May 31, 1955

T. J. HARRIS

2,709,384

PORTABLE PIPE VISE

Filed June 24, 1954

2 Sheets-Sheet 1

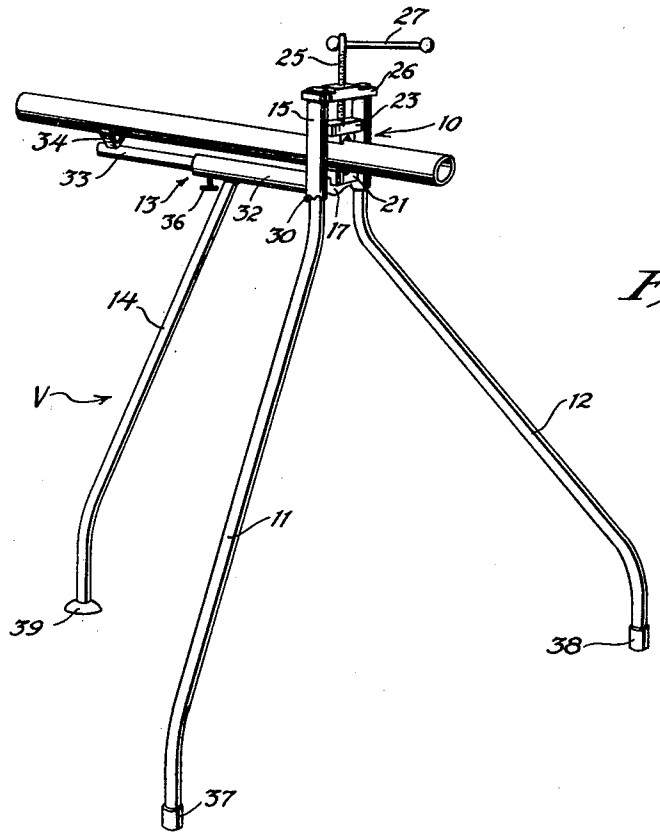


Fig. 1.

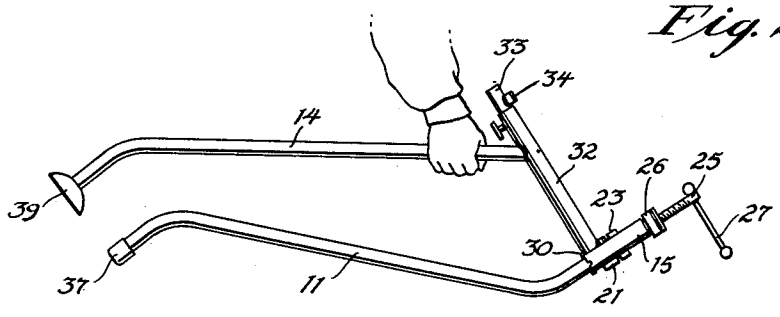


Fig. 2.

INVENTOR.
THOMAS J. HARRIS
BY Anthony J. Turchetti
ATTORNEY.

May 31, 1955

T. J. HARRIS

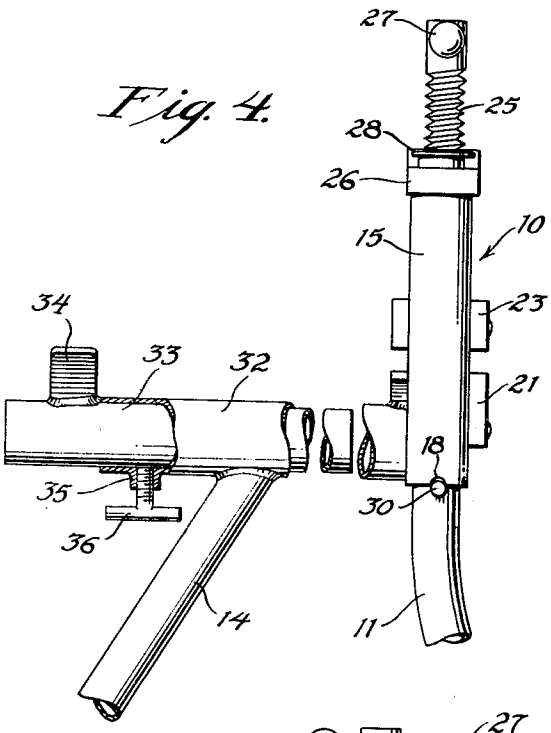
2,709,384

PORTABLE PIPE VISE

Filed June 24, 1954

2 Sheets-Sheet 2

Fig. 4.



