

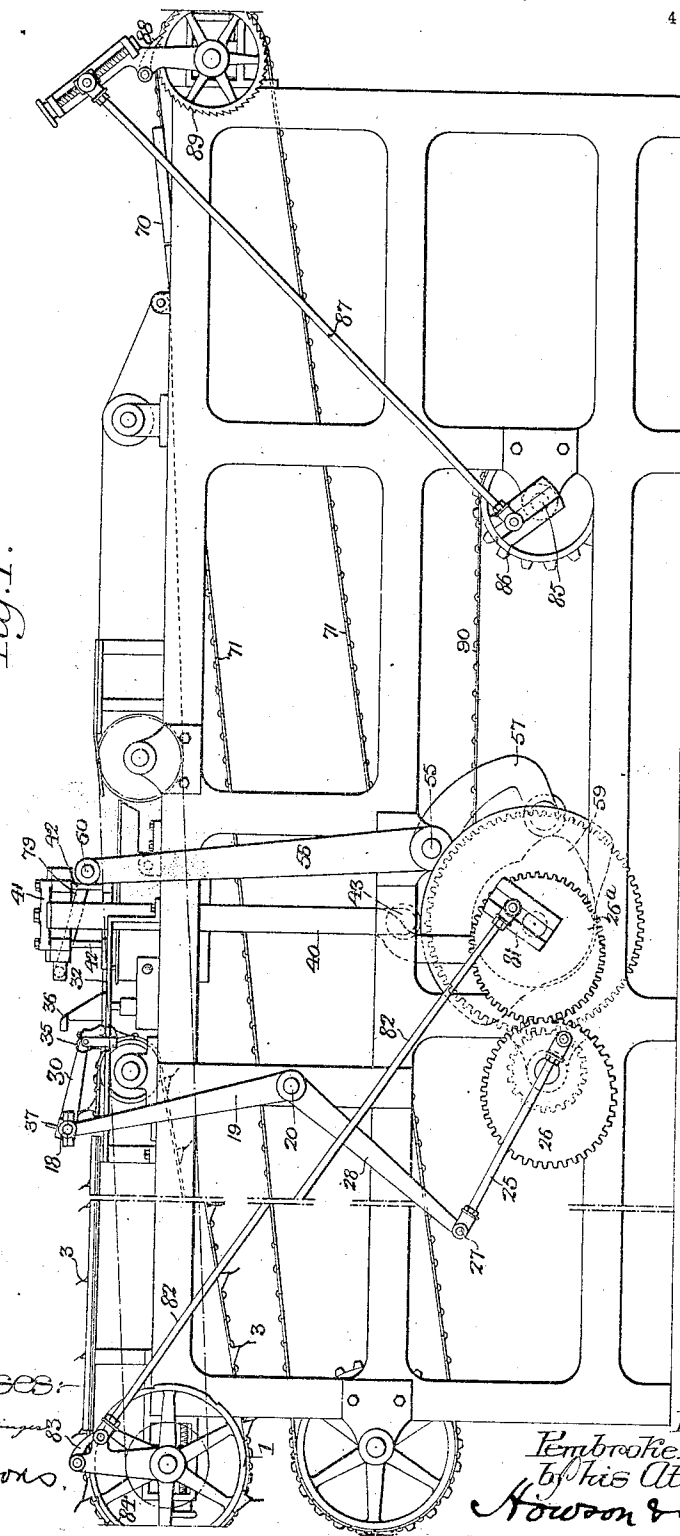
P. D. HARTON.
 CAKE COATING MACHINE.
 APPLICATION FILED MAY 8, 1908.

939,836.

