

(No Model.)

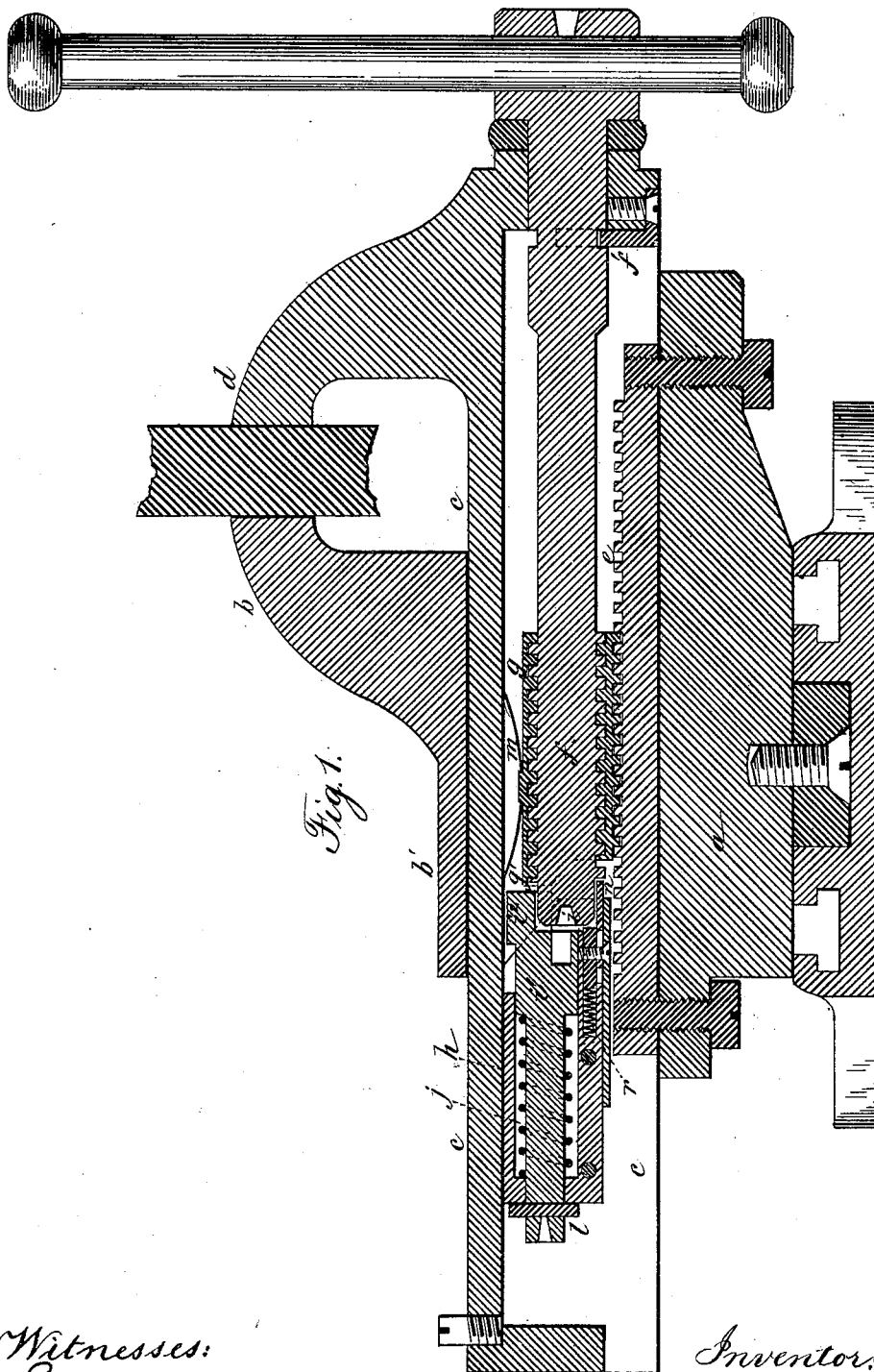
3 Sheets—Sheet 1

H. F. READ.

WISE.

