(No Model.)

S. H. RANDALL.

VISE.

No. 438,826. Patented Oct. 21, 1890.

FIG. 1.

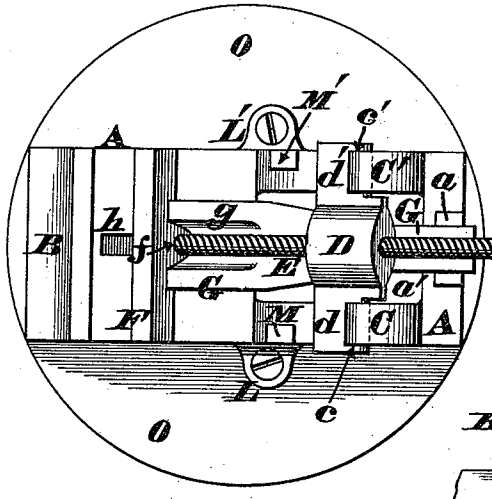


FIG. 4.

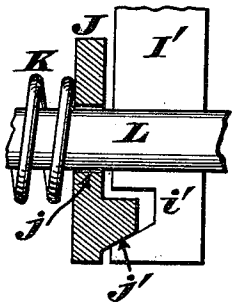


FIG. 4'.

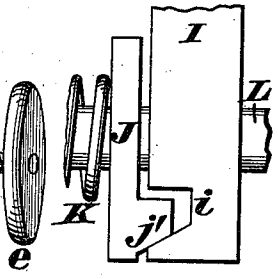


FIG. 5.

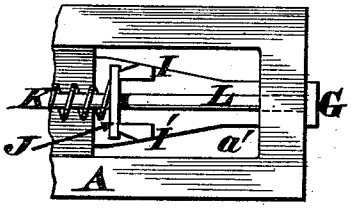


FIG. 2.

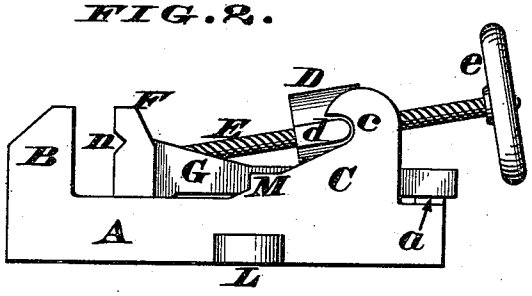


FIG. 6.

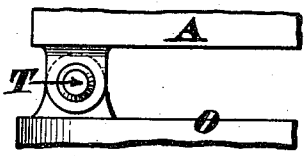


FIG. 3.

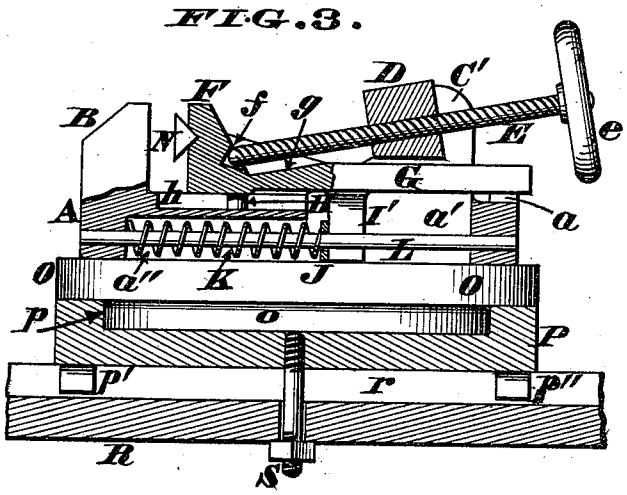
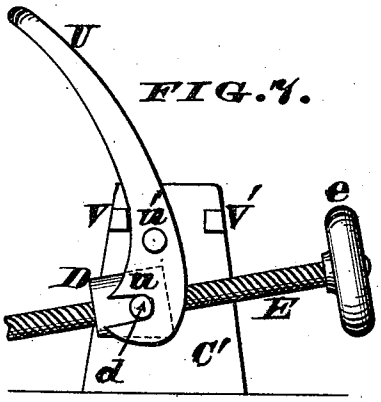


FIG. 7.



Attest.
M. F. Layman.
Arthur Moore.

Inventor.
Silas H. Randall.
by James H. Layman.
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SILAS H. RANDALL, OF WYOMING, OHIO, ASSIGNOR OF ONE-HALF TO JAMES D. RANDALL, OF SAME PLACE.

VISE.

SPECIFICATION forming part of Letters Patent No. 438,826, dated October 21, 1890.

Application filed May 31, 1890. Serial No. 353,771. (No model.)

