Nov. 20, 1928.

1,692,322

C. W. AIKEN

SOAP MARKING MACHINE

Filed April 14, 1921

4 Sheets-Sheet 1

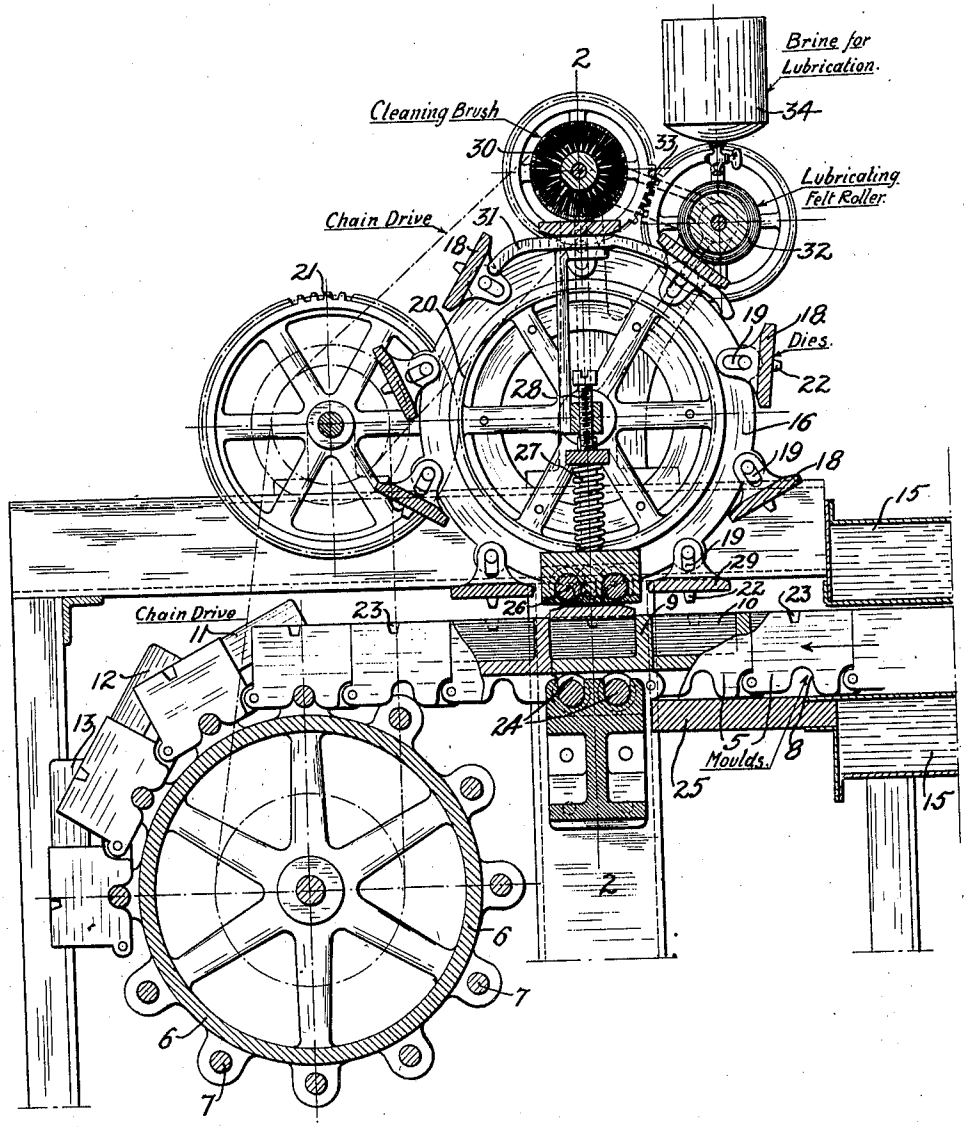



Fig. 1.