No. 266,523.

Patented Oct. 24, 1882.



Witnesses:
Edmund Brodhead
Walter S. Dodge

Inventor:
per Henry Franklin Read
Johnson & Johnson
Attys

(No Model.)

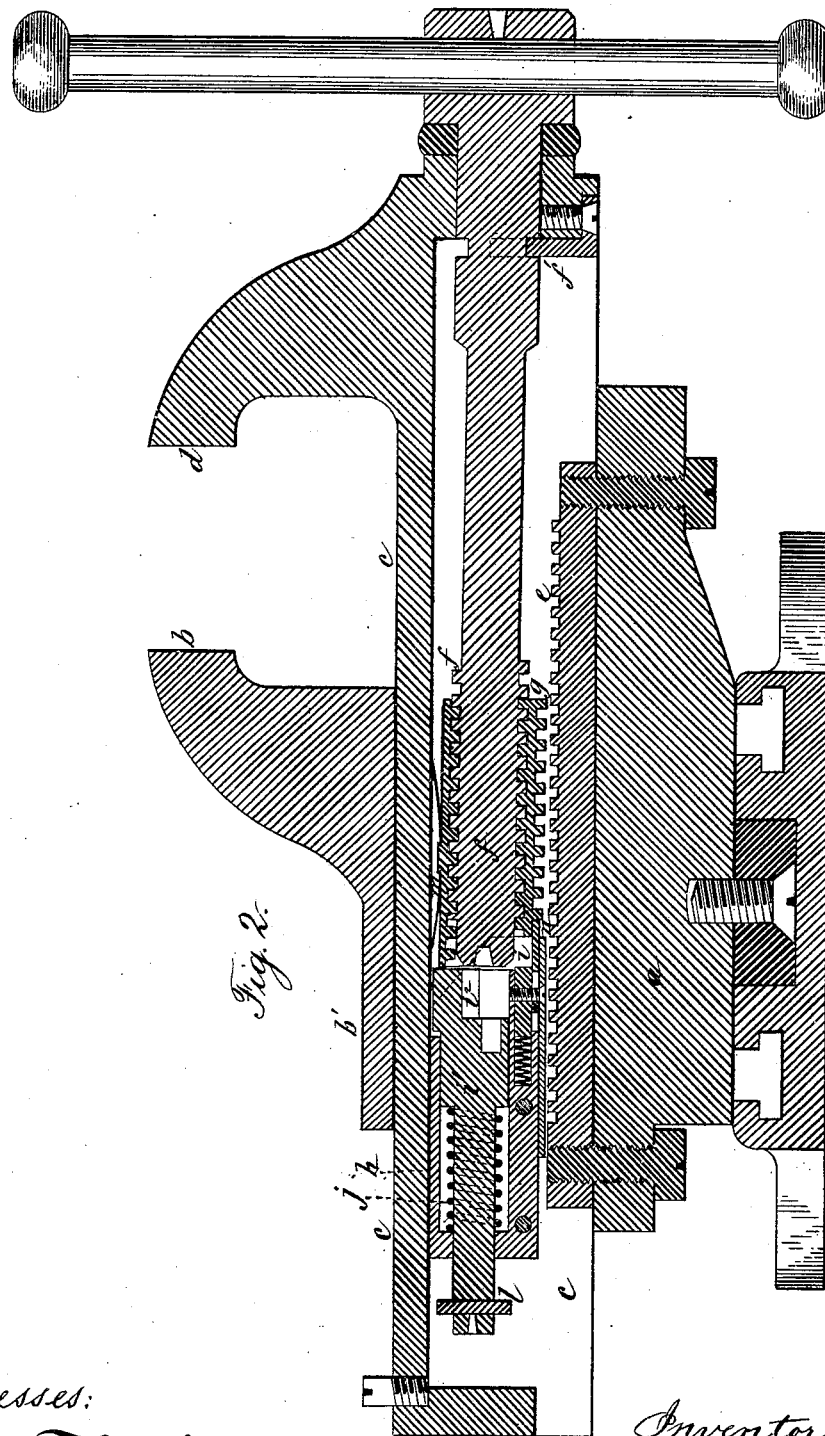
3 Sheets—Sheet 2.

