(No Model.)

M. G. LEWIS.

BENCH VISE.

No. 294,137. Patented Feb. 26, 1884.

FIG. 1.

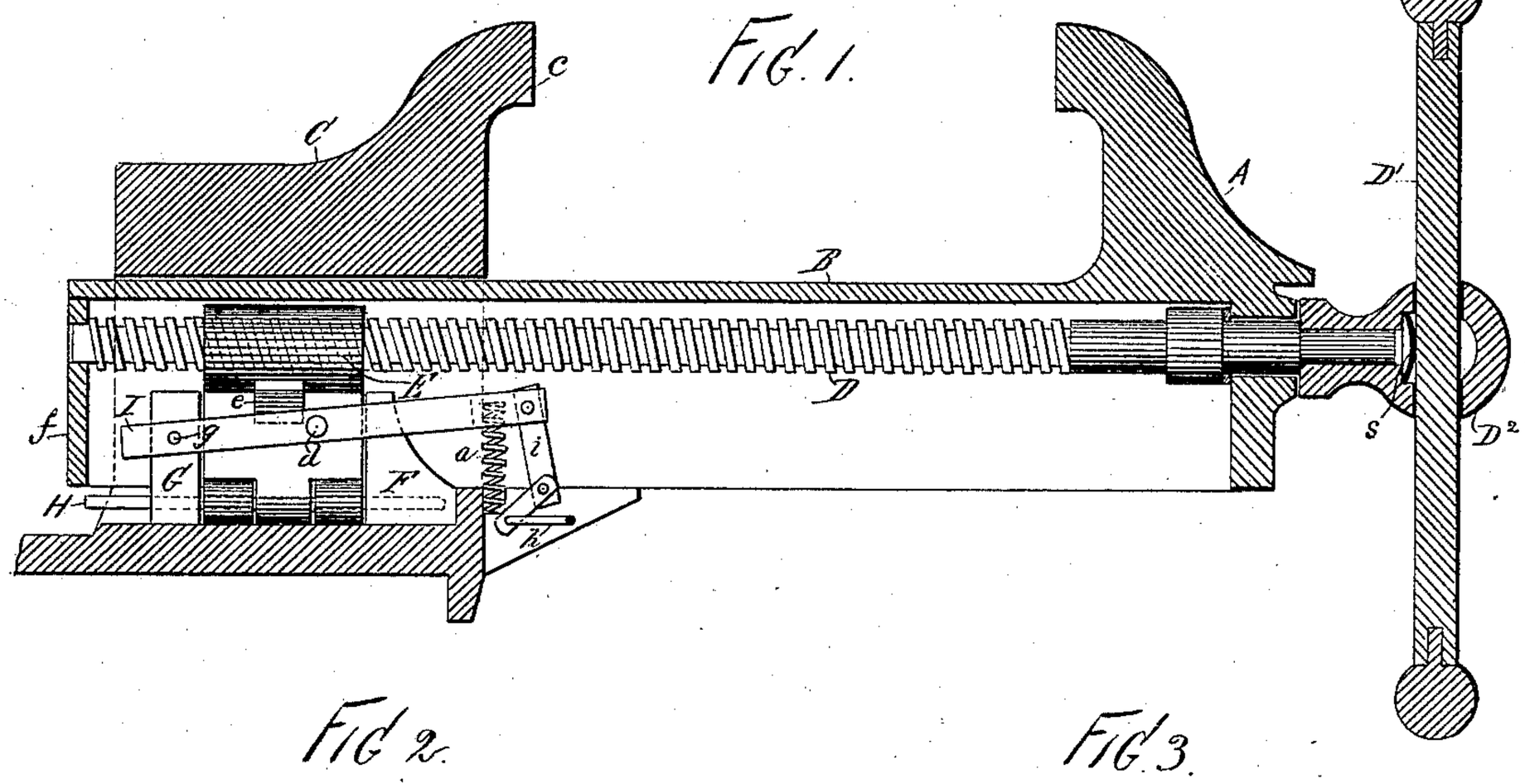


FIG 2.

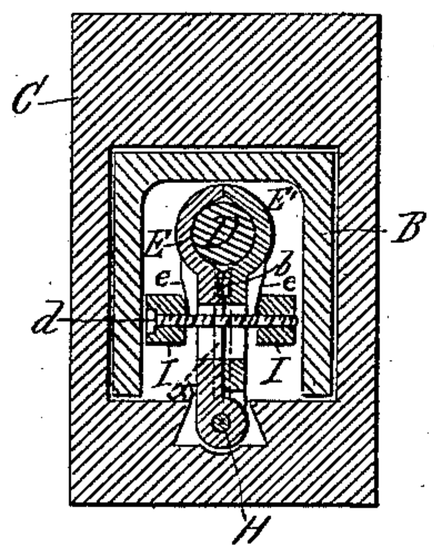


FIG 3.

