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④ Vice.

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EP-A-0 032 476
DE-A-3 242 319
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GB-A- 631 281</p> | <p>⑦ Proprietor: RECORD MARPLES LIMITED
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Description

This invention relates to vices and is particularly although not necessarily exclusively concerned with bench-mounted vices of the handy-man type.

Particularly in the DIY field it is not usual for a user to purchase more than one vice to allow for those occasions where an abnormally wide workpiece needs to be gripped. Thus when a conventional vice is being used with a jaw opening of for example three to four inches maximum, the user experiences great difficulty in gripping e.g. planks of more than four inch width. A construction to overcome this problem is known from DE—C—721983, where a movable jaw is slidably mounted on a body to co-operate with a fixed jaw at one end of the body, the movable jaw being disconnectable from the body, the body reversed, and the movable jaw reconnected to the body, when the movable jaw again cooperates with the fixed jaw which is now at the opposite end of the body, and whereby a second range of jaw openings is provided.

The object of the present invention is to provide an improved vice capable of accommodating workpieces of greater width than the normal jaw opening of the vice, in relatively simple and cost-effective manner.

According to the present invention, a vice comprises a body portion on which is provided a fixed jaw, a movable jaw mounted on at least one slide extending through a plain hole in the body portion and with a drive screw rotatably secured to the movable jaw and extending through a threaded hole in the body portion, said movable jaw being mountable on the body portion in a first position to cooperate with and be movable towards and away from the fixed jaw, and in a second position where the at least one slide and drive screw extend in the opposite direction through the respective plain and threaded holes in the body portion, and whereby the movable jaw cooperates with and is movable towards and away from a second fixed jaw on the body portion rearwardly of the first fixed jaw, and characterised by the body portion being rotatably secured to a mounting plate adapted to be secured to a work surface, with locking means provided to hold the body portion at a required disposition on the mounting plate, the rotatable mounting of the body portion on the mounting plate being effected by providing the mounting plate with a circular opening which opening is recessed on its underside, to locate a rotatable locking plate, at least one upstanding threaded stem on the rotatable plate passing through a hole in the body portion of the vice to be engaged by a threaded locking member. Thus, the locking member can be released to allow rotation of the body and the threaded locking member retightened when the body member is in the required alternative position.

During normal use the vice can be used in a conventional manner to hold workpieces of

widths up to the maximum jaw opening provided. When a wider workpiece is to be held, the movable jaw can simply be unscrewed completely from the body member, the locking means released, the body portion rotated through 180°, the locking means re-applied, and the movable jaw relocated on the body portion such that the movable jaw face co-operates with the further fixed jaw on the body. Thus the vice is provided with two ranges of opening, one up to, e.g., 3-1/2" (89 mm), and the other 3-1/2" (89 mm) minimum to 7" (178 mm) maximum.

Alternatively, the body portion may be secured to a work surface by e.g. a G-clamp, of plate construction, and when the top plate of the clamp may be constructed in the same manner as the mounting plate of a bench-mounted vice, to enable release and rotation of the vice body as and when required.

A further advantage of the invention in its forms where the vice body is rotatably mounted on a mounting plate or the top plate of a G-clamp of plate construction is that the vice can be used after the manner of a conventional swivel-bodied vice with either of the ranges of vice opening in use.

The first fixed jaw may be provided by an upstanding projection from the body portion, when the second fixed jaw can be formed by the rearward face of the projection.

To enable the vice to grip a variety of workpieces in either of its operative positions the operative face of either or both of the first and second fixed jaws may be provided with reversible or replaceable jaw plates.

Two embodiments of the invention will now be described with reference to the accompanying drawings, in which:-

Figure 1 is a side elevation of one embodiment of vice according to the invention;

Figure 2 is a plan view of Figure 1;

Figure 3 is a front elevation of Figure 1;

Figure 4 is a section on the line 4—4 of Figure 2;

Figure 5 corresponds to Figure 1 but shows the vice in its second operating condition;

Figure 6 corresponds to Figure 1 but shows a second embodiment of vice according to the invention; and

Figure 7 corresponds to Figure 6 but shows the vice in its second operating condition.

