

C. G. KAELIN.

WISE.

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1,288,612.

Patented Dec. 24, 1918.

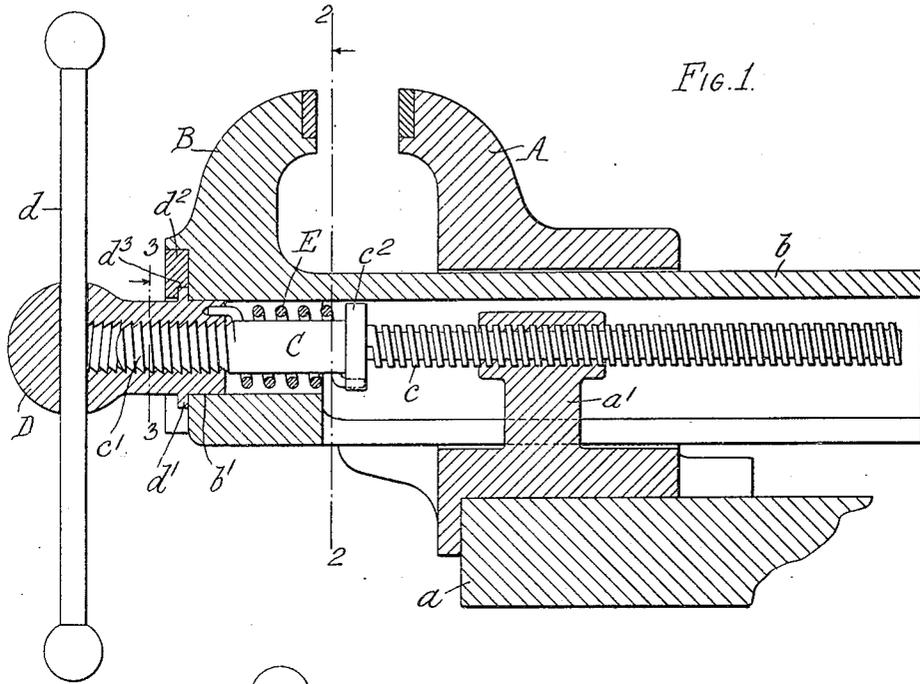


Fig. 1.

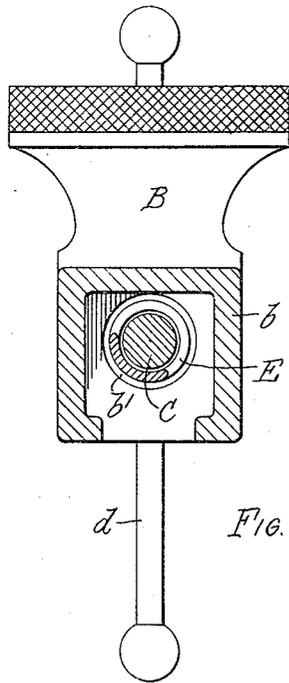


Fig. 2.

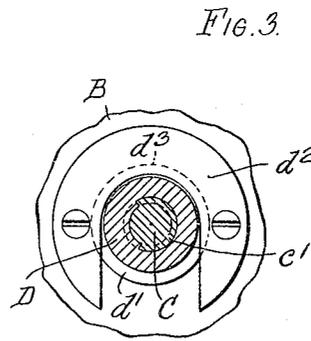


Fig. 3.

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UNITED STATES PATENT OFFICE.

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VICE.

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To all whom it may concern:

Be it known that I, CHARLES G. KAELIN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Vises, of which the following is a specification.

This invention relates to vises of the kind in which the movable jaw of the vise is brought into engagement with the objects to be clamped in the vise by a coarse or high pitched screw-threaded part and is then tightened in its holding position by means of a screw-threaded part of lower pitch.

The objects of the invention are to produce a vise of this kind of improved construction in which only one operation is required to clamp an article in the vise; also to produce a vise of this kind which is of simplified construction to reduce the cost of manufacture of the same; also to improve the construction of devices of this kind in other respects hereinafter specified.

In the accompanying drawings:

Figure 1 is a vertical central longitudinal section of a vise embodying the invention.

Fig. 2 is a transverse sectional elevation thereof on line 2—2, Fig. 1.

Fig. 3 is a fragmentary sectional elevation thereof on line 3—3, Fig. 1.

A represents the fixed or stationary jaw of a vise which is secured to a table or support *a*, and B represents the usual movable jaw having an extension *b* of substantially inverted U-shape cross-section which is slidable relatively to the fixed jaw A. The fixed jaw A is provided with the usual nut *a'* which extends upwardly into the U-shaped extension *b* of the movable jaw. All of these parts may be of any usual construction and of themselves constitute no part of this invention.

