(No Model.)

J. F. HALL.

Vise.

No. 230,005. Patented July 13, 1880.

Fig. 1.

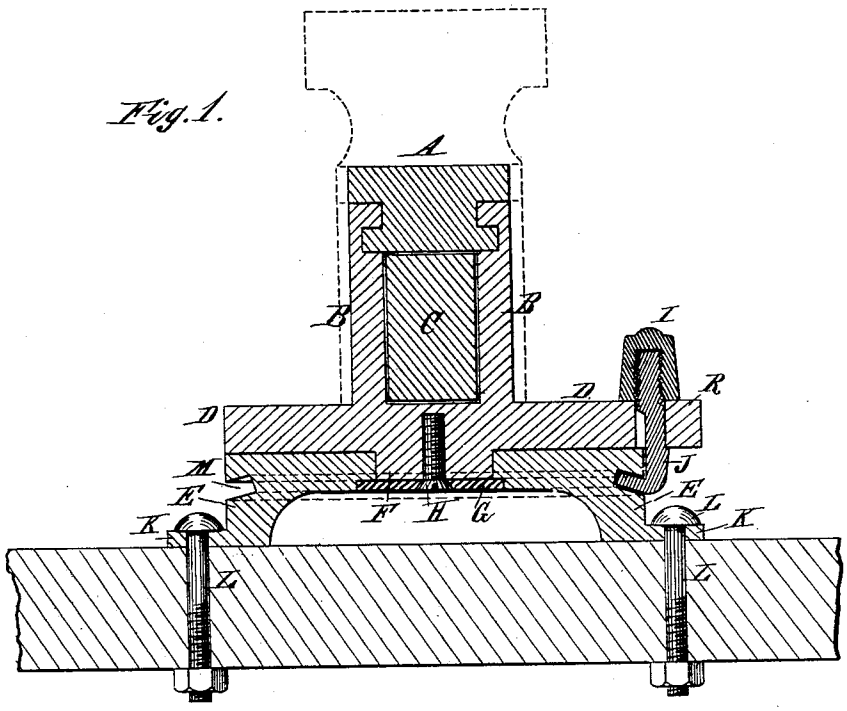
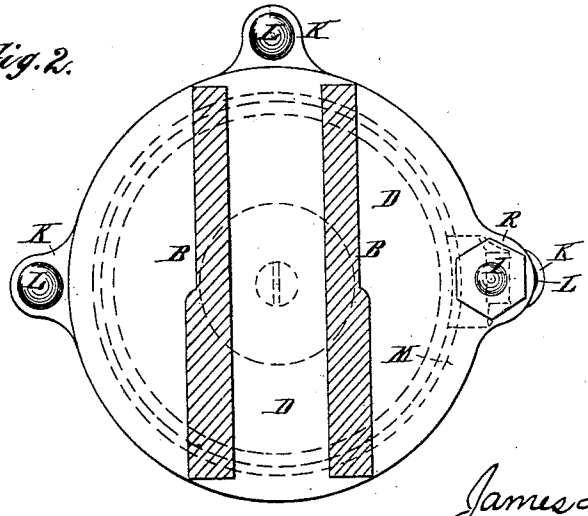


Fig. 2.



Attest:
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UNITED STATES PATENT OFFICE.

JAMES F. HALL, OF HAVANA, NEW YORK.

VISE.

SPECIFICATION forming part of Letters Patent No. 230,005, dated July 13, 1880.

Application filed April 3, 1880. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. HALL, of Havana, in the county of Schuyler 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 that class of vises in which the movable jaw or jaws are mounted upon a bottom plate which is pivoted to or swiveled on a bench-plate in such a manner that the vise may be removed at pleasure or to suit the convenience of the operator; and the invention has for its object the provision of simple and efficient means for locking and holding the vise-plate firmly in any position, admitting of ready, easy, and accurate adjustment.

To this end the invention consists in certain novel and useful arrangements or combinations of parts, all of which will be hereinafter first fully described, and then pointed out in the claims.

Heretofore in this class of vises it has been customary to lock the vise-plate and the bench-plate together by means of bolts passing through holes in both, or by means of spring-actuated pins passing through the vise-plate and entering perforations in the bottom plate provided for them at regular or irregular intervals, and necessarily at some distance from each other.

In either of these forms two prominent defects are observable: first, the bolts or pins are necessarily located at some distance within the perimeter of the plate, and thus are not capable of that resistance to the turning of the vise-plate which is peculiarly desirable, especially in the vises designed for very heavy work; and, second, the adjustment of the vise can only be made through certain predetermined distances, depending upon the location of the bolt-holes or other perforations, thus rendering them practically unavailable at certain points or for some particular uses. The bolt-holes and the perforations for the reception of the pins are likewise liable to become clogged by filings and chippings, requiring time and attention to clear or clean, and are liable to become enlarged under the action of the hammer, and thus permit the vise-plate to vibrate upon its seat.

