(No Model.)

J. M. HESSER.

DOUBLE GEARED SELF ADJUSTING VISE.

No. 456,568. Patented July 28, 1891.

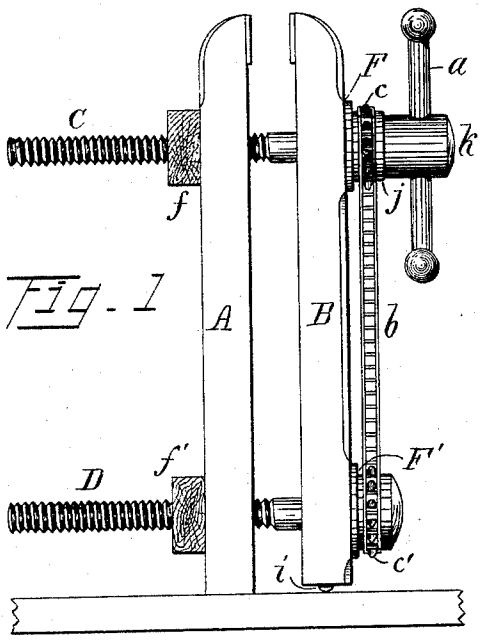


Fig. 1

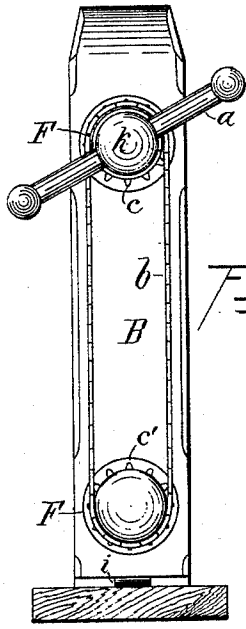


Fig. 2

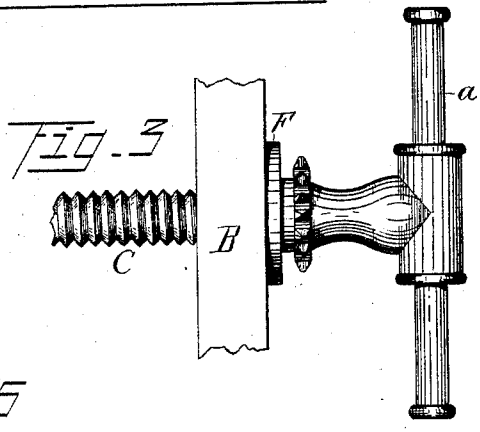


Fig. 3

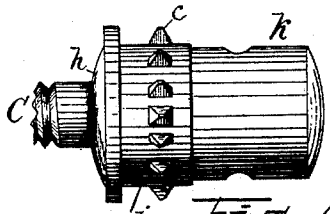


Fig. 4

Fig. 5

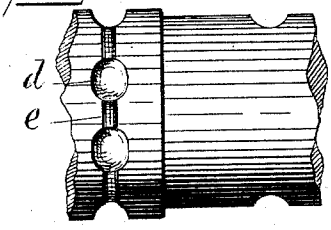




Fig. 7

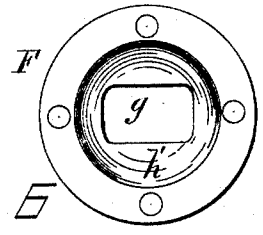


Fig. 6

Witnesses.
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UNITED STATES PATENT OFFICE.

JOSEPH M. HESSER, OF KIPTON, OHIO.

DOUBLE-GEARED SELF-ADJUSTING VISE.

SPECIFICATION forming part of Letters Patent No. 456,568, dated July 28, 1891.

Application filed March 12, 1891. Serial No. 384,752. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH M. HESSER, a citizen of the United States, residing at Kipton, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Self-Adjustable Double-Gear Vises, of which the following is a full, clear, and complete description.

The nature of my invention relates to a bench-vise constructed with an endless-chain connection between the two screws, the upper and lower screws operating in conjunction by the action of said chain, whereby the lower screw adjusts itself to the position of the upper or power screw.

It also relates to the peculiar form of the head of upper screw and washers, as hereinafter fully explained.

