

G. B. M. GOODWIN.
CANDY COATING MACHINE.

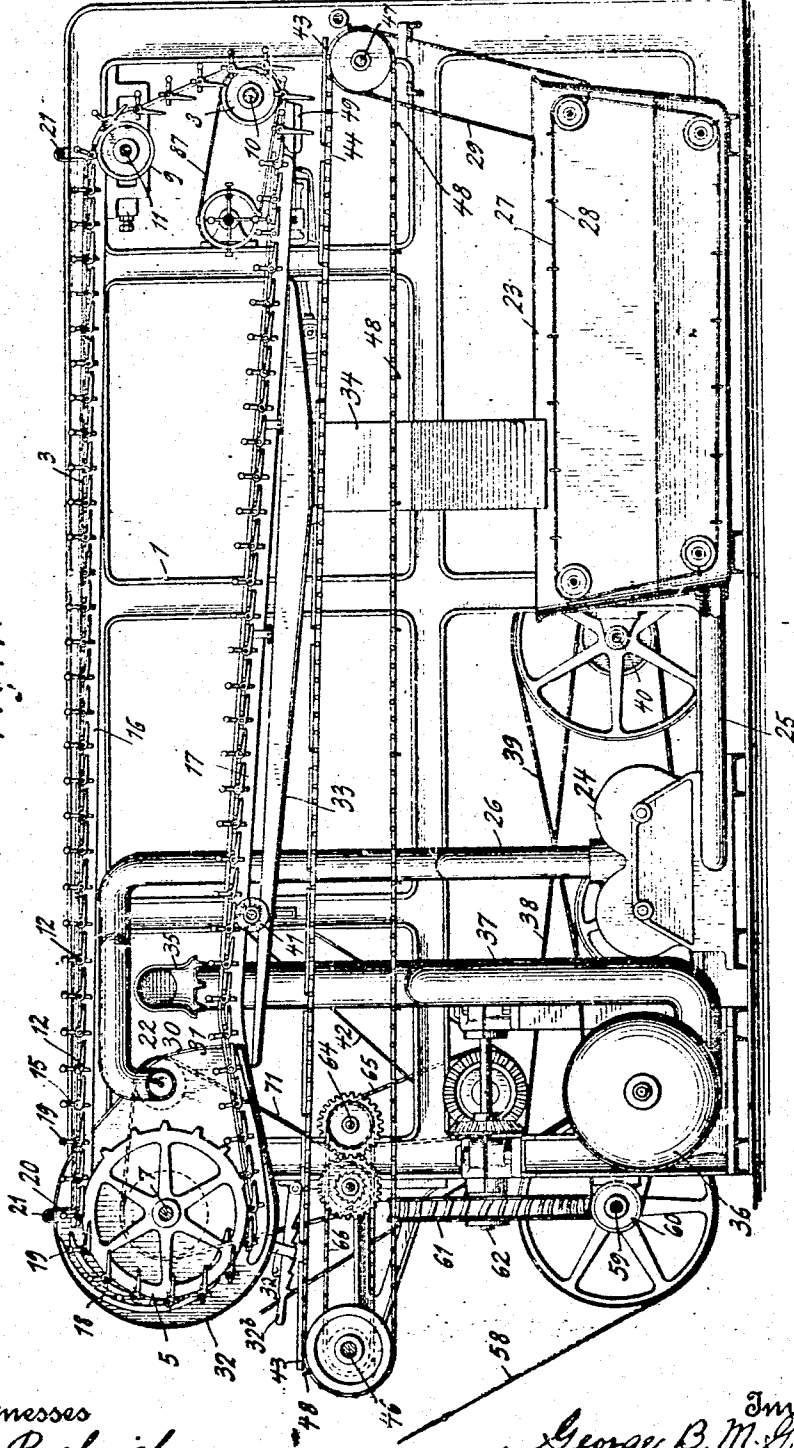
APPLICATION FILED FEB. 4, 1904. RENEWED MAY 27, 1905.

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Patented Oct. 19, 1909.

5 SHEETS—SHEET 1

FIG. 1.



Witnesses
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Fig. 2.

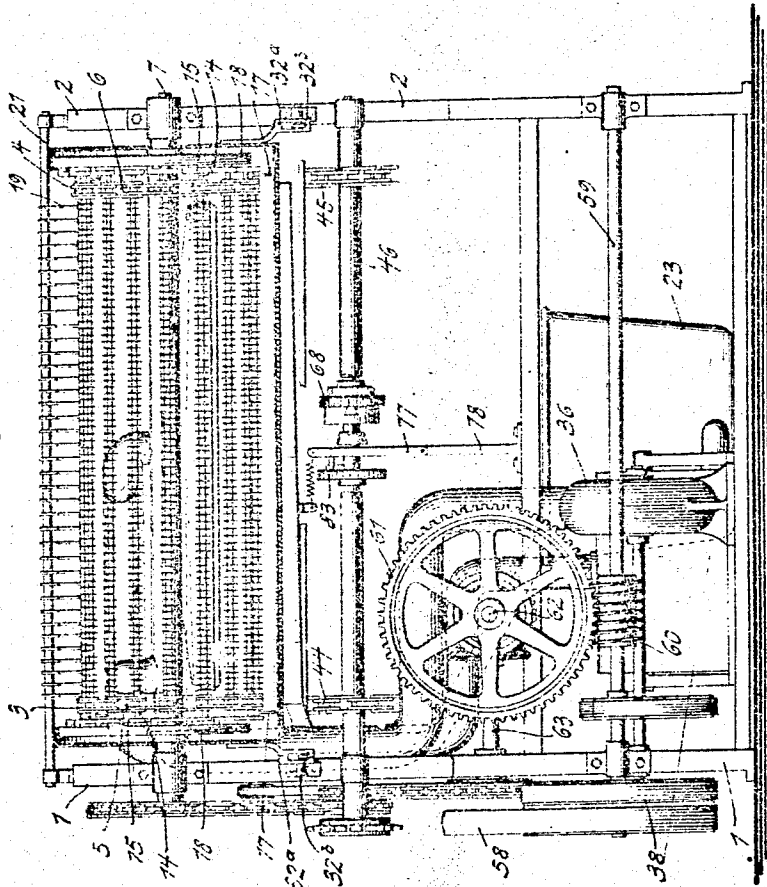
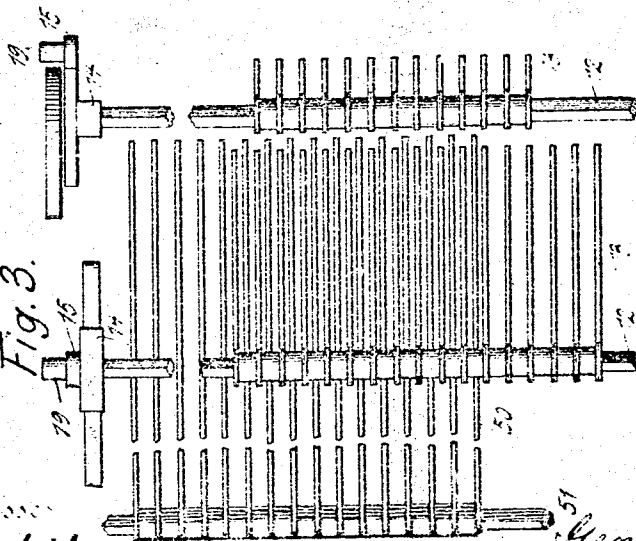


Fig. 3.