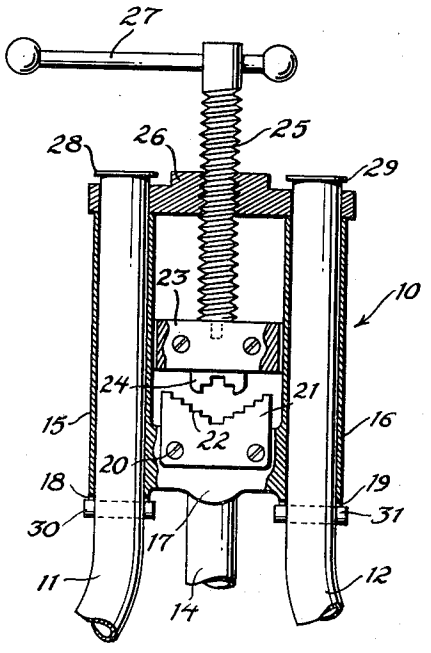


Fig. 3.

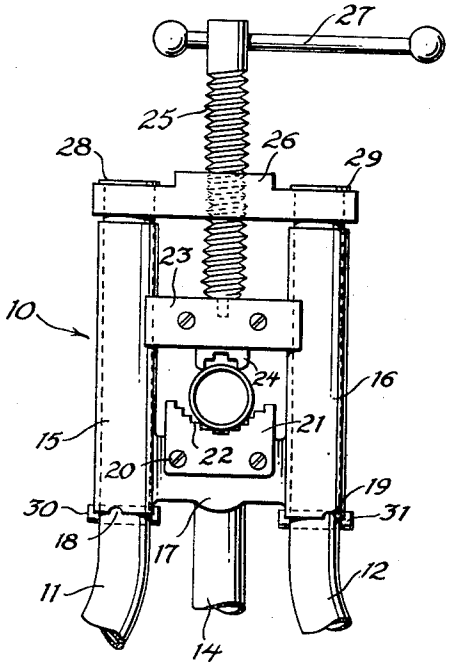


Fig. 5.

INVENTOR.
THOMAS J. HARRIS
BY
Anthony J. Turchetti
ATTORNEY.

United States Patent Office 2,709,384 Patented May 31, 1955

2,709,384

PORTABLE PIPE VISE

Thomas J. Harris, Forty-Fort, Pa.

Application June 24, 1954, Serial No. 439,035

11 Claims. (Cl. 81—41)

This invention relates to pipe vises, and more particularly to a portable pipe vise.

There are a variety of pipe vises on the market today all of which, while they serve their intended purposes, possess inherent disadvantages which the present invention is designed to overcome. Some of these vises are fixed installations requiring that they be fixedly secured in a suitable location, such as a work bench, making them highly impractical for portable usage, as is required by plumbers and pipe fitters. Other of these vises are portable, but are found to be heavy and therefore burdensome for a plumber to carry about, especially when he must climb several flights of stairs. In addition, currently available portable pipe vises are rather intricate in design, contributing to the cost thereof and the length of time required for assembling said vises at the work site. It has also been found that the presently available portable pipe vises have a tendency to "ride" or slip about the floor while threads are being cut in pipe held thereby.

It is an object of this invention, therefore, to provide an improved portable pipe vise.

It is another object of this invention to provide an improved portable pipe vise which is light in weight, requiring a minimum of physical exertion to carry it about.

It is a further object of this invention to provide an improved portable pipe vise which is of such simple construction as to be capable of assembly, ready for use, in a few seconds.

It is still another object of this invention to provide an improved portable pipe vise which will resist any tendency to slide about the floor while cutting pipe threads therewith.

