Dec. 17, 1929. L. F. LIGHT 1,739,642

COATING MACHINE

Original Filed April 12, 1924 3 Sheets-Sheet 1

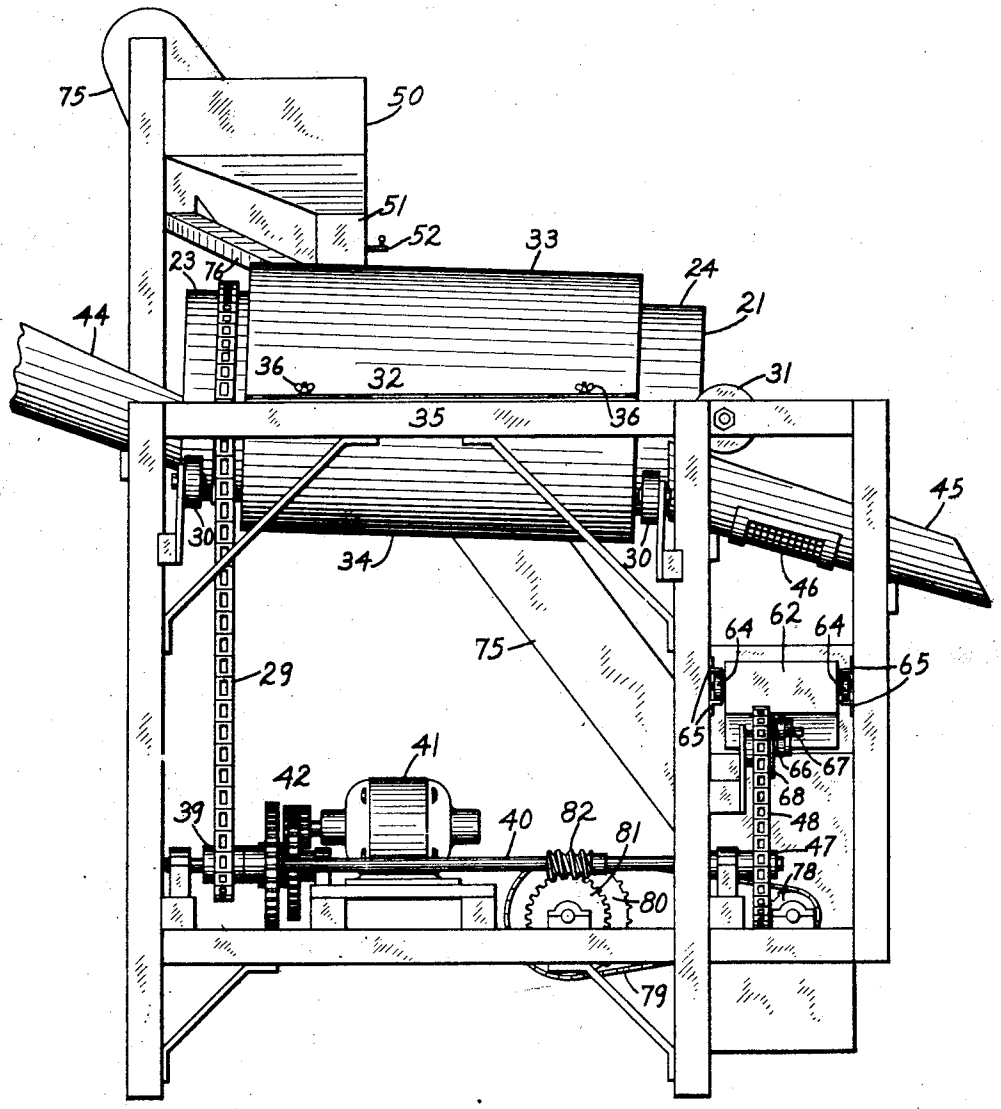


Fig.1

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COATING MACHINE

Original Filed April 12, 1924 3 Sheets-Sheet 2

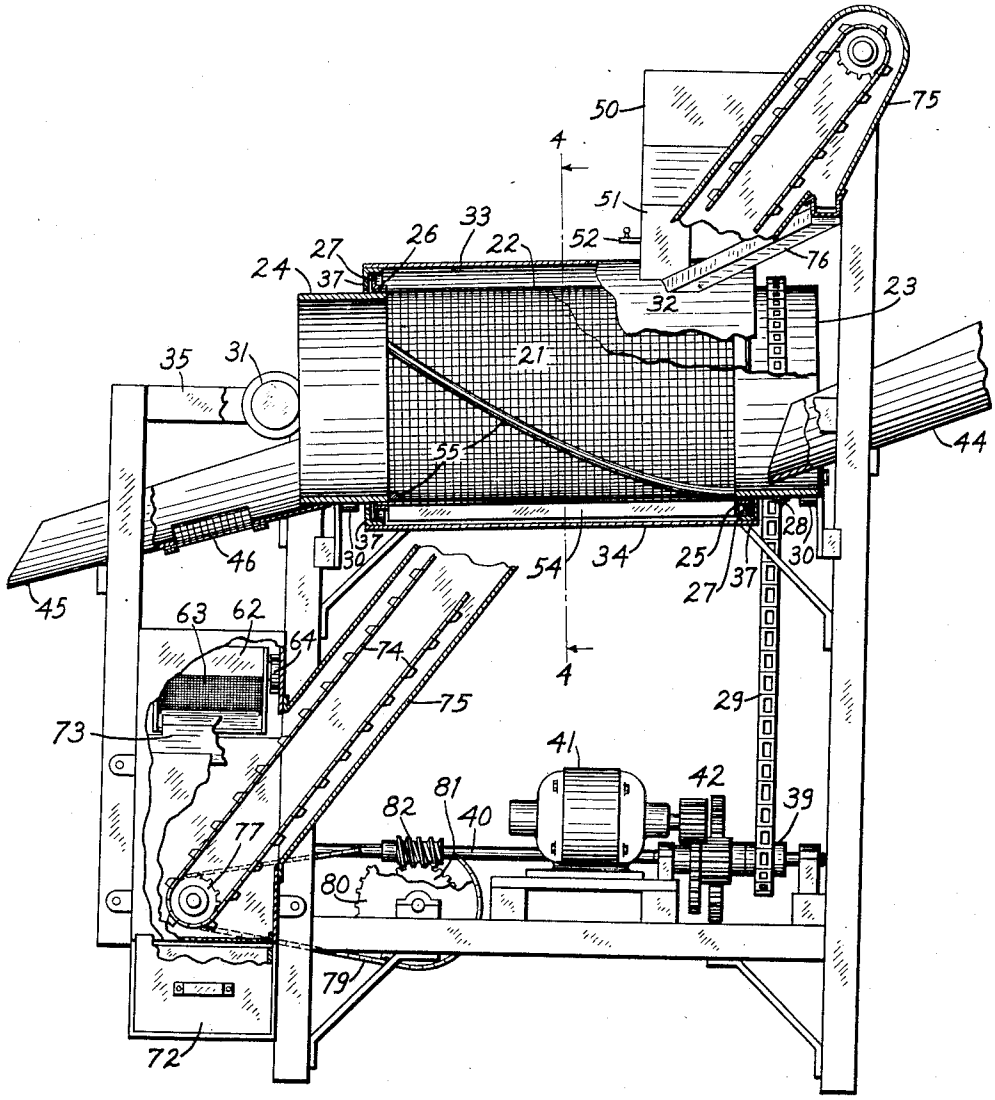


Fig.2

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COATING MACHINE

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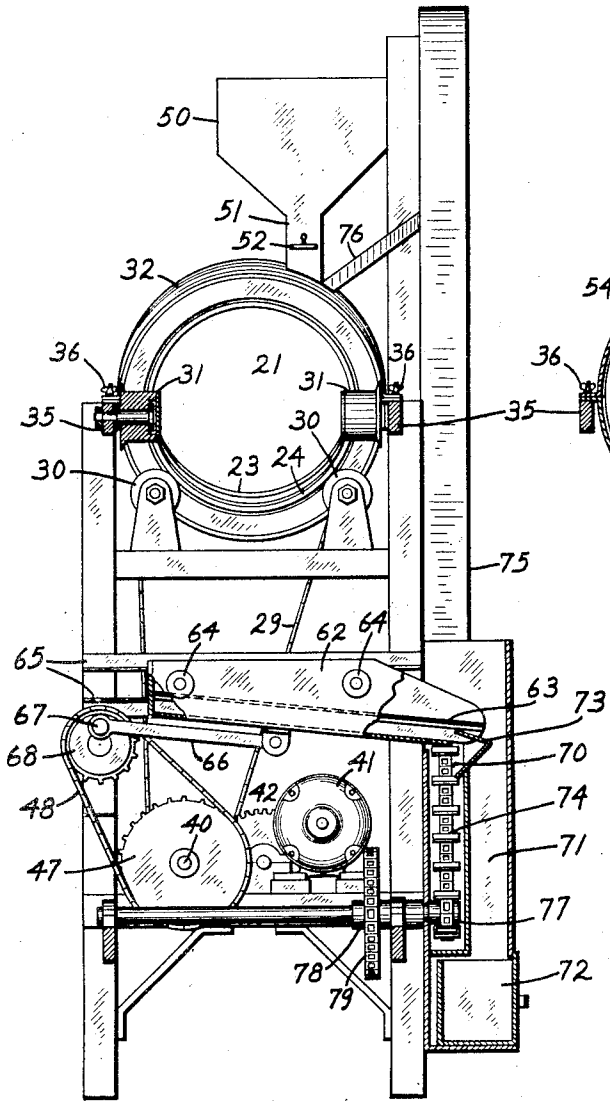


Fig. 3

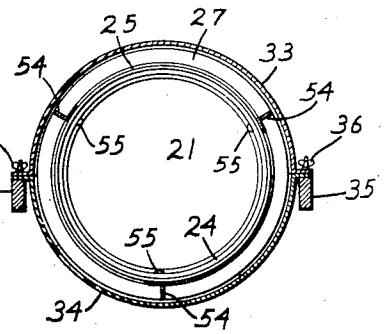


Fig. 4

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Patented Dec. 17, 1929 1,739,642

UNITED STATES PATENT OFFICE

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COATING MACHINE

Application filed April 12, 1924, Serial No. 706,123. Renewed May 1, 1929.

This invention relates generally to coating machines, and particularly to machines for coating such articles as cakes, doughnuts and crullers, with powdered sugar or the like.

A primary object of this invention is to provide a machine wherein the articles to be treated may be continuously fed therethrough and are thereby evenly coated upon all surfaces, and subsequently separated from all surplus coating material and other matter such, for example, as crumbs and fragments.

