Oct. 11, 1927. 1,644,755

T. E. STEPHENSON

PIPE VISE

Filed Feb. 17, 1926 2 Sheets-Sheet 1

Fig. 1.

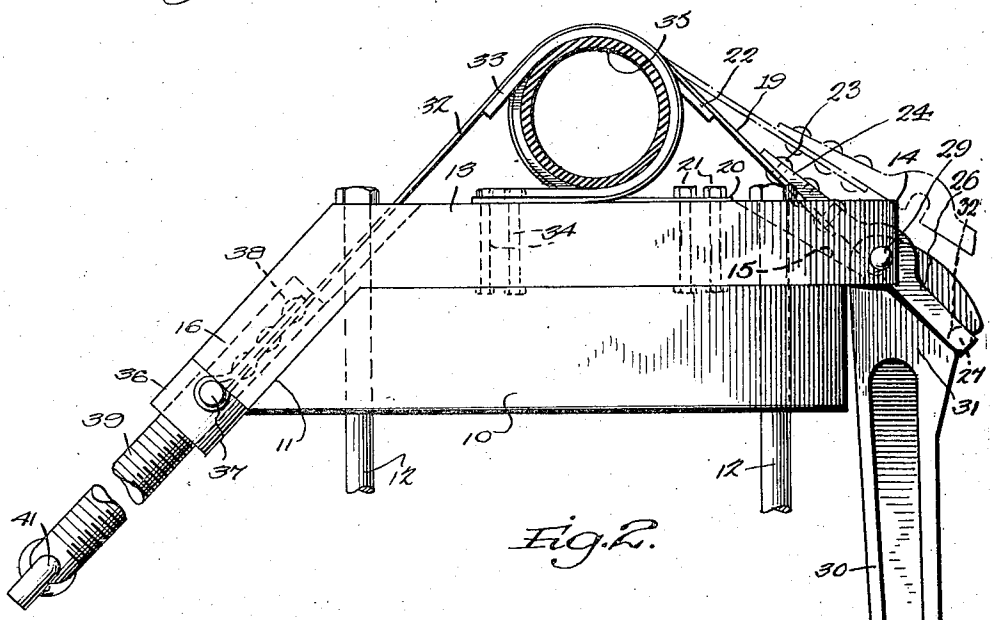


Fig. 2.

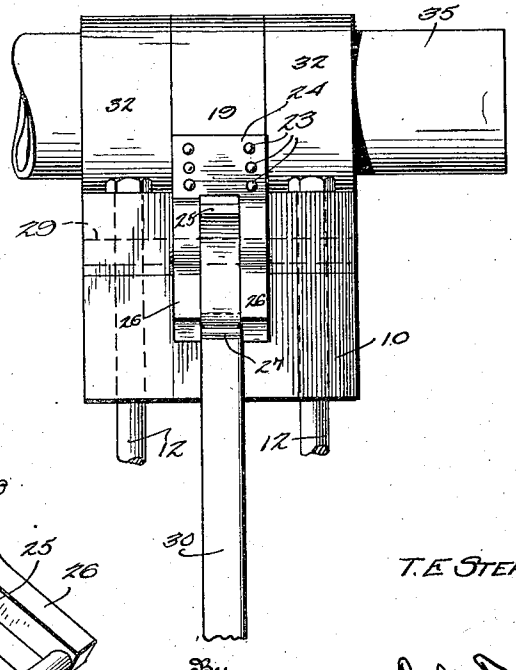
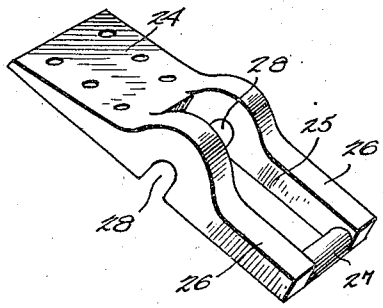


Fig. 3.



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Fig. 4.

