Jan. 27, 1925. 1,524,636

A. L. BAUSMAN

CONFECTION COATING MACHINE

Filed July 23, 1923 2 Sheets-Sheet 1

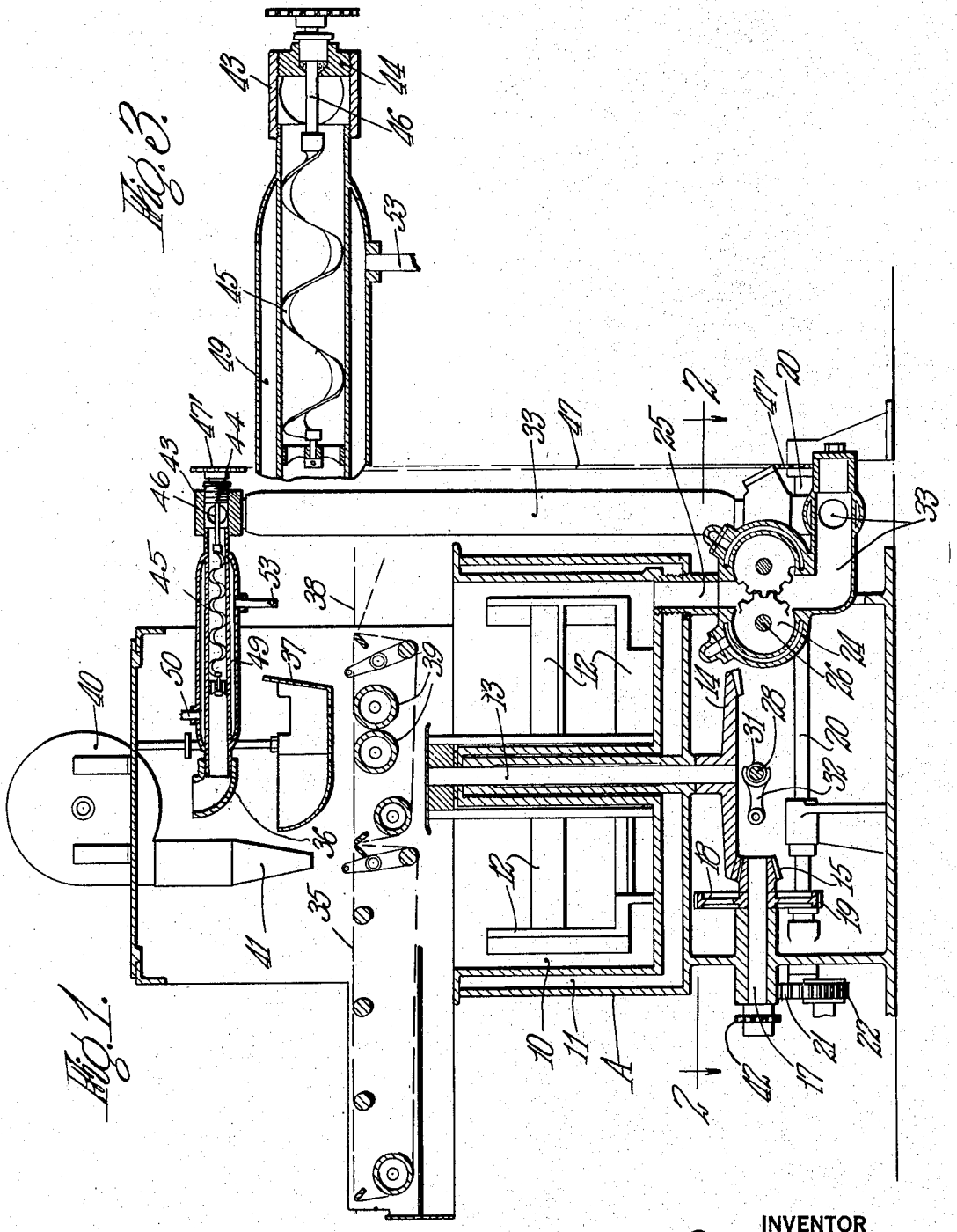


Fig. 2.

Fig. 1.

INVENTOR

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Fig. 1.