To all whom it may concern:

Be it known that I, SILAS H. RANDALL, a citizen of the United States, residing at Wyoming, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Vises; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the annexed drawings, which form part of this specification.

My invention comprises a peculiar construction of vise in which the operative screw serves as the only means for holding the movable jaw down firmly upon the bed of the implement, while at the same time said jaw can be readily advanced or retracted and swung around laterally upon said bed, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a plan showing my improved vise mounted upon a turn-table, so as to be readily swung around in a horizontal plane. Fig. 2 is a side elevation of the vise in condition for application to an ordinary work-bench. Fig. 3 is a longitudinal section showing the vise mounted upon a turn-table, which latter is applied to the grooved bed of a metal-planer or shaping-machine. Figs. 4 and 4′ are enlarged detail views. Fig. 5 is a plan of a portion of the under side of the bed of the vise. Figs. 6 and 7 are elaborations of my invention.

A represents the bed of the vise, the front end of which is provided with a fixed or stationary jaw B, that is preferably integral with said bed, the latter being furnished near its rear end with a pair of stout cheek-plates C C′, suitably notched at *c c′*, respectively, to serve as bearings for the journals *d d′* of a nut D.

E is a screw engaged with said nut and having at its rear end a convenient turning device, as the hand-wheel *e*, the front end of said screw being rounded off, as seen in Fig. 3, to turn freely within a socket *f* in the rear side of movable jaw F. Projecting rearwardly from this movable jaw is a tail-piece G, whose free end rests upon a raised bearing *a* of the bed-plate, while the front portion of said piece is grooved or guttered at *g* to permit the screw E to press against said jaw and near its base. Furthermore, this jaw has a downwardly-projecting pin or stud H, adapted to traverse a longitudinal groove *h* at the center of the bed-plate, by which arrangement said pin prevents lateral play of said jaw, but allows it to be turned slightly either to to the right or left or until the tail-piece G strikes either of the cheek-plates C or C′.

Depending from the tail-piece G, and adapted to traverse a vertical opening *a′* at the rear portion of bed A, are two lugs I I′, (seen in Fig. 5,) which lugs have a washer or plate J pressed against them by a coiled spring K, the latter being housed within a longitudinal groove *a″* of said bed, as seen in Fig. 3. This spring is coiled around a rod L, whose ends are secured in the bed-plate, which rod passes through an opening *j* of plate J, as seen in Fig. 4, and it is preferred to provide this plate with a rib *j′*, that is inclined on its under edge and enters notches *i i′* in the front edges of the lugs, by which arrangement the spring K not only retracts the shiftable jaw F, but holds the tail-piece G down snugly upon the bearing *a*.

L L′ are perforated ears projecting laterally from the bed A, and enabling the latter to be secured to a work-bench or other support.

M M′ are stops, that limit the retraction of jaw F, which jaw may be grooved longitudinally, as at *n*, to admit a swivel attachment N for holding certain kinds of work.

In the normal condition of this vise the spring K forces the jaw F back with sufficient pressure to keep its socket *f* constantly in contact with the rounded end of screw E, while at the same time said spring, in conjunction with the inclined rib *j′* and notches *i i′*, causes the tail-piece G of said jaw to rest upon the bearing *a*.

To use the vise, the piece of work is applied thereto in the customary manner, and the screw E is then turned to advance the jaw F, which latter preserves a perpendicular position, because the pressure of the angularly-arranged screw E forces said jaw down upon the bed-plate A. Consequently this jaw has no tendency to cant or incline either to the front or rear; but it can have a limited swing on the pivot H, either to the right or left, in

case the piece of work should be tapered toward either end. It is evident, however, that the angle or inclination of the screw E must vary according to the position of the jaw F, the screw assuming a steeper pitch as said jaw is retracted; but this change of angle is readily compensated for by providing the nut D with bearings *d d'*, that turn within the sockets *c c'*, the axis of which sockets or notches must be parallel with the upper side of bed A and also parallel with the fixed jaw B and at a higher elevation than the center of contact of screw E with shiftable jaw F. A swivel-vise can be formed by mounting the bed-plate A upon a disk or turn-table O, having a short cylindrical neck *o*, adapted to revolve within a circular pit or ring *p* of another disk P, provided with lugs *p' p''*, that enter the groove *r* of the bed R of an ordinary metal planer or shaper, as seen in Fig. 3.

S is a bolt, that holds the lower disk P securely upon the planer-bed; but in the other modification (seen in Fig. 6) the vise A is coupled to the turn-table O by a joint T, which arrangement enables the rear end of said vise to be raised and lowered as circumstances suggest.

