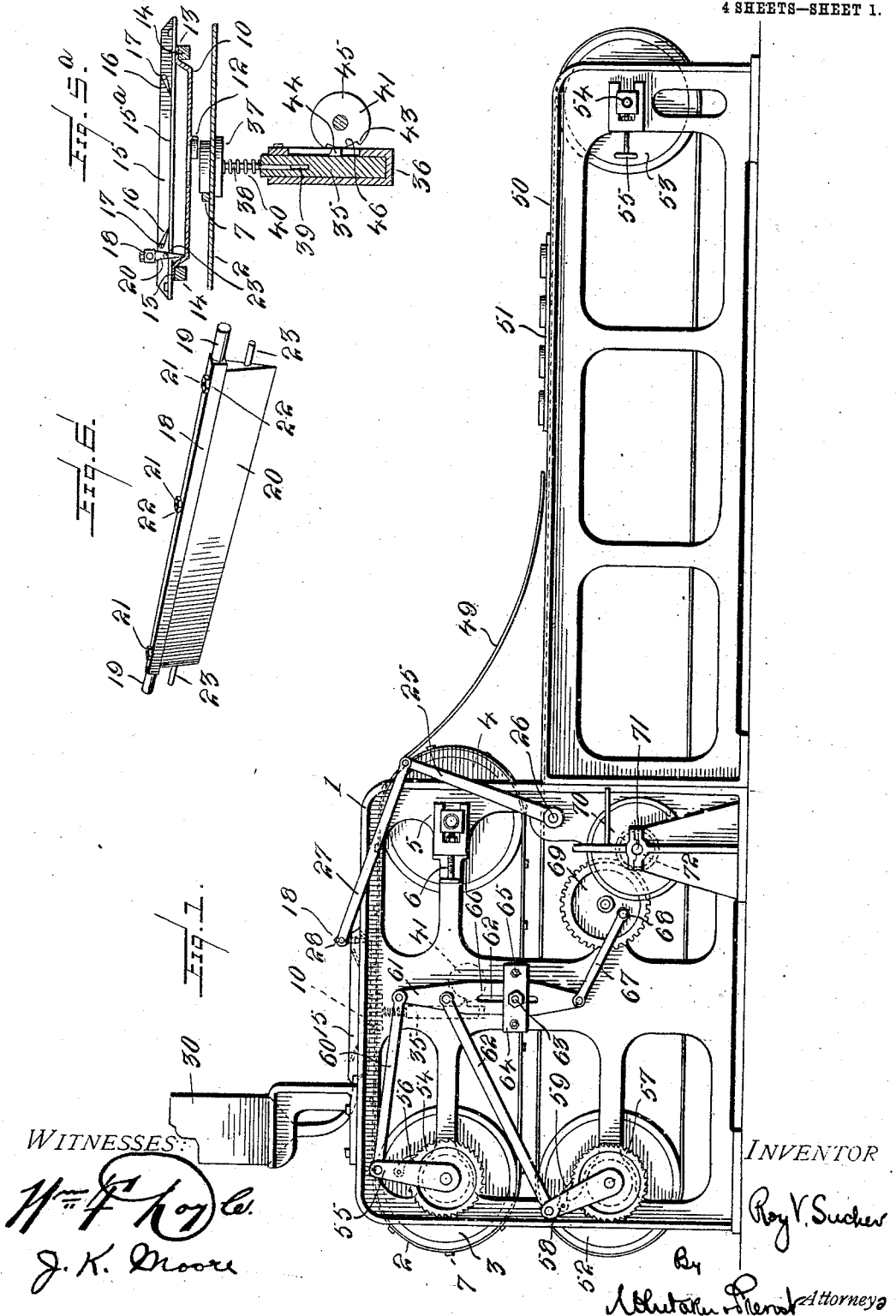


R. V. SUCHER.
MACHINE FOR ICING CAKES.
APPLICATION FILED MAR. 27, 1909.

954,147.

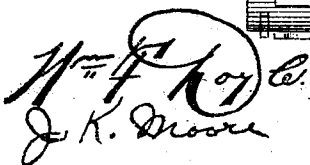
Patented Apr. 5, 1910.

