

Aug. 16, 1938.

I. F. MANDELL

2,127,180

CAP FORM WAXING DEVICE FOR USE IN A PAPER BOTTLE CAPPING MACHINE

Filed Sept. 29, 1936

5. Sheets-Sheet 1

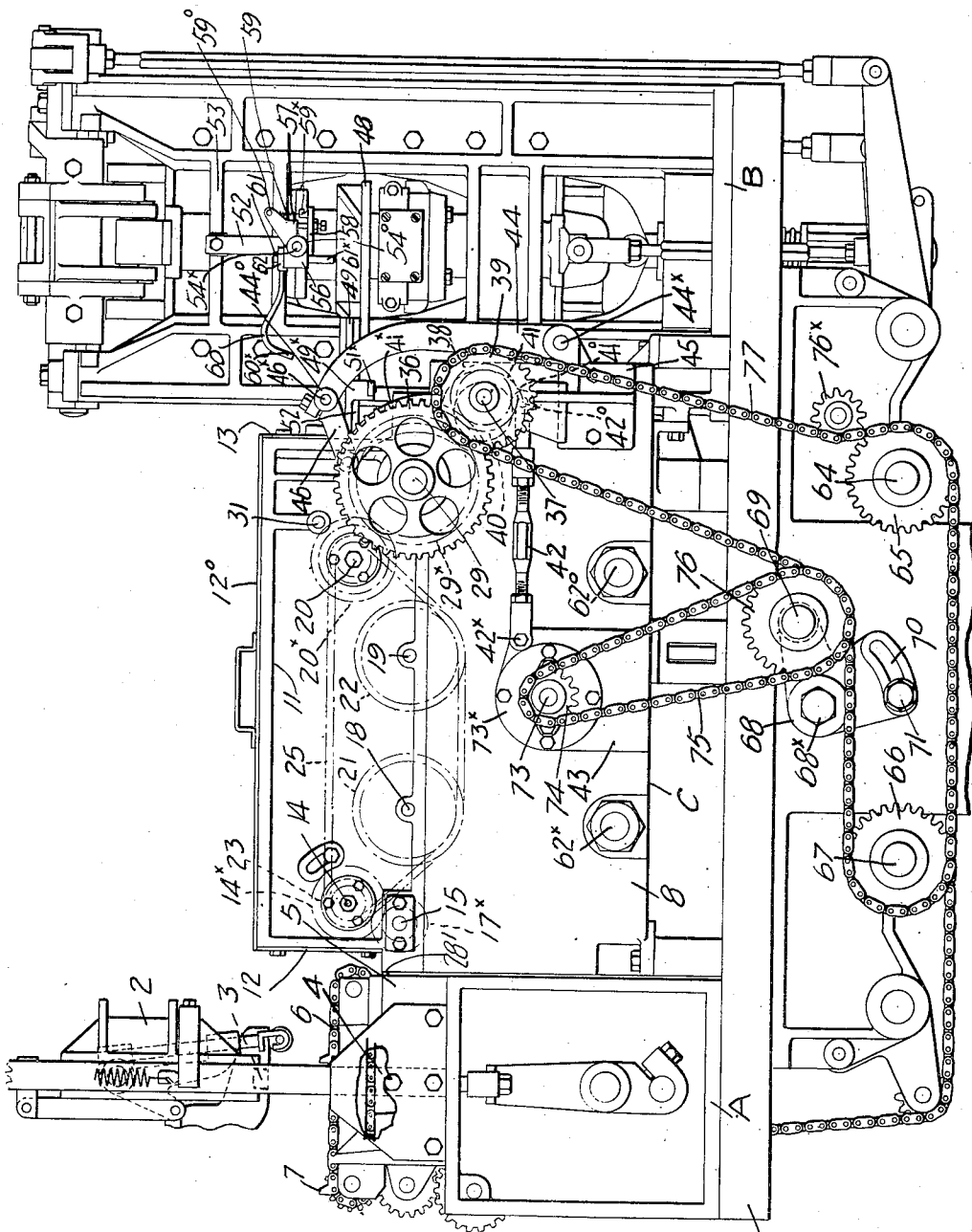


FIG. 1.