Another change is seen in Fig. 7, which shows the bearings *d* of nut D seated in sockets *u* of a forked lever U, journaled at *u'* to both of the cheek-plates, although but one plate is seen in the drawings. Each plate has stops V V', that limit the backward and forward swing of said lever. In this illustration the nut D is seen retracted, the advancement of said nut being effected by swinging the lever U back until it strikes the stop V', whereby the axis of the pivots *d* is moved slightly beyond the plane containing the axis of the pivots *u'* and the center of contact of the screw E in the socket *f* of the movable jaw F.

I claim as my invention—

1. The combination, in a vise, of the base A, provided with a stationary jaw B, a jaw F, sliding upon said base, a screw E, whose axis is inclined to the horizontal surface of base A and is contained by a plane perpendicular at once to said horizontal surface of base A and to the vertical surface of stationary jaw B, the screw E itself bearing obliquely downward upon sliding jaw F, with its end in a concavity in said sliding jaw F near its under surface, and, lastly, a nut D, carrying screw E and oscillating on an axis perpendicular to the previously-mentioned plane containing the axis of screw E, substantially as herein described.

2. The combination, in a vise, of the base A, provided with a stationary jaw B, a jaw F, sliding upon said base, a screw E, whose axis is inclined to the horizontal surface of base A and is contained by a plane perpendicular at once to said horizontal surface of base A and to the vertical surface of stationary jaw B, the screw E itself bearing obliquely downward upon sliding jaw F, with its end in a concavity in said sliding jaw F near its under surface, a nut D, carrying screw E and oscillating on an axis perpendicular to the previously-mentioned plane containing the axis of screw E, and, lastly, a spring K, which presses the concave bearing of sliding jaw F against the end of screw E, all as herein described, and for the purpose stated.

3. The combination, in a vise, of the base A, provided with a stationary jaw B, a jaw F, sliding upon said base, and a closing device pressing downwardly in a line inclined to the horizontal surface of base A and lying in a plane perpendicular at once to the horizontal surface of base A and the vertical surface of stationary jaw B, said device bearing against sliding jaw F in a concavity near its under surface and oscillating upon an axis above its bearing against sliding jaw F and parallel at once to the horizontal surface of base A and the vertical surface of stationary jaw B, substantially as herein described.

4. A vise whose shiftable jaw has a tail-piece G provided with downwardly-projecting notched lugs I *i* I' *i'*, in combination with a perforated plate J *j*, having an inclined rib *j'* that enters said notches *i i'*, a pushing-spring, as K, acting against said plate, and a rod L for said plate to rest upon, for the purpose described.

5. In a vise of the class specified, the screw E, for advancing the shiftable jaw F, having a socket *f*, which screw engages with a swinging nut D, having journals *d* seated in bearings *u* of a lever U, the latter being pivoted, like the journals *d*, above the center of contact of the end of said screw with the socket *f* of said shiftable jaw F, as herein described.

6. The combination, in a vise, of the base A, provided with a stationary jaw B, a jaw F, sliding upon said base, a screw E whose axis is inclined to the horizontal surface of base A and is contained by a plane vertical at once to said horizontal surface of base A and to the vertical surface of stationary jaw B, the screw E itself bearing obliquely downward upon sliding jaw F, with its end in a concavity in said sliding jaw F near its under surface, a nut D, carrying screw E and oscillating on an axis perpendicular to the previously-mentioned plane containing the axis of screw E, a pin H, projecting downward from sliding jaw F, said pin having its axis, first, perpendicular to the horizontal surface of base A; secondly, contained by the vertical plane containing the axis of the screw E; thirdly, intersecting said screw-axis in the center of oscillation of sliding jaw F upon the end of said screw, and, lastly, a groove in the base A, traversed by the pin H, said groove being bisected by the previously-mentioned plane containing the axis of screw E, all as herein described.

7. The combination, in a vise, of the bed A, provided with a stationary jaw B, a jaw F, sliding upon said base or bed, a closing device pressing downwardly in a line inclined

to the horizontal surface of base A and lying in a plane perpendicular at once to the horizontal surface of the base A and the vertical surface of stationary jaw B, said device bearing against sliding jaw F in a concavity near its under surface and oscillating upon an axis above its bearing against sliding jaw F and parallel at once to the horizontal surface of base A and the vertical surface of stationary jaw B, and, lastly, a spring K, which presses the concave bearing of sliding jaw F against the bearing end of the aforesaid closing device, all as herein described.

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

SILAS H. RANDALL.

Witnesses:
JAMES H. LAYMAN,
FRANCIS M. BIDDLE.