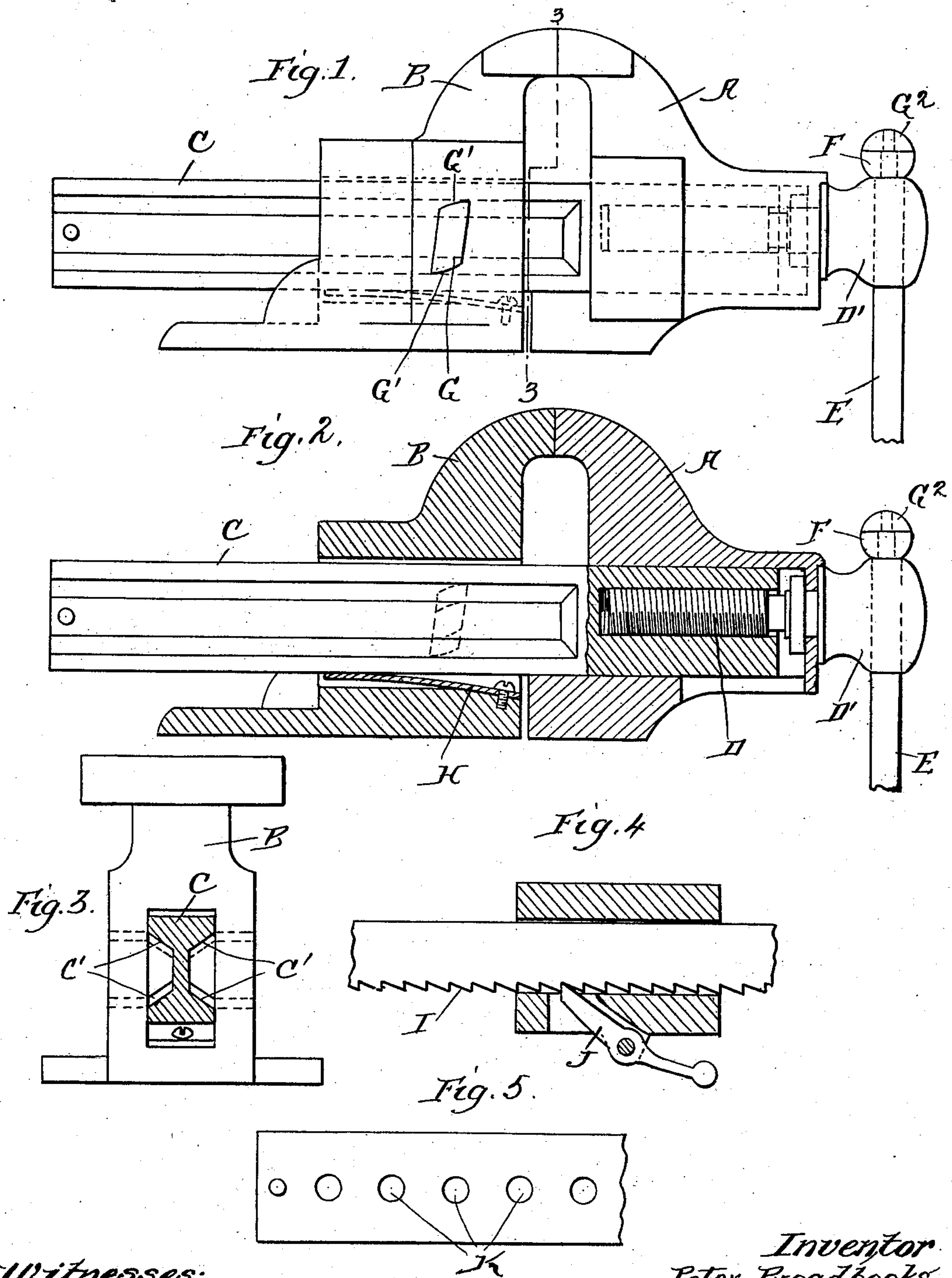


No. 763,087.

PATENTED JUNE 21, 1904.

P. BROADBOOKS.
ADJUSTABLE BENCH VISE.
APPLICATION FILED JUNE 30, 1903.

NO MODEL.



Witnesses:

Louis D. Heinrichs
L. A. Morrison

Inventor
Peter Broadbooks.

By

W. J. Williams
Atty.

UNITED STATES PATENT OFFICE.

