(No Model.)

A. MONTANT.

VISE.

No. 250,673. Patented Dec. 13, 1881.

Fig. 1.

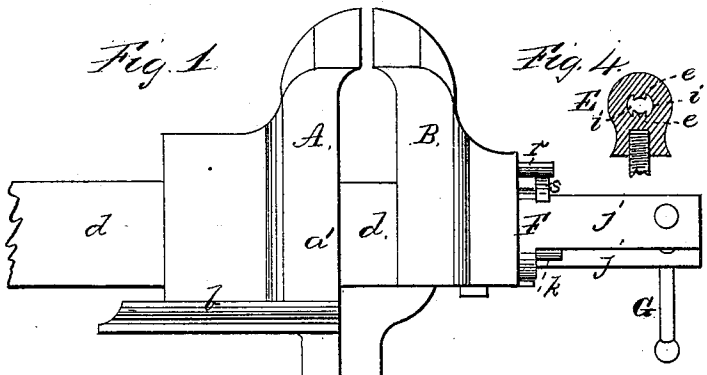


Fig. 4.

Fig. 5.

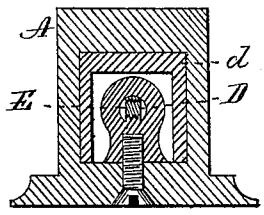


Fig. 2.

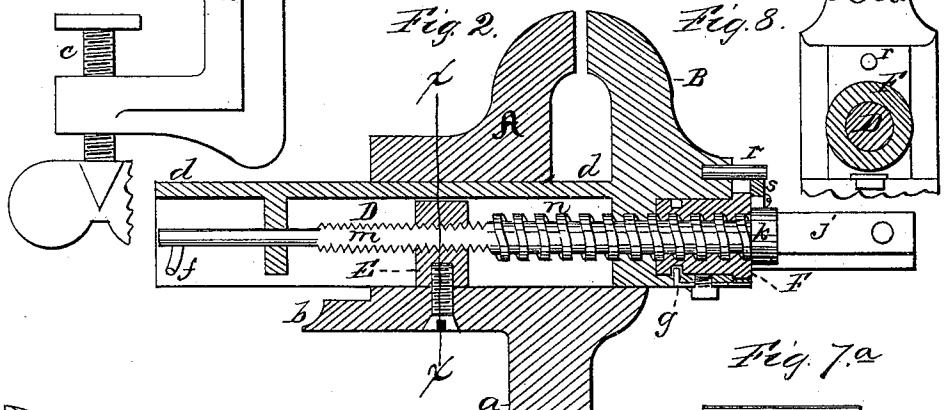


Fig. 8.

Fig. 7a.

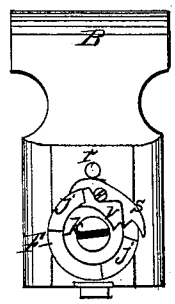


Fig. 5.

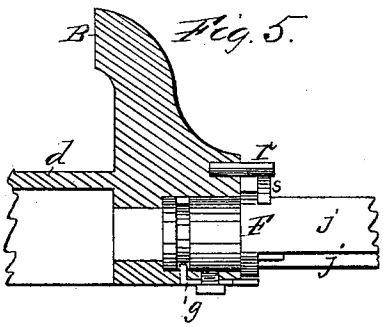


Fig. 6.

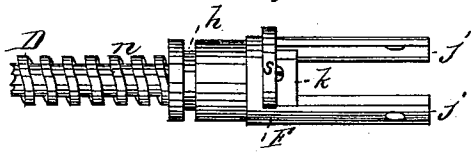
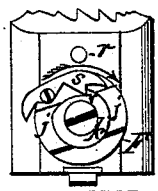


Fig. 7.



WITNESSES:

G. W. Barrett

W. L. Bennett

INVENTOR

Alphonse Montant

by E. S. Renwick

ATTORNEY.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ALPHONSE MONTANT, OF NEW YORK, N. Y.

VISE.

SPECIFICATION forming part of Letters Patent No. 250,673, dated December 13, 1881.

Application filed May 11, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALPHONSE MONTANT, of the city, county, and State of New York, have made an invention of certain new and useful Improvements in Vises; and I do hereby declare that the following is a full, clear, and exact description and specification of the same.

Vises as generally constructed consist of a fixed or stationary clamping-jaw constructed with a base, (by means of which the implement can be supported upon a bench or other article and can be secured thereto by bolts or screws,) of a movable clamping-jaw, (which may be moved toward and from the stationary jaw for the purpose of clamping and loosing an article between the two,) and of a screw or some substitute therefor for the purpose of moving the movable jaw toward the stationary jaw with force.

