

J. WERNER.
 CANDY COATING MACHINE.
 APPLICATION FILED JAN. 17, 1910.

991,919.

Patented May 9, 1911.

5 SHEETS-SHEET 1.

FIG. 1.

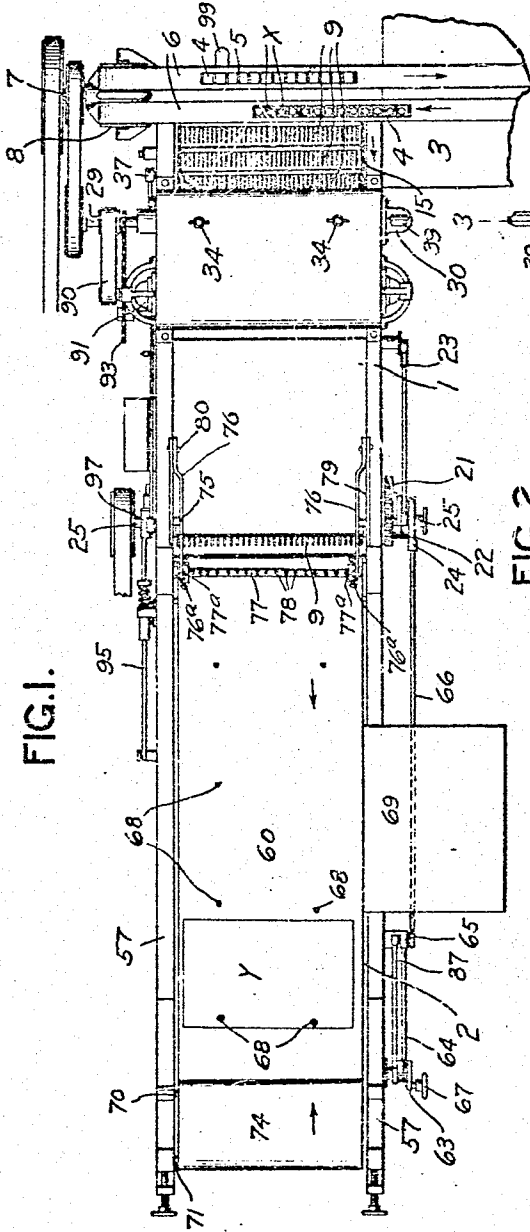
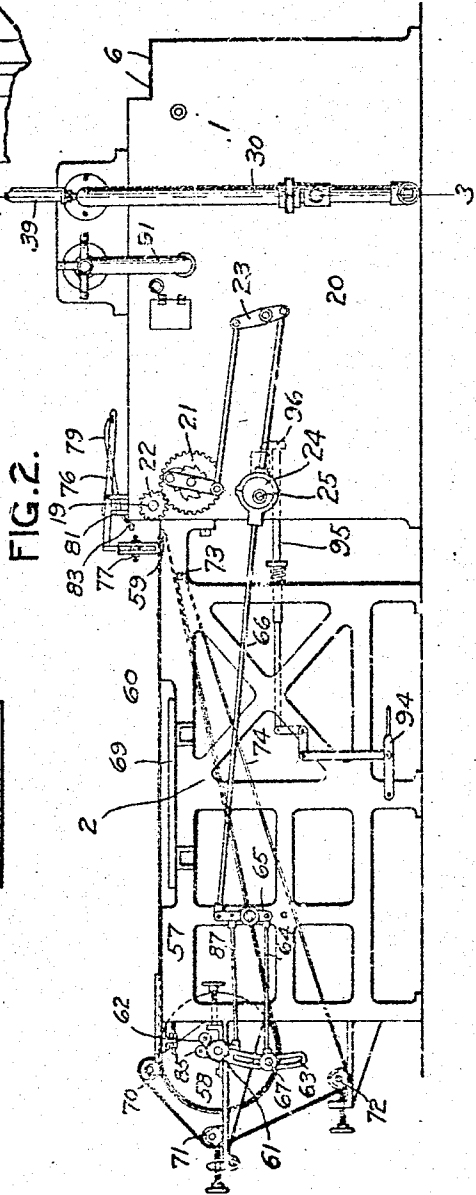


FIG. 2.



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 L. P. How

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5 SHEETS-SHEET 2.