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5 Sheets-Sheet 2

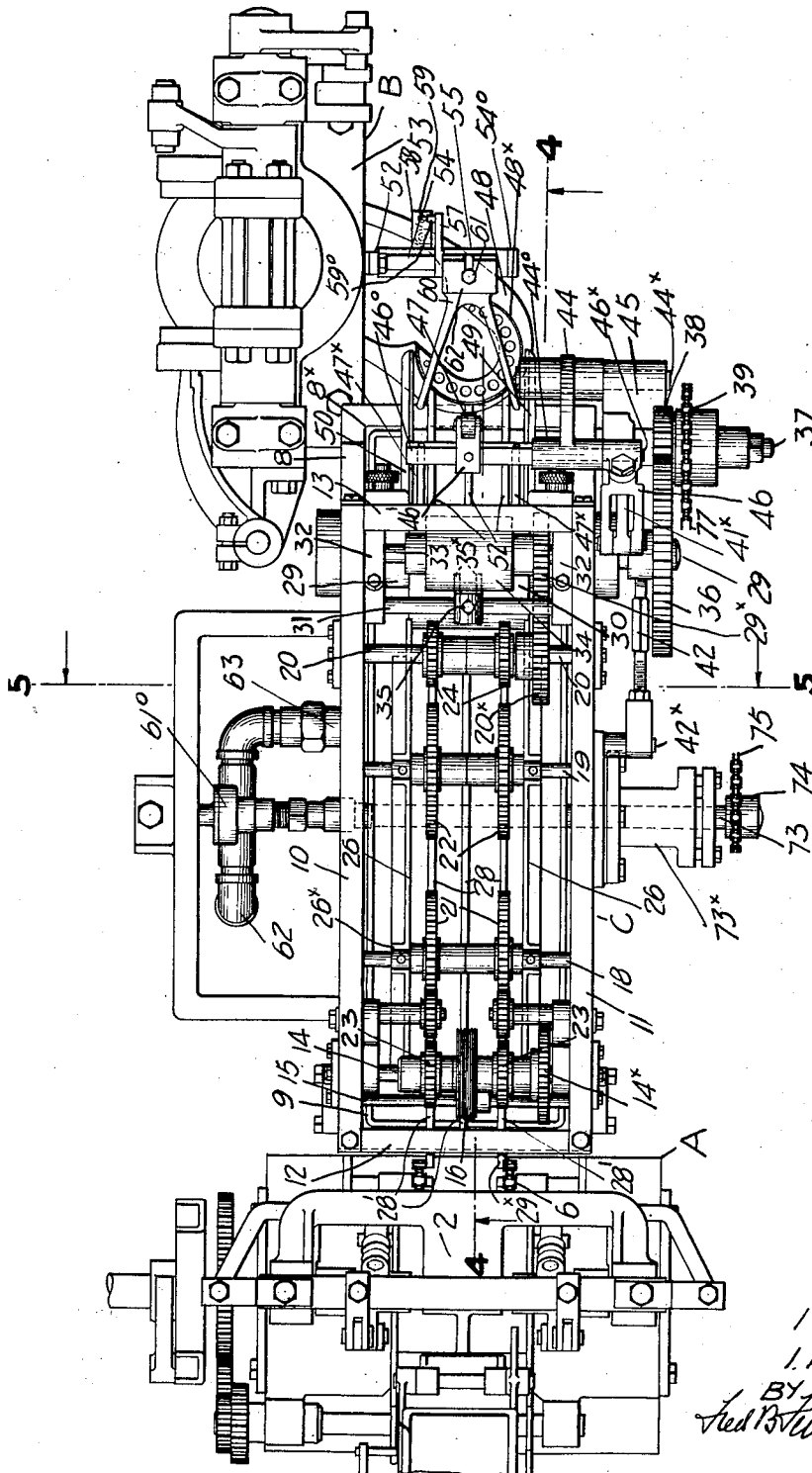


FIG. 2.

