

(No Model.)

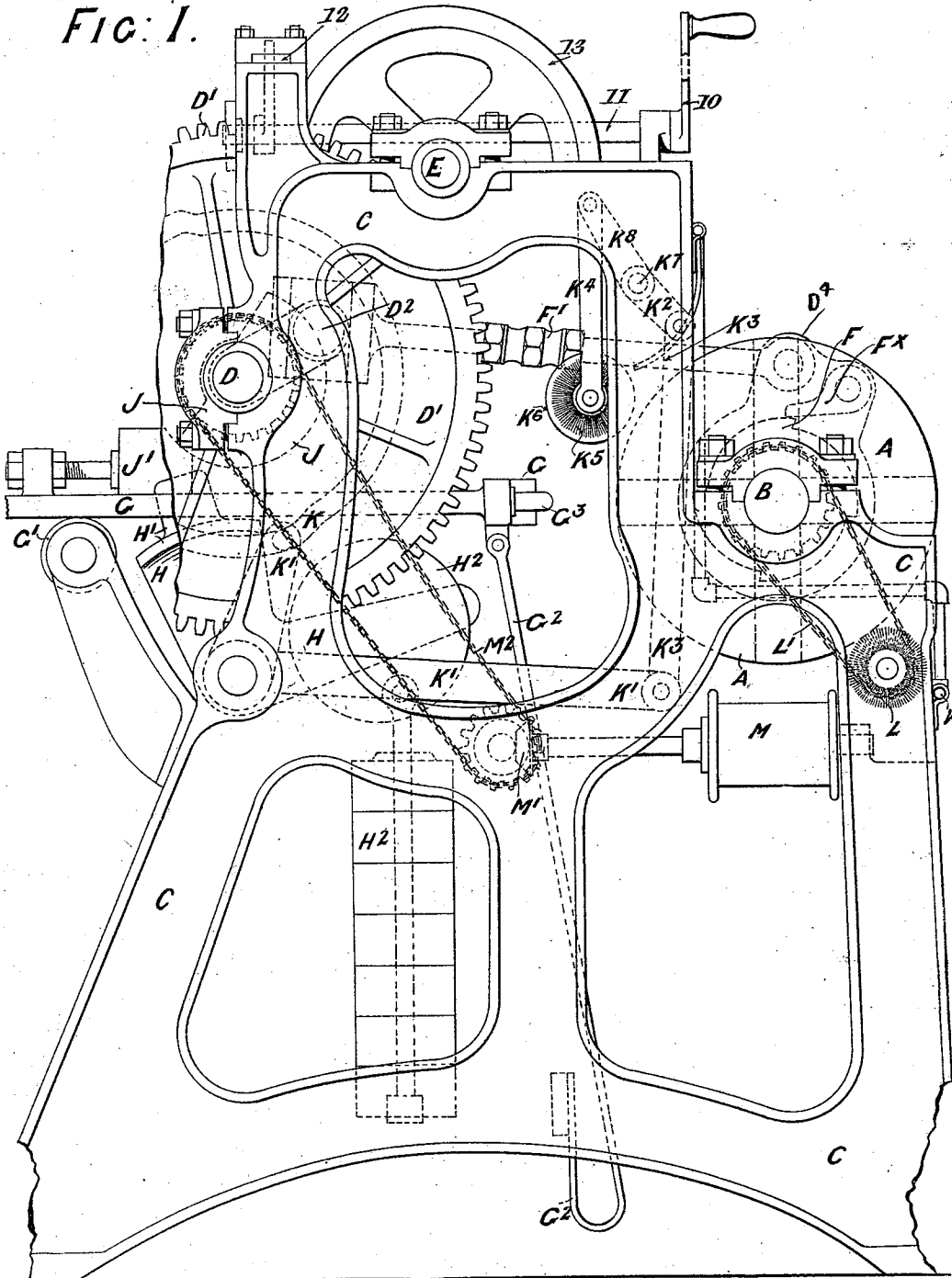
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J. WATSON.
MACHINE FOR PRESSING SOAP.

