W. COSTELLO, JR.

DEPOSITING NOZZLE FOR CAKE COATING MACHINES.

APPLICATION FILED SEPT. 5, 1917.

1,310,062.

Patented July 15, 1919.

2 SHEETS—SHEET 1.

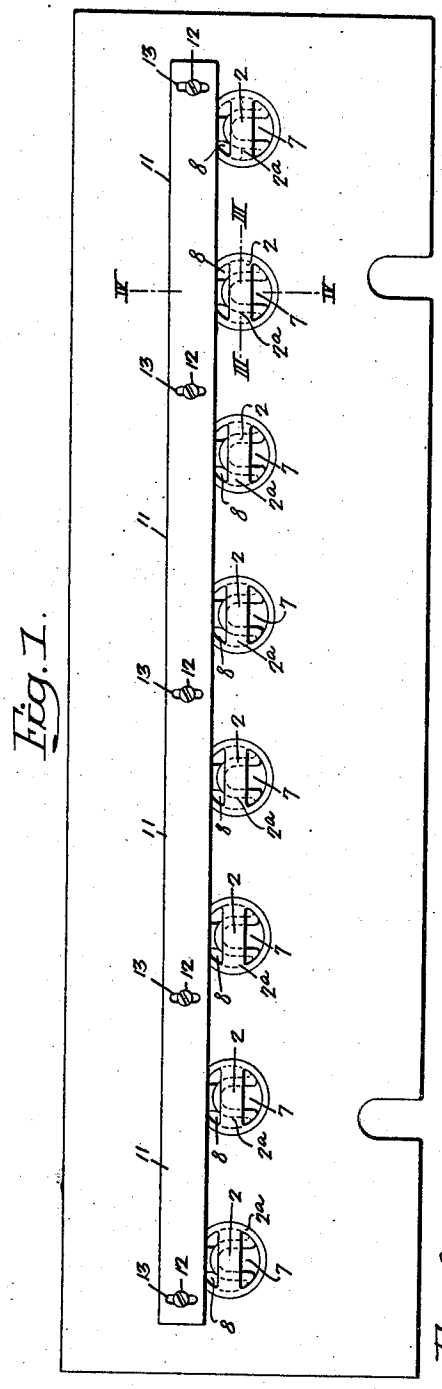


Fig. 1.

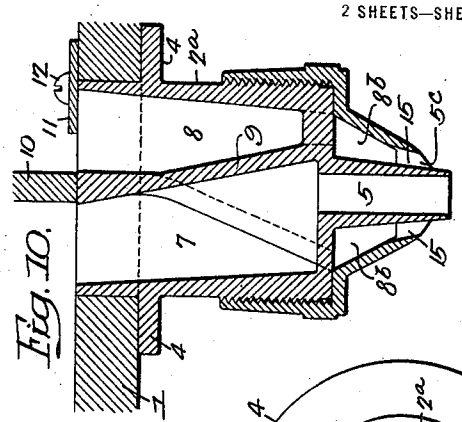


Fig. 10.



Fig. 12.

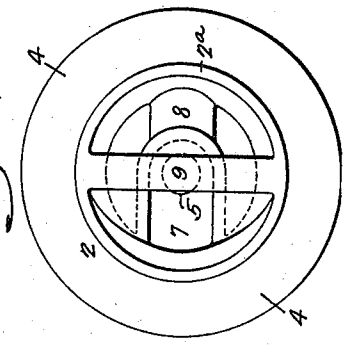


Fig. 11.

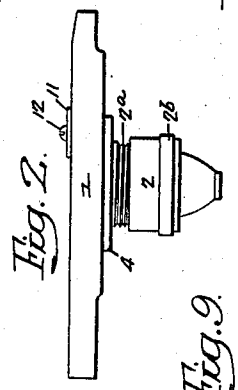


Fig. 2.

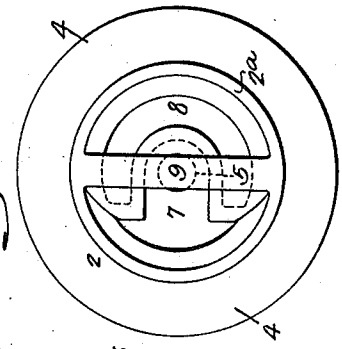


Fig. 9.

