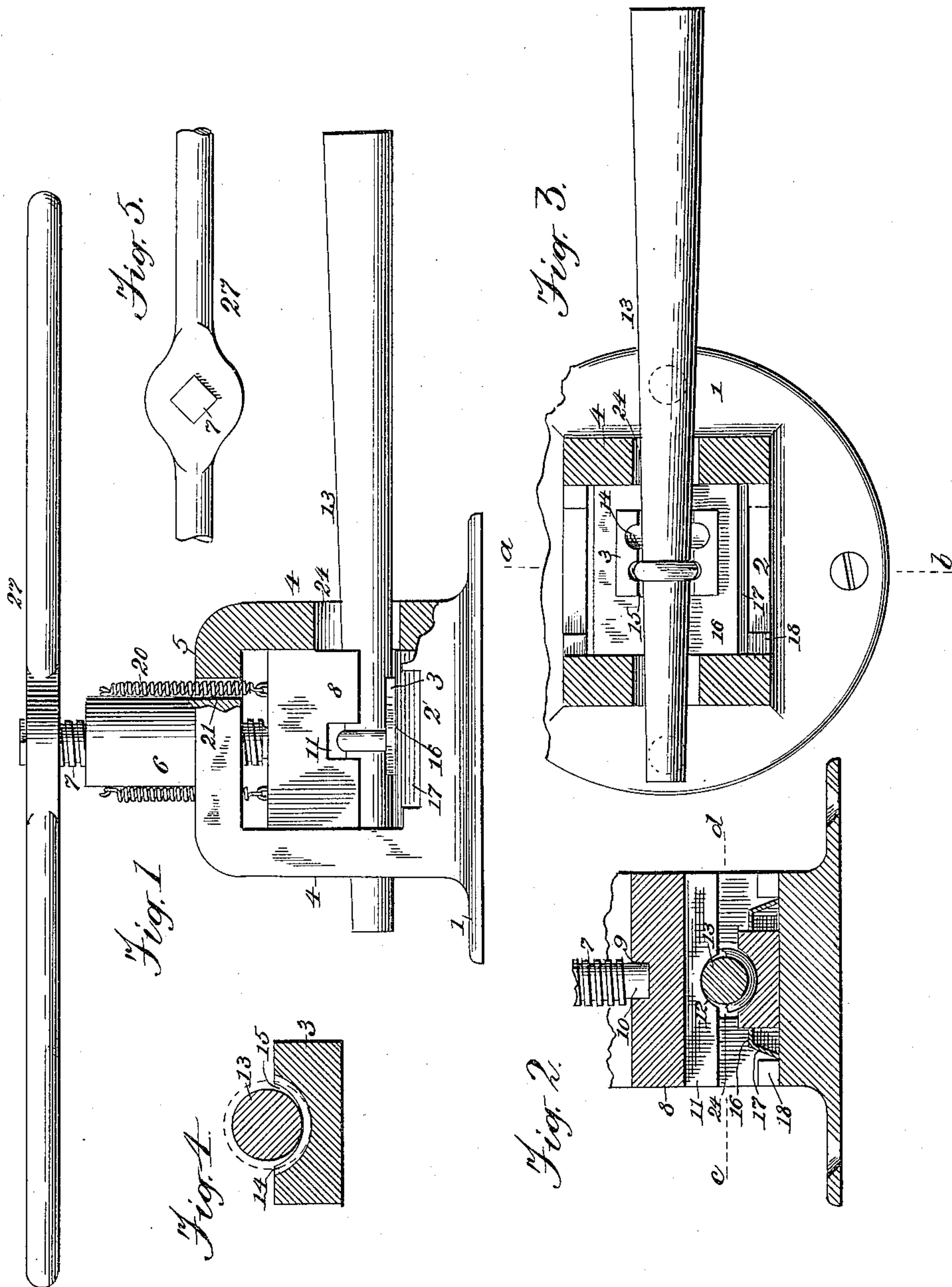


REF AVAILABLE COPY

L. W. SWEM.
RING EXPANDING PRESS.
APPLICATION FILED JAN. 5, 1915.

1,154,893.

Patented Sept. 28, 1915.



Witnesses:
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UNITED STATES PATENT OFFICE.

LAWRENCE W. SWEM, OF WEST LIBERTY, IOWA, ASSIGNOR TO E. L. WEBB & CO., OF WEST LIBERTY, IOWA, A CORPORATION OF IOWA.

RING-EXPANDING PRESS.

1,154,893.

Specification of Letters Patent.

Patented Sept. 28, 1915.

Application filed January 5, 1915. Serial No. 695.

To all whom it may concern:

Be it known that I, LAWRENCE W. SWEM, a citizen of the United States, residing at West Liberty, in the county of Muscatine and State of Iowa, have invented certain new and useful Improvements in Ring-Expanding Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to hand presses, and more particularly to the class of presses used for expanding finger rings; the object of this invention being to provide a press for such purpose, of simple construction, easily and quickly operated, and very powerful in its action.

