

No. 777,907.

PATENTED DEC. 20, 1904.

O. LINDBERG.
VISE.

APPLICATION FILED APR. 25, 1904.

NO MODEL.

Fig. 1.

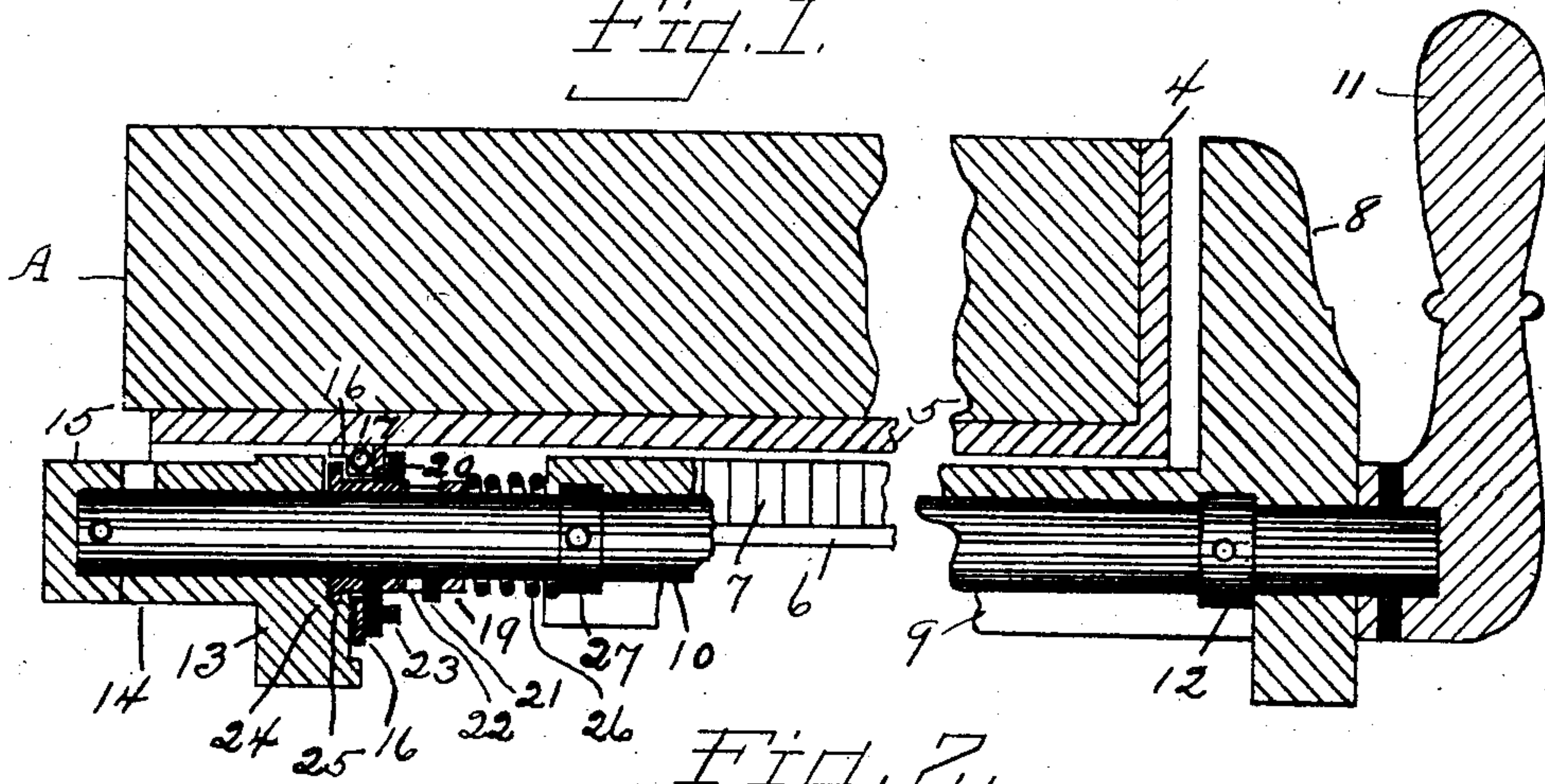


Fig. 2.