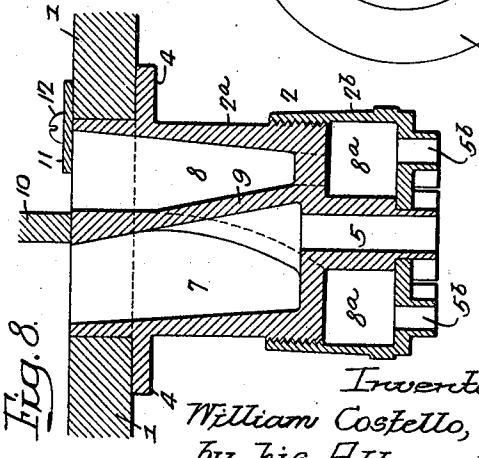


Fig. 8.

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2 SHEETS—SHEET 2.

Fig. 4.

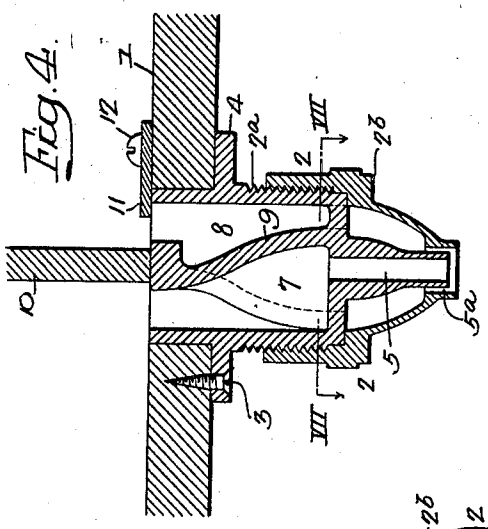


Fig. 5.

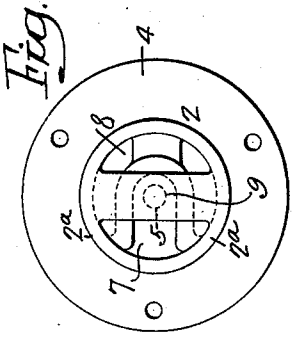


Fig. 7.

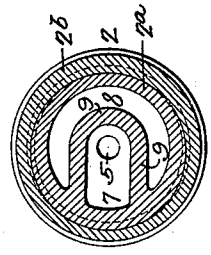


Fig. 3.

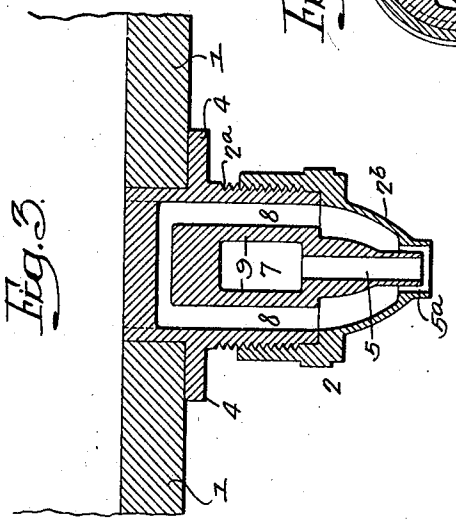
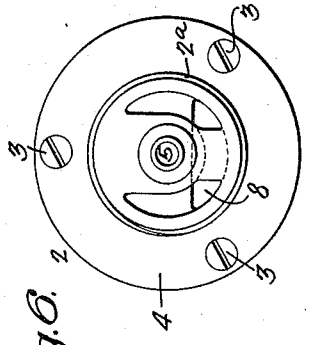


Fig. 6.



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UNITED STATES PATENT OFFICE.

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DEPOSITING-NOZZLE FOR CAKE-COATING MACHINES.

1,310,062. Specification of Letters Patent. Patented July 15, 1919.

Application filed September 5, 1917. Serial No. 189,793.

To all whom it may concern:

Be it known that I, WILLIAM COSTELLO, Jr., a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Depositing-Nozzles for Cake-Coating Machines, of which the following is a specification.

My invention relates to means employed with the hoppers of cake coating machines for the ejection or deposit of coating material carried by such hoppers, which may be in the form of a confection pure and simple made up of the necessary materials, in which case the deposited portion would represent the complete article, or a coating for various forms of cakes.

While my invention may be applied to various forms of coating machines, it has been combined with mechanism of the type shown in the various Harton patents, more particularly Patent No. 1,172,357, in which provision is made for partial retraction of the material ejected after the depositing action in order that the desired separation between the material within the nozzle and that delivered thereby can be readily effected.

