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Patented Apr. 17, 1900.

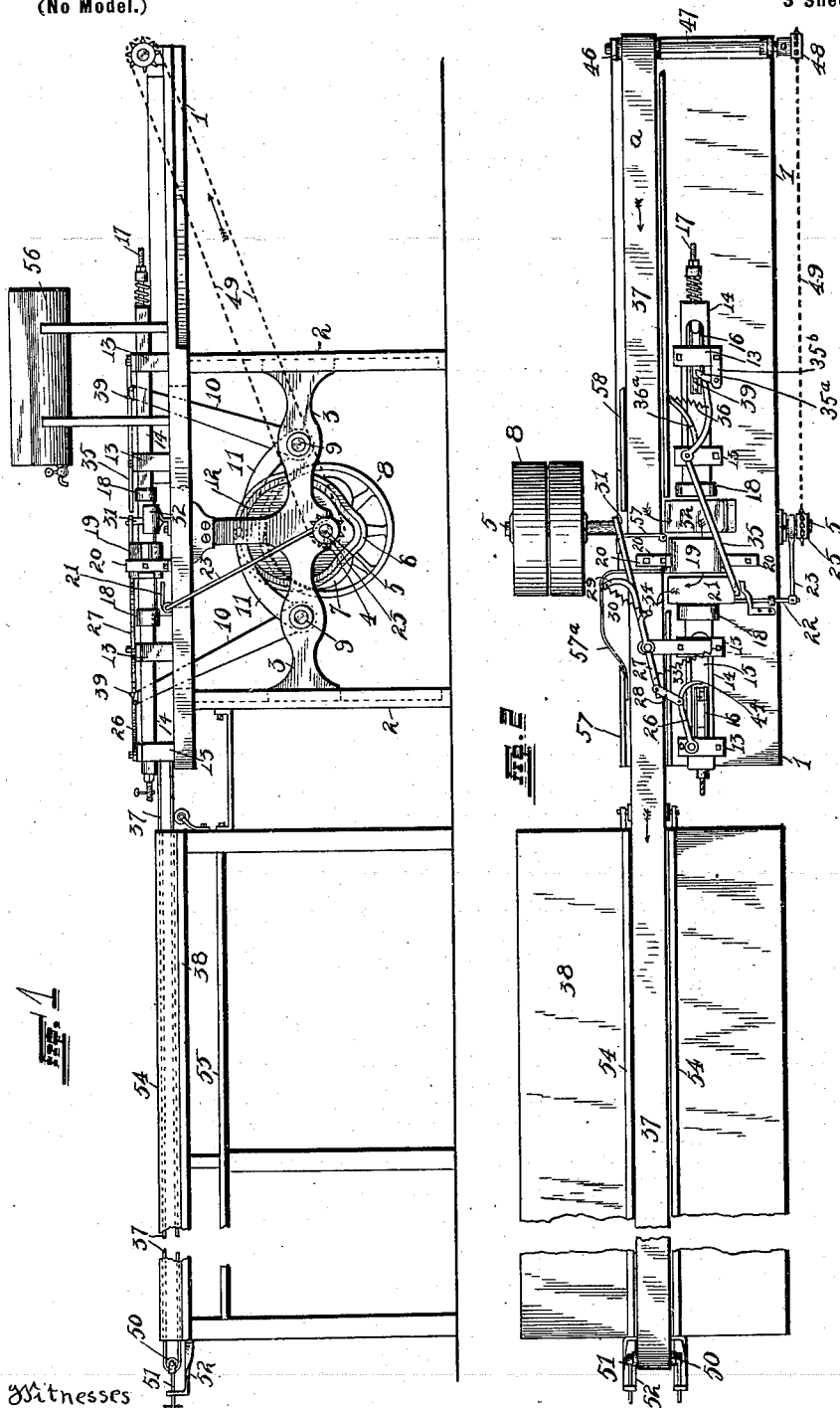
E. J. FORRESTER.

SOAP PRESS.

