(No Model.)

W. S. LORD.

Vise.

No. 232,282. Patented Sept. 14, 1880.

Fig. 1.

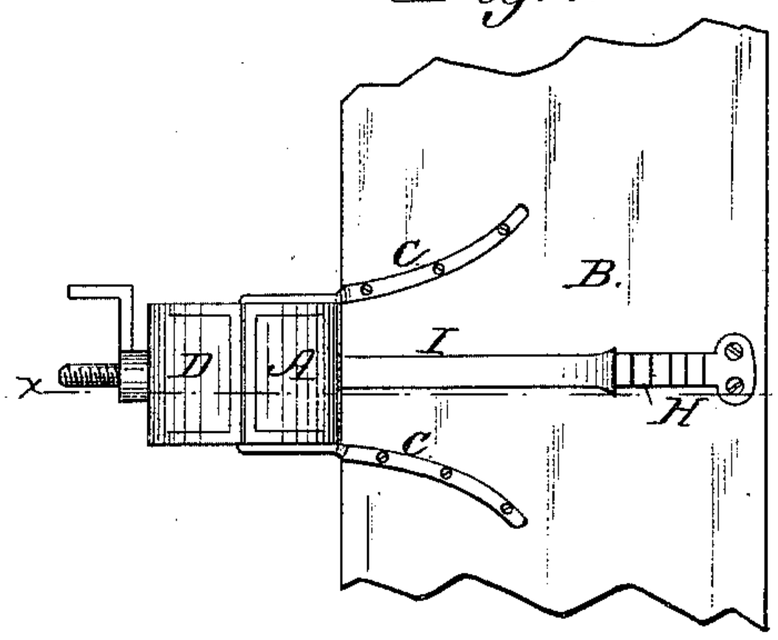


Fig. 2.

