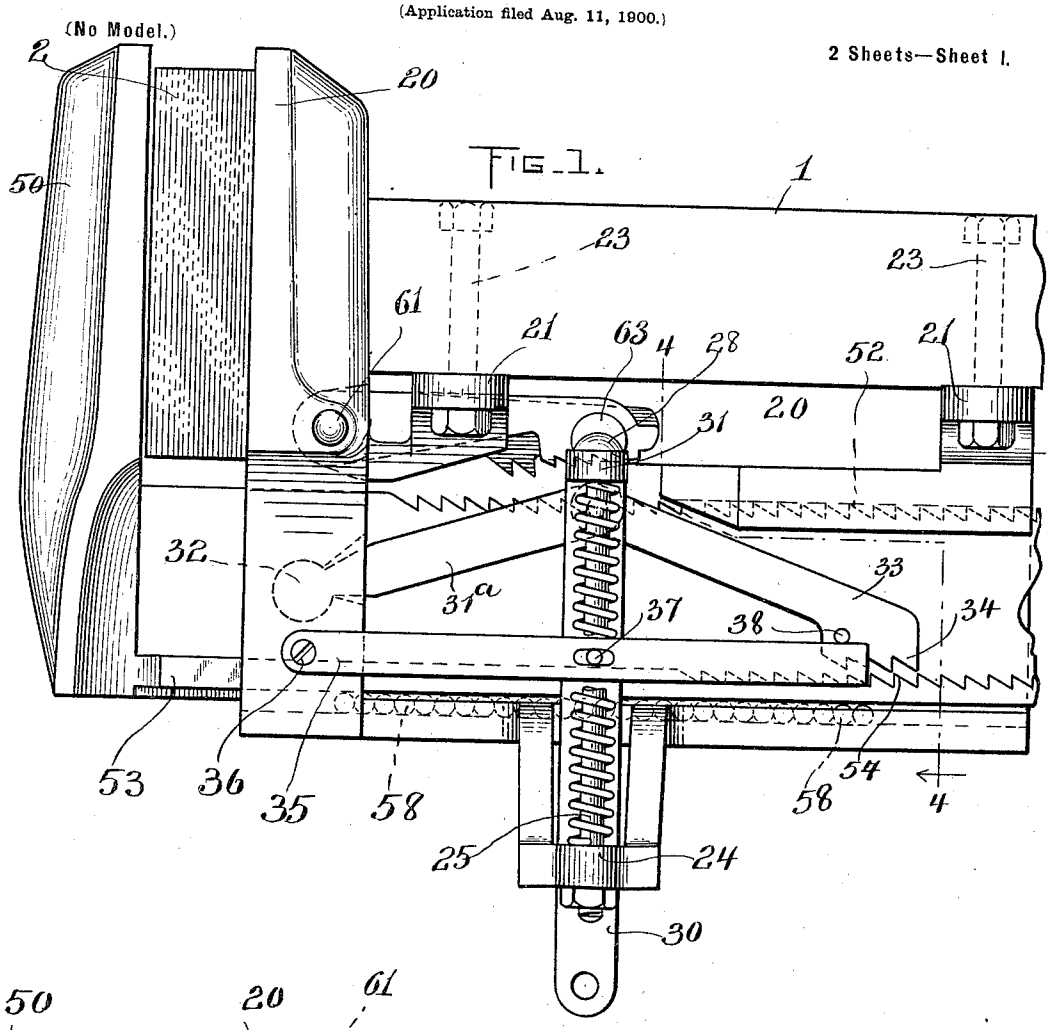
No. 701,167. Patented May 27, 1902.

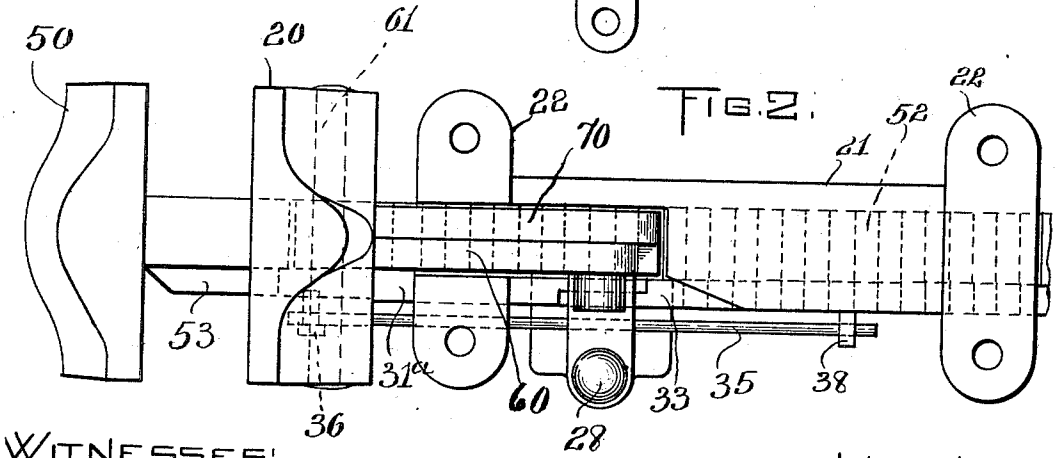
J. DENNIS.