(Application filed Mar. 13, 1899.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses

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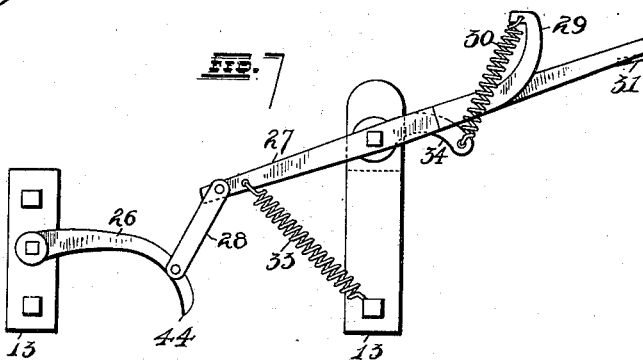
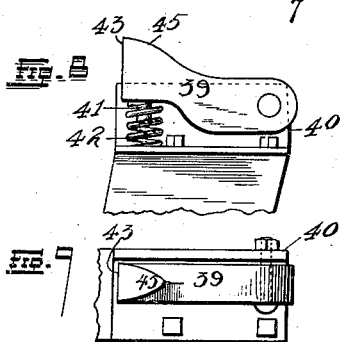
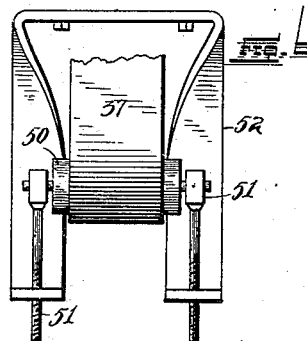
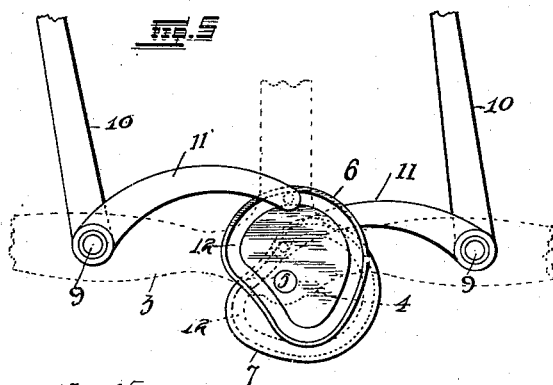
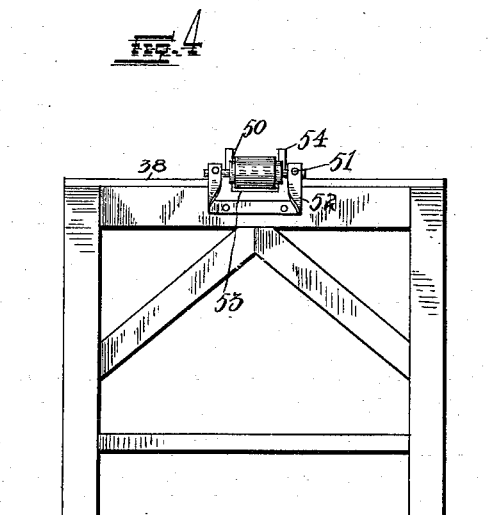
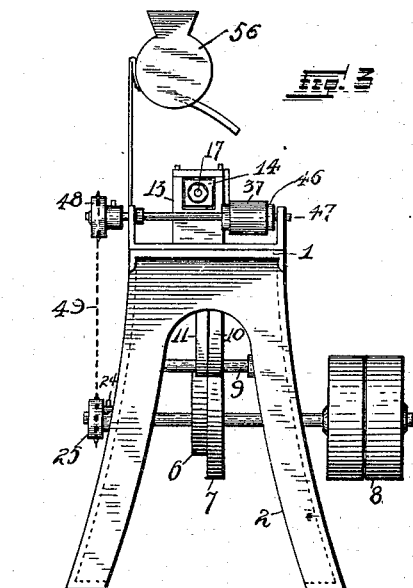
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(Application filed Mar. 13, 1899.)

(No Model.)

