(No Model.)

2 Sheets—Sheet 1.

W. ILBERY.

VISE.

No. 486,228. Patented Nov. 15, 1892.

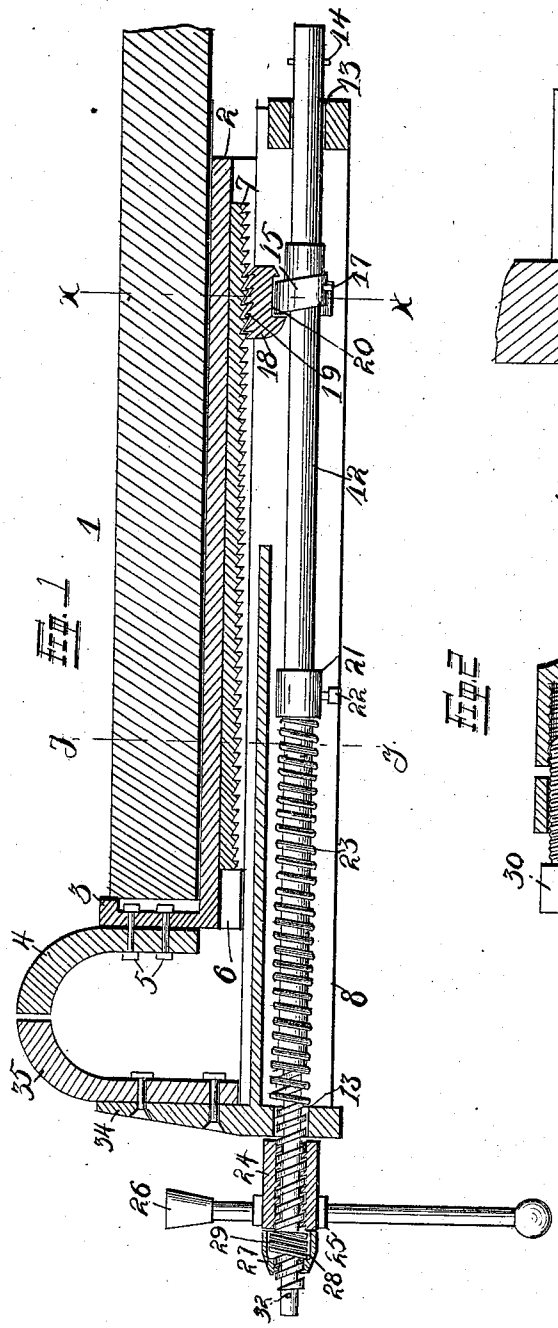

Fig. 1

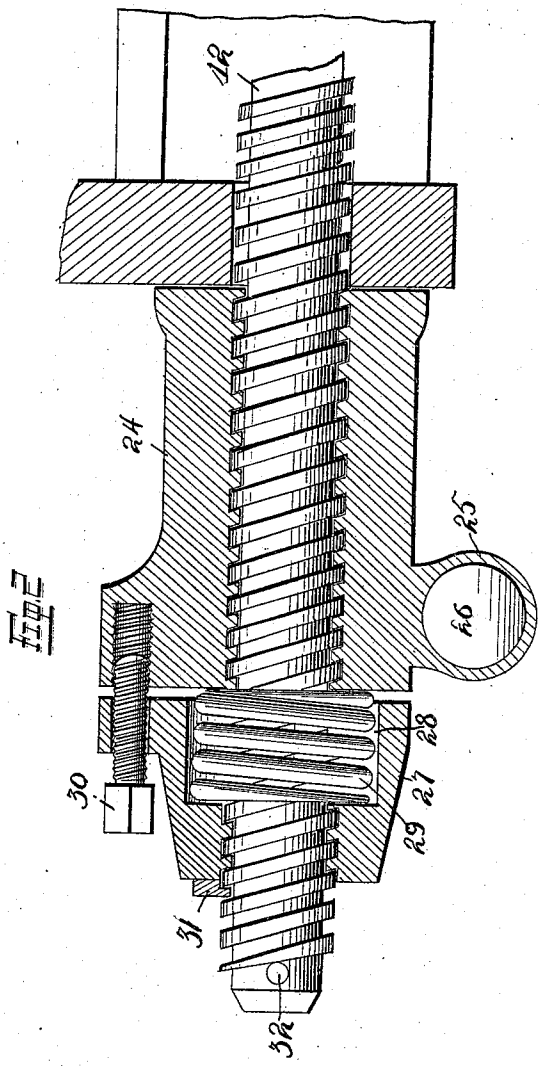

Fig. 2

Witnesses
A. A. Eickg
C. F. Keller.