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Fig. 4.

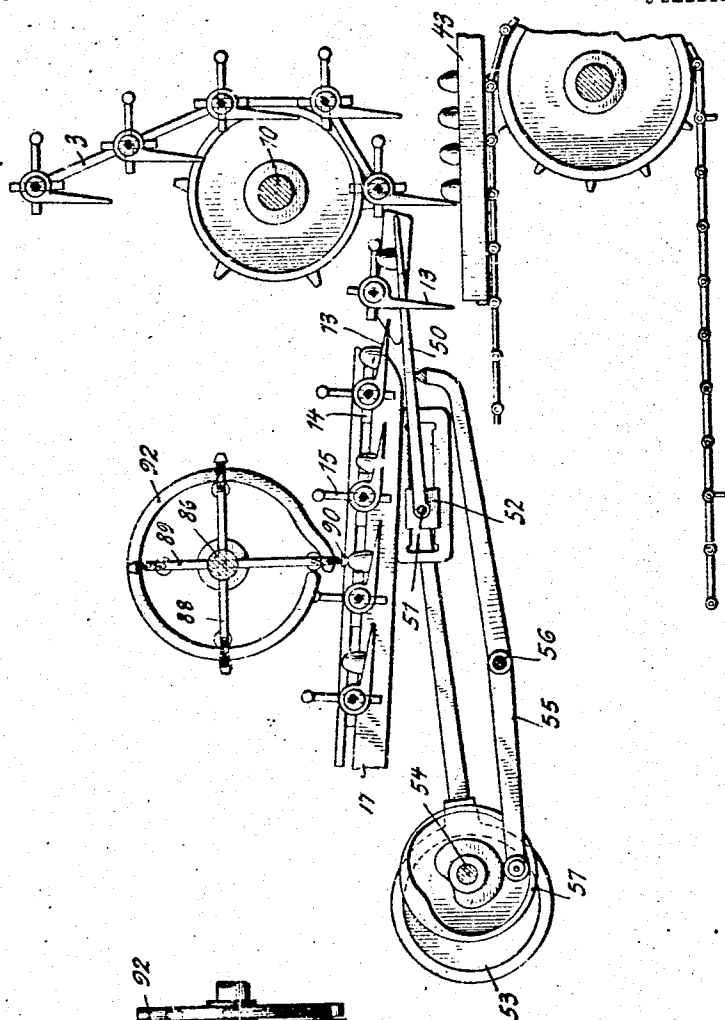
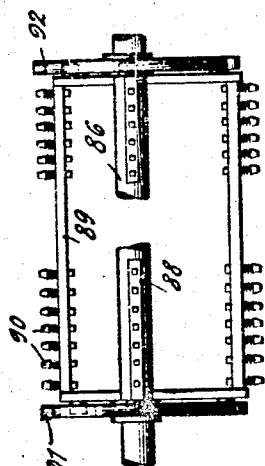


Fig. 5.



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5 SHEETS—SHEET 4.

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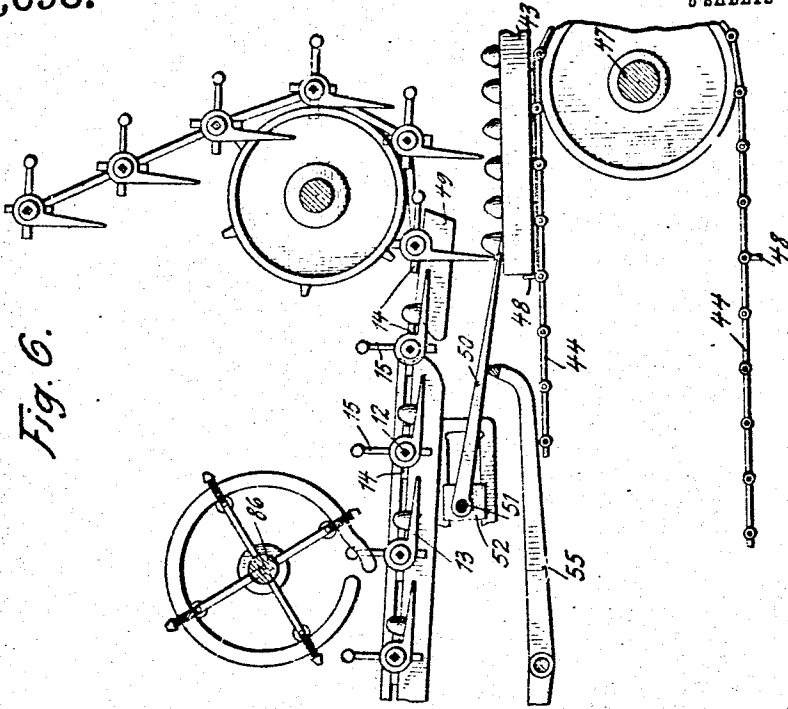


Fig. 6.