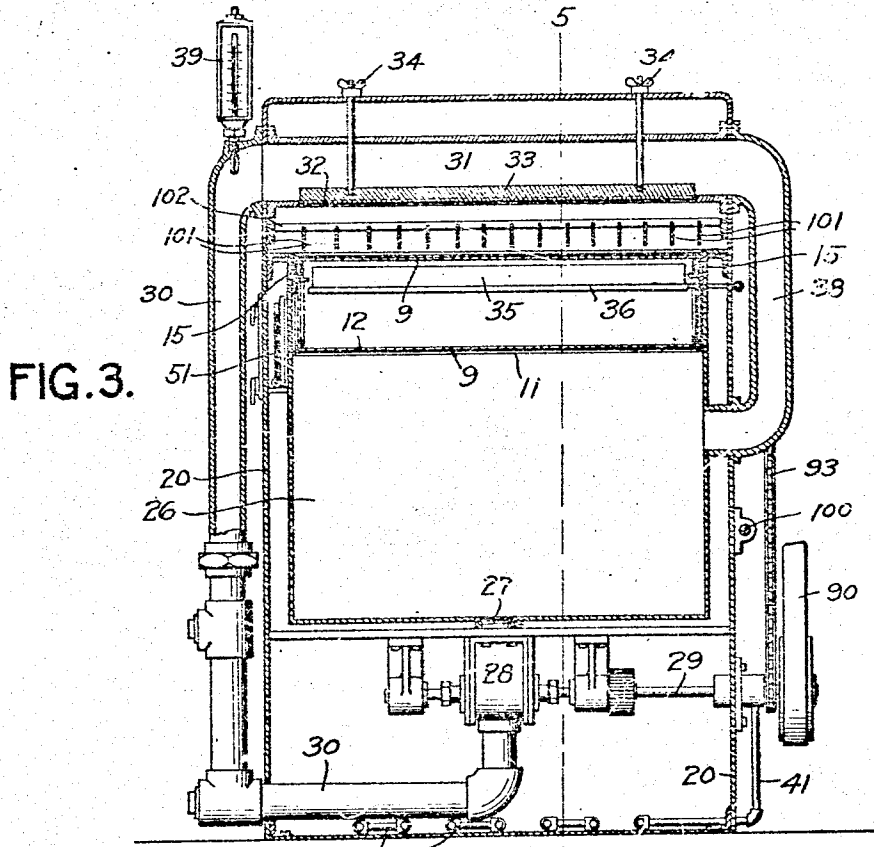


FIG. 3.

FIG. 7.

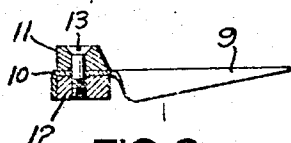


FIG. 9.

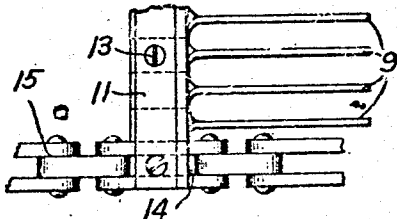


FIG. 8.

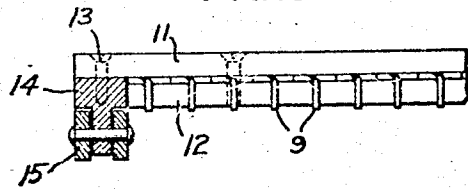
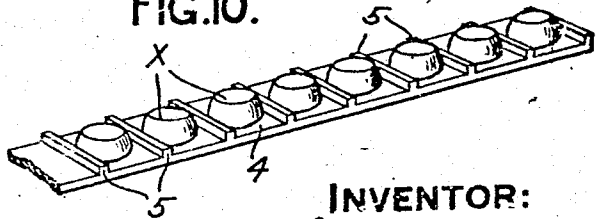


FIG. 10.