4 SHEETS—SHEET 1.



954,147.

4 SHEETS—SHEET 2.



BY

Roy V. Sucher

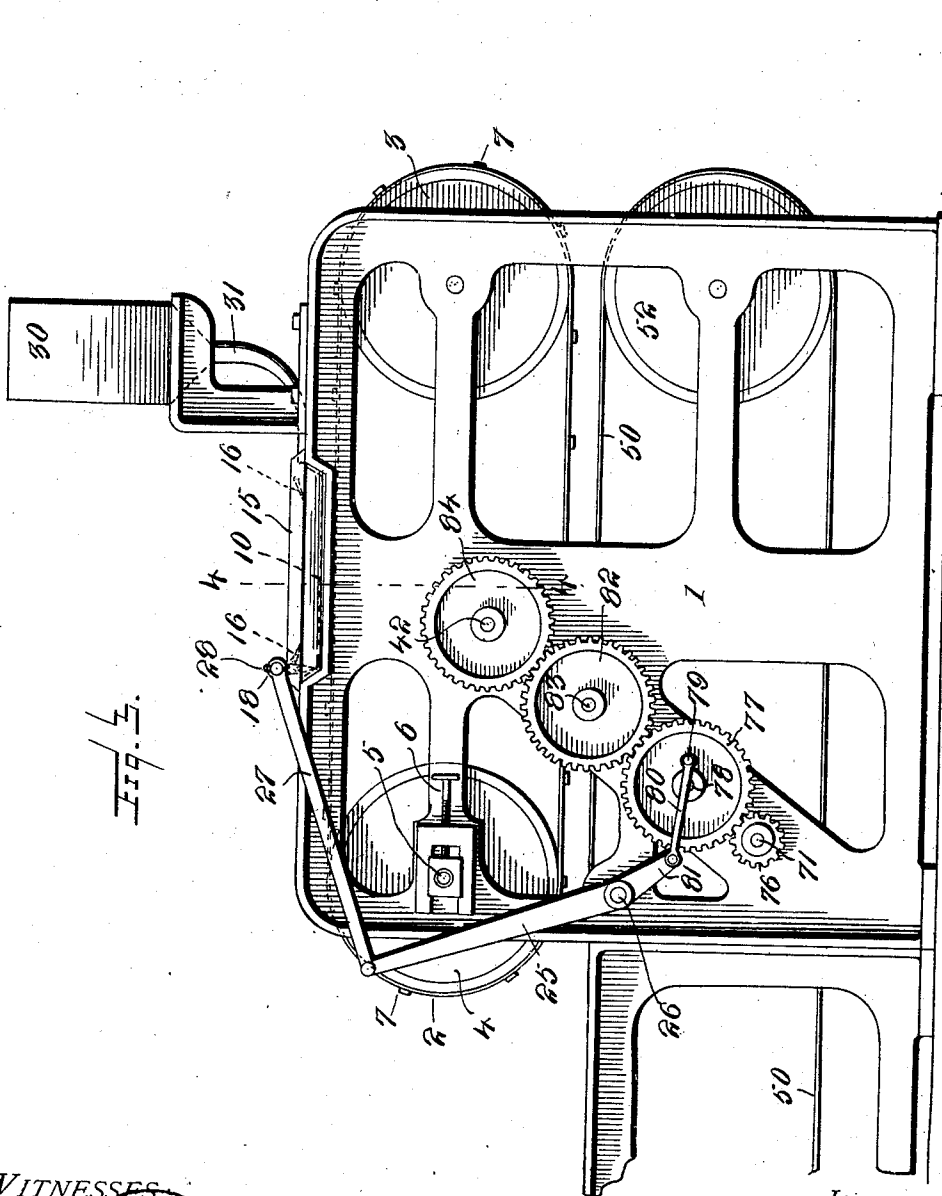
Whitaker P. Wood Attorney

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4 SHEETS—SHEET 3.