Patented Nov. 9, 1909.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

H. A. Chandler
L. W. Jones

Inventor
Pembroke D. Harton
 by his Attorneys,
Howson & Howson

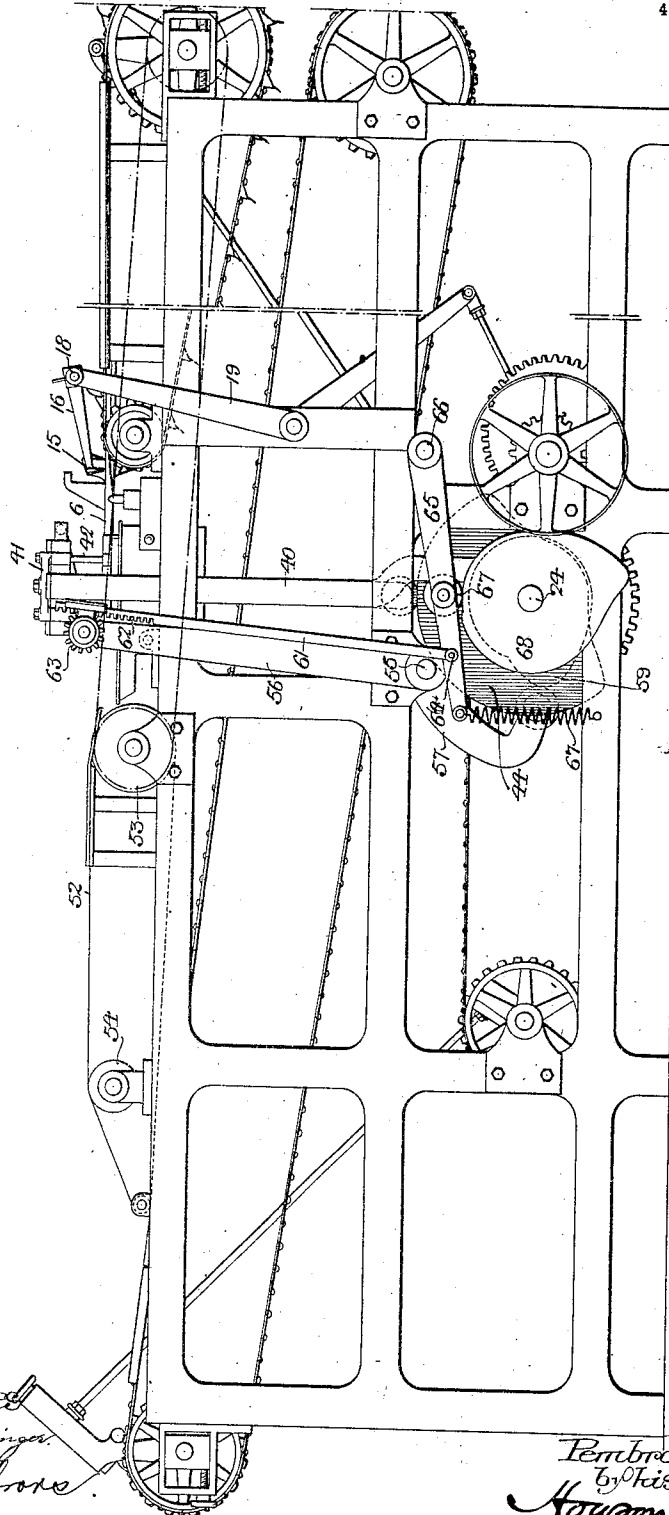
P. D. HARTON.
 CAKE COATING MACHINE.
 APPLICATION FILED MAY 8, 1908.

939,836.

Patented Nov. 9, 1909.

4 SHEETS—SHEET 2.

Fig. 2.



Witnessed
 Walter C. Pullinger.
 Arthur Nelson.

Inventor
 Pembroke D. Harton
 by his Attorneys
 Howson & Howson

P. D. HARTON.
 CAKE COATING MACHINE.
 APPLICATION FILED MAY 8, 1908.

939,836.

Patented Nov. 9, 1909.

