(No Model.)

N. W. CRANDALL.

VISE.

No. 390,650. Patented Oct. 9, 1888.

Fig. 1

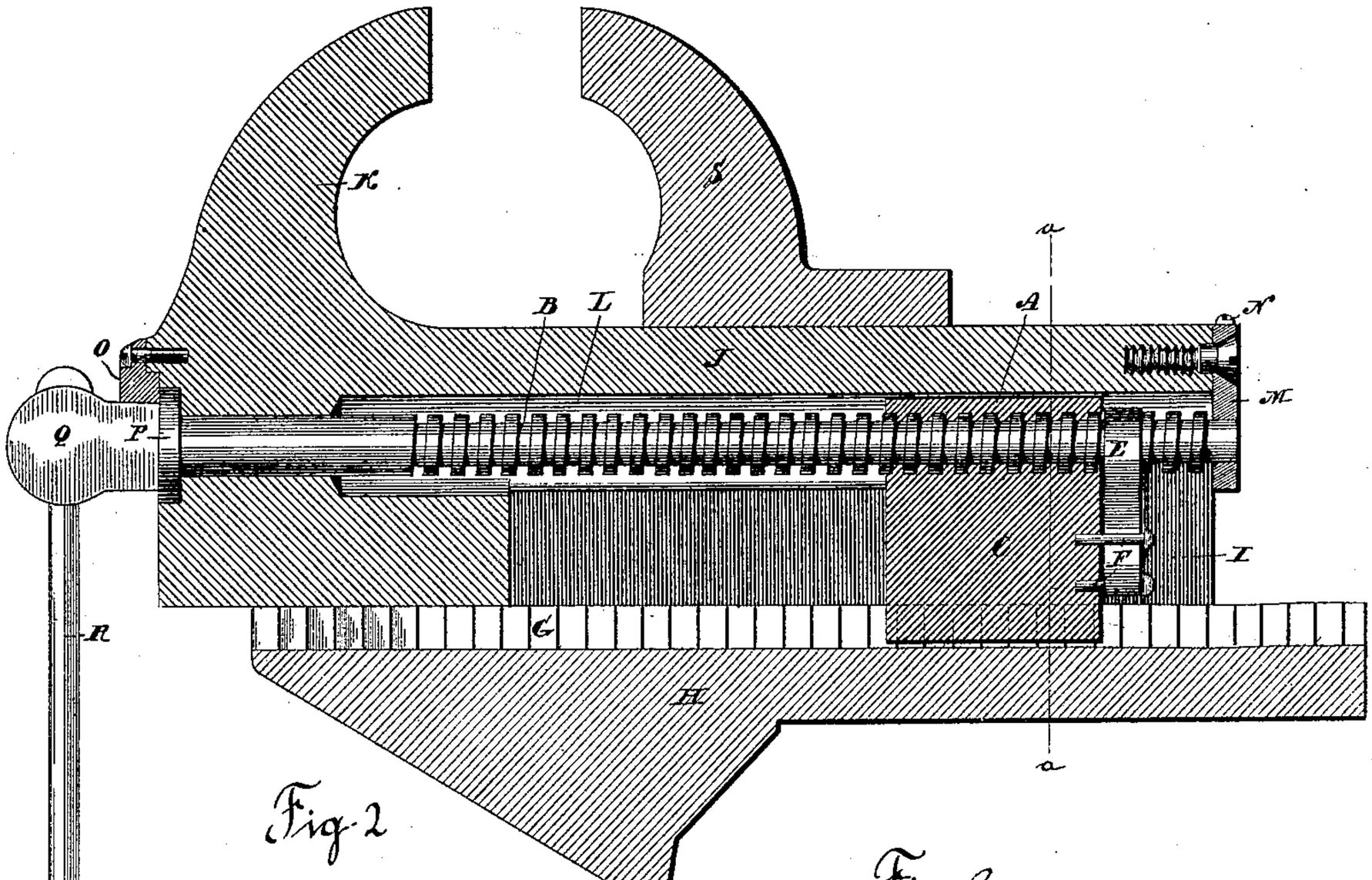


Fig. 2

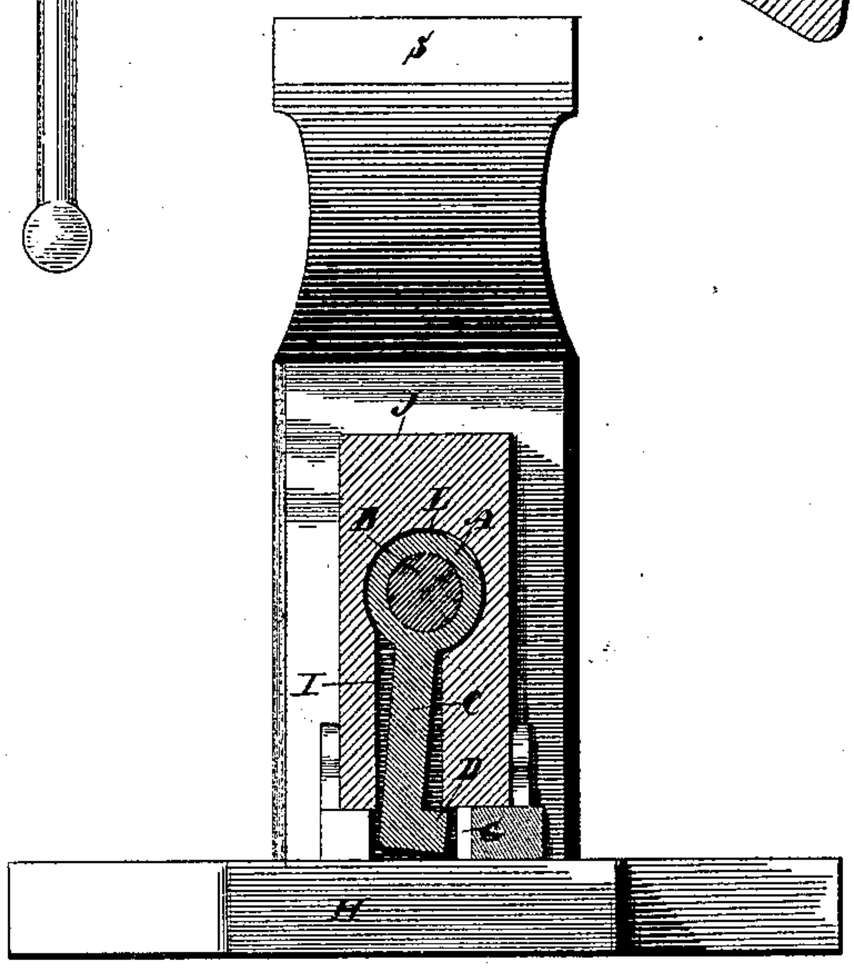
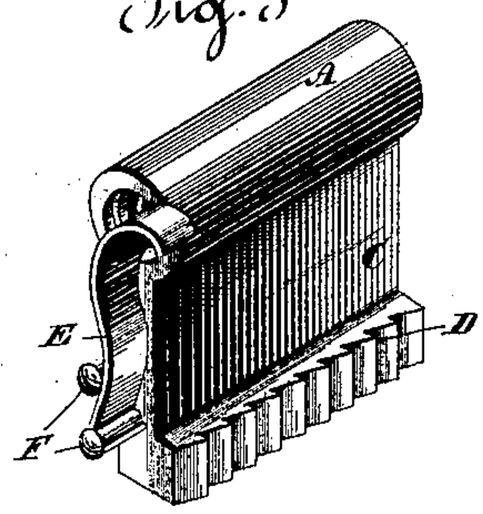


Fig. 3



Witnesses:
Chas. B. Shumway
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Inventor
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UNITED STATES PATENT OFFICE.

NATHAN W. CRANDALL, OF MERIDEN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO GEORGE W. JOPSON, OF SAME PLACE.

VISE.

SPECIFICATION forming part of Letters Patent No. 390,650, dated October 9, 1888.

Application filed June 18, 1888. Serial No. 277,422. (No model.)

To all whom it may concern:

Be it known that I, NATHAN W. CRANDALL, residing at Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Vises; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in that class of vises in which the adjustments of the movable jaw are made rapidly and independent of the slow turning of the screw, the object being to produce a vise of this description which shall be simple, compact, and durable in construction, efficient of operation, and more purely automatic in action than anything heretofore made in this line.

With these ends in view my invention consists in a coupling-head composed of a sleeve or nut and a depending arm made rigid therewith and provided with retaining-points, such head being coupled with the operating-screw of the vise, so as to swing it sidewise toward and away from a series of fixed retaining-points, with which those of the head are engaged and disengaged, and in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in vertical longitudinal section of a vise embodying my invention. Fig. 2 is a view thereof in vertical transverse section on the line *a a* of the preceding figure, and Fig. 3 is a detached perspective view of the coupling-head.

