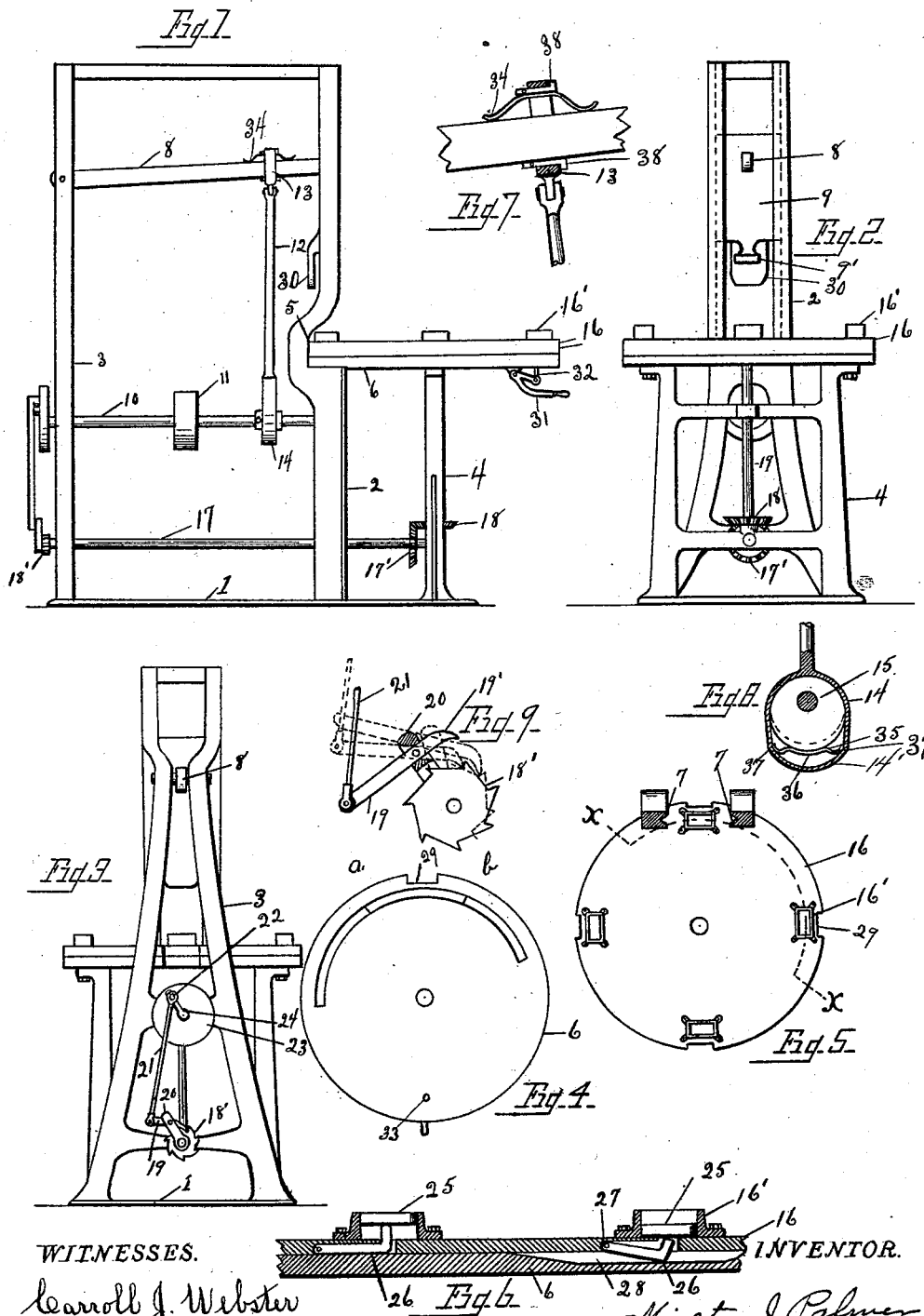


(No Model.)

M. J. PALMER.  
SOAP PRESS.

No. 525,391.

Patented Sept. 4, 1894.



WITNESSES.

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# UNITED STATES PATENT OFFICE.

MILTON J. PALMER, OF TOLEDO, OHIO.

## SOAP-PRESS.

SPECIFICATION forming part of Letters Patent No. 525,391, dated September 4, 1894.

Application filed April 27, 1893. Serial No. 472,027. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON J. PALMER, of Toledo, county of Lucas, and State of Ohio, have invented certain new and useful improvements in Automatic Presses for Soap-Forming; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

My invention relates to an automatic press for soap forming, and has for its object to construct a press in which the soap shall be automatically presented to the dies for pressure, and after pressure be automatically expelled from the die case.

A further object is to provide for adjustability of the parts to accommodate bars of soap of different thicknesses, with means for compensating for uneven sizes.

With this end in view, the invention consists broadly in a press having a plurality of movable die cases, a vertically movable die plate in each case, a reciprocating die, and means for moving the die cases beneath the same, and by a further movement automatically expelling the cake of soap from the die case.

