

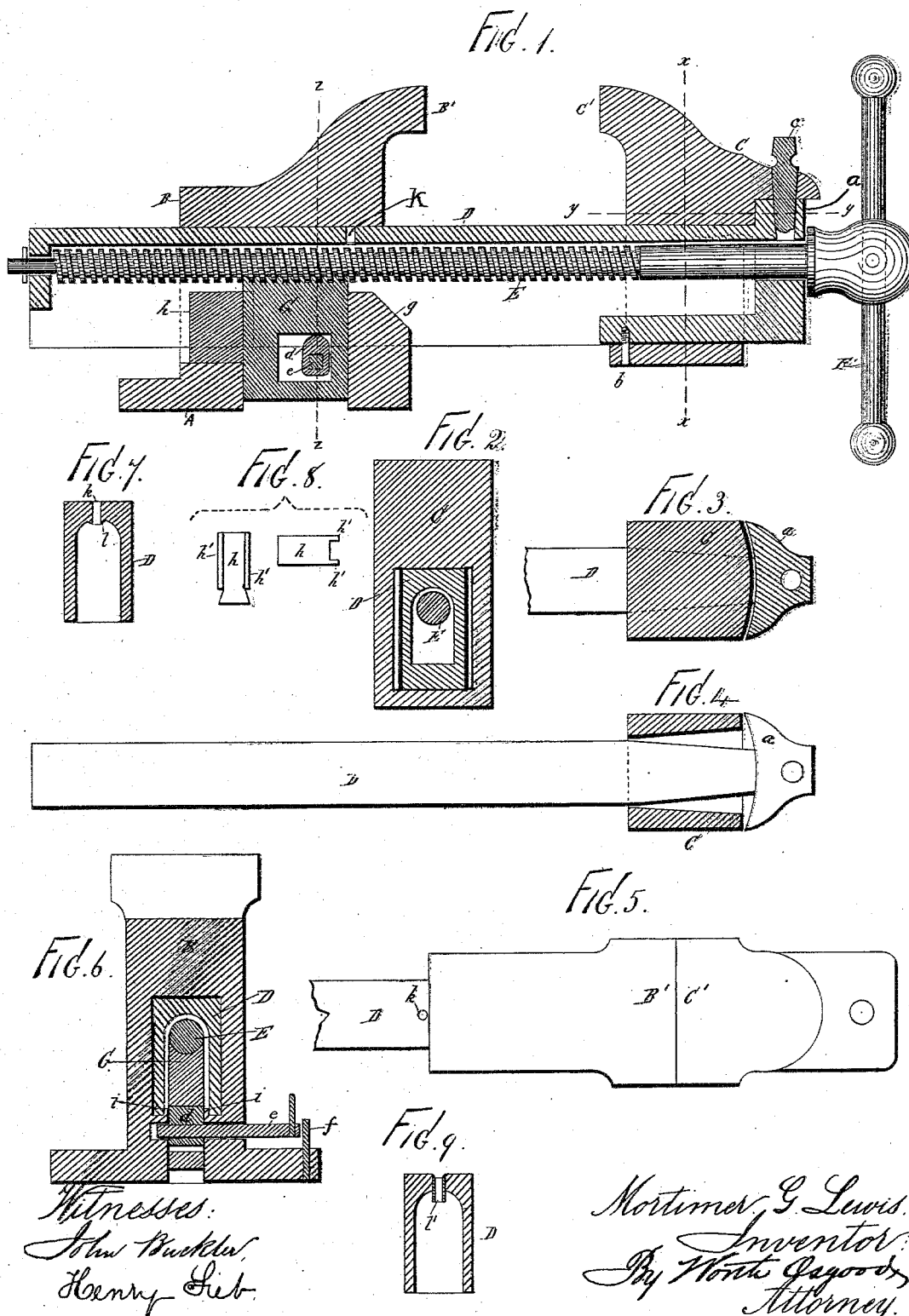
(No Model.)

M. G. LEWIS.

BENCH VISE.

No. 303,299.

Patented Aug. 12, 1884.



UNITED STATES PATENT OFFICE.

MORTIMER G. LEWIS, OF LOWVILLE, NEW YORK.

BENCH-VISE.

SPECIFICATION forming part of Letters Patent No. 303,299, dated August 12, 1884.

Application filed November 28, 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 are applicable also upon other vises, being well adapted for light or heavy work.