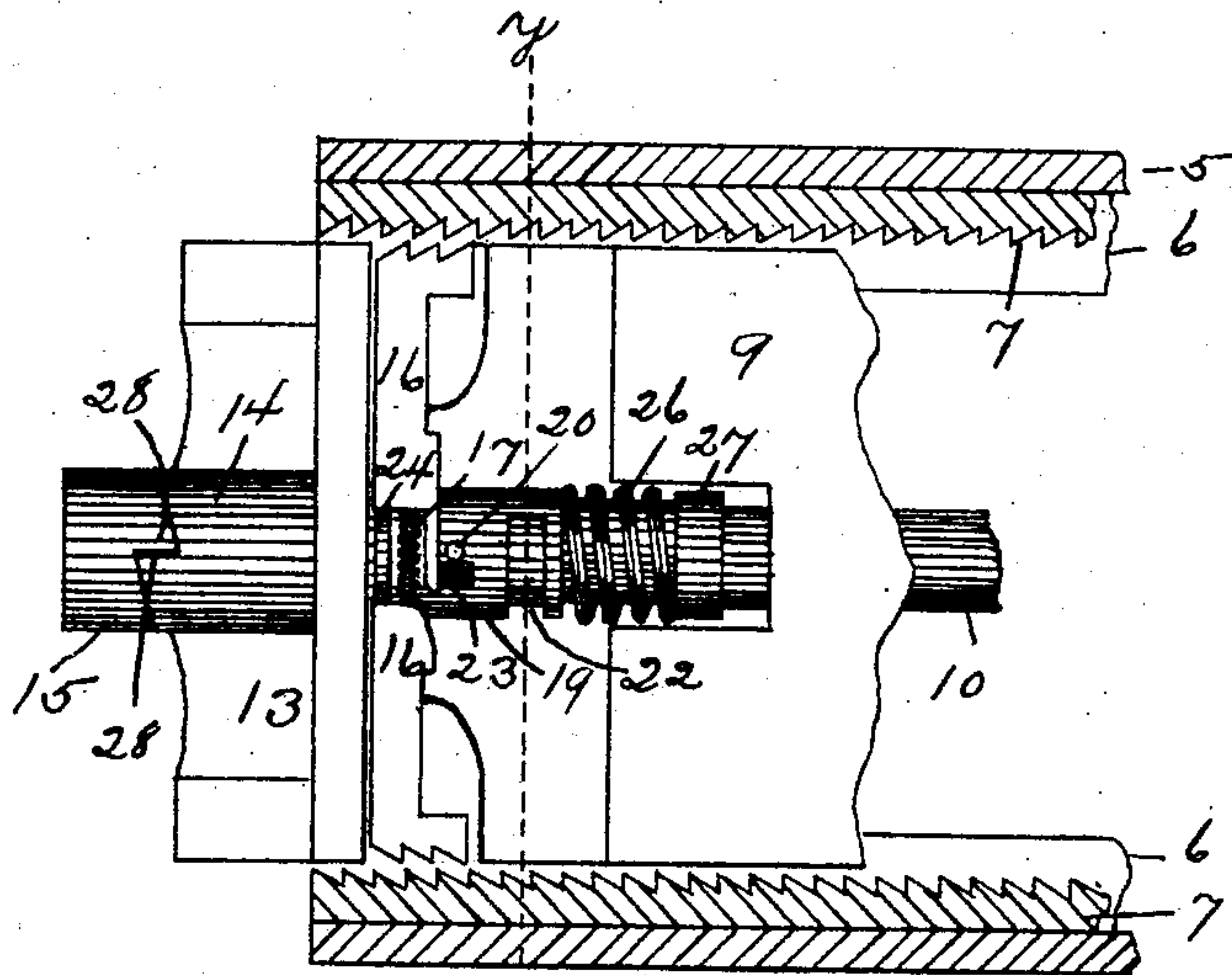