4 SHEETS—SHEET 3.

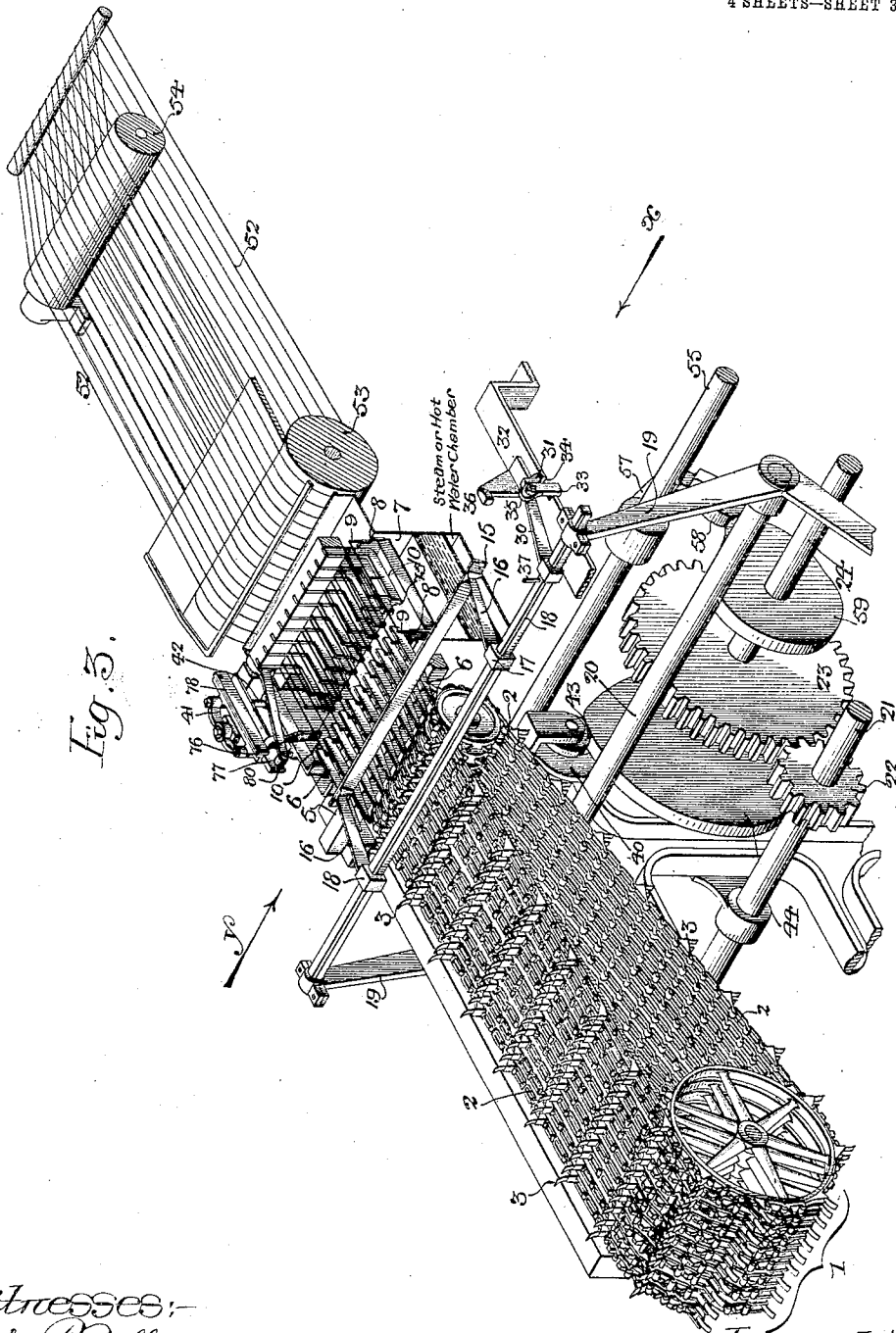


Fig. 3.

Witnesses:
 Walter S. Pullinger
 Lewis McInnis

Inventor
 Pembroke D. Harton
 by his Attorneys,
 Howson & Howson

P. D. HARTON.
CAKE COATING MACHINE.
APPLICATION FILED MAY 8, 1908.

939,836.

Patented Nov. 9, 1909.

4 SHEETS—SHEET 4.

Fig. 4.

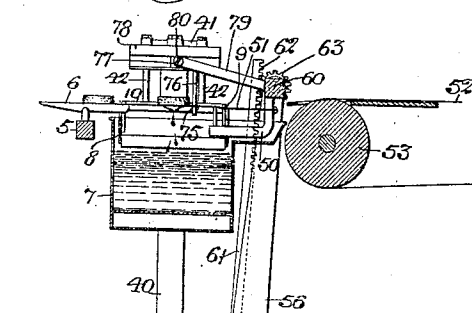


Fig. 5.

