G. M. EVANS.

BENCH-VISES.

No. 170,721. Patented Dec. 7, 1875.

fig 1

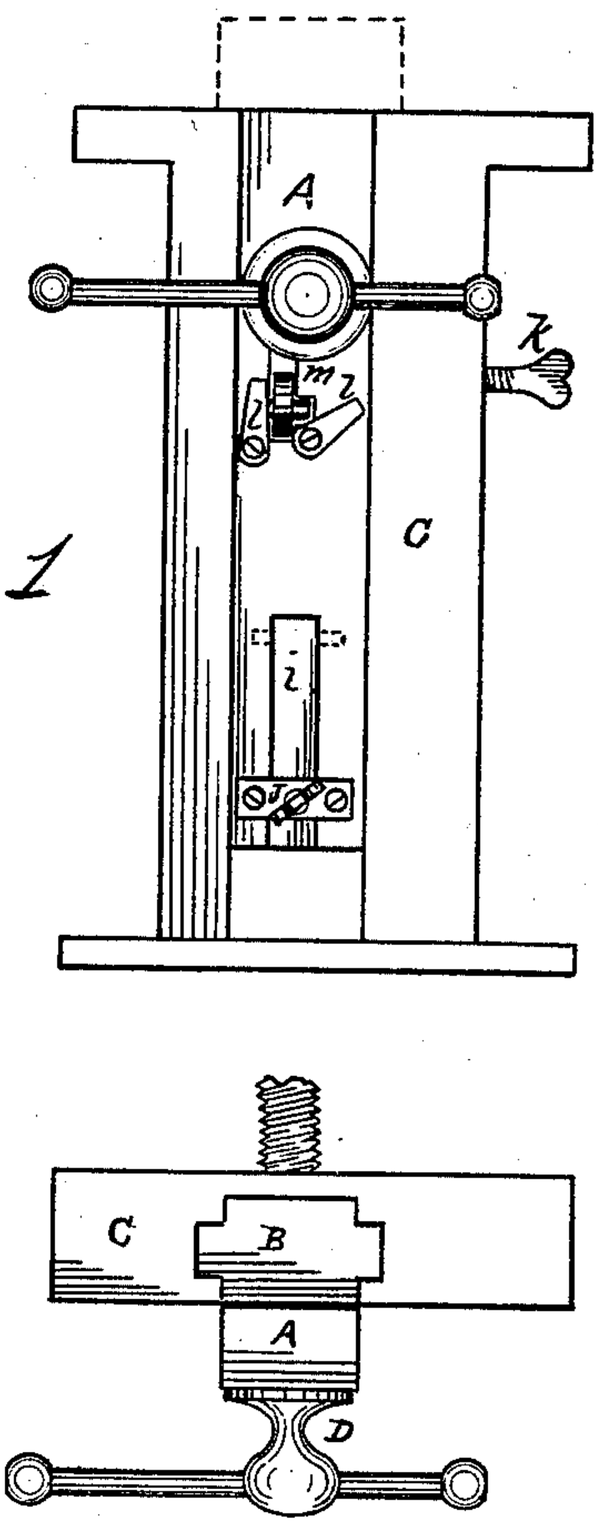

fig 2

fig 3

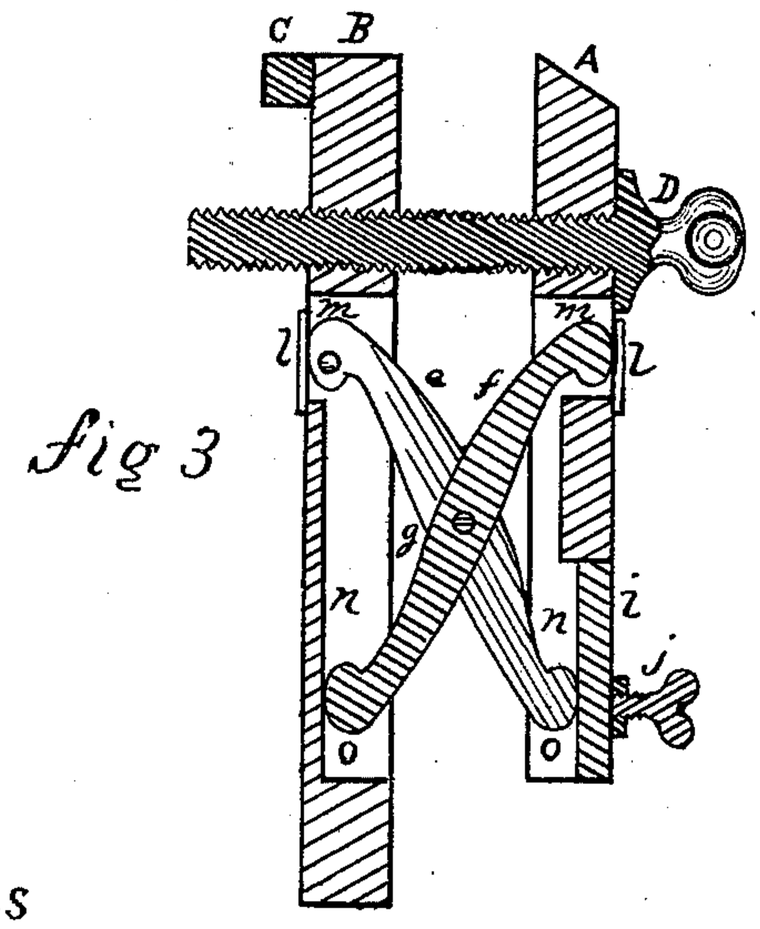

fig 4

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE M. EVANS, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN BENCH-VISES.

Specification forming part of Letters Patent No. **170,721**, dated December 7, 1875; application filed March 5, 1875.

To all whom it may concern:

Be it known that I, GEORGE M. EVANS, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Bench-Vises; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to certain improvements in equalizers for bench-vises invented by me, and for which Letters Patent No. 127,969 were issued to me June 18, 1872; and it consists in constructing the equalizers with fixed pivots, and so arranging them in their bearings in the jaws of the vise that the strain of the pivots upon the jaws will not be liable to split them.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a front view of my improvement in equalizers for bench-vises. Fig. 2 is a top or end view of the vise. Fig. 3 is a vertical section of the vise. Fig. 4 is a detailed section of the pivoted end of the equalizers.

A represents the movable jaw, and B the fixed jaw, which is susceptible of being raised or lowered in the frame C, and held in a fixed position in the frame by means of a set-screw, K, whereby a "high or low" vise may be formed, adapting it for a carpenter's bench-vise, or for a cabinet or carriage maker's vise. The jaws A and B are furnished with grooves *n*, in which the lower ends *o* of the equalizers move. The equalizers are constructed of cast-iron, the pivots *h* being cast with the bar. The bars *e* and *f* are pivoted together in the center at *g*. The openings *m* are made in the outer faces of the jaws, as shown in Figs. 1 and 3, and the pivots held in their place through the medium of pivoted buttons *l*. By casting the pivots *h* solid with the equalizers, as shown in Fig. 4, the process of drilling the equalizers and securing the pivots *h* in them is avoided, thereby diminishing the cost of constructing the equalizers, and securing uniformity in their construction, the pivot always occupying the same position in the equalizers, so that in case of breaking, a new equalizer may be substituted with a certainty of fitting the old jaws; and by placing the recess for the pivots in the outer face of the jaws, the liability of the pivots splitting and breaking the jaws is entirely avoided.

