C. HAKES.

LEVER VISE.

APPLICATION FILED APR. 21, 1913.

**1,092,145.**

Patented Apr. 7, 1914.

Fig. 1

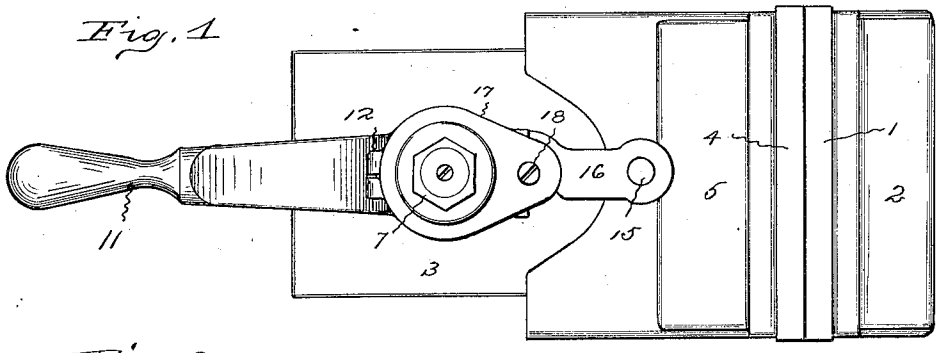


Fig. 2

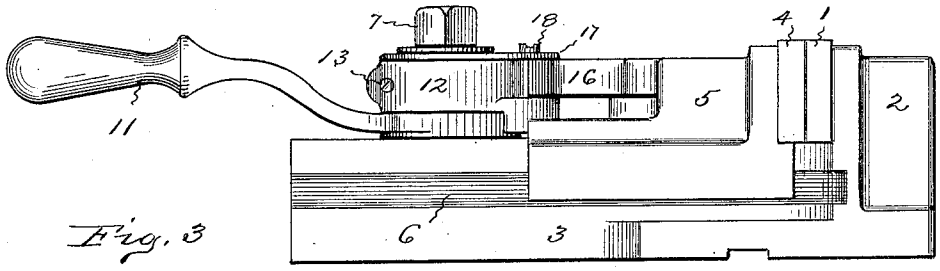


Fig. 3

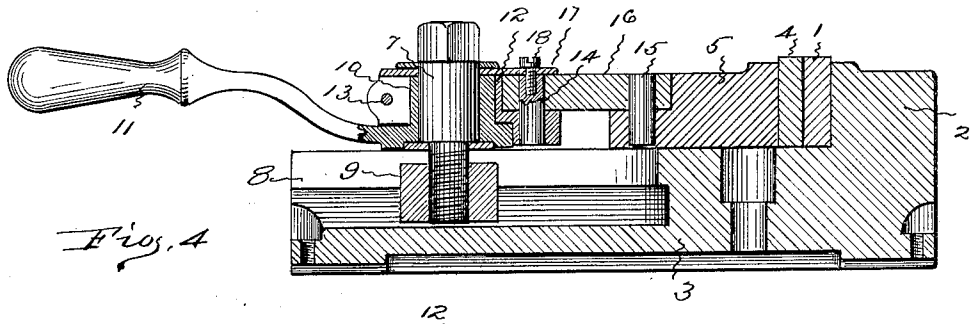


Fig. 4

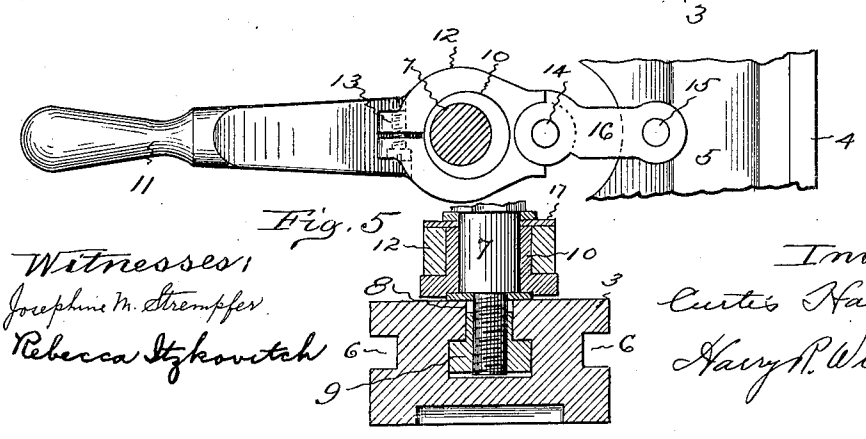


Fig. 5

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# UNITED STATES PATENT OFFICE.

CURTIS HAKES, OF WINSTED, CONNECTICUT, ASSIGNOR TO THE CARTER & HAKES MACHINE COMPANY, OF WINCHESTER, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## LEVER-VISE.

1,092,145. Specification of Letters Patent. Patented Apr. 7, 1914.

Application filed April 21, 1913. Serial No. 762,498.

*To all whom it may concern:*

Be it known that I, CURTIS HAKES, a citizen of the United States, residing at Winsted, in the county of Litchfield and State of Connecticut, have invented a new and useful Improvement in Lever-Vises, of which the following is a specification.