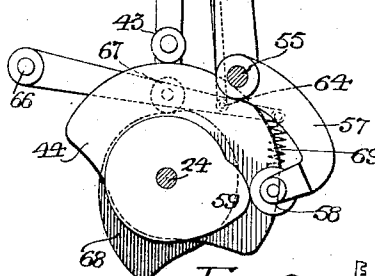
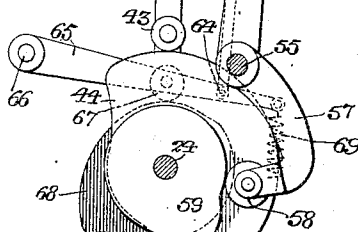
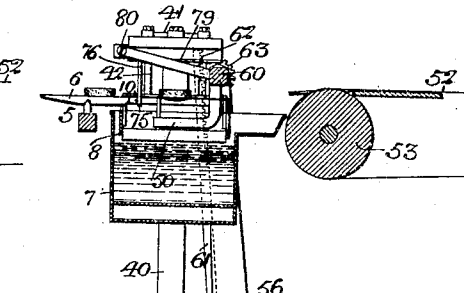


Fig. 8.

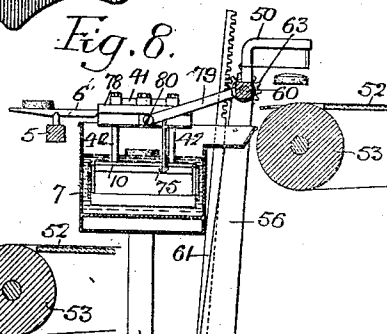


Fig. 6.

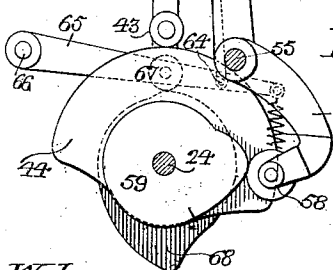
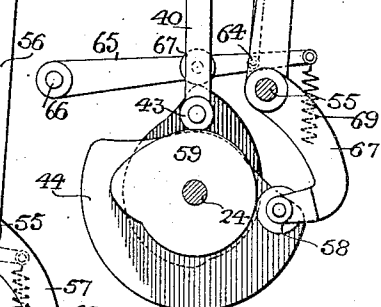
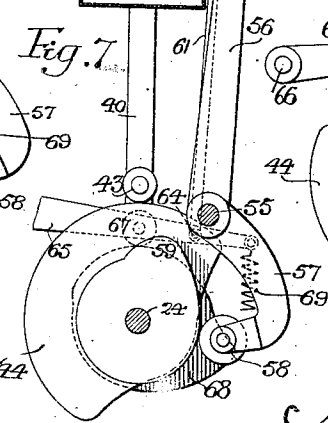


Fig. 7.



Witnesses:
Walker S. Pullinger
L. H. McLean

Inventor:
Pembroke D. Harton
by his Attorneys
Hosson & Hosson

UNITED STATES PATENT OFFICE.

PEMBROKE D. HARTON, OF PHILADELPHIA, PENNSYLVANIA.

CAKE-COATING MACHINE.

939,836.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed May 8, 1908. Serial No. 431,586.

To all whom it may concern:

Be it known that I, PEMBROKE D. HARTON, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Cake-Coating Machines, of which the following is a specification.

My invention relates to machines for coating cakes with icing or other material and consists of certain improvements in the form of structure described and claimed in the application for patent of myself and Charles F. Crelier, filed February 10, 1908, Serial No. 415,155.

The principal object of my present invention is to provide simple and efficient means for mechanically performing this work so as to avoid handling the cakes from the time they are placed upon a feeding apron until they are removed from boards or other suitable receiving means upon which they may dry or become set; such boards being carried by suitable conveyer belts and arranged to receive the cakes directly from the coating means, or from a conveyer leading therefrom.

A further object of my invention is to provide automatically operating means for delivering the cakes in rows to the icing bath, and a still further object is to facilitate the introduction of the cakes to the icing bath and the removal of the same therefrom.

My invention is fully shown in the accompanying drawings, in which:

Figure 1, is a side elevation of my improved machine, looking in the direction of the arrow *x*; Fig. 3; Fig. 2, is a side elevation, looking in the direction of the arrow *y*; Fig. 3; Fig. 3, is a perspective view, partly in section on a longitudinal median line of sufficient of the machine to illustrate the particular improvements forming the subject of my present invention, and Figs. 4, 5, 6, 7 and 8, are views illustrating the several steps in the operation of coating the cakes.