The vise for which Letters Patent were granted me June 18, 1872, numbered 127,969, had this objectionable feature, viz., breaking and splitting the jaws; and experience in the use of said vise demonstrated the necessity of adopting some means for overcoming this objectionable feature, which I have accomplished by constructing the vise with relation to the pivots as hereinbefore described.

I also found that by the process of drilling the equalizers for the reception of the pivot *h* it was almost impossible to have the equalizers interchangeable with relation to the jaws of different vises. This difficulty I overcome by casting the pivots *h* solid with the equalizers.

By the arrangement of the recesses for the pivots, and by the use of the pivoted buttons *l*, the bars can readily be removed when it becomes necessary for repairing them or substituting new ones, and also for facilitating their removal in case of transportation the several parts may be separated for packing, and can be easily and rapidly placed together for use.

The jaw A, at its lower end, is furnished with a pivoted piece, *i*, which is adjusted with relation to the lower end of the bar *e*, for taking up any lost motion which may occur from any cause whatever. Between the bars and jaws D is the main operating-screw for the jaws, and is of the ordinary construction.

Prior to inserting the screw the pivoted end of the equalizers is passed through the openings for the screw, and then lowered down in the grooves *n* until the pivots come opposite the recesses *m* in the outer face of the jaws. They are then lowered in the recesses and the buttons turned over them, as indicated in Figs. 1 and 3. The screw is then placed in the jaws, and the piece *i* properly

adjusted with relation to the lower end of the equalizers through the medium of the set-screw *j*. The rise is then ready for use.

Having thus described my improvement, what I claim as of my invention is—

The equalizers *m m*, having solid pivots, in combination with the recesses in the outer faces of the jaws, and the buttons *l l*, substantially as and for the purpose hereinbefore described and set forth.

GEORGE M. EVANS.

Witnesses:

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