3 Sheets—Sheet 2.



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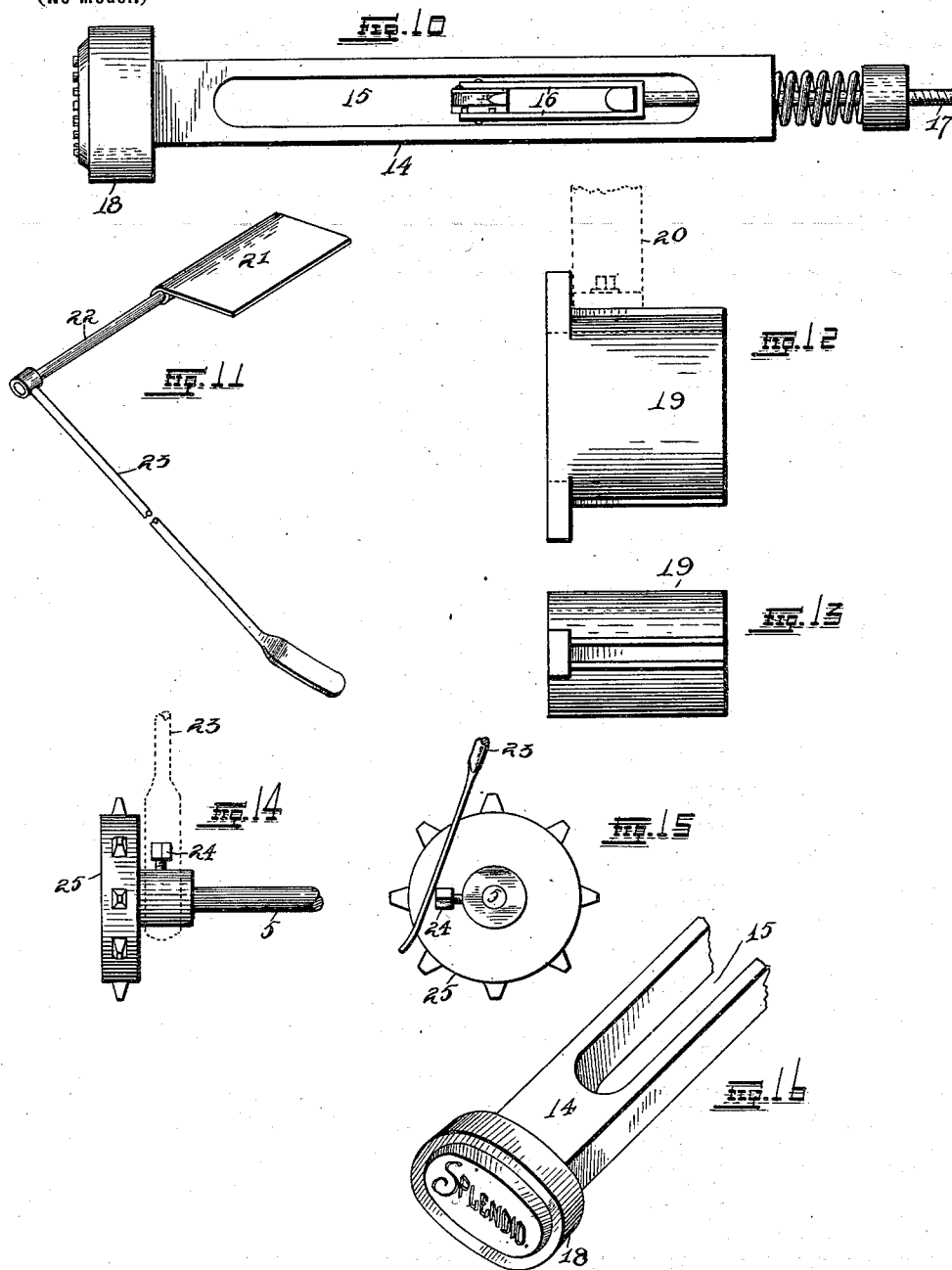
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E. J. FORRESTER.
SOAP PRESS.

(Application filed Mar. 18, 1899.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses

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UNITED STATES PATENT OFFICE.

ENOS J. FORRESTER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO C. W. WALLS
AND F. H. WALLS, OF SAME PLACE.

SOAP-PRESS.

SPECIFICATION forming part of Letters Patent No. 647,822, dated April 17, 1900.

Application filed March 13, 1899. Serial No. 708,946. (No model.)

To all whom it may concern:

Be it known that I, ENOS J. FORRESTER, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Soap-Pressing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to improvements in a soap-pressing machine; and it consists of the novel construction, combination, and arrangement of parts, as will be more fully hereinafter described, and set forth in the claims.

One object of this invention is to construct a machine with a series of levers operated by eccentrics for conveying the soap in communication with dies, suitably pressing the same, and discharging the soap upon the same belt on which it entered, and then conveying the soap to a table, where the same is wrapped.

Another object is to provide suitable levers operated by arms which communicate with and are operated by segments to engage the bar of soap when in alinement with the passage in front of the die, whereby the soap is pressed in the mold and discharged by the same operation or back again onto the belt and delivered to the wrapping-table.

