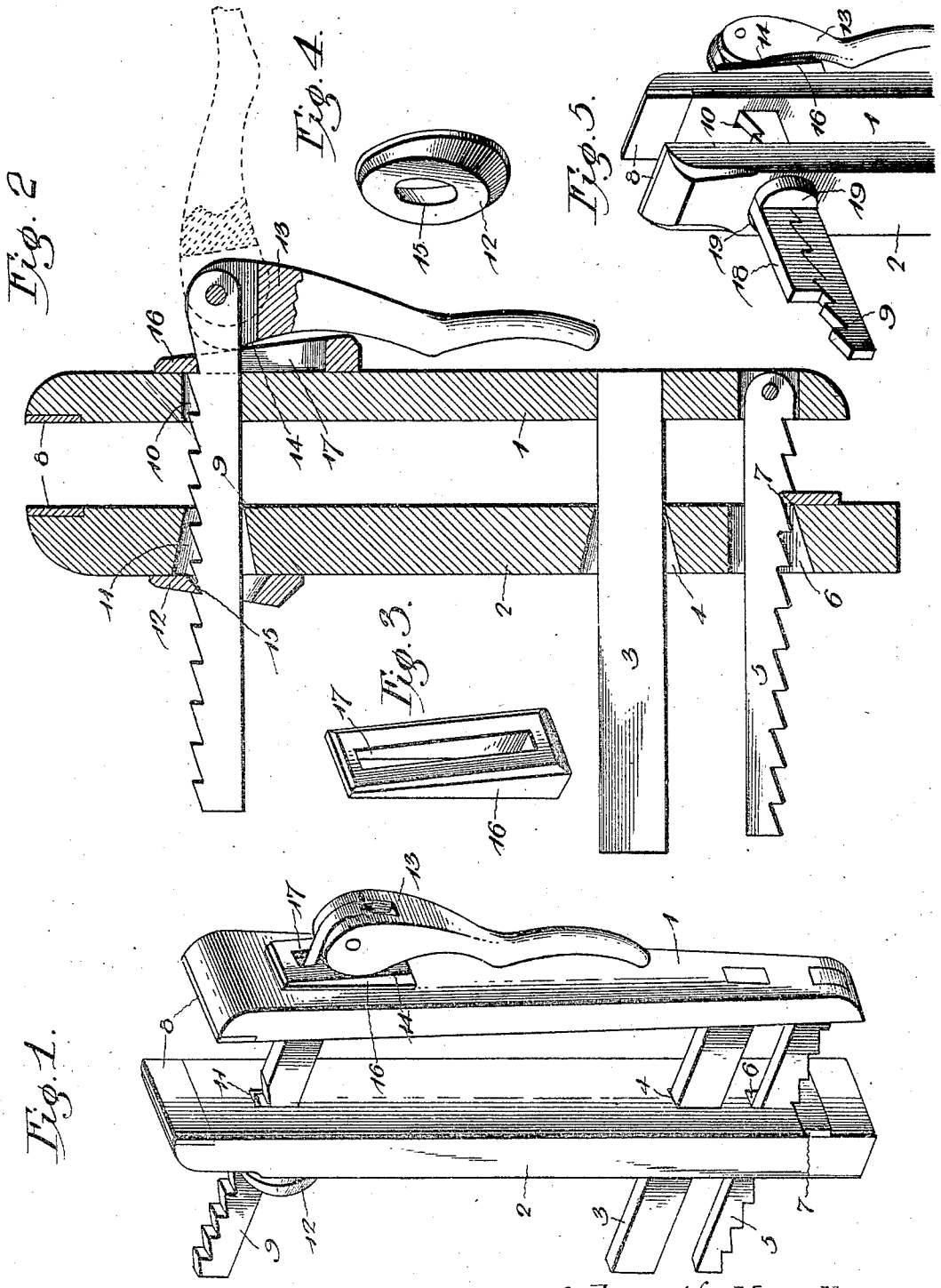
No. 630,230. Patented Aug. 1, 1899.