No. 554,753.

Patented Feb. 18, 1896.

Fig. 1.



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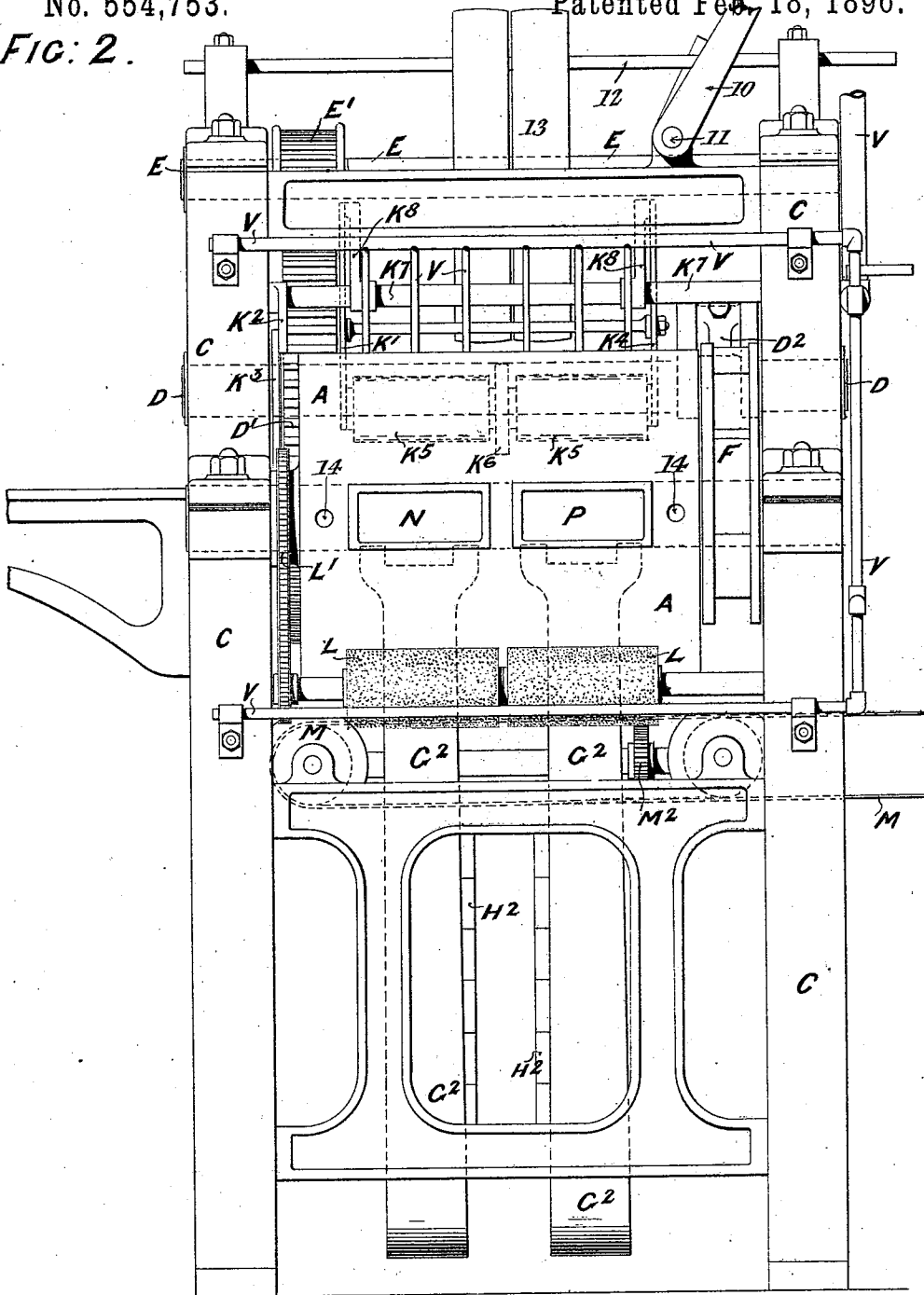
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FIG. 2.