These several defects or objections, and others not necessary to be enumerated, are obviated in my improved vise, which is constructed substantially as shown in the accompanying drawings, wherein—

Figure 1 is an axial section and elevation, and Fig. 2 is a plan or top view with the vise-jaws removed from the vise-plates.

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

A is one of the vise-jaws. (Shown in dotted lines.) B is the body of the vise, and C the arm connected with the movable jaw, all of which may be of any desirable pattern. These usual parts of the vise are mounted upon the vise-plate or top plate, D, which is swiveled upon the bottom plate, E, in such manner as to turn thereon, ordinarily by use of the hub F, center screw, H, and washer G. The bottom plate, E, is adapted to be clamped to the bench or elsewhere, as by the use of ears K K and bolts L L.

In the bottom plate, E, I cut, turn, or otherwise form a circumferential groove, M, of such a depth as to afford a firm bearing at any point for the clutch or dog J. The clutch or dog J is composed of a strong shank screw-threaded at its upper end and provided at its lower end with a projection intended to enter the before-mentioned circumferential groove M, and this projection should be long enough and strong enough to have a good firm bearing in the groove.

Upon the vise-plate is a perforated ear, R, through which the screw-shank or dog J is made to pass, and the nut I bears upon this ear and controls the movements of the dog J when the parts are all in place.

I find it advantageous to incline the upper surface of groove M upwardly and toward the center of the plate, as indicated, and to correspondingly incline the bearing-surface of the projection upon dog J. This construction insures the dog from slipping out of place when the nut I is turned down very hard, and tends to make the dog hug in toward the center of the plate, affording a firmer gripe upon the up-

per surface of groove M. The under surface of the groove should also be inclined slightly to facilitate the proper location of the clutch or dog, and so that any filings or chippings or other refuse which may collect in the groove may be readily cleared away as the clutch is revolved about with the vise-plate, thus making the same self-cleaning.

In order to bring the nut I as far over the edge of plate E as possible, and thus insure a better clamping of the two plates together, the shank of clutch J is cut away, as shown, on the side next the edge of the plate. This construction gives the clamping-nut a more extended bearing-surface upon plate D than would be afforded if the shank were left cylindrical throughout its length.

Under ordinary circumstances one clutch or dog, J, will be found amply sufficient to hold the vise in proper place; but for extra heavy work it may be found desirable to add a second clamping arrangement, which should be made in all respects like the one already described. A third, or even more, might be added without departing from the principles of the invention, the number to be used being no essential part of the improvements.

Instead of locating the groove M and clutch or dog J on the extreme edges of the plates, the groove might be cut in one of the plates at a greater or less distance from the edge thereof, said groove being still made continuous, so that, if necessary, the vise may be set at any point and the clutch or clutches correspondingly arranged.

The nut I is represented as being arranged to be turned by an ordinary wrench. Of course a thumb-piece might be applied, or any means of tightening or loosening the nut be adopted.

As thus constructed and arranged, the improved clamping contrivance is found to admirably answer the several purposes and objects of the invention as primarily stated.

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 specified, a plate provided with a circumferential groove adapted to receive the projection upon the removable clutch J and to afford a bearing for the same at any point of said groove, as described, so that the vise may be set and clamped at any point, substantially as set forth.

2. In a vise of the character herein set forth, the combination of the circumferentially-grooved plate E, a removable clutch passing through an ear, R, upon vise-plate D and engaging with the groove, and a nut, I, these several parts being arranged to operate substantially as set forth.

3. In a vise of the character herein set forth, the combination of a movable plate carrying the vise-jaws, a stationary plate having a circumferential groove the upper surface of which is inclined upwardly and toward the center of the plate, and a clutch having the upper surface of its locking projection similarly inclined and adapted to fit said groove, the clutch being provided with means for operating the same, substantially as and for the purposes set forth.

4. In a vise of the character herein set forth, the combination of a movable plate carrying the vise-jaws, a stationary plate having a circumferential groove, the upper and under surfaces of which are inclined upwardly and toward the center of the plate, and a clutch carrying a locking-nut the locking projection of which is adapted to travel in said groove and to clear the same, substantially as and for the purposes set forth.

5. In a vise of the character herein set forth, the clutch J, having its shank cut away, as explained, and a nut, I, having a bearing upon the vise-plate over the bottom plate, said clutch being adapted to engage in the circumferential groove upon the bottom plate, the clutch and the two plates being arranged and combined to operate substantially as set forth.

6. The combination of vise-plate D, having one or more ears, R, bottom plate, E, having circumferential groove M, with inclined surfaces, clutch J, cut away, as explained, and nut I, the whole combined and arranged to clamp the two plates together at the region of the groove, substantially in the manner 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.

JAMES F. HALL.

Witnesses:
T. I. TRACY,
ELBERT P. COOK.