PETER BROADBOOKS, OF BATAVIA, NEW YORK.

ADJUSTABLE BENCH-VISE.

SPECIFICATION forming part of Letters Patent No. 763,087, dated June 21, 1904.

Application filed June 30, 1903. Serial No. 163,820. (No model.)

To all whom it may concern:

Be it known that I, PETER BROADBOOKS, a citizen of the United States, residing at Batavia, county of Genesee, and State of New York, have invented a certain new and useful Improvement in Adjustable Bench - Vises, of which the following is a specification.

My invention relates to a new and useful improvement in adjustable bench-vises, and has for its object to provide a vise which will have a greater radius of adjustment than that afforded by the screw.

A further object is to provide a vise in which the jaws can be instantly, conveniently, and easily adjusted to the work, which shall be simple in adjustment and construction and strong in all its parts and having a powerful positive grip at any point of its opening to its fullest capacity.

Another advantage of the vise is to provide a hand-lever for the screw which shall be noiseless in operation and harmless to the operator's hands.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my vise with all the parts assembled; Fig. 2, a longitudinal section of the same; Fig. 3, a section on the line 3 3 of Fig. 1; Fig. 4, a modified form of construction, showing a ratchet-clutch instead of a friction-clutch; Fig. 5, a detail side elevation of a portion of the shaft, showing holes formed therein, through which pins may be inserted instead of the other forms of clutches.

A represents the forward or movable jaw of the vise, and B is the rear or fixed jaw of the vise, which is secured to the work-bench or any other support by means of screws or bolts.

C is the shaft of the vise, which extends through the fixed jaw B and into the mov-

able jaw A. A screw D is threaded into the forward end of the shaft, and this screw is swiveled in the ordinary manner in the movable jaw A. The head D' of the screw extends forward from the jaw A, and through this head extends the hand-lever E, which is provided with knobs upon either end to prevent the same from being removed from the head D'.

In the ordinary construction of vises the knobs upon the ends of the hand-levers are of metal and cause considerable noise when the same drop upon the head of the screw and also are liable to cause injury to the hands of the operator.

In my improved vise a hemisphere of rubber, as represented at F, is slipped upon the shouldered end of the lever E, and then a cap or nut in the form of a hemisphere is screwed onto the outer end of the lever, as represented at G², to hold the rubber buffer F in place. Thus the hand-lever in falling will bring the rubber buffer in contact with the head of the screw and prevent unnecessary noise and injury to the hands of the operator.

In Figs. 1, 2, and 3 I have shown the shaft C journaled upon each side, the channeled portion having beveled walls C' secured to the fixed jaw B and extending inward into the channel of the shaft C. Upon each side are studs G, which are adapted to clutch the shaft C. These studs G are beveled or rounded upon their upper and lower edges, as represented at G', and secured to the jaw B below the shaft is a spring H, the front end of which bears upon the under side of the shaft C behind the studs G, so as to tilt the same upward and cause the edges of the studs G to bite into the shaft and prevent any forward movement of the shaft relative to the fixed jaw B. In this manner a friction-clutch is provided, whereby the shaft C can be easily pushed backward; but to pull the same forward it is necessary to raise the forward end of the shaft by pulling upon the hand-lever E, and then the shaft may be slid forward as far as desired. Thus in operation the screw D can be used for all ordinary size work; but when it is desired to clamp larger work all that is necessary is to raise upward upon the

forward end of the shaft and pull the same forward, and any range or adjustment can be secured, only limited by the length of the shaft.

Of course I do not wish to be limited to any
 5 form of clutch for clutching the shaft C; as a
 ratchet I could be provided upon the side of
 the shaft, as shown in Fig. 4, and a pawl J
 engage the ratchet, which pawl could be dis-
 10 engaged when it is desired to adjust the shaft,
 or the shaft could be provided with a num-
 ber of lateral holes K and a pin inserted
 through the fixed jaw B and through one of the
 holes K to secure the shaft in place, or instead
 of a stud G upon each side of the shaft only
 15 one stud could be used, if so desired. Notice
 is also called to the improvement in the shape
 of the jaws, as by having the neck of the jaws
 shaped with square corners at right angles,
 as shown in Figs. 1, 2, and 3, it will be seen
 20 that work having right angles may be placed
 nearer to the center of the jaws more con-
 veniently than in the vise having rounded
 corners, and the work being placed near to
 the center will not strain the jaws sidewise
 25 as much as in the case of a round-neck vise.

