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1,626,197

E. S. HUTTON

LOCKING MECHANISM

Filed March 25, 1926

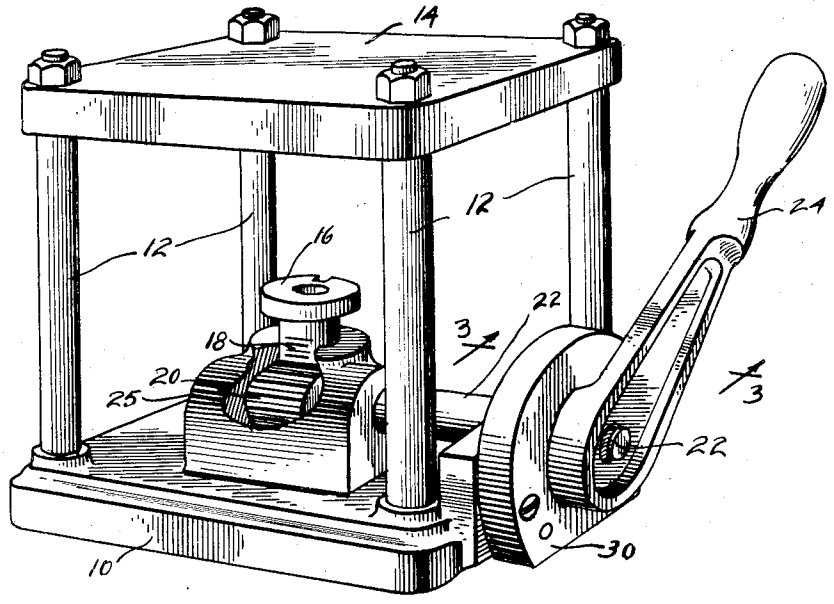


Fig. 1.

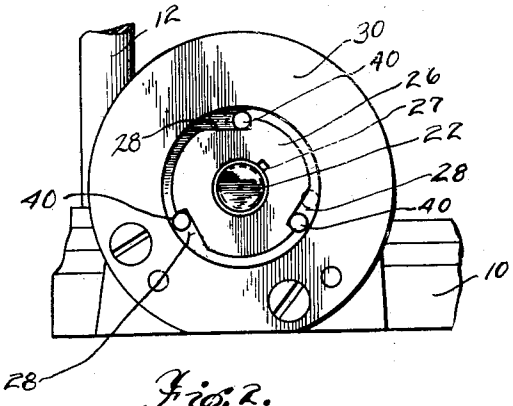


Fig. 2.

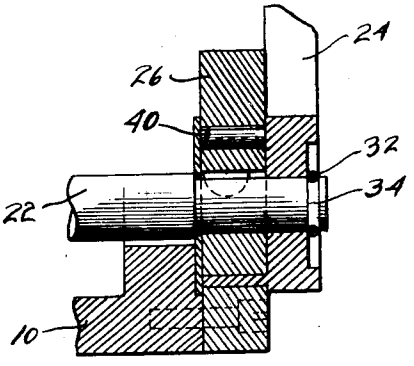


Fig. 3.

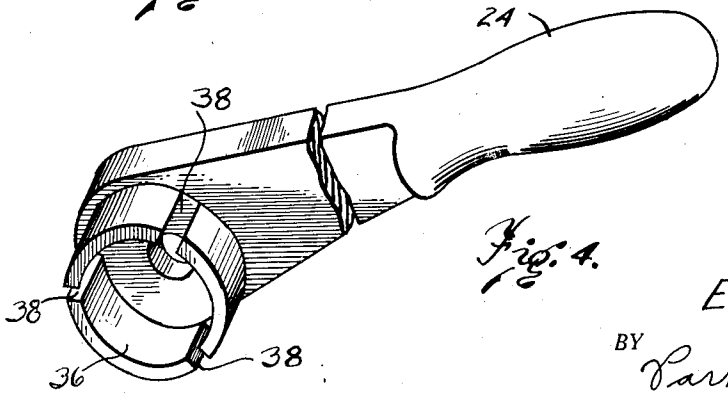


Fig. 4.

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UNITED STATES PATENT OFFICE.

EARL S. HUTTON, OF DETROIT, MICHIGAN.

LOCKING MECHANISM.

Application filed March 25, 1926. Serial No. 97,479.

My invention relates to improvements in locking mechanism particularly designed for work holders and other similar devices.

The object of my invention is to provide a simple, durable locking device adapted to hold a piece of work securely in position for the performance of a work operation thereon, which device automatically locks upon grippingly engaging the work to retain the work in place and may be quickly released to permit removal of the work. My improved device comprises a minimum number of durable, efficiently operating parts, the working mechanism is entirely concealed and protected, and it serves the purpose for which it is intended in a highly satisfactory manner.

Other objects and advantages of my invention will more fully appear from the following specification, appended claims and accompanying drawings, in which:

Figure 1 is a perspective of a work holder of conventional type provided with my improvement.

Fig. 2 is a fragmentary elevation broken away and partly disassembled of my locking mechanism.

Fig. 3 is a fragmentary sectional view taken on line 3—3, Fig. 1.

Fig. 4 is a perspective of an operating crank likewise broken away.

