May 19, 1931. P. EISEMANN 1,806,527

CLAMPING VISE

Filed Nov. 24, 1930

Fig. 1.

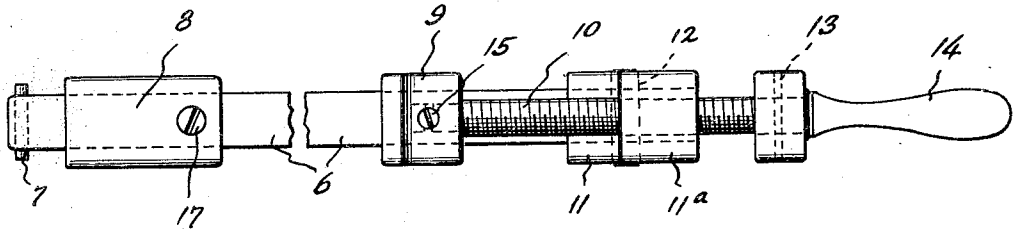


Fig. 2.

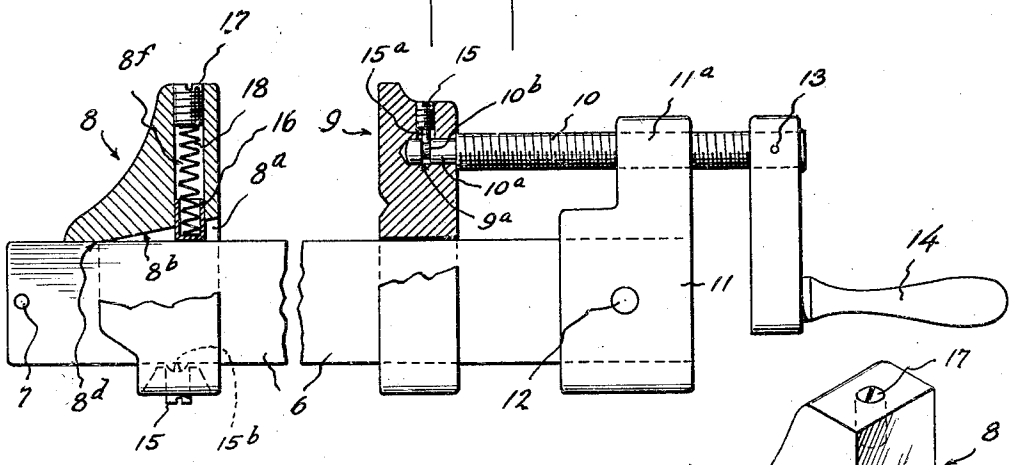


Fig. 3.

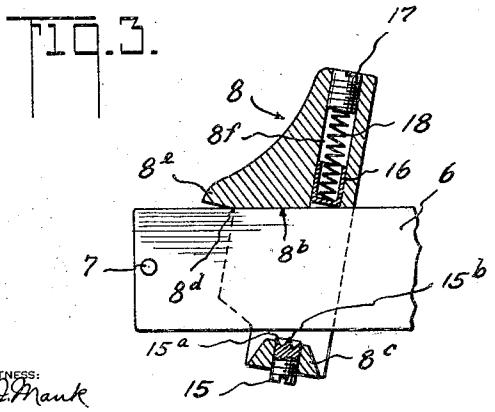
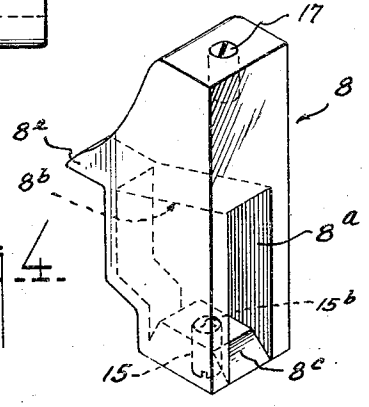


Fig. 4.



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UNITED STATES PATENT OFFICE

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CLAMPING VISE

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This invention relates to clamping vises, and the principal object thereof is to provide, in a hand, bench or other type of vise, a novel and improved form of locking and releasing mechanism for what in the ordinary device is the so-called fixed jaw, to the end that this first mentioned jaw may be quickly adjusted to approximately the desired position on the main bar or equivalent of the device before the other jaw is moved clampingly relative to said first mentioned jaw, as by a screw or the like.