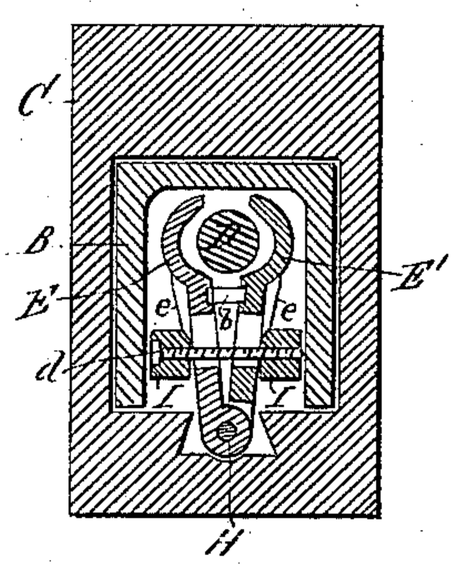


FIG. 4.

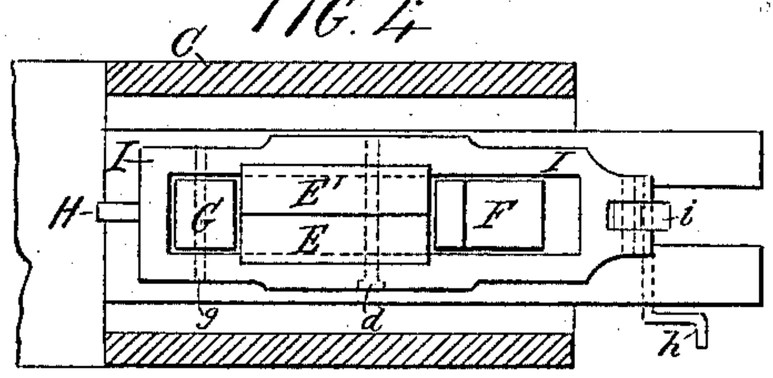
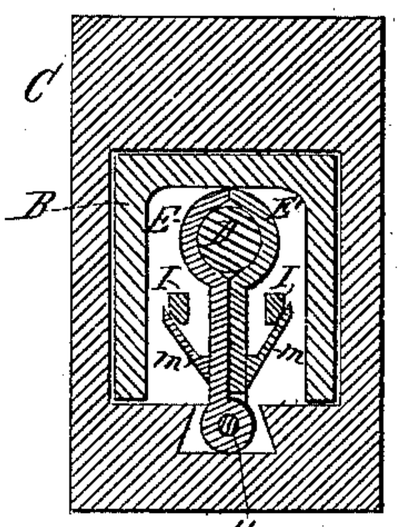


FIG. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

MORTIMER G. LEWIS, OF LOWVILLE, NEW YORK.

BENCH-VISE.

SPECIFICATION forming part of Letters Patent No. 294,137, dated February 26, 1884.

Application filed July 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER G. LEWIS, of Lowville, county of Lewis, and State of New York, have invented certain new and useful Improvements in Bench-Vises, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention has relation to bench-vises such as are ordinarily used by metal-workers; but the improvements may be applied upon other vises as well, being applicable for heavy or light work.

The object of my invention is to produce a simple, cheap, durable, and effective device wherein the movable jaw may be rapidly advanced or retracted, in order to quickly adjust the vise for the reception of any article, large or small, (the final clamping to be effected by the usual screw,) and to accomplish this movement at any point and for any distance within the limit of travel of the movable jaw, at the same time leaving the screw in such position that it may be turned to advance or retract the jaw for any distance within the limit of its movement. Vises supplied with means for permitting the jaw to be rapidly moved independently of or without turning the screw are called "rapid-transit vises," the uses and advantages of which are well understood, and the final clamping effected by turning the screw is called the "gathering." Heretofore in rapid-transit vises, wherein the screw passes through a whole or complete nut, the gathering could only be accomplished within a limited distance, and much care and attention was required of the operator to adjust the movable head and screw in such relative positions that after the rapid sliding of the front jaw the same could be gathered by the screw sufficiently to clamp the work, thus frequently consuming more time than that gained by dispensing with the necessity of turning the screw, as in still older patterns of vises.

To obviate this disadvantage, and otherwise to accomplish the aforesaid object of my invention, my improvements involve certain novel and useful arrangements or combinations of parts, peculiarities of construction, and principles of operation, all of which will be herein first fully described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation and partial sectional view of a vise constructed and arranged for operation in accordance with my invention. Fig. 2 is a cross-section upon a plane passing through the sectional nut, the same being shown in closed position; and Fig. 3 is a similar view, showing the nut in open position, to permit the rapid adjustment of the vise-head. Fig. 4 is a plan or top view, showing the construction and arrangement of the sectional nut and its appendages, the upper part of the vise-head being omitted. Fig. 5 is a cross-section through the nut, showing one means whereby the two parts thereof may be forced open as the yoke or frame is made to descend.

In all these figures like letters of reference, wherever they occur, indicate corresponding parts.

A is the traveling head, mounted upon the sliding bar B, and arranged to move toward and from the other head, C, which is secured upon or connected with the bench.