The shaft in my vise is made of suitable
 steel for the purpose and is absolutely un-
 breakable under any strain which may be
 brought to bear upon it while in use. Said
 30 shaft being narrower than a slide in ordinary
 cast vises will allow the work to be placed
 nearer the center of the jaw and will allow
 work to straddle said shaft more freely on
 account of its narrowness, which is of con-
 siderable importance. Straddling the shaft
 35 with the heel end of horseshoes by black-
 smiths or forked work by machinists is a great
 convenience, which cannot be accomplished
 as well on an ordinary cast vise on account of
 40 the great width required for the room for the
 screw and also to gain strength, as the weak-
 est point of all cast vises is in the front end
 of the slide.

By having the front jaw, as in my im-
 45 proved vise, slidable upon the shaft and also
 capable of being manipulated with a screw
 and by having the shaft slidable in the rear
 jaw makes it by far the most convenient and
 quick-adjusting vise ever produced. The screw
 50 being located at the upper edge of the shaft
 brings the fulcrum nearer to the jaws. Conse-
 quently it has more power at the jaws than
 any other vise having concealed or shielded
 screw. The screw being short will stand
 55 more twisting strain than if made of great
 length, as is necessary in other vises. There-
 fore the screw in my vise can be made of less
 diameter and yet be stronger and more effec-
 tive than a long screw and is much less ex-
 60 pensive to make. The extension and projec-
 tion upon the lower extremity of the front
 jaw provides greater bearing-surface to its
 slideway, and the opening shown on the bot-
 tom side of said front jaw will provide tool
 65 room through which to fasten the loose col-

lar upon the shank of the vise-screw, which
 is located at the inner side and at the end of
 the movable jaw and which causes the return
 movement of said jaw. It is obvious that an
 eccentric or other means beside a screw may 70
 be attached to the shaft and swiveled to a
 movable jaw for removing the movable jaw
 relative to the shaft, and I do not wish to be
 limited to the exact construction here shown,
 as slight modifications could be made without 75
 departing from the spirit of my invention.

Having thus fully described my invention,
 what I claim as new and useful is—

1. In a vise, a fixed jaw, a movable jaw, a
 shaft extending through the fixed jaw and 80
 into the movable jaw, and slidable in both, a
 screw or other means attached to the end of
 the shaft and swiveled to the movable jaw
 for moving the movable jaw relative to the
 shaft, a friction-clutch adapted to be secured 85
 to the fixed jaw and adapted to engage the
 shaft so as to allow for the backward move-
 ment of the shaft relative to the fixed jaw to
 prevent any forward movement of the same
 unless the forward end of the shaft is raised, 90
 and a spring adapted to set the rearward end
 of the shaft upward and cause the clutch to
 engage the shaft, as specified.

2. In a vise of the character described, a
 screw for moving the movable jaw, a head 95
 formed upon the screw, a hand-lever slidable
 through said head, knobs formed upon each
 end of the hand-lever, each of said knobs con-
 sisting of a hemisphere of rubber and a hemi-
 sphere of metal, the rubber being placed upon 100
 the ends of the hand-lever next to the head of
 the screw, and the metal being threaded upon
 the extreme end of the hand-lever to hold the
 rubber hemisphere in place, as and for the
 purpose specified. 105

3. In a vise, a fixed jaw, a movable jaw, a
 shaft extending through the fixed jaw and
 into the movable jaw and slidable in both, a
 screw attached to the end of the shaft and
 swiveled to the movable jaw for moving the 110
 movable jaw relative to the shaft, said shaft
 being provided with a longitudinal channel
 portion having beveled walls, studs secured
 to the fixed jaw and extending into the chan-
 nel of the shaft, said studs beveled or rounded 115
 upon their upper and lower edges, a spring
 secured to the fixed jaw, the free end of the
 spring bearing against the under side of the
 shaft behind the studs so as to tilt the shaft
 upward and cause the edges of the studs to 120
 bite into the shaft and prevent inward move-
 ment of the shaft relative to the fixed jaw, as
 and for the purpose specified.

In testimony whereof I have hereunto affixed
 my signature in the presence of two subscrib- 125
 ing witnesses.

PETER BROADBOOKS.

Witnesses:

F. L. HAYS,

GRACE MOWER.