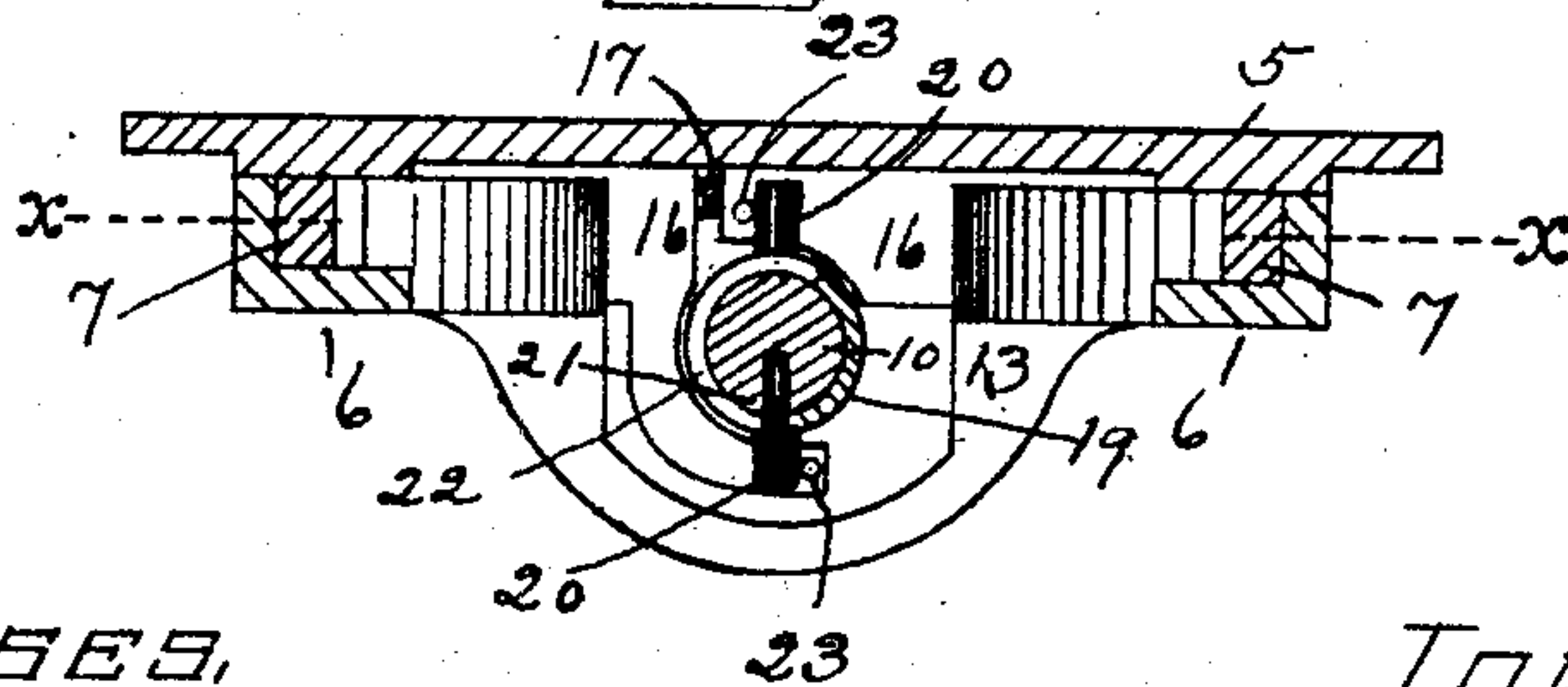