Referring to the drawings, Figure 1 is a side elevation of my complete machine, showing the table partly broken away. Fig. 2 is a top plan view of the same. Fig. 3 is an end view of the machine. Fig. 4 is an end view of the table, showing the belt-adjuster. Fig. 5 is a detail view of the eccentrics and eccentric-operating arms. Fig. 6 is a top elevation of the belt-adjuster detached from the table. Fig. 7 is a detail top plan view of the levers used to feed the soap cake from the belt in communication with the die and mold. Fig. 8 is a detail side elevation of the spring-dog carried by the segment-operating arms by which the soap-operating levers are manipulated. Fig. 9 is a top plan view of the same. Fig. 10 is a detail view of one of the bars carrying the die, showing its connection to the eccentric-operating arms. Fig. 11 is a perspective view of the plate and arm used to disconnect the soap from the end of the die when delivered through the mold. Fig. 12 is a top plan view of the mold. Fig. 13 is an

edge view of the same. Fig. 14 is a side elevation of the sprocket-wheel by which the lever, as shown in Fig. 11, is operated. Fig. 15 is a front view of the same. Fig. 16 is a perspective view of the die and a portion of the bar by which it is carried.

In the drawings I construct my machine with a table 1, mounted upon suitable legs 2, which are made of suitable material, preferably cast-iron in this case, and the said legs are connected together by the braces 3, which act as supports or bearings for the operating mechanism, which is located beneath the table. In the braces 3 is formed a bearing 4, in which is carried a shaft 5, upon which is mounted two eccentrics 6 and 7, and are driven by the pulley 8, on which is placed a belt of the usual construction.

To the brace 3, on each side of the central shaft 5, is mounted a shaft 9, carrying arms 10, which are also provided with a curved arm 11, which comes in communication with the grooves 12 of the eccentrics by which said arms are operated.

Upon the top of the table 1 are provided bearings or guide-posts 13, in which are mounted and carried bars 14, provided with a slot 15, in which extend the arms 10, which are connected to a frame 16, which is carried by an adjusting-bolt 17, formed in the rear end of the bars 14, which is constructed to adjust the die 18, carried by each bar, which is necessary according to the thickness of the bar of soap to be pressed. One of said bolts 17 is provided with a spring 17^a, its function being to allow the bar 14 to be adjusted according to the thickness of the cake of soap to be pressed and also to give in case of an obstruction. It is only necessary to have a spring 17^a on one of said bars 14, as the one to which it is applied has the principal action and the opposite bar is never varied. Between the dies is carried the mold 19, mounted in adjustable supports 20, secured to the top of the table 1. The mold 19 is constructed of suitable size to allow the dies 18 to pass therein and through which the bar of soap is passed after being pressed therein. Immediately in front of the mold 19, but a little beneath the same, is a plate 21, carried by a rod 22, having a downwardly-extending arm 23,

which comes in contact with a set-screw 24, located on the hub of the sprocket-wheel 25, located on the shaft 5. This construction is such that when the set-screw comes in communication with the under surface of the downwardly-extending arm 23 it raises the same slightly, which raises the plate 21, coming in contact with the bar of soap as it is delivered through the mold 19, pressing it slightly upwardly, releasing it from the edge of the die, to which the same on many occasions has a tendency to stick.

Upon the bar or guide-post 13 is mounted a curved lever 26, connected to a lever 27 by a connecting-bar 28. The lever 27 is pivotally mounted upon the plate 27^a, bolted upon the guide-post 13, projecting inwardly over the space occupied by the belt 37, said lever provided with a projection 29, in which is fastened one end of the spring 30, and on its forward end is a flattened downwardly-extending arm 31, which is designed to come in contact with the cake or bar of soap, conveying it inwardly upon the guard-plate 32 when said levers are operated by the arms 10 operated by the eccentrics. The lever 27 is brought back into its normal position by means of the spring 33, having its inner end secured to said lever 27 and its other to the guide-post 13, the purpose of which is when the lever is operated to convey the soap inwardly and release by the arms 10, the tension of said spring 33 bringing said lever 27 in the position as shown in Figs. 2 and 7.

The spring 30, which is carried by the lever 27, is also secured to the projection 34, securely fastened to the guide-post 13, and this spring is for the purpose that when the lever 27 comes in communication with the bar of soap and in case the bar is somewhat larger than the cake the machine is set for the spring 30 will allow the lever 27 to have a back pressure without materially injuring its parts.

