

A. S. MELLOR.

WISE.

APPLICATION FILED APR. 18, 1918. RENEWED MAY 27, 1921.

1,385,088.

Patented July 19, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

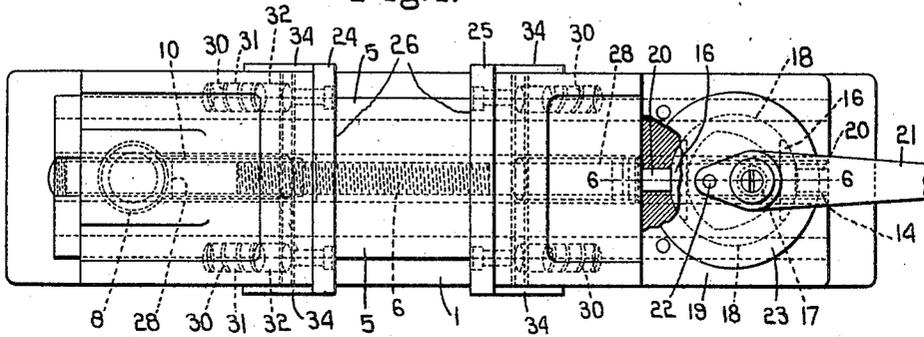


Fig. 2.

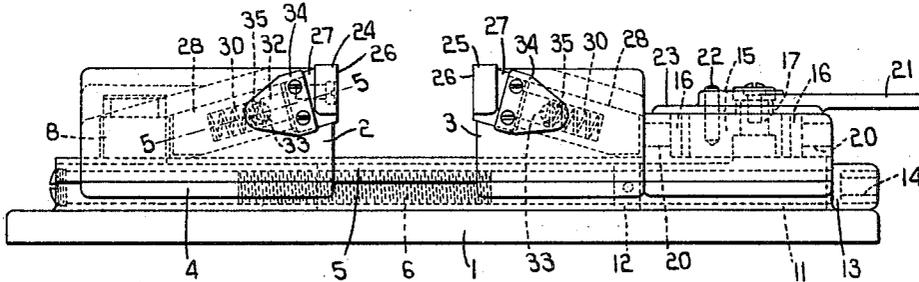


Fig. 3.

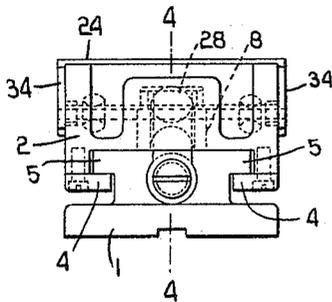
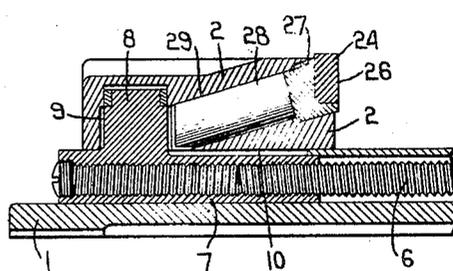


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

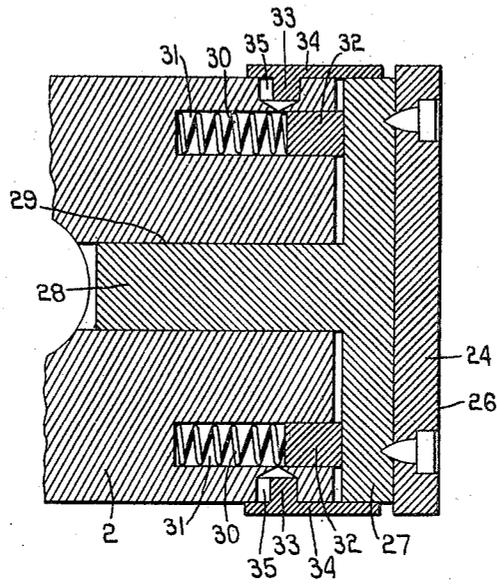
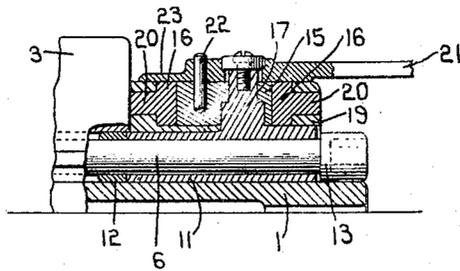


Fig. 6.



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UNITED STATES PATENT OFFICE.

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1,385,088.