My invention may be embodied in various forms of nozzles which are designed to handle two kinds of coating materials; the interior of the nozzles being provided with a plurality of channels or chambers so that one coating material may be centrally discharged from a centrally disposed opening communicating with one channel or chamber, while another coating material may be discharged in the form of an annular ring around or over the first body of coating material; or in the form of small bodies of material radiating from the centrally deposited body; or in the form of isolated masses at the edge or margin of a round cake, and surrounding the centrally deposited mass; the discharge apertures or orifices for the deposit of material around or over that deposited by the central nozzle communicating with the other channel or chamber.

A further object of my invention is to provide simple means for quickly and effectively cutting down the amount of material discharged without dismantling the machine; a further object is to provide for the removal and separation of the nozzle structures in order that the proper cleansing of the same can be effected without removing the receptacle containing the coating material from the machine, and a still further object is to provide a form of two-part nozzle in which the sections are interchangeable so that a machine equipped with that portion of the nozzle which must be carried by the bottom of the coating-material-receptacle, may receive any one of a number of different types of external nozzle sections adapted for the delivery of material over or around the material discharged from the central aperture of the nozzle structure.

These and other features of my invention are more fully described hereinafter, reference being had to the accompanying drawings, in which:

Figure 1, is a plan view of the bottom of a depositing hopper showing a plurality of nozzles made in accordance with my present invention carried thereby, and valve means for controlling the discharge through a portion of said nozzles.

Fig. 2, is an end elevation of the bottom structure shown in Fig. 1.

Fig. 3, is a sectional view on the line III—III, Fig. 1.

Fig. 4, is a sectional view on the line IV—IV, Fig. 1.

Fig. 5, is a plan view of the nozzle structure shown in Figs. 3 and 4.

Fig. 6, is an inverted plan view of a portion of the same.

Fig. 7, is a sectional view on the line VII—VII, Fig. 4.

Fig. 8, is a sectional view similar to Figs. 3 and 4, illustrating another form of nozzle within the scope of my invention.

Fig. 9, is a plan view of the same.

Fig. 10, is a sectional view similar to Fig. 8, of another form of nozzle.

Fig. 11, is a plan view of the same, and

Fig. 12, is an inverted plan view of the orifices.

In cake coating or material depositing machines of the type to which my invention has been applied, the bottom 1 of the hopper or other receptacle containing the material to be deposited is a separate and separable structure; such hopper usually containing suitable plunger mechanism whereby discharge through nozzles carried by the bottom of said hopper may be made at regular intervals. Such structures are usually provided with means whereby a slight suction may be imparted to the material being ejected in order that separation of the material

within the hopper and nozzles from that discharged onto the cakes or other carriers by the latter, may be readily effected.

In the present instance, this bottom plate, indicated at 1, receives a plurality of nozzles 2, of a double compartment type; each of said nozzles may comprise a portion 2^a let into apertures in the bottom plate 1 and held in place by screws 3 engaging a flange 4 thereof; which portion 2^a has the central discharge aperture or orifice 5, and a removable portion 2^b, preferably in threaded engagement with the portion 2^a, as clearly indicated by the drawings. The removable portion of the nozzle is provided with an aperture (or apertures) for the discharge of material over or around the material discharged from the central orifice. Each nozzle has a pair of channels or chambers 7 and 8; one chamber communicating with the centrally disposed orifice or outlet 5, while the other chamber communicates with the outlet surrounding the central aperture or to a plurality of outlets arranged to surround such central aperture, depending upon the character of depositing work which the particular nozzle is designed or intended to accomplish.

Between the channels or chambers 7 and 8, a diametrically disposed central wall or partition 9 is provided which, when the nozzle structure is attached to the bottom plate 1 must be placed in line with the longitudinal axis of the same; in such position underlying the central partition or division plate 10 of the coating material receptacle. In addition, the upper edge of the wall of the nozzle structure and the upper portion of the partition are in the same plane and are disposed with respect to the bottom plate in the same plane as the upper surface of the same.

In some instances, which condition will depend largely upon the consistency of the material being discharged from the hoppers, it may be desirable to cut down the supply delivered to the nozzle structures, and in other instances, it may be desirable to entirely cut off one or the other of the nozzle chambers. For this purpose, I may provide a longitudinally disposed valve-member 11, with fastening means in the form of screws 12, adapted to slots 13 formed in such member 11, whereby the latter is adjustable laterally on the bottom 1 of the hopper with respect to one or the other of the channels or chambers of the nozzles for regulation of the delivery to such channels or chambers or the complete cutting off of delivery to the same.