In Figures 1 to 5, a vice comprises a body 1 having an upstanding fixed jaw member 2. As shown particularly by Figure 4, the body 1 has two plain through holes 3 and a threaded hole 4, all on parallel axes. The vice has a movable jaw 5 provided with two fixed slide rods 6 slidably mounted in the plain holes 3, and a rotatably mounted drive screw 7 engaging in the threaded hole 4, the drive screw extending through the movable jaw to an operating handle 8.

The vice body 1 has an integral base plate 9 located on an annular mounting plate 10. As shown by Figure 4, the annular mounting plate is recessed at 11, and in the recess is located a rotatable locking plate 12 provided with two

upstanding threaded stems 13 which pass through corresponding holes in the base plate 9 to be engaged by respective lock nuts 14.

The annular mounting plate is located on the top plate 15 of a generally plate-like G-clamp 16, and there secured by four screws 17, a pad 18 of resilient friction material being provided on the under surface of the top plate 15 of the G-clamp, to assist retention of the G-clamp and hence the vice on a surface 19 to which the clamp is secured.

Thus, in the operating condition illustrated in Figure 1, where the upstanding jaw member 2 is at the end of the body 1 of closest approach to the movable jaw, the jaw face 20 of the movable jaw 5 can be closed on to the jaw face 21 of the fixed jaw. Thus, a relatively conventional handy-man vice jaw opening of say 0 to 3 inches is provided. However, for those occasions where a wider jaw opening is required, it is simply the case of removing the movable jaw 5 from the body 1, releasing the lock nuts 14 and rotating the body 1 through 180°, the lock nuts retightened, and the movable jaw relocated on the body, with the slide bars and the operating screw passing oppositely through the body. This condition is illustrated in Figure 5, from which it can be seen that the upstanding jaw member is now at the end of the body remote from the movable jaw, so that a second jaw face 22 can co-operate with the jaw face 20 on the movable jaw to provide a second range of jaw openings say from 3 inches to 6 inches.

In the second embodiment of vice according to the invention illustrated in Figures 6 and 7, and alternative manner of locating the vice on a surface is illustrated, in an otherwise identical vice construction.

In this embodiment, a bench-mounted vice is provided, the integral base plate 9 being located on an annular mounting plate 10 adapted for relatively permanent securing to a support surface 19, by having four screw holes (not shown) at its corners, through which screws extend, the screws passing through corresponding holes formed in the support surface.

It will be appreciated that the vice of the invention in either of its embodiments illustrated, in each of its operating conditions, has the additional advantage of serving as a rotatable vice, it simply being a matter of releasing the lock nuts 14 and rotating the body 1 to any desired angular disposition, and re-tightening the lock nuts.

Claims

1. A vice comprising a body portion on which is provided a fixed jaw, a movable jaw mounted on at least one slide extending through a plain hole in the body portion and with a drive screw rotatably secured to the movable jaw and extending through a threaded hole in the body portion, the movable jaw (5) being mountable on the body portion (1) in a first position to co-operate with

and be movable towards and away from the fixed jaw (2), and in a second position where the at least one slide (6) and drive screw (7) extend in the opposite direction through the respective plain (3) and threaded (4) holes in the body portion (1), and whereby the movable jaw (2) co-operates with and is movable towards and away from a second fixed jaw (2, 22) on the body portion (1) rearwardly of the first fixed jaw (2, 21), characterised in that the body portion (1) is rotatably secured to a mounting plate (10) adapted to be secured to a work surface (19), with locking means (12, 13, 14) provided to hold the body portion (1) at a required disposition on the mounting plate (10), the rotatable mounting of the body portion (1) on the mounting plate (10) being effected by providing the mounting plate (10) with a circular opening which opening is recessed (11) on its underside, to locate a rotatable locking plate (12), at least one upstanding threaded stem (13) on the rotatable plate (12) passing through a hole in the body portion (1) of the vice to be engaged by a threaded locking member (14).

