F. P. WOOD.

CONTAINER COATING MACHINE.

APPLICATION FILED MAY 28, 1915.

1,274,830.

Patented Aug. 6, 1918.

2 SHEETS—SHEET 1.

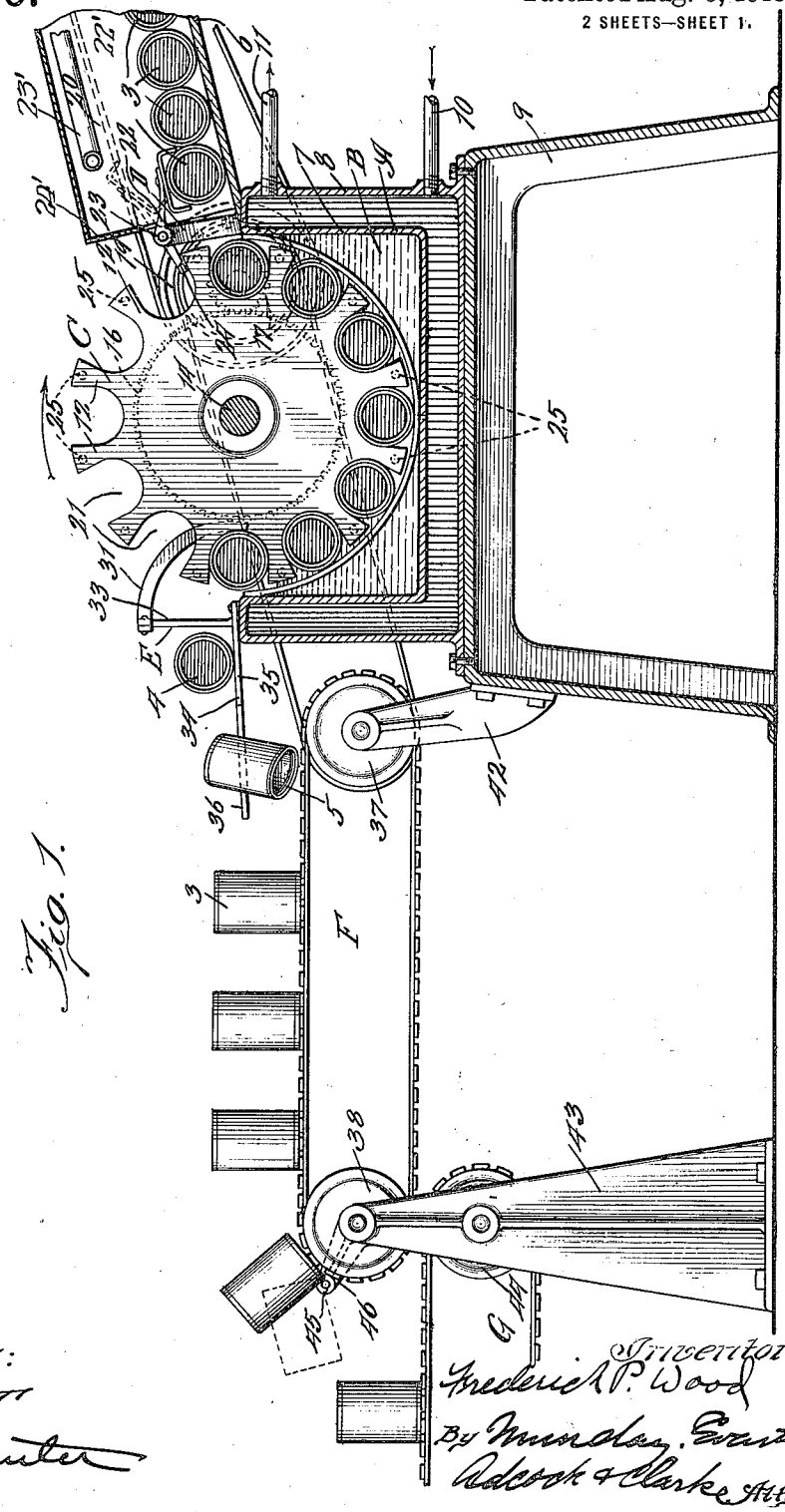


Fig. 1.

Witnesses:

J. C. Carpenter

Inventor:

Frederick P. Wood

By Munday, Evarts, Adcock & Clarke Attys.

