

(No Model.)

G. A. McKENZIE.
VISE.

No. 587,749.

Patented Aug. 10, 1897.

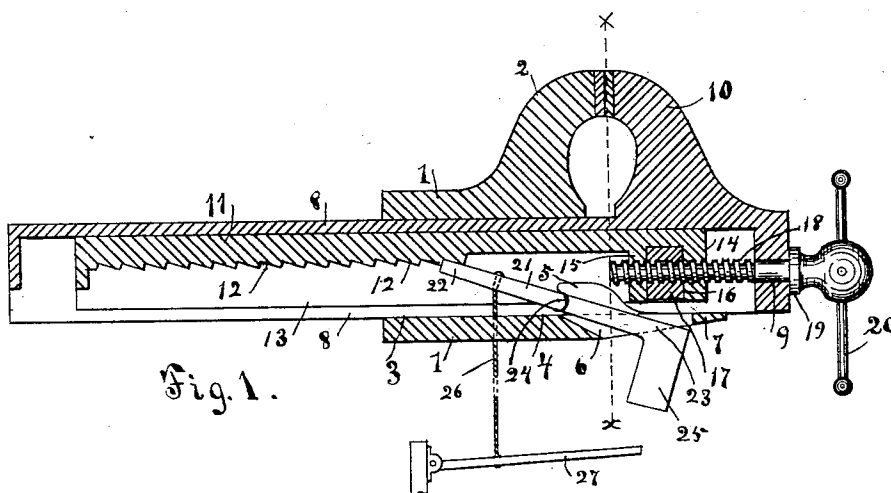


Fig. 1.

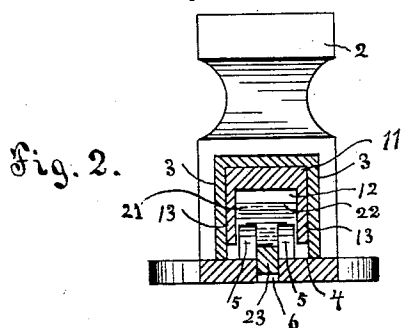


Fig. 2.

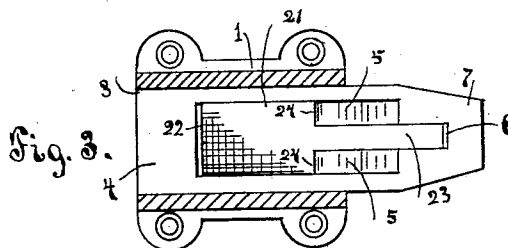


Fig. 3.

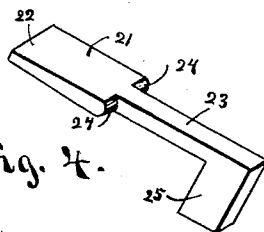


Fig. 4.

Attest:

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UNITED STATES PATENT OFFICE.

GEORGE A. MCKENZIE, OF WEST BAY CITY, MICHIGAN, ASSIGNOR TO S. L. GARLAND, OF BAY CITY, MICHIGAN.

WISE.

SPECIFICATION forming part of Letters Patent No. 587,749, dated August 10, 1897.

Application filed February 19, 1897. Serial No. 624,203. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. MCKENZIE, a citizen of the United States, residing at West Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Vises, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

10 This invention relates to improvements in vises, and pertains particularly to that class of vises in which a pawl and ratchet is used for determining the location of the movable jaw and with a screw as a means for loosening or tightening the jaws of the vise upon the work.

My invention consists, mainly, in the peculiar construction and arrangement of the parts and in the combination and the operation of the same, as I will hereinafter proceed to explain in detail, and which will also be fully set forth in the claims of this specification.

25 The object I desire to attain by my invention is, primarily, to arrange and construct a vise for general use, so that a cheaply-manufactured and reliable implement can be produced which at the same time will be of quick action and easily manipulated.

30 Another object of the invention is to so construct and arrange a vise of the class before mentioned that the strain on the ratchet and pawl is exerted in a direct line with the axis of the clamping-screw, whereby the strain on the holding parts is lessened and the strain on the supporting-arm, when the jaws are closed heavily upon the work, is exerted in a plane with the axis of the clamping-screw, whereby all uneven strain and clamping action on the ratchet-and-pawl mechanism is avoided.

45 I attain these objects by means of the devices and contrivances illustrated in the accompanying drawings, in which the same figures of reference will be found designating the same elements or parts throughout the several views.

Figure 1 is a longitudinal vertical section

of a vise embodying my improvements. Fig. 2 is a transverse vertical section of the same, 50 taken at X X. Fig. 3 is a horizontal sectional view of the base portion of the vise and showing the manner of supporting the pawl in position. Fig. 4 is a view of the pawl detached.

1 is the body or base portion of the vise, 55 which rests upon a bench or other suitable support, to which it may be secured in any convenient manner. The upper portion of this body 1 is provided with a stationary jaw 2, and through the body portion is provided 60 an opening 3, of rectangular or any desired form, and extending from front to rear. Within this opening and near the front portion of the bottom 4 thereof is arranged the upwardly-projecting supports 5, and between 65 these supports is provided a slot 6, which extends into an outwardly-projecting portion 7, which is a continuation of the base of the body portion 1.

Fitted to pass easily through the opening 70 3 is the arm 8, which is hollow and arranged with an open lower side, while the outer or front end of the arm is closed and provided with a centrally-located opening 9, while extending upwardly from the outer end of this arm is the outer or movable jaw 10, which is 75 arranged to oppose the rigid jaw 2.