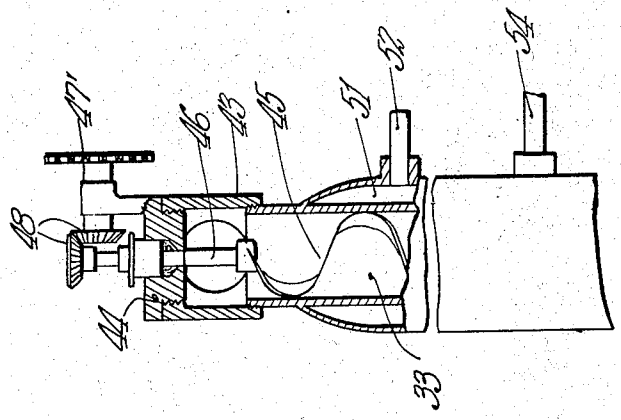
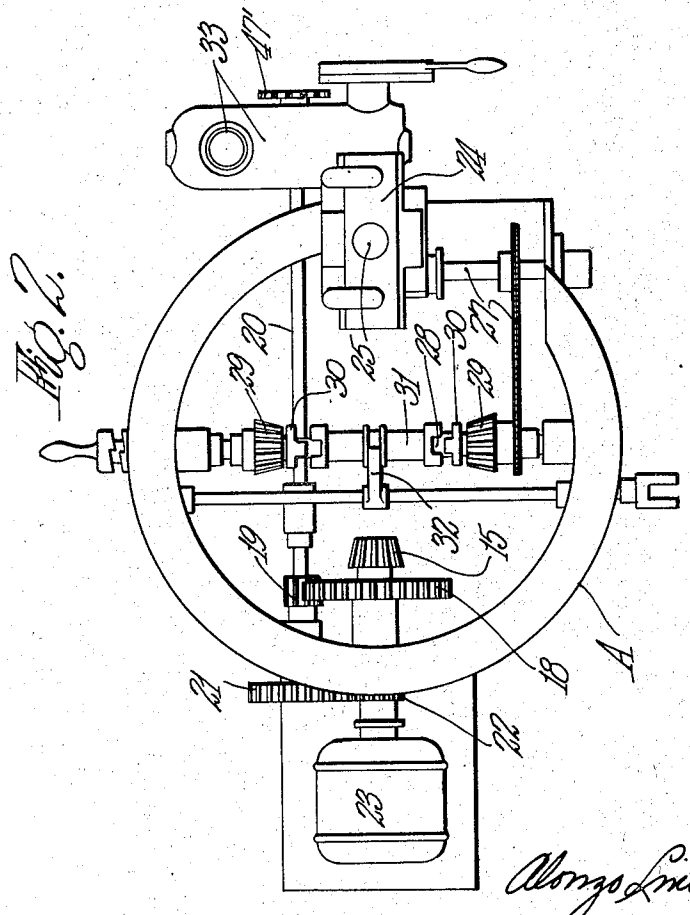


Fig. 2.



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Patented Jan. 27, 1925. 1,524,636

UNITED STATES PATENT OFFICE.

ALONZO LINTON BAUSMAN, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO NATIONAL EQUIPMENT COMPANY, OF SPRINGFIELD, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CONFECTION-COATING MACHINE.

Application filed July 23, 1923. Serial No. 653,225.

To all whom it may concern:

Be it known that I, ALONZO LINTON BAUSMAN, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Confection-Coating Machines, of which the following is a specification.

This invention relates to improvements in confectionery coating machines and, while the invention is capable of other and general applications, it is particularly advantageous in that type of coating machine in which the coating material is circulated over and over again in a path partially exposed to the air. One example, of one such type of machine is that wherein the coating is elevated from a supply tank and flooded over the goods to be coated, while carried on a travelling wire mesh conveyer, which permits the excess coating to pass therethrough and return to the supply tank.

The invention has for its broad object to provide, in a confection coating machine, means for improving the quality of the product, especially in regard to the color, structure and gloss of the applied coating.

My prior U. S. Letters Patent No. 1,323,948, of December 2, 1919, also had this same general object in view and the machine of the present invention, preferably, embodies the improvements of this patent together with others which effect still further improvement in the quality of the applied coating. In my prior patent, the improvement in the quality of the coating was effected largely by a conditioning and reconditioning of the coating in the main supply tank, characterized by the removal of air bubbles from the coating and by improved temperature control.

The additional improvement effected in the quality of the applied coating by this invention is due to conditioning means effective on the coating while it is being delivered from the supply tank through the discharge conduit and, by preference, as closely as possible to the point of discharge.

More particularly, it is proposed to apply in such conduit, a suitable agitating means by which a final mixing, or whipping together, of the constituents of the coating will be effected and, preferably, in conjunction therewith, means are provided to slightly cool the coating as it passes through the conduit, the more closely to regulate the temperature of the coating at about the time when it is applied to the goods within the necessary close limits.

It has heretofore been proposed to cool a portion of the coating to render it of somewhat thicker consistency and then to mix the cooled and thicker portions with the thinner and warmer portions in the shower pan of the coating machine, which arrangement is characterized by effecting improvements in the quality of the applied coating. The improvements of this invention are calculated to effect similar results on the same broad principle but in a different location and by different mechanism which operates in a specifically different manner, and with advantages.