2. A vice as in Claim 1, characterised in that the mounting plate (10) is secured directly to a work surface (19).

3. A vice as in Claim 1, characterised in that the mounting plate (10) is secured to the top plate (15) of a plate-like G-clamp (16).

4. A vice as in Claim 1, characterised in that the body portion (1) is secured to a work surface (19) by a G-clamp, having an upper leg portion passing through a plain hole in the body portion, and whereby the body portion can be located on the G-clamp in either its first or second positions and secured to a work surface.

5. A vice as in any of Claims 1 to 4, characterised in that the fixed jaw (21) and the further fixed jaw (22) are provide to opposite sides of an upstanding projection (2) from the body portion (1).

6. A vice as in any of Claims 1 to 5, characterised in that the fixed (2) and movable (5) jaws are provided with replaceable jaw plates (21, 22).

Patentansprüche

1. Schraubstock, bestehend aus einem Gehäuseteil, auf welchem eine feststehende Klemmbacke vorgesehen ist, einer auf wenigstens einer durch ein glattes Loch im Gehäuseteil hindurchgehenden Gleitstange montierten bewegbaren Klemmbacke und einer durch ein Gewindeloch im gehäuseteil hindurchgehenden, an der bewegbaren Klemmbacke verdrehbar befestigten Spindel, wodurch die bewegbare Backe am Gehäuseteil in einer ersten Stellung montierbar ist, um mit der feststehenden Backe zusammenzuwirken und zu derselben hin bzw. von derselben fort bewegbar zu sein, sowie in ein zweiten Stellung, in welcher die zumindest eine Gleitstange und die Spindel in entgegengesetzter Richtung durch das glatte bzw. das Gewindeloch im Gehäuseteil hindurchgehen, und wodurch die bewegbare Backe mit einer auf dem Gehäuseteil an der Rückseite der ersten

feststehenden Backe vorgesehenen zweiten feststehenden Backe zusammenwirkt und zu derselben hin bzw. von derselben fort bewegbar ist, dadurch gekennzeichnet, daß das Gehäuseteil (1) verdrehbar auf einer Tragplatte (10) befestigt ist, welche ihrerseits auf einer Arbeitsfläche (19) befestigbar ist, wobei Verriegelungsorgane (12, 13, 14) zur Fixierung des Gehäuseteiles in einer gewünschten Lage auf der Tragplatte vorgesehen sind, daß zur verdrehbaren Befestigung des Gehäuseteiles auf der Tragplatte letztere eine kreisrunde Öffnung mit einer Auskehlung (11) an der Unterseite zur Fixierung einer verdrehbaren Feststellplatte (12) aufweist und daß diese Feststellplatte wenigstens einen durch ein Loch im Gehäuseteil nach oben hindurchgehenden Gewindestift (13) trägt, an welchem ein Feststellorgan (14) mit seinem Gewinde angreift.

2. Schraubstock nach Anspruch 1, dadurch gekennzeichnet, daß die Tragplatte (10) direkt auf einer Arbeitsfläche (19) befestigt ist.

3. Schraubstock nach Anspruch 1, dadurch gekennzeichnet, daß die Tragplatte (10) auf der Oberplatte (15) einer plattenartigen Schraubzwinde (16) befestigt ist.

4. Schraubstock nach Anspruch 1, dadurch gekennzeichnet, daß das Gehäuseteil (1) auf einer Arbeitsfläche (19) mittels einer Schraubzwinde befestigt ist, welche mit einem oberen Schenkelteil durch ein glattes Loch im Gehäuseteil hindurchgeht, und wobei das Gehäuseteil auf der Schraubzwinde in seiner ersten oder seiner zweiten Stellung angeordnet und auf einer Arbeitsfläche befestigt werden kann.

5. Schraubstock nach irgendeinem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß die feststehende Klemmbacke (21) und die weitere feststehende Klemmbacke (22) an entgegengesetzten Seiten eines nach oben weisenden Ansatzes (2) des Gehäuseteiles (1) vorgesehen sind.

