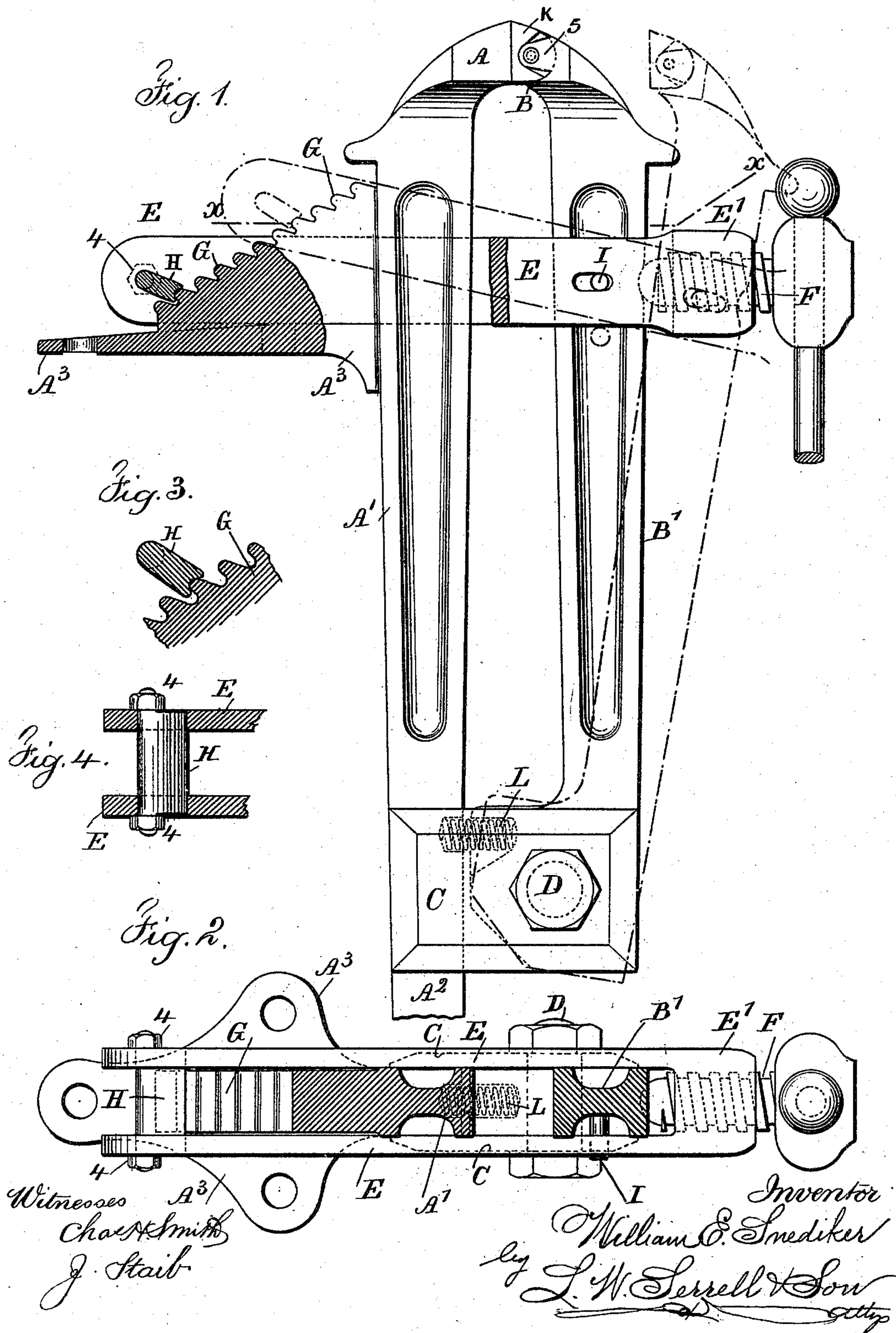


(No Model.)

W. E. SNEDIKER.
VISE

No. 579,022.

Patented Mar. 16, 1897.



UNITED STATES PATENT OFFICE.

WILLIAM E. SNEDIKER, OF JERSEY CITY, NEW JERSEY.

WISE.

SPECIFICATION forming part of Letters Patent No. 579,022, dated March 16, 1897.

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To all whom it may concern:

Be it known that I, WILLIAM E. SNEDIKER, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented an Improvement in Vises, of which the following is a specification.

Vises have heretofore been made with jaws carried by two arms or levers pivoted together at their lower ends, and one of these jaws has usually been fastened rigidly to a bench and the other jaw set up by a screw, and the screw in some instances has passed through a nut carried at one end of an open link or sling through which the lever portions of the jaws pass, and the back end of this sling or link has been sustained by one of a series of steps.

The present invention relates to a vise of the general character before mentioned; and it consists in the details of construction whereby the parts are more easily made and put together and more efficient in operation.

In the drawings, Figure 1 is a side elevation, partially in section, representing my improved vise; and Fig. 2 is a sectional plan at the line $x x$ of Fig. 1. Fig. 3 shows the cross-key and some rack-teeth sectionally and in larger size. Fig. 4 is a section of the straps at the cross-key.

The jaws A and B are of any desired size or shape, and from these the jaw-levers A' B' extend downward, and usually there is a bar or post A² passing from the lower end of the jaw-lever A' down to the floor, and the base-piece or bracket A³ extends out from the jaw A and rests upon a bench or other support for holding the vises in position, and the side plates C, permanently connected to the jaw-lever A', receive between them the lower end of the jaw-lever B', and a pivot-bolt D connects the parts together and allows the jaw B to be swung away from the jaw A. In constructing vises of this character the faces of the jaws are usually of steel and the bodies of the jaws and the jaw-levers are of malleable cast-iron or of wrought-iron.

