

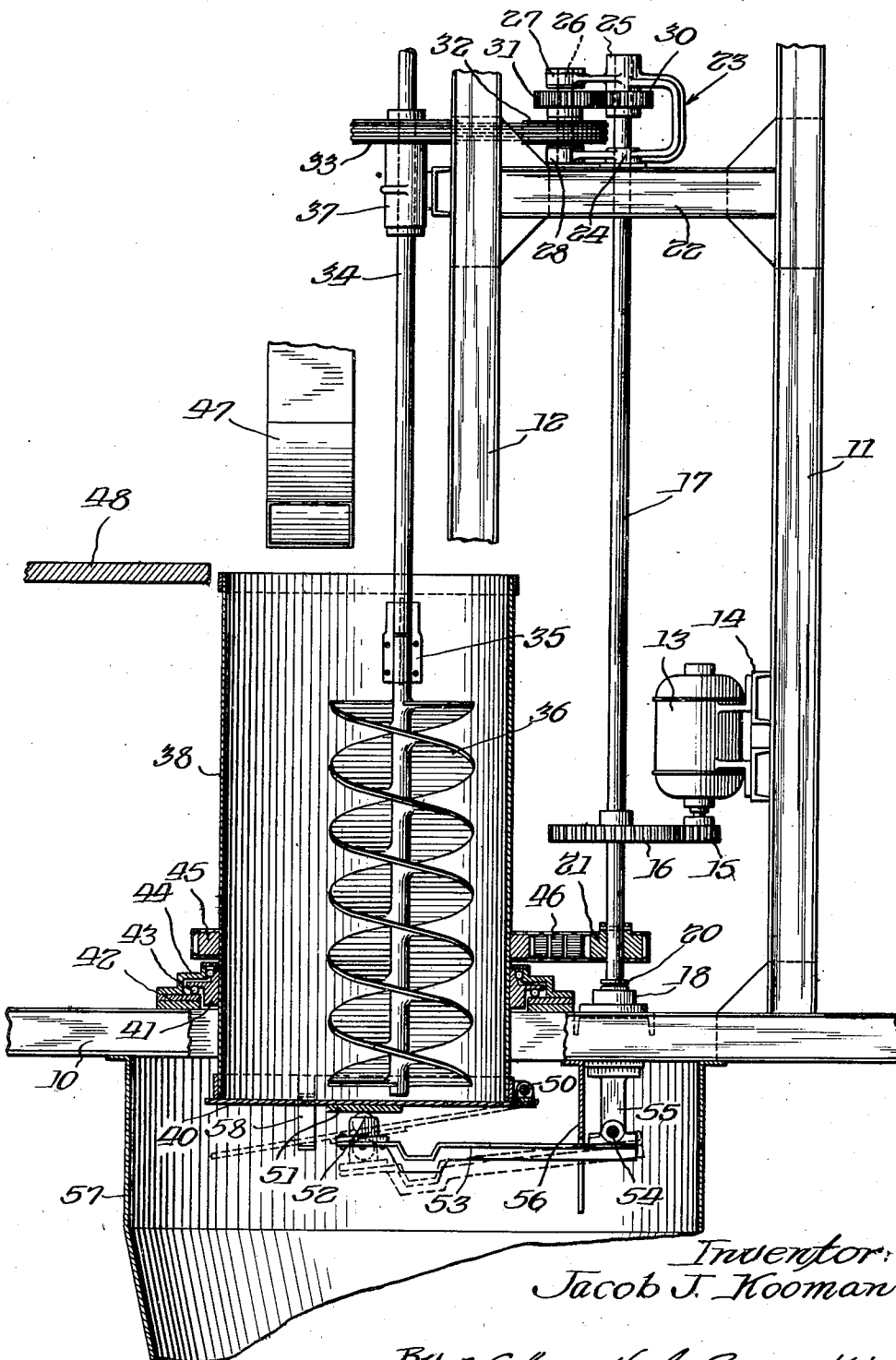
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CONFECTIONERY MAKING MACHINE

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CONFECTIONERY MAKING MACHINE

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2 Claims. (Cl. 259—33)

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The invention relates to confectionery making machines and has reference more particularly to improved mixing apparatus which will be efficient in operation and capable of increased production in the making of coated popcorn or similar confections.

The primary object of the invention therefore is to provide apparatus for mixing and coating popcorn and other cereals with a syrup such as caramel, which will be relatively simple in construction, easy to clean and sanitary in operation, as well as capable of performing the mixing and discharge of the confection in such rapid manner as to materially increase production.