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Fig. 3.

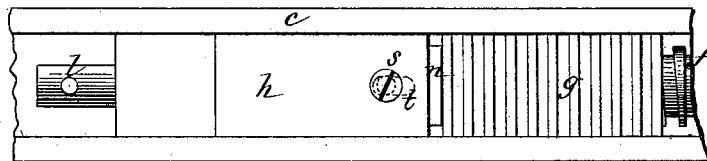


Fig. 4.

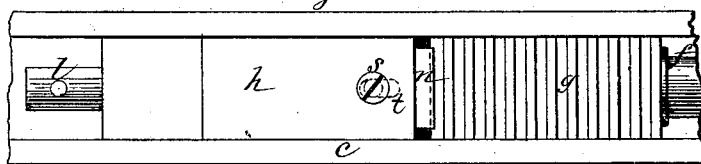


Fig. 5.

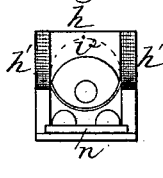


Fig. 6.

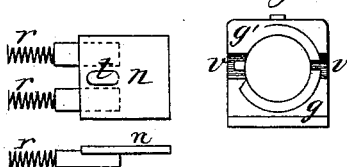


Fig. 7.

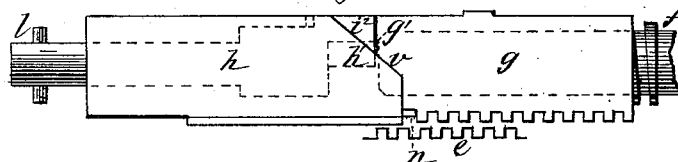


Fig. 8.

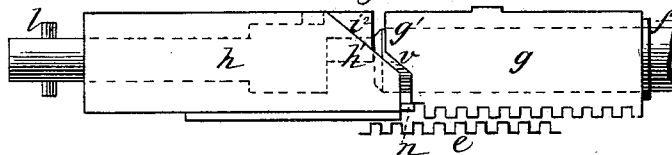
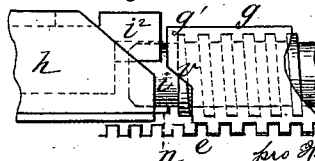


Fig. 9.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY F. READ, OF BROOKLYN, NEW YORK, ASSIGNOR TO READ, GLEASON
& READ, OF SAME PLACE.

WISE.

SPECIFICATION forming part of Letters Patent No. 266,523, dated October 24, 1882.

Application filed September 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY FRANKLIN READ, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Vises, of which the following is a specification.

In an allowed application for a patent filed by me I have described certain improvements in the vise, in which the movable jaw is adapted for parallel movement in relation to the fixed jaw, with a screw working in a sliding rack-nut automatically engaged with and disengaged from a rack of the fixed jaw by the co-operating action of the screw and fixed and movable inclines, whereby to allow the movable jaw to be freed from control of the screw, so that it may be moved in and out by hand, or to be controlled by the screw to firmly grasp the article between the jaws.

The object of the improvement herein is to render the engagement of the rack-nut with the fixed rack more certain and effective by maintaining the rack-nut in position to effect such engagement at once after it is free of the inclines, leaving the rack-nut free to drop square down, and thereby prevent the teeth of the rack-nut from partially engaging with the fixed rack before the inclines have separated. But for this provision the rack-nut would be caused to descend gradually as the inclined planes are separating, and its teeth thereby liable to partially engage, preventing it from firmly locking with the rack, and hence fail to give the proper clamping power.