Within the hollow arm 8 is placed the ratchet-piece 11, which entirely fills the space within the arm transversely and extends 80 nearly its entire length, and upon the under side of the rear portion of this piece is provided a series of ratchet-teeth 12, while the outer end portion of the ratchet-piece is provided on its under side with the longitudinal 85 flanges 13, which also extend along the lateral edges of the ratchet-teeth, and with a closed outer end 14, and with a transverse flange 15, which forms a chamber 16 between the flanges, and into this chamber is placed the 90 nut 17.

18 is a clamping-screw which is provided on its outer end with a suitable head having a shoulder 19 and a lever 20 with which to turn the screw, and the inner threaded portion of the screw is passed through the open- 95

ing 9 in the outer end of the arm and through the flanges 14 and 15, together with the nut 17, which is located between the flanges and which, as the screw is revolved, serves to impart to the ratchet-bar 11 a longitudinal movement within the hollow arm 8 either outwardly or inwardly, as desired.

Within the opening 3 is placed a pawl-piece 21 with its inner end 22 arranged for engagement with the ratchet-teeth 12, and this inner end portion is of a width to extend entirely across the ratchet-bar between the flanges 13, while the outer end portion 23 thereof is narrowed from the middle portion outwardly, forming shoulders 24 on each side of its middle portion, which rest against the inner edges of the projecting supports 5, while the outer portion 23 is provided with a weighted portion 25, which, turning downwardly, is passed through the opening or slot 6, so that the weight of the end 25 serves to lift the inner end of the pawl into engagement with the ratchet-teeth and also serves as a projecting handle which, when lifted, operates to release the pawl from engagement with the ratchet-teeth, the supports 5 acting as a pivot to allow the pawl to oscillate thereon, and if desired a wire or string 26 may be attached to the pawl by one end while the opposite end is secured to a foot-lever 27, which can be operated by the foot for depressing the pawl, so as to leave the hands of the operator free for holding the work between the extended jaws and for turning the screw for clamping the work in position.

When the pawl is disengaged from the ratchet-teeth, the outer jaw, together with the arm, the screw, and the ratchet-piece with the nut carried thereby may be moved outwardly to any desired position for placing large work between the jaws, and the pawl then being released at once engages with the ratchet-tooth at its end, and the screw can then be turned for tightening the jaws upon the work in the same manner as with an ordinary vise, and as the ratchet devices allow the jaws to be adjusted to close proximity to the work only one or two turns of the screw is required to firmly clamp the work in position. When it is desired to move the outer jaw inwardly to reduce the space between the jaws for clamping smaller work, the arm with the outer jaw is pushed inwardly and the pawl then slides over the teeth until the desired position is reached and the pawl again engages the adjacent tooth, and then the screw can again be turned for clamping the work, and thus the necessity of turning the screw a great number of times for adjusting the jaws for a great distance is entirely avoided and valuable time is gained in the manipulation of the vise.

It will be observed that by arranging the ratchet-bar within the hollow arm and providing for a movement of the hollow arm in-

dependent of the ratchet-bar provides an arrangement of the parts which permits the screw connection to be made with the outer end of the ratchet-bar and allows the clamping-screw to be shortened to about one-third of the length of the usual clamping-screw, and also allows the remaining parts of the vise to be made by casting and without machine-finishing, so that the only parts of the vise requiring fine machine-work are the short screw and the nut, whereby the cost of manufacturing a first-class vise, which can be used instead of the ordinary vise, is reduced to a minimum and an implement is furnished which has a more rapid means of manipulation than the ordinary vise.

Of course I do not claim the pawl-and-ratchet combination in a vise of themselves, as these elements are known to be in use, but by the arrangement and construction of the movable ratchet-piece within the hollow arm and the short clamping-screw, together with other parts and contrivances which I have hereinbefore described, the pawl and ratchet is rendered capable of producing the result sought, and a quick and easily adjusted implement is produced, which can be manufactured at a less cost than the ordinary vise having a slow adjustment of the jaws with the screw alone.

Having described the construction and operation of my improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a vise the combination of the body portion having a stationary jaw and provided with a horizontal opening extending through the body from front to rear, and provided on its bottom side with upwardly-projecting supports, a pawl-piece provided with laterally-projecting shoulders for engaging with the inner sides of said supports, a ratchet-piece having teeth for engaging with the inner end of said pawl, and provided on its outer end with a threaded nut, a hollow supporting-arm passed over said ratchet-piece and through said opening and provided on its outer end with a jaw for opposing said stationary jaw, and a clamping-screw having its inner threaded end passed through the outer end of said hollow arm and into said nut on the ratchet-bar, substantially as set forth.

2. In a vise the combination of the body portion provided with a stationary jaw, and having an opening extending from front to rear through the body and provided on the bottom side of said opening with upwardly-projecting supports, and with a slot between said supports, a pawl-piece having a reduced outer portion passed through said slot and provided on the lateral sides of its middle portion with shoulders resting against the inner edges of said supports, a hollow arm passed through said opening and carrying on its outer end a movable jaw for opposing said

stationary jaw, with a ratchet-bar within said
hollow arm and provided on its inner portion
with ratchet-teeth for engagement with said
pawl, and having on its outer end a nut, and
5 a clamping-screw passed through the outer
portion of said hollow arm and into said nut
on the ratchet-bar, substantially as set forth.

In testimony whereof I hereunto affix my
signature in presence of two witnesses.

GEORGE A. MCKENZIE.

Witnesses:

GEO. P. THOMAS,
JAS. E. THOMAS.