I have illustrated in my invention a work holder the form of which is well known and in which the base is indicated as 10, and 14 indicates a top plate supported above the base by uprights 12 one at each corner of the base. There is a movable work supporting member or a jaw 16, the shank of which is provided with a rack 18 that is in mesh with the pinion 20 mounted upon a rotatable shaft 22, which shaft is actuated by a crank 24 to raise and lower the member 16 with relation to the top plate 14. The shaft 22 has a bearing in the housing 25.

I provide coupling mechanism which connects the crank 24 with the shaft 22 whereby the shaft is locked to the crank to be rotated by the swinging movement thereof but which mechanism is so constructed that a reverse impulse of rotation applied from the shaft to the crank locks the shaft against rotation.

The disk 26 is fixed to the shaft 22. I have here shown the disk as fastened thereto by a key 27. This disk is cut away or notched on its periphery as at 28. Three such notches are shown in Fig. 2. A casing 30 is secured to the base and extends about the disk. The shaft 22 projects through and beyond the disk and casing. The crank 24 is mounted upon the projecting end of the shaft and may be secured thereon by a locking spring 32 disposed within the groove 34 of the shaft. The crank is freely rotatable upon the shaft except for the locking means hereinafter described.

The crank closes the open side of the casing and abuts the disk. The head of the crank is provided with an annular flange 36 which encircles the disk within the casing. This flange is slotted as at 38, three such slots being shown in Fig. 4. These slots are so located as to register with the notches 28 in the disk.

Rollers 40 are provided, which rollers are disposed freely within the notches 28 and the slots 38 and serve to lock the disk to the crank to rotate therewith to impart an impulse of rotation to the shaft to raise and lower the jaw 16.

In the construction shown in the drawing if the crank is swung in a counterclockwise direction the shaft would be rotated to raise the work holder 16 through the operation of the pinion and rack to grip a piece of work between such work holder 16 and the top plate 14. As the work is gripped in place the continuation of the impulse of rotation wedges the pins 40 against the casing 30 and a reverse impulse of rotation applied from the shaft to the disk to the crank wedges such pins more tightly between the casing and the disk and locks the shaft against rotatable movement which would loosen the grip upon the work. When it is desired to remove the work it is only necessary to apply pressure to the crank to swing the same in a clockwise direction which will loosen the mechanism and permit removal of the work.

It will be seen that the entire operating mechanism comprises a minimum number of durable parts entirely concealed and protected and that the whole device is exceedingly compact in arrangement and easily operable.

What I claim is:

1. In a work holder, a movable work support, a rotatable shaft to actuate the same, a disk fixed to the shaft, a casing about the disk, said disk having a recess adjacent to said casing, a crank on the shaft, said crank

having an annular portion extending between the disk and the casing, said annular portion of the crank having a recess corresponding with the recess in the disk, and a rotatable pin disposed within the recess of the disk and the recess in the annular portion of the crank to lock the disk to the crank for rotation therewith and adapted to be wedged between the disk and the casing to prevent reverse rotation of the disk by an impulse of rotation applied thereto from the shaft.

2. In a work support, a movable work holder, a rotatable shaft to actuate the same, a disk on the shaft, a casing about the disk, a crank on the shaft having a portion extending between the disk and the casing, a part coupling said portion of the crank and disk together for rotation of the shaft upon swinging movement of the crank, said part adapted to be wedged between the casing and the disk upon an impulse of rotation applied from the shaft to the disk.

3. In locking mechanism, a rotatable shaft, a disk fixed to the shaft, a casing about the disk, said disk provided with a notch adjacent to the casing, a crank on the shaft, said crank having a part extending between the disk and the casing and provided with a slot in proximity to the notch in the disk, a locking member located within said slot and notch to lock the disk to the crank to rotate therewith, said locking member adapted to be wedged between the disk and the casing to lock the shaft against rotation upon an impulse of rotation applied from the shaft to the disk.

4. In locking mechanism, a rotatable shaft, a disk fixed to the shaft, a casing about the disk, said disk provided with a plurality of spaced-apart notches adjacent to the casing, a crank on the shaft having an annular flange between the disk and the casing, slots in said annular flange corresponding with the notches in the disk, locking members loosely mounted within said slots and notches to lock the disk to the shaft to rotate therewith, said locking members adapted to be wedged between the disk and the casing to lock the shaft against rotation upon an impulse of rotation applied from the shaft to the disk.

5. In locking mechanism, a rotatable shaft, a disk fixed to the shaft, a cup-shaped casing extending about the disk and open on one side, said disk provided with a peripheral notch adjacent to the casing, a crank mounted on the shaft abutting the disk and closing the open side of the casing, said crank having an annular flange extending about the disk wthin the casing, said flange provided with a slot registering with the notch in the disk, a roller freely disposed within the slot and notch to lock the disk to the crank to rotate therewith, said roller adapted upon an impulse of rotation applied from the disk thereto to be wedged between the disk and the casing to lock the shaft against rotation.

6. In locking mechanism, a rotatable shaft, a notched disk on the shaft, a casing about the disk, a crank on the shaft, said crank having an arcuate portion extending between the disk and the casing and provided with a slot registering with the notch in the disk, a locking member loosely mounted within said notch and slot adapted to be wedged against the casing to lock the shaft against rotation upon an impulse of rotation applied from the shaft to the disk.

In testimony whereof, I sign this specification.

EARL S. HUTTON.