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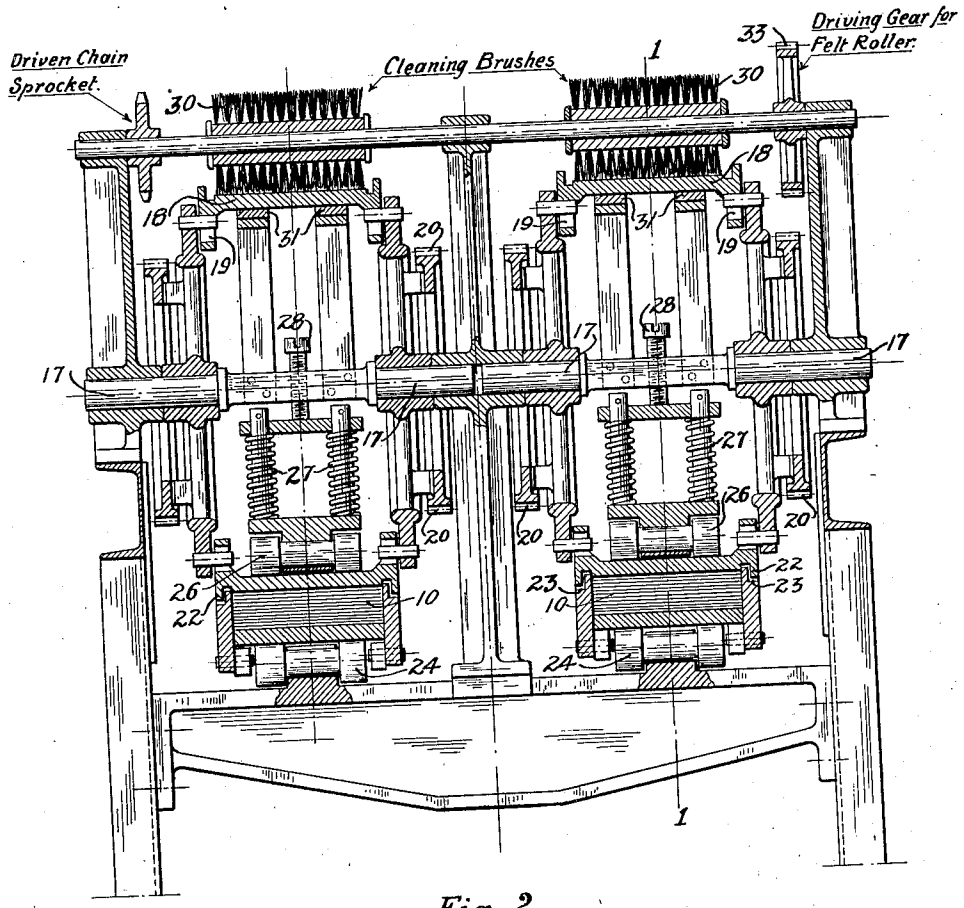



Fig. 2.

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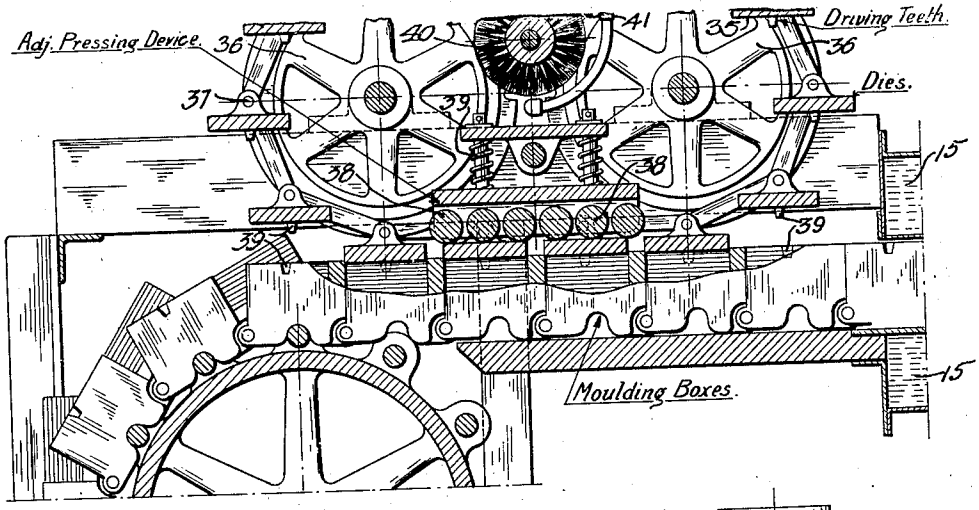



Fig. 3.

