

(No Model.)

2 Sheets—Sheet 1.

W. E. FORSTER & E. E. WINKLEY.
BEATING OUT MACHINE.

No. 542,958.

Patented July 16, 1895.

Fig. I.

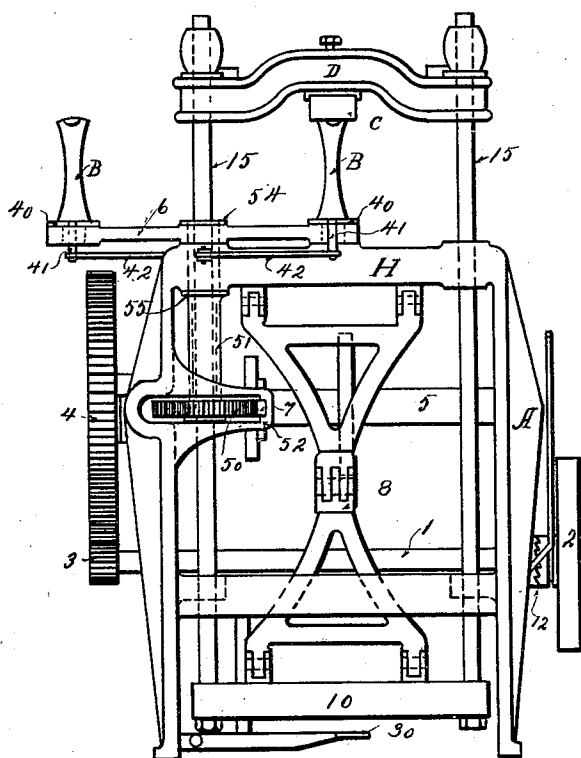
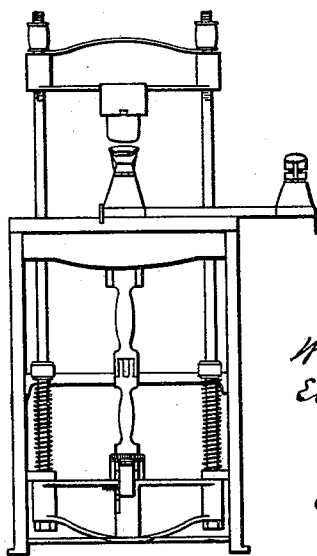


Fig. IV



WITNESSES

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E. E. Winkley
By their Attorneys
E. E. Winkley

INVENTORS

William E. Forster and
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By their Attorneys
E. E. Winkley

2 Sheets—Sheet 2.

BEATING OUT MACHINE.

Patented July 16, 1895.

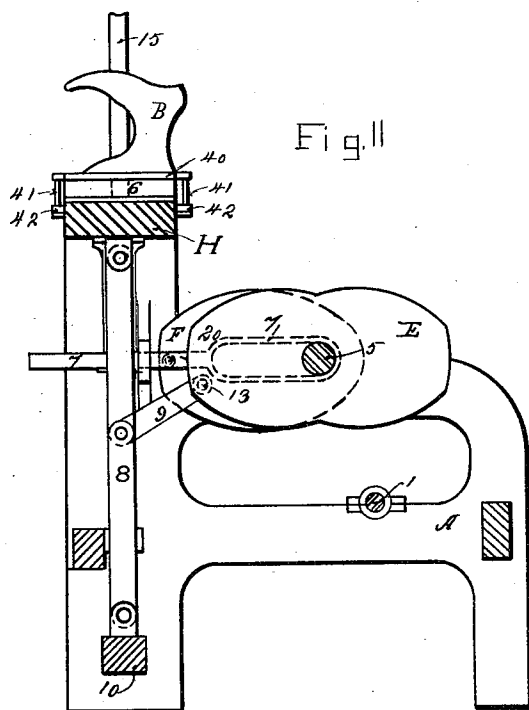
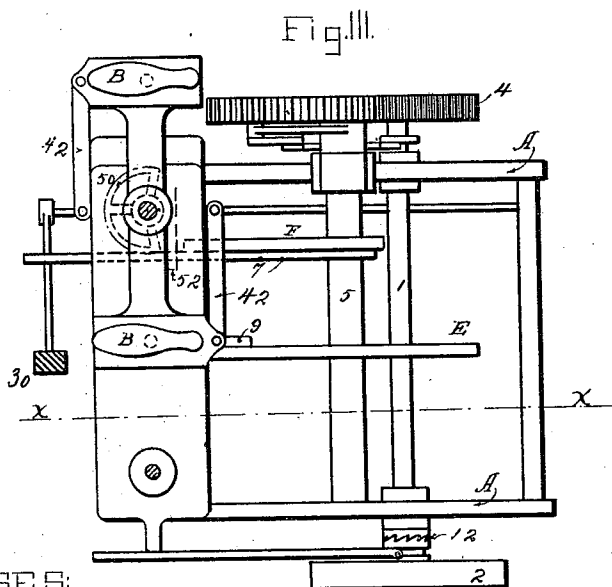


Fig. 11



Fi q.iii.