A further object of the invention is to provide a low-cost portable pipe vise.

These objects, together with other objects and advantages to be derived in utilizing the present invention, will become apparent from the following detailed description and from the accompanying drawings describing the preferred embodiment of this invention in which similar numerals refer to similar parts throughout the several views.

Figure 1 is a perspective view of the portable pipe vise of this invention in assembled position ready for use.

Figure 2 is a side elevational view of the portable pipe vise in a folded, disassembled condition, illustrating the manner in which it may be carried about.

Figure 3 is an enlarged front elevational view of the vise-portion of the present portable pipe vise, partly in section and with parts broken away, and showing the vise legs in an unlocked position.

Figure 4 is an enlarged side elevational view of the vise-portion shown in Figure 3, partly in section and with parts broken away, showing the vise legs in an unlocked position, and illustrating the telescoping pipe-support member.

Figure 5 is an enlarged front elevational view of the vise portion of the present portable pipe vise, with parts broken away, showing a pipe being held thereby, and illustrating the manner of maintaining the vise legs in a locked position.

Referring to the drawings, and particularly Figure 1 thereof, the portable pipe vise of the present invention is shown and referred to in its entirely therein by the letter V. This portable vise V consists of a vise-portion **10** supported by forwardly extending adjustable legs **11** and **12**, a rearwardly extending horizontal pipe-support member **13**, and a rear leg **14**.

Looking now at Figures 3–5, it will be seen that the vise-portion **10** consists of a pair of vertically disposed tubular members **15** and **16** integrally joined near their lower ends to a cross-bar **17**, and provided with a plurality of notches **18** and **19** about the peripheries of their lower ends for a purpose to be described below. Fixedly attached to the cross-bar **17** by means of screws **20**, or other suitable attachment means, is a vise bed **21** having stepped-teeth **22** in its upper surface for securely gripping a pipe. Cooperating with the vise bed **21**, and slidably retained between the tubular members **15** and **16** above said vise bed, is a movable head **23** having a jaw member **24** fixedly attached to the bottom thereof. The said movable head **23** is adapted for a vertical sliding movement between said tubular members **15** and **16**, as guides, under the control of a threaded rod **25** which is pivotably connected thereto. This rod **25** is threadably received in a tapped yoke **26**, which rests freely upon the upper ends of the tubular members **15** and **16**, and is provided with a horizontally slidable handle **27** for manipulating said rod. The upper ends of the legs **11** and **12** are slidably received in the tubular members **15** and **16**, and in the yoke **26** in apertures provided therefor in said yoke, and said leg ends are flared so as to provide retaining flanges **28** and **29**. The legs **11** and **12** are also provided with diametrically disposed locking studs **30** and **31**, located adjacent to the lower ends of the tubular members **15** and **16**, and adapted to be received in the notches **18** and **19** therein for a purpose to be described below.

The rearwardly extending horizontal pipe-support member **13** consists of a horizontal tubular casing **32** integrally attached at one end to the cross-bar **17**, and having a telescoping extension **33** slidably retained in the free end thereof, as shown in Figure 4. Fixedly attached to said telescoping extension **33** is a V-shaped pipe cradle **34** adapted for grasping the pipe in supporting fashion, as shown in Figure 1. Referring to Figure 4, it will be seen that the underside of the tubular casing **32** is provided with a tapped boss **35** near its free end, which threadably receives a set-screw **36** for maintaining the extension **33** in a fixed adjusted position. Integrally attached to the tubular casing **32**, as by welding or other suitable attachment means, is the downwardly depending rear leg **14**, above referred to. This leg, it will be noted, lies centrally of the forwardly extending adjustable legs **11** and **12**, so as to provide a tripod support for the vise-portion **10** and the pipe-support member **13**.

In order to preclude the present vise from "riding" or sliding about the floor while threads are being cut in pipe held thereby, the forwardly extending legs **11** and **12** are provided with rubber shoes **37** and **38**, while the rear leg **14** carries a rubber suction cup **39** which is adapted to securely attach said leg to the floor when a downward force is exerted thereon.

