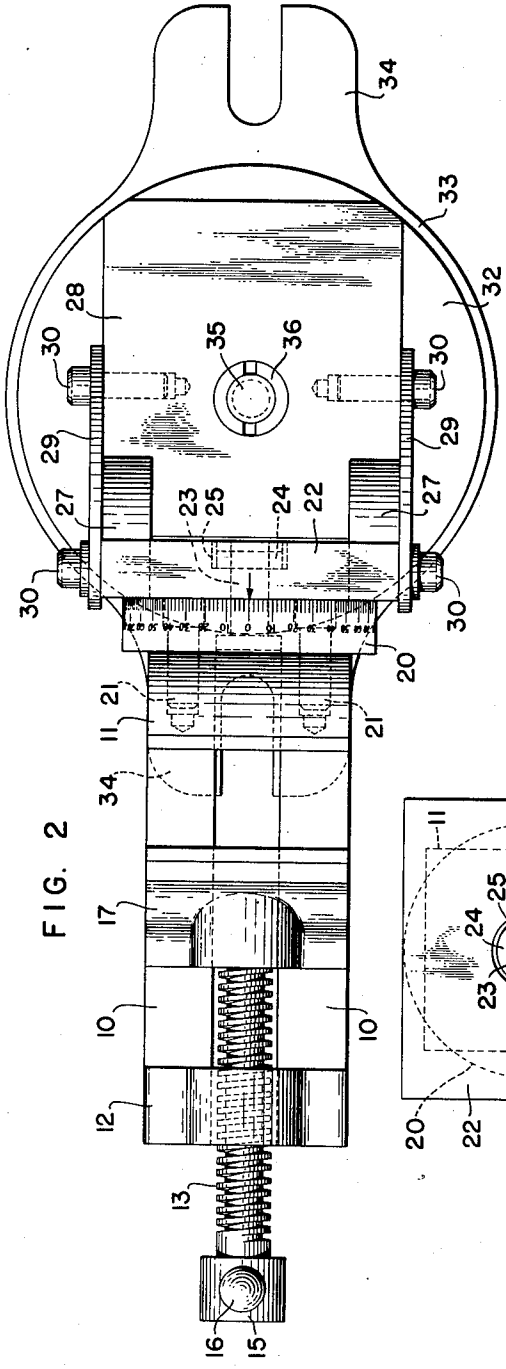


FIG. 2

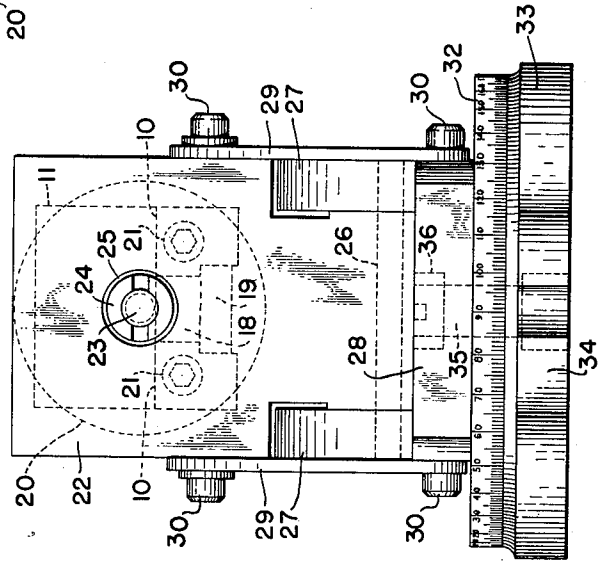


FIG. 3

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ANGULARLY ADJUSTABLE VISE

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1 Claim. (Cl. 81—41)

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This invention relates to adjustable vises, and it relates more particularly to a vise for use in machine tools, particularly grinding machines, whereby articles may be firmly held and portions thereof shaped to proper angles with respect to each other, such as is required, for example, when tool faces are to be ground at proper relative angles.

The principal object of the present invention is to provide an angularly adjustable vise for use in grinding machines and the like which is so constructed and arranged that likelihood of interference with the parts of the machine tools in which the vise is used will be minimized and in which the various adjustments may be more quickly and expeditiously made than in the devices of this character at present in use.

A further object of the invention is to provide a novel device of the character aforesaid which, while affording a high degree of accuracy will, nevertheless, be relatively inexpensive in construction, by reason of the use therein of a vise proper which is readily available, and which may be separately used if desired.

A further object of the invention is to provide a device of the character aforesaid which will permit the adjustment of the same to various positions, and permit the use of the same in such adjusted positions, without interference by or with the parts of the machine tools in connection with which the device is used.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawings forming part hereof, in which:

Figure 1 is a side elevation of an adjustable vise embodying the main features of the present invention;

Fig. 2 is a top or plan view thereof; and

Fig. 3 is an end elevation thereof.