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FIG. 4.

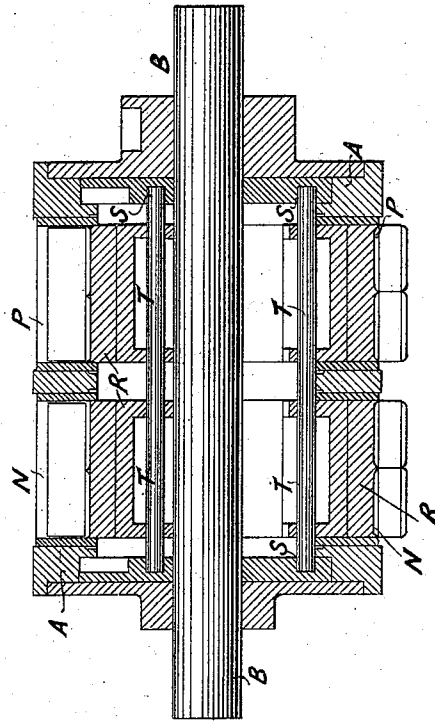
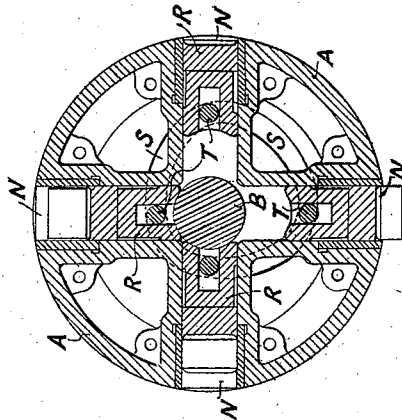


FIG. 3.



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UNITED STATES PATENT OFFICE.

JOSEPH WATSON, OF LEEDS, ENGLAND, ASSIGNOR TO JOSEPH WATSON & SONS, OF SAME PLACE.

MACHINE FOR PRESSING SOAP.

SPECIFICATION forming part of Letters Patent No. 554,753, dated February 18, 1896.

Application filed June 13, 1895. Serial No. 552,630. (No model.) Patented in England March 22, 1895, No. 6,011.

To all whom it may concern:

Be it known that I, JOSEPH WATSON, a subject of the Queen of Great Britain, residing at Leeds, in the county of York, England, have invented a certain new and useful Machine for Pressing Soap, (for which a patent has been granted to me in Great Britain bearing date March 22, 1895, No. 6,011,) of which the following is a specification.

Heretofore it has been proposed to construct machinery for pressing soap into cakes or blocks wherein molds for receiving the soap to be pressed have been carried around the periphery of a revoluble cylinder having a step-by-step motion, and the bases of such molds have been movable, one mold-base being connected to an opposite mold-base and operated by the blow of a hammer or of the pressing-plunger, or otherwise. Pressing-plungers have been employed to coact with the mold-carriers and press the cakes, and such have been actuated by cranks or by weights. The cranks have the effect of applying excessive pressure to a thick or heavy cake of soap, whereas a thin cake is not sufficiently pressed, and in practice the cakes of soap to be pressed commonly vary somewhat in weight and thickness. A weighted plunger is equally unsuitable, as the pressure is too dead and of too long duration, which causes the soap to adhere to the mold.