6. Schraubstock nach irgendeinem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß die feststehende Klemmbacke (2) und die bewegbare Klemmbacke (5) mit austauschbaren Einsätzen (21, 22 bzw. 20) versehen sind.

Revendications

1. Etau comprenant une partie de corps sur laquelle est prévu un mors fixe, et comprenant un mors mobile monté sur au moins un coulisseau s'étendant à travers un orifice lisse dans la partie de corps, et avec une vis d'entraînement fixée avec possibilité de rotation sur le mors mobile et

s'étendant à travers un orifice fileté dans la partie de corps, le mors mobile (5) pouvant être monté sur la partie de corps (1) à une première position pour coopérer avec le mors fixe (2) et être déplaçable en direction et en éloignement de ce dernier, et à une deuxième position à laquelle le coulisseau (6) et la vis d'entraînement (7) s'étendent en sens opposés à travers leurs orifices respectifs, respectivement lisse (3) et fileté (4), dans la partie de corps (1), et à laquelle le mors mobile (5) coopère avec un deuxième mors fixe (2, 22) et est déplaçable en direction et en éloignement de ce dernier, lequel se trouve sur la partie de corps (1) en arrière du premier mors fixe (2, 21), caractérisé en ce que la partie de corps (1) est fixée avec possibilité de rotation sur une plaque de montage (10) conçue pour pouvoir être fixée sur une surface de travail (19), des moyens de blocage (12, 13, 14) étant prévus pour maintenir la partie de corps (1) en une disposition requise sur la plaque de montage (10), et le montage rotatif de la partie de corps (1) sur la plaque de montage (10) étant réalisé en dotant la plaque de montage (10) d'une ouverture circulaire qui est renforcée (11) sur son côté supérieur, afin d'y loger une plaque de blocage rotative (12), au moins une tige filetée (13) en saillie vers le haut, prévue sur la plaque rotative (12), traversant un orifice pratiqué dans la partie de corps (1) de l'étau afin de s'engager dans un élément de blocage fileté (14).

2. Etau selon la revendication 1, caractérisé en ce que la plaque de montage (10) est directement fixée sur une surface de travail (19).

3. Etau selon la revendication 1, caractérisé en ce que la plaque de montage (10) est fixée sur la plaque supérieure (15) d'un serre-joint (16) à plaque.

4. Etau selon la revendication 1, caractérisé en ce que la partie de corps (1) est fixée sur une surface de travail (19) par un serre-joint, présentant une branche supérieure traversant un orifice lisse dans la partie de corps, la partie de corps pouvant être positionnée sur le serre-joint à sa première ou à sa deuxième position, et fixée ainsi sur une surface de travail.

5. Etau selon une quelconque des revendications 1 à 4, caractérisé en ce que le mors fixe (21) et le deuxième mors fixe (22) sont prévus sur des côtés opposés d'une partie en saillie vers le haut (2) de la partie de corps (1).

6. Etau selon une quelconque des revendications 1 à 5, caractérisé en ce que les mors fixe (2) et mobile (5) sont dotés de plaques de mors remplaçables (21, 22).