In many of the vices heretofore constructed the movable jaw is combined with the stationary jaw by means of a screw, and although this kind of vises (commonly called "screw-vises") is preferred for strength, it is objectionable because of the long time required to turn the screw sufficiently to change the relative positions of the jaws from what is suitable for a small article to a larger one, or vice versa. Other vises have been made in which the movable jaw is fitted to slide freely toward and from the stationary jaw for large changes of the relative positions of the two, and with a cam or other means to impart to the movable jaw a small clamping and loosing movement. These slide-vises, however, as a class are objected to by many users, because they do not operate with a screw and have not, in their opinion, as firm a gripe upon the article as a screw gives.

The object of my invention is to produce a vice which, while using a screw to operate the movable jaw, can have the relative positions of its jaws changed as rapidly, or thereabout, as is done with slide-vises, and which, while having the advantages incident to the capacity for the rapid movement of the movable jaw existing in slide-vises, is operated with a screw, so that my new vise is, in fact, a screw slide-vise embodying the good qualities of both the earlier distinct classes of screw-vises and slide-vises, without the objectionable features of either.

To this end my invention consists of certain combinations of the stationary or fixed jaw and the movable jaw of a vise with other devices, which combinations are set forth in detail in the claims at the close of this specification. In order that these combinations may be fully understood, I have represented in the accompanying drawings, and will proceed to describe, a parallel vise embodying my invention in the best form at present known to me, it being understood that the mode and form in which the devices recited in the claims may be constructed may be varied to suit the views of different manufacturers and users.

Figure 1 of said drawings represents the said vise. Fig. 2 represents a central section of the same crosswise of the faces of the jaws and with the screw in elevation. Fig. 3 represents a transverse section of the vise at the line *x x* of Fig. 2. Figs. 4 to 8, inclusive, represent various details of the vise.

The said vise has a fixed jaw, A, which must be constructed so as to be secured to a table or wood bench in a substantial manner. In the present example the vise represented is one for light work, having jaws with faces two inches broad, and the fixed jaw is made with a plate or base, *b*, and with a shank, *a*, fitted with a clamp-screw, *c*, by which the vise may be secured to a table or bench. Any other suitable securing device or devices may, however, be substituted for such shank and clamp-screw for the purpose of securing the fixed jaw to a stationary object, so that the vise-jaw is held stationary without aid from the operator, leaving his hands free for other operations.

The movable jaw B of the vise is constructed with a hollow shank or bar, *d*, which is fitted to slide crosswise of the face of the fixed jaw A in an opening formed therein, so that the movable jaw, when not controlled, may be slid rapidly toward and from the fixed jaw.

In order that the movable jaw, when slid to any desired position, may be moved slowly and with force toward and from the fixed jaw, the two are combined by means of the sectional screw D and sectional nut E. The screw D is connected with the movable jaw and extends

longitudinally through the cavity of the jaw-body *d* and through the fixed nut E, which is secured to or made in one piece with the fixed jaw A. A portion of the screw-thread of this nut E is cut away, as shown in section in Fig. 4, so that the said nut is a sectional nut with only about two quarter-sections, *e e*, of the screw-threads, which are separated by gaps *i i*. The portion *m* of the screw D which works in this sectional nut has its screw-threads correspondingly cut away, so that the opposite sides of the screw are flat, as shown at Figs. 2 and 3, leaving two intervening sections of screw-threads, which can be slid through the gaps *i i* of the sectional nut E whenever the sectional screw D is turned from right to left, so as to make the thread-sections of the screw correspond with the gaps of the thread-sections of the sectional nut. When, however, the screw is turned from left to right the thread-sections of the screw engage with those of the sectional nut and temporarily lock the screw D to the sectional nut E, and consequently temporarily secure the movable jaw B to the fixed jaw A.

In order that the screw D may not be turned in either direction any farther than is necessary for such locking and unlocking with the slight longitudinal movement which accompanies such turning, a stop, *f*, is provided. This stop may be of any suitable construction. In the present example it consists of a pin which projects radially from the end of the screw D in the cavity of the shank *d*, and which is of such length that it permits the screw to be turned in either direction about a quarter of a revolution, after which the end of the pin strikes the sides of the cavity and stops further movement in the same direction. Hence with the vise constructed as thus far described, if the screw D be so turned that the sectional screw *m* and sectional nut E are disengaged, the movable jaw B may be moved toward or from the fixed jaw to adjust it to gripe an article of any desired size within the the capacity of the vise, and then the slight turning of the screw engages the sectional screw-threads and nut and locks the movable jaw in its position, at the same time slightly forcing it toward the fixed jaw, against the article between the two.