This invention relates to certain combinations of parts and particularly to the mold-carrying cylinder and the plungers coacting therewith. The molds are arranged oppositely to each other around the periphery of a drum, free to be revolved in a vertical plane with a step-by-step ratchet motion upon a horizontal fixed shaft. The mold-bases rest upon horizontal rods in the interior of the drum, and the rods are carried at their ends in the stationary cam-grooves of disks keyed upon the fixed shaft so that the bases are forced up or outward at proper times by the revolution of the drum to expel the pressed cake and to allow of the mold-bases being cleaned. When the mold-bases are brought inward they rest upon the fixed shaft and are supported thereby. At one point in the revolution of the drum the molds in one set are brought opposite the plungers which are act-

uated by springs assisted by weights and held back by a cam, whereby a swift striking movement is given that strikes a thin cake of soap equally with a thick one, and as soon as the blow is delivered the plunger rebounds from the soap and is caught by the cam as it revolves, thus preventing the plunger resting against the soap and adhering to same.

Figure 1 of the accompanying drawings is a side elevation, and Fig. 2 an end elevation, of a machine constructed according to this invention. Figs. 3 and 4 are detail views.

The mold-drum A is mounted loosely on a fixed shaft B, carried in bearings situated on side frames C C.

D is the main shaft of the machine, which is driven from the belt-shaft E by spur-wheels E' D', and D² is a crank situated on the main shaft D.

F is a ratchet-wheel fixed to the mold-drum A, and F^x is a pawl connected to a crank D⁴ by means of a connecting-rod F', so that at each revolution of the main shaft D the mold-drum A is moved a quarter of a revolution.

G are plungers which are arranged to slide horizontally, being supported at the back by rollers G' carried from the framework, and the front ends of the plungers G are pivoted to the springs G³, which tend to keep them in a forward direction.

H are bell-crank levers which are pivoted below the plungers G, being connected therewith by toothed segments H', and the said segments H' also serve as supports for the plungers G.

H² are weights which are connected to the opposite arms of the bell-crank levers H, and tend to press the plungers G forward in conjunction with the springs G³, and the weights on the levers being adjustable the pressure or force of the plungers G may be regulated as required.

J is a cam which is mounted on the shaft D and works against blocks J', mounted on the plungers G, so as to withdraw the said plungers and retain them in the back position during the required time.

On the ends of the plungers G pins G³ are provided, which enter holes 14 in the mold-drum A when the plungers G strike forward.

On the face of the spur-wheel D' a camway

K is provided which actuates a bell-crank lever K', the opposite end of which is connected by means of a rod K³ to an arm K² mounted on a rocking shaft K⁷, which also carries arms K⁸, which latter are provided with links K⁴ having a rotary brush K⁵ with friction-pulley K⁶ mounted at their lower ends. Another rotary brush L is mounted at the opposite side of the mold-drum A, being geared to the latter by chain-gearing L', so as to rotate at a high speed simultaneously therewith, but in the opposite direction.

M is a traveling band which is actuated through bevel-gearing M' and chain-gearing M² from the shaft D.

V is a tube arrangement for supplying a draft of air to the brushes K⁵ and L, whereby they are kept clean and moist.

The drum A is provided with two sets of molds, composed of four molds N N N N in one set and P P P P in the second set.

R are the moving bases of the molds, which are free to rise from or rest against the fixed shaft B. Camways S are keyed to the fixed shaft B, and rods T, which pass through the bases R, have their extremities in the camways S, which latter actuate the rods T, so as to cause the bases R to rise and fall in their respective molds.

When the machine is required for use, the belt-shaft E is set in action, thereby transmitting motion to the main shaft D of the machine through the spur-wheels E' and D'. The soap is then placed in the molds N and P, now at the upper part of the drum A, and the latter is turned a quarter of a revolution by means of the pawl-and-ratchet motion F^x F. When the drum A has arrived at the right position, the end of the cam J passing the edges of the blocks J' releases the plungers G, thereby allowing them to spring forward and press the cakes of soap within the molds, and the fixed shaft B, being in contact with the bases R, takes the pressure exerted by the plungers G. The plungers G are then withdrawn by the cam J, and the pin on the bell-crank lever K' coming to the change in the cam K lowers the brush K⁵ between the drum A and the plungers G, thereby causing the brush K⁵ to rotate owing to the frictional contact of the pulley K⁶ with the drum A and sweep the surface of the said plungers G and completely clean same. As the drum A rotates the pair of cakes which have been pressed in the molds N and P are gradually forced out of the molds by the bases R, and when the drum A has turned a second quarter of a revolution the cakes of soap are fed out onto the traveling band M, which carries them away from the machine. The bases R are thus at the surface of the drum A, where they remain for a portion of a revolution, and while they are in this position they pass in contact with the rotating brush L, which cleans them effectually from particles of soap which may have adhered to same. The soap in cakes of proper size is advantageously fed