Another object of this invention is to provide a machine of the typified character wherein economy in the use of coating material is promoted by separating the surplus material from the articles which have been coated, freeing same from lumps, crumbs and foreign substances, and again using it.

A further object resides in the provision of simple and efficient mechanism of the foregoing character so co-ordinated as to facilitate cleaning and repair thereof as well as conducive to promote sanitation.

Still other objects will, in part, be obvious and are, in part, hereinafter set forth in greater detail.

With the aforesaid objects in view, this invention consists in the features of novel combination, construction and arrangement of parts hereinafter described as a preferred embodiment thereof, pointed out in the annexed claims, and illustrated by the accompanying drawings, in which like parts are designated by the same reference characters throughout the several views, and, in which:—

Figure 1 is an elevation of one side of a coating machine constructed in accordance with this invention;

Fig. 2 is an elevation of the other side of the machine of Fig. 1, with certain parts broken away and shown in section;

Fig. 3 is a view at the discharge end of the machine without the discharge chute and with certain other parts more or less broken away and shown in section to better illustrate certain features; and,

Fig. 4 is a fragmentary sectional view taken on the arrowed line 4—4 in Fig. 2.

Referring to Figs. 1 and 2, the cylinder generally indicated at 21 has, intermediate its ends, a foraminous portion 22, which is conventionally indicated as a cylindrically formed wire mesh screen, secured to the adjacent ends of the extensions 23 and 24 by means of the collars 25 and 26, respectively. The collars 25 and 26 each carry a flange 27, for a purpose which will be hereinafter more fully explained, and said collars may be conveniently formed from angle iron, as shown. The sprocket 28 is secured to the extension 23, and is engaged by the chain 29 for the purpose of imparting rotary motion to said cylinder 21.