S. N. HUBBELL.

VISE.

(Application filed July 30, 1898.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

SYLVANUS NYE HUBBELL, OF DANVILLE, VERMONT.

VISE.

SPECIFICATION forming part of Letters Patent No. 630,230, dated August 1, 1899.

Application filed July 30, 1898. Serial No. 687,314. (No model.)

To all whom it may concern:

Be it known that I, SYLVANUS NYE HUBBELL, a citizen of the United States, residing at Danville, in the county of Caledonia and State of Vermont, have invented a new and useful Vise, of which the following is a specification.

My invention relates to bench clamps or vises, and has for its object to provide a simple, compact, and efficient construction and arrangement of parts adapted for facilitating the accurate adjustment of the vise-jaws.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a vise constructed in accordance with my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a detail view of the wedge-shaped bearing-plate for the cam-lever. Fig. 4 is a similar view of the wedge-shaped ring washer. Fig. 5 is a detail view of a portion of the vise, showing a modified construction of clutch.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 and 2 designate the jaws of the vise embodying my invention, of which the former carries a guide-bar 3, operating in an opening 4 in the latter, said guide-bar fitting loosely in the opening to allow a limited angular adjustment of the jaws with relation to each other. The guide-bar is arranged near the heels of the jaws, and beyond the same, toward the extremities of the heels, the jaws are further connected by a ratchet-arm 5, pivotally mounted, for instance, upon the jaw 1 and extending loosely through an opening 6 in the jaw 2, with its ratchet-teeth in operative relation with a detent 7, which is preferably fixed to the face or inner surface of the jaw 2. The pivotal movement of the ratchet-arm enables it to be adjusted to engage either of its teeth with said detent to hold the heels of the jaws at any desired interval.

Interposed between the adjustably-connected heels of the jaws and the operative faces of said jaws (the latter being preferably provided with wear-plates 8) is an adjusting device, consisting in the construction illustrated of a draw-bar 9, extending loosely through registering openings 10 and 11 in the jaws 1 and 2, adjustably engaged at the outer side or back of the jaw 2 by a clutch 12 and provided at the other end in operative relation with the back of the jaw 1 with a cam-operating lever 13, having an eccentric or cam face 14, by means of which the faces of the jaws may be moved toward each other to clamp an object interposed between the wear-plates 8.

The clutch 12 in the construction illustrated in Figs. 1, 2, and 4 consists of a ring washer having its opening or eye tapered toward the outer surface of the washer to form an annular tooth 15, and when this washer is arranged in contact with the back or outer face of the jaw 2 this detent is adapted to be engaged with one of the ratchet-teeth of the draw-bar 9 to hold the draw-bar at a fixed relation with said jaw 2 and enable the jaws to be forced together by so manipulating the operating-lever as to exert pressure by means of the cam 14 upon the back or outer surface of the jaw 1.

In the construction illustrated the annular clutch 12 is tapered in thickness or is diametrically wedge-shaped, whereby with the annular detent engaged with a given tooth of the draw-bar the turning of the washer upon the draw-bar as a center will vary the adjustment of the draw-bar with relation to the jaw 2. The object of this construction will be obvious. A coarse adjustment of the jaws with relation to each other may be secured by the engagement of the clutch 12 with different teeth of the draw-bar, but when a more accurate adjustment thereof is required, through a distance less than the interval between two contiguous teeth of the draw-bar, the washer 12 may be turned upon its axis, as indicated, to cause either the thin or the thick portion of its inner periphery to engage the said tooth of the draw-bar. Furthermore, between the cam-face 14 of the operating-lever and the back or outer face of the jaw 1 I interpose a wear-plate 16, and in order to still further increase the facility with which an accurate adjustment of the jaws may be attained prior to the movement of the operating-lever, so as to fit an object interposed between the faces of the jaws, I employ a wear-plate 16 of ta-

