

A. A. BALL, JR.
SOLE PRESSING MACHINE.
APPLICATION FILED NOV. 14, 1908.

1,003,971.

Patented Sept. 26, 1911.

2 SHEETS-SHEET 1.

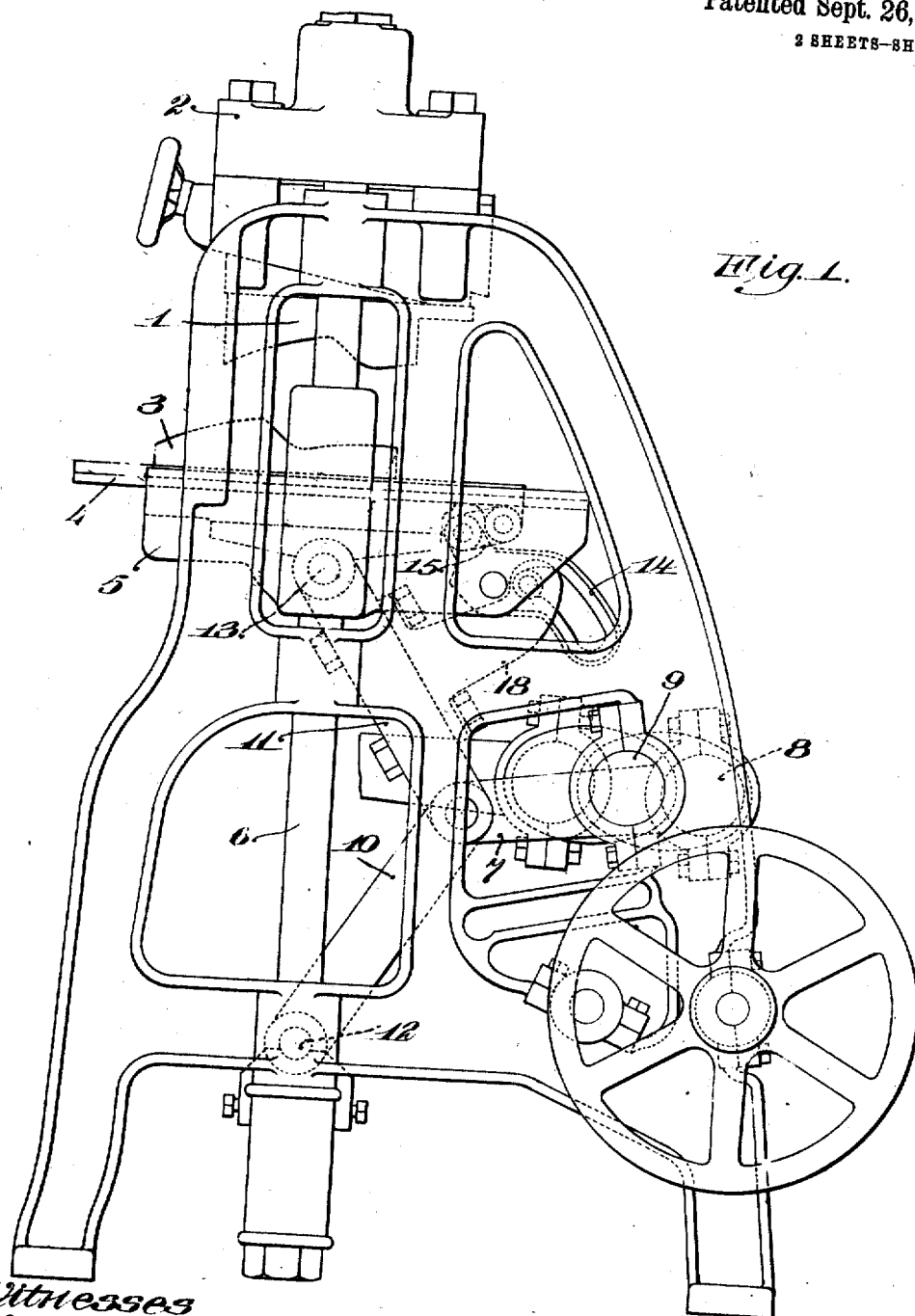


Fig. 1.