The invention, in its preferred embodiment, includes a cooling jacket encompassing a portion of the discharge conduit and a mixing device, such as a skeleton screw which is rotatable within the conduit adjacent the jacket. The cooled or tempered portions of the coating, adjacent the walls of the conduit, are mixed by the screw with the warmer portions forming the center of the stream, preferably, by an arrangement whereby the screw moves the first named portions backward against the current of the stream.

The invention, as thus disclosed, is particularly applicable to machines of the general type disclosed in my prior patent or machines which include a conduit, as distinguished from other conveying means for the coating. It is also applicable to machines in which the coating is delivered directly from the conduit to the goods without the intermediary of a shower pan and has the advantage that the final whipping together and intimate mixing of the coating is effected entirely out of contact with the air, thus tending to further eliminate trouble due to air bubbles in the coating.

Other objects and advantages will appear in the following description and in the illustrative embodiment of the invention in the accompanying drawings, in which:—

Fig. 1 is a sectional elevational view of a coating machine embodying the invention;

Fig. 2 is a sectional plan view taken on the line 2—2 of Fig. 1;

Fig. 3 is an enlarged sectional elevational view of the tempering and mixing means associated with the discharge conduit; and

Fig. 4 is a similar view showing a slightly different location of the tempering and mixing means.

Referring to these drawings,—there has been shown, by way of illustrative example, a coating machine of the type disclosed in my prior patent, above identified, and, while this particular type of machine has important advantages, and is preferred, the invention may, nevertheless, be applied with advantage to many other specifically different types of coating machines and is largely independent of the particular construction and arrangement of the machine.

In this particular machine shown, A represents the frame of the machine, formed to provide a supply tank 10 for coating material, and this tank is suitably provided with a jacket 11 to which a suitable temperature controlling medium is supplied. Within the tank is a stirring device 12, preferably of the type disclosed in my above identified prior patent, which device is fixed to a vertically disposed shaft 13, extending through and below the tank to receive a bevel gear 14, fixed thereon. A bevel pinion 15, in mesh with gear 14, is fixed to a shaft 17 mounted in frame A and this shaft is driven by spur gears 18 and 19 from a shaft 20. The latter extends outside frame A to receive a gear 21, which is driven by a pinion 22 from a motor 23.

Below tank 10 is a gear pump 24, preferably jacketed as shown and connected by a passage 25 with the tank. The drive shaft of this pump is shown at 26 and it is driven by a chain 27 and suitable sprockets from a shaft 28 upon which are freely rotatable two bevel pinions 29, meshing with the bevel gear 14 on opposite sides thereof. Associated with each pinion 29 is a clutch element 30 and slidably keyed to shaft 28 intermediate the clutch elements 30 is a sleeve 31, having at its ends suitable clutch elements to engage the elements 30. A shifter 32 is provided to enable sleeve 31 to be moved to connect either pinion 29 with shaft 28, whereby pump 24 may be driven in either direction. That is, the normal action of the pump may be reversed to cause the coating to be drawn back into the tank 10, when desired.

From pump 24 the coating material is conveyed by a jacketed conduit 33 to the goods which are carried by the usual pervious conveyer 35. The chocolate may pass directly from the delivery spout 36 of conduit 33 or through the intermediary of the usual shower pan, represented at 37. In either case, the candy cores, or centers, supplied to conveyer 35 by a feed belt 38, are flooded with and enveloped by the coating material, in the usual manner. The usual bottoming rolls 39 are provided below conveyer 35 for the purpose of picking up some of the coating and applying it to the bottoms of the centers,—the excess coating returning through the pervious conveyer 35 into the tank 10 through its open upper end. A fan 40 is mounted on casing A and serves to deliver a downward blast of air through nozzle 41 upon the confections. The conveyer 35 is driven by any suitable means, as for example, from a sprocket 42 on shaft 17, as shown in the above named prior patent.

The improvements of this invention are best shown in Figs. 3 and 4, which each show the same general construction and differ only in the location of the mixing and tempering means. That is, the invention may be applied to the upper horizontal leg of the conduit or to the vertical leg thereof. In either case, a suitable mixing device, preferably in the nature of a skeleton screw 45 is rotatably mounted in the conduit and its drive shaft 46 extends outwardly through the pipe fitting 43 which connects the two described legs of the conduit. The shaft 46 preferably passes through a removable plug 44 in fitting 43, which plug, when removed, permits the withdrawal of the agitating device as an entirety. This shaft 46 may be conveniently driven from shaft 20 by a chain 47 and suitable sprocket 47′ and, in the case of Fig. 4, by the additional means of intermeshing bevel gears 48. The jacket 49 in Fig. 3 is supplied with a cooling medium through an inlet pipe 50 and, in Fig. 4, the jacket 51 is similarly supplied with a cooling medium through a pipe 52. Exit pipes 53 and 54 are provided for jackets 49 and 51, respectively.