In order that the slow movements of the movable vise-jaw with great force may be effected after the movable jaw is locked, a portion, *n*, of the screw D is formed with continuous threads, which engage with the screw-threads of a nut, F, that is fitted to turn in a cavity in the movable jaw, and is held from endwise movement therein by means of a pin, *g*, which is received in a circular groove, *h*, Fig. 6, in the periphery of the nut F. The nut F is fitted with lugs *j j*, which straddle the screw-head *k*, and are perforated to receive an ordinary sliding lever-handle, G, by means of which the nut may be turned axially. From this construction it results that whenever the movable jaw has been locked to the fixed jaw by the partial turning of the sectional screw D in the sectional nut E the turning of the nut F upon the continuous screw-threads *n* forces the movable jaw toward the fixed jaw with a screw operation of the same character as that of the screw of an ordinary screw-vise. Hence the movable jaw B, when combined with the fixed jaw by means of the sectional screw, the sectional nut, the continuous screw, and its turning nut, may be slid rapidly toward or from the fixed jaw, and may be locked thereto, and may then be moved with a slow screw movement. The sectional screw and turning nut may be operated by separate levers; but in order that the sectional screw D and the turning nut F may both be operated by means of the same lever-handle G, the screw-head *k* and the turning nut F are connected by means of a pawl, *s*, or some movable substitute for it. The pawl in this example is a rigid pawl, and is pivoted to the nut F, and the screw-head is formed with a notch, *v*, Fig. 7, in which the shoulder of the pawl engages, but from which it can be disengaged by turning the nut when the screw is locked. For this engagement a pin, *r*, is secured in the movable jaw in such a position relatively to the pawl *s* that when the screw has been locked by turning it from left to right the tail of the pawl, passing beneath the projecting pin *r*, is depressed sufficiently to disengage the pawl from the notch of the screw-head, thereby freeing the sectional screw from the control of the lever-handle and permitting the nut F to turn to any desired extent upon the continuous screw-threads *n* for the purpose of tightening the grasp of the jaws upon the article placed between them. Thus, when the sectional screw D is in the position to be slid through the sectional nut E, the screw-head *k*, lugs *j j* of the nut F, and pawl *s* occupy the positions in which they are represented in Fig. 7. If then the movable jaw be slid against an article inserted between it and the stationary jaw and the nut F be turned from left to right, as indicated by the arrow, the pawl *s* compels the sectional screw D and the nut F to turn simultaneously until the tail of the pawl is affected by the pin *r*, and the pawl is disengaged from the screw-head *k*. As this disengagement occurs the further turning of the sectional screw in the same direction is stopped by the contact of the stop *f* with the side of the cavity in which it is situated. Consequently the further turning of the nut F in the same direction securely clamps the article, and the nut F, screw-head *k*, and pawl *s* occupy the positions shown in Fig. 7ª, or the nut F and pawl *s* occupy positions due to turning them farther from left to right. When the clamped article is to be loosed the nut F is turned by its lever-handle from right to left. During this movement the friction between the nut F and the part of screw D on which the nut acts compels the screw to turn with the nut as far as the stop *f* will permit—that is, far enough to permit the sectional screw-threads *m* to be slid through the sectional nut E—after which the

further turning of the nut F restores it to the position it first occupied, as at Fig. 7, with the pawl *s* engaged with the screw-head *k*, ready for a new operation.

The form and proportions of the vise-jaws and screw-threads may be greatly varied. The turning nut and the continuous screw-threads with which it operates also may be transposed. Thus the sectional screw may have its stem bored and screwed internally to form a nut, and a second turning screw may be fitted to screw into the screwed bore or nut so formed, and to impart the screw movement to the movable jaw when the sectional screw is locked or stopped from turning.

The pawl *s* may be replaced by a spring-pawl, or by any suitable connecting device which will compel the sectional screw to turn with the nut or its substitute.

The shank *a* and the screw *c* of the fixed jaw may be omitted, and the plate or base *b* may be perforated for screws or bolts, by which the vise may be made fast to the bench or other object; or the said plate may be fitted with a bolt-shank for the same purpose. The dimensions of the screw used will depend upon the strength required; but with a light vise having two-inch jaws, such as represented in the drawings, I have found that good results are attained when the threads *m* of the sectional screw have a pitch of one-sixteenth of an inch and the continuous screw-thread *n* has a pitch of one-eighth of an inch.

I claim as my invention—

1. The combination, substantially as before set forth, of the fixed vise-jaw, its base, the movable vise-jaw, the sectional screw, the sectional nut, the continuous screw-thread, and the turning nut.

2. The combination, substantially as before set forth, of the sectional nut, the sectional screw, the turning nut, the connecting-pawl, and the lever-handle.

3. The combination, substantially as before set forth, of the fixed vise-jaw, its base, the movable vise-jaw, the sectional nut, the sectional screw and its continuous screw-threads, the turning nut, and the stop which limits the turning of the sectional screw.

In witness whereof I have hereunto set my hand this 10th day of May, A. D. 1881.

ALPHONSE MONTANT.

Witnesses:
G. M. BARRETTO,
W. L. BENNEM.