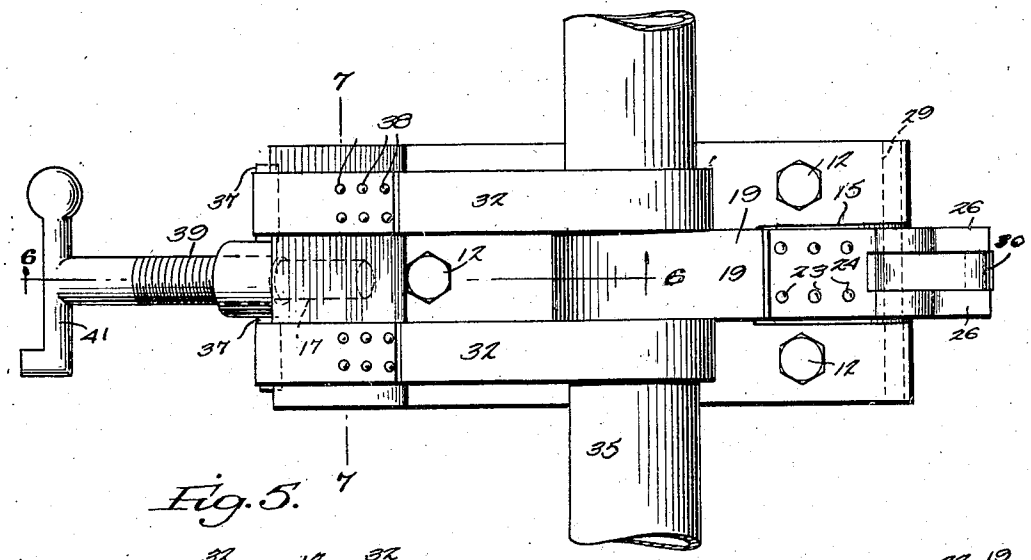


Fig. 5.

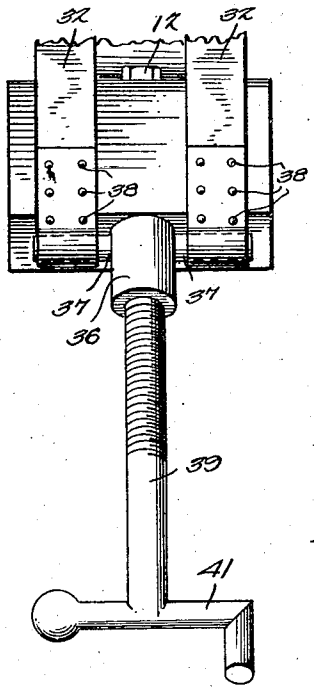


Fig. 6.

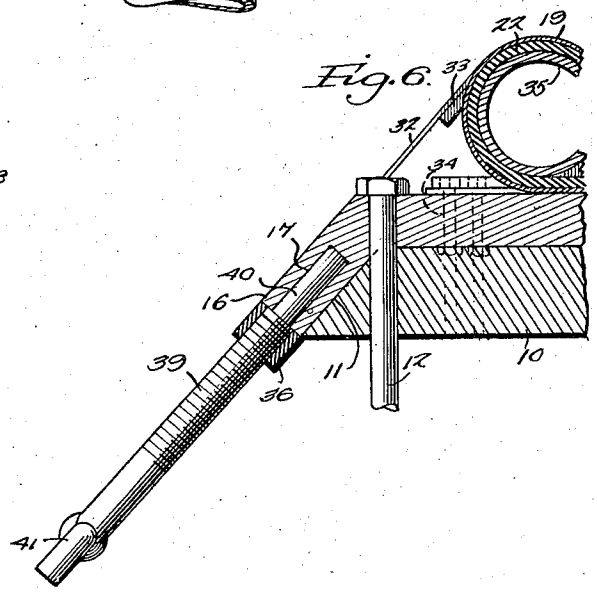
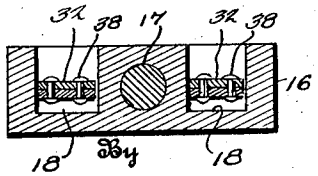


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS E. STEPHENSON, OF HARRISBURG, PENNSYLVANIA.

