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WISE.

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Fig. 1.

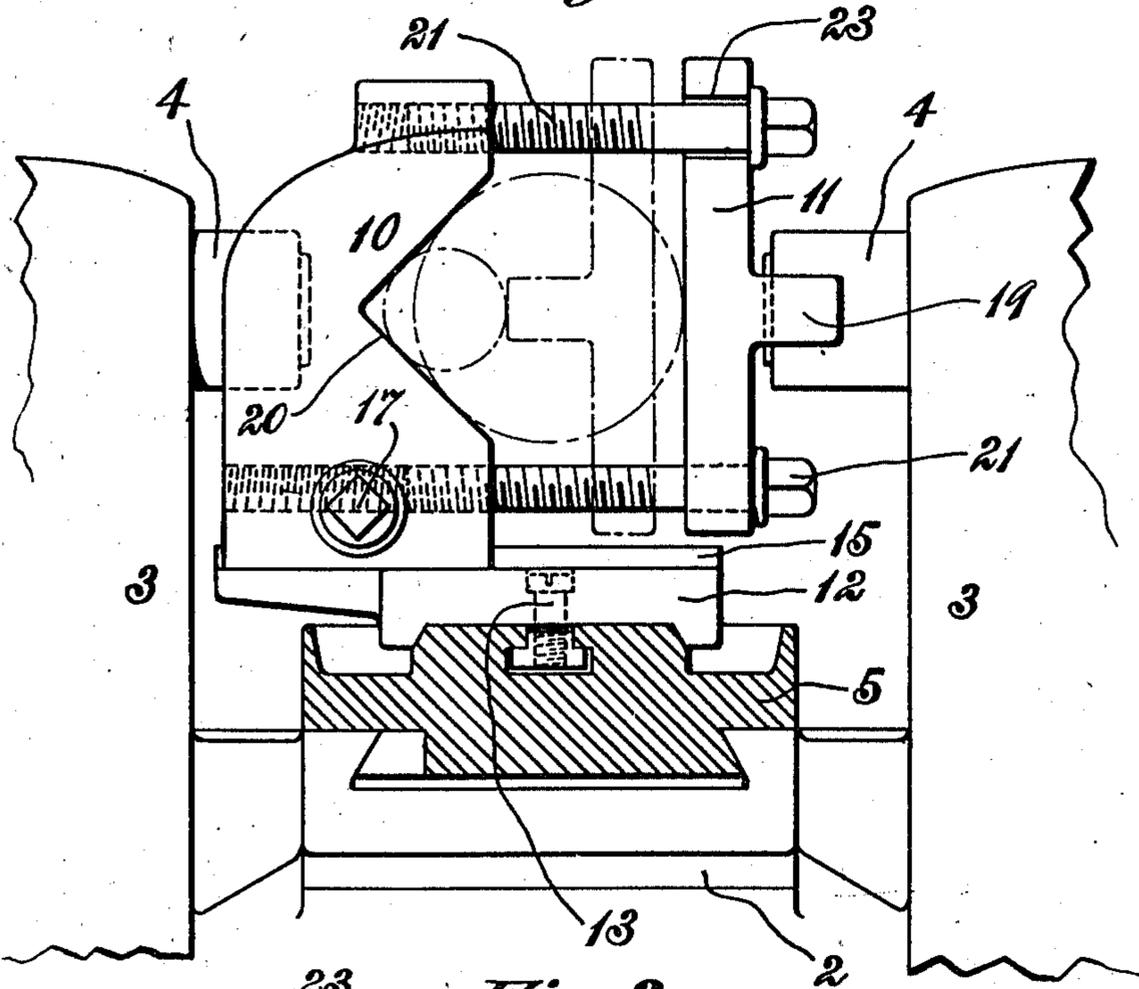
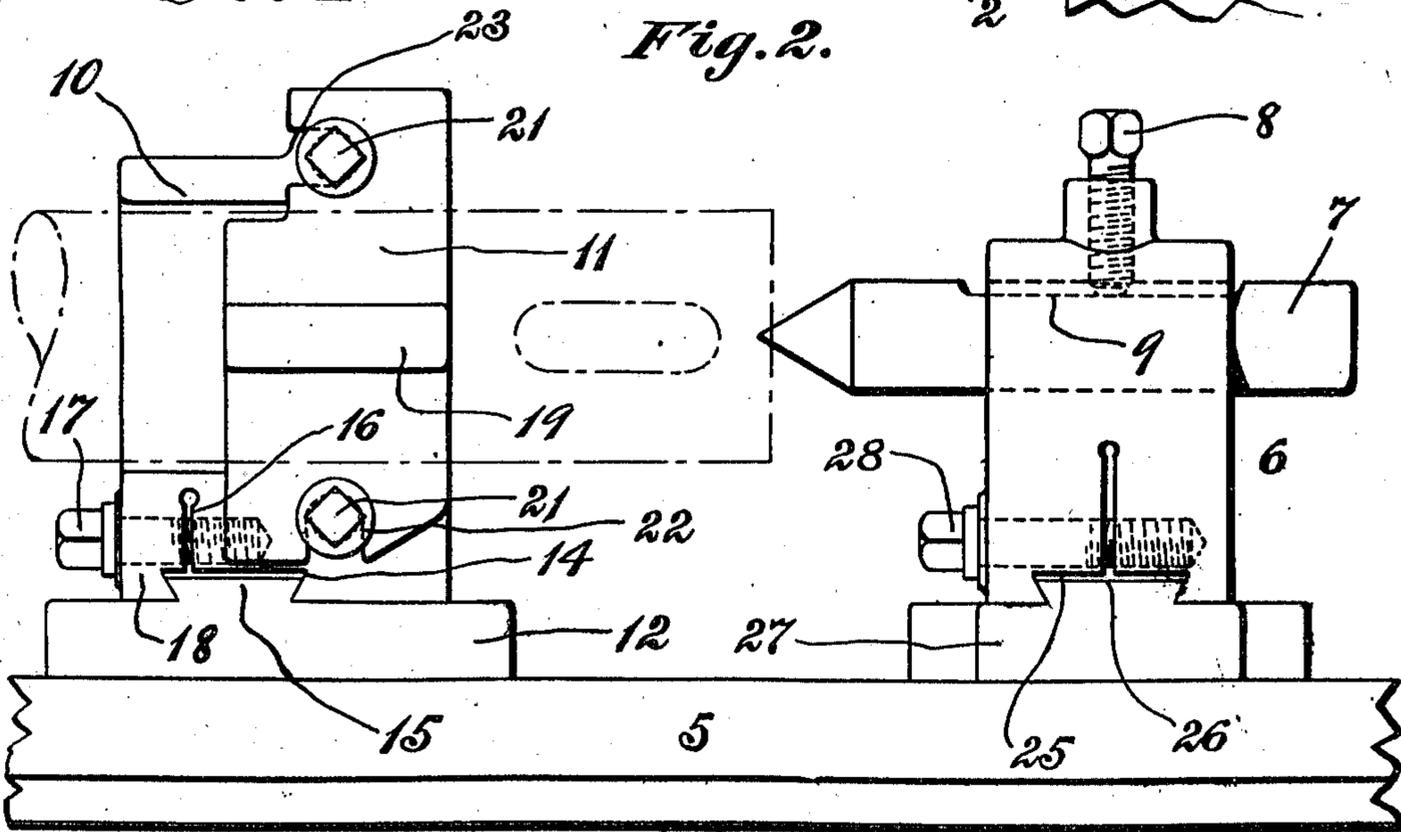