Among the objects of my invention are the provision of simple and effective means for permitting the adjustment of one of the jaws, (so that the vise may be made to clamp articles of varying widths, &c.,) preserving at the same time the requisite solidity of the movable head, obviating wear of the parts, and reducing the cost of manufacture, and the provision of simple, cheap, durable, and effective means for permitting a rapid adjustment of one of the heads independently of the ordinary clamping-screw. To accomplish these objects, and to produce a thoroughly practicable, strong, and durable vise, wherein the parts are not likely to get out of order or be damaged by ordinary use, my improvements involve certain novel and useful peculiarities of construction, relative arrangements or combinations of parts, 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 vertical longitudinal sectional elevation of a vise constructed and arranged for operation in accordance with my invention. Fig. 2 is a cross-section through the adjustable head, taken upon a plane passing through line *xx* of Fig. 1. Fig. 3 is a horizontal section and partial plan upon a plane passing through line *yy* of Fig. 1, and Fig. 4 is a plan view of the vise-bar, the sides of the adjustable head being shown in section. Fig. 5 is a plan view showing the two jaws closed together in a position to expose the oil-hole through the vise-bar. Fig. 6 is a cross-section and partial elevation upon a plane passing through line *zz* of Fig. 1. Fig. 7 is a cross-

section of the vise-bar upon a plane passing through the oil-hole. Fig. 8 represents an end elevation and plan of the top of one of the abutting blocks for the movable nut shown in Fig. 1. Fig. 9 is a cross-section of the slide-bar, representing a modified means of constructing or arranging the oil-hole.

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

A represents the bottom plate or base of the vise, which may be secured to the bench in any of the known ways, so that the base shall be stationary, or so that it may move as in the ordinary forms of swivel-vises.

B is one vise-head having jaw B', and connected with base A. C is the opposite head-carrying a jaw, C', made to approach or recede from head B.

D is the sliding vise-bar, and E the vice-screw, having handle or lever F.

The head C is made movable, so that its jaw C' may be inclined with respect to B' in order to firmly clamp articles with inclined sides. Heretofore, in vises having these adjustable heads, the heads have been made to turn upon vertical axes or pivots, and these pivots constitute their main support or bearing when they are being used. Constant and heavy work cause wear and strain upon the pins or pivots, and the accumulations of metal chip-pings or filings result in a grinding or wearing away of the bearings, in consequence of which the heads are found to wobble, and require care and attention for proper adjustment. To obviate these difficulties I pass the slide-bar through a slot in the head C, and provide this bar with a curved bearing-piece, *a*, against which the head is formed to abut in whatever position it may be adjusted. This bearing-piece *a* takes all the strain of the work, and is sufficiently solid and strong for the purpose. It is also re-enforced in part by the bearing of the head of the screw against the end of the sliding bar. To permit the head C to move upon the bar, I enlarge the slot through the head at the rear part thereof, and also incline or cut away the rear part of the bar slightly, as shown in Fig. 4, the edges of the vertical walls of the head on each side being made to bear against the surface of the bar and turn-

ing upon these bearing-lines as upon fulcrums. A like adjustability might be secured by further enlarging the opening through the head toward the side of the lever, leaving the bar plain or straight; but the construction indicated is preferred, because it does not materially weaken the head or the bar. The screw-pin *b* enters the material of the slide-bar, and is used only for the purpose of preventing the head *C* from sliding forward upon the bar. Though the head moves loosely about this pin, the pin is not intended as an axis or fulcrum, and does not receive any of the working strain, being made to pass loosely through the base of the head. The head could be equally well prevented from slipping forward by locating the detaining-pin in advance of the head or on top of the bar, either through the head or in advance of it, as well as by locating it beneath the bar. The head so mounted and arranged to move upon the bar is solid and secure in any position, and may be fitted to place at very little expense. The removable pin *c* is for the purpose of keying the head *C*, so that its jaw shall remain parallel with jaw *B'*. When the pin is withdrawn, it may be reversed in its socket, so as to prevent admission of dust, &c., to the socket. This form of movable jaw is applicable upon vises whether they permit of the "rapid transit" of the head or not.