Fig. 3.



Witnesses,

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OTTO LINDBERG, OF BRISTOL, CONNECTICUT.

VISE.

SPECIFICATION forming part of Letters Patent No. 777,907, dated December 20, 1904.

Application filed April 25, 1904. Serial No. 204,738.

To all whom it may concern:

Be it known that I, OTTO LINDBERG, a citizen of Sweden, (but having declared my intention of becoming a citizen of the United States,) residing at 112 Laurel street, Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Vises, of which the following is a specification.

My invention relates to improvements in vises; and the main object of my improvement is convenience and efficiency of operation.

In the accompanying drawings, Figure 1 is a central longitudinal section of my vise, partly in elevation and with the middle portion broken out. Fig. 2 is a sectional plan view of the main portion of the same, the section extending on the line *xx* of Fig. 3 through the fixed or stationary member only of the vise. Fig. 3 is a transverse section on the line *yy* of Fig. 2.

I have shown my improvement as applied to a woodworker's vise, having the top of the jaw flush with the top of the bench A; but the particular kind of a vise to which my improvement is applied is immaterial, inasmuch as the improvement resides in the mechanism for moving one member of the vise relatively to the companion member. I have also shown the improvement in connection with two racks and two dogs for engaging the said racks and with the said racks arranged in a horizontal plane on opposite sides of and a little above the operating-shaft. The number and location of the rack or racks is, however, a matter which is not essential.

The fixed vise-jaw 4 is rigid with the main frame 5 of the vise, the said frame and the parts that are rigid therewith constituting the fixed member of the vise. The under side of this frame has ways or guides 6, within which the moving member of the vise slides in and out to close and open the jaws. A ratchet-rack 7, which is or may be of a separate piece and of any desired material—as, for example, steel—is secured within each of these ways on opposite sides, the notched sides of the said racks facing each other, as best shown in Fig. 2.

The movable jaw 8 has made integral or rig-

idly connected therewith a slide 9, that is fitted to slide in the ways 6. In the jaw end of this slide a cam-shaft 10 is journaled, and to the front end of this shaft outside of the jaw 8 is the operating-lever 11, rigidly mounted on the said shaft. This lever prevents the shaft 10 from moving longitudinally through the jaw or slide in one direction, and any suitable shoulder or collar 12 may be employed to prevent such movement in the opposite direction. A short subslide 13 is also fitted to slide in the said ways and carries at its rear end a cam-seat 14, which is bored centrally to serve as a bearing for the rear end of the cam-shaft to turn in. A cam 15 is secured to the end of the shaft, so as to rotate therewith and with its cam face or end acting against the cam-seat of the subslide. Two sliding dogs 16 for engaging the racks are arranged to move to and from the said racks within transverse guides in the said subslide 13. These slides are forced outwardly—that is, in the direction to engage the racks—by means of any suitable spring 17, which lies between the confronting tails of the said dogs, as best shown in Fig. 2. The dogs are withdrawn from their engagement with the racks by means of dog-actuators in the form of pins or projections 20 on the sleeve 19, which sleeve surrounds the cam-shaft 10 at a point adjacent to the said dogs. The said sleeve is connected with the said shaft by a lost-motion or pin-and-slot connection 21 and 22, the pin 21 being fixed in the shaft and entering a circumferential slot 22 in the said sleeve, whereby a rotary movement of the shaft in the proper direction after taking up the slack in the said lost-motion connection will cause the said sleeve and its pins 20 to partially rotate and engage pins or shoulders 23 on the tails of the dogs and force the dogs out of engagement with the racks. This sleeve is held against longitudinal movement in the subslide by means of a collar or shoulder 24, that engages a recess 25, Fig. 1, in the said subslide. The pin 21 on the shaft and the abutment formed by the end of the slot 22 of the sleeve constitute a lost-motion connection between the said shaft and sleeve, and provision must also be made for permitting the shaft to move longitudinally through the