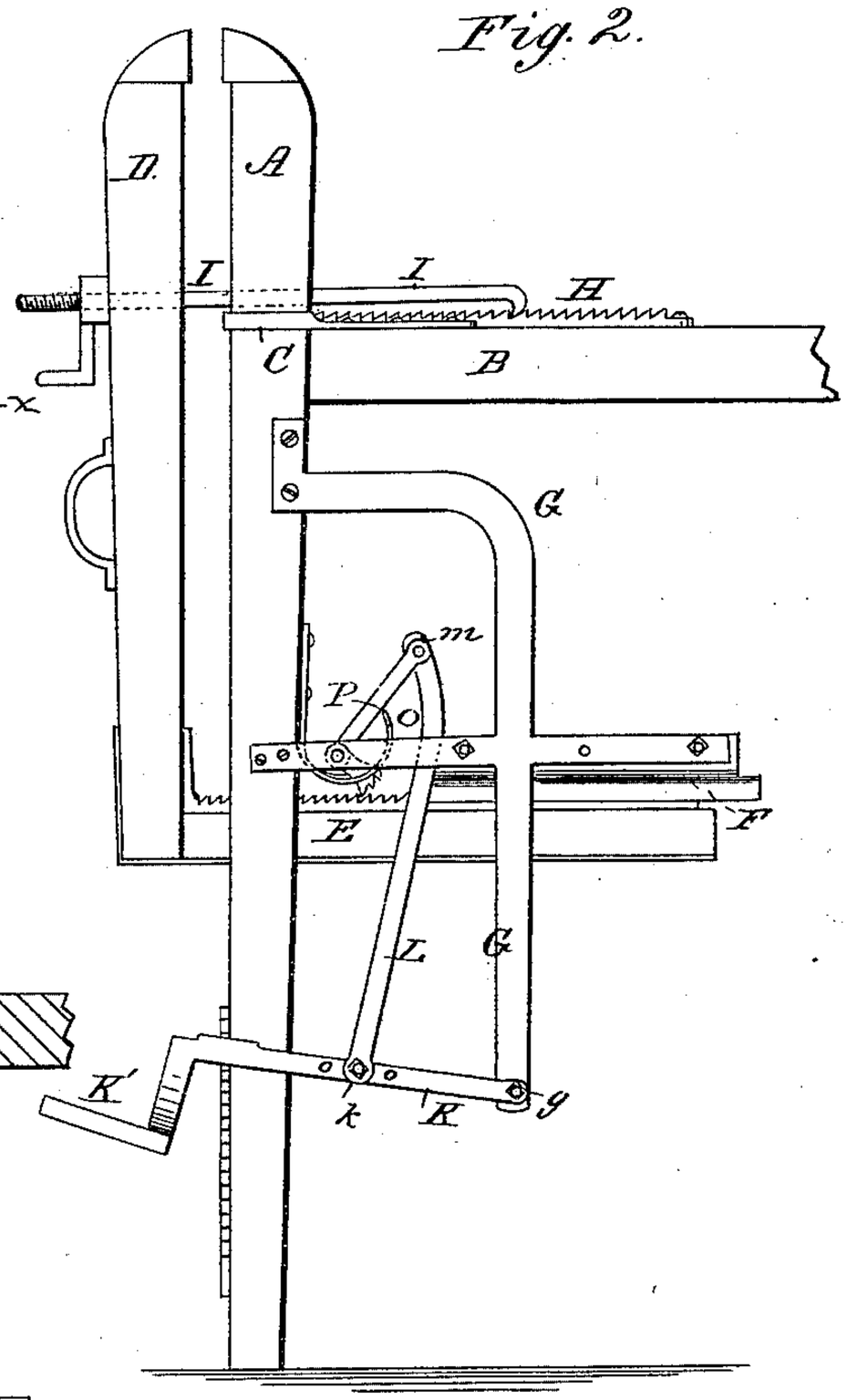


Fig. 3.

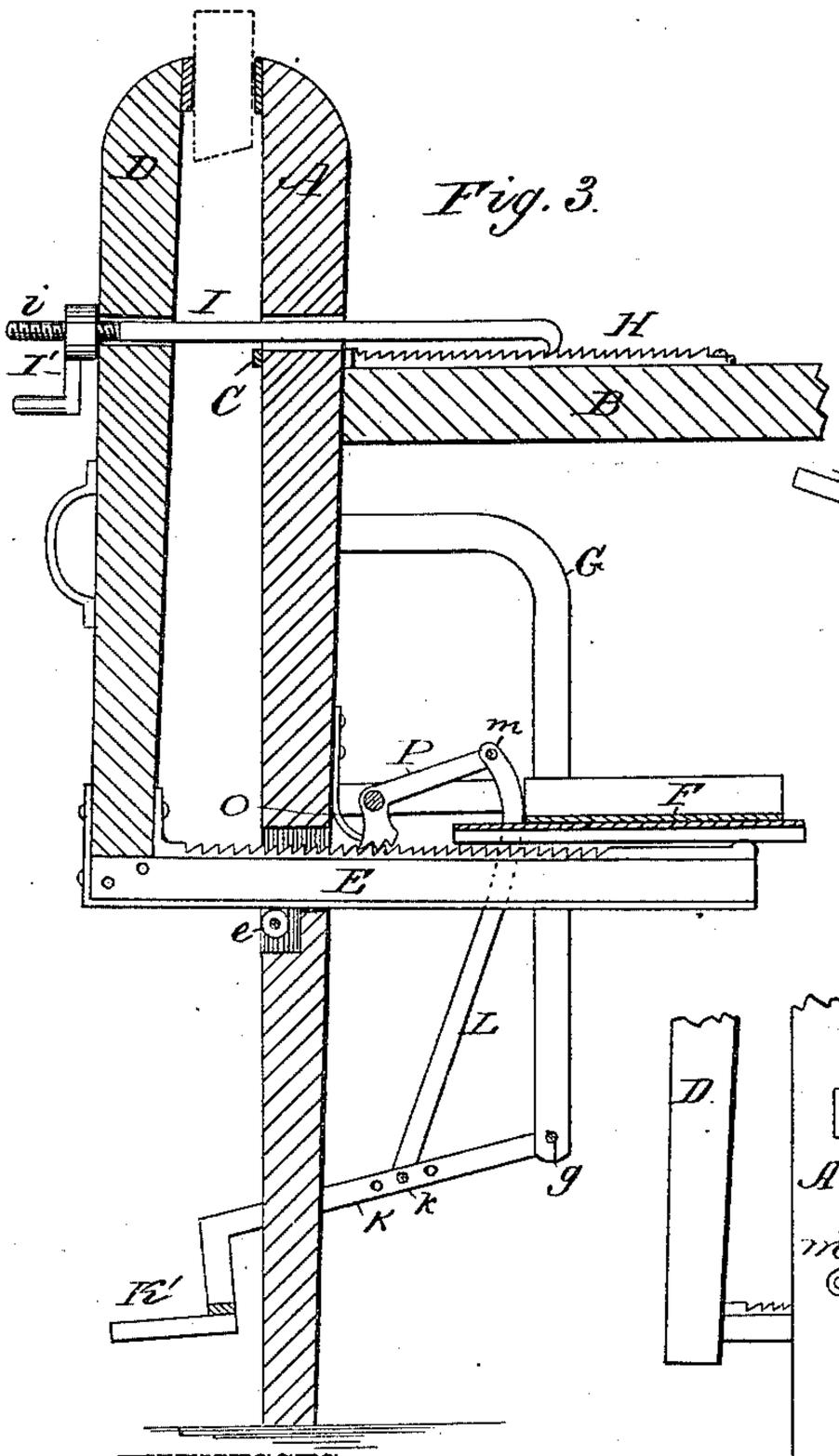
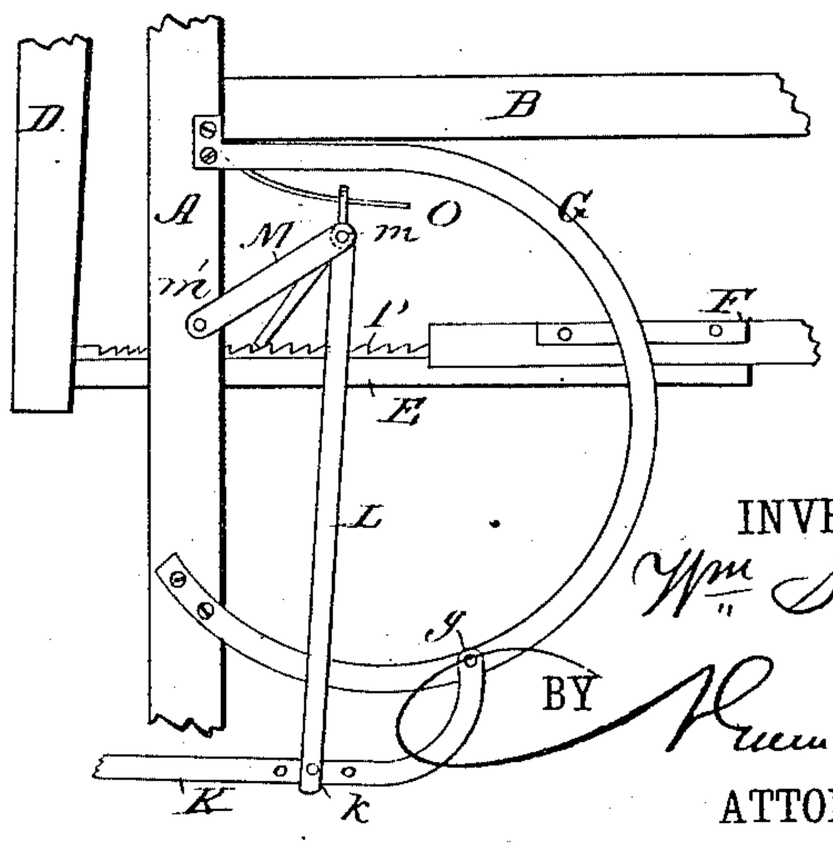