The lever 35 is secured to the guide-post 13 on the opposite side of the machine and is likewise provided with springs 36, one end secured to the lever 35 and its other to a projecting arm 36^a. This lever is manipulated by the dog 39 coming in contact with the pawl 35^a, pivotally secured in a brace 35^b, mounted upon the guide-post 13, its operation being similar to the levers previously described; but its action is to come in contact or communication with the bar after it has left the mold 19, pressing it forward, so that said bar is placed upon the endless belt 37, whereupon said bars are conveyed to the table 38, where the same are wrapped. These series of levers are operated alternately by means of the dog 39, mounted in an angular plate 40, suitably secured to the top of each of the arms 10, and is pivotally located therein and provided with a pin 41 on its under surface, around which is placed a spiral spring 42, its purpose being that when the arms 10 are operated the flat surface 43 of the dog comes in communication with the prong 44 of the le-

ver 26, pressing it forward, causing the levers to operate in the usual manner, as previously described, and when the dog 39 is carried beyond the arm 26 the same is allowed to pass said arm after it has fallen back to its normal position by allowing the dog 39 to pass underneath, its round surface 45 coming in contact with the under side of the lever 26, pressing it downwardly upon the spring 42, which allows the dog 39 to swing up or take its normal position when said lever is passed, and this action is repeated throughout the operation of the machine.

The endless belt 37 is mounted upon a roller 46, carried upon the shaft 47, being operated by a sprocket-wheel 48, being conveyed by sprocket-chain 49, secured to the sprocket-wheel 25, mounted upon the driving-shaft 5. The belt is also carried upon the roller 50, secured to the end of the table 38. This roller is carried in two adjusting-rods 51, carried in a support 52, suitably secured to the edge of the table. This device is for the purpose of tightening the belt 37.

The table 38 is composed of a top provided with a groove 53, through which said belt is passed, and on each side of said belt and upon the table are located guards 54, extending a slight distance above the height of said belt, which are for the purpose of preventing the bars of soap from falling from said belt when being conveyed from the machine. At each side of the table, underneath the top, is formed a shelf 55, on which are placed the wrappers in which said bars of soap are wrapped. This is for the convenience of persons wrapping the bars as they are delivered to them by the endless belt, as previously described.

The machine is provided with a tank 56, which is located above the mechanism and contains water, which is allowed to drip upon the passage-way where the soap enters before the die, the water causing said bar to slip easily, because soap on many occasions is very dry and will stick to the belt or guide-plate when not given sufficient dampness or moisture. At one side of the table is secured a guide-strip 57, which is provided at one end with an outwardly-bent guide-strip 57^a, and said guide-strips extend a suitable height and are for the purpose of preventing the cake of soap from falling from the belt 37. On the table opposite the passage through which the soap is to pass to come in communication with the mold I place a guide-strip 58, which is also for the purpose as before mentioned.

The operation of this invention is as follows: The bars of soap are placed upon a section of the belt (marked *a*) by hand at a space of about six to eight inches apart, being conveyed in the direction as indicated by the arrow until they are opposite the guard-plate 32, striking a stop 57, consisting of a bar secured to the table and extending over the belt 37, whereupon at this moment the end 31 of the lever 27 is brought in communication with the end of the bar of soap, press-

ing it forwardly upon the guard-plate 32. This lever is operated by the arm 10 coming forward, its dog 39 coming in contact with the curved end 44 of the lever 26. After the bar is in this position the opposite arm 10 is brought forward by means of the eccentric carrying forward the bar 14, bringing the die in communication with said bar and pressing it into the mold 19. Both bars are brought forward very nearly at the same time, causing each die to press against the cake of soap while in the mold 19, and when pressed the said bar is forced out of the mold upon the plate 21 by means of the rear die extending still forward, while the opposite die is moved backward, and when the cake is at the extreme end of the mold 19 the plate 21 is slightly raised by means of the downwardly-extending rod 23 pressing upwardly upon the cake of soap, releasing it from the edge of the die, and at this moment the arm 35 is brought forward by the action of the arm 10 pressing the bar of soap upon the belt 37, which is then conveyed to the table 38, where it is removed by the parties who place said cakes of soap in the paper wrappers. The cakes of soap are placed on the section *a* of the belt 37 at short intervals apart in order that each cake will not interfere with another while the lever is being operated backward and forward. This is generally arranged according to the judgment of the operator who places said cakes upon the belt.

The plate 21, which has been described, may be located on the top of the mold instead of underneath, as found best desired. In case a larger bar of soap is to be pressed the adjusting feature is done by tightening or loosening the nut upon the bolt 17, which communicates with the frame secured to the arms 10, which will cause the curved arm 11 to find the proper location in the groove 12 of the eccentric, thereby adjusting said movement to a shorter or longer stroke.

