

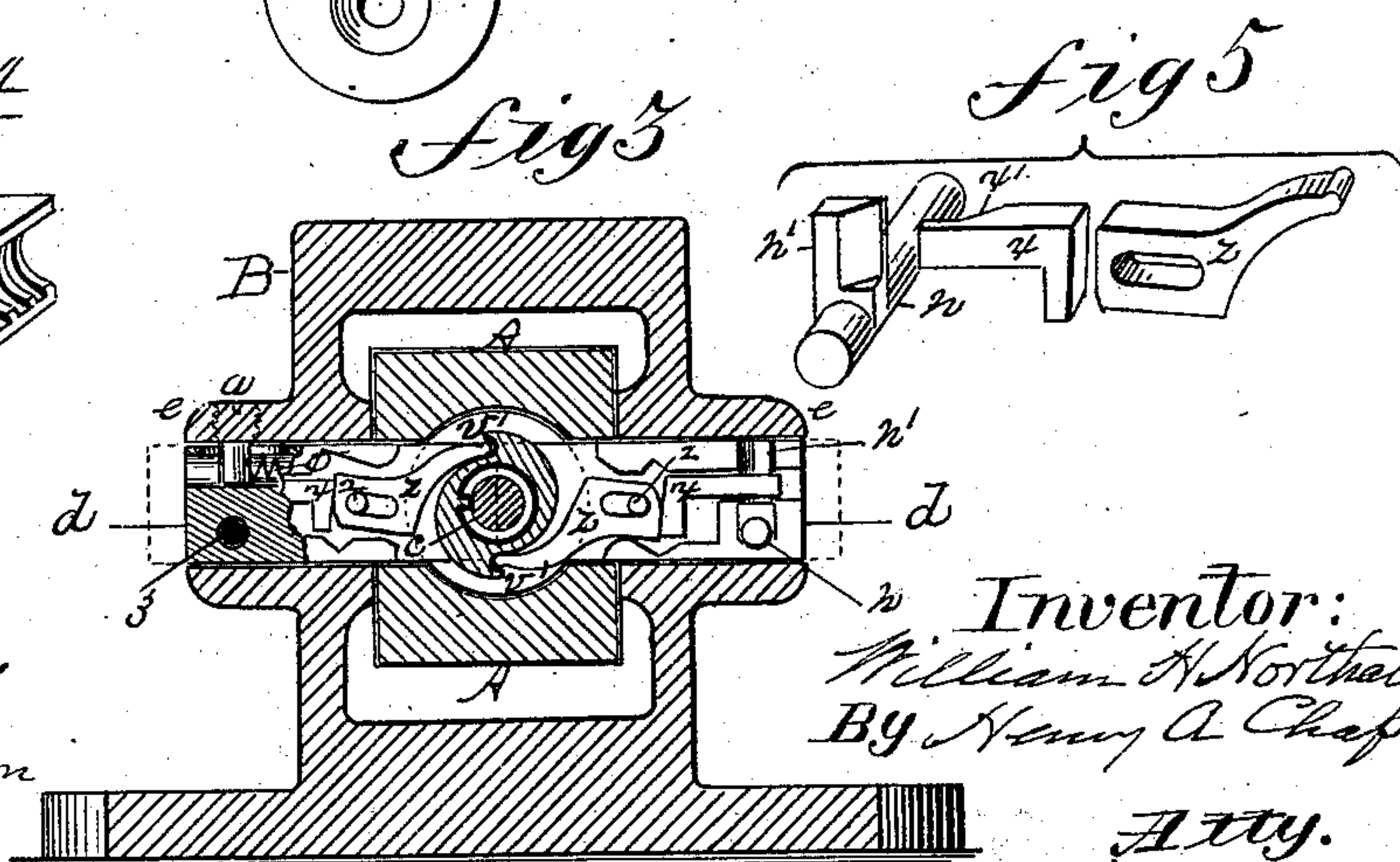