The accompanying drawings illustrate a construction by which this object is attained, in which—

Figure 1 represents a vertical longitudinal section of a vise as it appears when the screw is locked in position for controlling the movable jaw; Fig. 2, a similar section, the screw being shown in unlocked position and its rack-nut raised to allow the movable jaw to be slid in and out by hand; Fig. 3, a bottom view of the hollow bar of the movable jaw, showing the rack-nut in the position it occupies when disengaged from the fixed rack, and a holding-plate slide in position under the end of the rack-nut to hold it from dropping down in the

operation of separating the inclines; Fig. 4, a similar view, showing the rack-nut in the position it occupies when separated from the action of the inclines and held by the holding-plate slide in position to drop square into engagement with the fixed rack; Fig. 5, an end view of the locking device and its holding-plate slide; Fig. 6, an end view of the rack-nut; and Figs. 7, 8, and 9 show in elevation the rack-nut and the box for the locking device, to illustrate the action of the inclines to disengage the rack-nut from the fixed rack and the holding-plate slide for said rack-nut.

The non-sliding jaw *b* is formed upon a guide-box, *b'*, which has a base-casting, *a*, by which it is fixed upon the bench. The movable jaw *d* is formed with a hollow bar, *c*, which fits and has a movement within the fixed jaw-box. A rack of right-angled teeth, *e*, is secured to the bottom of the fixed jaw-box, and is of a length greater than the extent of the movement of the movable jaw.

The hollow bar *c* of the movable jaw carries the operating-screw *f*, which has the usual sliding hand-lever, and is secured in the front end of said bar by a key-plate, *f'*, fitted within a groove in the screw-stem, so that the jaw and screw must move together. This hollow bar is open at the bottom, so that a rack-nut, *g*, carried by said screw, and having right-angled or square teeth on its under side, is caused to engage with the fixed rack to place the movable jaw under the control of the screw to grip and hold the article placed between the jaws, the square intermatching teeth giving a strong and durable hold against the power of the screw in gripping the article. The disengagement of the rack-nut suspends the functions of the screw and allows the movable jaw to be slid in and out by hand, so as to quickly set the movable jaw to a position to admit the article to be clamped, when the screw-nut may be at once brought into engagement with the rack to give the required grip upon the article. The disengagement of the screw-rack nut from the fixed rack is effected by the action of the inclines, while their engagement is effected by a spring, *m*, bearing upon the rack-nut when the inclines are separated. When the rack-nut is thus engaged for controlling the movable

ble jaw by the screw it is locked in such engagement by means of a sliding locking device acting directly upon the free unthreaded end of the screw. The rack-nut fits closely within the hollow bar, and the inner or free end of the screw is unthreaded and cylindrical.

The locking device consists of a slide, i' , formed with a concave end, i^2 , adapted to fit over the said unthreaded end i of the screw. This slide is fitted to be moved in a box, h , toward and from the end of the screw. The box h is secured within the hollow bar, is open at one end and closed at the other, and a spring, j , upon the stem of the locking-slide, presses at one end against the closed end of said box and at the other end against a shoulder of the slide to force the concave end of the latter out of the box in position over the unthreaded end of the screw and to hold it in such position to maintain the engagement of the rack-nut with the fixed-rack while operating with the screw, such movement of the locking device being limited by a pin, l , in the stem bearing against the outside closed end of the box, as in Fig. 1. The rear end of the rack-nut is formed with an upwardly-inclined projection, g' , the inclines v whereof stand rearwardly on each side of the unthreaded end of the screw, while the front end of the box is formed with inclines h' , standing rearward and upward on each side of the concave end of the sliding locking device. The projecting end of the rack-nut, on which the inclines v are formed, is adapted to act against the concave end i^2 of the sliding locking device to force the latter back in its box, as in Fig. 2, by turning the screw to the left, and thereby move the concave end i^2 from over the cylindrical end of the screw. Simultaneously with this driving back of the locking device the inclines v of the rack-nut pass onto the inclines h' of the fixed box h , and cause the rack-nut to be raised against the pressure of its spring out of the teeth of the fixed rack just as the end of the locking device clears the unthreaded end of the screw. A plate-spring, m , pinned upon the rack-nut, bears against the under side of the top of the hollow bar and forces the teeth of the rack-nut down into the teeth of the fixed rack when the inclines are separated. This movement of the rack-nut carries with it the unthreaded end of the screw down in position to allow the concave end i^2 of the locking device to pass over the unthreaded end i of said screw to make the lock, as stated.