Inventor
William Ilbery
By his Attorneys
Higdon Higdon & Hogan

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

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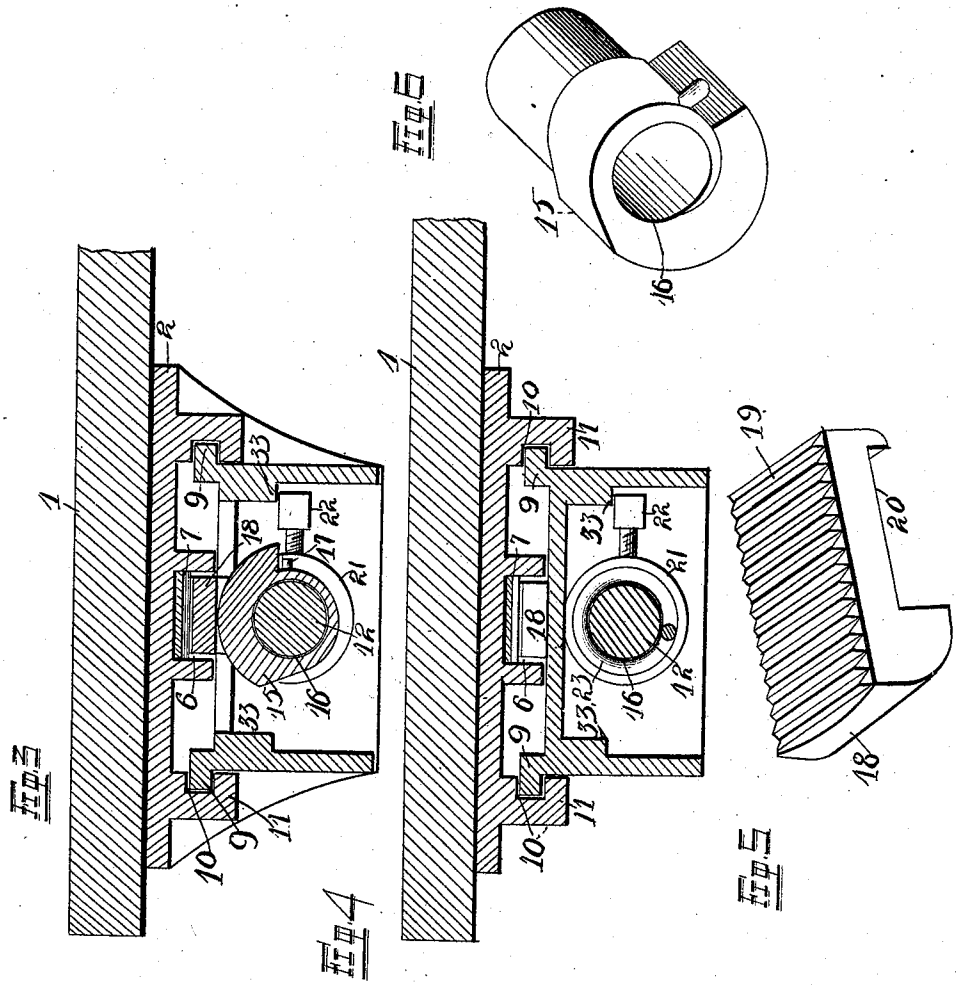

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By his Attorneys
Higdon & Higdon & Lingan

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

UNITED STATES PATENT OFFICE.

WILLIAM ILBERY, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO FREDERICK BRESSLER, OF SAME PLACE.

VISE.

SPECIFICATION forming part of Letters Patent No. 486,228, dated November 15, 1892.

Application filed March 21, 1892. Serial No. 425,769. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ILBERY, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Vises, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in vises; and it consists in the novel arrangement and combination of parts, as will be more fully hereinafter described, and designated in the claims.