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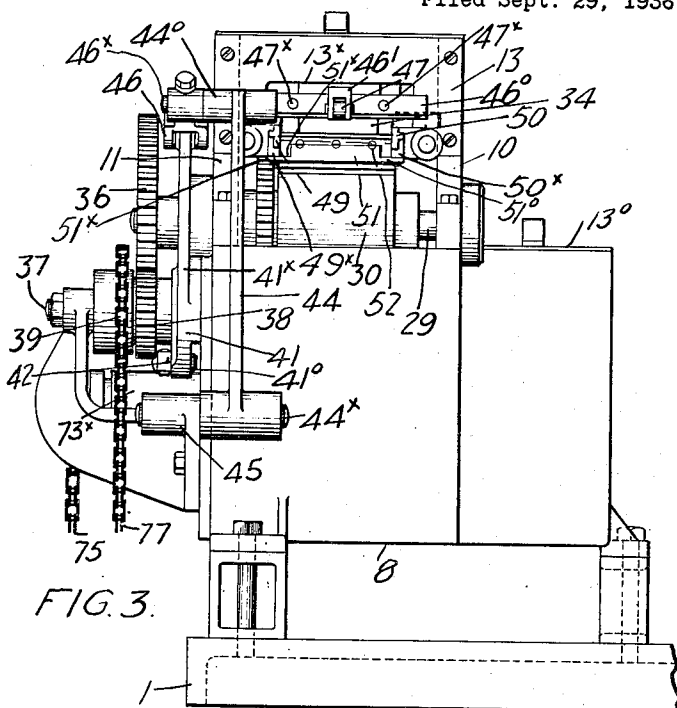


FIG. 3.