The object of my invention, as well known, is to facilitate the coating of small cakes and crackers with icing or other coating material, and to insure the conveyance of the coated cakes from the icing or coating bath without spoiling the icing or coating upon the same and without soiling the machine.

The cakes or other articles to be coated are fed to or deposited upon a suitable carrying

belt indicated in the drawings herewith at 1, and consisting of individual chains 2, each provided with hooks or arms 3, which hooks are arranged in line and serve to straighten the cakes deposited upon them as well as to carry such cakes forward. The cakes are fed by said chain onto a table 5 consisting of a series of slats 6, spaced apart at suitable intervals for the passage of said arms or hooks, and disposed adjacent an icing tank 7. Arranged to reciprocate within the icing tank is a dipping frame comprising sides 8 having a series of pins 9 projecting above the same, and between these pins fine wires 10 are stretched relatively close together, upon which the cakes are delivered from the table 5. The dipping frame is vertically reciprocated in a suitable manner, hereinafter described, and the means for operating the same are so arranged as to bring the receiving wires on the same plane as the table 5, when the cakes are ready to be pushed from the same. To accomplish this feeding of the cakes onto the dipping frame, I provide a pusher blade 15 carried by arms 16 secured at 17 to a square shaft 18 which shaft is journaled in arms 19 secured to a rock shaft 20, suitably journaled in the frame of the machine. The main driving shaft of the machine is indicated at 21 and this drives, by means of the pinion 22 and gear wheel 23, the cam shaft 24. Motion is imparted to these arms from the main driving shaft 21 by means of a link 25 pivotally mounted on an oval gear wheel 26 carried by said shaft and forming a face plate being driven by a gear 26^a on the shaft 24; the opposite end of said link being connected at 27 to an arm 28 forming an extension of one of the arms 16.

During the forward movement of the blade 15 it just clears the surface of the table 5 so as to directly engage and push the cakes onto the wires 10 of the dipping frame. On the return of said blade, however, it is necessary to lift the same so as to clear the next row of cakes pushed onto the table from the belt 1. For this purpose I provide the following means: The shaft 18 carries an additional arm 30, fixed thereto and having an end 31 slidable upon a plate or sub-table 32 mounted on the top of the frame of the machine. This arm carries a latch 33 which rests in a notch 34 in the sub-table 32 when the pusher blade 15 is in the retracted position. When the pusher blade is moved for-

ward in engagement with the cakes delivered by the chain 1, this latch trails on the sub-table. It is provided with a spring 35, however, so that when the pusher blade is retracted it tends to straighten, and this action is assisted by a stop 36 which engages a pin 37 carried by the hub of the arm 30, which engagement raises the end 31 of said arm; the latch being held a sufficient length of time to cause it to assume a vertical position, which action is assisted by the spring 35, thereby raising the arm 30 from contact with the sub-table and simultaneously lifting the ends of the arms 16 carrying the blade 15 so that the latter may move rearwardly above the cakes disposed on the table 5.

From the table 5, the cakes are constantly fed to the dipping frame in the icing bath and when dipped therein and raised by said frame they must be removed. The dipping frame is carried by a pair of rods 40 vertically movable with respect to the frame of the machine and guided by suitable means. To move these rods and thereby vertically reciprocate the frame within the bath of icing or other coating material, the following means are employed: The rods 40 carrying the dipping frame are connected therewith by means of cross-pieces 41 secured to said rods and frame by suitable bolts 42. Anti-friction rollers 43 are carried by these rods in engagement with cams 44 for operating the same; such cams being mounted on the shaft 24 and so disposed that the rods will maintain the dipping frame in position to receive a row of cakes and lower them into contact with the surface of the icing or other coating bath, and then raises them into position to be removed from said dipping frame. The mechanism for removing the cakes is clearly shown in Figs. 4, 5, 6, 7 and 8. For this purpose, as clearly shown in said views, I provide a series of reciprocating and oscillating arms 50, each of which carries a wire 51; such arms being arranged to be moved under the cakes carried by the wires of the dipping frame when the latter is lifted, as shown in Fig. 5; then to turn slightly on their pivot of oscillation, as shown in Fig. 6; then to be carried beyond the icing or coating bath, as shown in Fig. 7, and then to receive an oscillating movement so as to turn the cakes and deposit them iced side up on a suitable conveyer. In the present instance the conveyer consists of wires or strings 52, passing over suitable rollers 53 and 54.