WITNESSES:

H. F. Roy Co.
J. K. Moore

INVENTOR

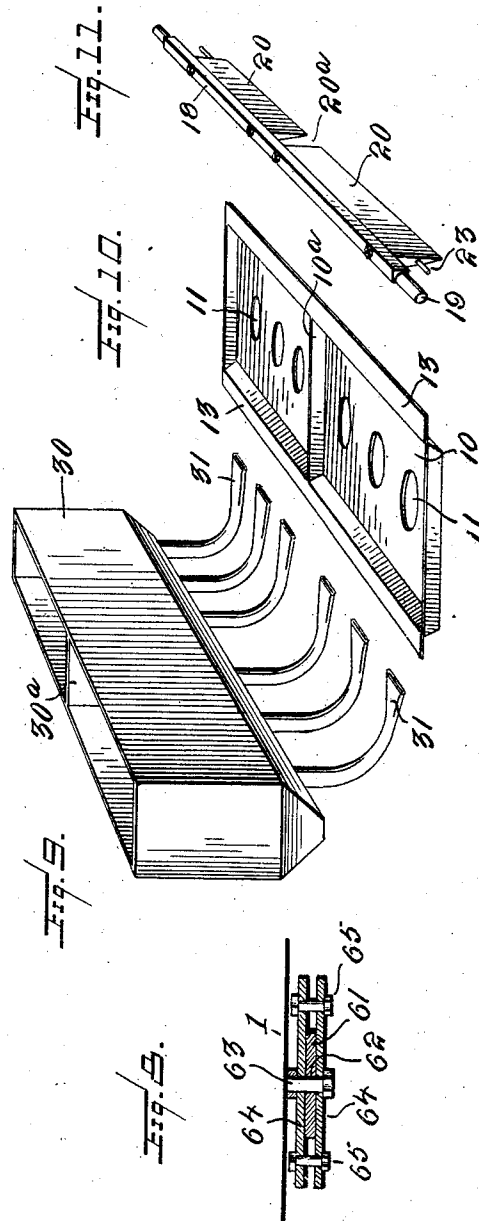
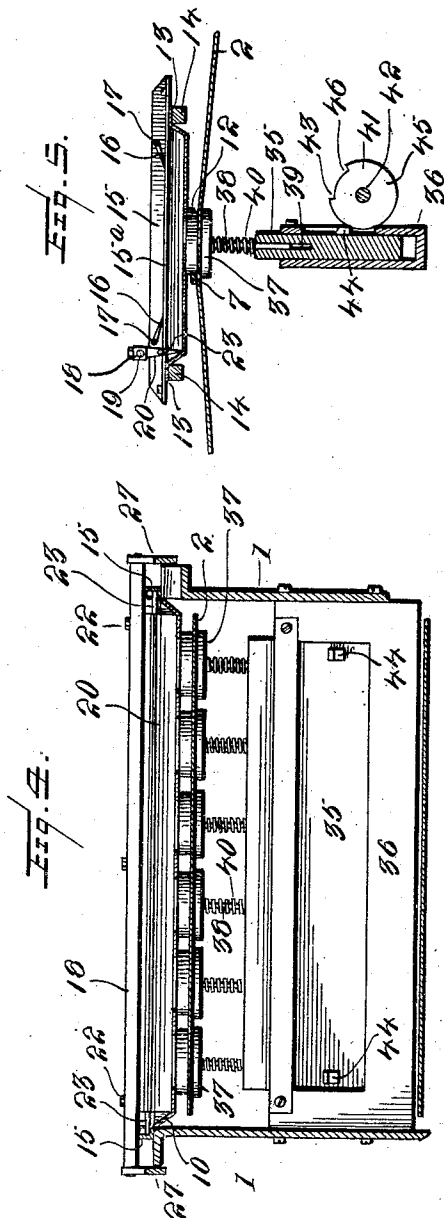
BY *Roy V. Sucher*
Whitaker Brewer Attorney

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4 SHEETS—SHEET 4.



WITNESSES.

J. K. Moore
J. K. Moore

INVENTOR

Roy V. Sucher
BY *Whitaker & Brown*

Attorney

UNITED STATES PATENT OFFICE.

ROY V. SUCHER, OF DAYTON, OHIO.

MACHINE FOR ICING CAKES.

954,147.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed March 27, 1909. Serial No. 486,162.