PIPE VISE.

Application filed February 17, 1926. Serial No. 88,894.

This invention relates to pipe vises, and more particularly to a flexible band gripping vise adapted to be arranged on any suitable support for holding a pipe or similar round article while work is being performed thereon.

An important object of the invention is to provide a plurality of flexible band gripping devices having novel operating means for gripping the band about a pipe or the like.

A further object is to provide a device of the above mentioned character provided with a single throw lever adapted normally to perform the gripping operation.

A further object is to provide novel take-up means for some of the bands whereby they may be adjusted to accommodate pipes of varying diameters.

A further object is to provide a device of the above mentioned character wherein one of the bands is provided with a free end arranged to one side of the pipe and adapted to be gripped thereabout by a single throw lever pivotally connected at one end, the point of engagement between the flexible band and the lever associated therewith being adapted to be moved past the center of the pivot of the lever whereby the lever will remain in operative position without fastening means to hold the pipe tightly gripped within the bands.

A further object is to provide a device of the character just mentioned wherein at least one flexible band is adapted to be wrapped about the pipe in a direction opposite the band connected to the lever, means being provided for taking up the band opposite that secured to the lever whereby the plurality of bands may accommodate themselves to pipes of varying diameters.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings I have shown one embodiment of the invention. In this showing:

Figure 1 is an end elevation, the pipe being shown in section,

Figure 2 is a front elevation,

Figure 3 is a detail perspective of the lever engaging member,

Figure 4 is a plan view,

Figure 5 is a fragmentary rear elevation,

Figure 6 is a fragmentary sectional view on line 6—6 of Figure 4, and,

Figure 7 is a similar view on line 7—7 of Figure 4.

Referring to the drawings the numeral 10 designates a suitable support which may be arranged on a work bench or the like. The support is preferably of cast metal of substantially rectangular form and is provided with a rear beveled face 11, as shown in Figures 1 and 6. Bolts 12 are adapted to secure the support in place in a manner to be described.

A base 13 is arranged over the support as shown, and one end 14 of the base overhangs one end of the support, as shown in Figure 1. The end 14 of the base is provided with an inclined cut out portion 15 for a purpose to be described. The opposite end of the base 13 is provided with a rearwardly and downwardly inclined portion 16 having a bearing opening 17 therein. The portion 16 of the base snugly fits against the inclined face 11 of the support, and the base is adapted to be secured in position by the bolts 12 previously referred to. The inclined portion 16 of the base is provided with a pair of inclined cut out portions 18 arranged on opposite sides of the bearing 17. Except for the cut out portions referred to, the top of the base is preferably substantially flat.

Referring to Figures 1 and 2, the numeral 19 designates a flexible band preferably formed of steel having one end 20 secured to the flat top of the base 13 by bolts or the like 21. The band 19 is provided with a lining strip 22 preferably formed of fabric. The free end of the band 19 is secured by rivets or the like 23 to a lever engaging member 24. The member 24 is provided adjacent its outer end with a cut out portion 25, as shown in detail in Figure 3, forming a pair of arms 26 connected at their ends by a preferably integral pin 27. The arms 26 are provided with substantially arcuate notches 28 for a purpose to be described.

A pivot pin 29 is arranged in the base 13 adjacent the end 14 thereof, as shown in Figure 1. This pin is arranged above the bottom of the cut-out 15, as will be apparent, and one end of a lever 30 is pivotally connected to the pin 29. The lever has a relatively wide upper end 31 provided with a cut-out 32′ adapted to receive the pin 27. When the device is in operative position as indicated in Figure 1, the pivot pin 29 is

arranged slightly above the line between the band 19 and the pin 27 whereby the handle will remain in operative position as will become apparent.