Operation

In using the present invention as a portable pipe vise, the legs **11** and **12** may be rotated rearwardly within the tubular members **15** and **16** and the vise carried about,

as shown in Figure 2, or extended forwardly in pipe-supporting fashion, as shown in Figure 1.

In setting-up the vise from the portable condition of Figure 2 to the supporting position of Figure 1, the handle 27 is rotated in a counter-clockwise direction so as to raise the movable head 23 a sufficient distance to unlock the legs 11 and 12. The legs are then pulled downwardly a slight distance so as to release the locking studs 30 and 31 from the notches 18 and 19, and the legs are rotated forwardly until said studs are in alignment with the notches 18 and 19 in the sides of the tubular members 15 and 16, respectively. This relationship is shown on an enlarged scale in Figures 3 and 4. Referring thereto it will be seen that with the legs 11 and 12 in a forward, unlocked position, the studs 30 and 31 are free from the notches 18 and 19, and yoke 26 rests freely upon the upper ends of the tubular members 15 and 16. It will also be noted that a substantial gap exists between the fixed bed 21 and the movable head 23, and that the flanges 28 and 29 lie above the yoke 26 with a gap therebetween.

The major advantage of the present invention, to be described now, is that the locking of the legs 11 and 12 in their forward position and the anchoring of a section of pipe within the vise-portion 10 of the vise is a simultaneous operation which is accomplished with a minimum of effort and in a minimum length of time.

A length of pipe is inserted into the vise so as to lie upon the fixed bed 21 and the cradle 34, as shown in Figure 1. The telescoping extension 33 may be adjusted within the tubular casing 32 to accommodate various lengths of pipe, and maintained in a fixed adjusted position by means of the set screw 36. With the pipe thus supported, the handle 27 is turned in a clockwise direction so as to turn the threaded rod 25 within the tapped yoke 26 causing the movable head 23 to move downwardly between the tubular members 15 and 16. When the jaw member 24 on said movable head contacts the pipe, said head comes to rest, but the rod 25 being pivotally attached thereto will continue to turn, causing the yoke 26 to travel upwardly thereon, due to the screw action of the threaded relationship therebetween. As the yoke 26 contacts the flanges 28 and 29 in its upward travel, an upward force is exerted thereon, which force causes the legs 11 and 12 to move upwardly within the tubular members 15 and 16, seating the locking studs 30 and 31 within the notches 18 and 19. This action is illustrated clearly in Figure 5. The legs 11 and 12 are now locked in their forward, pipe-supporting position of Figure 1. A downward force may now be exerted manually upon the rear leg 14 so as to cause the suction cup 39 to adhere to the floor, which force will ordinarily be supplemented by a maintaining force consisting of the weight of the pipe and the device, and the vetrical component of the torsional force exerted in the cutting of threads on the pipe. The joint holding action of the suction cup 39 and the rubber shoes 37 and 38 precludes slippage of the device during the cutting of pipe threads.

To disassemble the vise for portable carriage, the handle 27 is rotated counterclockwise until the yoke 26 is set free of the flanges 28 and 29 and the movable head 23 is raised above the pipe. The pipe may then be removed and the telescoping extension adjusted inwardly within the casing 32 and locked therein. A downward pull may then be exerted upon the legs 11 and 12 until the locking studs 30 and 31 are free of the notches 18 and 19, whereupon the said legs are rotated rearwardly until said studs align with rearward-facing complementary notches. The handle 27 is then again rotated clockwise until said studs are raised into the notches, locking the legs 11 and 12 in the position shown in Figure 2. The vise may now be carried about in the manner shown therein.

It will be noted from the above description of the present invention that a novel portable pipe vise is presented which overcomes the many disadvantages of existing vises of this type. In particular, it has been seen that the present portable vise may be assembled with a minimum of physical effort and in a minimum length of time. And due to the relative simplicity of the device, the total weight thereof is reduced considerably as compared with present-day portable vises, presenting an ideal portable pipe vise for use by plumbers and the like. The cost, of course, is reduced accordingly.

In addition, this vise is resistant to slippage during the cutting of pipe threads, and is readily adaptable to supporting various lengths of pipe by virtue of its telescoping pipe-supporting feature described above.