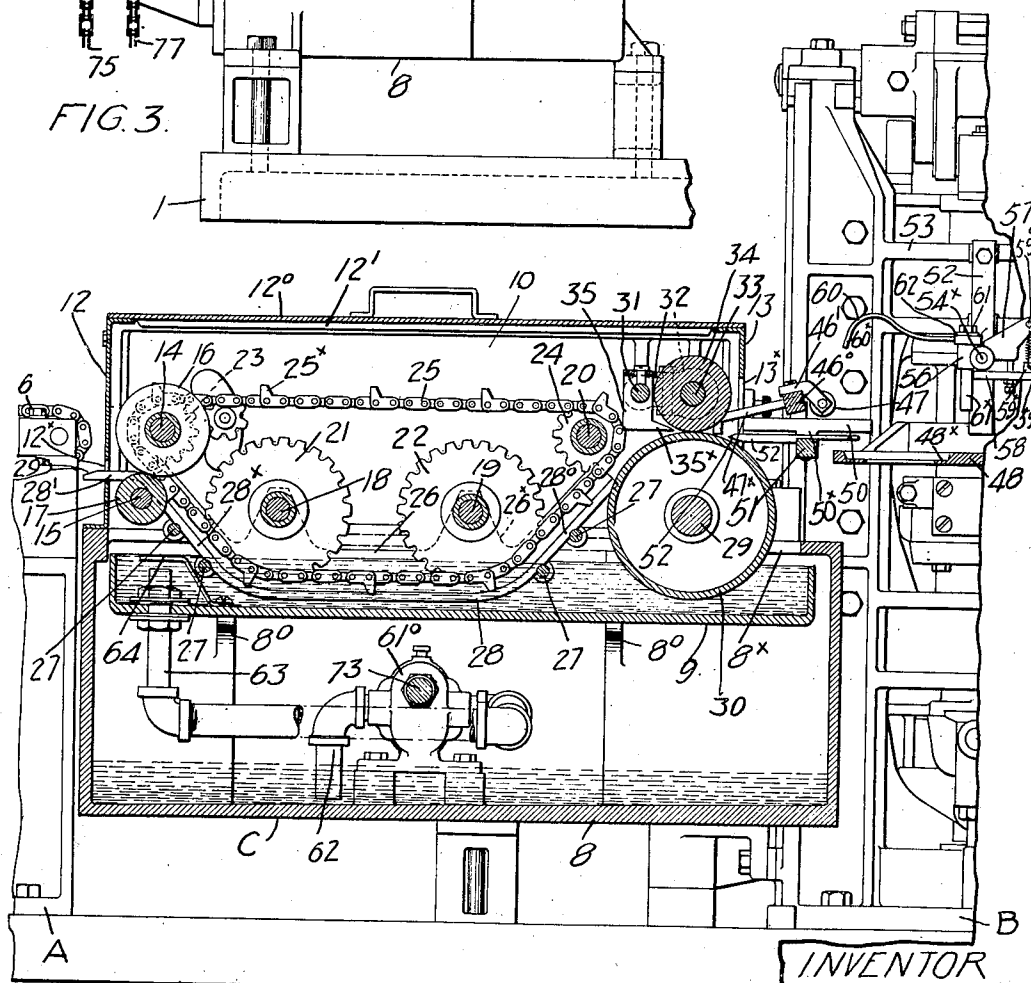


FIG. 4.

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5 Sheets-Sheet 4

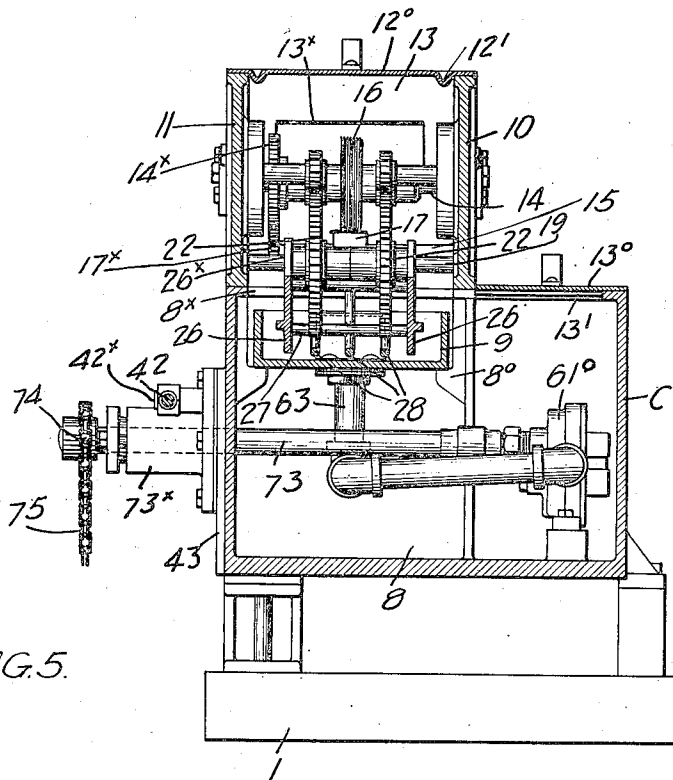


FIG. 5.