In the drawings, Figure 1 is a longitudinal section of my complete invention. Fig. 2 is a longitudinal section of the front end of the vise somewhat enlarged. Fig. 3 is an enlarged transverse section taken on the line *x x* of Fig. 1. Fig. 4 is an enlarged transverse section taken on a line *y y* at Fig. 1. Fig. 5 is a perspective view of the ratchet-tooth block detached from the device, and Fig. 6 is a perspective view of the cam which I employ in carrying out my invention.

The object of my invention is to construct a device that can be quickly adjusted and clamped upon the work to be operated upon, which device, in order to accomplish said results, must necessarily be susceptible of two operations—namely, one a sliding motion in a longitudinal direction and the other a rotary motion.

Referring to the drawings, 1 represents a table or stand to which my invention is applied and attached thereto in any desirable manner, as best shown in Fig. 1.

2 represents the stationary part of the vise, which, as shown, is attached rigidly to the under surface of the table 1 by means of screws or bolts fastening through said stationary part and into said table. The said stationary portion 2 of the vise is of suitable length and formed integrally with said portion, and at its forward end is an upwardly-projecting extension 3, to which a clamping-jaw 4 is attached in any suitable manner, but preferably by screws or bolts 5 being passed through the said jaw and through the said extension 3.

6 represents a longitudinal groove which is formed in the under surface of the stationary part 2 of the vise, within which is located a rack-bar 7, which is rigidly attached to said portion 2 in any suitable manner.

8 represents the movable or sliding portion of the vise which carries the movable parts and is adapted to be locked and adjusted in a manner as hereinafter described. The movable portion 8 of the vise is provided with two projecting flanges 9, which are adapted to be received by suitable longitudinal grooves 10, formed in the depending portions 11 of the stationary part 2 of the vise, allowing the said movable portion 8 to be moved in a longitudinal direction.

12 represents a longitudinal operating-shaft which is loosely journaled in the ends of the movable portion 8 of the vise by being passed through suitable openings 13, formed in the same. The forward end of the said shaft is screw-threaded a suitable distance, upon which a collar is adapted to be located and turned in a manner hereinafter described. In order to prevent the said shaft from being withdrawn from the portion 8 of the vise, a pin 14 is passed through the rear end of said shaft and is adapted to come in contact with the rear end of the movable portion 8, as best shown in Fig. 1.

15 represents the cam, which is provided with a central bore 16, through which the longitudinal shaft 12 is passed and the said cam rigidly attached in a suitable position upon said shaft by means of a pin 17, passed through said cam and into said shaft, the construction of which is best shown in Fig. 6.

18 represents a block which is located between the cam 15 and the rack-bar 7, carried by the stationary part 2 of the vise, and is adapted to lock the portions 2 and 8 against movement when the said cam is turned in proper direction. Said block 18 is provided with ratchet-teeth 19, which teeth are adapted to mesh with the teeth formed on the rack-bar 7 when the said block is brought in contact therewith. Formed in the under surface or bottom of the block 8 is a groove 20, the width of which corresponds to the width of the cam 15, by which means the said block is held always in contact with the said cam in addition to the sides of the groove 6, as best shown in Fig. 3. When the cam 15 is in a position

the reverse of that shown in Fig. 3, the block 18 will be lowered and consequently released from contact with the rack-bar 7, allowing the movable portion 8 of the vise to be moved in either direction. When the cam 15 is in the position as shown in Fig. 3, or, in other words, the enlarged or widest portion brought in contact with the said block 18, the same will be elevated and the teeth 19, formed on said block, brought in contact with the teeth formed on the rack-bar 7, in which position the movable portion 8 will be locked, but allowed to be further adjusted by the mechanism, as hereinafter described. Encircling the said operating-shaft 12 is a collar 21, which is adjustable upon said shaft, but normally locked to the same by means of binding-screw 22. Interposed between said collar and the interior surface of the movable portion 8 of the vise and encircling the said longitudinal shaft 12 is a coiled spring 23, which is adapted to hold the several parts in their proper position.

24 represents a screw-threaded sleeve which is adapted to be screwed on the projecting end of the operating-shaft 12, which is turned after the previously-described adjustment is made, causing the jaw of the vise to be tightly brought in contact with the work to be operated. The said sleeve 24 is provided with an extension 25, which is provided with an opening through which an operating-bar 26 is passed and adapted to be moved in a manner well known.