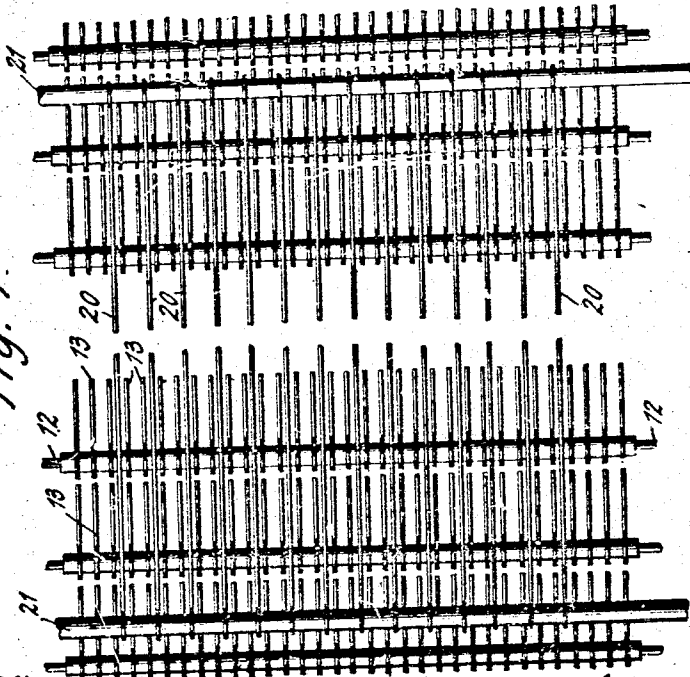


Fig. 7.

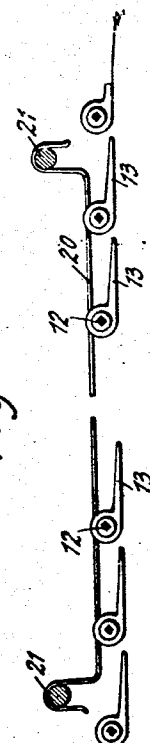


Fig. 8.

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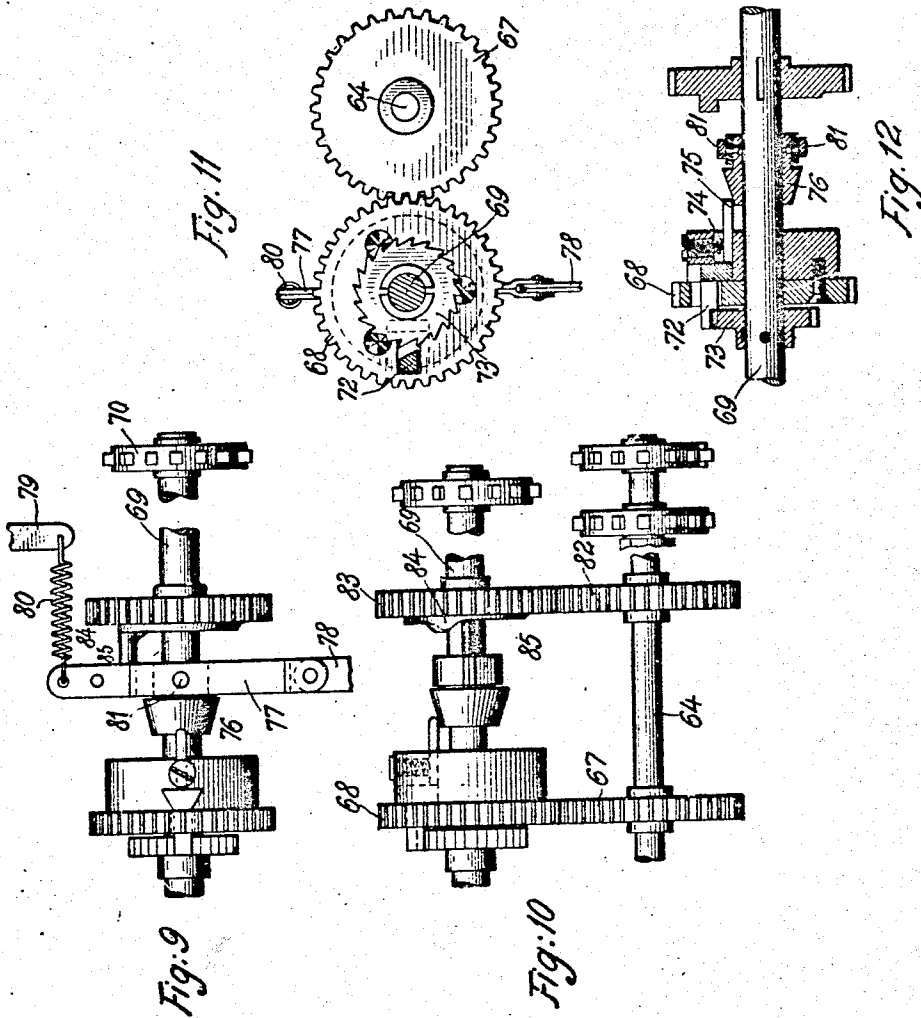
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5 SHEETS—SHEET 5.

937,698.



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UNITED STATES PATENT OFFICE.

GEORGE B. M. GOODWIN, OF NEW YORK, N. Y., ASSIGNOR TO MYRON A. SMITH, OF NEW YORK, N. Y.

CANDY-COATING MACHINE.

937,698.

Specification of Letters Patent.

Patented Oct. 19, 1908.

Application filed February 4, 1904, Serial No. 191,944. Renewed May 27, 1905. Serial No. 262,679.

To all whom it may concern:

Be it known that I, GEORGE B. M. GOODWIN, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Candy-Coating Machines, of which the following is a specification.

My invention relates to candy coating machines, and particularly to machines for coating articles with chocolate.

An object of my invention is to provide a machine whereby articles may be uniformly coated in large quantities with a minimum of hand labor; also to provide a machine whereby articles of various shapes and sizes may be coated without requiring a material change or adjustment in the mechanism, and without interrupting the operation of the machine; also to provide a construction whereby the coated articles may be carried directly out of the machine as soon as delivered from the coating mechanism so that said articles may be immediately carried into a cold chamber to set the coating material and prevent it from flowing off from the coated articles or losing its shape or sticking to the receiving mechanism; also to provide means for applying the coating material to the articles whereby the articles do not have to be positively held in position on the holders during the application of the coating material thereto. These, and other objects of my invention will more fully appear from the following description.

My invention consists in the novel parts, improvements and combinations herein shown and described.

In the accompanying drawings, which are referred to herein, and form a part hereof, one embodiment of my invention is illustrated, the same serving in connection with the description herein, to explain the principles of the invention, and the best mode of carrying those principles into effect.

