

Nov. 25, 1930.

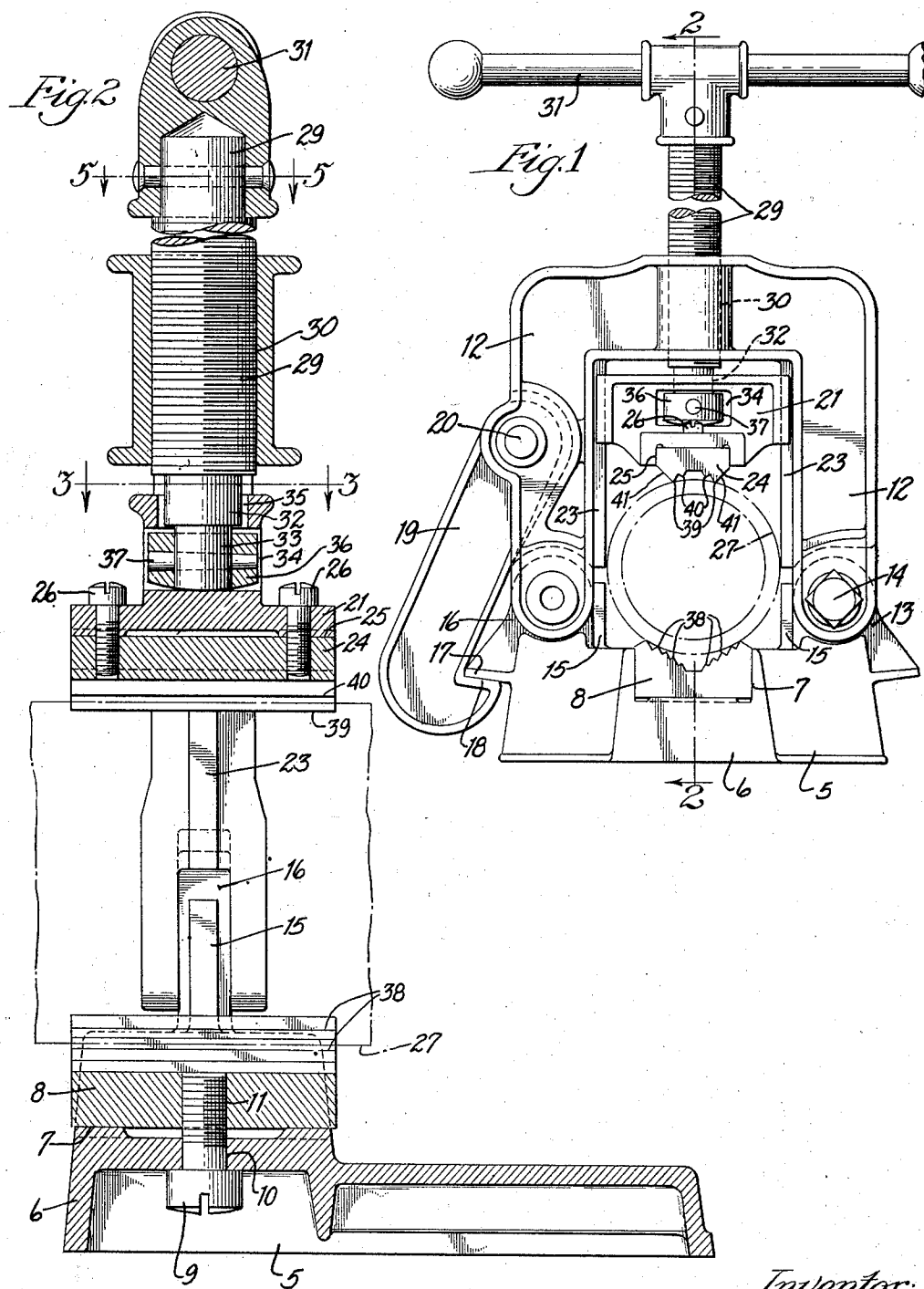
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1,782,929