into the molds by hand, and at 10 a crank-arm is represented upon the end of a shaft 11, upon which is a second arm to give motion to the belt-shifting bar 12 for acting upon the belt that is made use of to drive the pulleys 13, so that the machine may be stopped or started. These feeding, pressing, and delivering processes continue, the soap being fed into the molds at the upper surface of the drum at each quarter of a revolution and being delivered onto the traveling band at the base after they have been pressed.

The pressure of the plungers is equally given to both thin and thick cakes of soap, as they work quite independently of each other, and the pressure being of an elastic nature removes the danger of breaking which soap-machines have hitherto been subject to.

I claim—

1. In a machine for pressing soap, the combination with a mold-carrying drum upon a horizontal shaft and a step-by-step ratchet mechanism for revolving such drum, of an independently-acting pressing-plunger G, a spring G² fixed to the framework and acting to support the plunger and carry the same into action, a roller G' on the framework to support the rear end of the plunger, a bell-crank lever H and weight H² on one arm of the bell-crank and a toothed segment on the other arm engaging with the plunger to supplement the spring action, a block J' on the plunger, a cam J on a rotating shaft D to co-act with such block J' and draw back such plunger, as set forth.

2. In a machine for pressing soap, the combination with independently-acting pressing-plungers G, of a drum A loosely carried on a fixed horizontal shaft B, ratchet mechanism for intermittently rotating the drum, molds formed in the drum A to contain the material to be pressed, mold-bases R capable of being raised or lowered in the molds, horizontal rods T in the interior of the drum to carry the mold-bases, disks keyed to the fixed shaft B and having stationary cam-grooves to receive the ends of rods T, whereby the rods and mold-bases are moved inwardly and outwardly at proper times, the mold-bases being supported by the shaft B when the plungers are brought into action, as set forth.

3. In a machine for pressing soap, the combination with the independently-acting horizontal plunger G, of a spring G² connected to the framework and to the plunger to support and carry same into action, a weighted bell-crank lever H engaging with the plunger to supplement the spring action, a cam J on a rotating shaft to withdraw, retain and release the plunger, and a rear guide for the plunger, a drum A loosely carried on a fixed shaft B, ratchet mechanism for intermittently rotating the drum, molds formed in the drum A to contain the material to be pressed, movable mold-bases R, horizontal rods T in the drum A to carry the movable mold-bases, and stationary grooved cams S on the shaft B to re-

ceive the ends of the rods T and move the mold-bases, substantially as set forth.

4. The combination with the independently-acting horizontal plungers G, springs G² and
5 weighted levers H for advancing the plungers, a rotating shaft D, and cams J thereon to withdraw, retain and release the plungers, a mold-carrying drum A and a ratchet mechanism for revolving the drum upon a fixed
10 horizontal axle B, the movable mold-bases R and their rods T and the fixed disks with cam-grooves to operate the mold-bases, a grooved cam K on the rotating shaft D, a

bell-crank lever K' operated by the grooved cam, a rock-shaft K⁷ operated by lever K', a 15 brush K⁵ carried by and raised and lowered into and out of action by said rock-shaft K⁷, and a friction-wheel on the brush K⁵ co-acting with the drum A for rotating the brush to clean the acting surfaces of the plungers G 20 upon the descent of the brush, as set forth.

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Witnesses:

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