A further object of the invention is to provide mixing apparatus of the character described wherein the materials are delivered to the apparatus at the top thereof and discharged from the bottom following the mixing operation.

With these and various other objects in view, the invention may consist of certain novel features of construction and operation as will be more fully described and particularly pointed out in the specification, drawing and claims appended hereto.

In the drawing, which illustrates an embodiment of the invention, and wherein like reference characters are used to designate like parts, the figure is an elevational view, parts being shown in section, of the improved confectionery making machine forming the subject matter of the present invention.

Referring to the drawing, the beam 10 indicates the floor on which the present confectionery making machine is supported. In accordance with the invention, part of the apparatus, including the mixing screw and the power means, are located above said floor, being supported thereby, although part of the mixing container extends through the floor to depend below the same so that the coated confectionery upon discharge can be delivered by gravity to a hopper for subsequent operations.

The beam 10 supports the uprights 11 and 12 which comprise the main elements of the supporting structure for the driving mechanism including the electric motor 13, suitably secured by brackets 14 to the upright 11. The pinion 15, fixed to the shaft of the electric motor, drives the gear 16 on the counter-shaft 17. Said shaft is suitably journaled for rotation at its respective ends. The lower end of the shaft is supported by the member 18 which provides the bearing 20 for taking the downward thrust and weight of the counter-shaft. Immediately above said

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thrust bearing the pinion 21 is secured to shaft 17. The upper end of the counter-shaft projects beyond the transverse beam 22 which connects the uprights 11 and 12, maintaining them in proper spaced relation and suitably strengthening the supporting structure for the drive. The projecting end of shaft 17 receives the yoke identified in its entirety by numeral 23, which provides takeup mechanism for the drive to the mixing container. The yoke includes a part 24 through which the counter-shaft extends and an upper bearing 25 which functions to journal the projecting end of the counter-shaft. The stud shaft 26 is suitably journaled by spaced portions 27 and 28 comprising extensions of the yoke 23. A pinion 30 is suitably fixed to the counter-shaft 17 between the arms of the yoke and said pinion has meshing relation with a similar pinion 31 suitably fixed to the stud shaft 26 between the extensions of said arms. A pulley 32 is fixed to said stud shaft immediately below the pinion.

A belt drive operatively connects the pulley 32 with pulley 33 on operating shaft 34. Shaft 34 at its depending end includes the connection 35 by means of which the mixing element 36 is secured thereto. Said element 36 comprises two members of spiral formation arranged as a unit to form a compound screw. By means of the connection 35 the mixing element 36 can be detached from operating shaft 34 when it is desired to clean the mixing element or replace the same with a new one. For this purpose the operating shaft 34 is journaled by bearing 37 and driven by pulley 33 in a manner to permit axial movement of the shaft so that the same can be elevated or lowered with respect to the mixing container 38. When the shaft 34 is elevated the screw 36 is lifted from the container 38 and the same can then be cleaned. The drive shaft is lowered before resuming operations again.

The mixing container 38 comprises an elongated cylinder with an open top but having a bottom member 40 which may be alternately opened and closed in synchronism with the mixing operations. The container is suitably journaled for rotation, being supported by the floor beam 10 in a manner whereby the lower end of the container extends through the floor and depends some distance below the same. The casting 41 is fixed to the container adjacent said lower end and said casting extends completely around the same for supporting the container on the bearing 42, a plurality of hardened steel balls 43 being located between the parts to substantially reduce friction. The casting and supporting bearing are enclosed

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within the housing 44, which additionally provides a thrust bearing for taking up side thrust imparted thereto by the casting. The gear 45 is fixed to the container immediately above the journaling means therefor and said gear is operatively connected by means of the chain 46 with the pinion 21 on the counter-shaft 17.

The ingredients to be mixed or coated are supplied to the container through the open top thereof by means of the chute 47. The quantity of ingredients discharged from the chute for any mixing operation may be controlled either manually or by some automatic means. The container is filled to an appropriate level and in those cases where popcorn is to be coated with caramel, the syrup is first cooked in kettles. One or more of these kettles may be supported on the table 48 immediately preceding discharge of the cooked syrup to the mixing container. The mixing operation is performed by rotating the container 38 in one direction and the mixing screw 36 in an opposite direction. More particularly, the screw 36 is rotated at a speed in excess of the container and in a direction to cause travel of the material upwardly. When the material leaves the screw at its upper end it is discharged downwardly by gravity and this operation is repeated many times in order to thoroughly and uniformly coat the ingredients.