Fig. 4.



WITNESSES:

W. W. Collingsworth

Wm. H. Rowe

INVENTOR:

Wm. S. Lord

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM S. LORD, OF BROWNSVILLE, TENNESSEE.

VISE.

SPECIFICATION forming part of Letters Patent No. 232,282, dated September 14, 1880.

Application filed July 16, 1880. (No model.)

To all whom it may concern:

Be it known that I, WM. STINSON LORD, of Brownsville, in the county of Shelby and State of Tennessee, have invented a new and Improved Vise; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to an improved vise that may be easily operated by the foot of the workman to forcibly clamp the jaws of the vise upon the work while the hands are free to hold the work, and which may be immediately adjusted to adapt the jaws to embrace the work before the clamping movement of the jaws is exerted, as will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a plan view of my improved vise. Fig. 2 is a side elevation of the same with the jaws unclamped; Fig. 3, a central section of the same in the line *x x* of Fig. 1, with the vise in its clamped position; and Fig. 4, a detailed view of a modification of one of the parts.

The fixed jaw A of the vise is securely connected to the bench B by a metal strap, C. The stationary jaw A extends some distance below the table, and forms a support for the various parts below the table. The movable or sliding jaw D is provided with a slide-bar, E, secured at right angles thereto, that passes through an opening in the lower end of jaw A, and also passes through the ways of a guide-plate, F, that is supported in a horizontal position by curved brackets G G secured to the fixed jaw A. A friction-roller, *e*, may be journaled across the opening in the fixed jaw A for the bar E to slide upon, so that it may be withdrawn with but little friction. The sliding jaw D is made adjustable to embrace the work without clamping it, and is held in the adjusted position by the following means:

A ratchet-toothed rack-bar, H, is secured to the fixed jaw A and to the surface of the table, and receives the hooked end of a coupling-bar, I, the other end of which passes freely through both the fixed and the sliding jaws of the vise, and is held in proper relative position thereto by a screw-thread, *i*, upon the end of the bar and a crank-handled nut, I′, that engages therewith. A foot-lever, K, is formed of double bell-cranked arms that are hinged at their rear ends to the brackets G G by means of a through-bolt, *g*, that connects them, and come together at their front ends, which are joined to a pedal-bar, K′, that projects below the vise within convenient reach of the workman. The foot-lever arms are provided with a series of holes, and a through-bolt, *k*, passes across from one lever to the other to connect the opposite holes, so that the bolt *k* may be adjusted nearer to or farther from the fulcrum-bolt *g*.