The band 19 previously referred to is arranged substantially centrally of the width of the base 13, as shown in Figure 4, and a pair of similar bands 32 are arranged on opposite sides of the band 19. Each of the bands 32 is provided with a fabric or similar lining strip 33 and the bands are secured to the flat top of the base 13 by bolts 34. It will be apparent that the bands 19 and 32 are adapted to receive therebetween a pipe 35 or similar round article. The bands 32 turn about the pipe in a direction opposite the band 19, and each band 32 has its outer end extending downwardly and rearwardly in the cut out portions 18.

Referring to Figures 1, 4, 5 and 6, the numeral 36 designates a collar having trunnions 37 extending outwardly from opposite sides thereof. Each of the bands 32 has its outer end turned about one of the trunnions 39 and riveted to the body of the band as at 38. The collar 35 is internally threaded and receives a threaded operating shaft 39, and the shaft 39 has a reduced cylindrical upper end 40 rotatable in the bearing opening 17. The outer end of the shaft 39 is provided with a suitable operating handle 41 whereby the shaft may be rotated.

The operation of the device is as follows: When it is desired to clamp a pipe or similar article in the vise, the free end of the lever 30 is swung upwardly whereby the pin 27 is moved upwardly and rearwardly. A pipe is then inserted within the bands and the lever 30 is swung downwardly to the position shown in Figure 1. As previously stated, the pin 29 is arranged above the line of the band 19 and pin 27 whereby tension on the band 19 will hold the lever in operative position. In this connection it will be noted that the free end of the band 19 is substantially tangential to the pipe or other cylindrical article as the band approaches and reaches operative position, as shown in dotted and solid lines in Figure 1. As the parts approach operative position, the free end of the band 19 and the member 24 will assume substantially the position indicated in dotted lines in Figure 1. As the handle is swung downwardly and inwardly to operative position, the plane of the tangential end of the band 19 crosses the axis of the pivot pin 29, the latter being stationary and carried by the base 13. When the member 24 reaches operative position, the pivot pin 29 will contact with the innermost portions of the notches 28, thus limiting the movement of the member 24. If the pipe thus inserted is too small to be tightly gripped by swinging the lever 30 to the position shown in Figure 1, the shaft 39 may be rotated in one direction thus tightening the bands 32 to cause a further gripping action to be exerted upon the pipe by the lining strips 33. Any work then may be performed upon the pipe, as will be obvious. The pipe may be released merely by swinging the lever 30 upwardly without operating the shaft 39. If the same size pipe is then to be inserted in the vise, it will not be necessary to operate the shaft 39, the pipe being permitted to be inserted merely by raising the lever 30, after which the lever may be lowered to operative position. If it is desired to insert a larger pipe, the shaft 39 may be rotated to move the collar 36 upwardly. It will be apparent that the shaft 39 will not move longitudinally, but rotation thereof will cause longitudinal movement of the collar. In the position of the device shown in Figure 1, the bands and the collar 16 are arranged to receive the largest pipe size. Obviously the collar 36 may be moved longitudinally with respect to the shaft 39 to draw the bands 32 rearwardly to permit the bands to accommodate pipes of smaller diameter. It will be obvious that downward movement of the operating lever will be limited by the engagement of the pin 29 in the notches 28. It also will be apparent that the free end of the band may be swung upwardly and rearwardly merely by lifting the operating lever and releasing the pin 27 from the notch in the lever. The provision of fabric lining strips within the steel bands provides an efficient gripping means to prevent a pipe or the like from twisting in the vise.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A device of the character described comprising a base having a flat top, a flexible band secured at one end to the top of said base, said band being looped intermediate its ends, means for securing the opposite end of said band against movement, a second band secured at one end to the top of said base, said second band being looped intermediate its ends to coact with the looped portion of said first named band to form an embracing means adapted to receive a cylindrical article, and means for moving the free end of said second band to tighten the looped portion thereof about the article.