As herein shown, my improved vise is provided with a coupling-head having a threaded sleeve or nut, A, adapted to receive the operating-screw B, a depending arm, C, made rigid with the said sleeve or nut, and a horizontal rack, D, located at the lower end and upon one side of the said arm and having undercut teeth constituting a series of retaining-points. A stiff friction-spring, E, bent to partly embrace the screw B, is engaged with two pins, F F, located in the rear end of the said arm and arranged so that the spring is pressed against the screw, so as to produce considerable friction. A main rack, G, having undercut teeth or retaining-points corresponding to those of the rack D, is located within the standard H of the vise, and at the lower end and to one side of a longitudinal slot, I, formed in the under face of the beam J of the movable vise-jaw K, adapted to receive the depending arm of the coupling head, made sufficiently wide for the said arm to swing sidewise, so as to engage its rack with and disengage it from the main rack, and opening at its upper end into a bore, L, also formed in the said beam, and receiving the screw and the sleeve or nut of the coupling-head, which, when uncoupled, may be moved back and forth in the said bore and slot, together forming a chamber in the said beam J.

Preferably, and as herein shown, there are less screw-threads to the inch on the screw than there are teeth to the inch on the two racks, so that less than a complete revolution of the screw will be required to firmly couple the head and standard and start the jaw in effective and clamping movement. The said beam is provided at its rear end with a plate, M, receiving and supporting the rear end of the operating-screw and carrying a screw, N, forming a guard against the entire retraction of the beam, and at its forward end with a saddle, O, for holding the screw in place and thereto engaging with a collar, P, formed thereupon. The outer end of the screw is provided with the usual perforated knob, Q, receiving the shifting-lever R, which is of ordinary construction. The fixed or stationary jaw S of the vise is made integral with the standard of the tool.

Sufficient friction is developed between the friction-spring and the operating-screw to cause the coupling-head to swing with the same to one side or the other of the slot K, according to the direction of turning the screw, so that by turning the screw in one direction the retaining-points of the head are engaged with those of the rack. A little further turning of the screw in the same direction draws the undercut teeth of the two racks together, whereby the head is firmly coupled to the rack. Continued motion of the screw in the same direction, with the head so coupled to the stand-

ard, operates to advance the movable jaw to or toward the stationary jaw to firmly grasp the work, whatever that may be. A slight turning of the screw in the opposite direction backs the locking-head, and then, when it has been moved back a distance equal to the depth of the undercutting in the rack-teeth, swings it to the opposite side of the slot, disengaging it from the main rack, and therefore uncoupling the operating-screw and movable jaw from the standard, whereby the movable jaw may be freely moved forward and back, a slight turning of the screw at any time in the right direction serving at once to swing the coupling-head back into engagement with the main rack again, and thus recoupling the movable jaw with the tool standard.

It will be noted that the uncoupling and recoupling of the screw and standard are effected purely by a slight movement of the screw, which requires one hand to operate it in any vise, so that the other hand is left free for the manipulation of the work. It will be noted, also, that when the screw of my device is coupled with the standard thereof the device operates exactly as the ordinary screw-vice, so that my improved tool perfectly combines the ordinary and the so-called "rapid-transit" vise. My improved tool is also very compact and is simple and cheap of construction and durable and efficient in use.

It is apparent that in carrying out my invention some changes may be made from the construction herein shown and described. I would therefore have it understood that I do not limit myself to the exact construction and arrangement of parts as herein shown and described, but hold myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. A vise having a coupling-head consisting of a threaded sleeve or nut and a depending arm made rigid therewith and provided with retaining-points, in combination with a series of fixed retaining-points arranged to be engaged by those of the head, and an operating-screw passing through the said sleeve or nut and coupled with the same, so as to swing it sidewise toward and away from the fixed retaining-points, substantially as set forth.

2. A vise having a coupling-head consisting of a threaded sleeve or nut and a depending arm made rigid therewith and provided with retaining-points, in combination with a series of fixed retaining-points arranged to be engaged by those of the head, and an operating-screw passing through the said sleeve or nut and frictionally coupled with the same, so as to swing it sidewise toward and away from the fixed retaining-points, substantially as set forth.

3. A vise having a coupling head consisting of a threaded sleeve or nut, a depending arm and a rack, in combination with an operating-screw which passes through the said nut, a friction-spring coupling the screw and coupling-head, and a fixed rack for engagement by that of the coupling-head, which is swung into and out of engagement with the fixed rack by the screw, substantially as set forth.

4. In a vise, the combination, with a movable jaw, the beam whereof is longitudinally chambered, of a coupling-head located in the chamber of the beam and having a threaded nut and a depending arm carrying a rack, a fixed rack for engagement by that of the head, and a friction-coupling between the screw and head, whereby the latter is engaged with the rack and disengaged therefrom by turning the screw, substantially as set forth.

In testimony whereof I sign this specification in the presence of two subscribing witnesses.

NATHAN W. CRANDALL.

Witnesses:
E. C. BIRDSEY,
P. H. SMITH.