This invention relates to a vise which is designed to be attached to a milling, drilling or the like machine for receiving and holding pieces of stock to be operated upon, more especially when the operation of the tool is short and where there are a large number of similar pieces to be given the same cut. It is desirable in a vise of this character to have a fixed jaw, and a sliding jaw which will open and close quickly for the purpose of economizing time and widely so that the stock can be readily and safely placed between the jaws by the operative. It is essential that the sliding jaw be forced up tightly so as to securely hold the pieces of stock to be operated upon.

The object of this invention is to so construct a vise of this character that with simple motions of a handle the sliding jaw will be given long quick opening and closing movements and powerful short movements at the end of the long quick movements so that the stock will be gripped very firmly. To accomplish this end the sliding jaw is given its long quick motions by toggle links and its short powerful movements by a hand turned eccentric which is frictionally connected with one of the links and actuates the toggle, the friction between the parts being such that when the handle is first turned the eccentric causes the toggle to operate and move the sliding jaw and then when the resistance to the movement of the sliding jaw is sufficient to overcome the friction between the eccentric and the toggle, the eccentric will come into play and through the toggle move the sliding jaw farther.

Figure 1 of the accompanying drawings shows a plan of a quick and powerful operating lever stock-holding vise which embodies this invention. Fig. 2 shows a side view of the same. Fig. 3 shows a longitudinal section. Fig. 4 shows a plan of the hand lever, the eccentric, the toggle links and a portion of the sliding jaw. Fig. 5 shows a transverse section through the pivotal stud upon which is mounted the eccentric that is attached to the hand lever and the toggle link which is mounted upon the eccentric.

The fixed jaw plate 1 is attached in any suitable manner to the head 2 which projects upwardly from the bed 3. This bed is designed to be attached to the machine in the usual way. The sliding jaw plate 4 is attached to the sliding jaw head 5 in any suitable manner and this head is movable back and forth along the bed as usual being guided by portions which extend into the ways 6 in the sides of the bed.

The stud 7 is adjustably secured where desired along a slot 8 that is formed in the top of the bed, by a nut 9 into which the lower end of the stud screws. Turning on the stud is an eccentric 10 which is secured to or formed as the hub of the hand lever 11. Mounted on the eccentric is one end of the toggle link 12. The opening in this toggle link is made of such a size that it fits very closely or binds on the eccentric, although there may be movement between the eccentric and the link when the resistance to the movement of the link overcomes the friction between the eccentric and the link. For the purpose of regulating the friction the end of the link may be slitted and provided with a binding screw 13. Projecting upwardly from the front end of the toggle link that is mounted on the eccentric is a pin 14 and projecting upwardly from the sliding jaw head is a pin 15. The toggle link 16 is fitted on these pins. A plate 17 may be placed on the stud over the eccentric and toggle link for covering the parts. This plate may be held in position by a screw 18 which turns into the stud on the toggle link.

The pivot stud is moved to the desired location along the bed to give the sliding jaw the proper path of movement and then it is set by turning it tightly into the nut. When the handle is moved, as a result of the friction between the eccentric and the toggle link which is mounted thereon, the toggle links operate to impart to the sliding jaw a long quick movement. This enables the jaw to be opened widely and closed quickly. When the sliding jaw is almost closed and the resistance to its movement is sufficient to overcome the friction, the continued movement of the handle lever turns the eccentric and this causes the toggles to further set up

the sliding jaw so that the piece of stock to be operated upon will be very securely gripped between the jaws. After the stock has been operated upon, the reverse movement of the handle first, through the toggles draws back the sliding jaw and then through the eccentric opens it farther. The friction between the toggle link and the eccentric is so adjusted that the normal movements of the sliding jaw are given by the toggle, and when the resistance to those normal movements is sufficient to overcome the friction, the eccentric turns in the link and completes the movement.

With this construction the sliding jaw is opened widely and closed quickly by the toggle and then the work is gripped powerfully as a result of the movement of the eccentric which actuates the toggle.

The invention claimed is:

1. A lever vise having a fixed jaw, a jaw movable toward and from the fixed jaw, an eccentric, a handle for turning the eccentric, and a pair of jointed toggle levers the outer end of one toggle lever being connected with the movable jaw and the outer end of the other toggle lever being connected with the eccentric.

2. A lever vise having a fixed jaw, a jaw movable toward and from the fixed jaw, an eccentric, a handle for turning the eccentric, and a pair of jointed toggle levers the outer end of one toggle lever being connected with the movable jaw, and the outer end of the other toggle lever being mounted on the eccentric, and means for adjusting the friction between the eccentric and the end of the toggle lever mounted thereon.

3. A lever vise having a fixed jaw, a jaw movable toward and from the fixed jaw, a pivot stud, an eccentric mounted on said stud, a handle for turning the eccentric, and a pair of jointed toggle levers, the outer end of one toggle lever being connected with the movable jaw and the outer end of the other toggle lever being connected with the eccentric.

4. A lever vise having a fixed jaw, a jaw movable toward and from the fixed jaw, an eccentric, a handle for turning the eccentric, and a pair of jointed toggle levers, the outer ends of said levers being connected respectively with the movable jaw and the eccentric whereby the movement of the movable jaw is equal to the sum of the pitch of the eccentric and the throw of the toggle.

5. A lever vise having a fixed jaw, a sliding jaw, a toggle link connected with the sliding jaw, a fixed pivot stud, an eccentric mounted on said stud, a toggle link frictionally mounted on said eccentric and jointed to the toggle link that is connected with the sliding jaw, means for adjusting the friction between the eccentric and the toggle link mounted on the eccentric, and a handle for turning the eccentric.

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