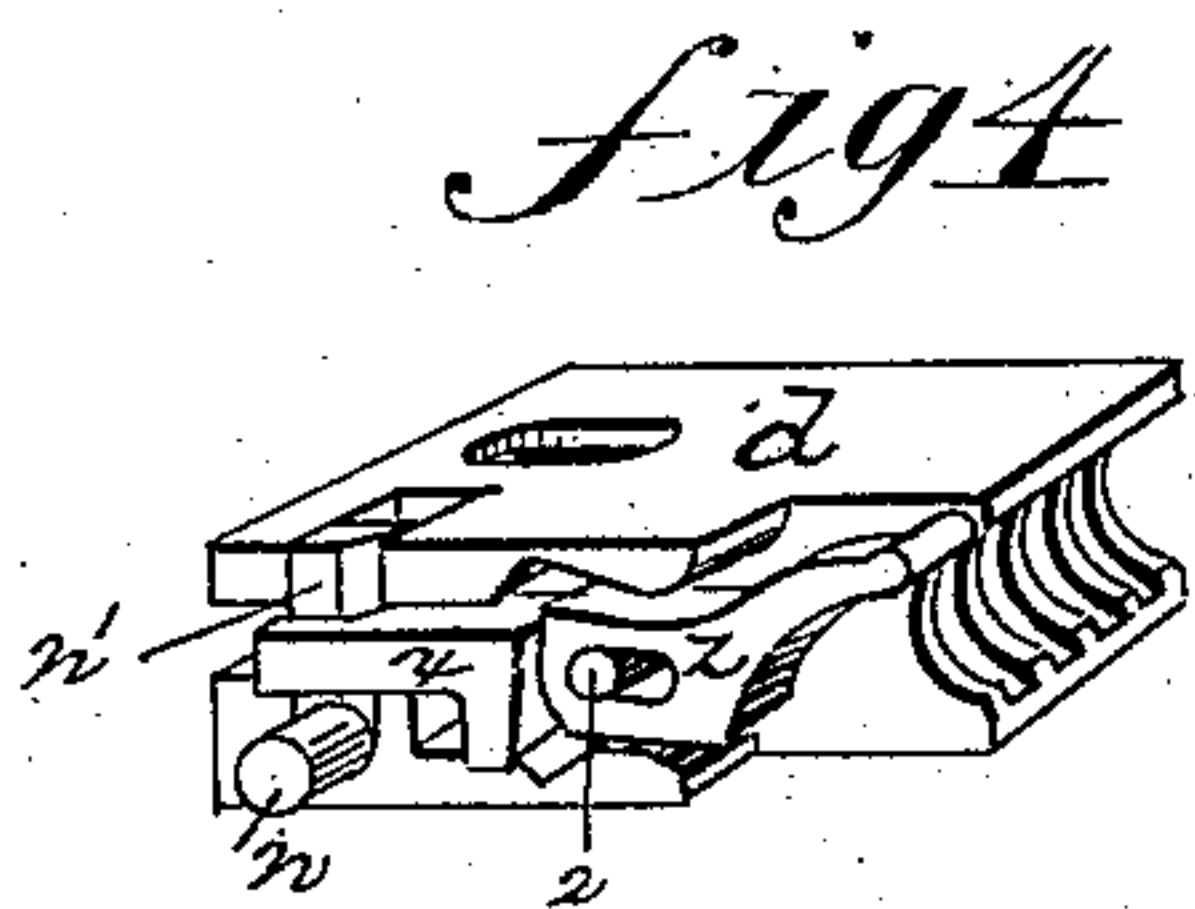
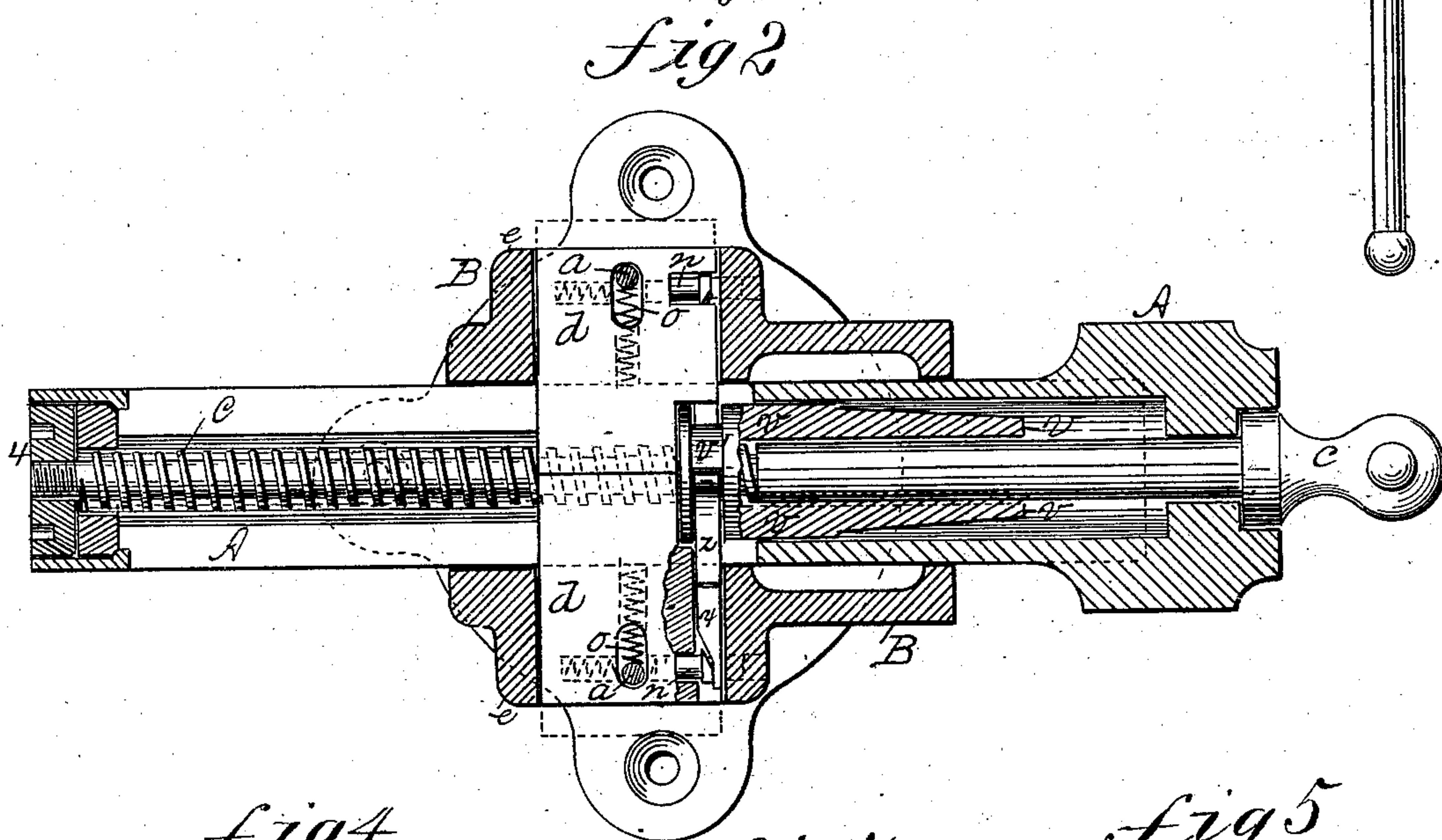