Although the present discussion of this invention has been limited to the above-described preferred embodiment, variations thereof are possible without departing from the scope of the invention. It is therefore not intended that the invention be limited to the particular embodiment disclosed, but only to the inventive concept as defined in the appended claims.

What is claimed is:

1. A portable pipe vise comprising, a pair of vertically disposed spaced parallel tubular members, complementary vise parts operatively mounted between said tubular members, a pair of adjustable tubular legs rotatably mounted within said tubular members, locking means associated with said tubular legs and tubular members for locking said legs in an adjusted position relative to said members, a horizontally disposed telescoping pipe-support attached to said tubular members, and a supporting leg fixedly attached to said pipe-support.

2. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar fixedly attached to said tubular members near the lower ends thereof, complementary vise parts operatively mounted between said tubular members, a pair of adjustable tubular legs rotatably mounted within said tubular members, locking means associated with said tubular legs and tubular members for locking said legs in an adjusted position relative to said members, a horizontally disposed telescoping pipe-support attached to said cross-bar, and a supporting leg fixedly attached to said telescoping pipe-support.

3. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar integrally attached to said tubular members near the lower ends thereof and lying therebetween, a vise bed fixedly attached to said cross-bar, a movable vise head slidably mounted between said tubular members above said vise bed, vise-operating means cooperating with said tubular members for raising and lowering said movable head relative to said bed, a pair of adjustable tubular legs rotatably mounted within said tubular members, locking means associated with said tubular legs and tubular members for locking said legs in an adjusted position relative to said members, said locking means being operatively controlled by said vise-operating means, a horizontally disposed extensible pipe-support attached to said cross-bar, and a supporting leg fixedly attached to said extensible pipe-support.

4. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar integrally attached to said tubular members near the lower ends thereof and lying therebetween, a yoke on the upper ends of said tubular members having a tapped bore therein, a vise bed fixedly attached to said cross-bar, a movable vise head slidably mounted between said tubular members above said vise bed, a threaded rod pivotally attached to said vise head and threadably mounted in said tapped bore, said rod being operable for raising and lowering said head relative to said bed, a pair of adjustable tubular legs rotatably mounted within said tubular members, locking means associated with said tubular legs and tubular members for locking said legs in an adjusted

position relative to said members, the locking action of said locking means taking effect upon a clamping action of said movable head following a lowering of said movable head, a horizontally disposed extensible pipe-support attached to said cross-bar, and a supporting leg fixedly attached to said extensible pipe-support.

5. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar integrally attached to said tubular members near the lower ends thereof and lying therebetween, a yoke resting on the upper ends of said tubular members, said yoke having a pair of apertures the size of the bore of said tubular members and in alignment therewith with a tapped bore therebetween, a vise bed fixedly attached to said cross-bar, a movable vise head slidably mounted between said tubular members above said vise bed, a threaded rod pivotally attached to said vise head and threadably mounted in said tapped bore, said rod being operable for raising and lowering said head relative to said bed, an operating handle on said rod, a pair of adjustable tubular legs rotatably mounted within said tubular members and extending upwardly through the apertures of said yoke, flanges on the ends of said tubular legs above said yoke, said tubular members having a plurality of notches about the peripheries of the lower ends thereof, locking studs carried by said tubular legs adjacent to said notches, said yoke exerting an upward force on said flanges upon a clamping action of said movable head following a lowering of said movable head so as to seat said studs in said notches, said seated studs locking said legs in an adjusted position relative to said tubular members, a horizontally disposed telescoping pipe-support attached to said cross-bar, and a supporting leg fixedly attached to said pipe-support.

6. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar integrally attached to said tubular members near the lower ends thereof and lying therebetween, a yoke resting on the upper ends of said tubular members, said yoke having a pair of apertures the size of the bore of said tubular members and in alignment therewith with a tapped bore therebetween, a vise bed fixedly attached to said cross-bar, a movable vise head slidably mounted between said tubular members above said vise bed, a threaded rod pivotally attached to said vise head and threadably mounted in said tapped bore, said rod being operable for raising and lowering said head relative to said bed, an operating handle on said rod, a pair of adjustable tubular legs rotatably mounted within said tubular members and extending upwardly through the apertures of said yoke, flanges on the ends of said tubular legs above said yoke, said tubular members having a plurality of notches about the peripheries of the lower ends thereof, locking studs carried by said tubular legs adjacent to said notches, said yoke exerting an upward force on said flanges upon a clamping action of said movable head following a lowering of said movable head so as to seat said studs in said notches, said seated studs locking said legs in an adjusted position relative to said tubular members, a horizontally disposed tubular casing attached to said cross-bar, an extensible pipe-support tube telescopically received in said casing, a pipe cradle on said pipe-support tube, locking means for said pipe-support tube, a supporting leg fixedly attached to said tubular casing, a suction cup on said supporting leg, and friction shoes on said tubular legs.

7. A portable pipe vise comprising, a vise frame, a pipe vise operatively connected to said frame and supported thereby, vise-operating means carried by said frame and operatively connected to said vise, adjustable legs attached to said vise frame, and locking means associated with said frame and legs for locking the legs in an adjusted position, said locking means being operatively controlled by said vise-operating means.

8. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar fixedly attached to said tubular members near the lower ends thereof, complementary vise parts operatively mounted between said tubular members, a pair of adjustable tubular legs rotatably mounted within said tubular members, locking means associated with said tubular legs and tubular members for locking said legs in an adjusted position relative to said members, and a fixed support leg attached to said cross-bar.

9. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar integrally attached to said tubular members near the lower ends thereof and lying therebetween, a vise bed fixedly attached to said cross-bar, a movable vise head slidably mounted between said tubular members above said vise bed, vise-operating means cooperating with said tubular members for raising and lowering said movable head relative to said bed, a pair of adjustable tubular legs rotatably mounted within said tubular members, locking means associated with said tubular legs and tubular members for locking said legs in an adjusted position relative to said members, said locking means being operatively controlled by said vise-operating means, and a fixed support leg attached to said cross-bar.

10. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar integrally attached to said tubular members near the lower ends thereof and lying therebetween, a yoke on the upper ends of said tubular members having a tapped bore therein, a vise head fixedly attached to said cross-bar, a movable vise head slidably mounted between said tubular members above said vise bed, a threaded rod pivotally attached to said vise head and threadably mounted in said tapped bore, said rod being operable for raising and lowering said head relative to said bed, a pair of adjustable tubular legs rotatably mounted within said tubular members, locking means associated with said tubular legs and tubular members for locking said legs in an adjusted position relative to said members, the locking action of said locking means taking effect upon a clamping action of said movable head following a lowering of said movable head, and a third leg fixedly attached to said cross-bar.

11. A portable pipe vise comprising, a pair of vertically disposed spaced tubular members, a cross-bar integrally attached to said tubular members near the lower ends thereof and lying therebetween, a yoke resting on the upper ends of said tubular members, said yoke having a pair of apertures the size of the bore of said tubular members and in alignment therewith with a tapped bore therebetween, a vise bed fixedly attached to said cross-bar, a movable vise head slidably mounted between said tubular members above said vise bed, a threaded rod pivotally attached to said vise head and threadably mounted in said tapped bore, said rod being operable for raising and lowering said head relative to said bed, an operating handle on said rod, a pair of adjustable tubular legs rotatably mounted within said tubular members and extending upwardly through the apertures of said yoke, flanges on the ends of said tubular legs above said yoke, said tubular members having a plurality of notches about the peripheries of the lower ends thereof, locking studs carried by said tubular legs adjacent to said notches, said yoke exerting an upward force on said flanges upon a clamping action of said movable head following a lowering of said movable head so as to seat said studs in said notches, said seated studs locking said legs in an adjusted position relative to said tubular members, and a fixed support leg attached to said cross-bar.

References Cited in the file of this patent

UNITED STATES PATENTS

1,798,340	Thewes	Mar. 31, 1931
1,897,449	Trowbridge	Feb. 14, 1933
2,619,858	Starbuck et al.	Dec. 2, 1952