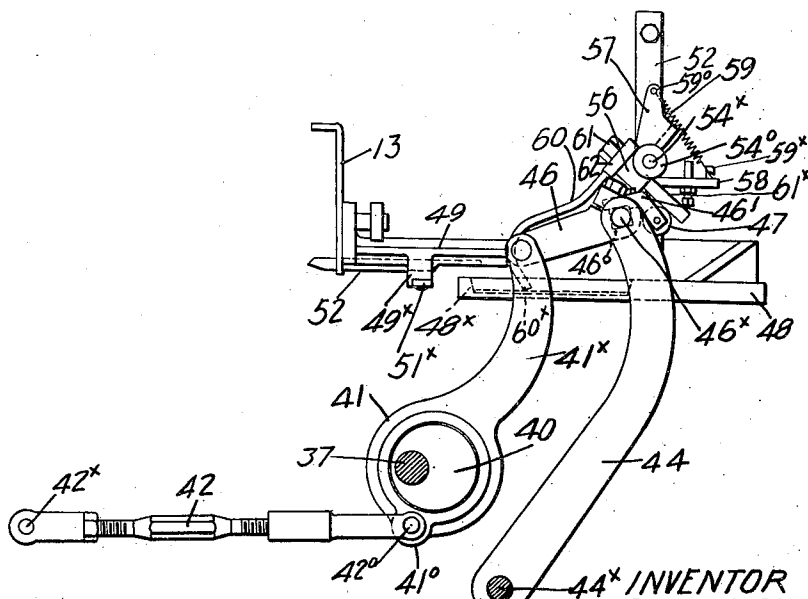


FIG. 6.

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CAP FORM WAXING DEVICE FOR USE IN A PAPER BOTTLE CAPPING MACHINE

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5 Sheets-Sheet 5

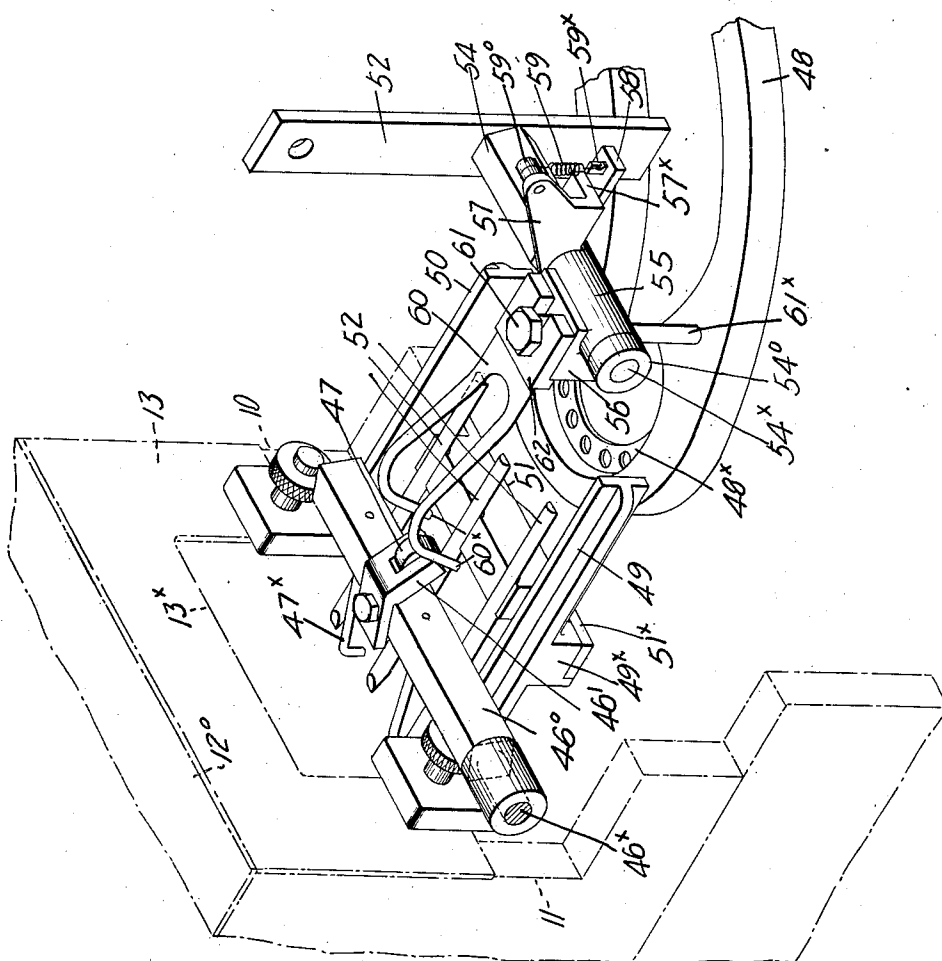


FIG. 7.