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To all whom it may concern:

Be it known that I, ALFRED S. MELLOR, a citizen of the United States, residing at Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Vises, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

10 This invention relates to vises of that type which are used for holding work in a milling machine, planer, grinding machine, etc., and the object of the invention is to provide a novel vise which is constructed so that the gripping pressure of the jaws on the work will tend to draw the work downwardly against the base of the vise, thus obviating any tendency of the work to rise in the jaw when it is clamped therein. Other objects of the invention are to provide a novel vise of this type in which the jaws are provided with flat work-engaging faces and which is so constructed that when the work is clamped therein, said faces have a slight receding and downward movement while being maintained in their parallel relation.

25 Other objects of the invention are to provide a novel device which is so constructed that the operative parts are protected from dirt, metal chips, etc., and otherwise to improve vises, all as will be more fully hereinafter set forth.

30 In order to give an understanding of my invention, I have illustrated in the drawing a selected embodiment thereof which will now be described, after which the novel features will be pointed out in the appended claims.

35 Figure 1 is a plan view of a vise embodying my invention;

Fig. 2 is a side view;

Fig. 3 is an end view;

Fig. 4 is a section on the line 4—4, Fig. 3;

Fig. 5 is a section on the line 5—5, Fig. 2;

45 Fig. 6 is a section on the line 6—6, Fig. 1.

The vise herein illustrated comprises a base 1 on which are sustained two jaws 2 and 3 which are movable toward and from each other thereby to clamp the work between them. The jaw 3 is fixedly secured to the base 1 and constitutes the fixed jaw. The jaw 2 slides on the base 1 and is provided with guiding members 4 which embrace the ribs 5 of the base thereby retaining the movable jaw in its proper position.

55 For giving the movable jaw 2 its move-

ment toward and from the jaw 3, I have provided a combined cam and screw mechanism so that by using the cam a quick adjustment of the jaw 2 can be made, while by using the screw a relatively slow but more accurate adjustment of said jaw can be made.

60 The screw for adjusting the jaw is shown at 6 and it extends longitudinally of the base and screw-threads into a sleeve-like nut 7 which is connected to the jaw 2. This nut 7 is shown as having a post or stud 8 rising therefrom which enters a recess 9 formed in the jaw 2. The post 8 travels back and forth in a slot 10 formed in the base, and said nut is properly guided by the base. The rotation of the screw 6, therefore, will operate to adjust the jaw 2 toward and from the fixed jaw 3. The screw 6 extends through a cam-controlled sleeve 11, said screw having a collar 12 thereon which engages one end of the sleeve, and being provided with a head 13 which engages the other end of the sleeve. The head 13 is provided with a wrench-socket 14 for the reception of a wrench or implement for turning the screw. When the sleeve 11 is held stationary then the jaw 2 may be adjusted by applying a wrench to the wrench-socket 14 and turning the screw 6 in one direction or the other, said screw being held from longitudinal movement by the sleeve 11.

90 A cam device is provided for moving the sleeve 11 bodily in a direction longitudinally of the screw thereby giving a quick adjustment to the movable jaw 2. Such cam device comprises a cam member 15 which operates between two stationary shoes 16 and which is pivotally mounted on a stud 17 rising from the sleeve 11. By turning the cam between the stationary shoes 16, the sleeve 11 will thus be bodily shifted in one direction or the other. The shoes 16 are each confined in a cam-receiving chamber 18 formed in a housing 19, each shoe having a stud or stem 20 extending therefrom which enters a recess in the wall of the housing thereby holding the shoe in proper position. The cam 15 is turned by means of a handle 21 which is connected to the post 17 for turning movement and which is provided with a pin 22 that extends into an aperture in the cam. The pin 22 locks the handle to the cam and as the handle and cam turn about the same axis, turning movement of the handle will thereby turn the cam.

The handle 21 is provided with a cover plate 23 which overlies the top of the housing 19 and forms a cover or closure for the cam-receiving chamber 18. This cover prevents any dirt or metal chips from entering the cam-receiving chamber.

The jaws 2 and 3 are each provided with a work-clamping member which is yieldable rearwardly and downwardly so that when work is clamped between said jaws, the clamping pressure will cause the work-clamping members to yield rearwardly and downwardly thereby tending to draw the work down against the base 1 and resisting any tendency of the work to be forced out of the jaws by the clamping pressure. These work-clamping members are indicated at 24 and 25, respectively. Each work-clamping member is provided with a flat work-engaging face 26 which normally projects slightly beyond the vertical face of the corresponding jaw, and said members are so sustained on the jaws 2 and 3 as to permit them to yield rearwardly and downwardly in such a manner that the faces 26 will always remain in their parallel relation during the yielding movement. Each work-clamping member is secured to a head 27 provided with a stem or guiding element 28 which has a downwardly-inclined position and which enters and is guided in an aperture 29 formed in the jaw. The stem 28 extends rearwardly from the central portion of the head, as seen in Fig. 5. Situated on either side of the stem is a spring 30 which is confined in a socket 31 in the jaw and which acts against a follower 32 that in turn impinges against the head 27. These springs tend to hold the work-clamping members in their normal projected position and resist any receding movement thereof. The forward movement of the head 27 due to the action of the springs 30 is limited by stop projections 33 carried by plates 34 which are secured to the ends of the heads 27, said stop projections operating in recesses or slots 35 formed in the sides of the jaws, the recesses being of sufficient dimensions to permit movement of the work-clamping members relative to the jaws. The heads 27 are received in recesses formed in the jaws, and the walls of the recesses are arranged in parallelism with the stem 28 so that when each work-clamping member is forced rearwardly by the clamping pressure of the work, said member will move in a downwardly-inclined position. During this movement the work-clamping face 26 will maintain its vertical or parallel relation.