The rollers 30—30, are carried by the frame of the machine, and are so positioned as to provide a support upon which the cylinder 21 may freely rotate. These rollers 30—30 are so positioned that, when the cylinder 21 is resting thereon, the extension 24 will be somewhat lower than the extension 23. Rollers 31, 31 are also carried by the frame of the machine and are so positioned as to receive the end thrust of the extension 24.

The foraminous portion 22 of the cylinder 21 is enclosed by the stationary drum 32, which drum consists of two approximately semi-cylindrical sections 33 and 34, (see Fig. 4) the adjacent portions of which are turned outwardly and are so formed and arranged as to rest upon the cross rails 35, 35 of the frame of the machine to which they are removably secured, as by the wing-nuts 36—36. Curved flange members 37, 37 are secured adjacent the ends of the drum sections 33 and 34, said flange members being arranged both to serve as supporting frames for retaining the shape of such sections and for so cooperating with the flanges 27 of the collars 25 and 26 of the cylinder 21 as to prevent escape of coating material between said frame and cylinder.

Flights 54—54 are secured to the outer surface of the cylinder 21, each of which flights extends substantially parallel to the axis of said cylinder; as shown, these flights consist of angle-iron bars, and, in any event, they should be so formed and arranged that, when the cylinder is rotated, they will serve to agitate such coating material as may accumu-

late between said cylinder 21 and the drum 32, and to elevate such material from the lower portion of the drum to a position where it will sift through the screen 22 on the ascending side and upper portion thereof.

Spiral lead rods 55—55, are secured to the inner surface of the cylinder 21, each of said rods being so formed that when said cylinder is rotated in the intended direction, said rods will tend to propel articles contained in said cylinder toward the lower end thereof.

As hereinbefore stated, rotary motion is imparted to the cylinder 21 by the chain 29 which engages the sprocket 28 carried by the extension 23 and said chain is, in turn, driven by the sprocket 39 which is fixed upon the shaft 40. Rotary motion may be imparted to the shaft 40 in any desired manner, such, for example, as by means of the motor 41, suitably mounted upon the under frame of the machine and arranged to drive said shaft 40 through the gearing generally indicated at 42.

A trough 44 is provided for conducting articles to be coated into the upper end of the cylinder 21; and a chute 45 is provided at the lower or discharge end of said cylinder for receiving coated articles issuing therefrom and conducting same beyond the frame of the machine to a point where a container may be provided for receiving them. Intermediate the ends of the chute 45 a screen 46 is provided over which articles are required to pass after contact with the coating material within the cylinder 21, the perforations or openings through said screen being of such size that the intended coated articles will pass without injury over said screen, but surplus coating material, coarser substances and objects smaller than the articles such as fragments thereof, crumbs, and the like, will pass through such perforations. It will therefore be apparent that the chute 45 includes means for separating the articles when coated from surplus coating material, from coarser substances and from objects smaller than such articles.

A hopper 50 is suitably supported above the drum 32 as a reservoir for sugar or other coating material, and a chute 51 is provided for conducting such material from the bottom of said hopper through an opening in the upper section 33 of said drum where said chute discharges against the periphery of the cylinder 21 near the higher end thereof. A gate valve 52 is provided in the chute 51 for regulating the flow of coating material therethrough.

A sifter is provided beneath the screen 46 for isolating usable coating material from other matter passing through said screen. Such sifter comprises the receptacle casing 62 which is so formed and positioned as to receive all surplus coating material, crumbs, and other substances or materials falling through the screen 46, the bottom of said casing sloping downwardly to the right, as viewed in Fig. 3. The casing 62 is divided into two compartments by a correspondingly sloping screen 63 situated intermediate the height thereof, the openings through said screen being of such size as to permit surplus coating material in usable condition to pass therethrough and so as to reject lumps, crumbs and other objects or material coarser than such usable coating material. The casing 62 is carried by the rollers 64—64, which engage the frame members 65—65 so as to facilitate reciprocatory movement of said casing lengthwise thereof.