To all whom it may concern:

Be it known that I, ROY V. SUCHER, citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Machines for Icing Cakes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features hereinafter described reference being had to the accompanying drawings which illustrate one form in which I have contemplated embodying my invention and said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a top plan view of the machine with a part broken away. Fig. 3 is a side elevation taken from the side opposite that shown in Fig. 1, with a part broken away. Fig. 4 is a transverse vertical sectional view on line 4—4 of Fig. 3. Fig. 5 is an enlarged longitudinal vertical sectional view of a portion of the machine. Fig. 5^a is a view similar to Fig. 5 showing the parts in different positions. Fig. 6 is a detail perspective view of the knife or scraper. Fig. 7 is a perspective view of a stencil plate or pan, detached. Fig. 8 is a detail of a part of the mechanism. Fig. 9 is a detail view of a modified form of icing reservoir. Fig. 10 is a detail view of a modified form of stencil pan, and Fig. 11 is a detail view of a modified form of knife or scraper.

The object of my invention is to provide a mechanism by means of which cakes of uniform size or shape, and of any desired pattern, can be provided with a coating of icing, in a very expeditious, and at the same time in a very accurate and uniform manner.

In the machine shown in the accompanying drawings which I have selected as exemplifying and embodying my invention, 1, 1 represents the main frame of the machine comprising the side frames or castings suitably connected together and supporting the various parts of the mechanism.

2 represents a feeding conveyer, of canvas, leather or other suitable flexible material mounted upon a pair of drums 3, 4, mounted

in bearings in the main frame. One of the drums, in this instance, the drum 4, is mounted in adjustable bearings 5, arranged to slide in horizontal guides in the main frame, and provided each with an adjusting screw 6 to keep the conveyer taut. The cover 2 is provided with means for positioning the cakes to be iced, and which are placed thereon, said means consisting in this instance of transverse bars 7 located at suitable intervals on the conveyer and secured thereto, said bars being provided on their forward sides with recessed portions 8 preferably curved inwardly as shown, to engage the cakes and hold them in definite positions transversely of the belt.

In the drawings each bar 7 is arranged to receive six cakes in a transverse row, but the machine may be arranged to accommodate any desired number. I also prefer to provide a series of longitudinally disposed spacing strips 9 between the adjacent bars 7, 7, as shown but this is not essential.

Above the central portion of the conveyer 2, I arrange a removable icing or stencil pan 10. A number of these pans will be provided for cakes of different sizes and shapes and each pan is provided on its bottom with a plurality of stencil apertures 11, corresponding in number and location with the notches 8 in the cleats or bars 7 of the conveyer, and also conforming to the shape of the particular shape of the cakes to be iced, and being slightly smaller in diameter than the cakes, so that the cakes cannot be passed through said apertures, and so that the iced portion of the cakes shall be within the outline of the cakes leaving a narrow margin all the way around. Beneath the bottom of the pan 10 I provide a downwardly projecting flange or lip 12 on the forward side of each of the stencil apertures, and a little distance from the edge of each aperture equal to the uniced margin desired, and these lips, which I term cake retaining lips or projections, preferably extend part way around the icing apertures, say for example about one-third around.

The pans 10 are each provided with lateral projecting edges or flanges 13, which are adapted to engage suitable supports and hold the pan in position when one of the same is placed in the machine. In this instance I have shown transverse supporting

bars 14, 14 connecting the side frames 1, 1, and located at such distance apart as to support the flanges 13, of the pan 10.

Above the plane of the icing or stencil pan 10, I arrange on each side of the machine a vertically disposed guide rail 15, preferably formed of angle iron, and provided with a horizontal flange 15^a. These guide rails are secured to the main frame in such manner as to permit the insertion of the flanges 13 of the stencil pan beneath them, and each of said rails is provided with a pair of pivoted pawls 16 supported on a pivot pin or screw 17, and having their lower ends resting on the horizontal flange, said pawls extending from their pivots in a direction toward the center of the pan.

18 represents a transversely disposed reciprocating knife bar, which carries a vertically and transversely disposed knife or scraper 20, depending therefrom and extending into the stencil pan. The knife bar is preferably rectangular in cross section for a greater part of its length and is provided at its ends with cylindrical portions 19, 19 and the knife or scraper is preferably provided with tangs 21 extending through apertures in the bar 18 and provided with threaded end portions to receive securing nuts 22. At each end the knife or scraper is provided with the pawl engaging laterally extending studs 23, 23.