Another object is to provide a device as above indicated, wherein a sturdy and simple and hence comparatively inexpensive, and yet absolutely dependable, vise may be provided.

A further object is to increase the simplicity of the quick release and locking means aforesaid.

Still another object is to utilize a novel structural feature, and one easy to adjust and of absolutely trifling cost, for the direct locking agent; and in that connection to provide for practically instantaneous lock and release, this latter preferably being the result of certain shapings and angular relations of the parts; the functioning of the device according to this relationship being assisted by yielding pressure applying means including an activating element which is of extreme simplicity and reliability.

Other objects and advantages of the invention will be hereinafter specifically pointed out, or will become apparent, as the specification proceeds.

With the above indicated objects in view, the invention resides in certain novel constructions and combinations and arrangement of parts, clearly described in the following specification and fully illustrated in the accompanying drawings which latter shows a form of the invention as at present preferred.

Fig. 1 is a top plan view of such embodiment;

Fig. 2 is a side elevation thereof, partially in section;

Fig. 3 is a view similar to Fig. 2, but showing the quick-adjustable jaw in position to permit such adjustment; and

Fig. 4 is a perspective view, on a somewhat enlarged scale, showing the jaw last mentioned.

The embodiment selected for illustration in the drawings, it will be noted, is a vise of the type which will be found quite useful by carpenters, cabinet makers and other workers where the work to be held by the vise is of wood or the like. Obviously, as hereinabove already pointed out, the present invention may be incorporated in a vise of any character whatever, and whatever be the nature of the work to which it is intended to put the same.

Referring to the details of the vise shown in the drawings the same includes a main bar 6, having at its rear end a cross pin 7 to act as a stop to limit the rearward sliding movement of a quick-sliding jaw 8, hereinafter referred to as the special jaw, since the same incorporates very important if not the principal features of the present invention, and coacts with the main bar, by virtue of such features, pursuant to the present invention.

The remaining parts of the vise include in the present case an adjustable jaw 9, operated by a screw 10, threaded through a fixed nut 11*a* constituting an integral superstructure carried by a fitment 11 sleeving the main bar and secured thereon at the front end thereof as by a rivet 12.

The forward end of the screw 10 has pinned thereon, as in 13, a crank handle 14, by which the screw may be turned in one direction or the other to move its forward, reduced, cylindrical portion 10*a*, provided with an annular groove 10*b*, back and forth. This portion 10*a* of the screw fits rotatively in a recess or bore 9*a*, formed in the upper portion of the adjustable jaw 9; and a set-screw 15 is downwardly applied as illustrated to enter a pin 15*a* on the lower end thereof in said groove.

It will be understood that due to the provision of the parts last described, the portion 10*a* of the screw may freely turn in either direction, and for as many revolutions as desired, in the jaw 9, but always so as to cause the screw and the jaw 9 to move together as

one unit in either direction along the length of the bar 6.

Referring next to the special jaw 8, the same is here provided with a throat 8*a* for sleeving the bar, such throat having parallel sides for engaging the sides of the bar, an inclined roof 8*b* and a frusto-pyramidal floor 8*c*. Axially of such pyramid, there is provided a threaded hole for a set-screw 15 having a cupped upper end 15*a*, such cup having centrally therein a round teat 15*a'*, the top of which teat is a trifle higher than the rim of the cup, as shown. This teat, has an important locking function, in combination with the inclination of the roof 8*b*, and with the feature of the construction whereby such roof is prolonged rearwardly beyond the rear point on the circular edge last mentioned. The angular relation of these parts will of course vary with different designs, but in a construction such as that hereinabove described, best results have so far been obtained, after considerable calculations and many tests, when the angle between the plane of said roof 8*b* and the plane containing the circular edge at the upper end of screw 15, is 82 degrees or in that neighborhood. It is desirable to have the undersurface of the part 8*e* flat, and in a plane parallel with the plane containing said circular edge. In other words, there is also an angle of approximately 82° between said undersurface and the roof 8*b*. Finally, the upper portion of the adjustable jaw 8 is provided with a bore 8*f*, which has slidable therein a ferrule 16, in the lower part of said bore, and which is threaded at the upper part thereof for the reception of a set-screw 17. The ferrule has a closed bottom, and within the ferrule is housed the lower end of an expansile spring 18, the upper end of said spring being engaged by the lower end of screw 17: and by adjusting the set-screw the tension of said spring may be varied as desired.