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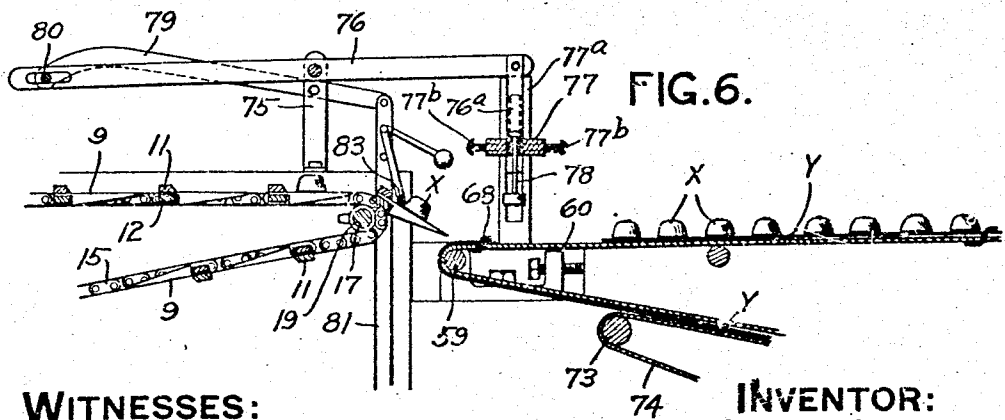
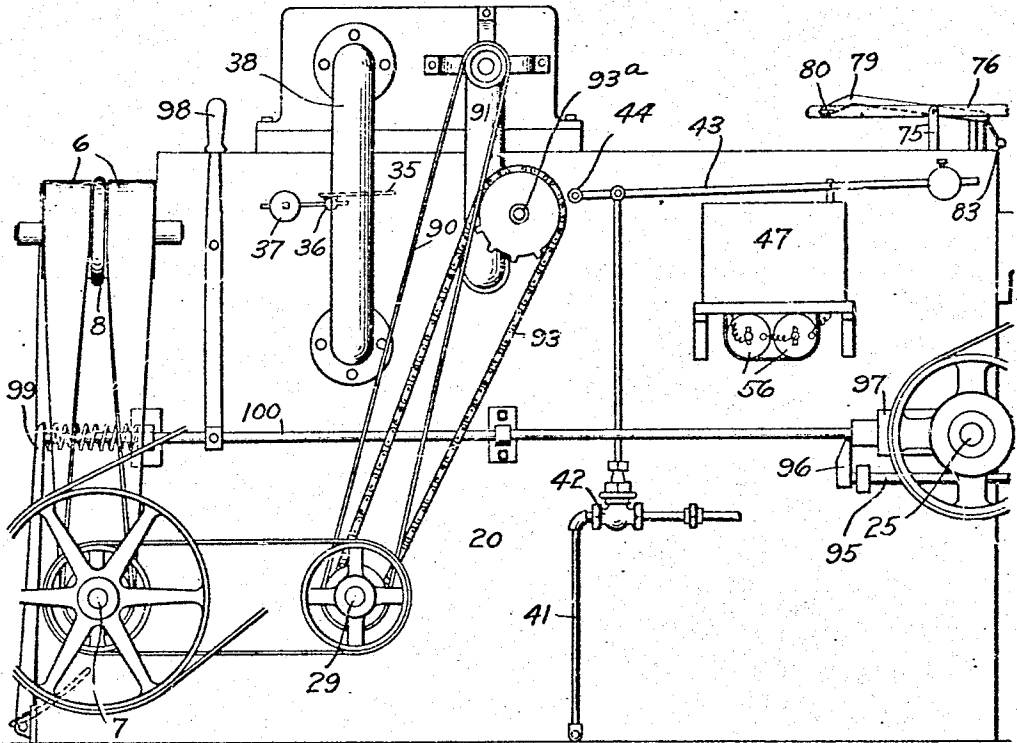
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5 SHEETS—SHEET 3.

FIG. 4.



