

Jan 6, 1931.

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1,787,787

PIPE VISE

Filed July 24, 1925

Fig. 1.

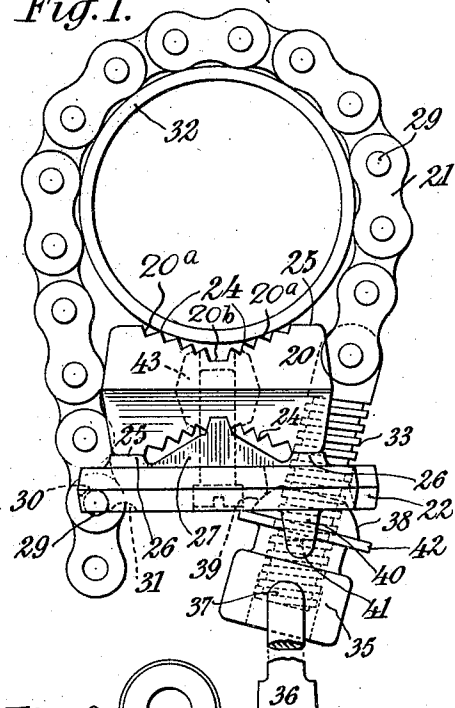


Fig. 3.

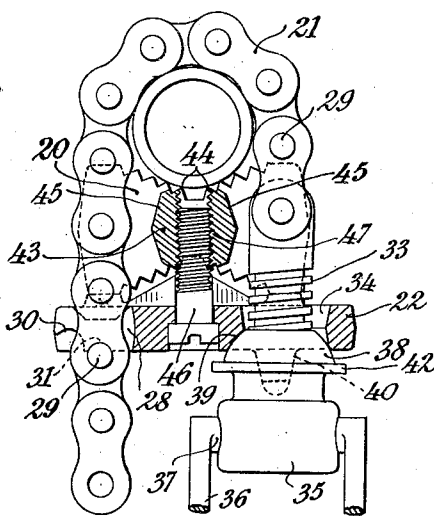


Fig. 2.

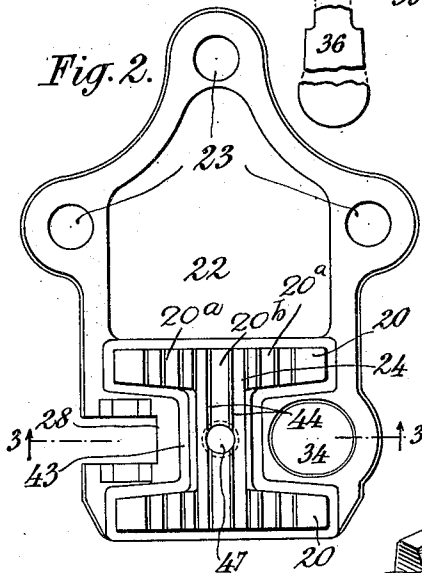
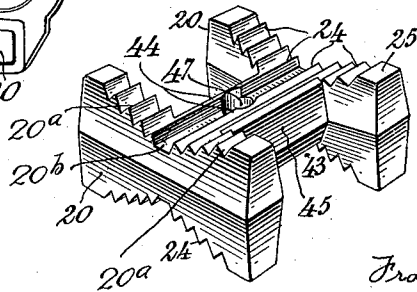


Fig. 4.



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PIPE VISE

Application filed July 24, 1925. Serial No. 45,768.

This invention relates to improvements in vices of the character commonly known as pipe vices, and more particularly to a vise in which the chain or other flexible jaw is opposed by a pair of spaced rigid V-shaped jaws located at opposite sides of the flexible jaw in order to afford a firm and stable support for the work-piece.

It is an object of the invention to provide a vise of the above described character having a reversible work-holding member provided with an intermediate support so disposed as to be clear of the surface of pipes or other work-pieces of relatively large diameter when clamped in the vise but having work-engaging elements conforming with those of the crotched portions of the rigid jaws so as to form a rigid prop for pipes or work-pieces of relatively small diameter in direct opposition to the flexible jaw. The intermediate support cooperates with the crotched portions of the fixed jaws in such manner as to provide a substantially continuous rigid support for pipes of small diameter which may be firmly clamped in the vise without being distorted.

In the drawings illustrating the preferred form of the invention,—

Figure 1 is an end view of a vise embodying the invention and having a pipe of relatively large diameter clamped therein;

Fig. 2 is a plan view of the vise, the flexible jaw thereof being omitted;

Fig. 3 is a transverse section through the vise along the line 3—3 of Fig. 2, the vise being indicated as having a pipe of relatively small diameter clamped therein;

Fig. 4 is a perspective view of the rigid jaws and intermediate support of the vise illustrated in Figs. 1, 2 and 3.

The invention is herein illustrated as applied to a vise comprising fixed V-shaped jaws 20, 20 and a flexible jaw in the form of a chain 21 mounted in a base 22 provided with openings 23 for bolts or other fastening devices whereby the vise may be secured to a bench or other support.

The jaws 20 are of the reversible type having work-engaging teeth 24 in their lower as well as in their upper surfaces whereby when

one set of teeth is dulled the jaws may be reversed in position so as to render a new set of teeth effective. Each pair of jaws comprises two serrated surfaces 20^a, 20^a, inclining or flaring upwardly and outwardly from a crotched portion 20^b in the form of a relatively wide spread V.