I have found that in the annealing operation by which the cast-iron is rendered malleable the metal in the inner portions of the jaw-levers is not uniformly acted upon, and hence remains in the condition of cast-iron,

and the jaw-levers are liable to break in consequence of the lack of homogeneity in the metal. To avoid this difficulty, I make the jaw-levers in the shape represented in Fig. 2, similar to the letter H in cross-section, so that the metal is of nearly uniform thickness, and the annealing operation renders the jaw-levers tough and uniform in strength throughout their length, and I am enabled to make use of this shape of jaw-lever because both jaw-levers are substantially alike and there are not any openings through the jaw-levers for the passage of the clamping-screw employed in the ordinary vise.

The strap E extends at both sides of the jaw-levers, and the nut portion E' at the front end of the strap receives through it the screw F, that acts against the lever portion of the jaw B, and the straps E pass back at opposite sides of the stepped incline or rack G, behind the jaw-lever A', and there is a cross-key H, passing through mortises in the straps E, and there are projecting screws from the ends of the cross-key H, receiving upon them the nuts 4, by which the cross-key is held in place, and the ends of the straps E are connected together.

The back edges of the steps or rack in the stepped incline G are preferably rounding, and the front edge of the cross-key H is shaped to fit the rounded edges of the steps. This prevents the cross-key from slipping off one step onto the next when pressure is applied and renders the parts much more durable and reliable than in cases where the edges of the stepped incline are flat, and by this construction the parts can easily be put together or taken apart by the simple removal of one of the nuts 4 and the cross-key H. The rack-teeth and cross-key in their preferred form are shown in Fig. 3.

I make use of a screw or pin I in a slot in one of the straps E to prevent the straps and nut dropping down when slackened, and the length of the slot for the pin I is sufficient for allowing the movement of the jaw B under the action of the screw F when an article is being clamped between the jaws. The pin may be below the strap, as seen by dotted lines, Fig. 1.

It will be observed that when the jaw B is swung open on its pivot-bolt D the straps E

will remain nearly at right angles to the jaw-lever B' and the cross-key H will be in position to take the steps of the stepped incline or rack, or nearly so, up to the limit of the opening movement, and this results from the stepped incline being described as an arc of a circle, or nearly so, from the pivot-bolt D, and in consequence of this construction the screw F acts substantially at right angles to the jaw-lever B' when such lever is either fully opened or closed or in any intermediate position.

In consequence of the jaw-lever B' swinging upon its pivot-bolt the face of the jaw B will not be parallel with the face of the jaw A and such jaws will not set closely against the opposite sides of a parallel article that may be introduced between them. To rectify this difficulty, the face of the jaw B is grooved as an arc of a circle, and the jaw-face K is made of a separate piece with a cylindrical segmental surface fitting the recesses. This allows the jaw-face to accommodate itself to the surface of the article that is being held between the jaws, and in order to prevent the jaw-face K from dropping when the vise is open it is advantageous to provide ears at the ends of the jaw B, with pins passing loosely through the ears and into the jaw-face K, such jaw-pins coinciding with the axis of the cylindrical segment, or nearly so. Hence the jaw-face can be moved so as to be parallel to the face of the stationary jaw or to set against an article introduced between the jaws.

The spring usually employed to swing the moving jaw extends up between one jaw and the other and often is in the way of articles introduced in the vise. I make a toe upon the moving-jaw lever above the pivot and extending nearly to the stationary-jaw lever and provide a recess in the same to receive an expansive helical spring, as shown at L. This leaves the space above the toe and between the jaw-levers free and clear, and the spring is protected from injury. The angle or shape of the stepped incline G may be varied.

I claim as my invention—

1. The combination with the jaws and jaw-

levers, of straps extending one at each side of the jaw-levers, a nut portion uniting the front ends of the straps and a movable cross-key near the back ends of the straps, and a stepped incline or rack behind the stationary jaw, substantially as set forth.

2. The combination with the jaws and jaw-levers in a vise, of straps extending at the sides of the jaw-levers united by a nut portion at the front end, a screw passing through such nut portion and acting upon the movable jaw, a cross-pin in mortises through the straps and nuts for holding the cross-pin in position, and a stepped incline or rack behind the stationary jaw for receiving the cross-key, substantially as set forth.

3. The malleable-iron jaws and jaw-levers, each jaw-lever being H-shaped in section, in combination with straps passing at the sides of the jaw-levers, there being a nut uniting the outer ends of the straps, a cross-key through the straps near their rear ends and a stepped incline or rack engaging the cross-key, substantially as set forth.

4. The combination with the stationary and pivoted jaws and their jaw-levers, of straps passing at each side of the jaw-levers and having a nut uniting their front ends, a cross-key through the rear portions of the straps, and a stepped incline or rack having rounded edges to the teeth, the front edge of the cross-key fitting the rounded edges of the teeth, substantially as set forth.

5. The combination with the stationary jaw and its jaw-lever, of a moving jaw and its pivoted jaw-lever, straps passing at each side of the jaw-levers and united at their outer ends by a nut, a screw passing through such nut, a stepped incline behind the stationary jaw, a cross-key passing through the straps near their rear ends, and a pin or screw for supporting the strap upon the moving jaw, substantially as set forth.

Signed by me this 1st day of October, A. D. 1896.

W. E. SNEDIKER.

Witnesses:

GEO. T. PINCKNEY,
S. T. HAVILAND.