pered or wedge shape, the same being slotted longitudinally, as shown at 17, and being reduced in thickness toward its upper end, whereby the upward manual movement of the wear-plate to bring a thickened portion thereof in the path of the cam-face will reduce the interval between the operative faces of the jaws, and thus enable the operator by a comparatively slight movement of the operating-lever to exert the desired pressure of the jaws upon the interposed object. The function of the wear-plate 16 therefore is supplementary to that of the clutch 12, and after a comparatively accurate adjustment of the jaws to the interposed object has been attained by the turning of said clutch upon its axis the wedge-shaped wear-plate may be moved upwardly to bring its beveled outer surface in contact with the face of the operating-lever, the latter being in an elevated or inoperative position. Subsequently the downward-swinging movement of the operating-lever will immediately cause a forcible contraction of the interval between the jaws, and hence the firm engagement of said jaws with an interposed object.

For broader or coarser adjustment of the jaws than those which can be obtained by means of the teeth of the draw-bar or when it is desired to bodily separate the jaws the ratchet-arm 5, located at the heels of the jaws, may be utilized; but it is obvious that by reason of the location of said ratchet-arm at a point remote from the operative faces of the jaws a nice adjustment may be attained between the said operative faces by altering the adjustment of the ratchet-arm, and thereby altering slightly the angular relation between the inner faces of the jaws.

In Fig. 5 I have illustrated a slightly-modified construction of clutch for engaging the draw-bar at the rear side or back of the jaw 2, the same being shown at 18 and consisting of a toothed detent provided with parallel guide-arms 19 to bear against opposite side surfaces of the draw-bar, the teeth of said clutch engaging those of the draw-bar and being held at the desired engagement by gravity. The clutch-ring 12, however, is also held by gravity in engagement with the desired tooth of the draw-bar, and the eye or opening thereof is of sufficient diameter to pass freely over the teeth of the draw-bar when the ring is manually elevated to disengage the annular detent thereof from said teeth of the draw-bar.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a vise, the combination with relatively movable jaws, of a toothed draw-bar provided with a hand-lever for exerting pressure upon the back of one of the jaws, a clutch adjustably engaged with the teeth of the draw-bar and bearing against the back of the other jaw, and a tapered or wedge-shaped wear-plate interposed between the cam of said lever and the back of the jaw in operative relation therewith, substantially as specified.

2. In a vise, the combination with relatively movable jaws, of a toothed draw-bar provided with a hand-lever for exerting pressure upon the back of one of the jaws, a clutch adjustably engaged with the teeth of the draw-bar and bearing against the back of the other jaw, and a tapered or wedge-shaped wear-plate interposed between the cam of said lever and the back of the jaw in operative relation with which said lever is arranged, said plate having a longitudinal slot fitted upon the intermediate portion of the draw-bar, substantially as specified.

3. In a vise, the combination with relatively adjustable jaws, of a toothed draw-bar fitting in registering openings in the jaws and provided at one end with a cam-operating lever for exerting pressure upon the back of one of the jaws, and an annular or ring clutch arranged in contact with the back of the other jaw and having a detent detachably engaged with the teeth of the draw-bar, substantially as specified.

4. In a vise, the combination with relatively adjustable jaws, of a toothed draw-bar fitting in registering openings in the jaws and provided at one end with a cam-operating lever for exerting pressure upon the back of one of the jaws, and an annular or ring clutch arranged in contact with the back of the other jaw and adjustably engaged with the teeth thereof, said clutch being diametrically tapered in thickness, substantially as specified.

5. In a vise, the combination with relatively adjustable jaws, of a toothed draw-bar fitting in registering openings in the jaws and provided at one end with a cam-operating lever for exerting pressure upon the back of one of the jaws, and an annular or ring clutch arranged in contact with the back of the other jaw and adjustably engaged with the teeth thereof, said clutch being diametrically tapered in thickness, and having an internal annular detent to engage the teeth of the draw-bar, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

SYLVANUS NYE HUBBELL.

Witnesses:
R. B. CHALMERS,
Mrs. ASA E. SNELLING.