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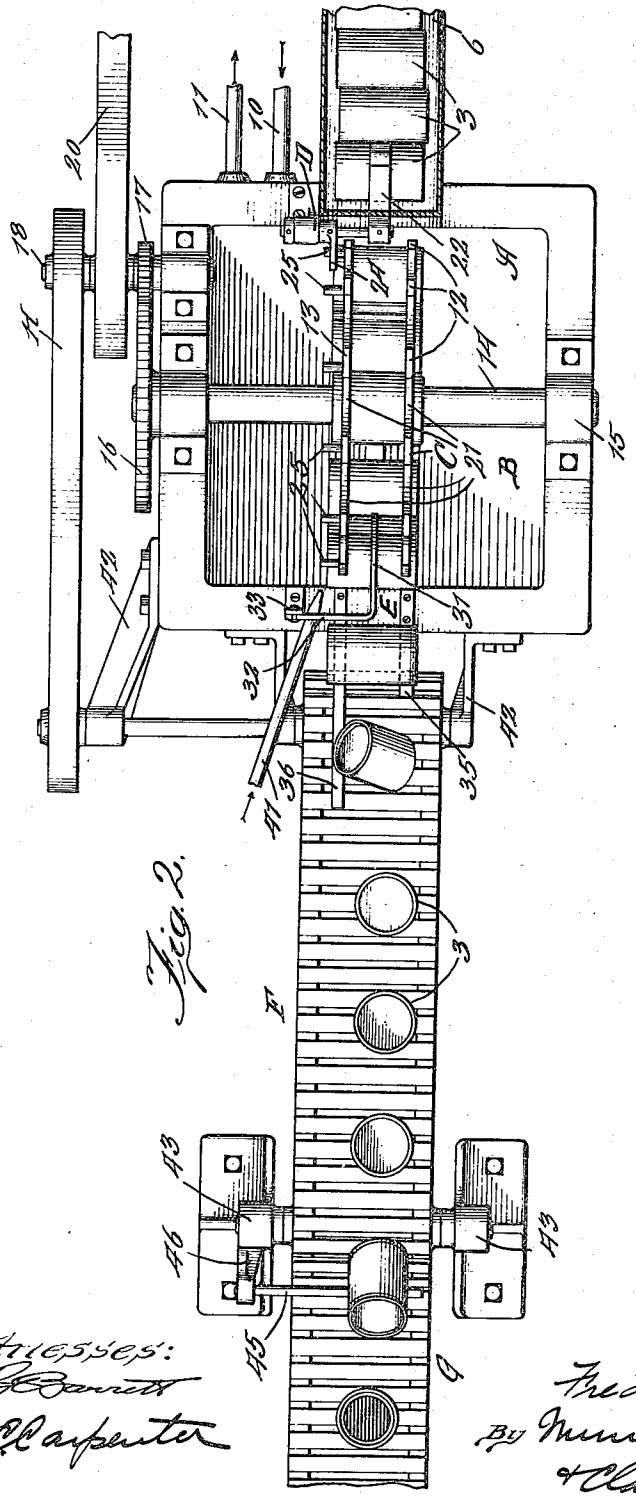


Fig. 2.

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UNITED STATES PATENT OFFICE.

FREDERICK P. WOOD, OF OAK PARK, ILLINOIS, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

CONTAINER-COATING MACHINE.

1,274,830. Specification of Letters Patent. Patented Aug. 6, 1918.

Application filed May 28, 1915. Serial No. 30,912.

To all whom it may concern:

Be it known that I, FREDERICK P. WOOD, a subject of the King of Great Britain, residing in Oak Park, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Container-Coating Machines, of which the following is a specification.

This invention relates in general to coating machines for cans, containers or other receptacles and has more particular reference to the provision of a machine for the proper coating of a container of the type forming the subject matter of my pending application for containers filed March 5, 1915, Serial No. 12,306, although it will be manifest as the invention is better understood that it has a wider and more general application.

A principal object of this invention is the provision of a machine for coating can bodies provided with restricted end openings with a continuous coating internally and externally. The can body hereinafter described, for the purpose of illustrating the invention, is a fair example of the type of a body for which machines embodying my present invention are designed. In this form of can one end is closed and the other end is provided with an inwardly extending flange or ring against which closures or covers may be seated. The machine hereinafter described is adapted to prevent any break or interruption in the internal coating through the trapping of air behind the flange or ring when the can is immersed horizontally in the coating bath.

A further object of the invention is the provision of a machine of the character described which will prevent the formation of air bubbles which will break the film or coating.

A further object of the invention is the provision of a machine which will automatically coat cans and drain the same of excess coating material without appreciable loss of such material.