The jaws are provided with plane surfaces 25 adapted to rest upon bosses 26 extending above the surface of the base 22, and the jaws may be held in proper alignment by upwardly-extending lugs 27 of suitable form to enter and fill the space between the innermost pair of teeth on the under side of each jaw.

The base 22 is provided with a slot 28 in one of its margins to receive one end of the chain 21, and the chain is provided with outwardly-extending pintles 29 which may be brought into engagement with stepped recesses 30, 31 in the under side of the base and extending in opposite directions from the margins of the notch 28.

The opposite end of the chain may be provided with any appropriate means whereby it may be firmly clamped about a pipe or similar work-piece placed upon the jaws 20, herein disclosed as a relatively large pipe 32. A satisfactory form of clamping means, herein disclosed for purposes of illustration, comprises a screw 33 secured to the end of the chain and having its threaded portion passed through an opening 34 in the base and engaged by a nut 35 having a drop handle 36, pivoted thereto at 37, by which the nut may be rotated. The upper end of the nut may be provided with a spherical surface 38 which may be held in close contact with a like spherical surface 39 in the under side of the base. Proper relation between the nut and the base may be preserved by a pair of lugs 40 at opposite sides of the nut, said lugs having fingers 41 extending inwardly into engaging relation with a retaining bead 42 on the nut. Relative angular movement between the nut and the base is provided for by making the opening 34 elliptical and by placing the centers of the fingers 41 in the center of curvature of the spherical surface 39.

After placing the work-piece upon the jaws, the chain may be secured in a relatively taut position around the same by pulling the front end thereof downwardly and causing the first pintle which falls below the recesses 30 and 31 to be engaged with one or the other of said recesses. The chain may then be tightened by rotation of the nut 35. By providing stepped recesses 30, 31 and by making the proper election of said recesses when securing the front end of the chain, the clamping of the work-piece in the vise may be effected by a relatively slight rotation of the nut.

Vises of the character thus far described, except as to the novel manner in which the jaws are mounted and held in proper alignment with respect to the base, are well known in the art. When used in connection with work to be performed on pipe of large diameter, they are highly satisfactory in that the pair of spaced jaws affords a wide and firm support for the pipe and the placing of the flexible jaw midway between the spaced jaws maintains the pipe rigidly in its intended position and avoids any tendency to tilt. With pipes of relatively small diameter a vise of the above described character is not altogether satisfactory since, if undue strain is applied thereto when clamping the pipe in the vise, the force exerted by the flexible jaw at a point midway between the opposed spaced rigid jaws is likely to bend the pipe. One of the important features of the invention, which will now be described, is to provide means whereby small pipes may be worked upon with the same facility as large pipes without danger of bending.

In the form of the invention herein illustrated it comprises an intermediate support 43 rigidly connecting the jaws 20, the combined structure being reversibly mounted in the base. This intermediate support 43 is provided with clamping teeth or other appropriate work-engaging portions adapted to make contact with the surface of work-pieces of relatively small diameter which would normally contact with the teeth within the crotched portions of the jaws 20, as indicated in Fig. 3. This has been effected in the present instance by providing the intermediate support 43 with a single pair of teeth 44 in alignment with the middle pair of teeth on the jaws 20. The surfaces 45 of the intermediate support may be curved downwardly from the teeth 44 so as to fall below the plane of the next pair of teeth of the jaws 20, whereby work-pieces of large diameter which engage teeth 24 of the jaws 20 other than the innermost pair will be free from contact with the surface of the intermediate support, as indicated in Fig. 1. As a result of this arrangement the clamping effect of the vise when working on pipe of large diameter is exactly the same as that

of the vises of the prior art. When working on pipe of small diameter the intermediate support cooperates with the crotched portions of the jaws 20 to provide a substantially continuous rest for the pipe including a prop which is directly opposed to the chain, thereby avoiding any tendency to bend the pipe when the clamping stress is applied.

As clearly illustrated in Figs. 1, 3 and 4, the jaws 20 and intermediate support 43 are united into one integral structure which may be readily secured to and maintained in proper position on the base 22 by means of a screw 46 passed upwardly through the bottom of the base into a threaded opening 47 provided therefor in the intermediate support.

The intermediate support may be symmetrical with respect to a horizontal plane passing through the centers of the jaws 20 whereby it will be equally effective when either pair of jaws is positioned uppermost. In other words, the intermediate support as well as the jaws may be made reversible.

The invention is not intended to be specifically limited to the form herein selected for purposes of illustration but should be regarded as including modifications and variations thereof within the scope of the appended claim.

What I claim is:

A pipe vise comprising a base, a pair of rigid jaw-bearing elements spaced in side by side relation, symmetrically disposed pairs of V-shaped jaws in opposite working faces of said jaw-bearing elements, an intermediate support extending from one of said jaw-bearing elements to the other and forming a rigid connection therebetween, said jaw-bearing elements and their connecting supports being capable of being mounted on said base with either pair of correspondingly positioned jaws in work-receiving position, lugs on said base to engage elements of the oppositely positioned pair of jaws and hold said parts in alignment, and fastening means to secure said parts in assembled relation, said support having symmetrically disposed work-engaging elements in conformity with those of the crotched portions of each pair of correspondingly positioned jaws, so as to cooperate therewith to form a substantially continuous rest for work of relatively small diameter.

In witness whereof, I have hereunto signed my name.

WILLARD C. KRESS.