G is a half-nut, which engages with the vise-screw. This is made vertically adjustable, so that when down or out of engagement with the screw, the slide-bar may be moved back and forth without turning the screw, and when up or in engagement the turning of the screw will insure the required opening or closing of the jaws. The nut *G* is moved up and down by a cam block or crank, *d*, made to revolve in a slot in the nut by means of a rod or lever, *e*, projecting through to the exterior. This cam-block is so mounted upon its rod that when the latter is turned a quarter of a revolution, (in order to free the nut,) the latter will drop down of its own weight; or, if clogged or prevented from dropping for any reason, the nut may be forced down by a further turn of the rod, bringing the cam-block to bear upon the bottom of the slot in the nut. These parts are preferably so arranged that the nut will drop without danger of catching, and the slot in the nut might therefore be made without the bottom or lower margin. The rod *e* is prevented from slipping out of place by any retaining-pin, as *f*. On the side next the movable jaw the nut is sustained by an abutting-block, *g*, made solid and secure, and strong enough to withstand all the strains likely to be brought upon it by the clamping-screw. A block, *h*, upon the opposite side of the nut serves as a guide or steadiment for the nut, for which purpose it may be provided with guides or wings *h' h'*, and may be secured in the base by a dovetail joint or any other means. It merely prevents displacement or disarrangement of the nut, and, as no particu-

lar strain is ever brought to bear upon it, it might be omitted if the nut is so mounted as to require no steadiment or guide. To prevent entrance of chippings or filings, &c., to the slot in which the nut is made to move, that slot may be protected, as by the ribs *i i* on each side. These cause the chippings, &c., to enter the ways between them and the walls of the head in which the slide-bar moves, so that by frequent moving of the bar they are gradually worked out through the slot in the head and do not interfere with the nut; but of course the nut will perform its offices without these protecting-ribs, and they may be omitted, if desired.

At *k* is a small oil-hole passing through a projection, *l*, on the under side of the top of the slide-bar and over the screw. In Fig. 9 is shown a tube, *l'*, which will answer for an oil-conduit. These parts are not claimed herein. All the parts of the vise are simple, compact, and strong, and require no extra fittings or fine work in order to adapt them for use. They are not liable to disarrangement, and will be found in practice to admirably answer the purposes or objects of the invention, as previously set forth.

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

1. In a bench-vise, the slide-bar passing through a slot in the adjustable head, said head being constructed and arranged to bear against the sides of the slide-bar at one end of the head, room being afforded between the other parts of the head and bar, as set forth, so that the head may be adjusted laterally, substantially as and for the purposes explained.

2. In a bench-vise, the combination of the slide-bar and the adjustable head made movable thereon, as explained, the bar being provided with a curved ledge for bracing the head, substantially as and for the purposes explained.

3. In a bench-vise, the movable head mounted upon the slide-bar and braced as explained, the clamping-screw mounted in the bar, and the retaining-pins arranged to retain the movable head, these several parts being combined and arranged substantially as shown and described.

4. In a bench-vise, the combination, with the clamping-screw mounted in the slide-bar, of a vertically-adjustable half-nut arranged to engage with or be disengaged from the screw, said nut being sustained and guided by the abutting-block in front and the guiding-block in rear, substantially as shown and described.

5. In a bench-vise, the combination, with the vertically-adjustable nut, of the cam-block located within a slot formed in said nut, and having a projecting shaft for revolving it, said cam being arranged to raise the nut by bearing against the upper surface of the slot therein, substantially in the manner, and for the purposes set forth.

6. In a bench-vise, the adjustable half-nut

having a slot for the accommodation of the operating-cam and the cam located therein, said nut being arranged to drop of its own weight, or to be forced down out of engagement with the screw as the cam is turned, substantially as shown and described.

7. In a bench-vise, the combination, with the vertically-adjustable nut having the operating-cam located in a slot therein, of the abutting-block arranged in front of the nut, made solid with the base of the vise and operating to sustain the nut, substantially as shown and described.

8. The combination of the vertically adjustable nut, the operating-cam located in a slot in said nut, a front abutting-block for receiving the strain brought to bear upon the nut by the

clamping-screw, and the rear guiding-block having the vertical flanges for engagement with the edge of the nut, substantially as shown and described.

9. In a bench-vise having a vertically-adjustable nut for engagement with the screw, the protecting-ribs arranged upon the margin of the slot in the base of the head, substantially as and for the purposes explained.

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

MORTIMER G. LEWIS.

Witnesses:

JULIUS H. WOOD,
JOHN G. MARVIN.