The nut *a'* is threaded to receive a correspondingly threaded portion *c* of a screw-threaded rod or spindle C, the threaded portion *c* being provided with a coarse thread for moving the movable jaw rapidly into or out of operative relation to the fixed jaw when the rod C is turned. The other end of the rod C is provided with a threaded portion *c'* having a relatively fine thread which engages with a correspondingly threaded portion in a clamping nut D, which is provided with the usual handle or rod *d* for turning the same. The nut D is operatively connected with the movable jaw B for mov-

ing the same toward and from the fixed jaw A. In the construction shown for that purpose the inner end of the nut is journaled in a hole *b'* formed in the movable jaw B and a collar or annular flange *d'* formed on the nut D bears against the front face of the movable jaw B and against a stop plate *d²* which is secured to the front face of the movable jaw and which has a recess *d³* for the annular flange *d'*. The nut D is thus free to turn but is held against endwise movement relatively to the movable jaw B.

The nut D is rotatable relatively to the rod C and is also yieldingly connected with the rod C so that the nut will transmit motion of rotation to the rod C when the rod is free to turn in the nut *a'*, and will turn relatively to the rod when the rod is held against movement. A spiral spring E is preferably provided for this purpose and is arranged about the rod C and has one end secured to the nut D and the other end secured on a collar *e²* of the rod C. The spring preferably extends into the hole *b'* in the movable member B where it is protected against injury and undue expansion.

When the nut D is rotated the movement of rotation is imparted through the spring E to the rod C for turning the rod relatively to the nut *a'* and thus bringing the movable jaw rapidly into operative relation to the fixed jaw A. When the jaw begins to contact with the object to be clamped, the coarse threaded portion *c* of the rod C binds in the nut *a'* so that on further turning of the clamping nut D, the nut will turn relatively to the threaded rod C, thus moving the jaw B into tight gripping engagement with the object to be held, by means of the additional leverage due to the relatively fine thread of the nut D. The turning of the clamping nut relatively to the threaded rod C causes a slight twisting of the spring E. When the clamping nut is turned in the reverse direction for releasing the object clamped between the jaws, the nut first turns relatively to the threaded rod, thus untwisting the spring E and releasing the pressure of the movable jaw against the object clamped so that the coarse threaded portion of the rod C is again free to turn relatively to the nut *a'*. By means of the structure recited, the vise can be rapidly operated to clamp an object, and the single operation of turning the clamping nut D serves the double purpose of rapidly bringing the mov-

able jaw into operative relation to the fixed jaw, and of tightly clamping the object by means of the increased leverage afforded by the fine thread of the nut D and portion *c'* of the rod C. The spring E forms a yielding but positive connection between the clamping nut and the threaded rod and also serves to take up any lost motion when parts of the device become worn or loose. The vise consists of comparatively few parts and is inexpensive to manufacture and efficient in operation.

I claim as my invention:

1. In a vise, the combination with a fixed part and a movable part slidable relatively to said fixed part, of a rod having relatively coarse-threaded and fine-threaded portions, the coarse-threaded portion engaging a correspondingly threaded portion of said fixed part, a nut engaging the fine-threaded portion of said rod and adapted to actuate said movable part, and a flexible connection between said rod and said nut.

2. In a vise, the combination with a fixed part and a movable part slidable relatively to said fixed part, of a rod having relatively coarse-threaded and fine-threaded portions, the coarse-threaded portion engaging a correspondingly threaded portion of said fixed part, a nut engaging the fine-threaded portion of said rod and adapted to actuate said movable part, and a spring connected at one end with said nut and at the other end with said rod.

3. In a vise, the combination with a fixed part and a movable part slidable relatively to said fixed part, of a rod having relatively coarse-threaded and fine-threaded portions, the coarse-threaded portion engaging a correspondingly threaded portion of said fixed part, a nut engaging the fine-threaded portion of said rod and journaled in said movable part, means for holding said nut

against movement lengthwise of said movable part, and a flexible connection between said rod and said nut.

4. In a vise, the combination with a fixed part and a movable part slidable relatively to said fixed part, of a rod having relatively coarse-threaded and fine-threaded portions, a nut journaled in said movable part and held against movement lengthwise thereof, said nut and said fixed part having threaded portions engaging with the threaded portions of said rod, and flexible means connected with said rod which cause the turning of said nut to move said movable part by means of the coarse-threaded portion when said parts exert no pressure relatively to each other and which are flexed to permit said nut to turn relatively to said rod for moving said movable part by means of said fine-threaded portion when said parts exert pressure relatively to each other.

5. In a vise, the combination with a fixed part and a movable part slidable relatively to said fixed part, of a rod having relatively coarse-threaded and fine-threaded portions, the coarse-threaded portion engaging a correspondingly threaded portion of said fixed part, a nut engaging the fine-threaded portion of said rod and journaled in a hole in said movable part, a spring extending into said hole and connected at one end with said nut and at the other end with said rod, and a part on said nut engaging with parts on said movable part for holding said nut against movement relatively to said movable part in the direction of the length of said nut.

Witness my hand, this 12th day of June, 1917.

CHARLES G. KAELIN.

Witnesses:

F. E. PROCHNOW,
A. L. MCGEE.