Of the drawings, Figure 1 is a central longitudinal vertical section of the candy coating machine constructed in accordance with my invention, parts being shown in elevation, as seen from the right in Fig. 2; Fig. 2 is an elevation of the end of the machine shown to the left in Fig. 1; Fig. 3 is a plan view illustrating a detail of the

mechanism; Fig. 4 is a vertical sectional view illustrating a part of the mechanism shown to the right in Fig. 1 on an enlarged scale; Fig. 5 is a side elevation of a detail of the mechanism shown in Fig. 4; Fig. 6 is a view similar to that of Fig. 4 illustrating the parts at a different period of their operation; Fig. 7 is a plan view illustrating a detail of the mechanism; Fig. 8 is a vertical sectional view, partly in elevation, illustrated in the part shown in Fig. 7, as seen from the bottom of that figure; Fig. 9 is an elevation and Fig. 10 a plan view of a detail of the driving mechanism; Figs. 11 and 12 are vertical sectional views taken on planes at right angles to each other and illustrating a part of the mechanism shown in Figs. 9 and 10.

Like reference numbers refer to like parts wherever they appear in the drawings.

The particular embodiment of the invention illustrated in the drawings comprises a pair of side frames 1 and 2, in which the various parts of the mechanism are mounted in operative relation. The mechanism includes, in general, the following parts, to wit, means for carrying the articles to be coated through the machine, means for applying the coating material, devices for receiving the coated articles and driving mechanism for the various parts.

As far as some of the features of my invention are concerned, any suitable means may be provided for carrying the articles to be coated through the machine. In accordance with one feature of my invention, however, the means for carrying the articles through the machine comprises an endless flexible carrier having a series of holders for the articles to be coated pivotally mounted thereon. In accordance with the construction shown, the carrier consists of a pair of endless chains 3 and 4 arranged to travel in fixed orbital paths at opposite sides of the machine. The carrier is preferably arranged to present upper and lower stretches of considerable length, whereby ample opportunity is given to place the articles to be coated in the holders, while the holders are in one stretch of the carrier, and to properly apply the coating material to the articles and remove the surplus material therefrom while they are in the other stretch of the carrier. As shown, the chains

3 and 4 are mounted at one end of the machine on a pair of sprocket wheels 5 and 6 fixed to a shaft 7 suitably journaled in the side frames 1 and 2, and at the other end of the machine each of the chains 3 and 4 passes over a pair of sprocket wheels, one pair of which is shown at 8 and 9 in Fig. 1. The said pairs of sprocket wheels are fixed near the opposite ends of two shafts 10 and 11, suitably journaled one above the other in the side frames 1 and 2 at the opposite end thereof from the shaft 7. The shaft 11, as shown, is made adjustable longitudinally of the machine for the purpose of taking up any slack in the chain, and properly adjusting the tension thereof. By reason of this construction, the carrier is arranged in two stretches, one above the other, said stretches being substantially horizontal. The means shown for driving the carrier will be presently described.

Any suitable construction of holder adapted to support the articles in such manner that the coating material may be applied thereto, may be used. In accordance with one feature of my invention, however, the holders are provided with supporting means extending transversely of the carrier and adapted to receive articles of various shapes and sizes and support them irrespective of their shapes. As shown, each of the holders consists of a rod or shaft 12 arranged transversely of the carrier and extending from side to side thereof, each of said rods being pivoted at its opposite ends in suitable bearings formed on the links of the chains 3 and 4. Each of these rods 12 is provided with a plurality of fingers 13, said fingers having supporting surfaces arranged in substantially the same plane, so that when the rods are turned to bring the upper surfaces of the fingers into a substantially horizontal position, a flat uniform support is provided which is adapted to receive any article, irrespective of its shape, so long as it is large enough to rest upon two or more of the fingers. These separated fingers, moreover, form an extended openwork substantially continuous and preferably flat support for the articles which will not retain the coating material, and which will permit the coating material to be applied to the articles to be coated in excessive quantities, the surplus flowing off between the fingers. By reason of this construction, moreover, the coating material can be applied to the bottoms of the articles. These fingers provide also a supporting surface having closely arranged parallel supporting ribs which permits the coated articles to be easily removed, and removed with a minimum amount of disturbance of the coating thereon, and without the removal of any of the coating that has been applied to the bottoms of the articles. The means for moving the coated

articles from the fingers will be presently described. In accordance with the best construction, the holders are so controlled as to maintain their supporting surfaces in a horizontal or substantially horizontal position during the time that the holders are passing along both the upper and the lower stretches of the carrier, and also during the time that they are passing from the upper stretch to the lower stretch. By reason of this feature, the articles may be carried through the machine without being held in any way, except to rest, by gravity on the holders. To control the holders in the manner described, any suitable means may be provided. In accordance with the construction shown, each of the shafts 12 is provided near one end of the machine with a pair of cross-arms 14 and 15, one arranged at right angles to the other, and one beside the other longitudinally of the shaft. The arms 14 are substantially parallel with the supporting surfaces of the fingers 13, and during the passage of the holders along the upper and lower stretches of the carrier, the arms 14 pass along substantially horizontal guideways, the one for the upper stretch being numbered 16, and the one for the lower stretch 17, see Fig. 1. During the time that the holders are passing, at the left hand end of the machine as seen in Fig. 1, from the upper stretch of the carrier to the lower stretch, the holders are maintained in a substantially horizontal position by means of a curved guideway 18, which is adapted to be engaged by pins or projections 19 projecting laterally from the upper ends of the arms 15, while the holders are passing along the upper stretch of the carrier. The guideway 18 is formed on a radius equal to the radius of the sprocket wheel 5, and is fixed to a stationary part of the machine in eccentric relation to the sprocket wheel 5, the center of curvature of the guideway being located directly above the axis of the wheel 5, a distance equal to the distance between the shafts 12 and the pins 19 on the arms 15. By reason of this construction, the holders will be taken from the upper guideway 16, and maintained with their supporting surface in a substantially horizontal position during their passage around the wheel 5, and delivered in a substantially horizontal position to the lower guideway 17. The arms 14, 15, and guideways 16, 17, 18 may be provided at each side of the machine, if desired, as illustrated in Fig. 2.

In accordance with the best construction, the upper stretch of the carrier is left free so that the holders will be accessible throughout the entire length of the upper stretch, to permit the articles to be placed thereon. The articles may be supplied to the holders in any suitable way, as by an automatic feeding mechanism. The articles

may be conveniently supplied to the holders, however, by hand, several feeders being placed along each side of the machine. Where the articles are supplied by hand, suitable guiding means are preferably provided to facilitate this operation. As shown, a series of stationary guide wires 20 are provided, the same being adjustably mounted at their opposite ends on stationary cross-rods 21, arranged at or near the opposite ends of the upper stretch of the carrier. These guide wires may be spaced to suit the size of the articles to be coated. As shown in Fig. 7, the guide wires are arranged in vertical planes passing between each alternate space between the fingers 13 of the holders, said wires being provided at their opposite ends with loops adapted to clasp the rods 21 with a suitable amount of friction to hold the wires in place.