The arms 50 for receiving and turning over the cakes are operated in the following manner: Secured to a rock-shaft 55, suitably journaled in the frame of the machine are levers 56, and also secured to said rock shaft and extending below the levers is a curved arm 57 having an anti-friction roller 58 in engagement with an operating cam 59 on

the shaft 24. In the upper ends of these levers a rock shaft 60 is journaled, which shaft carries the arms 50 with the wires 51; such arms being operated in the manner described by means of said cam 59 and other means to be described. When the arms 50 are brought forward beneath said cakes, as shown in Fig. 5, the rock shaft 60 carrying said arms is turned by means of a rack 61 on a rod 62, such rack engaging a pinion 63 on the end of said shaft. The rod carrying this rack is pivotally connected at 64 with a lever 65 pivoted to the frame at 66 and having a roller 67 in engagement with a cam 68 on the shaft 24; the roller being held in engagement with the cam by a spring 69. The rock shaft is turned at first very slightly, as shown in Fig. 6, until the levers 56 carrying said shaft are moved by the cam 59 away from the dipping frame, and then when the arms 50 reach a point where the cakes can drop from the same they are turned by the movement of said shaft 55 under the influence of the rack 61 and pinion 63 and the cakes are delivered to the belt 52 from which they slide onto boards or receptacles 70 carried by traveling conveyer belts 71.

To avoid an excess of icing on the surface of the cakes, I provide a scraper which is moved across the iced face of the same while they rest on the dipping frame just after being lifted from the icing or coating material. This scraper consists of a wire 75, carried by depending arms 76 secured to blocks 77 adapted to ways 78 carried by the bolts 42 supporting the dipping frame, such blocks being operated by the rock-shaft 55 through the medium of the links 79 connected to said shaft and to the blocks at 80, as clearly shown in Figs. 4, 5, *et seq.*

The feed belt 1 is driven from the cam shaft by means of a crank arm 81, connecting rod 82, pawl 83 and ratchet wheel 84. The chain belts 71 are driven from a counter shaft 85, by means of a crank arm 86, connecting rod 87, pawl 88 and ratchet wheel 89; said counter shaft being driven from the cam shaft 24 by means of the chain or belt 90. The delivery belt 52 is driven from the shaft which drives the feed belt 1 by means of a chain or belt 91. The driving mechanism is so arranged as to operate the several parts synchronously and thereby secure the automatic operation of the machine. The only handling the cakes receive is when they are placed upon the belt and from this point their treatment is wholly automatic until removed from the boards 71.

I claim:

1. The combination, in a cake coating machine, of means for feeding cakes to the surface of an icing bath, lifting mechanism vertically movable in said icing bath, said lifting mechanism comprising a series of wires

paralleling each other, and means for removing the cakes from said wires comprising arms having wires stretched thereon.

2. The combination, in a cake coating machine, of means for feeding cakes to the surface of an icing bath, means for lifting said cakes from the surface of said bath, means movable across the face of the cakes for automatically scraping surplus icing from the same after the lifting operation, and means for removing said cakes from the lifting means and simultaneously turning the same.

3. The combination, in a cake coating machine, of means for feeding the cakes to the surface of a body of icing, mechanism vertically movable in said icing for lowering the cakes onto the surface of the icing and lifting the same therefrom, and means for engaging said cakes to turn them over and bring the iced face uppermost, said means comprising arms capable of horizontal movement to receive the cakes, and oscillating movement to deposit the same.

4. The combination, in a cake coating machine, of means for moving the cakes, a tank containing icing onto the surface of which the cakes are deposited, means for lifting said cakes from the surface of the icing, means for removing the excess icing from the cakes after they have been lifted, oscillating arms arranged to pass beneath the cakes and remove them from the lifting means, said arms carrying the cakes and depositing them iced side up, and a conveyer belt for removing the cakes as deposited by the arms.

5. The combination, in a machine for coating cakes, of means for feeding said cakes, an icing tank having a body of icing therein, means for pushing said cakes from the feeding means to the icing, a vertically reciprocable dipping frame in said icing, wire supports carried by the frame to receive said cakes, arms for removing the cakes from the dipping frame, and means for reciprocating said arms and turning them to deposit the cakes upon a conveyer.