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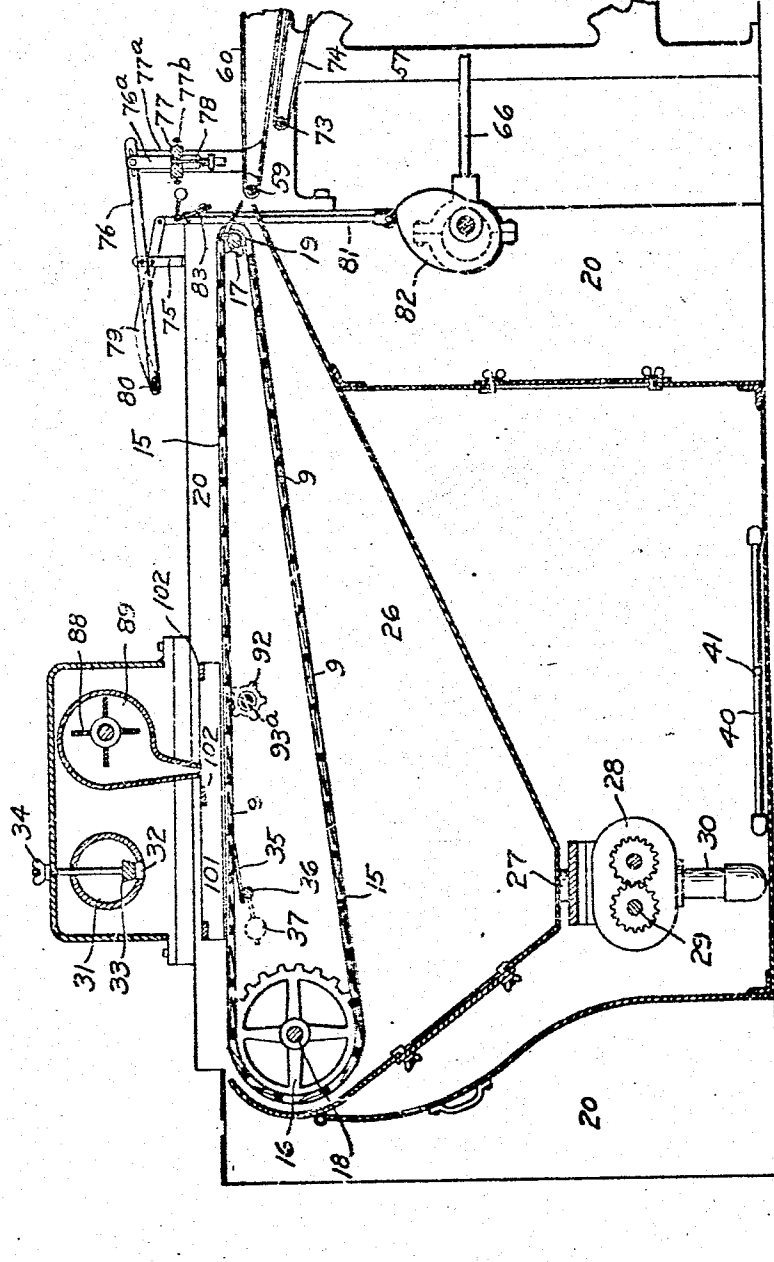
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5 SHEETS-SHEET 4.

FIG. 5.



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6 SHEETS-SHEET 5.

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FIG. II.

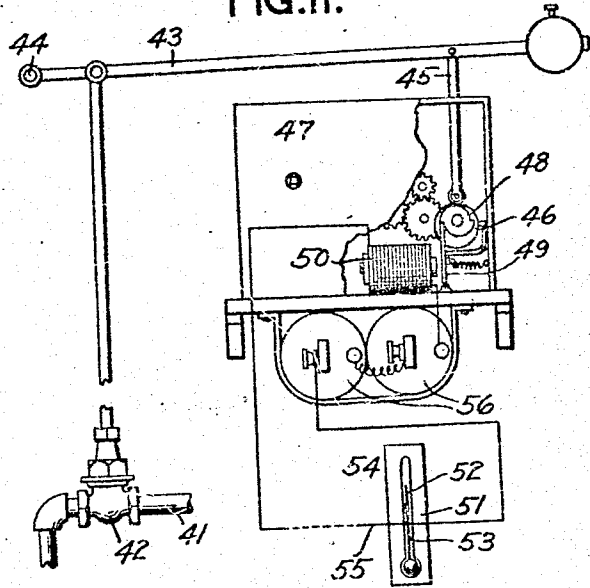


FIG. I3.