In the drawings: Figure 1 is a side elevation of a complete press. Fig. 2 is a front elevation, and Fig. 3 is a rear elevation of the same. Fig. 4 is a top plan view of the fixed table. Fig. 5 is a top plan view of the movable carrier plate. Fig. 6 is a view on lines *x-x*, Fig. 5, showing the fixed table and movable plate in section to disclose the means employed for expelling the soap after being pressed. Fig. 7 is a detail view of the press lever, showing the yoke in section to disclose a preferred means for adjusting the throw of the die to accommodate different sizes of bars of soap. Fig. 8 is a sectional elevation through the eccentric and eccentric shaft, showing the resilient bearing. Fig. 9 is a side elevation of the mechanism for imparting an intermittent, rotary movement to the carrier plate.

1 designates the bed plate, from which extend the front standards 2, and rear standards 3, and the table support 4. The front stand-

ards are formed with an offset 5 of a proper height to support one edge of a table 6, the outer edge of the table being supported by the frame 4 of a corresponding height. Immediately above the offset the front standards are formed with longitudinal grooves 7, which align vertically with the die cases hereinafter to be described. The rear standards 3 are of the same height as the front standards, and incline inwardly near the top to receive and pivotally hold a cross bar 8 which extends across the frame to a die stock 9 movable in ways or grooves 7, the die stock receiving motion therefrom and caused to reciprocate in the ways through the medium of a power shaft 10 journaled in the frame and pivoted with a pulley 11 to receive a belt (not shown) from the main or counter shaft. Bar 8 is connected with the power shaft by means of a pitman 12 pivotally connected with a yoke 13 through which the bar 8 passes, and with the power shaft by means of a strap 14 embracing an eccentric 15, upon shaft 10.

Rotatively supported upon table 6 is a carrier plate 16 upon the upper side of which is secured a plurality of die-cases 16'. In the present instance I have shown four die cases and the proper mechanism to carry a one fourth movement of the die plate to each reciprocation of the die stock, in order to cause the die 9' upon the die stock to register with and enter the die plate.

Journaled in parallel relation with shaft 10 is a shaft 17 provided upon one end with a miter gear 17' which meshes with a like gear 18 upon a shaft 19 which extends vertically through table 6, and is connected with carrier plate 16 to revolve the same. The opposite end of shaft 17 is provided with a ratchet wheel 18' actuated by a dog 19 pivotally connected with a swinging arm 20 loosely mounted upon shaft 17 the free end of the dog being connected with a rod 21 journaled upon a pivot arm 22 secured in a wheel 23 upon shaft 10.

In order to secure adjustability of the throw of rod 21, arm 22 is secured in a radial slot 24 in wheel 23, whereby the arm may be moved and secured in the slot any desired distance from the axial center of the wheel. Arm 20 is recessed transversely to admit dog 19, the upper and lower walls of the recess being each

inversely inclined as shown in Fig. 9, whereby the inclined shoulder upon the opposite side of the upper wall will coincide and act as a stop to the dog to limit its pivotal movement within the arm as to its highest and lowest throw. By this arrangement of dog and ratchet, the dog after having advanced and revolved the ratchet wheel and shaft 17 the proper amount to revolve shaft 19 and carrier plate 16 to present a die case in coincidence with the die, the dog is retracted by reason of the further revolution of wheel 23, and by reason of the swing of arm 20 which acts as a movable fulcrum for the dog, the engaging end 19' is raised from the ratchet wheel as shown in full lines Fig. 9, and when advanced again contacts directly with the particular tooth of the ratchet desired, and is only in contact with the ratchet wheel when revolving the same (see dotted lines, Fig. 9) thereby avoiding the unusual noise incident to riding over the ratchet teeth, and also the possibility of revolving the ratchet wheel in an opposite direction by frictional engagement.

Within each die-case 16' is a close fitting die plate 25 movable within the die case by means of a right angled lever 26 movable within a recess within the carrier plate, the long arm of which is pivoted as at 27 to the die plate, with the short arm projecting through the plate into the die case, there being a circular groove 28 formed in the table 6 near the edge, the groove being of a depth from  $a$  to  $b$ , Fig. 4, to allow the lever 26 of a die-case coinciding with the die and the one of the next succeeding die case, to fall, and allow the die plates to rest upon plate 16, and from A to B inclined upwardly to the horizontal plane of plate 6, whereby when one die case is revolved into coincidence with die 9' and the cake of soap contained therein is being subjected to the pressure of the die, the next preceding die case is in position relatively to the slot, and lever 26, that the die plate rests upon plate 16 to allow of inserting a cake to be pressed upon the next quarter revolution of the carrier plate, and the same act of revolving the plate causes lever 26 to raise the die plate and expel the pressed cake from the die case as it is moved from beneath the die by reason of the lever riding the incline of the slot.