The knife bar is reciprocated by means of arms 25, 25, secured to a transverse rock shaft 26 mounted in the main frame, said arms being pivotally connected to links 27, 27 the opposite ends of which are secured to the ends 19 of the knife bar, in this instance by means of cotters 28. I prefer to construct the vertical guide rails 15, so that the reciprocating knife bar will rest thereon, and hold the bottom edge of the knife or scraper just out of contact with the bottom of the pan, to avoid wear of the scraper and the bottom of the pan. It will be seen that as the knife bar is reciprocated, as it approaches either end of the pan, the studs 23, 23 on the knife or scraper will ride up over the pawls 16 until they pass over the pivoted portions thereof and allow the knife or scraper to fall, and on the return movement the studs 23, 23 will pass beneath and raise the pawls 16. This movement of the knife or scraper prevents the accumulation of icing at the ends of the pan as any icing pushed across the stencil apertures, in either direction, will be pushed back again on the return movement of the knife or scraper.

30 represents a reservoir for the icing mixture, which is provided preferably with a number of discharge spouts 31 corresponding in number and location with the stencil apertures in the pan, and adapted to deliver a stream of the icing mixture adjacent to each aperture.

In order to hold the cakes in proper position beneath the stencil pan to have the icing applied thereto, I employ a yielding pressure device to press upward the portion of the conveyer 2 immediately beneath the stencil apertures in the stencil pan. In this instance I have shown a transversely extending vertically movable presser bar or slide 35, mounted in a guide 36 secured to the main frame, the said slide being provided with a number of presser plates 37 corresponding to the number and location of the stencil apertures each of said presser plates being somewhat larger than the stencil apertures and yieldingly mounted with respect to the presser bar. In this instance each of the presser plates 37 is provided with a stem 38 engaging a guiding aperture 39 in the presser bar and provided with a coiled spring 40, said presser plates lying normally just below the plane of the conveyer 2 and having their centers coinciding with the centers of the stencil apertures. The presser bar 35 is designed to be elevated at the proper time by means of a pair of cams 41 on a transverse shaft 42 mounted in the machine frame, said cams being each provided with a shoulder 43 for engaging a lug 44 on the presser bar for raising the same, a circular portion 45 for holding the presser bar in raised position, and a recess 46 which permits the presser bar to fall into its lowest position.

50 represents a conveyer for carrying away the iced cakes which are delivered by the conveyer 2 upon an inclined transfer slide 49 and are permitted to slide down the same onto the conveyer 50, or preferably on drying boards or trays 51 of suitable size to receive a number of rows of cakes. The conveyer 50 is mounted on drums 52, 53 the latter being mounted in sliding bearings 54 provided with adjusting screws 55, and the drying boards or trays 51 are placed on the conveyer 50 preferably at the forward end of the machine (at the left, Fig. 1) and removed when filled at the rear end.

The conveyers 2 and 50 are operated by a step-by-step or intermittent movement which may be imparted to them in any desired manner. In the drawings I have shown the shaft of drum 3 provided with a ratchet wheel 54 rigidly secured thereto, and with a pair of pawl levers 55 pivotally mounted on the shaft on opposite sides of the ratchet wheel and carrying the pawl 56. The shaft of the drum 52 is similarly provided with ratchet wheel 57, pawl levers 58 and pawl 59.

60 represents a link connecting pawl levers 55 with one end of an oscillating lever 61 and 62 is a link connecting the pawl levers 58 with said oscillating lever. This lever 61 is constructed so that its center of oscillation can be adjusted to vary the throw of the pawls 56 and 59 and to this end said

lever is slotted longitudinally as indicated at 62, said slot engaging a stationary stud 63 secured to the main frame.

64, 64 represent clamping plates which are pivotally mounted on the stud 63 on opposite sides of the lever 61 and are clamped upon the lever, when it is adjusted vertically, by screws 65, 65 as shown in Fig. 8.