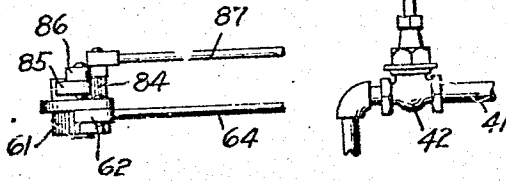
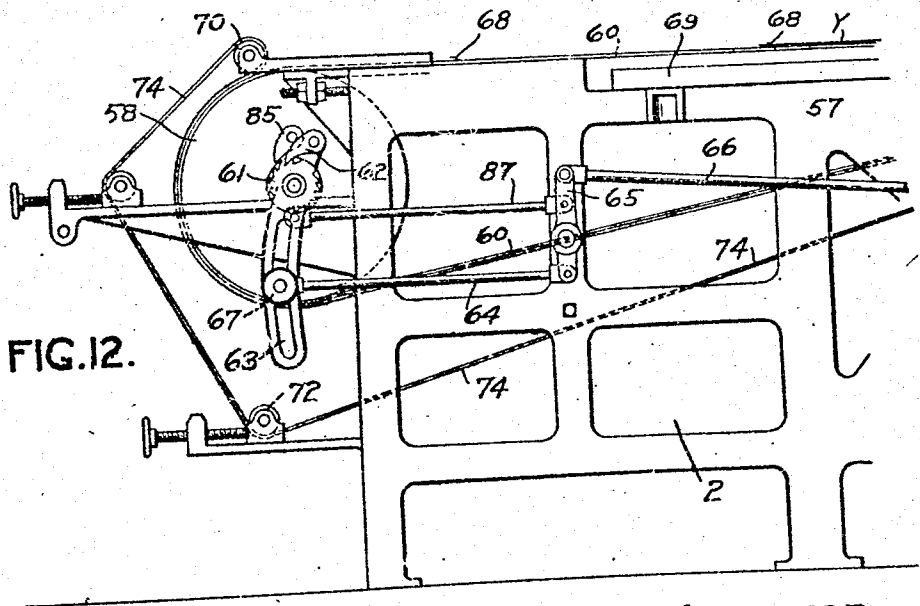


FIG. I2.



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UNITED STATES PATENT OFFICE.

JOHN WERNER, OF ROCHESTER, NEW YORK.

CANDY-COATING MACHINE.

991,919.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed January 17, 1910. Serial No. 538,551.

To all whom it may concern:

Be it known that I, JOHN WERNER, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Candy-Coating Machines, of which the following is a specification.

This invention relates to machines of the type in which candy centers are coated with chocolate, or other material.

The object of the invention is to produce a machine of this character which shall be simple in construction and efficient in operation.

The novel features include means for maintaining automatically an even temperature in the melting tank, means for coating the under side of the candies evenly and thoroughly, means for placing candy in the machine to be coated, and means for removing it therefrom.

In the drawings:—Figure 1 is a plan view of a machine embodying the present invention; Fig. 2 is a side elevation of the machine of Fig. 1; Fig. 3 is an enlarged section on the line 3—3 of Fig. 2; Fig. 4 is an elevation of part of the machine, from the side opposite to that shown in Fig. 2; Fig. 5 is a longitudinal section on the line 5—5 of Fig. 3; Fig. 6 is an enlarged view of the distributing mechanism by which the candy is removed from the machine; Fig. 7 is a detail view of the carrying forks, in elevation; Fig. 8 is an end view of the forks; Fig. 9 is a plan view of the forks; Fig. 10 is a perspective view of one of the candy-holders, with candies on it, as it appears when placed in the machine; Fig. 11 is a diagrammatic view of the temperature-regulator; Fig. 12 is an enlarged elevation of certain parts shown in Fig. 2; and Fig. 13 is a plan view of certain parts shown in Fig. 12.

In Figs. 1 and 2, where the complete machine is represented, 1 indicates the coating mechanism, 2 the distributing table, and 3 the feed-table.

The candy centers X that are to be coated are placed in racks 4 (Fig. 19), divided at equal intervals by transverse ribs 5. The racks are thin and flat, and preferably made of wood. Operators fill these racks with uncoated candies, and then place them upon a belt 6 (Fig. 1) that moves continuously, as indicated by the arrows, and is actuated

from a driven shaft 7. The belt 6 runs over an idler 8 at one side of the machine, and a similar idler at the end of the feed-table, which is not shown in the drawings.

The operator stands at the end of the machine between the feed-table 3 and the idler 8, and takes the racks full of candies as they approach him, sliding the candies off the racks onto a belt that moves in the direction of the length of the machine, carrying the candies through the coating mechanism. Having removed the candies from the racks, the operator places the empty racks on the opposite side of the belt 6, which is moving toward the feed-table, and they are returned to be filled at the latter.