6. The combination, in a cake coating machine, of an icing tank having a body of icing therein, means for feeding cakes to said icing, said means moving in one direction in engagement with the cakes and in the opposite direction above the cakes for engagement with the fresh supply, means for dipping the cakes in the icing, means for lifting the cakes from the icing, and means for removing said cakes from the lifting means and simultaneously turning them iced face up.

7. The combination, in a cake coating machine, of a tank having a body of icing therein, a table arranged to receive cakes from a suitable source, a blade for moving a row of said cakes from the table to the icing, means for moving said blade forward

in engagement with the cakes and retracting the same, means pivotally connected to the end of the blade and arranged to contact with a fixed portion of the machine for lifting the blade and holding it in an elevated position during its retractive movement, and means for lowering the cakes into contact with the icing.

8. The combination, in a cake coating machine, of a cake feeding belt having hooks to engage the cakes, a slatted table at the delivery end of said belt permitting passage of said belt, an icing tank, a dipping frame vertically movable in said icing tank, a reciprocating blade for moving cakes from the slatted table to the dipping frame, means for reciprocating said blade, means for raising the blade during its rearward movement, wires carried by the dipping frame upon which the cakes rest, arms arranged to be brought between the wires of the dipping frame to receive the cakes, means for reciprocating said arms when the dipping frame is lifted, and means for turning said arms to carry the cakes to a conveyer belt and deposit them iced face up.

9. The combination, in a cake coating machine, of means for feeding cakes to an icing bath, a table between the delivery end of the feeding means and said icing bath, a blade for sweeping the cakes from said table to the icing bath, means for actuating said blade forward in engagement with the cakes and backward over the same, a vertically reciprocable dipping frame in said icing bath to receive the cakes, means for raising and lowering the dipping frame, means for lifting the cakes from the dipping frame and turning them iced side up on a conveyer, said means comprising arms movable horizontally to a position beneath the cakes on the dipping frame and then in the arc of a circle with their pivotal point in movement also in the arc of a circle to transfer the cakes to said conveyer, and means for scraping the surplus icing from the cakes when resting on the dipping frame.

10. The combination, in a cake coating machine, of a tank having icing therein, means for feeding cakes to said icing, a dipping frame vertically reciprocable in said icing tank, said frame comprising sides, pins mounted in the same and wires stretched between said pins, a wire for scraping the surplus icing from the cakes while resting on the dipping frame, arms carrying said wire, slide-ways for said arms, and means for moving the arms in said slide-ways.

11. The combination, in a cake coating machine, of a tank having icing therein, a pusher blade for moving cakes to the same, means for moving said blade, a slideway for engagement with a portion of the pusher blade mechanism, and a latch carried by said mechanism and adapted to rise on the re-

tractive movement of the pusher blade so as to lift the same clear of the cakes.

12. The combination, in a cake coating machine, of a tank having icing therein, means for delivering cakes thereto, a dipping frame within said bath, means for lifting cakes from the dipping frame, and means controlled thereby for scraping surplus icing from the surface of the cakes.

13. The combination, in a cake coating machine, of means for feeding the cakes, a pusher blade for acting on said cakes, a driving shaft, a second shaft and a crank on said second shaft for actuating the pusher blade, an elliptical gear loose on the driving shaft, a connecting rod extending therefrom for driving the cake feeding means, and an elliptical gear on the second shaft for driving the elliptical gear on the driving shaft whereby the movement of the cake feeding means and the pusher blade will be such that a row of cakes will always be in position for engagement by the pusher blade when the latter is retracted.

14. The combination, in a cake coating machine, of means for feeding the cakes, a tank having icing therein, means for pushing them onto the surface of the icing, a dipping frame therefor, arms for lifting said cakes from the dipping frame, means for moving said arms to a position beneath the cakes carried by the dipping frame and retracting said arms, and independent means for turning said arms to deliver the cakes upon a conveyer belt.

15. The combination, in a cake coating machine, of a tank having icing therein, means for feeding cakes thereto, a vertically movable carrier receiving said cakes and serving to lower them onto and lift them from the surface of the icing, means for operating said carrier, a series of arms movable beneath said carrier when it is raised, rocking levers carrying said arms, a cam for actuating said levers to reciprocate the arms, and means for turning said arms when withdrawn from beneath the carrier.