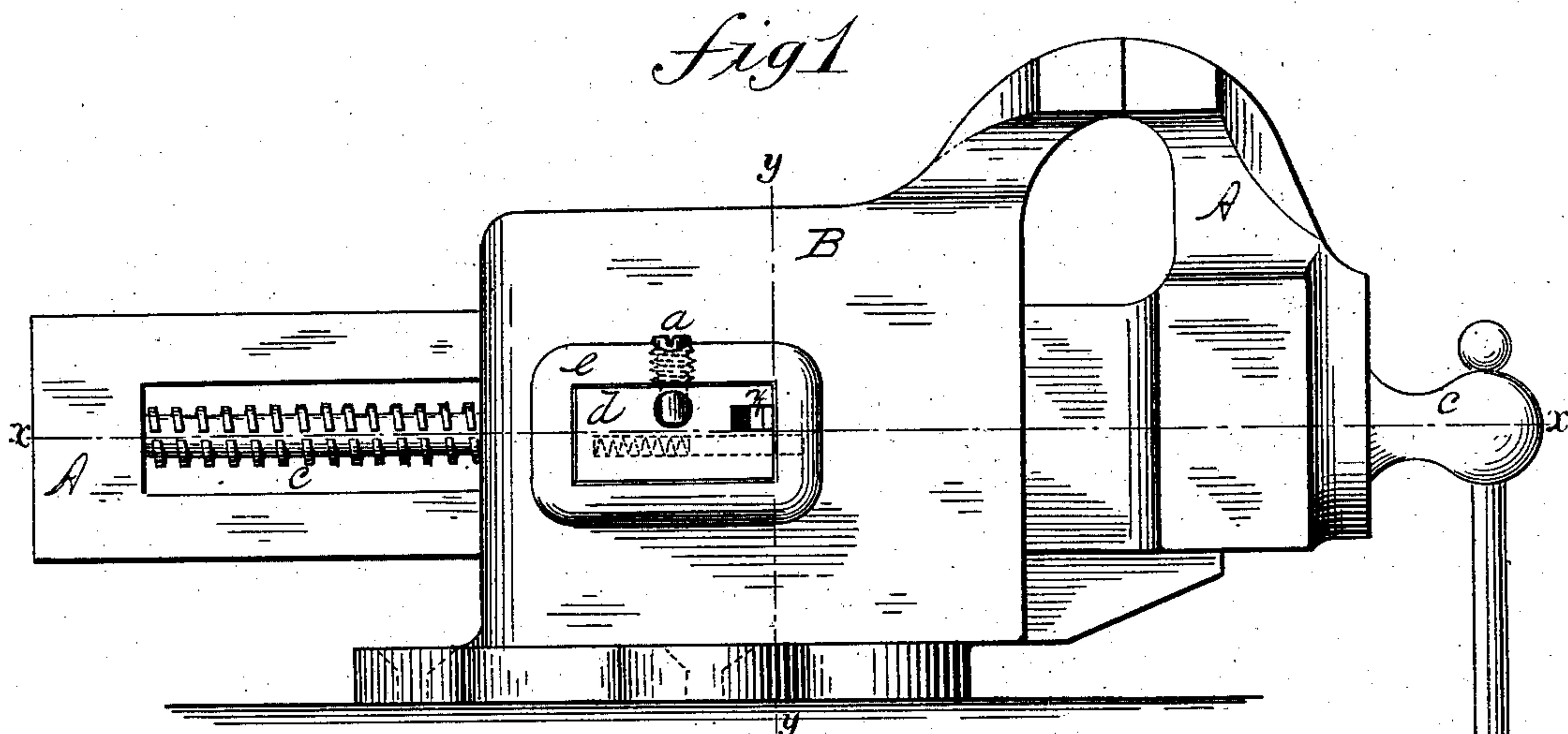
(No Model.)