A scale may be marked on the lever 61 to assist in setting it quickly to give the desired throw of the pawls for feeding the conveyers for cakes of different diameters.

The lower end of lever 61 is connected by a link 67 with a crank 68 on a gear wheel 69 meshing with a pinion 70, which is carried by a sleeve 72 surrounding the main drive shaft 71, said sleeve 72 being provided with a driving pulley 73. The shaft 71 extends across the machine and is provided with a driving pulley 74 adjacent to the pulley 73 and I prefer to provide an idle pulley 75 between them. The opposite end of shaft 71 carries a pinion 76 which drives a gear wheel 77 mounted on a stud 78 and provided with a crank pin 79 which is connected by a link 80 with an arm 81, rigidly secured to the rock shaft 26, carrying the arms 25 which actuate the reciprocating knife or scraper. The gear wheel 77 meshes with an idle gear 82 on a stud 83, which meshes in turn with a gear 84 on the shaft 42 which carries the cams 41 for raising the presser bar.

85 represents the main drive belt which connects a wide pulley on a suitable line shaft (not shown) with one or the other of the pulleys 72, 74 and 86 represents a belt shipper for shifting the belt from one pulley to the other, said belt shipper being slidably mounted in a bracket 87. I also prefer to employ a timed and automatic mechanism for operating the belt shipper so as to apply the power to the shaft 71, and to the sleeve 72 alternately. In this instance I have shown a pulley 88 provided with a peripheral cam groove extending half way around the same and terminating at its ends in inclined portions 89 and 90, for engaging a stud 91 on the sliding belt shipper and throwing it first in one direction and then in the other. The cam wheel or pulley 88 is driven separately and at a reduced speed by belt 92 from the counter shaft (not shown), and in the machine as here shown, said cam pulley makes one revolution to four and one-half revolutions of the pulleys 73 and 74.

The operation of the machine is as follows: The operator feeds the cakes to be iced by placing them in rows on the conveyer 2, each cake being placed in one of the recesses 8 in one of the cross bars or cleats 7 (see Fig. 2). The automatic belt shipper will cause the belt 85 to operate the sleeve 72 and shaft 71 alternately as de-

scribed. The operation of the sleeve 72 will actuate the oscillating lever 61, and move the conveyer 2 so as to bring one row of cakes beneath the stencil apertures in the appropriate stencil pan, which has been inserted in the machine, and will simultaneously advance the delivery conveyer 50. The conveyers will then be held stationary while shaft 71 is operated, the first effect of which is to instantly raise the presser bar 35, and bring the presser plates up beneath the conveyer 2, pressing the cakes up against the pan 10, the springs 40 compensating for the variations in thickness of the cakes, to avoid breaking the same. At the same time the knife or scraper begins to reciprocate and carries the icing across the pan, thus applying a thin even coating to each cake through the stencil apertures and making a movement in both directions across the stencil apertures, thus applying the icing smoothly and evenly, the cakes being held against movement by the cleat 7 and the lips 12 on the pan, as shown in Fig. 5. As the scraper returns to its normal position the cams 41 permit the presser bar to fall and as the conveyer moves away from the pan, the cakes fall away therefrom by gravity and are carried outward by the next movement of conveyer 2, which brings another row of cakes forward beneath the stencil apertures. The iced cakes are discharged upon the slide 49 which transfers them to the boards or trays 51, as before described.

By providing the reservoir 30 with a partition (or partitions) as indicated at 30^a, Fig. 9, icings of different colors or compositions can be simultaneously fed. In such case, however, I prefer to provide the stencil pan with a longitudinally disposed partition (or partitions) as indicated at 10^a, Fig. 10, and to provide the knife or scraper with a vertical notch or recess as shown at 20^a, Fig. 11, to prevent the different colors from becoming mixed. By this means cakes can be iced in two (or more) colors simultaneously as will be readily understood.

What I claim and desire to secure by Letters Patent is:—

1. In a machine for icing cakes, the combination with an endless horizontally disposed conveyer, provided with individual cake positioning devices, of a stationary icing pan provided with a stencil aperture located above the plane of the top surface of said conveyer, means for spreading the icing over said stencil aperture, and means for intermittently raising that portion of the endless conveyer below the icing pan, to bring the cakes into operative relation with the stencil aperture without removing them from the conveyer.