WISE

Filed Feb. 4, 1929

2 Sheets-Sheet 1



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Fig. 3

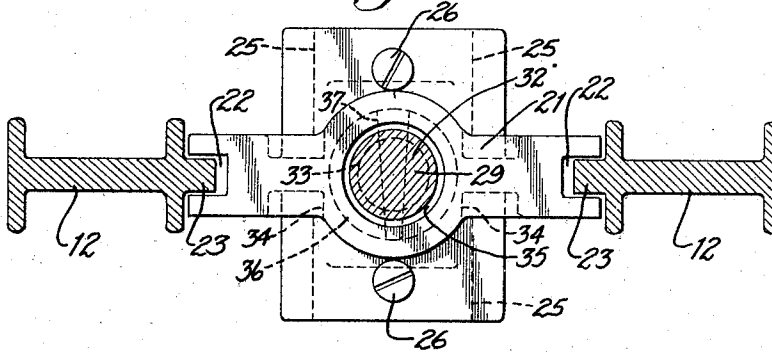


Fig. 4

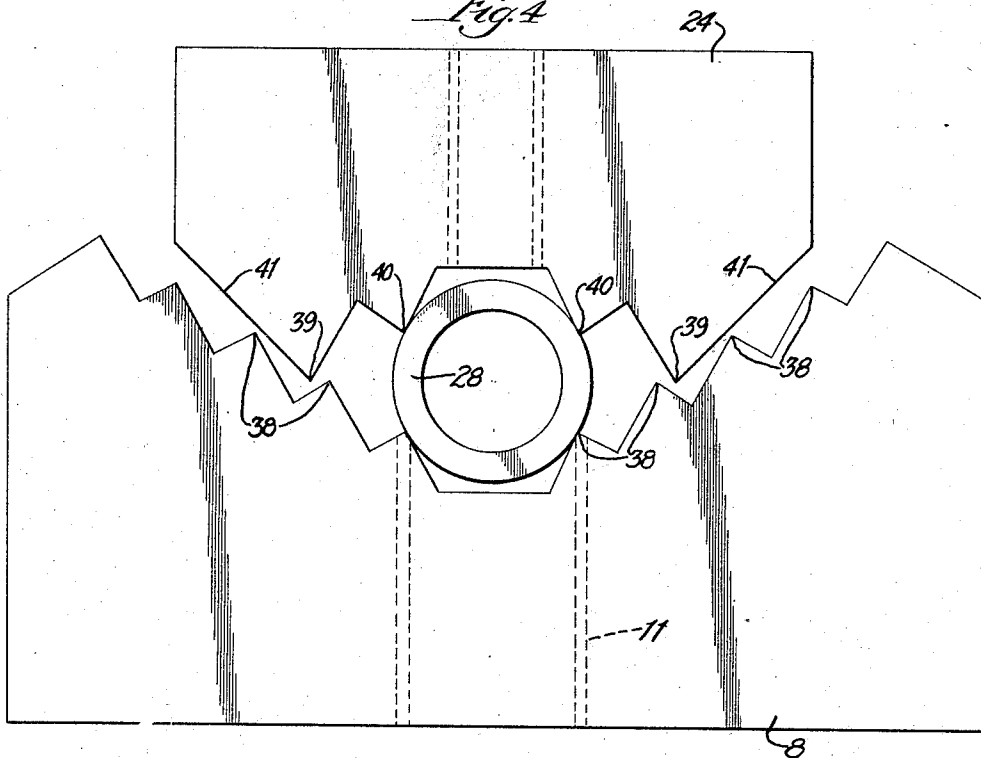
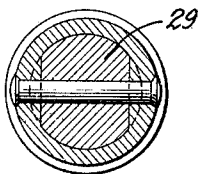


Fig. 5



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UNITED STATES PATENT OFFICE

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VISE

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My invention relates to vises of the type comprising a stationary, lower, jaw and upper jaw movable relative to the lower jaw and between which the article, such as, and more particularly, a pipe, is to be clamped.

One of my objects is to provide in a vise of the type in which the movable jaw cooperates with guide means for guiding this jaw in its movement toward the fixed jaw, for the automatic adjustment of the movable jaw against the article to be clamped, under the pressure applied against this jaw by the manipulation of a pressure-applying screw, a further object in this connection being to provide a novel, simple, economical and durable construction of pressure-applying means.

Another object is to provide jaws of such opposing surface conformation that they will be highly effective in the clamping of pipes of widely different diameters and without danger of crushing or otherwise distorting the pipes; and other objects as will be manifested from the following description.