A connecting rod 66 connects the casing 62 to a crank pin 67 carried by the sprocket wheel 68, so that rotation of said wheel will cause reciprocatory movement to be imparted to said casing. The chain 48 connects the sprocket wheel 68 to the sprocket wheel 47 which moves with the shaft 40, so that rotation of said shaft will cause intended actuation of the casing 62

The screen 63 is fitted snugly against the wall at the upper end and along the sides of the casing 62, while the lower end of said screen extends somewhat beyond the lower end of the bottom of said casing; there being no end wall at the lower end of said casing, so that usable coating material and other substances may freely leave the lower ends of the bottom of said casing and of said screen, respectively. The compartments 70 and 71 are so situated as to receive the matter discharged from the lower ends of the bottom of the casing 62 and the screen 63, respectively; and a drawer 72 is provided in the lower portion of the compartment 71 for receiving the matter which is discharged into said compartment. A baffle plate 73 is provided at the top of the partition between the compartments 70 and 71, said plate being so formed as to prevent matter intended for one of said compartments from being projected into the other of such compartments due to the reciprocation of the casing 62.

A chain and bucket conveyor 74 is arranged to return usable coating material which has been isolated as hereinbefore described, to the cylinder 21; to this end, said conveyor communicates with the lower portion of the compartment 70 and extends upwardly to a chute 76, and it is driven by a sprocket 77, which is enclosed by the casing 75. The sprocket 77 rotates with the sprocket 78, driven through the chain 79 by the sprocket 80, which sprocket rotates with the toothed gear 81 engaged by a worm 82 fixed or formed upon the shaft 40; so that rotation of said shaft effects actuation of the conveyor 74.

The chute 76 extends from the upper end of the casing 75 through section 33 of the drum 32, so as to discharge against the periphery of

the cylinder 21 adjacent the discharging end of the chute 51 of the hopper 50.

The driving gear should be so proportioned that, when the cylinder 21 is rotated at a suitable speed, the reciprocatory movement imparted to the sifter comprising the receptacle casing 62 and screen 63 will be such as will prevent objectionable accumulations thereon of matter which drops into said casing after passing through the openings in the screen 46, and likewise such as will cause the conveyor 74 to promptly return to the cylinder 21 the material which passes through said screen 63.

Although belt and pulley drives may be substituted for the chain and sprocket drives shown by the drawings and hereinbefore described in detail, it has been found that best results will be obtained through the use of chain and sprocket drives when the coating material employed is sugar or other substance which has a tendency to glaze over the surfaces of such belts and pulleys.

In order that the machine may be kept in clean and hygienic condition, it is important that the various parts with which either the coating material or the articles to be coated may come in contact, shall be readily detachable from the machine so that they can be easily removed for thorough cleansing. For like reasons, it is desirable that the cylinder 21 shall be mounted in some manner such as that shown, so that this cylinder can be readily removed from the machine for cleansing, and so that it will be impossible for oil, grease and other foreign substances from the bearings which support said cylinder to reach any surface of the machine with which coating material or articles to be coated come in contact incident to the operation of the machine.

The operation of the machine shown by the accompanying drawings and hereinbefore described in detail is as follows:

A suitable source of energy being connected with motor 41, and coating material introduced into the cylinder 21 until there is a sufficient accumulation of such material between said cylinder and the drum 32 so that such material will be elevated by the flights 54—54 in proper volume to continuously enter said cylinder through the openings therein. Articles to be coated are now introduced into the cylinder 21 through the trough 44, and the gate valve 52 adjusted as to supply additional coating material fast enough to take the place of that adhering to the coated articles and that leaving the machine and unfit for further use on account of having become lumpy or having adhered to crumbs and fragments of the articles coated.