2. A device of the character described comprising a base, having a flat top, a flexible band secured at one end to the top of said base, said band being looped intermediate its ends, means for securing the opposite end of said band against movement, a

second band secured at one end to the top of said base, said second band being looped intermediate its ends to coact with the looped portion of said first named band to form an embracing means adapted to receive a cylindrical article, and a lever pivoted adjacent one end to said base, said second band having pivotal connection with said lever at a point spaced from the pivot thereof.

3. A device of the character described comprising a base, a flexible band secured at one end to said base, said band being looped intermediate its ends, means for securing the opposite end of said band against movement, a second band secured at one end to said base and looped intermediate its ends to coact with the looped portion of said first named band to form an embracing means adapted to receive a cylindrical article, the free end of said second band extending beyond said cylindrical article substantially tangential thereto, a pivot pin carried by said base, and a lever connected adjacent one end to said pin, the extremity of the tangential portion of said second band being pivotally connected to said lever at a point spaced from said pivot pin, said lever being adapted to swing about said pivot pin to an operative position to tighten said second band about the article, the plane of the tangential portion of said second band being adapted to cross the axis of said pivot pin as said lever approaches operative position.

4. A device of the character described comprising a base, a flexible band secured at one end to said base, said band being looped intermediate its ends, a second band secured at one end to said base, said second band being looped intermediate its ends to coact with the looped portion of said first named band to form an embracing means adapted to receive a cylindrical article, connecting means between the free end of said first named band and said base, said connecting means being adjustable to move the adjacent end of said first named band toward and away from the looped portion thereof, and lever means connected between said base and the free end of said second named band to tighten the looped portion thereof about the article.

5. A device of the character described comprising a base, a flexible band secured at one end to said base, said band being looped intermediate its ends, a second band secured at one end to said base, said second band being looped intermediate its ends to coact with the looped portion of the said first named band to form an embracing means adapted to receive a cylindrical article, a member secured to the free end of said first named band, means connected between said base and said member for adjustably moving the latter toward and away from the looped portion of said first named band, and lever means connected between said base and the free end of said second named band to tighten the looped portion thereof about the article.

6. A device of the character described comprising a base, a flexible band secured at one end to said base, said band being looped intermediate its ends, a second band secured at one end to said base, said second band being looped intermediate its ends to coact with the looped portion of said first named band to form an embracing means adapted to receive a cylindrical article, a collar connected to the free end of said first named band, a screw rotatably carried by said base and threaded in said collar, said screw being rotatable to move said collar toward and away from the looped portion of said first named band, and lever means connected between the base and the free end of said second named band to tighten the lower portion thereof about the article.

7. A device of the character described comprising a base, a flexible band secured at one end to said base, said band being looped intermediate its ends, a pivot pin carried by said base, a lever connected at one end to said pivot pin, said band having its free end pivotally connected to said lever at a point spaced from said pivot pin, a pair of bands each secured at one end to said base, said pair of bands being looped intermediate their ends to coact with the looped portion of said first named band to form an embracing means adapted to receive a cylindrical article, the bands of said pair being arranged on opposite sides of said first named band, said base being provided with a bearing opening, a shaft having an end rotatable in said bearing, said shaft being provided with an intermediate threaded portion, a collar threaded on said shaft and provided on opposite sides with trunnions, and connecting means between each band of said pair and one of said trunnions, said shaft being adapted to rotate to move said collar toward and away from the looped portions of said pair of bands.

8. A device constructed in accordance with claim 7 wherein said base is provided with a flat top portion to which said bands are secured, the free ends of said bands being inclined downwardly, said base being provided with inclined cut out portions into which the free ends of said band extend.

In testimony whereof I affix my signature.

THOMAS E. STEPHENSON.