27 represents a nut which is screwed on the projecting end of the operating-shaft 12 against the sleeve 24 and is provided with a socket 28, within which is located a coiled spring 29 and which encircles the said shaft. The said coiled spring 29 is interposed between the said sleeve and nut, thus forming frictional contact, preventing the sleeve 28 from being easily turned when the movable portion 8 of the vise is adjusted independent of the rotary portion, and further preventing the said sleeve from being turned when blows are applied to the work located or clamped between the clamping-jaws of the vise. In order to prevent the nut 27 from moving out of contact with the said sleeve, I use a screw 30, which loosely passes through said nut and is screwed into the sleeve 24, preventing the said nut from being turned independent of the said sleeve. In order to prevent the sleeve and nut from being turned off of the projecting screw-threaded end of the operating-shaft, I form with or attach to the said nut a lug 31, which is adapted to come in contact with a pin 32, which is located in the extreme or terminal end of the said operating-shaft, as best shown in Fig. 2.

Thus it will be seen from the foregoing description that the location of the spring 29 forms a very important element of the vise, and should the same be dispensed with the movable portion 8, when adjusted in a longitudinal direction and desired to be locked by a slight or partial rotation of the operating-shaft 12, and the said collar 24, having no frictional contact applied thereto, would partially turn or rotate, in which operation the movable portion 8 would be released from its locked position before further adjustment could be made.

In order to accomplish the desired results, it is necessary that the operating-shaft 12 should only be partially rotated, and in order to prevent the said shaft from being entirely rotated the binding-screw 22, carried by the collar 21, is of such a length as to come in contact with the solid portions 33 of the movable portion 8 of the vise, allowing the shaft to be only partially rotated.

When the operating-shaft 12 is in position, as shown in Fig. 4, the block 18 will be elevated by the enlarged portion of the cam 15; but when said shaft is turned in the opposite direction or the said binding-screw brought in contact with the opposite side of the carriage or movable part 8 of the vise the said block will be lowered and brought out of contact, or more properly allowing the said dog to fall out of its engaging position.

34 represents an upwardly-projecting extension which is formed with the said movable portion 8 of the vise, to which is attached a jaw 25 in any suitable manner and is moved to and from the jaw 4 in a manner well known.

Should it be desired to adjust the vise to the work desired to be operated upon, the operating-shaft 12 is turned in a reversed position to that shown in Fig. 3, allowing the block 18 to fall by its own gravity out of contact with the rack-bar 7, in which position the movable portion 8 of the said vise can be moved freely in a longitudinal direction. While the said shaft 12 is in said position the said movable portion 8 is moved against the work to be operated upon, and by turning the said shaft in the proper direction the enlarged portion of the cam 15 will be brought in contact with the block 18, elevating the same, in which operation the movable portion 8 of the vise will be partially locked against longitudinal movement, and by further turning the sleeve 24 the movable jaw 35 will be brought toward the stationary jaw 4.

When it is desired to release the jaws of the vise upon the work, the sleeve 24 is turned in the opposite direction, when a reverse action of the parts is effected.

Having fully described my invention, what I claim is—

A vise of the class described, consisting of a stationary frame 2, formed at its forward end with an extension 3, carrying a jaw 4, and with depending portions 11, provided with grooves 10, said frame 2 having a longitudinal groove 6 in its under face, within which is located a rack-bar 7, a movable frame 8, provided with outturned flanges 9, engaging the grooves 10, an operating-screw 12, loosely journaled in the ends of the frame 8 and provided at its rear end with a retaining-pin 14,

a cam 15, secured upon the screw, a toothed block 18, disposed between the rack-bar 7 and the cam 15 and provided with a groove 20 for the reception of the cam, an adjustable collar 21, disposed on the operating-screw, a coil-spring 23, encircling the screw and interposed between said collar and the inner face of the frame 8, a screw-threaded sleeve 24, mounted on the outer end of the operating-shaft and carrying an operating-bar 26, a nut 27, screwed on the projecting end of the operating-screw and provided with a socket, a coil-spring 29, disposed therein and encircling said screw 12, a screw 30, passed through the nut 27 and screwed into the sleeve 24, and a jaw 35, secured to an extension 34 of the frame 8, all arranged and adapted to operate substantially as and for the purpose set forth.

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

WILLIAM ILBERY.

Witnesses:
O. F. KELLER,
ALFRED A. EICKS.