I claim—

1. A soap-pressing machine, having a table-framework carrying a soap-pressing mechanism, eccentrics mounted in said framework, arms connected with said eccentrics and with die-carrying bars, said bars mounted in guide-posts upon said table-framework, spring-dogs mounted upon said arms, a series of levers carried by said guide-posts which convey the bars of soap through its route to be pressed, and a means for conveying said soap to the wrapping-table after being discharged from the mold, substantially as specified.

2. In a soap-pressing machine, the combination of a series of levers mounted upon guide-posts secured to the top of the table, a dog mounted upon arms axially mounted in the framework of said machine and connected with eccentrics carried upon the drive-shaft, means for carrying the soap in alinement to be brought in communication with the mold by the use of said levers, die-carrying bars

carried in said guide-posts and operated by the arms connected with the eccentrics for pressing the soap within the mold and to discharge the same when pressed, and means for releasing the soap from the edge of the die when discharged from the mold and to feed said soap again upon the belt to be carried to the wrapping-table, said eccentrics and arms mounted in said framework, substantially as specified.

3. In a soap-pressing machine, the combination of a driving-shaft held in the frame of the machine, suitable eccentrics, arms axially mounted in said framework and communicating with and operated by the said eccentrics, said arms communicating with and operating die-carrying bars mounted in guide-posts upon said frame, levers mounted upon said guide-posts by which to convey the bar of soap from the feeding device and to convey the same after being discharged from the mold to the device by which it is carried to the wrapping-table, a tank mounted upon said machine for the purpose of allowing water to drop upon the passage-way in order that the soap may slide easily in its desired position, substantially as specified.

4. A soap-pressing machine, composed of a table, a supporting-framework mounted beneath said table, eccentrics carried and operated upon the driving-shaft mounted in the framework of said table, oscillating arms mounted in said framework and communicating with and operated by the eccentrics, said arms connected to the die-carrying bars mounted in guide-posts on said table for operating the same, a spring-dog carried by said arm which communicates with levers mounted on top of said machine, said levers provided with springs for conveying said levers to their normal positions after released by the spring-dog, said arms designed to feed the bars of soap to the mold and discharge the same when pressed, and an endless belt operated by a sprocket-chain from the driving-shaft which feeds the soap to the mold and conveys the same when pressed to the wrapping-table, substantially as specified.

5. In a soap-pressing machine, the combination of a series of levers supported upon the table, said levers operated by a dog mounted upon arms axially mounted in the framework of said machine, a means carried in said framework and operated by the driving-shaft for manipulating said arms, a means for carrying the soap cakes in alinement to be brought in communication with the mold by the manipulation of said levers, die-carrying bars manipulated in guide-posts mounted upon the table and operated by said arms for pressing the cake of soap within the mold and to discharge the same when pressed, and means for releasing the soap cake from the edge of the die when discharged from the mold and a means for again conveying the soap back upon the belt to be carried to the

wrapping-table, the various means described operated by the driving-shaft, substantially as specified.

6. A soap-pressing machine, comprising a 5 framework, a fixed soap-cake mold carried by said framework, a single endless carrier for feeding and delivering the cakes of soap, means for laterally feeding the cakes of soap into the mold, plungers provided with soap- 10 dies, and means for operating said plungers for compressing the soap, substantially as specified.

7. A soap-pressing machine, comprising a 15 framework, a fixed soap-cake mold carried by said framework located intermediately of the receiving and delivering ends of the machine, a single endless carrier mounted on said framework for feeding the cakes of soap in juxtaposition relative to the soap-cake mold and to 20 receive the compressed cakes of soap and deliver them to the wrapping-table, and separate means for feeding the soap cakes laterally into the mold, plungers provided with soap-dies adapted to be inserted and with- 25 drawn from the soap-cake mold, means for operating said plungers, means located in the rear of said mold for delivering the com-

pressed cakes of soap laterally, substantially as specified.

8. A soap-press constructed with a suitable 30 frame, a fixed mold, a single endless carrier which is arranged to feed cakes of soap to said mold and also to receive the pressed cakes from said mold and deliver the same, and means for pressing the cake within said 35 mold, substantially as specified.

9. A soap-press constructed with a frame, a fixed mold, means for feeding cakes of soap to said mold, plungers arranged to simulta- 40 neously enter said mold from opposite directions, and means whereby one of said plungers is caused to advance within said mold an abnormal distance and eject the soap cakes therefrom, and means for causing opposite 45 plungers to recede during the abnormal advance just mentioned, substantially as specified.

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

ENOS J. FORRESTER.

Witnesses:

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