D is the screw, by turning which the traveling head can be moved back and forth.

The head C may be mounted upon a block or base, and be arranged to turn about a vertical axis, and its jaw *c* may be swiveled or pivoted, in order to turn the vise or to clamp articles with inclined sides; but these features, though advantageous, are not necessary.

Within the head C is a sectional or two-part nut, E E′, through which the screw D passes, the two parts of the nut being accommodated by the hollow in the bar B. The base of the recess in the head C is provided with a dovetail groove, within which is located the abutting-block F, against which the two parts of the nut bear when strain is brought upon the same by the screw, and the nut is held at the other end by a second block, G, which prevents it from tipping under the strain. The blocks might be otherwise secured. The two parts of the nut are hinged together at their bases, as by the hinge pin or bolt H, the pin being made to pass through

the block G and to enter a little way into the block F. By this pin or bolt the parts are properly secured together.

I is a yoke or frame hinged at one end on the block G, as at *g*, and operated by any simple crank, as *h*, and connecting-piece *i*, located at or near the other end, the crank being placed within convenient reach of the operator. A spring, *a*, of any form, operates to keep the yoke in its uppermost position when not purposely pushed down, and a spring, *b*, also of any pattern, placed between the two sections of the nut, tends to force them apart at top as soon as pressure on the exterior is removed. Instead of this spring, I may apply inclined pieces, as *m m*, upon the exterior of the sections of the nut. (Shown in Fig. 5.) These are riveted to or otherwise attached to or formed on the sections, and bear against the yoke in such manner that when it descends it will force the two sections to move apart, same as the spring. When the yoke is elevated, it closes the two sections of the nut about the screw, and then, on turning the screw, the head A is moved as may be required. Upon depressing the free end of the yoke, the two sections of the nut immediately release the screw, when the head A may be rapidly adjusted to any required point, after which, upon elevating the yoke, the nut and screw are brought into engagement, and the screw may be employed to effect the final powerful clamping. Thus it will be seen that no matter to what position the head may be adjusted by the rapid transit, the screw is always in position to effect the final gathering after the nut is made to engage therewith, and this without requiring special attention on the part of the operator. The yoke is prevented from spreading by any suitable bolt, as at *d*, the same passing through the two sections of the nut, within which there are suitable slots for its accommodation.

In order that the yoke may ride smoothly up and down and firmly wedge the two parts of the nut together, the sides of the sections are suitably inclined; or inclined surfaces are applied thereon, as at *e e*. I preferably make the two parts of the nut so that their lower parts do not quite touch each other, as indicated by the dotted lines *x x*, Fig. 2, leaving room between them to prevent any accumulation of oil or grit from interfering with their efficient closing. To allow the sectional nut to quickly and effectually release the screw without requiring too much room for its movements, its interior may be slightly cut away at the bottom, so that as the sections swing upon the hinge the lower portions of the threads will move far enough to clear the threads on the screw. The screw is supported at its forward end in the usual manner, and at its rear by any suitable cross-piece in the bar, as *f*, the purpose of the latter support being to keep the screw always in proper line with the central axis of the nut. If the sections of the nut be brought together, and do not immediately clamp the screw, a very slight turn of the latter will bring its thread in proper position to engage with the threads on the interior of the sections. The screw D is turned by use of a handle or lever, D′, passing through the enlarged screw-head D^2. A spring, *s*, operates to maintain the lever in any position to which it may be adjusted.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a vise of the character herein set forth, a sectional or divided nut, the two parts whereof are hinged at the bottom and provided with a surrounding yoke, said nut being combined with the screw and arranged to clamp and release the same, substantially as and for the purposes set forth.

2. In a vise of the character herein set forth, the combination, with the screw, of a nut made in two parts, hinged together and mounted in the bench-head, substantially as shown, and for the purposes explained.

3. In combination with the two parts of the nut arranged to clamp the vise-screw, an intervening spring, substantially as and for the purposes set forth.

4. In combination with the two parts of the nut arranged to clamp the vise-screw, a movable yoke for forcing the said two parts into operative position, substantially as shown and described.

5. In a vise of the character herein set forth, the two parts of the clamping-nut hinged together, the surrounding yoke or frame for operating the nut, and the projecting crank or handle, combined substantially as shown, and for the purposes explained.

6. In a vise, the combination of the clamping-nut made in two parts and hinged at the bottom, and the operating-yoke arranged for operation in connection with the vise-screw and the forward abutting-block, against which said nut is made to bear, substantially as shown and described.

7. In a vise, the combination, with the two parts of the clamping-nut, hinged together as explained, of the front and rear abutting-blocks mounted in the head, substantially as shown and described.

8. In combination with the yoke or frame arranged to move the two hinged sections of the clamping-nut, the spring applied in connection with said frame, and arranged to operate substantially as shown, and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

MORTIMER G. LEWIS.

Witnesses:
J. F. WATERS,
F. H. WOOD.