March 12, 1957 L. R. PLACHECKI 2,784,624

DRILL-ROD HOLDER

Filed March 1, 1955

FIG. 1

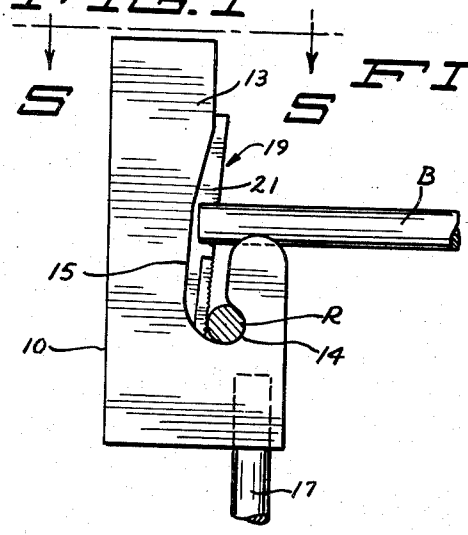
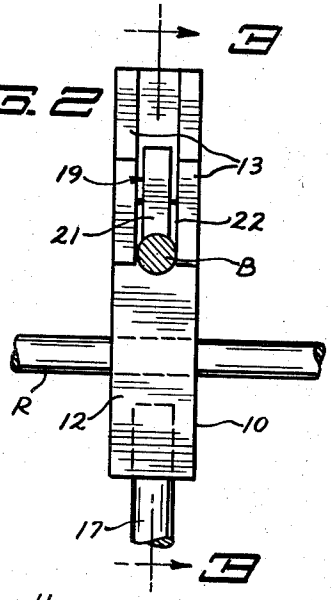


FIG. 2



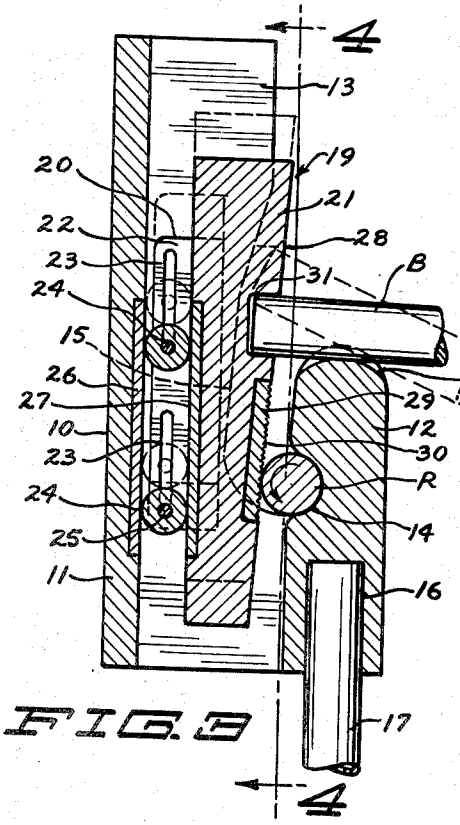


FIG. 3

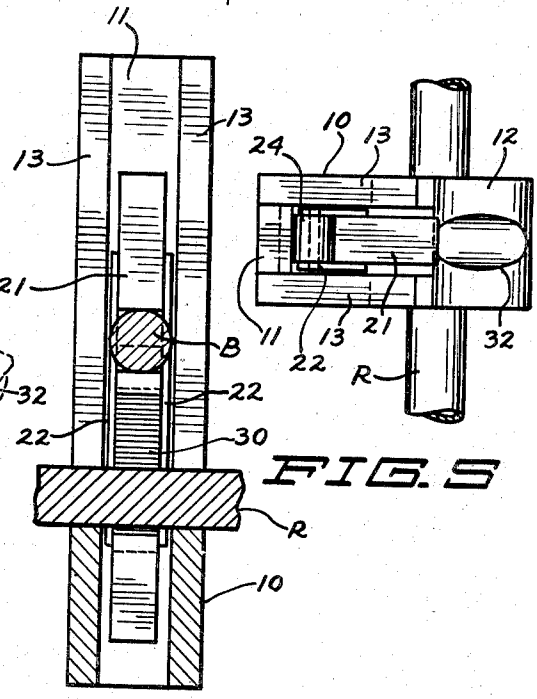


FIG. 5

FIG. 4

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United States Patent Office 2,784,624 Patented Mar. 12, 1957

2,784,624

DRILL-ROD HOLDER

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Application March 1, 1955, Serial No. 491,393

5 Claims. (Cl. 81—19)

This invention relates generally to the vise art and more particularly concerns holders or vises adapted to maintain a secure grip on rod, pipe or other stock that is round in cross section.

The invention has particular application in the drilling art where it is frequently necessary to quickly clamp and hold a rod for bit replacement or to secure a section of pipe, casing or the like.

