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W. H. OTTO ET AL

CLAMP

Original Filed March 9, 1922

Fig. 1.

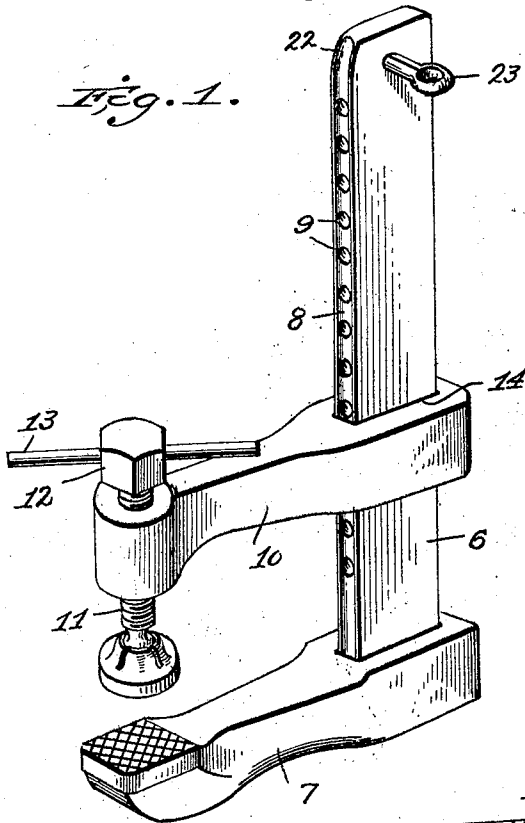


Fig. 2.

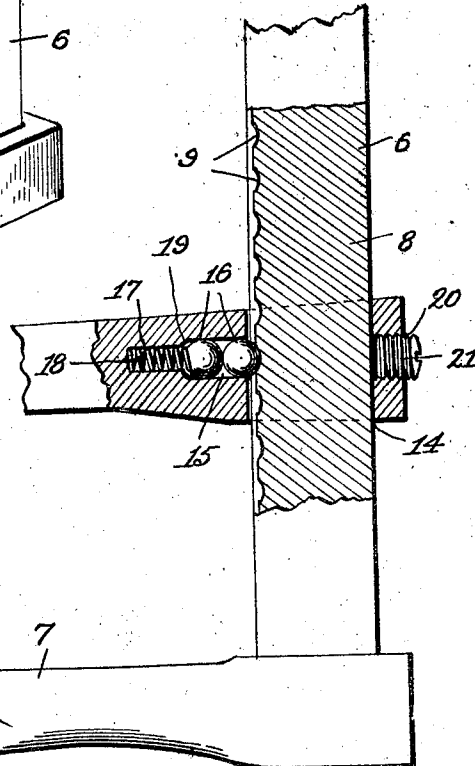
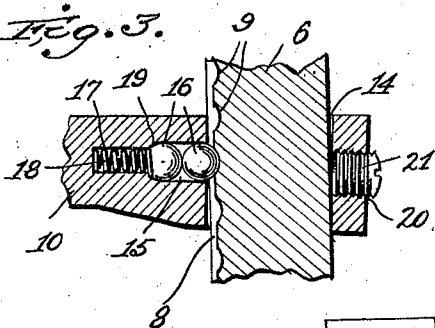


Fig. 3.



Inventors

William H. Otto and
William Ulrich
By *Ralston and Willis* their Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM H. OTTO AND WILLIAM ULRICH, OF CINCINNATI, OHIO.

CLAMP.

Application filed March 9, 1922, Serial No. 542,426. Renewed February 24, 1923.

To all whom it may concern:

Be it known that we, WILLIAM H. OTTO and WILLIAM ULRICH, citizens of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Clamps, of which the following is a specification.

This invention relates to improvements in clamps of the quick-action type and has for one of its particular objects to provide means whereby the movable jaw can be shifted from one position to another on the shank, and be retained in the adjusted positions while the clamp is not engaged with the work; also to provide a clamp which will automatically lock when the jaws are bound to the work, one that is simple in construction, and efficient as to the clamping qualities.

These and other objects hereinafter set forth are attained by the means illustrated in the accompanying drawing in which:—

Fig. 1 is a perspective view of the improved clamp.

Fig. 2, is a side elevation of the clamp showing part of the shank and the movable jaw in section and in an unlocked position, and

Fig. 3 is a sectional view showing the movable jaw in a locked position.