The operation of the device should be clear from the foregoing.

It may, however, be explained that to slide the special jaw 8 along the bar 6 in either direction, it is necessary only to rock the jaw from the position shown in Fig. 2 to that shown in Fig. 3, against the tension of spring 18. On manual release of the jaw, said spring will snap the jaw back to the position shown in Fig. 2. A piece of work interposed between the jaws 8 and 9 will transmit the pressure being exerted by screw 10, to the jaw 8, above the portion 8*e* thereof, on turning the handle 14 enough to force the jaw 9 against the work. Immediately, the upper portion of the jaw 8 will have a tendency to rock back, against the portion 8*e* as a fulcrum, whereupon the floor 8*c* will rise, never to dig an edge portion of the cup 15*a* into the underside of the main bar 6, but to unmarringly jam the top of the teat 15*a'* against the underside of the bar.

A slight turn on the screw 15 will bring the special jaw back to square set on the main bar 6, if at any time such a correctional adjustment be found necessary. Also, when said bar becomes worn, such an adjustment will restore the parts to a natural firm grip.

As to materials and dimensions now preferred, all parts are steel or iron; the elements 8, 9, 11 and 14 being preferably malleable iron castings; the bar 6 being preferably a high carbon cold rolled steel; and the important screw 15 being preferably of tool steel, hardened and tempered, while the ferrule 16 is preferably of cold rolled steel, 3/8" round rod 5/8" long with $\frac{5}{16}$" hole drilled 1/2" deep. The other dimensions are preferably those which will be scaled from the drawings.

Considerable particularities of description, as to materials, part details, dimensions, capacities and utilities may have been herein indulged in, but it will be understood that these statements, made with particular reference to that one, and the one now preferred, of the many possible embodiments of the invention which is illustrated in the drawings, are not in any way to be taken as definitive or limitative of the invention. Inasmuch as many changes could be made in the above constructions, and many apparently widely departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language contained in the following claims is intended to cover all 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.

In other words, the scope of protection contemplated is to be taken solely from the appended claims, interpreted as broadly as is consistent with the prior art.

What I claim as new is:

1. In a vise, the combination of a bar, a jaw, screw means for moving said jaw along said bar, and a special jaw for coacting with the first-mentioned jaw; said special jaw having a throat sleeving said bar which includes a roof and a floor, said special jaw above said throat having a rearward projection presenting an undersurface for engaging the top of the bar thereby to hold the clamping face of the special jaw at a predetermined angle to the top of the bar, said roof extending toward the other jaw and upwardly at an angle to the top of the bar, said floor having adjustable therein an upwardly inserted set screw the upper end of which is shaped to provide an upstanding teat circular in cross-section, the top of said teat for jamming against the lower

part of the bar at a point forward of the rear end of said roof, said special jaw having above the bar a spring-pressed device tending always to urge said roof toward contact with the top of the bar thereby to throw the special jaw to a loose sliding fit on the bar.

2. The device defined in claim 1, wherein the angle mentioned is approximately 82°.

3. The device defined in claim 1, wherein the top of the set-screw is cupped around said teat and a plane including the rim of such cup is perpendicular to the axis of said set-screw and is at an angle of approximately 82° to the plane of extension of said roof.

4. The device defined in claim 1, wherein said device includes a substantially vertical bore from the top of the special jaw to said roof, a ferrule in the lower part of said bore and slidable therein and projectable therebelow, a set screw in the top of said bore, and an expansile spring between said set screw and said ferrule.

In testimony whereof I hereby affix my signature.

PETER EISEMANN.