The fact that the mixing screw rotates in a direction opposite to the container is due to the location of the pinion 31 in the connections from counter-shaft 17 to drive shaft 34. As a result of this pinion shaft 34 rotates in a direction opposite to shaft 17. The container 38 has the same direction of rotation as shaft 17 since it is directly driven by means of the chain from pinion 21.

In confectionery making machines as heretofore constructed considerable time has been lost in discharging the coated ingredients from the mixing container. It is necessary that the coating ingredients be discharged in a manner which will leave the container in a clean and sanitary condition. The invention provides means for accomplishing this objective and in addition the confection is discharged in such a rapid manner as to materially increase production. The container 38 is provided with the bottom member 40, pivoted to the container at 50. Said member therefore has a closed and an open position with respect to the container and in order to effectively close the same the member has a diameter somewhat larger so as to project a short distance beyond the container. The hardened steel plate 51 is secured to the undersurface of the member 40 centrally thereof and a substantially frictionless member 52 in the form of a castor or rotatably mounted ball is adapted to have bearing contact with said plate. Said member 52 is carried at the free end of the lever 53, pivoted to control shaft 54, suitably supported from the undersurface of the floor beam 10 by means of the hanger 55. The hanger and control shaft are separated from the member 40 by a baffle 56, as shown in the drawings. The baffle prevents the coated ingredients upon discharge from the container from coming in contact with the control mechanism for the pivoted bottom member 40 and therefore the baffle prevents contamination of said coated ingredients, thus maintaining proper sanitary conditions. The depending lower end of the container 38, the pivoted bottom member 40, and the controls for said member, are all located within the hopper 57.

In operation of the mixing apparatus of the in-

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vention the motor 13 is started to cause rotation of the counter-shaft 17, which in turn produces rotation of the mixing screw 36 and the container 38 in opposite directions and at different speeds. Material such as popcorn or dry cereal sufficient for one mixing operation is admitted to the container and a quantity of syrup or the like is then poured over the ingredients. Agitation to insure thorough and uniform coating immediately takes place, being effected primarily by the screw 36. When this agitation has continued for a predetermined interval of time the operator through actuation of shaft 54 drops the lever 53 downwardly, which allows the pivoted bottom member 40 to open. The extent of the opening of said member may be controlled by a stop 58. Satisfactory discharge of the coated ingredients takes place since the container is rotating at the time and centrifugal action throws the material outwardly through the opening thus provided in the bottom. The discharge action is complete and thorough so as to maintain the interior surfaces of the container in a clean condition. The hopper 57 provides a housing enclosing the depending bottom end of the container and thus the discharged ingredients are collected by the hopper and may be delivered by the same to other apparatus for further processing.

What is claimed is:

1. In confectionery making apparatus, a mixing device including a container of substantially cylindrical shape having its longitudinal axis disposed vertically, means having encircling relation with the container intermediate the ends thereof for supporting the container for rotation with the lower end of the container depending below the said supporting means, driving means for rotating the container, a bottom closure member comprising a substantially flat disc pivotally secured to the container adjacent the end depending below the supporting means, the pivot axis of said member having a right angle relation with the longitudinal axis of the container, whereby said closure member rotates with the container and may be opened and closed during said rotation, and means controlling said positions of the bottom closure member including a movable lever and a substantially frictionless bearing member located at the end of said lever and having contact with the undersurface of the bottom closure member substantially centrally thereof, whereby actuation of the lever in one direction applies pressure to the member to maintain the same closed and actuation of the lever in the other direction releases said pressure permitting the member to open.

2. In confectionery making apparatus, a mixing device including a container of substantially cylindrical shape having its longitudinal axis disposed vertically, means having encircling relation with the container intermediate the ends thereof for supporting the container for rotation with the lower end of the container depending below the said supporting means, driving means for rotating the container, a bottom closure member comprising a substantially flat disc pivotally secured to the container adjacent the end depending below the supporting means, the pivot axis of said member having a right angle relation with the longitudinal axis of the container, whereby said closure member rotates with the container and may be opened and closed during said rotation, and control means supported independently of the container including a bearing adapted to contact the under surface of the bottom closure member substantially centrally thereof for controlling the

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positions of the member during said rotation of the container.

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