Referring to the accompanying drawings: Figure 1 is a view in elevation of a vise embodying my improvements.

Figure 2 is an enlarged section taken at the line 2—2 on Fig. 1 and viewed in the direction of the arrows.

Figure 3 is a section taken at the line 3—3 on Fig. 2 and viewed in the direction of the arrows.

Figure 4 is a view in elevation of the two jaws of the vise showing the relative positions occupied thereby when clamping a relatively small pipe; and

Figure 5, a section taken at the line 5—5 on Fig. 2 and viewed in the direction of the arrow.

In the particular construction shown the vise comprises a base member 5 at which it is adapted to rest upon the top of a bench or the like and to which it may be secured as by bolts or screws passing through openings in the base, the latter at one edge portion being formed with an upwardly extending portion 6 recessed, as indicated at 7, to receive the lower, fixed, jaw member 8 which is shown as held in place by a screw 9 extend-

ing upwardly through an opening 10 in the base and screwing into a threaded opening 11 in the jaw member 8.

Surmounting the base 5 is a yoke frame 12 pivotally connected at the lower end of one of its arms, with an upstanding lug 13 on the base, as by a pivoting bolt 14, the lower end of its opposite leg being slotted as represented at 15 at which it straddles an upstanding lug 16 on the base when the parts are in the position shown in the drawings, namely, when the vise is closed. The base 5 is provided with a latch lug 17 with which the shoulder 18 of a latch lever 19 pivoted at 20 on the frame 12 is adapted to automatically interlock upon the act of swinging the yoke frame 12 on its pivot 14 to the closed position shown in the drawings.

The vise also comprises an upper jaw member 21 which is located within the space between the legs of the yoke member 12 and is guidingly confined thereon to be moved toward and away from the lower jaw member as desired. This upper jaw member is formed along its opposite edges with vertically disposed grooves 22 by which this member is guidingly confined within the rectangular opening partially defined by the yoke, the inner sides of the arms of the yoke and the lugs 13 and 16 being provided with aligned tongues 23 to serve as guides for the jaw member 21.

The jaw member 21 is preferably formed with a removable jaw section 24 held in place on the body portion of the jaw member 21, in a downwardly opening recess 25 therein, as by screws 26 on the jaw member and screwed into the section 24.

The jaw member 21 is positioned directly over the jaw section 8, these jaws being shown as continuous from end to end and of substantially the same length and operating to firmly grip an article therebetween, such as for example, the large pipe shown at 27 in Figs. 1 and 2 or the small pipe shown at 28 in Fig. 4.

The means shown for applying pressure to the jaw member 21 to produce the clamping action, comprises a rod 29 having an external screw thread at which it is threaded in an

opening 30 in the upper, cross bar, portion of the yoke 12, the upper end of this rod being provided with a handle-forming cross bar 31. The rod 29 immediately below its threaded portion is of reduced diameter as represented at 32, its lower extremity being of still further reduced diameter as represented at 33. The jaw member 21 contains a transversely disposed opening 34 and a vertical opening 35 communicating with the opening 34, the rod 29 extending at its reduced portion 33 into the opening 34 and at its reduced portion 32 loosely into the opening 35, the rod 29 being provided at its reduced portion 33 with a collar 36 rigidly held thereon by a pin 37 extending transversely through the collar and the portion 33 of the rod 29, the bottom surface of the surrounding portion of the collar 36 being rounded as represented whereby the lower end of the actuating element comprising the rod 29 and collar 36 is of general spherical contour and presents a surface of relatively large area.

The pressure of the upper jaw member against the pipe to be clamped is produced by the engagement of the pressure producing device described against the bottom wall of the opening 34 in the jaw member 21. As the jaw member 21 loosely fits the guide 23, in order that this jaw member may conformingly fit the pipe to be clamped, and as the threaded rod 29 and collar 36 loosely fit within the jaw member 21, the latter may adjust itself to conformingly fit against the pipe, under the applied pressure, without danger of cramping and straining the parts of the device; the clamping jaw 21 being lifted and held in raised position, by the engagement of the collar 36 with the top wall of the opening 34 in the jaw member 21.