Co-operating with the rack-nut, its bearing-spring, and with the fixed and movable inclines, means are provided by which the engagement of the teeth of the movable rack-nut with the teeth of the fixed rack is rendered certain and complete to prevent only a partial engagement of the teeth incident to the action of the inclines and the spring. The means which I employ for this purpose consists of a slide or thin plate, n , fitted horizontally in a seat in the

fixed box h just under the locking device and the unthreaded end of the screw. A spring or springs, r , is arranged to constantly press this plate out from the box, the extent of such projection being limited by a screw, s , passing through a bottom plate of the box into a slot, t , in the plate-slide. This plate-slide is arranged in a plane to bring its lower surface about on a level with the bottom of the teeth of the rack-nut when the latter is engaged with the teeth of the fixed rack, so as to receive the action of the nut-rack as it is moved back to bring the inclines into action to disengage the rack-nut. This movement of the rack-nut therefore strikes and forces back the plate-slide until the rack-nut is sufficiently raised to allow the projecting end of the plate-slide to slip off the end of the rack-nut and pass beneath its lower side against its end tooth, as shown in Fig. 2. This is the position in which the inclines will have fully acted to disengage the rack-nut, and the latter will be so held by the inclines, allowing the sliding jaw to be moved in and out by hand. To again engage the rack-nut, the separation of the inclines would let the rack-nut teeth gradually descend upon the fixed rack-teeth, and thereby liable to only partially intermatch and catch, so as to be difficult to be moved, and to require sufficient pressure of the screw to cause the nut-rack to jump the partially-intermatching teeth. It is the function of the plate-slide to prevent this catching and partial intermatching of the teeth, and this it does by holding the nut-rack from descending under the pressure of its spring until the inclines are fully separated, as shown in Fig. 8, when the rack-nut slips off the end of the plate-slide and descends quickly and squarely upon the teeth of the fixed rack and the concave end i^2 of the locking device passes over and locks the screw. If the teeth of the rack-nut should be just in position to enter the teeth of the fixed rack, the engagement will be complete at once; but if the teeth strike upon each other a slight turn of the screw will bring them into full gear without catching or binding. One revolution of the screw is sufficient to engage and disengage the rack-nut from the fixed rack. The rack-nut has an interior screw-thread adapted to receive the operating-screw, and the locking device will spring out over the latter as soon as the nut is engaged. The fixed jaw-body may be mounted upon a suitable swiveling base.

I claim—

1. The combination, in a vise, of the screw f , having the unthreaded cylindrical end i , the fixed rack e , and the movable rack-nut g , having the projecting inclines $g'v$, with the locking device i' , having the concave end i^2 , the fixed inclines h' , the springs m and j , and a plate-slide, n , arranged to be projected in position under the movable rack-nut to hold it out of engagement with the fixed rack in the operation of separating the inclines, for the purpose specified.

2. In combination, in a parallel vise, the fixed
rack *e*, the movable rack-nut *g*, having the pro-
jecting inclines *g'* *v*, the screw *f*, having the un-
threaded cylindrical end *i*, the plate-spring *m*,
5 the fixed box *h*, the locking device *i'*, having
the concave end *i''*, the spring *j*, the slotted
plate-slide *n*, fitted within said fixed box, and
its spring *r*, all constructed and arranged for
co-operation, substantially as herein described,
10 for the purpose specified.

In testimony whereof I have hereunto set my
hand in the presence of two subscribing wit-
nesses.

HENRY F. READ.

Witnesses:

A. E. H. JOHNSON,

J. W. HAMILTON JOHNSON.