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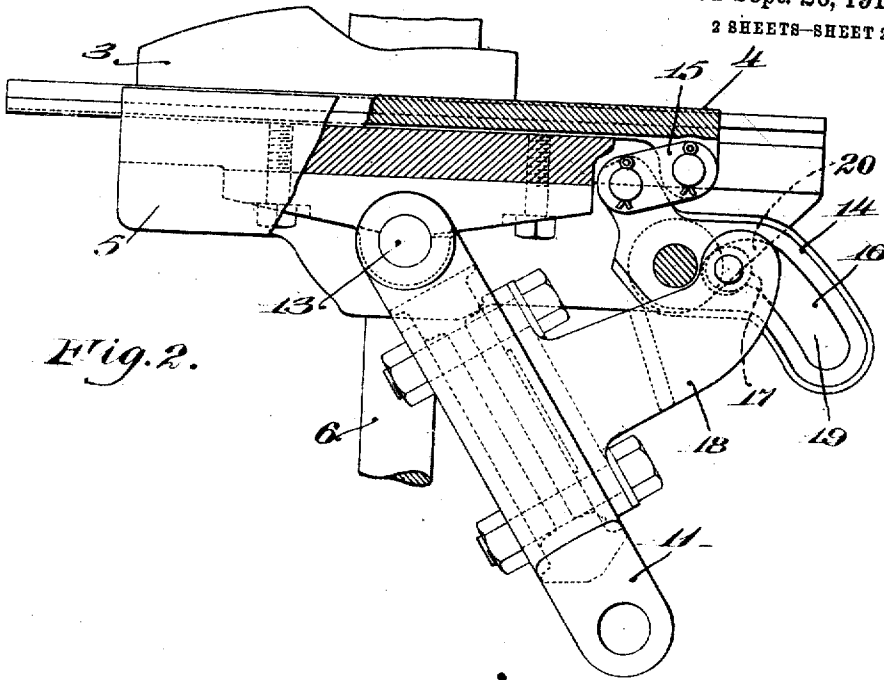


Fig. 2.

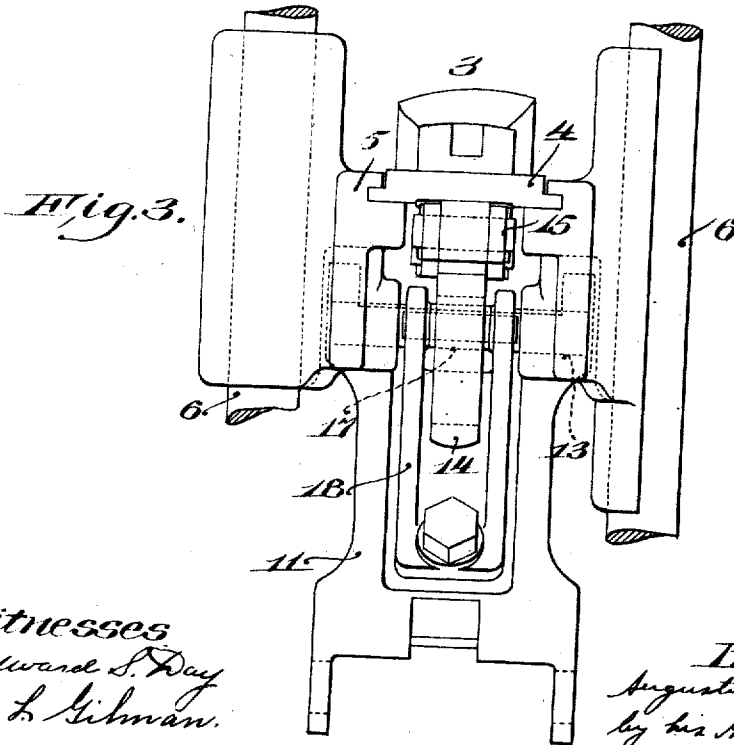


Fig. 3.

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UNITED STATES PATENT OFFICE.

AUGUSTUS A. BALL, JR., OF LYNN, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

SOLE-PRESSING MACHINE.

1,003,971.

Specification of Letters Patent. Patented Sept. 26, 1911.

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To all whom it may concern:

Be it known that I, AUGUSTUS A. BALL, Jr., a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sole-Pressing Machines; 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.

The invention relates to that class of sole pressing machines such as sole molding, sole laying, or sole leveling machines in which the cooperating pressing forms are relatively reciprocated to move them toward and away from each other, and in which one of the forms is moved transversely to bring it into and out of alinement with cooperating form.

The object of the invention is to provide an improved mechanism for effecting the transverse movements of the reciprocating form into and out of alinement with the cooperating form, whereby the construction is simplified, and the movements of the form are accurately controlled without shock or undue wear upon the parts, and the form is securely held from displacement when in its inner or outer position.