Fig. 2.



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To all whom it may concern:

Be it known that I, BENGT M. W. HANSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Vises, of which the following is a specification.

This invention relates to vises the object of the invention being to provide an article of this character which is adapted to effectually hold a cylindrical or substantially similarly shaped piece of stock while the same is being subjected to a milling or other operation.

In the drawings accompanying and forming part of the present specification I have illustrated in detail one simple and advantageous form of embodiment of the invention which to enable those skilled in the art to practice said invention will be fully set forth in the following description while the novelty of the invention will be included in the claims succeeding said description.

Referring to said drawings, Figure 1 is a front elevation of a vise embodying my invention and showing the same operatively associated with a milling machine, and, Fig. 2 is a side elevation of said vise a part of the said machine carriage being shown.

Like characters refer to like parts in both said figures.

A vise comprising my invention may be used in many different ways although it is of prime importance when combined with a milling machine as disclosed by the drawings and I will briefly refer to those parts of said machine which appear.

The bed is denoted by 2 and from the same rise upright portions 3 in which are journaled for rotative movement the tool-spindles 4 which in addition to a rotary movement are also given an intermittent longitudinal movement each step thereof occurring at the end of a stroke of the carriage 5 which is supported for reciprocatory movement in a direction transverse to the axes of motion of said spindles, by said bed 2 the said spindles as will be apparent being situated at opposite sides of said carriage so that the tools carried by the former can simultaneously operate upon the stock or work. In practice it is the custom to move these spindles toward each other and owing to this fact and the reciprocation of the carriage a slot can be cut entirely through the work the

length of slot depending upon the degree of reciprocation of the carriage. The carriage is shown as furnished with a center carrier 6 provided with the center 7 held in a longitudinally adjusted position by a screw 8 tapped through the top of the body of said center carrier and adapted to engage a flattened face 9 on said center. The center carrier 6 as will hereinafter appear is adjustable longitudinally and transversely of the carriage and the center 7 thereon and the vise collectively effectually hold the work although the major part of this function is performed by the vise. I have shown the work in dotted outlines in Fig. 2 and in Fig. 1 I have illustrated by similar lines two sizes of work and the way in which said two sizes or different sizes are held will be hereinafter set forth.

The vise involves in its make-up a jaw structure which is transversely adjustable for the purpose of centering the work, said jaw structure comprising a relatively fixed and a movable or adjustable jaw, the latter being preferably, as will hereinafter appear, reversibly mounted.