5

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4

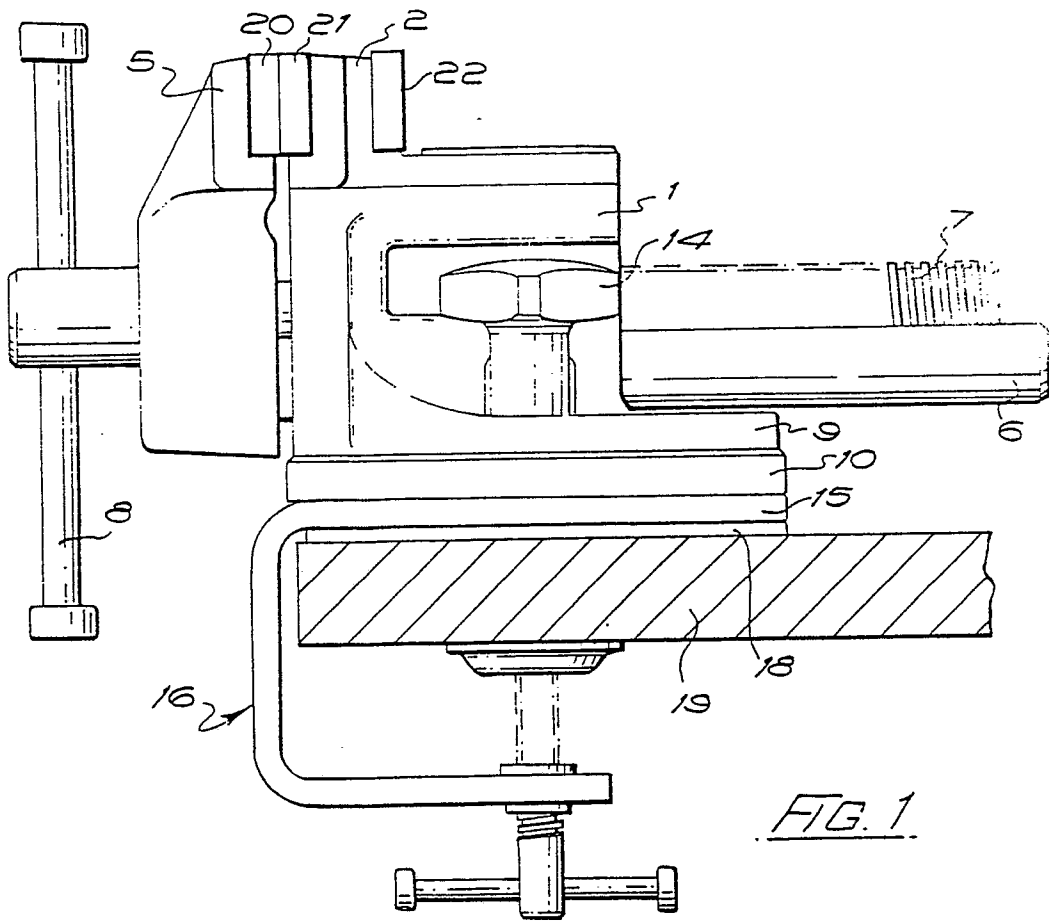


FIG. 1