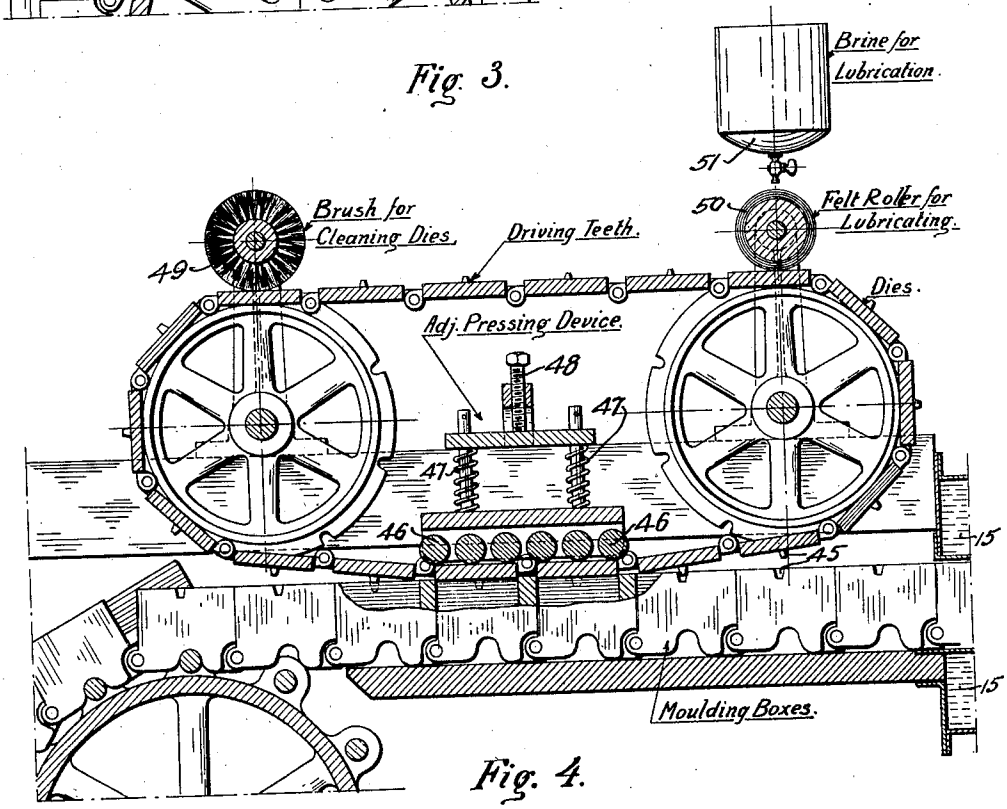



Fig. 4.

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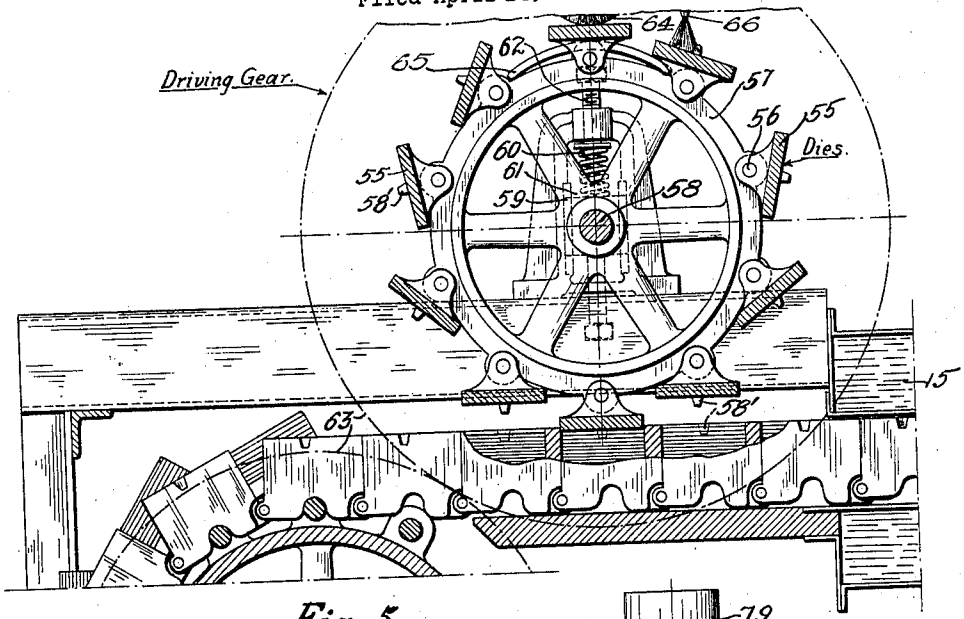



Fig. 5.