sleeve to the full extent of the longitudinal movement given to the said shaft by the cam. This provision, as shown, is made by making the slot 22 wider than the pin 21. The slotted sleeve and pin on the cam-shaft, together with the dog-engagement faces 20 and 23 of the said sleeve and dogs, constitute a connecting device between the said shaft and dogs, while the pin-and-slot connection of the said shaft and sleeve make the same a lost-motion connecting device. A spiral spring 26 is arranged on the cam-shaft 10 with one end abutting against one end of the sleeve 19 and its other end abutting against a shoulder or collar 27 on the said shaft, whereby the said slide 9 and subslide 13 are forced away from each other when released to the power of the said spring and may move toward each other in operating the vise, as hereinafter described. By turning the cam-shaft in the left-hand direction—that is, in the direction for unscrewing a right-hand thread until the lost motion between the shaft and the sleeve is taken up—the pin 21 will engage the metal of the sleeve at one end of the slot 22, and then the sleeve will rotate with the shaft, carrying the pins 20 of the said sleeve against the pins or shoulders 23 of the two dogs and withdraw both of the said dogs from engagement with the racks, as best shown in Figs. 2 and 3. The two slides—slide 9 and subslide 13—may now be drawn through the ways 6 as one piece, so as to open or close the jaws, as may be desired. In fact, if the dogs are thus held back the said slides may be wholly withdrawn from the ways in the companion member of the vise. After adjusting the jaws so as to approximately pinch any given work placed between them the cam-shaft is turned in the right-hand direction, the first action of which will be to release the dogs and let them lock the subslide to the ways, so that the said slide cannot move in the direction to open the vise-jaws. The pins or projections that withdraw the dogs and the cam are so related to each other that when the said dogs are fully withdrawn the shoulders 28 of cam and cam-seat engage each other, as shown in Fig. 2, so that the cam is resting on what may be called the “base” of its incline and is ready to act for moving the cam-shaft endwise, the same as a screw-thread acts to move a shaft endwise by rotation in the proper direction. Consequently as the cam-shaft is turned in the right-hand direction and the subslide is locked against being pulled

out the cam-shaft is moved longitudinally and forces the moving jaw toward the fixed jaw to effect the desired pinch on the work between the jaws. A reverse movement of the cam-shaft releases the work, and if the moving jaw is to be pulled out the said reverse movement of the shaft may be continued far enough to withdraw the dogs and return the cam to its base of action.

By my improvement I am enabled to operate the dogs for the quick or sliding action of the jaws by merely rotating the cam-shaft, and at the same time I make the cam effective for pinching the work between the jaws for a large part of one revolution of the said cam-shaft.

I claim as my invention—

1. In a vise, the combination of the frame having a fixed jaw, rack and ways, with a slide and subslide mounted within the said ways, a dog mounted to move on the said subslide for engaging and disengaging the said rack, a cam-shaft mounted in the said slide and subslide, a cam on the said shaft acting on the said subslide, a dog-actuator partially rotating through the movement of the said shaft, and a lost-motion device between the said dog-actuator and the shaft, whereby the movement of the shaft exceeds the movement of the said dog-actuator.

2. In a vise, the combination of a frame having ways and a rack with a slide and subslide mounted to move in the said ways, a cam-shaft and cam with the said cam acting against the said subslide, a dog mounted in the said subslide, a sleeve mounted on the said cam-shaft and acting to withdraw the said dog from the said rack, and a lost-motion connection between the said sleeve and shaft for withdrawing the dog.

3. In a vise, the combination of a frame having ways and a rack with a slide and subslide mounted to move in the said ways, a cam-shaft and a cam with the said cam acting against the said subslide, a dog mounted in the said subslide, a sleeve loosely mounted on the said cam-shaft and having driving-shoulders with a blank space between, a dog-actuator mounted on the said sleeve, and a sleeve-actuator mounted on the said shaft and acting in the blank space between the driving-shoulders of the said sleeve.

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Witnesses:

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