Links L L are connected at their lower ends to lever-arms K K by means of bolt *k*, and are connected at their upper ends to the bolt *m* of an L-shaped segment-pawl, P, provided with a series of ratchet-teeth upon its short arm, that is pivoted at its angle to the brackets G in such manner that when the long arm of the pawl P is drawn down by the link L and foot-lever K the short toothed arm will engage with the teeth of the rack and force the bar E outwardly to clamp the jaws, and when the said lever is released the pawl and lever, with their connections, are raised again by a spring, O, that bears against the long arm of the lever, and the pawl will be lifted out of contact with the rack-bar, so that the sliding jaw may be freely adjusted by hand.

The hooked end of the coupling-bar I is first lifted from the notches of the rack, and the sliding jaw is drawn out and adjusted to closely rest against the sides of the work between the jaws of the vise without clamping it, and the hooked end of the bar is then dropped into the notch in the rack-bar most nearly opposite to it. If there should be no convenient notch for the hook to engage with, the crank-handle of the nut I′ is turned to extend or reduce the length of the bar until the adjustment is made. This latter operation may usually be quickly performed with but a slight turn of the nut. The work may then be held and adjusted to the desired position between the jaws, while the hands are free to hold the work or manipulate the tools in performing the adjustment. When this is properly done the workman may, by placing his foot upon the pedal of the foot-lever, bring the pawl down into contact with the rack upon the bar of the sliding jaw and thrust the lower end of said jaw outwardly, while the upper middle portion of the said

jaw will be prevented from moving farther away from the fixed jaw by the nut of the coupling-bar, and the upper end of the sliding jaw will be forced in toward the fixed jaw to an extent corresponding with the movement of the lower end of the sliding jaw and clamp the work between the upper portion of the jaws with a pressure corresponding to the intermediate leverage and the pressure exerted upon the pedal.

A locking pin or catch conveniently placed upon a stationary portion of the bench or fixed jaw will serve to hold the foot-lever down and the jaws permanently clamped without the constant pressure of the foot of the workman, if desired.

Various modifications may be made in the above-described machine without departing from the spirit of my invention.

Instead of the segment-pawl above described the rack-bar E may be operated by the foot-lever by a swinging pawl, P, suspended from the pin *m* of a pair of links, M, pivoted at *m'* to the stationary jaw A, and held out of contact with the teeth of the rack-bar when the lever K is not operated by means of a spring-plate, O, secured to the stationary jaw A and table B, the free end of which passes beneath a link, m^2, that is connected with the pin *m*. When the foot-lever is depressed the free end of the pawl will engage with one of the teeth of the rack and thrust the bar E forward. The leverage-connection between the pawl and the pedal may also be varied in a manner that would be readily suggested by a skilled workman.

The above-described device is cheap, and may be manufactured by any blacksmith with but few workshop facilities. It is also very strong and durable, and may be quickly operated after a little practice, so that it may be instantly adjusted and clamped, the foot as well as the hands serving to facilitate the work. The tedious process of screwing a long distance from a short one, or vice versa, is by this means entirely avoided. The vise may be made entirely of iron, or partially so, at but little cost, as the expensive process of cutting and fitting heavy screws is avoided.

I do not broadly claim a vise provided with a fixed jaw and a sliding jaw adjustably connected to the fixed jaw, and arranged to clamp the work by thrusting the lower end of the sliding jaw outwardly by foot-lever mechanism, as I am aware that such form of construction has been heretofore employed.

What I claim as new is—

1. In a vise, the combination of the stationary jaw, the rack-bar secured thereto, the sliding jaw, the coupling-bar, provided with a hook at one end and a screw-thread and nut at the other, to connect the jaws and readily adjust the sliding jaw to suit the size of the work, and lever mechanism connected with a foot-treadle to thrust the lower end of the sliding jaw outwardly and clamp the work with the upper end of the jaw by foot-power, substantially as and for the purpose described.

2. In a vise, the combination of the fixed jaw, the rack-bar secured thereto, the coupling-bar, the movable jaw, the slide-bar with a rack secured to its upper edge, the pawl hinged to the stationary jaw, a foot-lever hinged to the frame and connected with the pawl by a link, to bring the pawl into gear with the rack and thrust the lower end of the movable jaw outwardly and clamp the work with the upper end of said jaw, substantially as and for the purpose described.

3. In a vise, the combination of the fixed jaw A, sliding jaw D, coupling-bar I, the rack-edged slide-bar E, the pawl-and-lever mechanism for actuating the same, with the bracket G and guide-block F, for holding the slide-bar E in position, substantially as and for the purpose described.

The above specification of my invention signed by me this 14th day of July, 1880.

WILLIAM S. LORD.

Witnesses:

SOLON C. KEMON,

CHAS. A. PETTIT.