Thereafter, during the operation of the machine, the articles within the cylinder 21 will be tumbled due to the rotation of said cylinder so as to become coated on all sides with the coating material entering said cylinder through the openings therethrough, and such articles will be gradually propelled by the lead rods 55—55 toward the end of said cylinder which discharges into the chute 45, together with any crumbs or fragments which may become detached from such articles, as well as lumps of coating material which may form within said cylinder. The coated articles, crumbs, fragments and lumps will thereupon drop into the chute 45 and move away from the cylinder 21 therein; such articles being discharged from the lower end of said chute, where a suitable receptacle may be provided for receiving same, and such crumbs, fragments and lumps will pass through the openings through the screen 46, together with such surplus coating material which may become detached from the coated articles during their movement through said chute. The matter so passing through the openings in the screen 46 will fall upon the screen 63, and coating material in usable condition will pass through the openings in said screen 63 into the compartment provided below said screen in the casing 62; such isolation of usable coating material being accelerated by the reciprocatory movement imparted to the casing 62. Due to the slope of both the screen 63 and the bottom of the casing 62, and accelerated by such reciprocatory movement, the matter thereupon will be moved to the discharging ends of said screen and casing. The usable coating material will drop into the compartment 70, after leaving the discharging end of the casing 62, from which such material will be elevated by the conveyor 74 and discharged into the chute 76, and said chute will conduct such material into the space between the drum 32 and the cylinder 21 on the ascending side of said cylinder near the upper end thereof, from which point such material will enter through the openings in said cylinder to cooperate with that introduced from the hopper 50, and that elevated by the flights 54—54 in coating the articles in said cylinder. The matter leaving the discharge end of the screen 63 will drop through the compartment 71 into the drawer 72; and the baffle plate 73 will prevent such intermingling of the material discharged from the casing 62 with the matter discharged from the screen 63 as would otherwise result from the reciprocatory movement imparted thereto.

Although the exemplification of this invention shown by the accompanying drawings embodies all the features thereof, it is to be understood that certain of such features may be advantageously employed either separately or in groups comprising less than all of such features. For example,—other features of this invention may be advantageously employed without providing a part corresponding in detail with the cylinder 21 as

shown by the drawings and hereinbefore more fully described, it being sufficient that there shall be a chamber arranged for introduction thereinto of articles to be coated and coating material, which chamber need not, of necessity, be revoluble or be cylindrical in form, and which, likewise, need not have a foraminous portion, although it is believed that best results will be obtained by the use of a chamber arranged as shown and described; and, in any event, by the use of means for causing agitation of the contents of the chamber either as shown and described or by some other means well known to those skilled in this art.

Similarly, other features of this invention may be employed without the sifter comprising the casing 62 and screen 63; in which case such sifter may be replaced by other well known forms of mechanism so constructed and arranged as to isolate coating material which is in usable condition from matter separated from said articles, as by the screen 46; and other features of this invention may be employed in machines for coating certain classes of articles without the use of any such isolating mechanism.

It should be correspondingly understood that utilization of the particular means shown and hereinbefore described for imparting reciprocatory movement to the sifter receptacle casing 62 is not essential to other features of this invention, as other means may be utilized for causing relative movement between the screen 63 carried by said casing and the material, substances and objects thereon, as will be understood by those skilled in this art.

Still other matters of combination, arrangement, structure, design and detail may be modified without departing from the underlying principles of this invention, it should therefore be understood that the invention is not restricted to such features other than in so far as specified in the appended claims; and it should also be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of such invention which, as a matter of language, might be said to fall therebetween.

Having described this invention, what I claim as new and desire to secure by Letters Patent of the United States of America is:

1. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for the introduction of articles to be coated at one end thereof; a supply reservoir for the coating material with means for conducting such material from the reservoir to a portion of the cylinder near that at which the articles to be coated are introduced; means for regulating the flow of coating material from the reservoir to said cylinder; a structure over which the articles are required to pass after contact with the coating material, said structure having openings that permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than such articles; a screen of a character to permit only coating material in usable condition to pass therethrough and positioned for receiving matter passing through the aforesaid structure openings; means for causing agitation of the contents of the revoluble cylinder and relative movement between said screen and matter thereon; and a conveyor arranged to return the usable coating material to that portion of the cylinder adjacent the end at which articles to be coated are introduced.

2. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying in intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; means for conducting coated articles away from the cylinder comprising a section over which the coated articles are required to pass, said section having openings therethrough of a size to pass matter such as surplus coating material, coarser substances and objects smaller than the coated articles; a receptacle positioned for receiving matter passing through the section openings, said receptacle being mounted for reciprocatory movement; a screen carried by the receptacle intermediate the height thereof, said screen being of a character to permit only coating material in usable condition to pass therethrough; means for causing agitation of the contents of the revoluble cylinder and for imparting reciprocatory movement to the receptacle; and a conveyor arranged to return to the cylinder material which has passed through said screen.

3. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated; means for propelling articles to be coated through such cylinder from end to end thereof; a drum surrounding the foraminous portion for receiving materials passing through the foramina thereof; agitating and elevating means for material between said cylinder and said drum; a structure over which the articles are required to pass after contact with such coating material, said structure having openings that permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than such articles; a screen of such character as to permit only coating material in usable condition to pass

therethrough and positioned for receiving matter passing through the structure openings; mechanism moving with the revoluble cylinder for causing relative movement between said screen and matter thereon; and a conveyor arranged to return the usable coating material to the cylinder aforesaid.

4. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for propelling articles to be coated therethrough from end to end; a drum surrounding the foraminous portion for receiving materials passing through the foramina thereof; agitating and elevating means for material between the cylinder and the drum; a structure over which the articles are required to pass after contact with the coating material, said structure having openings that permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than such articles; a screen of such character as to permit only coating material in usable condition to pass therethrough and positioned for receiving matter passing through the structure openings; and mechanism moving with the revoluble cylinder for causing relative movement between the screen aforesaid and matter thereon.

5. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an interemdiate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; means for propelling articles to be coated through said cylinder; a structure over which the articles are required to pass after contact with such coating material, said structure having openings that permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than such articles; a screen of such character as to permit only coating material in usable condition to pass therethrough and positioned for receiving matter passing through the structure openings; means for causing agitation of the contents of the revoluble cylinder and relative movement between the screen and matter thereon; and a conveyor arranged to return the usable coating material to the cylinder aforesaid.

6. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; means for propelling articles to be coated through said cylinder; a structure over which the articles are required to pass after contact with the coating material, said structure having openings that permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than such articles; a screen of such character as to permit only coating material in usable condition to pass therethrough and positioned for receiving matter passing through the structure openings; and means for causing agitation of the contents of the revoluble cylinder and relative movement between the screen and matter thereon.

7. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material, a structure over which the articles are required to pass after contact with the coating material, said structure having openings that permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than such articles; a screen of such character as to permit only coating material in usable condition to pass therethrough and positioned for receiving matter passing through the structure openings; means for causing agitation of the contents of the revoluble cylinder and relative movement between the screen and matter thereon; and a conveyor arranged to return the usable coating material to the cylinder aforesaid.

8. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; a structure over which the articles are required to pass after contact with the coating material, said structure having such openings that permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than such articles; a screen of such character as to permit only coating material in usable condition to pass therethrough and positioned for receiving matter passing through the structure openings; and means for causing agitation of the contents of the revoluble cylinder and for imparting a reciprocatory movement to the screen.

9. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; a structure over which the articles are required to pass after contact with the coating material, said structure having such openings that permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than such articles; a screen of such character as to permit only coating material in usable condition to pass therethrough

and positioned for receiving matter passing through the structure openings; and means for causing agitation of the contents of the revoluble cylinder and relative movement between the screen and matter thereon.

10. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; a chute with screen means intermediate its ends for separating such articles when coated from matter such as surplus coating material, coarser substances and objects smaller than the articles being treated; sifter mechanism so constructed and arranged as to isolate that portion of the separated material which is in usable condition from that not in such condition, as well as from other matter; a conveyor arranged to return the isolated coating material to the revoluble cylinder aforesaid; and means for effecting rotation of the cylinder and operation of the sifter mechanism in co-ordination with the actuation of said conveyor.

11. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; a chute having a screen section intermediate its ends for separating the articles when coated from such as surplus coating material, coarser substances, and from objects smaller than such articles; sifter mechanism so constructed and arranged as to isolate that portion of the separated coating material which is in usable condition from that not in such condition, as well as from other matter; and a conveyor arranged to return the isolated coating material to the cylinder aforesaid.

12. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; a chute having a screen section intermediate its ends for separating the articles when coated from matter such as surplus coating material, coarser substances, and objects smaller than such articles; a reciprocatory sifter operable to isolate that portion of the separated coating material which is in usable condition from that not in such condition, as well as from other matter; and means for effecting rotation of the cylinder aforesaid and co-ordinated operation of the sifter.

13. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; a screening chute for separating the articles when coated from matter such as surplus coating material, coarser substances and smaller objects than such articles; and a reciprocatory sifter so constructed and arranged as to isolate that portion of the separated coating material which is in usable condition from that not in such condition, as well as from other matter.

14. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and adapted for introduction thereinto of articles to be coated and coating material; means for rotating said cylinder to propel the articles to be coated therethrough; and a stationary discharging chute over which the articles are required to pass after contact with the coating material, said chute having a screen portion intermediate its ends with openings of a size which permits passage therethrough only of matter such as surplus coating material, coarser substances and objects smaller than the articles being coated.

15. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous section and adapted for introduction of the articles to be coated at one end thereof; means for rotating the cylinder to propel the articles to be coated therethrough from end to end; a drum surrounding the foraminous section for receiving materials passing through the foramina thereof; agitating and elevating means for material between the cylinder and said drum; and a stationary discharge chute over which such articles are required to pass after contact with the coating material, said chute embodying a perforate section having openings therein that permit passage therethrough of surplus coating material.

16. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and arranged for introduction thereinto of articles to be coated and coating material; a stationary discharge chute over which the articles are required to pass after contact with the coating material, said chute embodying a perforate section with openings of a size to permit passage therethrough of matter such as surplus coating material, coarser substances and objects smaller than the articles being coated; and means to return to the cylinder aforesaid material which has passed through the chute perforate section.

17. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and arranged for introduction thereinto of articles

to be coated and coating material; a stationary discharge chute over which the articles are required to pass after contact with the coating material, said chute embodying a perforate section of such mesh as to permit passage therethrough of surplus coating material; and means to return to the cylinder aforesaid material which has passed through the chute perforate section.

18. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion and arranged for introduction thereinto of articles to be coated and coating material; a stationary chute having a perforate section intermediate its ends for separating such articles when coated from surplus coating material, coarser substances and objects smaller than the articles being coated; and means serving to convey to the cylinder aforesaid the reusable material which has passed through the chute perforate section.

19. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder embodying an intermediate foraminous portion, an attached perforate extension at one end thereof and a nonperforate extension at the other end; a drum surrounding the foraminous portion for receiving material passing through the foramina thereof; angle section flights secured on the outside of the cylinder for agitating and elevating coating material between the cylinder and the drum; a supporting frame; rollers carried by said frame arranged to rotatably support the cylinder; and other rollers co-operative with the end of one of the cylinder extensions to receive the end thrust thereof.

20. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder having a foraminous portion intermediate its ends; spiral rods for propelling articles to be coated through the cylinder from end to end thereof; a drum surrounding the foraminous portion of the cylinder for receiving coating material passing through the foramina thereof; co-operative angle-section collars effective to prevent coating material from escaping between the drum and cylinder at the ends thereof; a supporting frame; rollers carried by the frame arranged to so support the cylinder as to permit rotation thereof; and other rollers adapted to receive the end thrust of said cylinder.

21. In a machine for treating doughnuts and the like with coating material, the combination of a revoluble cylinder having a foraminous portion intermediate its ends; a drum surrounding the foraminous portion for receiving coating material passing through the foramina thereof; co-operative angle-section collars effective to prevent coating material from escaping between the drum and cylinder at the ends thereof; a supporting frame; rollers carried by said frame and arranged to so support the cylinder as to permit rotation thereof; and other rollers on the frame positioned to receive the end thrust of the cylinder aforesaid.

22. In a sugaring device of the character described, a rotating drum adapted to be traversed by the articles being sugared, a substructure with rollers to support the drum at opposite ends, drive means secured to the substructure beneath the drum, and interposed connections including a transmission chain engaging circumferential sprocket teeth on the drum to hold the latter to the substructure incidental to rotating said drum.

23. In a sugaring device of the character described, a rotating drum adapted to be traversed by the articles being sugared, a substructure with rollers to support the drum at opposite ends, drive means including a longitudinal jack shaft journalled in the substructure beneath the drum, and a transmission chain coordinating a pinion on said jack shaft with circumferential sprocket teeth on the drum to hold the latter to the substructure incidental to rotating it.

In witness whereof, I hereunto subscribe my name, this 5th day of April, 1924.

LESLIE F. LIGHT.