The invention is fully disclosed in the description and claims following, reference being had to the accompanying drawing, in which—

Figure 1 is a front view of a press embodying my improvements, a part of the frame being broken away to show parts beyond. Fig. 2 is a section, on the line *a b*, Fig. 3, of the lower part of the press. Fig. 3 is a section of the same on the line *c d* of Fig. 2. Fig. 4 is a section of the swage-block or die and the mandrel, taken along the center of the ring-groove in the die. Fig. 5 is a fragmentary top view of the hand-lever.

The main frame of the press comprises a base 1 adapted to be screwed or otherwise fastened to a bench, as indicated in Fig. 3. The thick portion 2 of the base forms a flat, level seat for the swage-block or die 3. From the base rise parallel standards 4, uniting in a yoke 5 at the top. This is provided with a boss 6 to take a screw 7. In practice the upper end of the screw is squared, as shown and the hand-lever 27 by which it is turned is similar to an ordinary tap-wrench, fitting over said squared end. This is preferable to any sort of a fixed lever, since it allows for the shifting of the lever at each quarter turn, whereby its position may at all times be such as to give the operator, sitting in front of the press, the best possible leverage, it being understood that the expanding of a ring demands very powerful pressure.

Between the parallel sides of the press-frame is mounted a pressure-block 8 provided with a central socket 9 to receive the end of the screw 10. It will be noted that this socket serves not only for contact with the reduced end of the screw, but as a well for oil to lubricate the screw at this point. One of the serious difficulties met with in the operation of ring-presses of the inverted type, in which the screw contacts with the under side of the pressure-block, is the fact that oil applied to the working end of the screw runs off immediately, the parts work dry, and are presently cutting and chafing injuriously. In the middle of the pressure-block, on the under side, is a notch or recess 11 wide and high enough to clear any ring which may be operated upon. Transverse to this recess is a semicircular groove 12, best shown in Fig. 2, to receive the upper face of the ring mandrel 13, a hard and rigid bar of round steel, tapered from the smallest to the largest ring-size. In practice the recess in the pressure-block straddles the top of the ring, as clearly shown in Fig. 1. Holes 24 admit the mandrel, and permit a limited vertical movement thereof.

The swage-block, or lower die, is of hardened steel, and provided with one or more shallow grooves 14, corresponding to the desired outer shape of the ring. Transverse to the ring-groove or grooves is a shallower concavity 15 adapted to receive a portion of the periphery of the mandrel, and to the extent of the difference between its depth and that of the ring-groove, limiting the thinness to which the ring may be pressed. The die is held in proper position by a keeper 16. This is formed of sheet-steel, with downwardly bent side wings 17 fitting into the space between corner lugs 18 of the main frame. In the horizontal part of the keeper is a rectangular hole, in which the die fits neatly. By placing this hole to one side of the center, as shown in Fig. 3, a doubly grooved die may be used with the same keeper, as will be apparent.

The pressure-block is held in close and continuous contact with the lower end of the screw by springs 20, passing through holes 21 in the yoke, and suitably attached to the press-frame at one end and to the pressure-block at the other.

The operation of expanding a ring consists in swaging the lower part of the ring in the die by powerful pressure brought to bear on the mandrel inserted in the ring.

5 This swaging action is applied to all parts of the ring by turning the mandrel a little at each impression, and keeping the mandrel forced into the ring as far as the taper of the mandrel will permit it to go. The pressure is exerted by a series of short pulls on the hand-lever, and is of course relaxed to allow the mandrel to turn. When the pressure is relaxed by reversing the motion of the hand-lever it is desirable that the pressure-block come up instantly, and with no lost motion. For this reason the retractile springs are provided to withdraw the pressure-block, since they maintain this close contact of the block and screw, and there is no lost motion and consequent waste of time and effort. It is also to be noted that there is no use of the mandrel as a lever, and the only strain upon it is a direct vertical pressure close to the ring, the gap in the pressure-block being only wide enough to take the widest ring. In practice it has been found that the use of the mandrel as a screw-turning lever has had a tendency to twist and distort the ring; that being of highlv tempered steel and so used in the press to which it has been so applied it has been frequently broken, and that its use as a hand-lever is neither sufficient nor convenient, the lever being too short, in the first place, and in its revolution taking positions where the pull of the operator is not advantageously applied.

Having thus described my invention, I claim:

1. In a ring-press a press frame having a base adapted to support a swage-block, side-standards perforated to admit a ring-mandrel and allow a limited vertical movement thereof, and a screw-receiving yoke, a screw threaded in said yoke, a hand-lever therefor, a pressure-block slidably mounted between said standards, one or more springs to hold said block in contact with the screw, the block having a central recess or socket for the end of the screw, and a gap at the under side, to receive the upper part of a ring mounted on said mandrel, and means adapted to hold the swage-block in position.

2. In a ring-press, a press frame having a base adapted to support a die or swage-block, and provided with upraised lugs, a die-keeper having a hole therein to receive the die, and with downwardly bent sides fitting between said base-lugs.

3. In a ring-press, a press-frame having a base adapted to support a swage-block or die, and provided with upraised lugs, and a die-keeper having an off-center hole therein to receive the die, and with downwardly bent flanges fitting between said lugs, whereby the same keeper may serve for a double-matrix die, as described.

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

LAWRENCE W. SWEM.

Witnesses:

E. C. NICHOLS,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."