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and Erastus E. Wendling
By their Attorneys
E. H. Phillips

UNITED STATES PATENT OFFICE

WILLIAM E. FORSTER AND ERASTUS E. WINKLEY, OF LYNN, MASSACHUSETTS; SAID WINKLEY ASSIGNOR TO SAID FORSTER.

BEATING-OUT MACHINE.

SPECIFICATION forming part of Letters Patent No. 542,958, dated July 16, 1895.

Application filed July 12, 1894. Serial No. 517,381. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM E. FORSTER and ERASTUS E. WINKLEY, citizens of the United States, and residents of Lynn, in the county of Essex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Beating-Out Machines, of which the following is a specification.

Our invention relates generally to improvements in machinery of the above class, and more particularly to those machines included in the above class and known in the trade as "direct-pressure" machines.

Our invention is an improvement upon the devices shown and described in Letters Patent of the United States No. 152,559, issued to Swain, Fuller & Co. as assignees of J. B. Johnson, January 30, 1874, for machinery for shaping shoe-soles; also in Letters Patent of the United States No. 141,058, dated July 22, 1873, to same parties, same subject of invention; also, Letters Patent of the United States No. 75,428, dated March 10, 1868, to same inventor, same subject of invention.

Our invention consists of mechanisms whereby the rotary bar shown and described in said Letters Patent is rotated, the molds reciprocated, and the lasts rotated upon the bar to bring the toe to the front when presented to the molds and to the operator.

Our invention further consists of suitable connections between said mechanisms, whereby they are made to perform their functions in due relative order without manual interference of the operator.

The object of our invention is to produce an automatic beating-out machine embodying in design the general features of the devices shown in said Letters Patent.

Our invention is illustrated in the accompanying drawings, in which—

Figure I is a front view of machine embodying the same. Fig. II is a section on line X X, Fig. III. Fig. III is a plan view with reciprocating cross-head omitted. Fig. IV is a front view of the machine shown and described in said Letters Patent No. 152,559, which is deemed sufficient to illustrate the connection of our invention therewith.

Similar letters and figures of reference refer to similar parts throughout the several views.

In the drawings, A represents a frame suitable to support the working parts of the machine.

B B represent the lasts or jacks, and C the mold, which is mounted upon a reciprocating cross-head D. The lasts B B are mounted upon a bar 6, arranged to rotate about the rod 15, substantially as shown in said Letters Patent. The form and arrangement of the cross-head D, upon which mold C is mounted, and also of vertical connecting-rods 15 15 and cross-head 10, are also similar to that of corresponding parts in said devices described in said Letters Patent.

Each of the lasts B is mounted upon a last-supporting table 40, which is centrally pivoted upon the arm 6, being free to rotate thereon, an arrangement for which we claim no invention, as the same is substantially described in said Letters Patent.

As shown in the drawings, the mold C is yieldingly mounted upon the cross-head D, substantially as shown and described in Letters Patent to William E. Forster, dated July 5, 1892, No. 478,420, (sole-pressing machines,) to which reference may be had.

H is a bed rigidly secured to or forming part of the frame A, which supports the bar 6 under pressure, the form of which is also substantially similar to that shown in said first-cited Letters Patent.

To the bed H is pivoted a toggle 8, which is also pivoted to cross-head 10, the arrangement being substantially as shown in said Letters Patent first herein cited.

To bend and straighten the toggle 8 we find the following to be a convenient form of mechanism: From the toggle 8 projects a rigid arm 9, which carries a cam-roll 13, working in a cam-path upon the cam E, rigidly mounted upon a shaft 5, suitably mounted in frame A, to which a series of partial rotations may be imparted by mechanism hereinafter described.