VISE.

(Application filed Aug. 11, 1900.)

(No Model.) 2 Sheets—Sheet 1.





WITNESSES:
A. D. Harrison
D. F. Pezzetti.

INVENTOR:
John Dennis
by Wright Brown & Quinby
Attys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 701,167. Patented May 27, 1902.

J. DENNIS.

VISE.

(Application filed Aug. 11, 1900.)

(No Model.) 2 Sheets—Sheet 2.

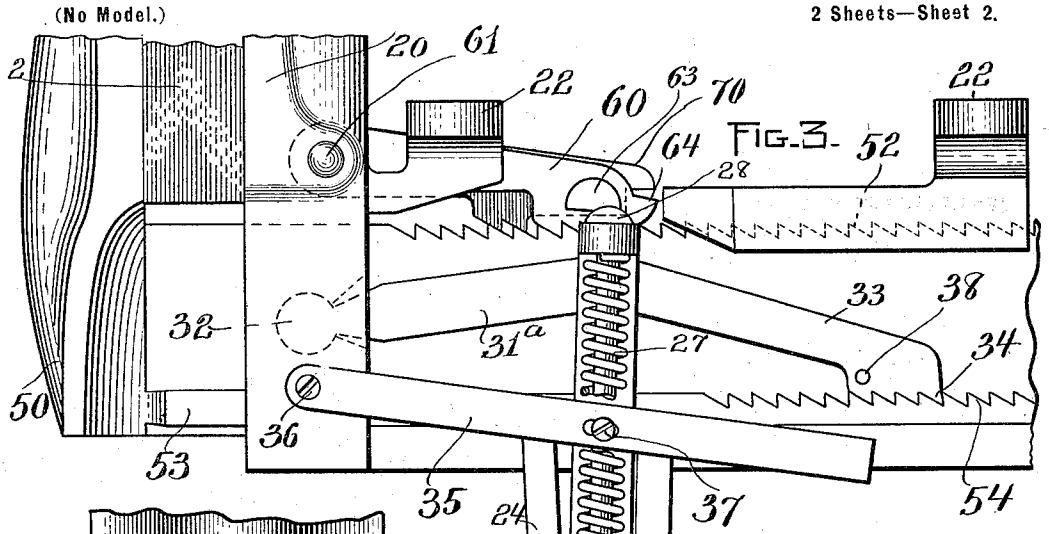


FIG. 3.

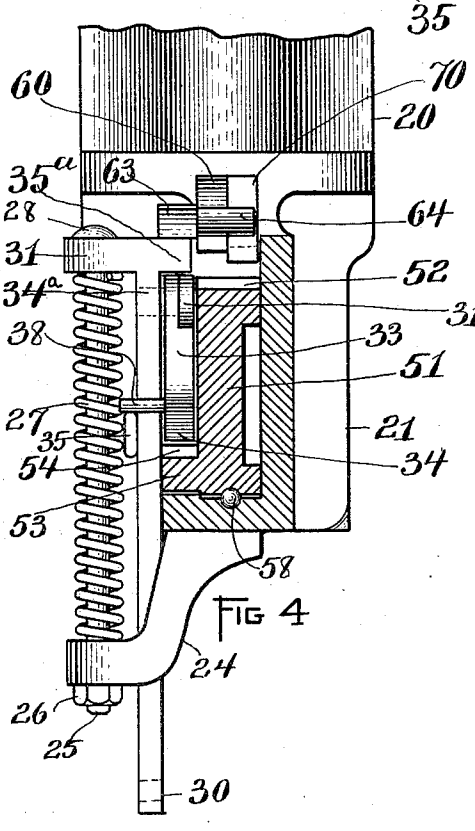


FIG 4

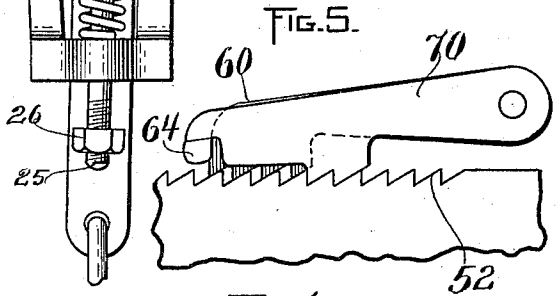


FIG. 5.