2. In a machine for icing cakes, the combination with an endless horizontally disposed conveyer, provided with individual

cake positioning devices, of a stationary icing pan provided with a stencil aperture located above the plane of the top surface of said conveyer, means for spreading the icing over said stencil aperture, and a vertically movable presser device below the conveyer, having a vertically yielding part for directly engaging the conveyer to raise the cakes into operative relation with the stencil aperture without removing them from the conveyer.

3. In a machine for icing cakes, the combination with an endless horizontally disposed conveyer, provided with individual cake positioning devices disposed transversely and longitudinally thereof, of a stationary icing pan located above the plane of the top face of said conveyer, and provided with stencil apertures disposed transversely with respect to the conveyer, a vertically movable pressed bar below the conveyer and a plurality of vertically yielding pressers, located in line vertically with the stencil apertures, and adapted to directly engage the conveyer, to raise the cakes into operative relation with said apertures, without removing them from the conveyer.

4. In a machine for icing cakes, the combination with a horizontally disposed conveyer provided with individual cake positioning devices, of a removable icing pan located above the conveyer and provided with stencil apertures, means for supplying icing to said pan and spreading it over said apertures, and vertically movable devices directly engaging the said conveyer, for elevating the cakes into operative relation with the icing pan without removing them from the conveyer.

5. In a machine for icing cakes, the combination with a main frame, a horizontally disposed conveyer supported therein and provided with individual cake positioning devices, horizontal guides on the frame above said conveyer, a removable icing pan having laterally projecting portions engaging said guides, and provided with stencil apertures in its bottom, an icing reservoir having discharge devices above said pan, a movable spreading device, supported by the main frame and having portions depending into said pan, and a vertically movable device below the conveyer for raising the cakes into operative relation with said stencil apertures without removing them from the conveyer.

6. In a machine for icing cakes, the combination with a horizontally disposed conveyer, provided with individual cake positioning means, of an icing pan located above the plane of said conveyer and provided with stencil apertures, stationary means for supplying icing to said pan, a horizontally reciprocating spreader, having its lower edge adjacent to the bottom of said pan and movable to and fro over said stencil apertures, a

vertically movable presser device located below the conveyer, in line with said stencil apertures and directly engaging the conveyer, and means for intermittently reciprocating said presser device.

7. In a machine for icing cakes, the combination with a horizontally disposed conveyer, of a stencil pan located above the same and provided with stencil apertures, a reciprocating knife in said pan, and means for elevating the knife above the bottom of the pan adjacent to each end of its reciprocation.

8. In a machine for icing cakes, the combination with a horizontally disposed conveyer, of a stencil pan located above the same and provided with stencil apertures, a reciprocating knife in said pan, pivoted inclined devices adjacent to each end of the reciprocation of the knife, and projections on said knife for engaging said devices.

9. In a machine for icing cakes, the combination with a horizontally disposed conveyer, of a stencil pan located above the same and provided with stencil apertures, a reciprocating knife in said pan, horizontal guide rails at each side of the pan, a pivoted inclined pawl adjacent to each end of said guide rails, projecting portions connected with said knife engaging said guide rails, and projecting portions connected with said knife for engaging said pawls.

10. In a machine for icing cakes, the combination with a receiving conveyer, provided with positioning means for the cakes, a stationary stencil pan provided with stencil apertures, means for supplying the icing mixture to said pan, a reciprocating knife in said pan for applying the icing mixture to said cakes, means for elevating and dropping said knife adjacent to each end of its reciprocation, and means for elevating the portion of the conveyer below the pan to bring the cakes into operative relation therewith.

11. In a machine for icing cakes, the combination with an endless receiving conveyer, provided with positioning means for cakes, a stencil pan, and icing applying devices, and means for raising the portion of the conveyer beneath said pan to bring the cakes into operative relation therewith, of devices for imparting motion intermittently to said conveyer, and adjusting means for regulating the travel of said conveyer at each movement thereof to conform to the diameter of the cakes to be iced.