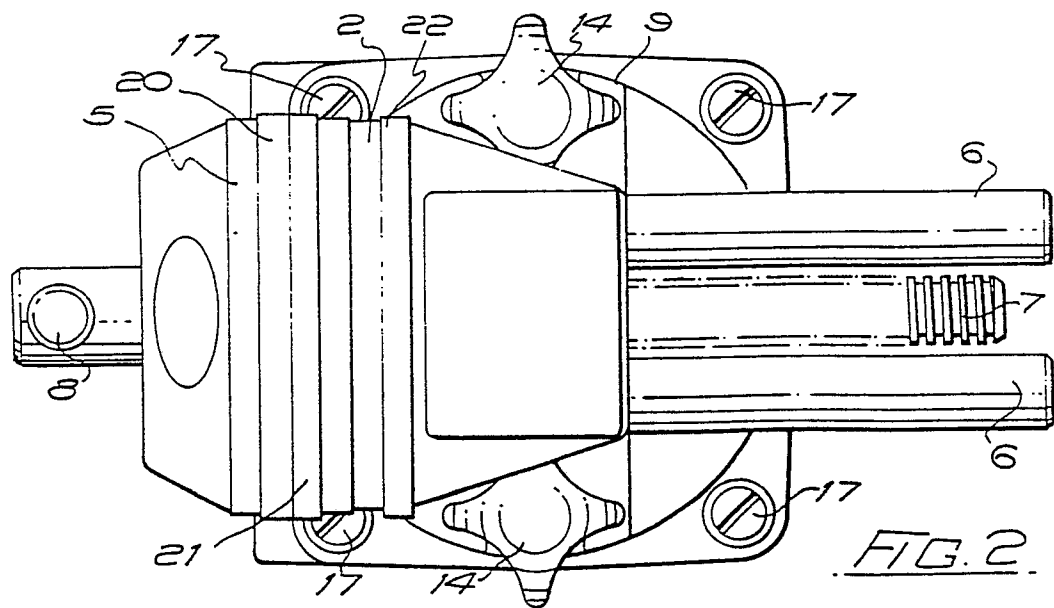
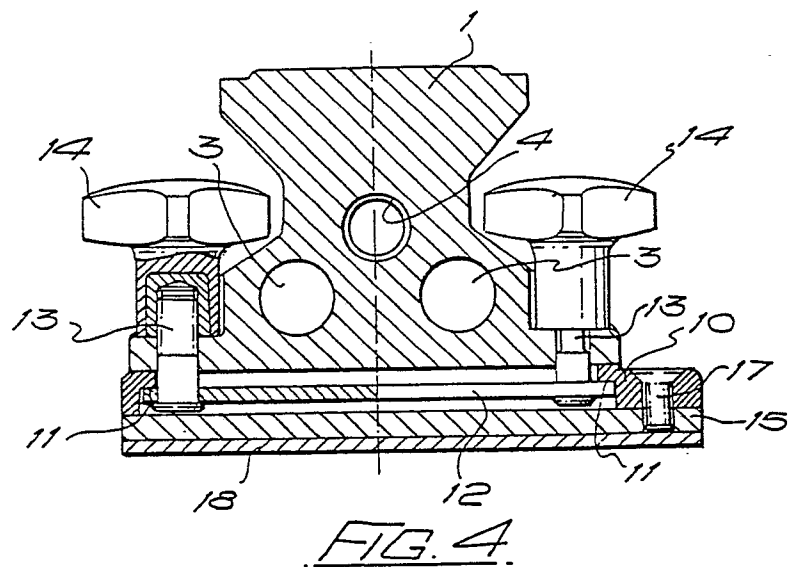
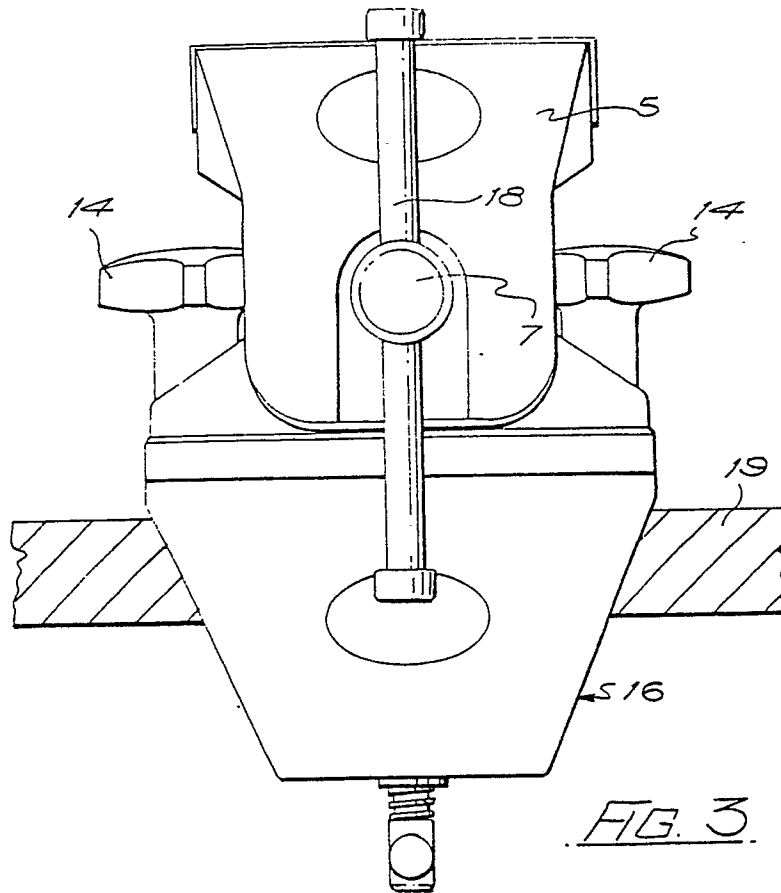