Similar reference numerals in all of the figures of the drawing designate like parts.

To enable other skilled in the art to make and use this improvement, we will proceed to describe the construction and operation of the same, with reference to the accompanying drawing, in which 6 designates the shank provided at one end with a jaw 7 that is preferably formed integrally therewith, and said shank on its front edge is formed with a groove 8 which extends the entire length of the shank, and in the bottom of said groove is formed a series of depressions 9 for the purpose hereinafter described.

Constructed to slide on the shank is a movable jaw 10, the same being provided at its free end with a clamping screw 11 which is provided with a swivel-toe at its lower end, and a head 12 at its upper end which is provided with a handle 13 for turning the clamping screw.

Movable jaw 10 is preferably formed with a through slot 14 which is formed to permit the shank to move freely therethrough and large enough to allow tilting of the movable

jaw when the work is clamped, and formed in the body-portion of the movable jaw and opening into the slot 14, is a cavity 15 in which are positioned the lock-balls 16, said cavity being formed with an extension 17 for a spring 18 that is engaged between the end of the cavity extension 17 and the adjacent ball. The cavity extension 17 is formed smaller in diameter than the ball cavity to form a shoulder 19 to limit the movement of the balls backwardly, and the spring constantly exerts pressure in a direction to push the balls forward, so that when the clamp is not engaged with the work, a clearance will be had between the shoulder 19 and the balls to permit them to recede slightly when passing from one lock-depression 9 to another in the shank.

Cavity 15 and its extension 17 are preferably formed through a hole 20 at the rear of the movable arm, and after the spring and balls are placed in the cavity, the hole 20 is closed with a screw 21.

The shank and groove 8 at its upper end, are slightly curved backwardly as shown at 22, to permit entrance of the exposed lock-ball when the movable jaw is being first inserted upon the shank, and the shank is also provided at its upper end with a removable stop-pin 23 which will prevent the movable jaw from running off the shank.

In operation, the work to be clamped is placed between the jaws and the movable jaw is initially slid close to the work or in a position where the front lock-ball will engage in the depression 9 closest to the work. Then the clamping screw is operated to force the toe into tight engagement with the work, and this will tilt the movable jaw on the shank sufficiently to advance the shoulder 19 against the rear-ball 16 and thus lock the balls against backward movement and preventing their disengagement from the lock-depression and thus positively lock the movable jaw against movement longitudinally of the shank. When the work is unclamped, the locking parts are released and the movable jaw can slide freely on the shank, the shoulder 19 then having receded sufficiently to permit the balls to recede to a distance equal at least to the cavities 9, so that the balls can run along the groove 8 and snap into the cavities one after another.

Having thus fully described the invention, what is claimed is:—

1. A clamp comprising a shank having a

fixed jaw at one end, and a series of depressions formed in the edge of shank, a movable jaw mounted to slide on the shank, provided with a clamping screw at its outer end, and
5 formed with a cavity opening into the shank opening thereof, a lock-ball in said cavity, a spring in said cavity for forcing said ball into engagement with the depression in the edge of the shank, said cavity being formed
10 with a shoulder to engage the lock-ball when the movable jaw is tilted and thereby lock the ball in the depression.

2. A clamp comprising a shank having a fixed jaw at one end, said shank being grooved
15 on one of its edges and provided with a series of depressions in the bottom of said groove, a movable jaw on the shank having a clamping screw at its outer end and provided with a cavity opening into the shank
20 opening thereof, locking-balls in the cavity, a spring in the cavity for forcing one of the balls into engagement with one of the depressions in the bottom of the groove of the

shank, said cavity being formed with a shoulder to engage the lock-balls when the movable jaw is tilted and thereby lock one of the balls in its depression. 25

3. A clamp comprising a shank having a fixed jaw at one end, said shank being grooved on one of its edges and provided with a
30 series of depressions in the bottom of said groove, a movable jaw on the shank having a clamping screw at its outer end, a cavity in said jaw, a locking means in the cavity, a spring for forcing the locking means into
35 one of said depressions, the walls of the cavity forming a shoulder for engaging behind the locking means when the movable arm is tilted, the groove at the top end of the shank being curved backwardly to permit the entrance of said locking means. 40

In testimony whereof we affix our signatures.

WILLIAM H. OTTO.
WILLIAM ULRICH.