A still further object of the invention is the provision of a machine of the character described which will first coat the cans then drain them and after draining turn them end for end and cause any excess of material within the can to settle in and around the seam between the bottom and the body of the can to insure the provision of a perfectly coated bottom connection.

Other objects and advantages of the invention will be apparent as it is better understood from the following description when considered in connection with the accompanying drawing illustrating a preferred embodiment thereof.

Referring to the drawings,

Figure 1 is a side elevation of a machine embodying my invention shown partially in section; and

Fig. 2 is a top plan view thereof.

The machine shown on the drawing and used for the purpose of illustrating my invention, consists of a receptacle A containing a coating bath B, a carrier C, a can feeding mechanism D, a can delivery device E, a pair of conveyers F and G and driving means H together with the other attendant means, mechanisms and devices to be later described.

The cans 3 shown on the drawing are of paper or other fibrous material and each is provided with a bottom 4 at one end and a ring 5 at the other, against which may be seated a suitable closure (not shown). It is intended in the present machine to coat both the inside and outside of the cans by immersion and the can bodies, after being provided with the ring and bottom just described, roll down a chute 6, one end of which is disposed at the receptacle A. This receptacle has a double wall 7 and 8, preferably of metal, and mounted upon a suitable base 9, the two walls of which provide a heating space into which a suitable heating fluid may be introduced through an inlet pipe 10 and taken out through an inlet pipe 11 in circulation. The coating material in the present instance is a fluid mass B, kept at proper fluidity by the temperature of the receptacle and heat transmission through the inner wall 7 thereof.

The cans 3 are received from the chute 6 by the carrier C and this carrier, in the present instance, consists of a pair of notched disks or plates 12, 13 mounted upon a shaft 14 which is supported in bearings 15 from the top of the receptacle. The shaft 15 carries a gear 16 meshing with a pinion 17 upon a shaft 18 carrying a pulley 19 driven by a belt 20 from any suitable source of power. The shaft 14 is preferably disposed

just above the surface of the bath B, so that nearly a half of the carrier C is always immersed in this bath. The notches designated at 21 are provided about the periphery of the disks or plates 12, 13 and these notches are dimensioned to grasp the cans with sufficient firmness to prevent independent rotation of the cans in their travel through the bath. The two plates 12, 13 revolve together and the notches of one are in registration with the notches of the other. As a pair of registered notches arrive at the lower end of the chute 6 a can rolls therein, the other cans in the chute being held back by a movable stop 22 pivoted at 23 upon a suitable standard and having a finger 24 disposed alongside one of the notched plates or disks (13 in the present instance). This plate or disk carries outwardly extending stops 25 adapted to engage the finger 24 and lift the stop at appropriate intervals to permit the passage of the cans. While on the chute the cans are preheated preferably to about or above the temperature of the bath B in order that immersion therein will not expand any air which may be disposed in the interstices or pores of the body. This preheating is accomplished in a chamber 22′ surrounding the path of travel of the cans, the bottom of the chute 6 forming the bottom of this chamber. Heat is supplied through a pipe or coil 23′ for the purpose. The forward wall 24′ is positioned as close to the carrier C as possible in order that the temperature of the cans may not fall appreciably before immersion. If the temperature be raised somewhat above that of the bath a partial vacuum will be created in the pores of the can, which will aid in the formation of the coating by drawing parts of it into the ends of the pores.

The cans are received by the carrier in horizontal position and are carried through the coating bath. Any air trapped behind the flange or ring 5 will constantly be shifted in position throughout the travel of the can through the bath, as this can receives a rotation with the carrier, thereby causing the coating of the entire internal surface, the air trapped being moved from almost diametrically arranged portions of the can body during the coating operation.

After the carrier has lifted the cans to the height of the receptacle edge or top, they are removed by an ejector E comprising a curved arm 31 extending across the path of the travel of the cans and having an elbow 32 extending to one side and engaging a standard 33 to form a support. The can bodies engaging the arm 31 are rolled upon a shelf 34 composed in the present instance of two strips 35 and 36 sloping downwardly slightly from the receiving end. The shelf is cut away at its forward part to provide an extension at one side. In other words, the strip 35 is shorter than the strip 36. This causes one end of each can to drop in advance of the other end as the cans roll from the shelf, so that the cans alight in vertical position upon the first conveyer F. This conveyer is of the ordinary traveling type and moves around two sprocket wheels 37 and 38. The cans alight upon this conveyer up-side-down, *i. e.*, with the open end or the end provided with the ring 5 resting upon the conveyer. This arrangement provides for a draining of any slight excess of material that may be carried by the can after leaving the bath.

