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E. G. SEYMOUR.

VISE.

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Fig. 1.

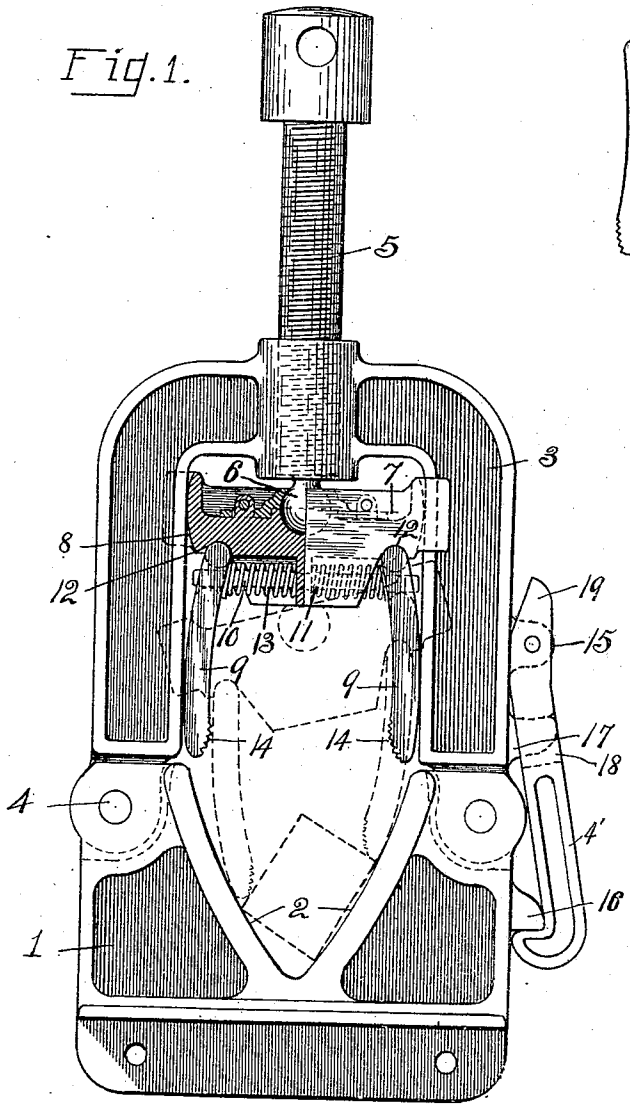
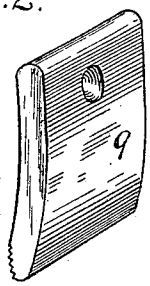


Fig. 2.



WITNESSES:

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VISE.

No. 870,522. Specification of Letters Patent. Patented Nov. 5, 1907.

Application filed March 25, 1907. Serial No. 364,393.

To all whom it may concern:

Be it known that I, ERNEST G. SEYMOUR, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Vises; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates more particularly to the class of vises, the stationary jaw of which is provided with a V-shaped gripping surface; and has for its object the provision of a light, durable, and highly efficient vise of this class, which is not only adapted for the firmly gripping of pipe or other circular articles but has its movable gripping parts so mounted as to enable them to readily conform to the shape of and firmly grip articles of square, triangular or other cross-sectional forms.

A further object of my invention is to materially improve and enhance the practicability and commercial value of apparatus of this class by making the opposing gripping surfaces of the fixed jaw in the forms of arcs instead of plain surfaces, as heretofore employed, and also making the pendent gripping members of the movable jaw in longitudinally curved form having radii of approximately equal length to those of the arcs of the fixed jaw, thus increasing the surface contact of the fixed jaw with a curved article, and also facilitating the frictional coaction of the pendent gripping members with the respective gripping surfaces of the fixed jaw.

The invention is fully described in the following specification, and illustrated in the accompanying drawing, in which,—

Figure 1 is an elevation of a vise embodying the features of my invention, with a portion thereof in section and showing in dotted lines the movable jaw tilted to grip an article of polygonal formation, and Fig. 2 is a perspective view of one of the pendent gripping-members of the movable jaw.

Referring to the drawing, 1 designates the base of the machine, the top of which is formed with an approximately V-shaped transverse recess in which the pipe or other object to be held may rest. The opposing bearing-surfaces 2, 2 of this recess describe arcs of circles, the concavities of which face each other, as shown, and are for the purpose hereinafter described. Rising from the base 1 is an inverted U-shaped frame-part 3, one leg terminal of which is pivoted to the base, as at 4, while the other is intended to be locked to the base by a latch-member 4′, thus permitting a relative opening of the base and said upper part to facilitate the placing or removal of the work.