The prongs 9 of the carrier-forks are preferably made from flat pieces of metal that are twisted near the ends 10 at right angles to the main portions 9, so that the main portions 9 support the candies on their edges, and the parts 10 can be secured between two transverse bars 11 and 12 (Fig. 7), which latter are fastened together by screws 13. The drawings show the prongs 9 turned down over the bar 12 at their rear ends, so that they cannot fall out when the screws are set up. The bars 11 and 12 which extend across the machine, as aforesaid, are fixed at each end to blocks 14, while the latter are connected to endless chains 15, 15 that run over sprockets 16 and 17 (Fig. 5). These sprockets in turn are fixed, respectively, to transverse shafts 18 and 19 that are journaled in the side frames 20 of the machine. The shaft 19 is rotated intermittently by a ratchet gear 21 (Fig. 2) that meshes with a pinion 22 on one end of said shaft outside the frame 20. The gear 21 is actuated by a rocker-arm 23, that is connected to an eccentric 24 on a drive shaft 25. The pinion 22 is thus given intermittent movement, which it communicates to the chains 15, so that the forks move through the machine one step at a time, and the parts are so proportioned that each step is equal in length to the distance from the tip of one set of prongs to the tip of the next set. The candies are placed on the forks while the latter are momentarily stationary between the movements. Below the chains 15 and inclosing them on all sides but the top, is a hopper 26 (Fig. 5) that contains the melted chocolate, or other coating material. Connected to the bottom of this hopper by a pipe 27 is a gear pump 28, driven

by a shaft 29 that in turn receives its motion from the drive shaft 7 (Fig. 4). The pump 28 draws chocolate continuously from the bottom of the hopper and forces it up through a pipe 30 and into the side of a casing 31 that extends across the top of the machine. This casing 31 has a slot 32 on its under side, that extends across the machine (Fig. 5), in which a bar 33 lies that is adjustable vertically by means of thumb-screws 34, to regulate the flow of chocolate. When the bar 33 is raised, a sheet of chocolate in fluid state flows continuously through the slot, down into the hopper, and between the prongs 9. As the candies X pass through this sheet of chocolate, they become completely coated except on the bottom. For the purpose of coating the bottom also, a plate 35 is pivoted at 36 under the chains 15, and its rear edge is held up against the under side of the forks by a counterweight 37 (Figs. 4 and 5). This plate is directly under the slot 32, so that it becomes thickly covered with chocolate, which it presses up through the forks. The candies in passing over the plate 35 are accordingly dragged across the chocolate that it presses up between the forks, and in this way are thoroughly coated on the bottom. When the chocolate piled up on the plate 35 overcomes the counterweight 37, the plate tilts and lets the chocolate slide off into the hopper. The surplus chocolate in the casing 31, that cannot pass through the slot 32, runs back to the hopper through a pipe 38 (Fig. 3).

A thermometer 39, set in the top of the pipe 30, discloses to the operator the temperature of the chocolate. It is essential to maintain the temperature of the chocolate practically constant, and the machine is designed to accomplish this in the following manner: In the first place, the machine is inclosed air-tight by its outer frame 20, and heating steam-coils 40 are placed on the floor under the hopper 26, but not in contact with it. The heat of the coils may vary, but inasmuch as the air between them and the hopper is a comparatively poor heat conductor, the fluctuations at the hopper are reduced.

Next, the circulation of the chocolate by the pump 28, as described above, tends to maintain an even temperature, and finally, the entrance of steam to the coils 40 from the supply pipe 41 is automatically controlled. For the latter purpose a valve 42 in the supply pipe 41 is employed (Fig. 4), which is actuated by a lever 43, pivoted at 44. A rod 45 (Fig. 11) extends downward from said lever, and a roller on its lower end rests on an eccentric 46 which is geared to a spring motor 47. On the same shaft that carries the eccentric 46 is a ratchet 48, having two teeth, which cooperate with an escapement device constituting the armature 49 of an electromagnet 50. The electromagnet, when

energized, operates the escapement to release the ratchet momentarily and the eccentric 46 makes a half rotation under the movement imparted to it by the spring motor, and so raises the rod 45 and opens the valve 42.

The magnet 50 is controlled by a thermometer 51, located between the hopper 26 and the frame 20. The mercury in this thermometer is divided by an air space into two parts 52 and 53, and the terminals 54 and 55 from a battery 56 enter the tube as indicated in Fig. 11. When the temperature drops to a predetermined point, the part 52 of the mercury closes a circuit between the terminals 54 and 55, and operates the magnet 50, which, as explained, opens the valve 42, and admits steam to the coils 40. When the temperature rises to a predetermined point, the part 53 closes the circuit and the magnet operates the escapement again and permits the eccentric 46 to make a half-rotation, and operate the rod 45 and lever 43, closing the valve 42 again.