W. H. NORTHALL.

SLIDING JAW VISE.

No. 292,135.

Patented Jan. 15, 1884.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM H. NORTHALL, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO C. S. LEET, OF SAME PLACE.

SLIDING-JAW VISE.

SPECIFICATION forming part of Letters Patent No. 292,135, dated January 15, 1884.

Application filed June 12, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. NORTHALL, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented new and useful Improvements in Sliding-Jaw Vises, of which the following is a specification.

This invention relates to improvements in sliding-jaw vises; and it consists in the combination, with one of the jaws of a vise and its clamping-screw, and the fixed jaw and body of a vise, of one or more sectional nuts, adapted to be engaged with and disengaged from the clamping-screw by rotating the latter, the object being to provide a vise of improved construction, one of whose jaws is capable of being moved toward and from the other one independent of the clamping-screw, to quickly open the jaws and set them against an object to be held between them, before employing the said screw to force one jaw against the other.

In the drawings forming part of this specification, Figure 1 is a side elevation, and Fig. 2 a longitudinal section, of a vise embodying my invention. Fig. 3 is a transverse section on the line *yy*, Fig. 1. Fig. 4 is a perspective of one of the nuts and certain of its directly-connected operating parts. Fig. 5 illustrates detail parts.

In the drawings, B is the body of the vise, on which is the fixed jaw, and it is properly chambered to admit through it the tail part of the sliding jaw A, and permit the latter, with the clamping-screw *c*, which is fitted to rotate therein, to have a free sliding movement in said body, whereby one jaw is moved from and toward the other. The clamping-screw *c* is grooved longitudinally, and has fitted upon it a tubular cam, *v*, provided with a spline-key fitting said groove, whereby said cam is made to rotate with said screw; but the latter may freely slide in the cam. The form of that part of cam *v* which is in connection with the sectional nuts, as hereinafter described, is shown in section in Fig. 3, it being provided at that point with two cam projections, *v' v'*, opposite each other. Said projections *v'* are in a groove on the cam, as shown

in Fig. 2. The cam *v* is placed on the screw *c*, the latter passed through the part A, and the screw is secured to the part A by a nut, 4, on its end in the usual manner. The usual head is formed on the outer end of the screw *c*, through which operates the usual turning-bar, as shown.

The sides of the body of the vise B are provided with bosses *e*, to provide suitable thickness on opposite sides in which to make proper bearings for the aforesaid nuts. Said sides are perforated to receive, opposite each other, the sectional nuts *d*, which are of block form, and have a screw-thread in one edge corresponding to that on the screw *c*. The outer end of the nut is bored to receive in a cavity so formed a spiral spring, *o*, and the nut having been placed in its bearing in the body B, spring *o* is forced into the nut, and a screw, *a*, is passed through the upper side of the boss *e* through an opening in the top of the nut and behind the spring *o*, forming a fixed abutment for one end of the latter, and causing the force of said spring to be exerted against the nut to force it against screw *c* and make it engage therewith. The nut *d* is held in engagement with the screw *c* by a bolt, *n*, which is inserted in a cavity in said nut, in which, behind said bolt, is a spiral spring, 3. (Shown in dotted lines in Figs. 1 and 2, and the end of it is shown in Fig. 3.) The bolt *n* operates transversely to the motion of the nut relative to screw *c*, and when the nut is against the latter the outer end of said bolt enters a hole in the boss *e*, as shown in Fig. 1, firmly locking the nut, so that whatever may be the strain upon the nut when the screw is turned to force the jaws together, it cannot slide back. In addition to the bolt *n*, the nut *d* is provided with a cam-lever, *z*, having an elongated hole through it, and hung on a pin, 2, on the nut, and a wedge, *x*, having a wide end next to lever *z*, its opposite end reaching by the arm *n'* on bolt *n*, and having an incline, *x'*, thereon, adapted to be forced against the beveled edge of said arm *n'*. When the nut and its parts, as shown in Fig. 4, is placed in the body B, as in Figs. 1 and 2, the said lever, wedge, and bolt are brought to the positions shown in