The general operation of the machine will sufficiently appear from the preceding description and for a more complete disclosure of the operation, as well as the construction of the machine, together with the coating conditioning means, reference is made to the above named prior patent. As to the improved conditioning means, the stream of chocolate flowing through conduit 33 is subjected, in those portions adjacent jacket 49 or 51, to the influence of the cooling medium and tempered to the proper degree for application to the confections. Those portions of the stream, which are thus tempered and thereby rendered of somewhat thicker consistency than the chocolate in the center of the stream, are forced backwardly by the skeleton screw 45 against the current of the stream and caused to mix with the warmer chocolate in the center of the stream. The two portions of different consistency are also intimately mixed and whipped together. Considerable importance is attached to the final whipping together of the coating just prior to its de-

livery for chocolate is a mixture of solid and liquid constitutents, which have a tendency to separate, and it is desirable to keep them intimately mixed and at the proper temperature right up to the time of application to the goods. It is also considered important to effect this final whipping action, as nearly as may be, out of contact with the air, for with ordinary whipping devices air may oftentimes be beaten into the chocolate. The upwardly turned nozzle 36 insures that the conduit will always be filled and prevents air from entering into the conduit and being beaten into the chocolate.

The described arrangement also leaves the shower pan entirely free from agitating devices and this is also important because the shower pan is open and operators, accustomed through years of operation to coating machines unencumbered by moving parts in the shower pan, are prone through force of habit to reach into the latter and accidents are liable to occur if moving parts, especially in the nature of a beater, are provided in the shower pan.

The invention has been disclosed herein in an embodiment at present preferred, for illustrative purposes but the scope of the invention is defined by the appended claims rather than by the foregoing description.

1. In a confectionery coating machine, of the type wherein warm coating material is conveyed from a supply tank and delivered to the goods to be coated through a conduit, cooling means for tempering a portion of the stream flowing through said conduit, and means for mixing said tempered portion of the stream with the untempered portion thereof.

2. In a confectionery coating machine, of the type wherein warm coating material is conveyed from a supply tank and delivered to the goods to be coated through a conduit, a jacket surrounding a portion of said conduit and adapted for the circulation of a cooling medium therein, whereby the stream of coating material is cooled in those portions adjacent the wall of the conduit, and means for mixing said portions with the warmer coating forming the center of the stream.

3. In a confectionery coating machine, of the type wherein warm coating material is conveyed from a supply tank and delivered to the goods to be coated through a conduit, a jacket surrounding a portion of said conduit and adapted for the circulation of a cooling medium therein, whereby the stream of coating material is cooled in those portions adjacent the wall of the conduit, and means for scraping back said portions against the current of the stream and causing them to mix with the warmer portions thereof.

4. In a confectionery coating machine, having a supply tank provided with a jacket to which a heating medium is supplied, a coating vessel and a conduit through which the coating is conveyed from the former to the latter, cooling means for tempering the coating as it travels through said conduit, and agitating means within said conduit and acting on the tempered coating.

5. In a confectionery coating machine, having a supply tank provided with a jacket to which a heating medium is supplied, a coating vessel and a conduit through which the coating is conveyed from the former to the latter, cooling means for tempering the coating as it travels through said conduit and just prior to its delivery to said vessel, and agitating means within said conduit and acting on the tempered coating.

6. In a confectionery coating machine, of the type wherein warm coating material is conveyed from a supply tank and delivered to the goods to be coated through a conduit, cooling means for tempering a portion of the stream flowing through said conduit just prior to its delivery to the confections, and means for mixing said tempered portion of the stream with the untempered portion thereof.

7. In a confectionery coating machine, of the type where warm coating material is conveyed from a supply tank and delivered to the goods to be coated through a conduit, cooling means for tempering a portion of the stream flowing through said conduit, and a skeleton screw rotatable in said conduit and operable to remove the tempered portion and mix it with the warmer portions of the stream.

8. A method of coating confections and the like, which consists in conveying the coating in a fluid state and out of contact with the air to a position above the confections, in cooling part of the stream before it reaches said position, in mixing said part of the stream with the other parts thereof before it reaches said position, and in delivering the mixed parts from said position to the confections.

9. A method of coating confections and the like, which consists in conveying the coating in a fluid state and out of contact with the air to a position above the confections, in whipping the coating while out of contact with the air before it reaches said position, and in delivering the coating from said position to the confections.

In testimony whereof I have affixed my signature.

ALONZO LINTON BAUSMAN.