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UNITED STATES PATENT OFFICE

2,127,180

CAP FORM WAXING DEVICE FOR USE IN
A PAPER BOTTLE CAPPING MACHINEIrving F. Mandell, North Quincy, Mass., assignor
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Application September 29, 1936, Serial No. 103,172

2 Claims. (Cl. 91-46)

My invention relates to improvements in cap form waxing devices for use in a paper bottle capping machine, and the object of the invention is to devise simple means for automatically receiving the cap forms from the main feeding and printing mechanism of the capping machine, for feeding the received cap forms through a wax bath, and for transferring the waxed cap forms from the bath into receiving mechanism for conveying them to the forming mechanism performing the next operation of the capping machine, and for ensuring the time of immersion in a wax bath maintained at constant level and even temperature is sufficient for the proper sterilization of the cap forms prior to contact with the bottle.

Fig. 1 is a side elevation of the waxing device showing its position in relation to the printing mechanism and forming dies.

Fig. 2 is a plan view of the parts illustrated in Fig. 1, the tank covers and conveyor chains of the immersion tank being removed.

Fig. 3 is an elevation of the right hand end of the waxing mechanism, the forming dies and mechanism for transferring the cap forms from the waxing device to the forming dies being removed.

Fig. 4 is a sectional view taken on line 4-4 Fig. 2.

Fig. 5 is a transverse sectional view on line 5-5 Fig. 2.

Fig. 6 is an enlarged elevation of the mechanism for transferring the waxed forms from the immersion tank to the form receiving arm of the cap forming mechanism.

Fig. 7 is an enlarged perspective detail of the major portion of the mechanism illustrated in Fig. 6 and showing the position of the immersion tank indicated by dot dash lines.

In the drawings like letters of reference indicate corresponding parts in the different views.

1 indicates the main frame of the capping machine on which are supported the cap form printing mechanism A, the forming mechanism B and the cap form waxing mechanism C interposed between the printing mechanism A and forming mechanism B. The cap form printing mechanism A and the cap forming mechanism B form the subject matter of separate applications, the waxing mechanism C being the subject matter of the present application.

2 is the vertically movable printing head provided with a printing plate 3 coacting with a platen 4 carried on the platen support 5. 6 is a chain conveyor provided with lugs 7 by which

the cap forms are carried onto the platen 4 beneath the printing plate 3 for the printing operation and after the printing operation are again carried by the lugs 7 forward to the waxer C, the construction of which I will now describe.

8 is the heating tank of the waxer provided with a top opening 8^x beneath which is supported on lugs 8^o an immersion tray or bath 9. 10 and 11 are side plates extending upwardly from the longitudinal edges of the opening 8^x and suitably secured to the tank 8.

12 and 13 are end plates provided respectively with openings 12^x and 13^x to permit of the ingress and egress of the cap forms. 12^o and 13^o are covers held in place by the ribs 12' and 13'. Adjacent to the ingress orifice 12^x are upper and lower shafts 14 and 15 journaled in the side plates 10 and 11. 16 is a grooved roller secured to the shaft 14 to coact with the roller 17 free on the shaft 15 to feed the cap forms forward. 18, 19 and 20 are shafts also journaled in the side plates 10 and 11. 14^x is a gear secured to the shaft 14 and meshing with a gear 17^x mounted on the shaft 15 and connected to the roller 17 to ensure positive coaction between the rollers 16 and 17.

To the shaft 18 is secured a pair of sprocket gears 21 spaced equally each side of the centre of the tank 8. In a line with the sprocket gears 21 are sprocket gears 22 secured to the shaft 19. In the same vertical plane as the sprocket gears 21 and 22 are sprocket gears 23 secured to the shaft 14 and sprocket gears 24 secured to the shaft 20. On each set of sprocket gears 23, 21, 22 and 24 are mounted endless feed chains 25 running parallel to each other and provided with feed lugs 25^x similar to the lugs 7 of the printing mechanism hereinbefore described.