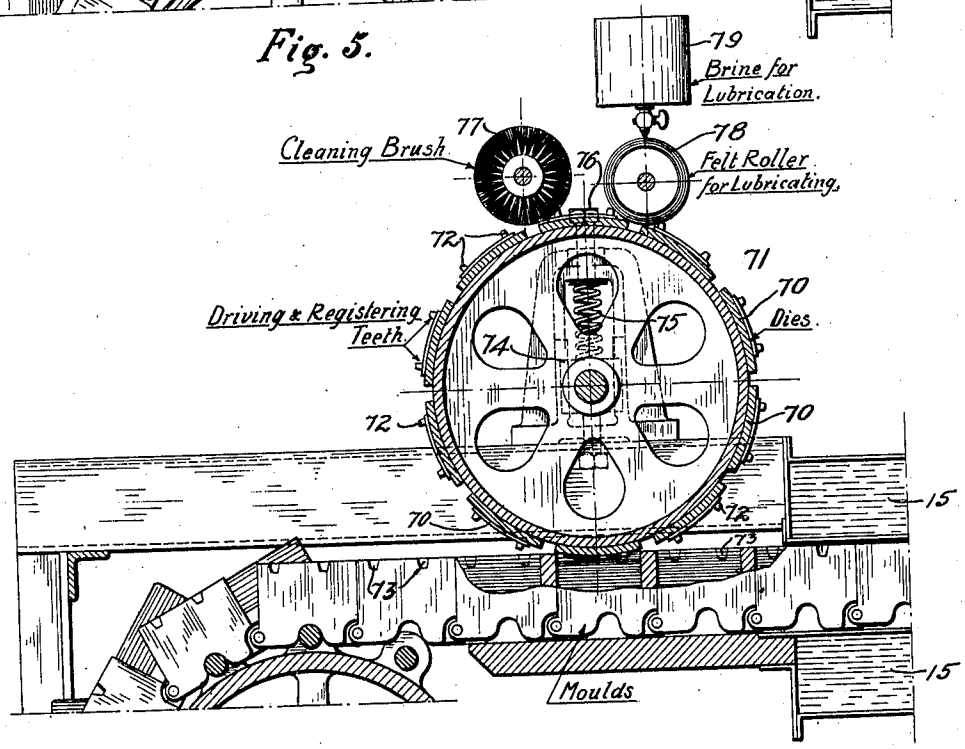



Fig. 6.

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Patented Nov. 20, 1928. 1,692,322

# UNITED STATES PATENT OFFICE.

CHARLES W. AIKEN, OF NEW YORK, N. Y.

## SOAP-MARKING MACHINE.

Application filed April 14, 1921. Serial No. 461,398.

My invention relates to a machine for stamping or marking cakes of material such as soap, paraffin etc.

It is an object of my invention to provide a marking machine in which the marking dies are so mounted as to contact with and impress a mark on the cake of material while the latter is in motion.

It is another object to provide a machine in which the marking die will be forced to travel at the same lineal speed as the cake of material being marked.

It is still another object to provide means for resiliently urging the marking dies into contact with the cakes to be marked.

It is a further object to reduce the number of working parts and the complexity of machines of this type.

Other objects are to provide means for cleaning the dies and lubricating the latter, and in general, the object is to simplify and improve this class of machines.

Briefly stated, in the preferred form of my invention, there is provided an endless chain or succession of mold boxes, each of which is adapted to contain a cake of soap or similar material to be impressed by a marking die. One or more marking dies are mounted so as to coact with and mark the cakes of material in the molds while the latter are in motion. Means are provided for causing the marking dies and cooperating cakes of material to be moved at the same lineal speed while the marking operation is taking place. If desired, means may be provided for cleaning the die or dies each time after the same has been in contact with a cake. Similarly, means may be provided for lubricating the die or dies before the latter are caused to contact with the material to be marked.