the latter figure, being held up against the nut by the adjoining side of the boss *e*. When one or both of nuts *d* are placed in the body B, the cam *v* is moved on screw *c*, to bring its 5 groove, in which are the projections *v' v'*, opposite the ends of the levers *z*, which ends lie in said groove and on the projections just named.

By reference to Fig. 3 it will be seen that 10 the ends of the levers *z* lie one above and one below screw *c*, and in positions to be simultaneously acted on by the cam *v*. When the screw *c* and cam *v* are turned to the right to move jaw A toward the fixed jaw, the levers 15 *z* swing on the pins 2 and drop off from the ends of the projections *v' v'* as the latter come around under them, having no effect on the nuts; but when the screw *c* is turned back or to the left the projections *v' v'* are forced 20 against the ends of levers *z*, thereby driving them in a direction away from the axis of the cam. The function of each cam-projection *v'* is that of an arm having a rotary motion around the axis of the screw *c* against the end 25 of lever *z*, when said screw is turned backward. The lever *z* has a sliding movement on pin 2 in a direction from screw *c*, given to it by the contact of said projection *v'* with it. The result of said sliding movement of lever *z* 30 is to force wedge *x* in the same direction and draw bolt *n* back into the nut *d* clear from boss *e*. Lever *z* then comes to a stop so far as its movement independent of the nut is concerned, said movement being first opposed by 35 the action of spring 3 behind bolt *n*, and if the force of said spring does not prove a sufficient abutment to hold lever *z* while the nut moves back, the pending flange on wedge *x* will strike against the shoulder of the nut-section to effect 40 the movement of the nut away from the screw, leaving the latter free to be moved longitudinally between the nuts and in the cam *v*, the screw being held meanwhile to keep the nuts back. The aforesaid back movement of the nuts 45 *d* is indicated by the dotted lines in Fig. 2. While screw *c* is turned back and so held by the operator, the nuts *d* are kept away from the screw *c*, and the movable jaw and its tail part, together with screw *c*, may be freely moved

back and forth in the body B, and by releasing 50 screw *c* the nuts *d* return to their places against the screw, so that by turning the latter to the right the jaws may be clamped forcibly together. When screw *c* is released, as aforesaid, the 55 springs *o* in the nuts drive them against the screw, and as soon as the nuts have moved inward to their proper places the bolts *n* slip into their holes in the bosses *e* and firmly lock them.

To operate the vise, screw *c* is turned back 60 to throw out the nuts, the movable jaw is drawn away from the fixed one, the piece to be screwed into the vise is placed against the latter jaw, the movable one is pushed against 65 said piece, and the screw is then turned to the right, fastening said piece firmly between the jaws. One nut serves to operate the vise as well as two; but additional strength and force 70 is gained by having nuts to engage each side of screw *c*.

What I claim as my invention is—

1. In a sliding-jaw vise, the combination, 75 with the body, the movable jaw, and the clamping-screw thereof, of one or more sectional nuts, substantially as described, attached to said body, and mechanism, substantially as 80 described, for operating said nut or nuts by and under the control of the said screw, to move them toward and from the latter, substantially as set forth.

2. The combination, with the body and the movable jaw of a sliding-jaw vise, of a longitudinally-grooved clamping-screw, of a cam 85 fitted on said screw and having a splined connection therewith, of one or more sectional nuts attached to said body, each of which is provided with a cam-lever, a wedge, and a locking-bolt, substantially as described, and 90 springs *o* and 3, all as set forth.

3. The combination, with the body B, the sliding jaw A, the screw *c*, and the cam *v*, of the nut *d*, the springs *o* and 3, the lever *z*, the wedge *x*, and the bolt *n*, substantially as set forth.

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Witnesses:

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