To adapt the opposed jaws of the device to effectually clamp pipes of widely different diameters and without danger of crushing or otherwise distorting them, I provide the jaw sections 8 and 24 with teeth as shown extending throughout the length of these sections. The teeth on the lower jaw and represented at 38 are divergently disposed upwardly from the center of the jaw section 8 as shown in Figs. 1 and 4, with the teeth at opposite sides of the center tilted slightly inwardly.

The toothed portion of the jaw section 24 comprises a pair of teeth 39 located at opposite sides of the center of this jaw member and a pair of teeth 40 located between the teeth 39 and likewise at opposite sides of the center of the jaw section 24.

The teeth 40 are disposed in substantial vertical alinement with the lowermost ones of the teeth 38, and the teeth 39, the outer sides of which are represented at 41, extend to the ends of the jaw section 24, and in the gripping of a pipe of relatively small diameter as represented in Fig. 4, extend into the valleys between the second and third lower-

most ones of the teeth 38 at each side of the center of the jaw section 8 and thus in intermesh therewith, the engagement of the jaw section 24 with a larger pipe, as for example as shown in Fig. 1, being at the teeth 39.

It will be understood from the foregoing that by providing the teeth on the jaws as shown and described I am enabled to effectually clamp a wide range of sizes of pipes from quite small to large pipes without objectionable lateral overlapping or telescoping of one jaw relative to the other with consequent disadvantage in clamping small pipes. There being no such telescoping action of the jaws in my device, the teeth on the jaws being directly opposed to each other, danger of crushing the pipes is reduced to the minimum.

While I have illustrated and described a particular construction embodying my invention, I do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is:

1. In a vise, the combination of teeth-equipped, directly opposed, jaws relatively movable toward and away from each other, the teeth on one of said jaws being arranged in series which diverge upwardly toward the other of said jaws, and certain of the teeth on the other of said jaws being so shaped as to extend into the valleys between certain of adjacent teeth on said first-named jaw in one position of the jaws.

2. In a vise, the combination of teeth-equipped, directly opposed, jaws relatively movable toward and away from each other, the teeth on one of said jaws being arranged in series which diverge upwardly toward the other of said jaws, the crests of certain of the teeth on the other of said jaws substantially directly opposing the crests of the lowermost teeth on said first-named jaw and others thereof being located beyond and extending below the adjacent teeth on this jaw and extending into the space between said series of diverging teeth and opposing valleys formed between certain of the latter.

3. In a vise, the combination of teeth-equipped, directly opposed, jaws relatively movable toward and away from each other, the teeth on one of said jaws being arranged in series which diverge upwardly toward the other of said jaws, the crests of certain of the teeth on the other of said jaws substantially directly opposing the crests of the lowermost teeth on said first-referred-to jaw and others thereof being located beyond and extending below the adjacent teeth on this jaw and extending into the space between said series of diverging teeth and extending into the valleys between certain of the teeth of said diverging series.

4. In a vise, the combination of directly opposed jaws relatively movable toward and away from each other and each provided with a plurality of teeth at opposite sides of its center, the teeth on said jaws being arranged in oppositely diverging series, certain of the teeth on one of said jaws other than the innermost teeth thereof being so shaped as to extend into the valleys between certain of adjacent teeth of the other of said jaws.

5. In a vise, the combination of directly opposed jaws relatively movable toward and away from each other and each provided with a plurality of teeth at opposite sides of its center, the teeth on one jaw being of greater number than the teeth on the other of said jaws and extending laterally beyond the latter, the teeth on said jaws being arranged in oppositely diverging series, certain of the teeth on one of said jaws other than the innermost teeth thereof being so shaped as to extend into the valleys between certain of adjacent teeth on the other of said jaws.

6. In a vise, the combination of directly opposed jaws relatively movable toward and away from each other and each provided with a plurality of teeth at opposite sides of its center, the teeth on one jaw being of greater number than the teeth on the other of said jaws and extending laterally beyond the latter, the teeth on said jaws being arranged in oppositely diverging series, certain of the teeth on the one of said jaws provided with the lesser number of teeth, other than the innermost teeth thereof, being so shaped as to extend into the valleys between certain of adjacent teeth on the other of said jaws.

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