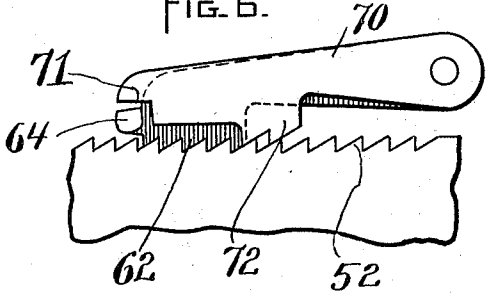


FIG. 6.

WITNESSES:

A. D. Harrison

R. F. Lizette

INVENTOR:

John Dennis

by Wright Brown & Quinby

Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN DENNIS, OF LOWELL, MASSACHUSETTS.

VISE.

SPECIFICATION forming part of Letters Patent No. 701,167, dated May 27, 1902.

Application filed August 11, 1900. Serial No. 26,605. (No model.)

To all whom it may concern:

Be it known that I, JOHN DENNIS, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Vises, of which the following is a specification.

This invention relates to a new and improved vise; and it consists in the novel features of construction and relative arrangement of parts hereinafter fully described in the specification, clearly illustrated in the drawings, and particularly pointed out in claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which like characters indicate like parts in all of the figures.

Figure 1 represents a side elevation of a vise constructed in accordance with my invention and secured to the lower side of a bench. Fig. 2 represents a top plan view of a vise removed from the bench. Fig. 3 represents a side elevation of a vise removed from the bench, the parts being in somewhat different relation than they appear in Fig. 1. Fig. 4 represents a vertical sectional view on the line 4 4 of Fig. 1 looking in the direction of the arrow. Fig. 5 represents a detail view of the pawls. Fig. 6 represents a like view showing the pawls in a different position.

The object of the invention is to so construct a vise that its movable jaw may be operated by a toggle and held by a detent, the parts being so arranged that one can be operated independently of the other, and at the same time the detent can be released by the toggle when desired.

1 represents the bed of a bench, the legs or standard of which are not shown, only such portion of the bed being shown as is necessary to show the manner of connecting the vise thereto. The work 2 is arranged to be gripped between the stationary jaw 20 of the vise and its complemental sliding jaw 50. The stationary jaw 20 is formed at one end with a casting 21, provided with ears 22, by which it is secured to the bench by bolts 23, the upper end of the bolts being preferably countersunk, as shown, in order not to interfere with the use of the surface of the bench. The sliding jaw 50 is formed with a slide 51, adapted to move in a complemental recess in the casting 21. The slide 51 is supported by antifriction devices 58. (See Figs. 1 and 4.) The slide 51 upon its top face is formed with ratchet-teeth 52 (see Figs. 1, 2, 3, 4, 5, and 6) for a purpose hereinafter explained. The slide 51 is formed with a flange 53, that is provided upon its upper surface with ratchet-teeth 54. (See Figs. 3 and 4.) The casting 21 is formed on its underside with a bracket 24. (See Figs. 1 and 4.)

25 represents a rod one end of which is loosely arranged in apertures formed in the lugs 31 and the bracket 24. The head 28 of the bolt prevents the bolt from dropping out of the lug 31, while a nut 26 prevents the bolt from being pulled up through the bracket 24.

27 represents a coiled spring arranged around the rod 25 and bearing at one end upon the outer face of the bracket 24 and at its other end against the lug 31.

30 represents a vertically-reciprocating bar provided with a lug 31. The head 28 of the rod 25 rests upon the lug, and the parts are so arranged that as the bar 30 is pulled down the spring 27 is compressed and will restore the parts to the position shown in Fig. 4 when the bar 30 is released.

31ª represents one end of a lever-arm pivoted at 32 in the end of the casting 21 or in the lower part of the stationary jaw 20. 33 represents the other arm of the toggle, the two arms being connected by a pin 34ª, (see Fig. 4,) the one end of said pin being loosely arranged in a suitable recess in the bar 30. (See Fig. 4.)

35ª represents a lug in the upper end of the sliding bar 30 and arranged under a lug 63 on the pawl 60.