The apparatus which receives and distributes the candies after they have been coated, consists of a frame 57 (Figs. 2 and 12), which has at its rear end a rotatable drum 58, and at the forward end, adjacent to the frame 20, a roller 59. A tight canvas belt 60 runs over the roller and drum, and is carried along step by step as the latter is intermittently rotated. Intermittent rotation is effected by a ratchet disk 61, actuated by a pawl 62, which receives its movement from a rocking link 63, which latter is swung back and forth by a rod 64. The rod 64 is connected to an arm 65 that is oscillated by a rod 66 from the eccentric 24 (Fig. 1). By moving the end of the rod 64 to various positions on the link 63 where it is secured in place by a nut 67, the drum may be made to move the belt 60 in longer or shorter steps as desired.

On the upper face of the belt 60, spaced at equal intervals, and arranged in pairs across it, are hooks 68 (Fig. 6) each pair being adapted to enter perforations at one edge of a sheet of paper Y, that is placed on the hooks by an operator seated at the table-leaf 69 (Fig. 1). At the rear end of the frame 57 are idler rollers 70, 71, 72, provided with adjusting or tension screws, while just behind the roller 59, located at the forward end of said frame, is an idler 73. A belt 74 runs over these rollers, and the drum 58, so that it lies close against the lower side of the belt 60. The paper Y is accordingly carried between these two belts 60 and 74, the belt 74 being moved by its frictional engagement with the belt 60 and the sheets of paper Y.

On the rear end of the coating frame 20 is a pair of standards 75 (Fig. 6), supporting levers 76, which carry at one end a frame 77 with a number of stamps 78 that are loosely supported by said frame. Levers 79

are connected by pins 80 with the levers 76, and are moved up and down by a rod 81 that bears on a cam 82 on the drive shaft 25 (Fig. 5). The movement of said cam is synchronized with the movement of the chains 15, so that the rod moves up when the chains move toward the rear, and come down when the chains stop. In its downward movement, the lever 79 carries a scraper bar 83 with it, which pushes all the candies on one set of forks onto the paper Y. The parts are so timed that the paper Y moves and stops as the forks do. In this way the candies are placed on the paper Y in even rows, and as they stop momentarily under the stamps 78, are marked with the form on the die. The frame 77 is adjustable vertically upon the arm 76^a that is pivoted to the lever 73 and is fixed in adjusted position by set screws 77^b. The stamps are hung in the frame by means of freely sliding vertical stems, as shown in Fig. 5 so that as the frame descends they are placed on the tops of the candies and then picked up again, as the frame is raised. The standards 77^a, 77^a serve as vertical guides for the frame 77. It is not necessary that the spacing of the candies longitudinally upon the paper Y should be the same as the spacing on the forks, for by using an appropriate ratchet 61, the spaces will be shortened, or lengthened, as desired. The ratchet 61 must have a smooth portion 83 to allow for the spacing between two consecutive sheets of paper, and the papers should be spaced a distance apart equal to three or four rows of candy, in order to give the operator at the table 69 time to remove a full sheet and substitute an empty one.

In order to maintain an uninterrupted movement of the belts 60 and 74 during the time while the papers are changed, so that each paper will be brought around the roller 59 in time to receive its first row of candies, a ratchet 84 (Fig. 13) is fixed on the same shaft with the ratchet 61, and has a toothed portion opposite the smooth portion of the latter ratchet, and vice versa. The ratchet 84 is operated by a dog 85 on an arm 86 that is connected by a rod 87 to the arm 65, so as to move in opposition to the rod 64.

A fan 88 (Fig. 5) is journaled in a casing 89 adjacent to the casing 31, and is revolved by a belt 90 (Fig. 4) from the shaft 29. The fan draws air through a pipe 91 from the space between the hopper and the frame 20, and blows it over the candy after it has been coated. The candy is subjected to this air current before it is acted upon by the bar 83, and is hardened in this way so that it is not marred by the contact of said bar 83.

An agitator or shaker is provided to vibrate the chains 15 and forks for the purpose of shaking the surplus coating from the candies. This agitator consists of a pair of star wheels 92 (Fig. 5) carried by a shaft

93^a. The shaft is rotated by a chain 93 (Fig. 4), and the star wheels shake the chains 15 up and down.

A treadle 94 is provided on the distributing frame for disconnecting that part of the mechanism from the driven shaft when necessary. This treadle is connected with a rod 95, which carries a hook 96 adapted to disengage a clutch 97 (Fig. 4), when said hook is moved toward the drive shaft 25. Any suitable form of clutch may be used that will disconnect the driving pulley from the drive shaft. A hand lever 98 and a treadle lever 99 are provided at the feed end of the machine for operating this clutch 97 from that end of the machine, both levers being connected with said clutch 97 by a rod 100.