On the shafts 18 and 19 are mounted parallel bar brackets 26 at the outside of each pair of sprocket gears 21, 23 by hangers 26^x. To the bar portions of the brackets 26 are secured transverse bars 27 to which are spot welded, or otherwise suitably secured, cap form guide rails 28 having upwardly inclined forward ends 28^x and upwardly inclined rear ends 28^o, the inclined forward ends 28^x terminating in horizontal portions 28¹ beveled at 29^x to permit the cap form passing easily thereonto as it is fed by the feed chains 6 of the printing mechanism to the feed rollers 16 and 17.

As the feed rollers pass the cap forms forward, the lugs 25^x engage the rear edge of each form carrying them forward over the guide rails 28 guided downward by the rail portions 28^x and the

portions of the feed chains 25 paralleling the same and beneath the surface of the liquid wax contained in the tray 9 to pass horizontally beneath such surface to the upwardly inclined guide portions 28^o up which the caps are carried.

29 is a shaft journaled in the side plates 10 and 11 adjacent to the guide rail portions 38^o. 30 is a discharge roller secured to the shaft 29. 31 is a rod secured in the plates 10 and 11 and on which are swung arms 32 in which, at their free ends, is journaled a shaft 33 on which is mounted a roller 34 resting upon the roller 30. 35 is a U-shaped guide member secured to the rod 31 and provided with tongues 35^x to guide the cap forms to between the rollers 30 and 34.

36 is a gear secured to the shaft 29. 37 is a shaft mounted in a suitable bearing bracket carried by the tank 8. 38 is a pinion secured to the shaft 37 and meshing with the gear 36. 39 is a sprocket gear also secured to the shaft 37 and driven as hereinafter described.

Secured to the shaft 37 is an eccentric 40 shown in the forward position in Fig. 1 and the rear position in Fig. 6 provided with an eccentric strap 41 provided with an arm 41^x and a lug 41^o. 42 is an adjustable binding rod pivoted at 42^x on the boss 43. The opposite end of the rod 42 is pivotally connected at 42^o to the lug 41^o.

44 is an arm swung upon a pin 44^x carried in a bracket 45 carried by the base of the tank 8. 46 is a link pivotally connected at one end to the upper end of the arm 41^x and at the opposite end upon a shaft 46^x journaled in the sleeve like upper end 44^o of the arm 44. The shaft 46^x is provided beyond the sleeve 44^o with a squared portion 46^o to which is secured a bracket 46^x in which is journaled a roller 47. Also fixed on the squared portion 46^o are a pair of hooked fingers 47^x.

48 is the transfer arm of the forming mechanism B, provided with a cap form receiving recess 48^x. The arm 48 is reciprocated by mechanism so that each cap form received in the recess is carried into the forming dies to be further operated upon. This mechanism I do not further describe as it forms part of the mechanism B forming the subject matter of a separate application.

Secured to and extending outwardly from the end plate 13 is a pair of brackets 49 and 50 (see Fig. 7) provided with depending lugs 49^x and 50^x. 51 is a bridging piece provided with end extensions 51^x and 51^o secured to the bottom face of the depending lugs 49^x and 50^x. 52 are guide rails spot welded or otherwise secured to the bridging piece 51. The cap forms, as they leave the rollers 30 and 34, pass onto the guide rails 52.

By the rotation of the eccentric 40, the arms 41^x and 44 and link 46 are carried towards the tank 8 carrying the hooked ends of the fingers 47^x over the discharged cap form resting on the guide rails 52 so that the hooked ends of the fingers drop behind the rear edge of the form. As the arms 41^x and 44 are swung in the reverse direction by the eccentric 40, the hooked ends of the fingers 47^x engage the peripheral edge of the cap form so as to draw it over the recess 48^x into which the form drops.

In order to ensure that the cap form fits into the bottom of the recess 48^x I provide the following mechanism.