FIG. 2



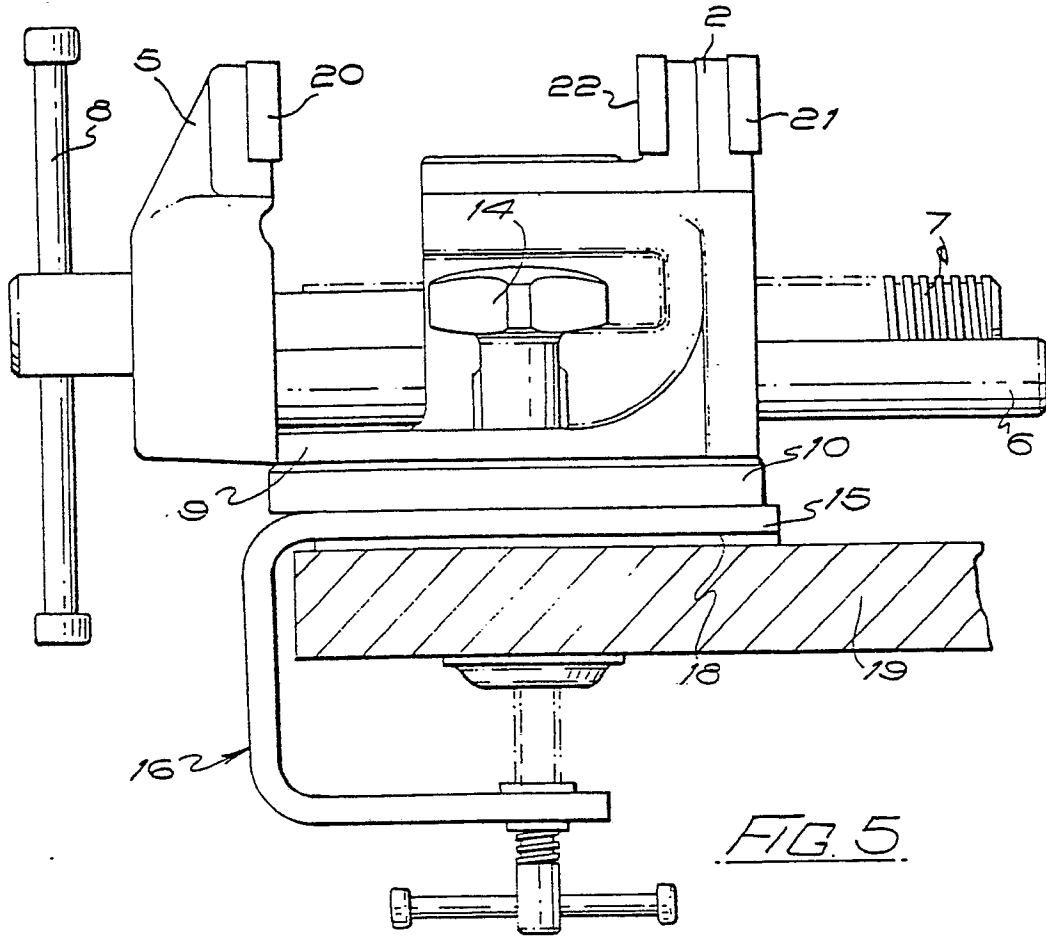


FIG. 5.

