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A. L. STOWELL

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VICE

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Fig. 1.

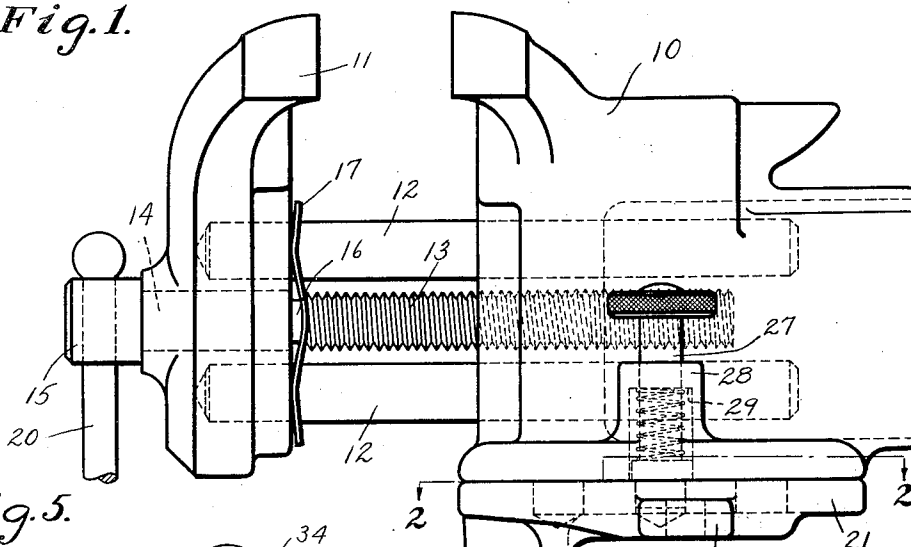


Fig. 5.

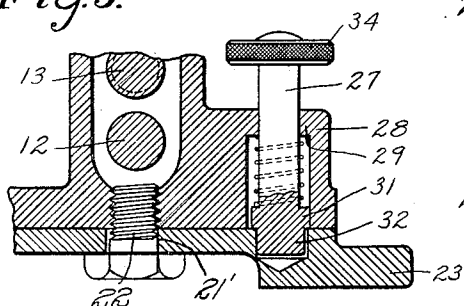


Fig. 2.

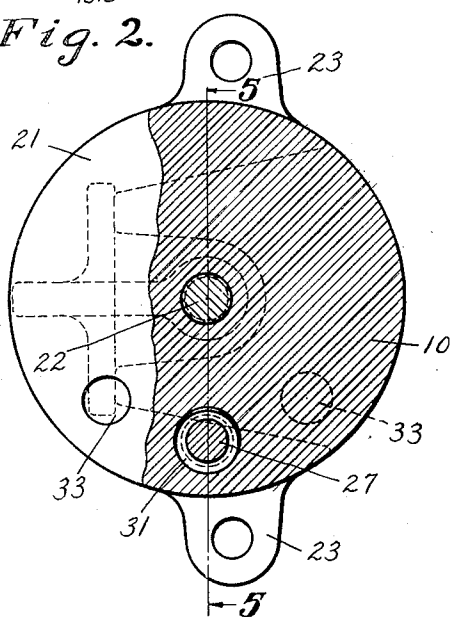


Fig. 4.

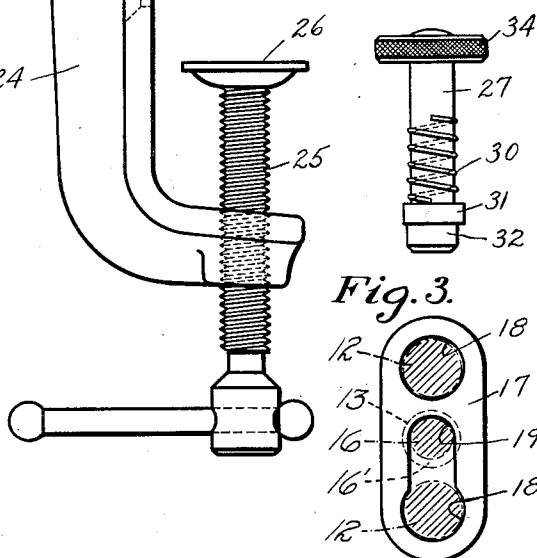
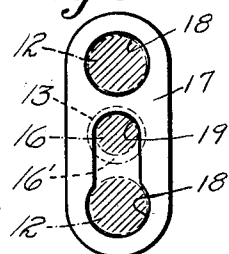


Fig. 3.