The coating material is applied to, and properly drained from the articles during the passage of the holders along the lower stretch of the carrier. Any suitable means for applying the coating may be employed. Preferably, however, means for applying the coating should be employed which will not disturb the articles or move them out of their positions on the holders. In accordance with one feature of my invention, the means for applying the coating consists, in the main, of spraying devices constructed to apply the coating in the form of small drops or streams which do not have sufficient force to move the articles on the holders. In accordance with the construction shown, a perforated pipe 22 is arranged transversely of the machine near the left end thereof, as seen in Fig. 1. The pipe 22 is preferably located some distance above the lower stretch of the carrier, and the perforations in said pipe are arranged to direct the coating material in fine streams downwardly on to the articles on the holders. The coating material in liquid form may be applied to the pipe 22 by any suitable means. As shown, the coating material is supplied from a tank 23, in which a suitable quantity of the material is maintained in a liquid condition. The coating material is drawn from the tank by a pump 24 through a suction pipe 25, and is delivered from the pump to the perforated pipe 22 by a delivery pipe 26. The coating material in the tank 23 is preferably kept at a uniform temperature and in a homogeneous condition by means of a suitable stirring device, that shown consisting of an endless belt 27, having a series of agitators 28 secured thereto. The belt, one part of which passes through the coating material, may be kept in continuous motion by any suitable means, as by the driving chain 29, which receives its motion from a suitable part of the machine. While any suitable pump may be used, a rotary pump of the gear type,

as indicated, is preferably employed. For the purpose of keeping the perforations in the pipe 22 from becoming clogged, an agitating or scraping device is preferably provided in the pipe 22. As shown, this device consists of a shaft 30, centrally arranged longitudinally of the pipe 22, and projecting from one end thereof, where it is provided with a sprocket wheel, by which it is driven. As indicated, the shaft 30 is provided with a spiral blade or scraper 31, which during the rotation of the shaft, continuously scrapes the inner surface of the pipe, and locally forces the material through any perforation which may become clogged. To insure the application of the coating to the under surfaces of the articles, and to collect that part of the spray from the pipe 22 which is not applied to the articles, the end of the carrier located to the left in Fig. 1 is inclosed in a casing 32, the under portion of which extends a suitable distance beneath the lower stretch of the carrier under the pipe 22.

To provide a mass of the coating material in which the lower parts of the articles may be immersed, the guide 17 for the lower stretch of the carrier is directed upwardly a short distance at its left end, and the bottom of the casing 32 is given an upward inclination corresponding to that of the guide to form a suitable tank or reservoir for the coating material. The right hand edge of the casing 32 is arranged at such a level that the surface of the mass of coating material retained thereby will be maintained slightly above the level of the supporting surfaces of the holders when said surfaces are at the lowest point in their travel below the sprocket wheels 5 and 6. The surplus material supplied by the spray pipe 22 will keep the coating material in the reservoir, formed by the casing 32, filled and constantly overflowing at its right hand edge. The height of the coating material in the casing 32, with respect to the holders on the carrier, may be adjusted by adjusting the angular position of the casing 32 with respect to the frame of the machine. For this purpose, the casing 32 is loosely mounted on the shaft 7, and is provided, at each side, with an arm 32^a adapted to engage a notched arm or lever 32^b pivotally mounted on the corresponding side frame of the machine. By shifting the arms 32^b from one notch to another of the arms 32^a, the angular position of the casing 32 is readily adjusted, so as to raise or lower the right hand edge of the lower part of the casing, and thereby raise or lower the level of the liquid coating material therein. The overflow from the casing 32, and the drip from the coated articles, and from the holes, as they pass along the lower stretch of the carrier, is received by a suitable drip-pan 33, which has an inclined

bottom serving to direct the surplus coating material through a drain passage 54 back to the supply tank 23.

To insure the removal of the surplus material from the coated articles, means for producing an air blast is preferably provided. As shown, this means consists of a distributing head or pipe 35 arranged above the lower stretch of the carrier, preferably just beyond the casing 32, said head having perforations in its under surface to direct jets of air downwardly upon the freshly coated articles. A blast of air may be supplied to this pipe by any suitable means. As shown, a rotary fan 36 is provided, the blast from said fan being conveyed to the head 35 by a pipe 37. The fan is driven from the power shaft by the belts 33 and 39, and suitable pulleys, and an intermediate countershaft 40. To remove the surplus coating material from the under surfaces of the coated articles, a rotary brush 41 is preferably provided, the same being located a short distance beyond the blast pipe 35, beneath the lower stretch of the carrier and above the drip-pan 33. This brush may be driven in any suitable way, as by a belt 42.

As far as some of the features of my invention are concerned, any suitable means may be provided to receive the coated articles as they are delivered from the holders. In accordance with the best construction, means are provided to deliver the coated articles from the holders at or near the end of their travel along the lower stretch of the carrier, and means are provided to receive the coated articles delivered from the holders, and carry them immediately out of the machine so that they can be chilled, as by placing them in a cold chamber or ice-box, with the least possible delay. By reason of this construction, the coating material, which is in a soft condition when the articles are delivered, is not given time to flow off from the articles, or to change its shape, or to become cemented to the receiving devices. In accordance with the embodiment of this feature of the invention illustrated, the receiving means consists of a series of trays 43, and means for supporting the trays and moving them in proper relation to the end of the lower stretch of the carrier at the right, as viewed in Fig. 1. The trays are preferably moved in the same direction as the carriers, on to which the coated articles are delivered. As shown, the supporting means for the trays consists of a pair of chains 44 and 45 (see Figs. 1 and 2), which for convenience in introducing the trays, extend from one end of the machine to the other, and are mounted in a substantially horizontal position beneath the carrier on suitable sprocket wheels, carried by the shafts 46 and 47. The chains 44 and 45 are provided at suitable intervals with projec-

tions 48 adapted to engage the rear edges of the trays so as to insure the regular spacing and proper movement thereof. For the purpose of delivering the coated articles from the holders, the latter are preferably turned on their pivots from their horizontal supporting position downwardly out of their supporting position. For the purpose of turning the holders on their pivots to deliver the articles, the guides 17 are terminated a short distance from the end of the lower stretch of the carrier, and a short guide 49 is provided, the same being located out of the plane of the cross-arms 14 of the holders, and in the plane of the cross-arms 15 of the holders, as clearly shown in Fig. 3. The short guide 49 may be provided at each side of the machine, if preferred. It will be seen that as the holders pass the guides 49 they will be turned on their pivots from a horizontal into a substantially vertical position so as to deliver the coated articles therefrom. The forward ends of the guides 49 may be given a gradual incline so as to turn the holders down with as gradual a movement as may be desired.