In the form of structure shown in Figs. 3 and 4, the chamber 7 of the nozzle communicates with the central outlet or discharge orifice, while the chamber 8 communicates with an outlet or orifice 5^a surrounding the outlet 5, so that material may be discharged from said outlet 5^a over or around that discharged from the central orifice.

In the form of structure shown in Figs. 8 and 9, the chamber 7 communicates with the central orifice 5, while the chamber 8 communicates with an auxiliary chamber 8^a having a plurality of outlets or orifices 5^b for the deposit of isolated spots of coating material around a central mass ejected through the central orifice 5.

In the form of structure shown in Figs. 10, 11 and 12, the chamber 7 communicates with the central orifice 5, while the chamber 8 communicates with a chamber 8^b having an outlet orifice 5^c surrounding the orifice 5, with V-shaped notches 15 through which the coating material is ejected.

The central discharge apertures or orifices may be all alike, and the sections 2^b threaded thereon may be universally interchangeable so that when a hopper bottom is equipped with the portions 2^a of the nozzles, any of the portions 2^b may be employed therewith; it merely being necessary to provide the threaded engaging portions of the same size.

In the use of these nozzles, the mechanism for forcing the material through the orifices may be arranged to effect delivery from both orifices or sets of orifices simultaneously, or from either orifice or sets of orifices ahead of the other; depending entirely upon the effect which it is desired the coating material shall produce.

I claim:

2. A two-part nozzle for cake coating machines comprising a body member having a pair of chambers, each with a separate outlet, a partition between said chambers having its upper portion diametrically disposed with respect to said body member whereby the inlet to each chamber is of substantially the same size and shape; the upper edge of the wall of said body member and said upper portion of the partition being in the same plane, and a supplemental detachable member in threaded engagement with the chambered body and having a discharge opening in communication with the outlet from one of said chambers; the outlet from the other chamber discharging through said supplemental member.

2. A two-part nozzle for cake coating machines, such as set forth in claim 1, wherein the supplemental detachable member has a central discharge opening in communication with the outlet from one of the chambers of the body member, and wherein the outlet from the other chamber discharges axially through the discharge opening of the supplemental member and gives the latter opening an annular contour.

3. The combination, with the bottom plate of a coating material receptacle, of a nozzle

structure connected to said plate; said nozzle structure being made up of a plurality of members in threaded engagement with each other; one of said members having a pair of chambers communicating directly with independent bodies of coating material in said receptacle and receiving supplies in the respective chambers, means for connecting said chambered member with said bottom plate, and a partition between said chambers having its upper portion diametrically disposed with respect to said member whereby the inlet to each chamber is of substantially the same size and shape; the upper edge of the wall of said chambered member and said upper portion of the partition being in the same plane as the upper surface of the bottom plate and each of said chambers having a separate outlet; one of said outlets serving for final discharge of the coating material, while the other outlet delivers coating material to the removable member for delivery around the material discharged directly from the chambered member.

4. The combination with a bottom plate of a coating material receptacle, of a two-part nozzle structure carried thereby and having a pair of chambers, each with a separate outlet, a partition between said chambers having its upper portion diametrically disposed with respect to said member whereby the inlet to each chamber is of substantially the same size and shape; the upper edge of the wall of said chambered member and said upper portion of the partition being in the same plane as the upper surface of the bottom plate, a laterally movable member carried by the bottom plate and arranged to overlie the entrance to one of said chambers and control delivery to and through the same, and means for securing said laterally movable member in its adjusted positions.

5. The combination with the bottom plate of a coating material receptacle for cake coating machines, of a two-part nozzle structure comprising a chambered body adapted to fit an aperture in said bottom plate and having its upper surface flush with the upper surface of said bottom plate, means for securing said chambered body to the bottom plate; said chambered body having a partition dividing it into a pair of chambers with the upper part of said partition diametrically disposed with respect to said chambered body whereby the inlet to each chamber is of substantially the same size and shape, a depending tubular member centrally disposed carried by said chambered body and forming the outlet from one of its chambers; said chambered body being externally threaded, and an internally threaded cap member adapted to said threaded portion and having an outlet for delivery of material received from the other chamber of the chambered body around the orifice of the depending tubular member.

In witness whereof I affix my signature.

WILLIAM COSTELLO, JR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."