It should, of course, be understood that the description and drawings herein are illustrative merely, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

Referring to the drawings, in the particular embodiment of the invention therein shown, the vise proper comprises a frame member made of two longitudinal bar-like extensions 10 having an integral upwardly projecting jaw 11 at one end, and at the other end an integral lug 12 in which a tightening screw 13 is threaded. The outer end of the tightening screw 13 is provided with a hand

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lever 14 of the usual type, comprising a rod which passes through a head portion 15 of the screw 13 and is provided with an enlargement 16 at each end so that said hand lever 14 may be moved to the most advantageous position for turning the screw 13.

The inner end of the screw 13 is journaled in a movable jaw member 17 which has a portion 18 extending downwardly into the space between the two bar-like extensions 10 of the frame of the vise proper. The lower portion of each of the members 10 is recessed whereby a retaining block 19, carried at the lower end of the extension 18 of the movable jaw member 17, will serve to prevent the movable jaw member 17 from being displaced from the frame members 10.

The foregoing type of vise proper is of a well known construction and commonly used in connection with various machine tools, such as drill presses, shapers, milling machines and the like.

The jaw portion 11 of the vise proper is, however, secured to a disc member 20 by means of bolts 21, and the disc member 20 is secured to a plate member 22 by means of a bolt 23, which extends therethrough and serves not only as a fastening means but also as a pivot about which the disc member 20 and the parts carried thereby may be rotated on the axis provided by the bolt 23.

The bolt 23 is provided with a nut 24 threaded thereon and positioned in a recess 25 in the rear of the plate member 22, the arrangement being such that when the nut is tightened on the bolt 23 the vise proper will be held in a fixed position on the axis provided by the bolt 23.

The peripheral surface of the disc member 20 is provided with suitable graduations indicating angularity and the plate member 22 is also provided with a line indicator so that the position of the vise proper about the axis provided in the bolt 23 will be indicated to the user.

The plate member 22 is pivotally supported by means of a pin 26 mounted in segment lugs 27 which extend upwardly from a horizontal plate member 28. The axis of the pivot pin 26 is transverse to that of the bolt 23 which is provided for the initial angular adjustment of the vise proper.

Sector shaped links 29 are provided on each side of the device. The links 29 are secured respectively to the plate member 22 and to the horizontal plate member 28 by means of bolts 30 passing through the slots 31 of said sector links 29.

At least one of the segment lugs 27 to which the plate member 22 is pivoted by means of the

pivot pin 26 is provided on its outer surface with suitable graduations for indicating the angularity of the plate member 22 with respect to the horizontal plate member 28. This adjustment is accomplished by loosening the bolts 30 and thereafter tightening the same when the plate member 22, and the vise proper carried thereby, have been brought to the desired angular position about the axis provided by the pin 26. It should here be noted that the axis of the pivot pin 26 is so located that the plate member 22 may, if desired, be brought to an extreme horizontal position.

The horizontal plate member 28 is secured to or integral with a disc member 32 having angular graduations on its peripheral surface. Said horizontal plate member 28 and disc member 32 are pivotally mounted on a base member 33 having slotted lugs 34 for securing the device on the work table of a machine tool such as a grinding machine or the like. The means for securing plate member 28 and disc member 32 to the base plate 33 comprises a bolt member 35 having a slotted nut 36 threaded thereon, the arrangement being such that after the adjustment of plate member 28 and the parts carried thereby has been made about the vertical axis provided by the bolt member 35, the nut 36 is tightened to secure the parts in the adjusted position. The periphery of the disc member 32 is graduated to indicate the angularity so that the proper positioning of the parts about the vertical axis may be known.

It will be noted that, by the foregoing arrangement, there is provided a vise which may be readily adjusted to various angular positions about three component axes. The adjustment in each instance may be made easily and expeditiously, and the various parts of the structure are so constructed and arranged as to minimize the likelihood of any interference between the various parts of the device and the parts of the tools for operating upon the work which may be mounted in the vise proper.

It will also be noted that the pivotal axis of the disc member is parallel to the clamping axis of the vise, that is, to the direction of travel of the movable jaw of said vise. By this arrangement, the various operations of the machine tools in connection with which the vise is used will be greatly facilitated, and the work may be set up in much less time and with less likelihood of error.

I claim:

An adjustable vise comprising a vise proper consisting of a frame work carrying a fixed jaw, a movable jaw mounted on said frame work, and means for advancing and retracting said movable jaw with respect to the fixed jaw; a disc member to which the fixed jaw portion of the vise proper is secured, a plate member on which said disc member is pivotally mounted, the pivotal axis of said disc member being parallel to the direction of travel of the movable jaw of the vise, means for securing said disc member at desired angular positions on said plate member; means for supporting said plate member comprising a horizontal plate member having upwardly projecting lugs, a pivot connecting said lugs and said plate member, means for securing said plate member in adjusted positions with respect to the horizontal plate member comprising slotted sector links and bolts for securing said links to said plate members, a base plate upon which said members are mounted, and means for pivoting said horizontal plate member about a vertical axis and securing the same in adjusted angular positions on the base plate.

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