In the drawings, I have shown for illustrative purposes only, various forms in which the invention may be embodied.

In said drawings:

Fig. 1 is a vertical sectional view of one form of machine and taken substantially in the plane of the line 1—1 of Fig. 2.

Fig. 2 is a vertical sectional view taken substantially in the plane of the line 2—2 of Fig. 1.

Fig. 3 is a vertical sectional view showing a modified form which the invention may assume.

Fig. 4 is a vertical sectional view showing still another modified form of the invention.

Fig. 5 is a vertical sectional view somewhat similar to Fig. 1, but showing modified means for urging the dies into contact with the soap cakes.

Fig. 6 is a view similar to Fig. 5 showing a modified method of supporting the marking dies.

In Figs. 1 and 2, an endless chain or succession of mold boxes 5—5 are provided and these mold boxes may be actuated or moved along by any suitable means such as the sprocket wheel 6 having pins or teeth 7 for cooperation with corresponding recesses 8 in the mold boxes or parts movable therewith. The chain or mold boxes may be supported upon a second similar sprocket, not shown, to provide a substantially straight run for the boxes during a portion of their travel. If desired, the mold boxes may each comprise an open topped box, and the end of one box may close and form the end of the next succeeding box in the chain. It will thus be seen that when the end 9 of one of the boxes is upon the sprocket wheel, the end 9 will be moved away from the next succeeding box and will permit the cake 10 therein to fall out or be removed. The cakes instead of remaining in the boxes when the latter are on the sprocket, may adhere to the ends such as 9 of the preceding boxes and will then be sustained from the ends 9 as shown at 11, 12, 13 in Fig. 1.

The chain or mold boxes, if desired, may pass through a temperature modifying device 15 which preferably surrounds the chain during a part of its movement up to the point of marking. This temperature modifying tank or device is for chilling the soap cake to provide a skin thereon capable of receiving the impression from the die member hereinafter described. It is, of course, to be understood that if material is to be marked which is too hard at ordinary temperatures to receive the die impression then heating fluid may be put in the temperature modifying device to properly prepare the cakes for marking.

Mounted upon the frame of the machine is a die carier 16, in this case shown as a disc or wheel, on one or more shafts 17. A plurality of die members 18—18 are pivoted to

the die carrier and a lost motion connection 19 is preferably provided to admit of slight independent motion between each die and the carrier. The die carrier may be provided with a suitable gear or gears 20 meshing with gears such as 21, which may, if desired, be chain driven from the main shaft operating the sprocket 6. The proportions of the gears and chain sprockets is such that the lineal velocity of the mold boxes and of the die members will be substantially the same. Each die or parts movable therewith may be provided with a tooth or teeth 22 for cooperation with corresponding teeth or recesses 23 in the mold boxes or parts movable therewith. One or more rollers 24—24 may be journaled in the frame of the machine for providing an anti-friction bearing for the mold boxes as the same pass beneath the marking dies. If desired, the mold boxes may also be supported by means of a plate 25, upon which the mold boxes may slide.

Supported from the frame of the machine, there may be one or more rollers 26 which are resiliently urged by means of springs 27 into contact with the marking dies as will hereinafter be described. Means such as the screw 28 may be provided for varying the degree of pressure with which the die members are urged into contact with the soap cakes.

The operation of the machine as thus far described is as follows: Liquid or semi-solid soap is introduced into the mold boxes from any suitable container not shown, or the soap cakes ready formed might, if desired, be placed in the boxes. If liquid soap is used the cakes will preferably be chilled in passing through the temperature modifying device 15 in order to provide a relatively hard skin or surface on the cakes so that the impression from the dies may be received and retained. The soap cakes will move to the left as seen in Fig. 1. The die member 29 is seen only slightly removed from the mold box and as the chain of boxes progresses toward the left the tooth on the marking die 29 will engage in the slot or groove 23 in the mold box and the die and box will thereafter move with the same lineal speed. The lost motion connection 19 permits the die member to move relatively to the die carrier and when the die comes beneath the rollers 26 the latter will resiliently press the marking die down into contact with the soap cake and the soap cake will be impressed with the mark with whatever degree of pressure has been determined by the screw 28. As the chain of boxes moves further toward the left, the die member in contact with the soap cake will be raised therefrom and carried up and around by the die carrier. The soap cakes as previously described, will be discharged at the left hand side of the machine as viewed in Fig. 1 and be received in a suitable container or upon a conveyor, not shown.