12. In a machine for icing cakes, the combination with an endless receiving conveyer provided with positioning means for cakes, a stencil pan, and icing applying devices, and means for raising the portion of the conveyer beneath said pan to bring the cakes into operative relation therewith, of devices for imparting motion intermittently to said

conveyer, and adjusting means for regulating the travel of said conveyer at each movement thereof to conform to the diameter of the cakes to be iced and comprising a pawl and ratchet mechanism operatively connected with said conveyer, an oscillating lever, connected at one end with said pawl and ratchet mechanism, means for adjusting said lever longitudinally with respect to its center of oscillation and actuating means for said lever.

13. In a machine for icing cakes, the combination with a receiving conveyer provided with positioning means for cakes, a stencil pan, and icing applying devices, and means for raising the portion of the conveyer beneath said pan to bring the cakes into operative relation therewith, of devices for imparting motion intermittently to said conveyer, and adjusting means for regulating the travel of said conveyer at each movement thereof to conform to the diameter of the cakes to be iced and comprising a pawl and ratchet mechanism operatively connected to the conveyer, an oscillating lever connected with said pawl and ratchet mechanism, and having a longitudinal slotted portion, a stationary stud extending through said slotted portion, clamping plates engaging said lever and having a pivotal engagement with said stud and actuating means for said lever.

14. In a machine for icing cakes, the combination with a horizontally disposed conveyer, a stencil pan located above the same, a reciprocating knife in said pan, a vertically movable presser device for elevating the portion of the conveyer below said pan, actuating devices for moving said conveyer, separate actuating devices for said knife and presser device, and automatic means for operating said actuating devices alternately.

15. In a machine for icing cakes, the combination with a horizontally disposed conveyer, a stencil pan located above the same, a reciprocating knife in said pan, a vertically movable presser device for elevating the portion of the conveyer below said pan, actuating devices for moving said conveyer, separate actuating devices for said knife and presser device, separate driving pulleys for said actuating mechanisms, a belt shipper for moving a driving belt from one to another of said pulleys, and a rotary cam for automatically operating said belt shipper.

16. In a machine for icing cakes, the combination with a horizontally disposed conveyer, for receiving the cakes, a stencil pan above said conveyer, a partition in said pan extending longitudinally of said conveyer, an integral reciprocating blade bar supported above and independently of said pan, provided with separated knife portions

extending into the pan on opposite sides of said partition, and means for elevating the portion of the conveyer beneath said pan.

17. In a machine for icing cakes, the combination with a horizontally disposed conveyer, for receiving the cakes, a stencil pan above said conveyer, a partition in said pan extending longitudinally of said conveyer, a reciprocating blade bar supported above and independently of said pan, provided with separated knife portions extending into the pan on opposite sides of said partition, an icing reservoir having a plurality of compartments, and separate spouts supplying the icing therefrom to said pan on opposite sides of said partition, and means for raising the portion of the conveyer below said pan.

18. In a machine for icing cakes, the combination with a horizontally disposed conveyer provided with cake positioning means, means for intermittently moving said conveyer, a stencil pan located above said conveyer provided with a plurality of stencil apertures disposed transversely thereof and corresponding in number and position with said positioning devices, a stationary reservoir for icing provided with a plurality of spouts discharging into said pan and corresponding in number and position with the stencil apertures therein, a reciprocating knife in said pan, and means for elevating the portion of the conveyer below the pan.

19. The combination with an endless conveyer provided with cake positioning devices thereon, disposed at intervals transversely thereof, a stencil pan located above the plane of the conveyer and provided with stencil apertures at intervals transversely of the conveyer corresponding with said positioning devices, means for feeding icing to said pan, a reciprocating knife in said pan and means for elevating the portion of the conveyer beneath said stencil apertures into position to bring the cakes thereon into operative relation with said apertures.

20. The combination with the endless conveyer provided with cake positioning devices for engaging the rear edges of the cakes, of a stencil pan above said conveyer provided with stencil apertures, and having a downwardly extending positioning lip on the forward side of each of said apertures, means for intermittently moving said conveyer, and means for raising the portions of said conveyer beneath said stencil apertures.

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

ROY V. SUCHER.

Witnesses:

JOHN L. FLETCHER,
J. K. MOORE.