For certain classes of goods, the holders may deliver the coated articles directly on to the receiving trays 43, the coated articles being enabled, by reason of the rib-like surface of the holders, to slide from the holders on to the receiving trays. For the smaller articles, however, and for certain classes of goods which are apt to tip in sliding off the holders, an intermediate transferring mechanism is preferably provided. As shown, this transferring mechanism (see particularly Figs. 3, 4 and 6,) consists of a series of fingers 50 similar to the fingers 13 of the holders, said fingers 50 being fixed to a transverse rock-shaft 51, journaled at its opposite ends in a pair of sliding boxes 52. The boxes 52 are reciprocated in lines substantially parallel with the lower stretch of the carrier by means of eccentrics 53 fixed on a shaft 54, suitably journaled in the side frames of the machine and driven from any suitable part thereof. As the fingers are reciprocated backward and forward they are also oscillated in vertical planes about shaft 51 as an axis. The means shown for accomplishing this oscillating movement of the fingers consists of levers 55 fulcrumed on a transverse shaft 56, and receiving motion from cams 57 fixed on the shaft 54. The eccentrics 53 and cams 57 are so proportioned and arranged that the fingers are caused first to lie close to the under surface of the carrier, and move in the same direction therewith at substantially the same speed, then to move downwardly to the receiver 43, then to move backwardly and upwardly to their first position. The fingers 50 are spaced the same distance apart as the fingers 13 of the holders, and are ar-

5 ranged opposite the spaces between the fingers of the holders, and the movement of the fingers 50 is so timed that while they are in their uppermost position, the holders are turned downwardly so as to transfer the coated articles from the fingers 15 of the holders to the fingers 50 of the transferring means. Then as the fingers move downwardly to the receiver 43 and start their backward movement, the advancing movement of the holders causes them to engage the sides of the articles and push them gently off from the fingers 50 on to the receiver. The shaft 54 is so driven as to make one revolution during the time required for the carrier to move a distance equal to that between the successive holders. The receivers 43 are preferably moved at a somewhat slower speed than that of the carrier, so that the coated articles may be closely spaced on the receivers. The relative movement between the receivers 43 and the carrier is preferably varied when the adjacent edges of the receivers are passing the delivery point on the carrier, so as to prevent the deposit of the coated articles directly on the edges of the receivers, or in the spaces between them. This may be accomplished in any suitable way. In accordance with the construction shown, these objects are accomplished by a peculiar driving mechanism, which will now be described.

35 The power for driving the machine is supplied by any suitable means, as by a belt 58 to a suitable pulley on the main shaft 59 of the machine. The motion of this shaft is communicated by means of a worm-wheel 61 to a shaft 62, and from that shaft by means of beveled wheels to a shaft 63, which in turn drives a shaft 64 by means of a sprocket chain 65. The motion of the shaft 64 is communicated directly by means of a sprocket chain 66, to the shaft 46 of the receiving mechanism, said mechanism being thus driven at a uniform speed. The shaft 7 of the carrier is driven from the shaft 64, but to interrupt the movement of the carrier at intervals to permit the spaces between the receivers 43 to pass the delivery point, the driving connection between the shafts 64 and 7 is intermittently interrupted. Any suitable means may be provided for this purpose. As shown, the shaft 64 is provided with a gear-wheel 67, which meshes with a gear-wheel 68 loosely mounted on a shaft 69, which is connected by means of a sprocket wheel 70 and a sprocket chain 71, with a sprocket fixed on the shaft 7. The gear 68 is provided with a radially movable tooth 72, which is adapted, when moved inwardly, to engage the teeth of a ratchet wheel 73 fixed on the shaft 69. The tooth 72 is normally held in engagement with a tooth of the ratchet 73 by means of a spring 74.

For the purpose of intermittently moving the tooth 70 outward to momentarily disconnect the gear 68 from the shaft 69, and thus interrupt the driving connections for the carrier, the following mechanism is provided. The tooth 72 is provided with an oppositely projecting finger 75 adapted to be engaged and moved outwardly by a cone 76 loosely mounted to slide on shaft 69. The cone 76 is normally held out of contact with the arm 75 by means of a lever 77 pivoted at one end on a bracket 78, and connected at the opposite end to a fixed bracket 79 by means of a tension spring 80, the lever 77 being pivotally connected with the hub of the cone 76 by the pivot screws 81. For the purpose of intermittently moving the cone 76 into contact with the arm 75 so as to lift the tooth 72 out of engagement with the ratchet 73, the shaft 64 is provided with a gear 82, which meshes with a gear 83 loosely mounted on shaft 69, adjacent to the lever 77. The gear 83 is provided with a cam 84 adapted to engage a laterally projecting pin 85 on the lever 77, so as to move said lever toward the gear 68 against the tension of the spring 80. The parts are so proportioned that the cam 84 will come into operation on the pin 85 so as to stop the carrier each time a space between two adjacent delivery trays 43 arrive at the delivery point.

For the purpose of marking the coated articles, a marking device may be arranged above the lower stretch of the carrier near the delivery end thereof. As shown, this marking device consists of a shaft 86 suitably journaled in the side frames 1 and 2, and driven by a chain 87 from the shaft 10. A pair of rectangular frames 88, 89 are mounted on the shaft 86, said frames being arranged to slide radially in either direction with relation to said shaft. Each of the frames is provided along its opposite sides with a series of spring-pressed markers 90 adapted to make contact with the upper surfaces of the articles carried by the holders. For the purpose of controlling the frames 88 and 89, a pair of stationary cam guides 91 and 92 are provided. The guides 91 are concentric with the shaft 86, except at a point between the shaft 86 and the carrier. At this point, a sharp depression is made in the guiding surfaces. Each of the frames is provided on each side of the shaft with a friction roller adapted to engage the cam guides 91 and 92. By reason of this construction, it will be seen that as either side of either frame comes opposite the recesses in the guides, the frame will be permitted to drop vertically toward the carriers so as to cause the markers 90 to strike the tops of the coated articles, as clearly shown in Fig. 4. The continued rotation of the

shaft 86 will then cause the frame to be moved radially upward so as to raise the markers 90 out of contact with the articles.

Having fully described the operation of the machine in connection with the description of the construction thereof, a further description of the operation is unnecessary.