16. The combination, in a cake coating machine, of a tank having icing therein, means for feeding cakes to and lifting them from the surface of the icing, arms arranged to engage said cakes after they have been lifted, rocking levers carrying said arms, a cam for moving said levers to reciprocate the arms beneath the cakes and remove them from the lifting means, a pinion carried by said arms, a rack in engagement with said pinion whereby the arms may be turned, and means for operating said rack.

17. The combination, in a cake coating machine, of a tank having icing therein, means for feeding cakes thereto, a carrier for receiving the cakes, means for lowering and raising said carrier to bring the cakes in contact with and lift them from the icing,

a pair of rocking levers, a frame journaled in the ends of said levers, arms carried by said frame, means for moving said levers to advance and retract the arm-carrying frame beneath the cakes, a pinion carried by said arm-carrying-frame at its pivotal point, and a rack for moving said pinion to turn the frame and its arms after the latter have been retracted.

18. The combination, in a cake coating machine, of a tank having icing therein, a cake carrier within the same, means for depositing cakes upon said carrier, means for moving the carrier to lower the cakes onto and lift them from the icing, a series of arms reciprocable beneath said carrier when the latter is raised, a pivotally mounted frame carrying said arms, rocking levers in the ends of which said arm-carrying-frame is journaled, a cam for operating said levers to reciprocate the arm-carrying-frame, means for maintaining said cam in operative relation with said levers, and means for turning said arms when withdrawn from beneath the carrier.

19. The combination, in a cake coating machine, of a tank having icing therein, means for feeding cakes to and lifting them from the surface of the icing, a series of arms reciprocable beneath said cake-lifting-means when the latter is raised, a frame carrying said arms, rocking levers in the ends of which said arm-carrying-frame is journaled, a cam for operating said levers to reciprocate the arm-carrying-frame, a spring maintaining said cam in operative relation with said levers, and means for turning said arms when withdrawn from beneath the cake-lifting-means.

20. The combination, in a cake coating machine, of a tank having icing therein, means for feeding cakes to and lifting them from the surface of the icing, a series of arms reciprocable beneath said cake-lifting-means when the latter is raised, a frame carrying said arms, rocking levers in the ends of which said arm-carrying-frame is journaled, a rock-shaft carrying said levers, a bent arm carried by said rock-shaft, a cam engaging said bent arm for operating the levers to reciprocate the arm-carrying-frame, means such as a spring for maintaining the cam in operative relation with said levers, and means for turning said arms when withdrawn from beneath the cake-lifting means.

21. The combination, in a cake coating machine, of a tank having icing therein, a cake carrier within the icing, means for depositing cakes upon said carrier, means for moving the carrier to lower the cakes onto and lift them from the icing, a series of arms reciprocable beneath said carrier when the latter is raised, a pivotally mounted frame carrying said arms, rocking levers in the

70

75

80

85

90

95

100

105

110

115

120

125

130

ends of which said arm-carrying-frame is journaled, a cam for operating said levers to reciprocate the arm-carrying-frame, a pinion carried by said frame, a rack for operating said pinion, and means for operating said rack.

22. The combination, in a cake coating machine, of a tank having icing therein, means for feeding cakes to and lifting them from the surface of the icing, a series of arms reciprocable beneath said cake-lifting-means when the latter is in the raised position, a frame carrying said arms, rocking levers in the ends of which said arm-carrying-frame is journaled, a cam for operating said levers to reciprocate the arm-carrying-frame, a pinion carried by said frame, a rack arm for operating said pinion, a cam for operating said rack arm in one direction, and a spring for operating said rack arm in the opposite direction to effect oscillation of the arm-carrying-frame.

23. The combination, in a cake coating

machine, of a tank having icing therein, means for feeding cakes to and lifting them from the surface of the icing, a series of arms reciprocable beneath said cake-lifting-means when the latter is in the raised position, a frame carrying said arms, rocking levers in the ends of which said arm-carrying-frame is journaled, a cam for operating said levers to reciprocate the arm-carrying-frame, a pinion carried by said frame, a rack arm for operating said pinion, a lever connected to said rack arm, a cam for operating said lever in one direction, and a spring for operating said lever in the opposite direction to move said rack arm and effect oscillation of the arm-carrying-frame.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

PEMBROKE D. HARTON.

Witnesses:

MURRAY C. BOYER,
WM. A. BARR.