The operation of the device will be readily apparent from the foregoing. Normally the springs 30 hold the work-clamping members in their forward position with the faces 26 projecting slightly beyond the

faces of the jaws. When work is clamped between the jaws by the operation of either the cam or the screw, the clamping pressure of the work will tend to force the work-clamping members rearwardly and downwardly against the action of the springs 30, and the downward component of such receding movement of the work-clamping members will operate to hold the work firmly against the base.

The construction of the vise is such that the screw 6 is entirely protected from dirt and chips. Moreover, the plates 34 are of a size to completely close the ends of the recesses in which the heads 27 are received so that said plates constitute a protection against the entrance of any dirt or metal chips between the work-clamping members and the jaws. The device is relatively simple to manufacture and is effective in firmly holding the work.

I claim:

1. In a vise, the combination with two jaws, of means to move them toward and from each other, each jaw having a recess in its operative face, the top and bottom walls of which recess have a downwardly-inclined direction, a work-clamping member fitting the recess in each jaw and constructed to move backwardly and downwardly when pressure is applied thereto in a direction determined by the top and bottom walls of the recess, a guiding element rigid with each work-clamping member and extending rearwardly and downwardly therefrom through the corresponding jaw, each jaw having a guiding surface which coöperates with the corresponding guiding element throughout its length to hold the jaws against locking movement as they recede, and a spring acting on each work-clamping member and yieldingly resisting the receding movement thereof.

2. In a vise, the combination with two jaws, each having a recess in its operative face, of means to give said jaws a relative movement toward and from each other, a work-clamping member sustained in the recess of each jaw, each work-clamping member having a stem extending therefrom in a rearward and downward direction entirely through the jaw, each jaw having a guiding surface which engages the stem throughout its length, each work-clamping member being capable of moving downwardly and rearwardly in a direction determined by said stem, and a spring acting on each work-clamping member tending to yieldingly resist the receding movement thereof.

3. In a vise, the combination with a base of two jaw members mounted thereon and capable of relative movement toward and from each other, a work-clamping member carried by each jaw and constructed to yield rearwardly when subjected to clamping

pressure, plates carried by each work-clamping member and overlying the sides of the jaws, each plate having a projection thereon operating in a recess in said jaw, said projections limiting the spring-impelled movement of the work-clamping members.

4. In a vise, the combination with a base, of a jaw member fixed thereto, a second jaw member movably mounted thereon and provided in its under face with a recess, a nut slidably mounted on the base and having a stem entering said recess, an operating screw having screw-threaded engagement with said base, said screw extending beyond the fixed jaw member, a sleeve situated beyond the fixed jaw member and through which the screw extends, and a cam for giving movement to said sleeve and thereby moving the screw longitudinally.

5. In a vise, the combination with a base having a housing at one end, of a jaw fixed thereto adjacent the housing, another jaw movably mounted thereon, a nut having a swiveled connection with said movable jaw, a screw having screw-threaded engagement with said nut and extending through the housing, and a cam in the housing for giving bodily movement to said screw.

6. In a vise, the combination with a base

having at one end a housing provided with a cam-receiving chamber, of a jaw fixed to said base, a movable jaw mounted on the base, a screw connected to the movable jaw, a sleeve beneath the housing through which said screw extends, means for preventing relative longitudinal movement of the sleeve on the screw, said sleeve having a stud, a cam situated in the cam-receiving chamber and pivotally mounted on said stud, and means to turn the cam whereby the screw is moved bodily.

7. In a vise, the combination with a base having at one end a housing provided with a cam-receiving chamber, of a jaw fixed to said base, a movable jaw mounted on the base, a screw connected to the movable jaw, a sleeve beneath the housing through which said screw extends, means for preventing relative longitudinal movement of the sleeve on the screw, said sleeve having a stud, a cam situated in the cam-receiving chamber and pivotally mounted on said stud, a cover plate secured to the cam and constituting a cover for the cam-receiving chamber, and a handle connected to said cover plate.

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

ALFRED S. MELLOR.