It will be seen from the foregoing that the carrier plate is mechanically revolved to present a die case in condition to receive a cake of impressed soap, and by a further revolution to present the cake in position to be pressed, and finally by a continued revolution to automatically expel the pressed cake, whereby the cake is inserted and removed by the operator at points distant from the pressing dies, and out of danger of the die contacting with the hand and consequent injury thereto.

In order to insure a perfect register of the die case and die, the carrier plate and fixed plate are recessed peripherally at 29, each re-

cess being opposite a die case, and a projection 30 is formed upon the die stock which projects somewhat below the die and is formed with a slightly tapering lower end, which enters the recess and aligns the die case with the die just prior to its contact with the soap therein.

In order to expel one or all of the die plates from the die case or cases, there is provided a lever 31 pivotally connected with the bottom of plate 6 and having a pin 32 pivotally connected thereto, which projects through a hole 33 in the table in coincidence with the die cases as they are revolved, whereby upon an upward push of the lever the die plates are expelled from the die cases.

In order to compensate for uneven thicknesses of cakes of a particular size, yoke 13 is provided with a strong spring 34 adapted to yield under excessive pressure to prevent undue strain upon the parts of the machine, and to further guard against strain in extraordinary circumstances I have provided a novel form of eccentric bearing comprising an eccentric strap, 14, formed with a circular upper portion, and a depending portion 14' which extends below the eccentric a distance to accommodate a spring plate 35 having a circular curved portion 36 to bear against the eccentric and arms 37 bearing upon the strap, 1, the normal contact of the plate upon the eccentric being without tension upon the spring arms. By this arrangement spring 34 may be of a rigidity to withstand a pressure of say sixty five pounds to the square inch before flexure, and adapted to yield and straighten at a pressure above this amount, when, should the resistance exceed the flexure of the spring, the spring plate 35 will immediately yield and prevent undue strain upon the other parts of the press.

In order to arrange the die for a stroke for a thickness of cakes generally, the yoke is adjustable upon bar 8 to vary the length of connection between shaft 10 and the bar by means of keys 38, by which if it is desired to lengthen the connection, both keys may be inserted in the yoke below the bar to equalize the length, one key may be inserted above, and one below, as shown in Fig. 7 and to shorten to a minimum, both keys may be inserted above the bar.

The specific form of device shown and described may be varied greatly, and yet be comprehended in my invention. I therefore wish the construction herein shown to be regarded as simply diagrammatic of a preferred form of mechanism and the specific character of the means employed for ejecting the cake, the arrangement may be such as to allow the operator to work from either side of the carrier plate as desired, the main idea of my invention being comprehended in the plurality of movable die cases, the reciprocating die, and automatic mechanism for ejecting the pressed cake.

What I claim is—

1. In a soap press, the combination of a frame, a fixed table thereon, a plate carrying a plurality of die cases, a mechanism for revolving the plate with an intermediate motion and recess in the periphery of the table and like recesses in the periphery of the plate opposite each die case, a reciprocating die stock movable in the frame and means for reciprocating the same, said die stock having a projection, which as the die stock lowers enters the projection in the recess and plate, and aligns the die case with the die.

2. In a press, the combination of a fixed table having a peripheral groove extending in the arc of a circle with an opposite inclination from the base to the horizontal plane of the table, a plate revolvably mounted upon the table, a plurality of die cases carried by the plate each having a die movable therein, a plurality of levers pivoted at one end to the plate and movable therewith in coincidence with the groove in the table, one end adapted to drop therein and allow the die to fall within the die cases and ride up the inclination to raise the die.

3. In a press, the combination of a fixed table, a revoluble plate carrying die cases movable thereon and means for revolving the same, dies in the die cases a power shaft, a die stock, a pivoted bar connected with the same, an eccentric upon the power shaft, a strap embracing the same of greater diameter internally than the eccentric and a spring plate resting at each end upon the strap, and bearing centrally upon the eccentric, and a pitman connecting the eccentric strap and bar.

4. In a press, the combination of a fixed

table, a revoluble plate carrying die cases and means for revolving the same, revoluble dies in the die cases a power shaft, an eccentric thereon, a vertically reciprocating die stock, a bar connected with the same, and a pitman connected with the eccentric and with the bar by means of a yoke having a yielding bearing interposed between the yoke and upper edge of the bar.

5. In a press in combination with a frame comprising front and rear standards, a die stock and die movable in the front standard, a revoluble plate carrying die cases and means for intermittingly revolving the plate to align the die cases with the die comprising a power shaft, a crank disked thereon, a parallel shaft and connections with the table to revolve the same, a ratchet wheel upon the parallel shaft, a swinging frame adjacent to the ratchet wheel, a dog pivoted in the frame, one end adapted to engage the ratchet wheel, and a rod connecting the crank, disk and outer end of the dog.

6. In a press, in combination with a fixed table a die carrier movable therein, die cases upon the carrier, each having a movable die plate therein and means for automatically raising the die plate, a lever pivoted to the table having a pin operated thereby to contact with the die to manually remove the same.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

MILTON J. PALMER.

Witnesses:

WILLIAM WEBSTER,  
FLOYD R. WEBSTER.