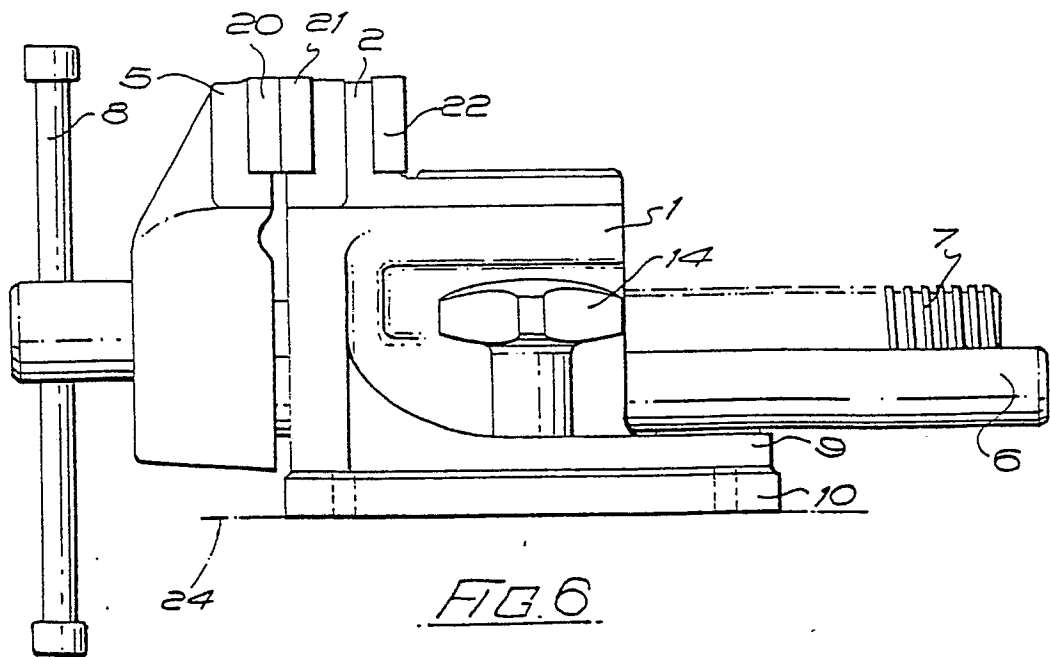


FIG. 6.

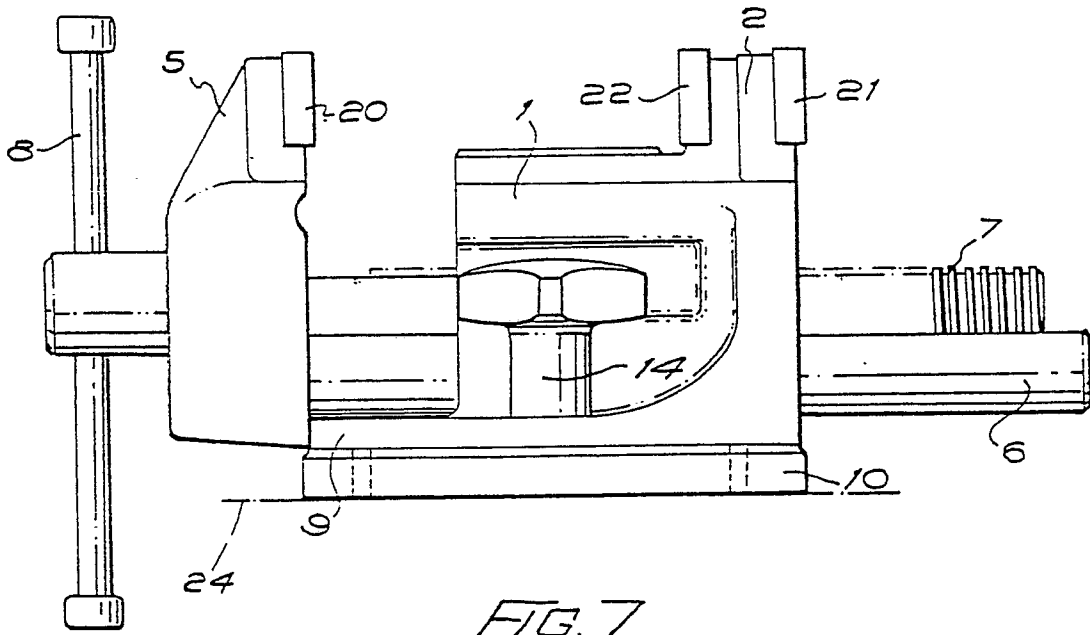


FIG. 7