To these ends, one feature of the invention contemplates the provision in a machine in which a jack or other form is mounted for transverse movement on a reciprocating head, of devices actuated by the relative movement between the head and its actuating mechanism for moving the form transversely into and out of alinement with the cooperating form. Broadly considered, this feature of the invention contemplates the provision of any suitable devices through which the relative movement between the reciprocating head and its actuating mechanism will be translated into transverse movements of the form carried by the head.

In the class of machines which the invention is especially designed to improve, the reciprocating form carrying head is usually reciprocated through a toggle lever, one link or member of which is pivoted to the head, and in accordance with a further feature of the invention, the form is actuated to move into and out of alinement with its cooperating form by this member of the head actuating mechanism as the tog-

gle is straightened and broken in reciprocating the head. This construction enables the transverse movements of the form to be accurately controlled by connections which are simple in construction, and are compactly arranged. In the preferred form of the invention the connections between the transversely movable form and the lever of the actuating mechanism which is pivoted to the head includes a cam which controls the position of the form upon the head, and which is so shaped that the form is locked in its outer position out of alinement with the cooperating form when the reciprocating head is retracted, and that the form is moved into alinement with the cooperating form during the first part of the advance movement of the reciprocating head, and is then held in fixed position upon the head during the completion of the advance movement of the head. This cam may be formed in the pivoted lever of the head actuating mechanism, or in the form carrier, or in a part connected with the form carrier. It is preferred, however, to form the cam on a lever which is pivoted upon the reciprocating head, and is connected with the form, and to actuate the cam lever by engagement with the lever of the head actuating mechanism. It is also preferred to form the cam that the form is under positive control during the reciprocation of the head and the transverse movement of the form.

The invention also includes certain further features and combinations which will be hereinafter described and claimed, the advantages of which will be apparent to those skilled in the art from the following description of a machine embodying the invention.

The various features of the invention will be readily understood from an inspection of the accompanying drawings, in which—

Figure 1 is a side elevation of a machine embodying the features of the invention in their preferred form; Fig. 2 is a side elevation partly in section showing the devices for effecting the transverse movements of the reciprocating form; and Fig. 3 is a rear elevation looking from right to left in Fig. 2.

In the machine shown in the drawings the forms for acting upon the sole are designed and shaped to mold the sole prior to

the lasting operation. It will be understood, however, that the invention may be embodied in machines designed for laying soles or leveling soles, in which case a jack adapted to support and carry a shoe will be mounted upon the reciprocating head, as is usual in machines designed for sole laying or sole leveling.

The machine illustrated is provided with two sets of sole molding forms, each comprising a fixed mold and a transversely movable mold carried by a reciprocating head. The heads are reversely reciprocated to bring one set of forms together while the other set is being separated, and the forms on the heads are moved forward and back during the reciprocation of the heads to advance the form when the head is in its retracted position, and to return the form into alinement with its complementary form during the advance movement of the head. Since the devices for giving transverse movements to the forms on the reciprocating heads are duplicates of each other, only one set of forms is illustrated.

As shown in the drawings, the fixed form 1 is carried upon the under side of a cross-bar 2 by supporting and adjusting devices which may be of any suitable construction. The transversely movable form 3 is secured upon a carrier slide 4 mounted in a cross-head 5. The cross-head is mounted and guided upon vertical rods 6 in the usual manner, and is reciprocated through a toggle which is connected by means of a link 7 with a crank 8 on the shaft 9. The toggle comprises the two links or levers 10 and 11, lever 10 being pivoted at 12 to the frame, and the lever 11 being pivoted at 13 to the reciprocating head. When the parts are in the position indicated in the drawings the head 5 is in its lower or retracted position, and the form carrying slide 4 is in its forward position, with the form 3 in convenient position for the removal of the molded sole and the insertion of a new sole. When the shaft 9 is revolved the toggle is straightened to advance the head 5, and during the first part of the advance movement of the head the form 3 is retracted to bring it into alinement with the cooperating form 1, and then during the final advance movement of the head the form 3 remains in fixed position upon the head so that the sole is pressed between the forms by a movement of the form 3 directly toward the form 1. When the toggle is broken and returned to the position indicated in the drawings, the form 3 remains in alinement with the form 1 during the first part of the downward movement of the head 5, and then during the completion of the downward movement, is moved forward out of alinement with the form 1 and into the position indicated in the drawings.