To rotate the bar 6 we have adopted the following mechanism, to which, however, we do not restrict our invention, as the same can be readily modified by one skilled in the art without departing from the essential nature thereof: The bar 6 is secured to a vertical shaft 51, preferably tubular, and forming a sleeve, mounted on the vertical rod 15. The

shaft 51 is provided with suitable bearings in frame A, in which it is free to rotate, being held in position by collars 54 and 55, respectively, above the bar 6 and below bed H. The collar 54 also serves to hold in place the bar 6. The arrangement is such that the rod 15 is free to reciprocate through the tubular shaft 51 and the shaft 51 to rotate about the rod 15. Below the bed H the shaft 51 carries a pinion 50, rigidly mounted thereon, and which engages with rack on the rack-rod 7. The rack-rod 7 is supported in suitable bearing 52 in a bracket on frame A, through which it is free to slide, and is forked or slotted to embrace shaft 5. The rack-rod 7 carries a cam-roll 20, working in cam-path in cam F, mounted upon the shaft 5. The arrangement is such that the rotation of cam F imparts a sliding motion to rod 7 and motion of rotation to the pinion 50, shaft 51, and bar 6, and by suitably forming the cam F to secure required throw a half-turn may be given to the bar 6 for each partial rotation of shaft 5 and the lasts B B alternately brought under the form C.

It will be noted that if rigidly secured to the bar 6 the lasts B B would alternately present (when the bar 6 was rotated, as above described) the heel and toe toward the front of the machine. This change of position is undesirable, it being practically essential to the operation of the machine that the toe of the last should be toward the front of the machine.

To accomplish the above-suggested result we rotate the last-supporting table 40 upon its pivot while the arm 6 is rotating, a convenient mechanism for which is described as follows: Connected with the last-supporting table 40 at a point beyond the bar 6 is an arm 42, which is pivoted to a suitable support upon frame A. The arm 42 and last-supporting table 40 are connected by a rod 41, which is free to turn in both and is of sufficient length to drop the arm 42 below the bar 6. The arm 42 is parallel with the line of centers of rotation of the bar 6 and last-supporting table 40. The arrangement is such that as the bar 6 rotates the last-supporting table 40 is rotated by the arm 42 (the rod 41 passing around the end of bar 6) and kept always parallel to its original position, so that if adjusted with toe to the front of the machine the last will be kept in that position for any position of the bar 6.

Since the rotation of the cam F gives an inward and outward motion to the rod 7, both lasts B B are brought under the form C for each rotation of shaft 5. The mold C must therefore have two reciprocations, which are provided for by the double cam E.

The cross-head D must always have a lead upon the bar 6 to secure clearance of the mold C and last B. This we provide for by the form and arrangement of the circular runs upon the cams E and F.

The series of partial rotations imparted to shaft 5 may most conveniently consist of a series of half-rotations, and the cams are so formed and arranged upon the shaft 5 that at the end of each half-rotation one of the lasts B and the form C are together in a position of pressure.

Power is applied to the machine by a pulley 2 and clutch 12 or fast and loose pulley or shaft 1, suitably mounted in frame A. The shaft 1 carries a pinion 3, which engages with the gear 4, which turns loose upon the shaft 5, to which, however, it is arranged to impart a series of half-rotations by a suitable clutch mechanism, a convenient form of which is shown and described in Letters Patent No. 478,420, issued to William E. Forster for improvements in sole-pressing machines, to which reference may be had for a full description thereof.

The clutch mechanism is operated by a treadle 30 and suitable connecting-levers, arranged substantially as shown in said Forster machine.

The operation of our invention has been fully described in connection with the description of the several parts. To use the same, power being applied, the operator adjusts a shoe upon the outside last, puts his foot upon treadle 30, and depresses it until rotation of shaft 5 commences, when he immediately releases the treadle and the last B is carried under the form C, the other last B being thrown out, and pressure is applied.

We claim as novel, and desire to secure by Letters Patent, in a beating-out machine—

1. The combination of a reciprocating mold, a pair of lasts or jacks revolubly mounted upon opposite ends of an oscillating bar, a cam and connected mechanism for reciprocating the mold, an oscillating vertical shaft and suitable connections for actuating the bar and revolving the lasts or jacks upon the bar, substantially as described.

2. An oscillating bar carrying at or near its opposite ends a revoluble last, and an oscillating vertical shaft and connecting levers for revolving the lasts upon the bar, substantially as described.

3. The combination of a mold, a horizontally movable last carrier and last mounted thereon, a vertical shaft arranged to oscillate in suitable bearings, a cam and connecting gears for actuating said shaft, and suitable connections between the last carrier and shaft whereby the oscillation of the shaft moves the last carrier and its last toward and from the mold, substantially as described.

Dated at Lynn June 25, 1894.

WILLIAM E. FORSTER.
ERASTUS E. WINKLEY.

Witnesses:

BENJAMIN PHILLIPS,
VICTOR G. SANDBERG.