My invention, in its broader aspects, is not limited to the particular construction shown and described, nor to any particular construction by which it may be or has been carried into effect, as many changes may be made in the construction without departing from the main principles of the invention, or without sacrificing its chief advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a candy coating machine, the combination of an endless carrier, a series of holders, each having an extended substantially continuous openwork surface adapted to support from beneath several articles to be coated, said holders being pivotally mounted on said carrier, means for applying the coating material to the articles on said holders, means for receiving the coated articles, and means for turning said holders on their pivots to deliver the coated articles therefrom.

2. In a candy coating machine, the combination of an endless carrier, a series of holders, each having an extending substantially continuous openwork surface for supporting from beneath the articles to be coated, said holders being pivotally mounted on said carrier and arranged with their pivotal axes transverse to the path of movement of the carrier, means for applying the coating material to the articles on said holders, means for receiving the coated articles, and means for turning said holders on their pivots to deliver the coated articles therefrom.

3. In a candy coating machine, the combination of an endless carrier, a series of holders, each having an extended substantially continuous openwork surface adapted to receive and support from beneath a line of articles to be coated, said holders being pivotally mounted on said carrier and arranged with their axes transverse to the path of movement of the same, means for applying a coating material to the articles on the holders, means for receiving the coated articles, and means for turning said holders on their pivots to deliver the coated articles therefrom.

4. In a candy coating machine, the combination of an endless carrier, a series of holders for supporting the articles to be coated, said holders being pivotally mounted with their axes transverse to the path of movement of said carrier and having extended substantially flat and continuous openwork supporting surfaces adapted to receive arti-

cles of various sizes and shapes, means for applying a coating material to the articles on the holders, means for receiving the coated articles, and means for turning said holders on their pivots to deliver the coated articles therefrom.

5. In a candy coating machine, the combination of an endless flexible carrier, mounted to present upper and lower stretches movable in opposite directions, a series of holders, each having an extended substantially continuous openwork surface for supporting from beneath articles to be coated, said holders being pivotally mounted independently of each other on said carrier, means for applying the coating material to the articles on said holders, means for receiving the coated articles, means for retaining said holders in supporting position during their travel along both stretches of said carrier, and means for turning said holders on their pivots to deliver the coated articles therefrom.

6. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for supporting articles to be coated, said holders being pivotally mounted on said carrier with their axes transverse to the path of movement thereof, and having extended substantially continuous openwork supporting surfaces adapted to receive articles of various shapes and sizes, means for applying the coating material to the articles on said holders, means for receiving the coated articles, means for retaining said holders in supporting position during their travel along both stretches of said carrier, and means for turning said holders out of their supporting position to deliver the coated articles therefrom.

7. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, said holders being presented for the reception of the articles during their movement in one direction, means for applying a coating material to the articles on the holders during the movement of the holders in the opposite direction, and means for receiving the coated articles from the holders when the latter are near the end of their movement in the latter direction.

8. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, said holders being presented for the reception of the articles during their movement in one direction, means for applying

a coating material to the articles on the holders during the movement of the holders in the opposite direction, and means for receiving the coated articles from the holders when the latter are near the end of their movement in the latter direction, said receiving means being movable in the same direction as the holders from which the coated articles are being delivered.

9. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, said holders being presented for the reception of the articles during their movement in one direction, means for applying a coating material to the articles on the holders during the movement of the holders in the opposite direction, and means for receiving the coated articles from the holders when the latter are near the end of their movement in the latter direction, and means for turning said holders on their pivots to deliver the coated articles therefrom.

10. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, said holders being presented for the reception of the articles during their movement in one direction, means for applying a coating material to the articles on the holders during the movement of the holders in the opposite direction, and means for receiving the coated articles from the holders when the latter are near the end of their movement in the latter direction, said receiving means being movable in the same direction as the holders from which the coated articles are being delivered, and means for turning said holders on their pivots to deliver the coated articles therefrom.

11. In a candy coating machine, the combination of an endless flexible carrier, a series of holders for supporting from beneath articles to be coated said holders being pivotally mounted on said carrier, means for applying a coating material to the articles on said holders, means for receiving the coated articles, and means for turning said holders on their pivots to deliver the coated articles therefrom, and means for transferring the coated articles from the holders to the receiving means.

12. In a candy coating machine, the combination of an endless flexible carrier, a series of holders for articles to be coated pivotally mounted on said carrier, means for applying a coating material to the articles on said

holders, means for receiving the coated articles, means for turning said holders on their pivots to deliver the coated articles therefrom, and means for transferring the coated articles from the holders to the receiving means, said transferring means being movable during the transferring operation in the same direction as the receiving means.

13. In a candy coating machine, the combination of an endless flexible carrier, a series of holders for articles to be coated pivotally mounted on said carrier, means for applying a coating material to the articles on said holders, means for receiving the coated articles, means for turning said holders on their pivots to deliver the coated articles therefrom, means for transferring the coated articles from the holders to the receiving means, and means for moving said transferring means from the holders toward the receiving means and in the same direction as the movement of the receiving means.

14. In a candy coating machine, the combination of an endless carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for supporting articles to be coated said holders being mounted on said carrier, means for applying a coating material to the articles during the movement of the holders in one direction, means for receiving the coated articles from the holders near the end of the movement of the latter in the same direction, means for turning said holders on their pivots to deliver the coated articles therefrom, and means for transferring the coated articles from the holders to the receiving means.

15. In a candy coating machine, the combination of an endless carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for supporting articles to be coated said holders being mounted on said carrier, said holders while in the upper stretch of the carrier being presented for the reception of articles to be coated, means for applying a coating material to the articles while the holders are in the lower stretch of the carrier, and means for receiving the coated articles from the holders when the latter are near the end of the lower stretch of the carrier.

16. In a candy coating machine, the combination of an endless carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for supporting articles to be coated said holders being mounted on said carrier, said holders while in the upper stretch of the carrier being presented for the reception of articles to be coated, means for applying a coating material to the articles while the holders are in the lower stretch of the carrier, and means for receiving the coated articles from the

holders when the latter are near the end of the lower stretch of the carrier, said receiving means being movable in the same direction as the holders from which the coated articles are being delivered.

17. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, said holders while in the upper stretch of the carrier being presented for the reception of articles to be coated, means for applying a coating material to the articles while the holders are in the lower stretch of the carrier; means for receiving the coated articles from the holders when the latter are near the ends of the lower stretch of the carrier, and means for turning said holders on their pivots to deliver the coated articles therefrom.

18. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, said holders while in the upper stretch of the carrier being presented for the reception of articles to be coated, means for applying a coating material to the articles while the holders are in the lower stretch of the carrier, means for receiving the coated articles from the holders when the latter are near the ends of the lower stretch of the carrier, said receiving means being movable in the same direction as the holders from which the coated articles are being delivered, means for turning said holders on their pivots to deliver the coated articles therefrom, and means for transferring the coated articles from the holders to the receiving means.

19. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders, each having an extended substantially continuous openwork surface adapted to support from beneath several articles to be coated, said holders being pivotally mounted independently of each other on said carrier, and means for controlling said holders whereby they are held with the same side up during their movement in both stretches of the carrier.

20. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, means for controlling said holders whereby they are held with the same side up

during their movement in both stretches of the carrier, said holders being presented for the reception of articles to be coated when in one stretch of the carrier and means for applying a coating material to the articles when the holders are in the other stretch of the carrier.

21. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, means for controlling said holders whereby they are held with the same side up during their movement in both stretches of the carrier, said holders being presented for the reception of articles to be coated when in the upper stretch of the carrier, and means for applying a coating material to the articles when the holders are in the lower stretch of the carrier.

22. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders, each having an extended substantially continuous openwork surface adapted to support from beneath several articles to be coated, said holders being pivotally mounted independently of each other on said carrier, and means for controlling said holders whereby they are held with the same side up during their movement in both stretches of the carrier and from one stretch to the other.

23. In a candy coating machine, the combination of an endless flexible carrier mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier and means for controlling said holders whereby they are held with the same side up during their movement in both stretches of the carrier and from one carrier to the other, and means for turning said holders on their pivots to deliver the coated articles therefrom.

24. In a candy coating machine, the combination of a series of holders for articles to be coated, said holders having supporting surfaces adapted to receive articles of various shapes and sizes, means for applying a coating material to the articles on said holders, means for moving said holders along one plane to receive the articles to be coated, then out of that plane and along another part of an orbital path past the coating means without substantially varying their supporting positions, and means for moving said holders out of their supporting positions to deliver the coated articles therefrom.

25. In a candy coating machine, the combination of a series of holders for articles

to be coated, said holders having supporting surfaces adapted to receive articles of various shapes and sizes, means for applying a coating material to the articles on said holders, means for moving said holders in one direction to receive the articles to be coated, then in another direction past the coating means without substantially varying their supporting positions, and means for moving said holders out of their supporting positions to deliver the coated articles therefrom.

26. In a candy coating machine, the combination of a series of holders for articles to be coated, each of said holders consisting of a plurality of fingers having supporting surfaces closely arranged in substantially a single plane, means for applying a coating material to the articles on said holders, means for moving said holders past the coating means with their supporting surfaces in substantially a horizontal position, and means for moving the supporting surfaces of said holders out of a horizontal position to deliver the coated articles therefrom.

27. In a candy coating machine, the combination of a series of holders for articles to be coated, each of said holders consisting of a plurality of fingers having supporting surfaces closely arranged in substantially a single plane, means for applying a coating material to the articles on said holders, means for moving said holders along part of an orbital path to receive the articles to be coated, then past the coating means with their supporting surfaces in a substantially horizontal position, and means for moving the supporting surfaces of said holders out of a horizontal position to deliver the coated articles therefrom.

28. In a candy coating machine, the combination of a series of holders for articles to be coated, said holders having supporting surfaces adapted to receive articles of various shapes and sizes, means for applying a coating material to the articles on said holders, means for moving said holders along one plane to receive the articles to be coated; then out of that plane and along another part of an orbital path to the coating means without substantially varying their supporting positions.

29. In a candy coating machine, the combination of a series of holders for articles to be coated, said holders having supporting surfaces adapted to receive articles of various shapes and sizes, means for applying a coating material to the articles on said holders, means for moving said holders in one direction to receive the articles to be coated, then in another direction to the coating means without substantially varying their supporting positions.

30. In a candy coating machine, the combination of an endless flexible carrier

mounted to present upper and lower stretches movable in opposite directions, a series of holders for articles to be coated pivotally mounted independently of each other on said carrier, positive means for controlling said holders whereby they are held with the same side up during their movement in both stretches of the carrier, and means for turning said holders on their pivots to deliver the coated articles.

31. In a candy coating machine, the combination of means for forming a spray of coating material, and a series of holders each adapted to independently carry the articles to be coated through said spray, and means whereby the undersurfaces of the articles are presented to the surface of a body of the coating material.

32. In a candy coating machine, the combination of means for forming a spray of coating material, and a series of supports, each adapted to engage the under sides only of the articles to be coated and, independently of the other holders, carry the articles through said spray.

33. In a candy coating machine, the combination of means for forming a spray of coating material, and a series of supports, each adapted to engage the under sides only of the articles to be coated and, independently of the other holders, carry the articles through said spray, and means for applying a coating material to the under surfaces of the articles on said supports.

34. In a candy coating machine, the combination of a series of holders for articles to be coated, each of said holders having surfaces adapted to support articles to be coated irrespective of their shapes, means for forming a spray of coating material, means for moving said holders in succession through said spray without substantially varying their supporting positions, and means for moving said holders in succession out of their supporting positions to deliver the coating articles therefrom.

35. In a candy coating machine, the combination of a series of holders for articles to be coated, each of said holders consisting of a plurality of fingers forming supporting surfaces closely arranged in substantially a single plane, means for forming a spray of a coating material, means for moving said holders through said spray with their supporting surfaces in a substantially horizontal position, and means for moving the supporting surfaces of said holders out of a horizontal position to deliver the coated articles therefrom.

36. In a candy coating machine, the combination of means for applying a coating material, means for carrying articles to be coated past said coating means, a series of receivers on to which the coated articles are delivered, means for advancing said re-

ceivers with relation to said carrying means so that the coated articles will be deposited in successive order on said receivers, and means for varying the relative movement between said carrying means and said receivers to prevent the deposit of coated articles on or between the adjacent edges of said receivers.

37. In a candy coating machine, the combination of means for applying a coating material, a series of holders for carrying the articles to be coated past said coating means, a series of receivers on to which the coated articles are delivered from said holders, means for advancing said receivers with re-

lation to said carrying means so that the coated articles will be deposited in successive order on said receivers, and means for varying the relative movement between said carrying means and said receivers to prevent the coated articles from being deposited on or between the adjacent edges of said receivers.

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

GEORGE B. M. GOODWIN.

Witnesses:

MAXWELL ZIEGELER,
GUSTAV THROM.