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UNITED STATES PATENT OFFICE

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VISE

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3 Claims. (Cl. 81—41)

The present invention relates to a small bench or table vise of the type having a swiveled but otherwise fixed jaw and a movable jaw associated with the fixed jaw by means of a screw.

5 The object of the invention is to provide a very simple and yet effective device which may be cheaply manufactured and sold at a relatively low cost.

10 More particularly, an aim of the invention is to provide in a device of this sort a very simple, cheap, and effective means for preventing lost motion or loose play between the movable jaw and the screw for adjusting that jaw.

15 A further aim of the invention is to provide a device with an angularly adjustable fixed jaw and means of a simple and effective nature for holding the fixed jaw in indexed position and also securing the fixed jaw rigidly to its support so that it cannot vibrate or shake.

20 Other objects will be in part obvious, and in part pointed out more in detail hereinafter.

25 The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

30 In the accompanying drawing wherein is shown, for illustrative purposes, one of the many embodiments which the present invention may take,

Figure 1 is a side elevation of a vise constructed and equipped in accordance with the present invention;

35 Fig. 2 is a transverse section taken through the base of the vise substantially on the line 2—2 of Fig. 1;

40 Fig. 3 is a detail side elevation of the tension plate or strip employed, the rods and screws being shown by broken lines;

Fig. 4 is a detail side elevation of the index pin with its tension spring; and

45 Fig. 5 is a sectional view taken substantially on line 5—5 of Fig. 2, through the body portion and base of the vise.

Referring now to the drawing, which shows the features of the invention embodied in a bench or table vise, 10 designates a fixed jaw or body portion, and 11 designates the movable jaw. The movable jaw is provided with a pair of vertically spaced apart guide rods 12 which slidably engage through the intermediate portion of the fixed jaw 10 so as to support the movable jaw 11 in proper register with the fixed jaw and so as to hold the movable jaw 11 from

tilting. An adjusting screw 13 is provided with a major threaded portion which is screwed into the fixed jaw 10 at a point between the guide rods 12, and at its outer end is provided with a cylindrical or journaled portion 14 mounted 60 for turning freely in the movable jaw 11 and at a point between the adjacent ends of the guide rods 12. The guide rods 12 are secured to the movable jaw 11 in any suitable manner, such as by a tight fit, and the guide rods 12, at 65 their free ends, have a relatively snug sliding engagement through correspondingly formed openings in the fixed jaw 10. The outer end of the adjusting screw 13 is provided with a head 15 which bears against the outer side of the 70 movable jaw 11 to hold the adjusting screw 13 from moving inwardly through the movable jaw. Between the threaded portion of the adjusting screw and its bearing portion 14, there is provided an annular groove or recess 16 disposed 75 at the inner side of the movable jaw 11.

In accordance with the present invention, a spring plate or strip is employed for keeping the swivel connection between the adjusting screw 13 and the movable jaw 11. This strip 80 is provided in its opposite end portions with openings 18 adapted to receive therethrough the spaced guide rods 12. The strip is also provided, at its intermediate portion, with a slot or opening 19 of reduced width and which 85 is adapted to receive the neck portion of the screw within the groove or annular recess 16. This slot opens up into one of the openings 18, in the present instance, the lower opening. The opposite end portions of the spring plate are 90 adapted to engage against the inner face of the movable jaw 11, as shown in Fig. 1. The intermediate portion of the spring is preferably bowed inwardly or rearwardly in the face of the jaw 11 and bears with tension against the 95 shoulder 16' at the inner side of the groove 16.

In assembling the parts so far described, the adjusting screw is passed through the bearing of the movable jaw and then the rear or inner end of the screw is extended through the lower opening of the spring plate. The spring plate 100 is moved forwardly of the screw until it engages the movable jaw, and the bowed portion of the spring is then pressed forwardly, and the spring is moved downwardly so as to engage the neck 105 of the screw in the slot 19, as shown most clearly in Fig. 3. The forward ends of the rods are now driven into the respective openings of the movable jaw above and below the bearing for the screw. 110

It is understood that the spring bears with tension against the shouldered end of the threaded portion of the adjusting screw so that the plate normally urges the cylindrical portion of the adjusting screw inwardly and holds the head 15 of the screw against the outer face of the movable jaw. This spring plate has sufficient inherent resiliency to maintain a relatively tight fit between the head and the movable jaw so that, when the adjusting screw is backed out of the fixed jaw, it will forcibly and incidentally carry with it the movable jaw to effect the desired immediate separation of the jaws. By holding the movable jaw against lost motion or loose play with respect to the screw, the operation of clamping a piece of work between the jaws is facilitated. The head of the screw is provided with the usual pin or handle 20 by means of which the screw may be easily turned in either direction.