The fixed and stationary jaws are denoted by 10 and 11 respectively and they are connected with a base as 12 which is adjustable longitudinally of the carriage 5 and which may be held in an adjusted position by one or more tee bolts as 13. Said jaw 10 is shown as having a transverse dovetail groove 14 to receive the similarly formed tongue 15 on the base 12 by reason of which said jaw 10 can be slid in a direction transverse to the carriage 5. The groove 14 is intersected by the slot 16 and tapped into said jaw 10 is a screw 17 which crosses said slot the presence of the latter producing a clamping portion 18. By loosening the screw the said jaw 10 can be adjusted and when the adjustment is secured the screw will be set up to press the clamping portion 18 against the tongue or as it might be otherwise put to draw the portions of the jaw at opposite sides of said slot into clamping engagement with said tongue. This jaw 10 is only adjusted when the size of the work to be operated upon is changed.

The jaw 10 is shown as having on its inner side a substantially rectangular aperture or opening 20 which receives the work and no matter what the size of the work may be within the limits of said aperture or opening said work will be always held at two circumferentially separated places which

fact taken together with the movable or adjustable jaw precludes all possibility of the work turning when the same is held in the vise. In Fig. 1 I have shown by the two series of dotted circles work or stock of different sizes or diameters and by full and dotted lines how the adjustable and reversible jaw is positioned when these two different sizes of work are held.

The adjustable or movable jaw 11 is shown as consisting of a plate provided on one side with a fin or rib 19 the purpose of which is to engage work or stock of small diameter. In Fig. 1 the jaw 11 is shown by full lines as positioned for engaging work of comparatively large diameter and in such a case the body of the said jaw directly bears against the work to press the same firmly into the seat or aperture 20, as will be apparent upon observing the larger sized broken line circle. To hold smaller size work the jaw 11 is reversed and the fin or projection 19 presses the said small size work into said rectangular seat 20 through the aid in both cases of clamping screws as 21 which it will be observed are threaded into the normally fixed jaw 10 at superposed points. The adjustable jaw 11 is shown as having open slots 22 and 23 disposed at right angles to each other the slot 22 in the present case extending vertically while the slot 23 is horizontally disposed and through these slots the screws 21 extend. Owing to the described connections it is a very simple matter to reverse very quickly the jaw 11. As will be clear what is shown as the flat inner face of said jaw 11 engages directly the large size work while when said jaw is reversed the fin or projection 19 on the opposite side of said jaw directly engages the small size work.

The work can be readily and quickly mounted in the vise. To do this the screws 21 if necessary are backed out and the work is then passed between the jaws 10 and 11 being moved sidewise until it bottoms substantially in the approximately rectangular aperture or seat 20. The screws 21 are then operated to move the jaw 11 toward the companion jaw this motion continuing until the work is solidly clamped between the two jaws.

It will be assumed that the parts are positioned as shown by full lines in Fig. 1 the larger outline circle indicating the diameter of the work held and that further such work has been removed. It will be clear how small size work can be put into position in the vise. When such work is in place it will be clear that the same will be off center. To center the work with respect to the two spindles 4 is the purpose of the transverse

adjustment of the jaw structure slide 12. In the illustration given the jaw structure after the large size work has been removed and the small size work put in its place, will be moved toward the right in Fig. 1 until the work held by the vise is precisely centered between the two spindles.

The center carrier 6 it will be remembered has been described as capable of movement in transverse directions and I will now describe the means shown for securing these functions. Said center carrier 6 is represented as having a groove 25 in its underside to slidably receive a tongue or rib 26 on the upper side of the slide 27 movable longitudinally of the carriage 5. After the work has been centered what has been termed the center 7 can be brought into engagement with the work centrally thereof by the compound motion of the center carrier, after which the latter is clamped in its adjusted position by the clamping screw 28 substantially after the manner hereinbefore described in detail in connection with the slide 12. In the present instance the work is centered by the action of the jaw structure on the slide 12 after which the center 7 or auxiliary work-securing device is adjusted to engage the work centrally thereof at one end.

I have described in detail one simple and advantageous form of embodiment of the invention. It will be clear that I do not restrict myself to the disclosure thus made for many variations may be adopted within the scope of my claims.

What I claim is:

1. A vise comprising a relatively fixed jaw, a pair of screws supported by said jaw, and a reversible jaw having independent work engaging portions and also having open slots disposed substantially at right angles to each other, for receiving the respective screws.

2. A vise comprising a relatively fixed jaw having a substantially rectangular work receiving recess, a pair of screws tapped into said jaw, and a second jaw having open ended slots disposed substantially at right angles to each other for receiving the respective screws, the heads of said screws being adapted to engage the outer side of the second jaw, and the latter having on one side thereof a flat work engaging face and on the other side thereof a work engaging fin provided with a flat face.

In testimony whereof I affix my signature in presence of two witnesses.

BENGT M. W. HANSON.

Witnesses:

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