Threaded through the top of the frame-part 3 is a hand-screw 5, which has its lower end formed with a ball 6 to which the cross-head 7 of the movable jaw of the machine is centrally swiveled in any suitable manner, whereby said cross-head, if unrestrained would be permitted to have a universal pivotal movement relative to the screw. The cross-head 7 has its ends vertically grooved to adapt it to receive and be guided in its vertical movement by the inner sides of the legs of the frame part 3, which form a slide-way therefor. The bases of these grooves describe arcs of a circle having a common axis with the ball 6, as shown at 8, thus permitting the cross-head to have a free vertical tilting movement relative to the frame part 3 to enable the gripping-jaws 9, 9, which are pendently carried by said cross-head, to assume different positions for the purpose of holding articles of irregular or polygonal shapes. The jaws 9, 9 are swingingly suspended in spaced relation from a suspensory-pin 10, extending horizontally through an extension 11 of the cross-head, and project downwardly from bearings 12 on the under side of the cross-head in position, when lowered, to coact with the respective bearing-arcs 2, 2 of the fixed jaw. The free ends of the jaws 9 are caused to yieldingly hug the respective sides of the work receiving space of the vise due to the action of springs 13 carried by the pin 10. The gripping-jaws 9 are longitudinally curved, as shown, to adapt their outer or convexed sides to conform to the curved spaces 2 of the fixed jaw, and each has its free end rounded and serrated, as at 14, to provide suitable surfaces for firmly gripping a pipe or other circular object to prevent a turning thereof in the vise when a turning stress is applied thereto.

The primary purpose of curving the coacting surfaces of the fixed and movable jaws in the manner described is to increase the area of such coaction whereby the wear occasioned will be more widely distributed over such surfaces and consequently decreased over that resulting if the surfaces 2 of the fixed jaw were made straight and the ends only of the jaws 9 allowed to coact therewith. A further very important advantage derived from the provision of the broad coacting surfaces of said parts is the resultant increased frictional resistance, which resides both between the coacting surfaces of said parts, and the curved surfaces 2 of the fixed jaw and a circular article held thereby, thus providing a more effectual gripping of such article. The curving of the surfaces 2, 2 also enables the machine to be made shorter, and consequently cheaper and lighter, as the work is thereby enabled to seat lower in the fixed jaw than would otherwise be the case.

The latch-member 4′ is pivoted to a lug 15 on the frame-part 3 and has its lower or free end angled to

lorm a hook to adapt it to engage a lug 16 on the base 1 of the apparatus. In order to strengthen the latch-member and at the same time relieve the pin or pivot on which it is hung from the stress incident to the tightly gripping of an article between the jaws, which stress is very considerable and frequently breaks the pin or pivot, the frame part 3 is formed with a lug 17, which is intended to project within a receiving slot or hole 18 in the latch and to exert an opposing pressure on the latch to that exerted by the lug 16 when the latch is in locked position. The latch 4′ is formed at its pivot end with an extension 19, which serves as a stop for limiting the opening or outward movement of the latch so that it never entirely leaves the lug 17, and also enables it to serve as a handle by means of which the frame part 3 may be raised.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is,—

1. A vise comprising a fixed jaw having a V-shaped work recess provided with outwardly curved work coacting surfaces, a movable member guided above said recess, and gripping-jaws swingingly suspended from said member and intended, when lowered, to coact with the curved surfaces of the fixed jaw and to coöperate to hold the work against movement therein.

2. A vise comprising a substantially V-shaped fixed jaw the opposing surfaces of which describe arcs of circles, a member mounted for vertical movement relative to said jaw, a pair of gripping-jaws suspended from said member in position, when lowered, to coact with the curved surfaces of the fixed jaw and to coöperate to hold the work in said fixed jaw, said gripping-jaws being longitudinally curved to conform to the coacting surfaces of the fixed jaw.

3. A vise comprising a fixed jaw, a slide-way carried by the fixed jaw, a member movable in said slide-way and tiltable relative thereto, gripping-jaws swingingly carried by said member, and means for actuating a sliding movement of the member and gripping-jaws.

4. A vise comprising a fixed jaw, an inverted U-shaped frame forming a slide-way, a cross-head mounted to have sliding and tilting movements in said frame, pendent swingingly mounted gripping-members carried by the cross-head to coöperate with the fixed jaw to hold the work and adapted to accommodate themselves to the shape of the work due to the tilting of the cross-head, and means for moving the cross-head.

5. The combination with the hinged parts of a vise, of a latch-member pivoted to one part, and a lug on each part coöperating with the latch-member to prevent an opening of the parts and relieving the latch pivot of strain.

6. The combination with the hinged parts of a vise carrying, respectively, the fixed and movable jaws thereof, one of said parts having two lugs and the other having one lug formed thereon, of a latch-member pivoted to one of said two lugs and coöperating with the other lug of the pair and with the sole lug on the other part to prevent an opening of said parts.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

ERNEST G. SEYMOUR.

Witnesses:
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Hazel B. Hiett.