52 is a vertical bar secured to the body of the die casting 53 of the cap forming mechanism B. From the bar 52 extends an hexagonal stud 54 which is provided with a rounded portion 54^x.

Freely mounted on the portion 54^x is a sleeve 55 held in place by the collar 54^o.

56 is a block formed integral with the sleeve 55. 57 is a lug also formed integral with the sleeve 55 and provided with a foot 57^x (see Fig. 7). 58 is a bar secured to the lower flat face of the hexagonal portion of the stud 54. 59 is a tension spring anchored at one end at 59^x to the bar 58 and to the pin 59^o extending from the lug 57 at the opposite end. A bifurcated member 60 is secured to the block 56 by a bolt 61 extending through a clamping member 62, the end of the bolt projecting downward as indicated at 61^x.

When the cap form is drawn towards the recess 48^x by the fingers 47^x, the roller 47 is carried by the same movement into engagement with the depending end 61^x of the bolt 61 thereby rocking the sleeve 55 counterclockwise and carrying the ends 60^x of the bifurcated member 60 downward against the upper face of the cap form fed into the recess 48^x by the fingers 47^x so as to force such cap form firmly into the bottom of the recess 48^x. When the roller 47 returns, the sleeve 55 and portion 60 are carried back to their normal position by the spring 59.

In order to maintain the melted wax at the temperature required, I provide two heating elements 62^x and 62^o (see Fig. 1) secured in the wall of the heating tank 8 and in order to ensure evenness of temperature this heated wax is pumped up into the tray 9 by the pump 61^o and allowed to overflow into the tank so that the wax is always maintained at a definite level irrespective of the varying level in the tank 8. 62 is the inlet pipe and 63 the outlet pipe of the pump. 64 is a baffle plate extending over the open discharge end of the pipe 63 so as to prevent the heated wax being pumped too high.

In order that the various parts may be operated in unison I provide the following drive.

64 is the main drive shaft to which is secured the sprocket gear 65. 66 is a sprocket gear secured to a suitably journaled shaft 67. 68 is a bell crank bracket pivoted at 68^x. 69 is a shaft journaled in one arm of the bracket 68. The other arm of the bell crank is provided with a concentric slot 70 through which extends a securing bolt 71.

72 is the shaft of the pump 61^o journaled in a bearing 73^x and to which is secured the sprocket pinion 74. 75 is a sprocket chain extending around the sprocket gears 74 and 76. 77 is a chain engaging the sprockets 65, 66, 76 and 39. From the sprocket wheel 39 the gears 38 and 36 are rotated driving the shaft 29 which is connected by the intermeshing gears 29^x and 20^x to the shaft 20 to drive the carrier chains 25. By this means the pump 61^o and mechanism for feeding the cap forms through the tank are operated from the same drive shaft. The sprocket gears 76 and 76^x serve as tighteners for the chains 75 and 77. The sprocket 76 is a double sprocket to accommodate the chains 75 and 77.

What I claim as my invention is:—

1. In a cap form waxing device, a liquid wax containing tank having an ingress opening and an egress opening at opposite ends, a waxing pan supported in the tank between the ingress and egress openings, suitably driven sprockets and sprocket chains mounted thereon to form parallel horizontal lower runs submerged in the wax of the pan, cap form guiding means beneath the sprocket chains, and feed fingers extending from the sprocket chains to engage the cap forms and push them forward over the guid-

ing means towards the egress opening as the chains revolve.

2. In a cap form waxing machine, a liquid wax containing tank having an ingress and egress opening at opposite ends, a waxing pan supported in the tank between the ingress and egress openings, suitably driven sprockets, an endless sprocket chain arranged to form a horizontal lower run extending beneath wax level of the

pan, a guide rail extending parallel to and beneath the lower run of the sprocket chains and having inclined ends leading up towards the ingress and egress openings, and feed lugs extending from the sprocket chain to engage the cap forms to push them forward over the guide rails from the ingress towards the egress opening.

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