Means are provided for preventing the collection of an excess of material upon the outside of the bottom of the can, which means in the present instance consist of a steam nozzle 41 which plays upon this end of the can as it comes to the delivery point and blows back any excess coating material that may be thereon into the bath. The cans are allowed to drain throughout a predetermined period or while upon the conveyer F. A receptacle, not shown, for catching such drainage, may be supported in a known manner under the upper limb of the conveyer. It is desired that any excess of coating material that may remain after this draining shall be disposed at the bottom of the can, and this for two reasons: first, for the improvement of the connection of the bottom with the body; and second, because when so located it will not interfere with the formation of the subsequent closure at the open end. To this end the cans are inverted in position as they are delivered to the second conveyer G which carries them through the drier. The pulleys 37 and 38 are mounted respectively in brackets 42 and 43, the brackets 42 being secured to the base 9 of the receptacle and the brackets 43 upon any suitable support. One of the pulleys 44 of the conveyer G is also mounted in the brackets 43 in vertical alinement with and beneath the pulley 38. The inversion of the cans is accomplished by a rod 45 extending across the path of movement of the can and supported in an arm 46 on a bracket 43. The rod 45 is positioned relatively close to the conveyer F and around opposite the curve at its delivery end so that it engages the bottom of the can and causes it to fall, as indicated in dotted lines in Fig. 1. After so falling it alights open end up, upon the conveyer G. Any subsequent flowing of the internal coating is into or onto the seams at the bottom, improving them.

It is thought that the complete operation of the machine will be manifest from the foregoing, and it will be obvious that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing any of its mate-

rial advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A machine for coating can bodies comprising in combination, a receptacle for holding a coating bath, a rotatable carrier mounted therein and provided with means for engaging the cans to hold them against rotation independently of said carrier, and feeding mechanism for delivering cans to said carrier, comprising an inclined chute and a movable stop having members adapted to pass down at the front and rear of the can next to be fed from said chute.

2. A machine for coating can bodies comprising in combination, a receptacle for holding a coating bath, a rotatable carrier mounted therein and provided with means for engaging the cans to hold them against rotation independently of said carrier, and a hook-shaped arm for automatically delivering cans from said carrier.

3. A machine for coating can bodies comprising in combination, a bath receptacle, a carrier mounted therein and adapted to convey cans in horizontal position thereto, and a delivery mechanism, said delivery mechanism comprising means for ejecting the cans into vertical position, with their open ends downward, a conveyer for transporting the cans in said position for drainage, means for inverting the cans end for end to rest on their closed bottoms for the settling of the coating composition into the bottom seam of the can, and a second conveyer arranged to receive the cans from said inverting means and to transport the same.

4. In a machine for handling coated can bodies, a bath receptacle, means for dipping can bodies therein, a drainage conveyer, means for guiding the dipped cans sidewise toward the drainage conveyer, means for supporting the cans at one end only while the other end drops in a direction transverse to the movement of the conveyer for delivering the can bodies open end downward on said conveyer, a second conveyer below the drainage conveyer, and means for arresting the open end of the can bodies while the closed end tilts over in the direction of the movement of the conveyer on to said second conveyer.

5. The combination of a bath receptacle, a rotary carrier therein having means for holding can bodies with their axes horizontal and parallel with the axis of the carrier, means for disengaging the can bodies from said carrier with their axes in horizontal position, a drainage conveyer, and means whereby the can bodies are caused to roll freely after disengagement and are tilted into vertical position with their open ends downward on said drainage conveyer.

6. A machine for coating can bodies comprising in combination, a receptacle for a bath of coating material, a carrier for dipping can bodies therein, a conveyer for receiving can bodies from said carrier, a blast pipe directed against the closed end of the can body and operating on the same to force excess of coating material toward the open end of said body before the can body is received on said conveyer, and means for depositing the can bodies open end downward on said conveyer.

7. A machine for coating cans, comprising, in combination: a receptacle for holding a bath of coating glue; and a rotatable carrier mounted in said receptacle and having an arc of travel in said bath, and provided with means for engaging can bodies with their axes horizontally disposed, said engaging means acting to hold the can bodies against rotation relative to the carrier.

Signed in the presence of two subscribing witnesses.

FREDERICK P. WOOD.

Witnesses:
J. O. CARPENTER,
ESTHER ABRAMS.