Means are provided for maintaining the candies in proper lateral relation while they are being agitated, these means comprising thin, stationary bars 101 that depend from cross-pieces 102 (Figs. 3 and 5), and are spaced laterally to correspond with the ribs 5 on the racks 4, so that they keep the candies apart while passing through the coating mechanism even though disturbed by the agitator.

What I claim is:-

1. In a candy coating machine, the combination, with a conveyer comprising a series of forks, the prongs of each fork consisting of plates, at one end twisted at right angles to present their edges uppermost, and which are locked together at their horizontal ends, of means for discharging over the forks the material for coating the candy; substantially as shown and described.

2. In a candy coating machine, the combination, with a conveyer comprising parallel, endless belts, spaced supports for the candy arranged in consecutive series transversely across the machine between said belts, and clamping devices carried by the belts for engaging the candy supports correspondingly at one end, of means for discharging over the forks the material for coating the candy; substantially as shown and described.

3. In a candy coating machine, the combination, with a conveyer comprising parallel, endless belts, spaced supports for the candy arranged in consecutive series transversely across the machine between said belts, and transverse bars carried by and between the belts and adapted to clamp said candy supports between them correspondingly at one end, of means for discharging over the forks the material for coating the candy; substantially as shown and described.

4. In a candy coating machine, the combination, with a carrier for the candies open for the passage of coating material in melted condition, of means for discharging such material in melted condition upon the car-

rier; and a vertically movable plate supported beneath the carrier and adapted to catch said material and hold it yieldingly against the under side of said carrier; substantially as shown and described.

5 5. In a candy coating machine, the combination, with a carrier for the candies adapted to expose partially their under sides, of means for discharging coating material in melted condition upon the carrier and a plate supported beneath the carrier and adapted to catch said material and to hold it yieldingly against the under side of said carrier; substantially as shown and described.

10 6. In a candy coating machine, the combination, with a carrier for the candies open for the passage of coating material in melted condition, of means for discharging such material in melted condition upon the carrier; a plate pivotally supported beneath the carrier, and means for holding said plate yieldingly against the under side of the carrier; substantially as shown and described.

25 7. In a candy coating machine, the combination, with a carrier for the candies open for the passage of coating material in melted condition, of means for discharging such material in melted condition upon the carrier and a counterweighted plate pivotally supported beneath the carrier, and adapted to bear yieldingly against the under side of the carrier; substantially as shown and described.

35 8. In a candy coating machine, the combination, with a coating mechanism including a carrier in the form of a horizontal, endless belt, of a distributor, also in the form of a horizontal, endless belt, adjacent the discharge end of said carrier, movable in the direction of the movement of said carrier, and adapted to receive the candies from the carrier; a scraping bar supported above the discharge end of the carrier, and adapted to move across it in the direction of the distributor to engage the candies and transfer them from the carrier to the distributor; and means for operating said

scraping bar intermittently; substantially as shown and described.

50 9. In a candy coating machine, the combination, with a coating mechanism including an intermittently movable carrier in the form of a horizontal endless belt, of an intermittently movable distributor, also in the form of an endless belt, adjacent the discharge end of said carrier, and movable with and in the direction of the movement of said carrier; a drive shaft; operating connections between said drive shaft and said carrier and distributor, respectively; means for adjusting the length of the periodical movements of the distributor; a transferring device adapted to move the candies from the carrier to the distributor; and connections between the drive shaft and the transferring device adapted to operate the latter during the periods of rest of the carrier and distributor; substantially as shown and described.

70 10. In a candy coating machine, the combination, with a carrier for the candies, of means for giving it an intermittent movement in a horizontal plane; a frame adapted to reciprocate vertically above the carrier; a stamping device carried by the frame and free to move vertically therein; and means for reciprocating said frame during the pauses in the movement of said carrier; substantially as shown and described.

80 11. In a candy coating machine, the combination, with a carrier for the candies, of means for giving it an intermittent movement in a horizontal plane; a part adapted to reciprocate vertically above the carrier; a frame adjustable vertically on said part; a stamping device carried by said frame and free to move vertically therein; and means for reciprocating said vertically movable part during the pauses in the movement of said carrier; substantially as shown and described.

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