It may happen that small quantities of soap will adhere to the marking dies when the latter leave the soap cake, and the next impression by the die member would probably be blurred or unsatisfactory. For removing any adhering particles of soap, I have provided means in the form shown as a brush 30 which may be chain driven from any of the rotating parts. A suitable supporting guide 31 may be provided to engage beneath the marking dies and hold the latter in position to be engaged by the brush and thoroughly scrubbed to remove the adhering soap.

In order to avoid as much as possible the tendency of the soap to stick to the dies, it is desirable to lubricate the latter, and for this purpose I have shown a lubricating roller 32 preferably of felt which may, if desired, be gear driven from the brush drive as indicated at 33. A suitable lubricant such as brine from the tank 34 will be applied to the lubricating roller. It will, therefore, be seen that each die after impressing a soap cake will be brushed clean and thereafter lubricated before it again engages a soap cake.

In the modification shown in Fig. 3 the endless chain of mold boxes may be the same as that previously indicated. In Fig. 3, the marking dies 35 are rotatably mounted relatively to the mold boxes, but are mounted upon a chain running over two or more sprockets 36. Each die member is pivoted to the chain as at 37, and the chain is preferably rather loose to provide a slight degree of movement of the dies for marking the cakes.

A plurality of rollers 38—38 are resiliently pressed as by means of adjustable springs 39 into contact with the die members as the latter pass beneath the rollers and are in contact with the soap cakes. Each of the dies and mold boxes have interlocking tooth connections such as 39, for causing the marking dies and soap cakes to move with the same lineal speed while the cakes are being stamped or marked.

In this case, the pivoted dies may always face downwardly due to their pivotal support, and a brush such as 40 may be provided for removing particles of soap adhering to the marking dies. If desired, an atomizer or spray 41 may be provided to lubricate the marking dies before the latter contact with the soap cakes.

The operation of the modification shown in Fig. 3 is substantially the same as that previously described. The gear connections for operating the various parts are not specifically shown, since these constitute mere mechanical expedients and form no part of my invention.

In Fig. 4, the mold boxes are the same as in the previous figures and the temperature modifying device may likewise be provided. The marking dies in this case are joined together and form in themselves an endless chain as distinguished from being pivoted to

an endless chain, as disclosed in Fig. 3. The marking dies and boxes in Fig. 4, are provided with interlocking tooth connections 45 for causing the lineal speed of the boxes and die members to correspond while the cakes are being marked. The marking dies in this case are resiliently pressed into contact with the soap cakes by means of rollers 46 which are urged downwardly by means of springs 47, the tension of which may be varied by means of the adjusting screw 48. A cleaning brush 49 is provided for freeing the dies of adhering soap and a lubricating roller 50 and lubricant tank 51 may be provided for lubricating the dies before the latter begin their stamping operation. In this figure, the driving gearing is not shown since the same forms no part of my invention and may be of any desired form.

In the modified form disclosed in Fig. 5, the mold boxes and temperature modifying device may be the same as those hereinbefore described. The marking dies 55 may be pivotally mounted as at 56 upon a die carrier 57 upon a shaft 58. The dies and mold boxes are provided as in the previous cases, with interlocking tooth connections 58′ for causing the lineal speed of the dies to correspond with that of the soap cake being marked.

In this latter modification, instead of resiliently pressing each die independently into stamping contact with the soap cake, the entire die carrier 57 is bodily movable toward and away from the soap cakes. This movement is permitted by reason of the sliding connection 59 between the die carrier shaft 58 and the machine frame. A spring 60 is interposed between the slide 61 and a part of the machine frame for urging the marking dies into marking contact with the soap cakes passing beneath the die members. An adjusting screw 62 may be provided for varying the degree of pressure with which the dies contact with the soap cakes. The marking dies and mold boxes may be operated by means of gears 63 for causing the dies and boxes to move at the same speed.