That my invention may be seen and fully understood by others familiar with this art, reference will be had to the following specification and the annexed drawings, forming a part thereof.

Figure 1 is a side elevation of my improved vise. Fig. 2 is a front elevation. Fig. 3 is a detached section showing a different form of head. Figs. 4, 5, 6, and 7 are detached sections, hereinafter fully explained.

Like letters of reference designate like parts in the drawings and specification.

The two jaws A and B of my vise are similar to those of an ordinary bench-vise, the jaw A being rigid, while the jaw B is movable. I use a screw C with a lever *a* in the head thereof, as ordinarily used, but of different construction, as hereinafter shown. I also use a second or lower screw D not used in the ordinary vise. The heads of these duplex screws C and D, which are on the exterior of the jaws, as shown, are of the same diameter. An endless chain passes around the two heads. A sprocket-chain *b* may be used for this purpose, as shown in Figs. 1 and 2, in which case teeth *c* and *c'* are arranged around the two screw-heads, or any other suitable chain may be used—as, for instance, an S-chain, a section of which is shown at E, Fig. 7. In this case the heads of the screws are constructed similar to Fig. 5, the depressions *d*, and grooves *e* being arranged alternately around the head to receive the links of the chain E. The screws C and D, preferably of iron, pass through the jaws A and B, and are threaded into the blocks or nuts *f f'*, Fig. 1. It will readily be seen that power being applied to the screw C and said screw threaded in or out, as the case may be, the screw D must necessarily move simultaneously therewith the same direction and the same distance, resultant from the two heads being the same diameter, and the endless chain *b* passing around them both.

A plate F, of which Fig. 6 is a detached view, is attached to the exterior of the movable jaw B, through which the upper screw C passes, and a similar plate F' is attached to said jaw for the passage of the lower screw D. The opening in the center of the plates F and F' is substantially of the form shown at *g*, Fig. 6, the opening in the jaw B corresponding in form and registering with the opening *g*. These plates are concaving. The convexity *h* of the inner side of the heads of the screws C and D, as shown in Fig. 4, corresponds to and is adjusted to the concave *h'* of the plates F and F', Figs. 3 and 6, and forms a concave and convex seat or bearing for the heads of the screws, which are convex in form on the inner side, as shown at *h*, Fig. 4. The purpose of this peculiar form of bearing for the jaws is to make a vise, that when the two jaws are brought to bear on an article placed between them the movable jaw will give a little one way or the other, thereby gripping the substance firmly at all points. Hence anything of a wedge or tapering form will be as firmly held between the jaws of the vise as a piece having uniform and parallel sides, which is of valuable importance in the trades.

A roller *i*, Figs. 1 and 2, is arranged in the lower terminal of the movable jaw B to facilitate the moving to and fro of said jaw.

In case a wood screw and head are used, as shown in Figs. 1, 2, and 4, the convex plate *h* with its washer and band *j* and sprockets *c* are all cast in one piece and fitted to the screw and head *k*, forming a band and washer in place, Fig. 4.

The strain upon the jaws by my improvement is in the line of the screws. Hence the jaws and screws are not subjected to the angular strain as in the ordinarily-constructed bench-vises.

It is not deemed necessary to point out the

many advantages of my improved vise over the ordinary bench-vise, as they can readily be seen, the construction being, as it is, simple, durable, economical, and effective.

What I claim, and desire to secure by Letters Patent, is—

1. In a self-adjusting double-geared vise, an upper and a lower screw operating conjointly and in combination with an endless chain passing around the heads of said screws on the exterior of the vise, with a crown washer and band to the upper screw and head, substantially as and for the purpose set forth.

2. In a self-adjusting double-geared vise having concave and convex plates arranged on the exterior of the movable jaw, with holes of the form shown therein, in combination with the double screws C and D, having convex heads, arranged in the manner substantially as and for the purpose set forth.

3. The combination, with the adjustable jaws of the vise, of a wheel *i*, the concave and convex plates F and F′, and the duplex screws C D, arranged in connection with the chain and gears, substantially as and in the manner set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH M. HESSER.

Witnesses:

W. H. BURRIDGE,

L. GRISWOLD.