The free end of the toggle 33 is formed with ratchet-teeth 34, adapted to engage ratchet-teeth 54 as the bar 30 is pulled down, thereby forcing the sliding jaw 50 against the work 2.

35 represents a lever pivoted at 36 to the lower part of the stationary jaw 20, said bar having a sliding pivotal connection 37 with the rod 25, (see Fig. 3,) and at its free end is arranged to engage a pin 38 on the free end of the toggle-arm 33 to raise the teeth 34 out of engagement with the teeth 54 as the rod 25 is forced upward by the spring 27 when the bar 30 is released.

60 represents a ratchet-pawl pivoted upon

a bolt 61, arranged in the top side of the casting 21. This pawl at its free end is formed with ratchet-teeth 62, adapted to engage ratchet-teeth 52. The pawl 60 is also formed with a lug 63, adapted to be engaged by the lug 35^a when the latter is raised by the spring 27 to the position shown in Figs. 1 and 4.

70 represents a pawl pivoted upon the bolt 61 and arranged beside the pawl 60. The pawl 70 is provided with a lip 71, arranged to rest upon or be engaged by a projection 64 on the pawl 60 in order that the end of the lever 70 may be raised by the projection 64 as the lever 60 is raised by the lug 63 engaging the lug 35^a. (See Figs. 3 and 4.) The pawl 70 is provided with ratchet-teeth 72, adapted to engage ratchet-teeth 52. The pawls 60 and 70 are arranged side by side (see Figs. 2, 3, 4, 5, and 6) and adapted to alternately engage the ratchet-teeth 52, the parts being so arranged that the teeth of one pawl will be in full engagement with the ratchet-teeth 52 when the teeth of its companion pawl are only in half engagement. (See Figs. 5 and 6.) The pawls 60 and 70 may be termed "holding-pawls," while the arm 33 has the function of operating the movable jaw 50 against the work.

The operation of the parts as described is as follows: The work 2 being placed in the vise, (see Fig. 1,) the sliding jaw 50 is slid by hand in contact with the work 2, the teeth 34 (see Fig. 1) being out of engagement with the teeth 54. The bar 30 is then pulled down, either by a treadle or otherwise. This downward motion of the bar 30 pulls the lever 35 out of engagement with the arm 33 and permits the teeth 34 and 54 to engage. The further downward movement of the bar 30 serves to swing the toggle-levers 31^a 33, drawing the movable jaw 50 against the work. (See Fig. 3.) As the bar 30 is pulled downward the lug 35^a is out of engagement with the lug 63, permitting the ratchet-pawls 60 and 70 to come in contact with the ratchet 52. The ratchet-teeth of the pawl 70 are arranged half a tooth in advance of the corresponding ratchet of the pawl 60, as shown, so that if the slide is not pushed far enough for the ratchet-teeth of one pawl to engage the teeth 52 of the slide the ratchet-teeth of the other pawl will do so each time the stroke of the bar 30 is made until the movable jaw has been crowded with the desired degree of firmness against the work, each succeeding movement of the bar being like the first. After the work has been sufficiently tightened the bar 30 is held down in any desired way until it is desired to loosen the work. When the bar 30 is released, the spring 27 (see Figs. 3 and 4) forces said bar upward and raises the ratchet-pawls 60 and 70 to the position shown in Fig. 1, in which position the sliding jaw may be pulled by hand away from the work. In giving the bar 30 successive movements to force the sliding jaw 50 against the work the bar is not permitted to rise far enough so that the part 35^a shall engage the lug 63 to disengage the companion pawls 60 and 70, but only far enough to permit the teeth 34 on the arm 33 to get a new and advanced position on the teeth 54.

Having thus explained the nature of my invention and described a way of constructing and using the same, though without attempting to set forth all the forms in which it may be made or all the modes of its use, what I claim, and desire to secure by Letters Patent, is—

1. A vise comprising a movable jaw, a shank connected therewith and provided with two sets of ratchet members, a toggle-arm provided with means to engage one set of ratchet members to move said jaw, and retaining means for engaging the other set of ratchet members to hold said jaw, the toggle being arranged to operate independently of the retaining means.

2. A vise comprising a movable jaw provided with a shank having a set of ratchet-teeth, two companion pawls having complementary teeth arranged to engage said ratchet, the teeth of one pawl being arranged in advance of the other, as described, and means for moving said shank arranged to disengage said pawls, or to move said shank without engaging said pawls.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN DENNIS.

Witnesses:
A. D. HARRISON,
H. L. ROBBINS.