The mechanism for effecting the transverse movements of the form 3 comprises a lever 14 pivotally mounted on the head 5 and connected with the form carrying slide 4 by a link 15. The lower end of the lever 14 is provided with a cam slot 16 which is engaged by a pin or roll 17 carried by an arm 18 which projects from the lever 11 of the head actuating toggle. The cam slot 16 is provided with a curved part 19 which is concentric with the pivot 13 of the lever 11 when the form 3 is in its retracted position in alinement with the form 1. The cam slot is also provided with a curved part 20 which is so shaped that the lever 14 is swung toward the left from the position indicated in Figs. 1 and 2 in advancing the head 5. The part 20 of the cam slot is so shaped that the cam lever 14 is actuated to bring the form 3 into alinement with the form 1 with an accelerated and then retarded movement so that the form is rapidly and accurately moved and positioned without shock or jar, and with little wear on the parts. After the form 3 has thus been brought into alinement with the form 1, the roll 14 rides in the part 16 of the cam slot during the continued movement of the lever 11 toward the left, so that the form is held securely in fixed position upon the head 5 during the completion of the movement of the lever 11, and during the completion of the upward movement of the head 5. When the head 5 is retracted by moving the toggle lever 11 toward the right, the roll 17 moves idly in the part 19 of the cam slot during the first part of the downward movement of the head, thus retaining the form in fixed position on the head, and then during the latter part of the downward movement of the head the roll coöperates with the part 20 of the cam slot to swing the lever 14 about its pivot, and advance the form 3 into the position indicated in the drawings, and to maintain the form in this position until the toggle is again straightened to advance the head 5. The transverse movements of the form are thus effected through the swinging movement of the toggle lever 11 about its pivotal connection with the head without shock or jar, and the movements of the form are accurately timed and positively controlled, and the form is securely held upon the head in both its advance and retracted position.

While it is preferred to employ the construction and arrangement of parts shown and described in practicing the invention, it will be understood that this construction and arrangement is not essential to the invention in its broader aspects, and may be modified and changed without departing from the invention.

Having set forth the nature and object of the invention, and specifically described one

form of machine in which it may be embodied, what I claim is:—

1. A sole pressing machine, having, in combination, a head, a form mounted thereon, a cooperating sole pressing form, head actuating mechanism for moving the forms toward and from each other, and devices carried on the head and actuating mechanism and actuated by the relative movement between the head and its actuating mechanism for moving the form transversely into and out of alinement with the cooperating form, substantially as described.

2. A sole pressing machine, having, in combination, a sole pressing form, a reciprocating head, head actuating mechanism including a lever pivoted to the head, a form carried by the head, and connections carried on the head and lever between the lever and form for moving it into and out of alinement with the sole pressing form, substantially as described.

3. A sole pressing machine, having, in combination, a sole pressing form, a reciprocating head, a toggle through which the head is actuated having one lever connected with the head, and a form on the head actuated by said lever to move it into and out of alinement with the sole pressing form, substantially as described.

4. A sole pressing machine, having, in combination, a reciprocating head, actuating mechanism therefor including a lever connected to the head, a transversely movable form on the head, and connections between the form and lever including a cam actuated by the lever and controlling the transverse movements of the form, substantially as described.

5. A sole pressing machine, having, in combination, a reciprocating head, a toggle through which the head is actuated having one lever connected with the head, a lever on the head connected with the form, and

connections between said levers for moving the form transversely as the head is reciprocated, substantially as described.

6. A sole pressing machine, having, in combination, a sole pressing form, a reciprocating head, a form mounted thereon, head actuating mechanism including a lever connected with the head, and connections between the form and lever including a cam for moving the form transversely and locking it in position on the head, substantially as described.

7. A sole pressing machine, having, in combination, a sole pressing form, a reciprocating head, a form mounted thereon, a lever on the head connected with the form and provided with a cam slot, actuating mechanism for the head including a lever pivoted to the head, and a pin on said lever engaging the cam slot, substantially as described.

8. A sole pressing machine, having, in combination, a sole pressing form, a reciprocating head, a form mounted thereon, a lever on the head connected with the form and provided with a cam slot, and a pin engaging the slot to actuate the form as the head reciprocates, substantially as described.

9. A sole pressing machine, having, in combination, a sole pressing form, a reciprocating head, a laterally movable form mounted thereon, a lever 14 mounted on the head and connected with the form, a cam slot 16 in the lever having a part 19 and a curved part 20, and a pin engaging the cam slot to actuate the form 3 as the head is reciprocated, substantially as described.

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

AUGUSTUS A. BALL, Jr.

Witnesses:

FRED O. FISH,
MARGARET L. GILMAN.