The fixed jaw 10 is mounted for turning upon a base member 21, and to this end an axial screw 22 is passed upwardly through an opening 21' in the base member 21 and is threaded into the bottom of the fixed jaw 10. The base member 21 may be provided at opposite sides with apertured ears 23 for the reception of screws, bolts, or the like for securing the base member 21 from turning or twisting on the table, bench, or other support to which the vise may be applied. The forward edge portion of the base 21 carries a depending arm 24 which, at its outer end, is turned backwardly beneath the base 21 and is provided with a clamping screw 25 having a swivel for the piece 26 adapted to engage beneath the table or support when the screw is turned to clamp the base 21 in place.

The body portion or fixed jaw 10 of the vise is provided at one side of the pivot screw 22 with an index pin 27 mounted in a suitable housing or hollow boss 28 which may be an integral part of the jaw 10. The pin extends through and is journaled in the upper wall 29 of the housing. Near its lower end, the pin 27 is provided with an eccentric or cam 31 in the form of a collar or flange. At the lower side of the eccentric or cam 31, the pin 27 carries a stud 32 which is co-axial with the pin. This stud 32 is adapted to seat in any one of a number of socket or stop openings 33 which are provided in the upper face of the base. The openings 33 are arranged in a circular row and may be equidistantly spaced from the pivot screw 22 so that as the vise body is turned upon the base, the pin 27 is brought into registry with the selected opening. The upper end of the pin 27 is provided with a knurled head 34. A spring 30, interposed between the wall 29 and the cam or eccentric 31, normally urges the pin with its parts downwardly in the housing 28.

When it is desired to swing the vise into a predetermined angle upon its base 21, it is only necessary to clasp and turn the head 34 and draw it upwardly so as to lift the pin 27 and thereby raise the stud 32 out of the opening 33 in which it was engaged. The vise body may now be swung about its pivotal axis until the stud 32 moves into register with the selected opening 33. The tension of the spring 30, when the head 34 is released, snaps the stud 32 into that opening 33. The jaw 10 may now be

clamped very rigidly and tightly against vibration with respect to the base 11 by merely turning the head 34 of the index pin. When this is done, the cam or eccentric 30 will engage that portion of the wall of the housing which is remote from the pivot screw, with the result that there is a tendency to move the fixed jaw to the right, as shown in Fig. 5, and the lower end of the pin to the left. This results in the stud 32 engaging that portion of the wall of the opening 33 which is closest to the pivot pin, and also causes the pivot pin to be crowded to the right against the edge of the opening 21' and the jaw to be crowded towards the right against the threaded portion of the pivot pin. Thus all play is taken out between the pivot screw and the base, the pivot screw and the fixed jaw, between the base and the index pin, and between the pivot pin and the fixed jaw. Therefore, all lost motion and play is quickly taken up by the cam or eccentric and a rigidity in the structure is thus provided. These results are accomplished in a structure where accurate machine work is not required.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim as my invention:

1. A vise comprising a fixed jaw, a base for the jaw, a pivot pin connecting the base and jaw together and about which the jaw is adapted to turn, a spring pressed pin carried on the jaw, said base having openings therein adapted to selectively receive said pin, and an eccentric carried by said pin for operation against the fixed jaw.

2. A vise comprising a body portion, a base supporting said body portion, a pivot pin between the base and body portion, and about which the latter is adapted to turn, said body portion having a housing, a pin slidably mounted in the housing and having a stud on its lower end and an eccentric above the stud for engagement against the wall of the housing, and a spring carried in the housing and normally urging said pin towards said base, said base having socket openings therein adapted to selectively receive said stud.

3. A vise comprising a body portion, a base pivotally connected to the body portion, and an eccentric pin mounted on the body portion, said base having socket openings therein adapted to selectively receive the lower end of said pin, said pin being adapted to be turned on the body portion for moving the lower end of the pin eccentrically and binding the lower end of the pin in the socket opening.

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