The primary object of the invention is to provide a vise or holder for stock that is round in cross section and which is adapted to quickly grip the stock and positively secure it against turning movement on its center axis.

Another object of the present invention is to provide a rod holder which tightens itself into a secure gripping relation with the rod as the rod is turned.

Another object of the invention is to provide a vise for a piece of round stock which automatically adjusts itself to the diameter of the stock to be held therein.

Still another object of the invention is to provide a work-holding vise which utilizes a wedging princple enabling the operator to secure or release the work with a minimum of time and effort.

With these and still other objects in view my invention broadly comprises a body member so formed as to present a base plate and a stationary jaw which are spaced in generally parallel relation, said jaw having a work-receiving recess opening toward said plate, a movable jaw assembly having roller means on one side for rolling engagement with said base plate and having a gripping surface on its opposite side adapted to extend across said recess to retain a piece of work therein, said surface being disposed at an angle to the base plate for wedging action of the movable jaw, and said body member and movable jaw having means for jointly receiving a common pry bar for removing the movable jaw from between said stationary jaw and base plate.

The above-mentioned and still additional objects of the invention will be brought to light during the course of the following specification, reference being made to the accompanying drawings, in which:

Fig. 1 is a side elevation of my improved holder, a drill rod (workpiece) being shown in section, and a supporting rod and a pry rod being broken off and shown in section, the body member being mounted in upright position and showing the pry rod in position to shift the movable roller jaw upwardly for removal from the holder.

Fig. 2 is a front view of the holder as shown in Fig. 1, the pry rod being shown in section, and the drill rod (workpiece) and the supporting rod being broken off and shown in section.

Fig. 3 is an enlarged vertical section taken on line 3—3 of Fig. 2 with the roller jaw shown in work-releasing position in broken lines.

Fig. 4 is a vertical section taken on line 4—4 of Fig. 3.

Fig. 5 is a top view of the holder from line 5—5 of Fig. 1, the pry rod being omitted.

Referring now more particularly to the drawing, reference numerals will be used to denote like parts or structural features in the different views. While, as heretofore explained, my holder is designed to securely grip any piece of stock which is round in cross section such as a rod or pipe, I have herein shown the device holding a section of rod R. This is due to the fact that I have found the holder particularly useful for securing drill rods during the replacement of drill bits thereon. It is understood, however, that the words "rod" and "drill rod" are used merely as illustrative and not as words of limitation.

The body member of the holder is designated generally by the numeral **10**. It has a base plate **11** and a relatively thick stationary jaw **12** which are rigidly interconnected by a pair of spaced side plates **13**. It will be noted that the jaw **12** and plate **11** are generally parallel with the jaw extending only about half the length of the plate. The jaw **12** is provided with a semi-circular recess **14** extending crosswise across the inner face thereof for reception of and engagement partially around the circumferential surface of a rod R. The extended edge of each side plate **13** is cut away as shown at **15** to provide a throat for guidance and entrance of the rod R into the recess **14**. It will be noted that the edge extends downwardly and slightly inwardly toward the base plate and then curves outwardly to meet the jaw **12** at the bottom of the recess **14**. All parts of the member **10**, that is the plate **11**, the jaw **12** and the side plates **13**, are integrally related to form a single, solid and very durable body for the holder.

The holder may be mounted in the upright position shown by providing a socket **16** in the jaw **12** for reception of the upper end of an upright support **17**. The lower end of post **17** may be embedded in the ground when it is desirable to use the holder at the site of mining operations. When convenient the member **10** may be secured in a vise or mounted in any other suitable manner which will render it immovable.

The movable or roller jaw is designated generally at **19**. In the preferred construction it comprises two sections, a carriage section designated at **20** and a jaw section or element **21**. The carriage has a pair of elongated independent side plates **22**, each of which has a pair of aligned longitudinally extending slots **23**. These plates are welded or otherwise secured to the jaw **21**. Rollers **24** formed of hard steel and having center pins **25** which extend beyond the roller ends are disposed loosely between the side plates, the ends of the pins **25** riding in the slots **23**. The carriage width is such as to allow it to move freely up and down between the plates **13**. The carriage section **20** may be completely independent of the jaw **21** with the plates **22** unattached to the jaw. However, connecting the section through the plates **22** facilitates handling.

In the preferred construction I provide a surface plate **26** of hardened steel on the inside face of the base **11** against which the rollers **24** can roll.

The jaw member **21** has a wedge shape and fits between the plates **22** to ride upon the rollers **24**. A reinforcing bearing plate **27** is recessed in the roller-engaging surface of the jaw in facing relation to the plate **26**. The opposite side **28** of member **21** converges gradually toward the roller-engaging surface so that the jaw has a downwardly tapering shape. The central portion of face **28** is recessed for flush reception of a hardened jaw plate **29** having an exposed antifriction gripping surface which may be knurled as shown.