A cleaning device 64 may be provided for removing adhering matter from the dies and a supporting guide 65 may hold the dies in position to be cleaned. Lubricating means in the form of an atomizer 66 for spraying lubricant upon the dies may be provided.

In Fig. 6, the mold boxes may be the same as in the cases previously considered. In this case, however, the marking dies 70 are preferably rigidly carried by the die carrier 71 and registering teeth 72—73 may be provided for causing the die members and mold boxes to move at the same lineal speed. In this modification, as in that shown in Fig. 5, the entire die carrier is mounted by means of the slidable connection 74 to move bodily toward and away from the mold boxes in order to permit the marking dies to stamp the soap cakes. A spring 75 urges the die carrier and dies into engagement with the soap cakes with the desired degree of pressure and an adjusting screw 76 provides for varying the degree of pressure with which the cakes are stamped.

A cleaning brush 77 may be used as in the previous forms for cleaning the dies. Lubricating means in the form of a felt roller 78 and lubricating tank 79 may be provided for lubricating each die before the latter stamps a cake in one of the mold boxes.

In all of the forms shown, the connection between the marking dies and the mold boxes for securing correspondence in speed may also serve as a driving connection and by driving either one, the other will be driven.

In all of the cases, it is to be understood that the cleaning means may be independently driven or may be stationary and the cleaning action may be due to the movement of the die beneath the cleaning means.

While I have described the invention as particularly adapted for marking cakes of soap, I wish it understood that the invention is not limited to such specific use, and wherever the term "soap" appears in the specification or claims, I wish to have included within that term, other similar materials, such as paraffin, waxes, etc., unless by the context or otherwise a different construction is necessary.

Various modifications have been disclosed in the drawings, but I desire that it be understood that the drawings are illustrative rather than definitive and that various changes and modifications may be made within the scope of the appended claims.

I claim:

1. In a soap marking machine, an endless chain of mold boxes for carrying cakes to be marked, a plurality of marking dies rotatably mounted to move adjacent said boxes and mark the cakes therein, means for causing the lineal speed of said boxes and marking dies to be substantially equal, means for cleaning each die, and means for lubricating each die after the latter has been cleaned.

2. In a soap marking machine, an endless chain of mold boxes, each adapted to contain a cake to be marked, a die member for marking a cake in one of the mold boxes, and means for cleaning the die member after the latter has marked a cake.

3. In a soap marking machine, an endless chain of mold boxes each adapted to contain a cake to be marked, a die member mounted for coaction with a cake in one of said mold boxes, and means for lubricating the marking die before the latter contacts with the cake to be marked.

4. In a soap marking machine, an endless chain of mold boxes each adapted to contain a cake of material to be marked, means for modifying the temperature of the cakes in the mold boxes, a marking die rotatably mounted

with respect to said boxes, means for causing the marking die to move at the same lineal speed as and parallel with the mold boxes and to coact therewith for marking a cake in a mold box, and means for resiliently pressing said marking die toward the cake of material to be marked.

5. In a soap marking machine, an endless chain of mold boxes, each adapted to carry a cake of material to be marked, a plurality of marking dies mounted upon a member and rotatable with respect to said mold boxes, each of said dies being mounted so as to coact with one of said mold boxes as the latter pass beneath the die members, whereby the cake in the mold box will be marked, means for cleaning each die member after the latter has marked a cake, and means for lubricating each die member before the latter contacts with a cake to be marked.

6. In a soap machine, a plurality of interlocking soap molds adapted to receive the soap and connected together to form a conveyor, carrier means, a plurality of continuously moving automatically applicable stamping members traveling synchronously with said molds said stamping members being movable independently of each other and guided to move parallel with said conveyor.

7. In a soap cake forming machine, a plurality of interlocking soap receiving molds connected to form a conveyor and adapted to automatically discharge the soap cakes as the conveyor moves, in combination with a plurality of consecutively operable stamping members operated synchronously with said molds, and means for automatically cleaning said stamping members.

8. In a soap cake forming machine, a plurality of interlocking soap receiving molds connected to form a conveyor and adapted to automatically discharge the soap cakes as the conveyor moves, in combination with a plurality of consecutively operable stamping members operated synchronously with said molds, means for automatically cleaning said stamping members, and means for automatically lubricating said stamping members.

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