Immediately above the plate **29** the jaw member **21** is provided with a socket **31** which opens through the face **28**. This socket is adapted to receive the end of a pry bar B for upward movement of the member **21**. The upper end of the stationary jaw **12** is grooved as at **32** to provide a saddle on which the bar B may be fulcrumed.

The manner of use of the holder will now be clearly understood. When it is desired to securely grip the rod

R for bit replacement or the like it is lowered crosswise through the throat provided by the edges **15** and jaw **12** and into the recess **14**. The movable jaw **19** is then inserted downwardly between the rod and base plate **11** to the position shown in Fig. 3, with the rollers **24** in engagement with the plates **26** and **27** and the surface **30** of the jaw plate **29** resting against the rod.

As rotary turning action is then exerted on rod R in the direction indicated by the arrow in Fig. 3 through means of wrench action upon a part to be unthreaded from the rod the jaw **21** will tighten against the rod. This is due to the non-slip engagement between the rod and the surface **30**. As the rod rotates the member **21** is moved downwardly by the frictional engagement therewith, it being freed of frictional resistance against the plate **11** by means of the rollers **24** which serve as bearings between the plates **26** and **27**. Accordingly, as the movable jaw descends it exerts increased pressure against the rod until it is positively locked against further rotation.

When it is desired to remove the rod from the holder the member **21** is pried upwardly as by the bar B with the proximity of the socket **31** and the groove **32** allowing a great amount of leverage. If the article or section to be unthreaded from or threaded upon the rod is to be turned relative to the rod in a clockwise direction as viewed in Fig. 4, the rod must, of course, be reversed in the holder.

I have thus provided a new and improved vise for drill rods, pipes or other pieces of round stock which economically and effectively carries out the aforementioned objectives. It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the function and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. In a vise for securing a rod or other piece of round stock against rotation about its longitudinal axis, a body member having a back plate and a stationary jaw disposed in spaced parallel relation, said jaw having a semicircular cross recess opening toward the back plate for partially receiving a piece of stock, a slidable jaw disposed between the back plate and stationary jaw and having an inclined surface facing said stationary jaw, said inclined surface having a roughened portion facing said recess for securingly holding a piece of stock in the recess, the slidable jaw having a socket adapted to receive the end of a pry rod for moving said jaw away from such a piece of stock, and said body member having a seat adjacent the socket when the slidable jaw is in stock-securing position to serve as a fulcrum for the pry rod.

2. In a vise for securing a piece of round stock, a body member having a base plate and a stationary jaw arranged in spaced parallel position with a pair of side plates integrally connecting the base plate and jaw and providing a passageway through the body member, said side plates being partially cut away to allow a piece of stock to be inserted crosswise between the plate and jaw and against the jaw, said jaw having a recess opening toward the base plate for receiving such piece of stock, a movable

jaw member independent of the body member for insertion into said passageway between the base plate and stationary jaw to secure such piece of stock in said recess, and being retained therein by said side plates, said movable jaw having an elongated tapering shape with rotary bearing means on one of the converging sides thereof for rolling along the base plate as said jaw is moved, and the opposing side of said movable jaw having a knurled surface opposing said recess and adapted to engage such piece of stock.

3. In a vise for securing a round piece of stock against rotary slippage, a body member having an elongated stationary jaw and base plate arranged in spaced parallel relation, means for mounting the body member with the jaw in vertical position, said jaw having a work-receiving recess opening toward said plate, and a movable jaw assembly adapted for vertical clamping adjustment between said jaw and plate, said assembly comprising a downwardly tapering wedge member, roller supports on each side of the wedge member extending toward said base plate, a pair of vertically spaced roller bearings journaled in said roller supports and having peripheral contact with the base plate and the adjacent side of the wedge member, the opposite side of the wedge member diverging from the jaw in its downward extension and having a knurled surface opposing said recess.

4. The subject matter of claim 3 wherein the roller supports have slots extending parallel to the base plate with the roller bearings journaled in said slots for rolling movement along said adjacent side of the wedge member.

5. In a vise for securing a rod or other piece of round stock against rotation about its longitudinal axis, a body member having a back plate and a stationary jaw integrally associated in spaced parallel relation, an elongated longitudinally tapered independent jaw disposed between the back plate and stationary jaw for longitudinal sliding movement parallel therewith and having an inclined surface facing the stationary jaw, said surface having a roughened portion for securely holding a piece of stock between the jaws, the wider end portion of said independent jaw extending substantially beyond the corresponding end of the stationary jaw, said end portion of the independent jaw having means for reception of the end of a pry rod for moving said jaw longitudinally away from such a piece of stock, and said corresponding end of the stationary jaw having a seat opposite said means when the independent jaw is in stock-securing position to serve as a fulcrum for the pry rod.

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