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COATING MACHINE AND PROCESS OF COATING CYLINDRICAL OBJECTS

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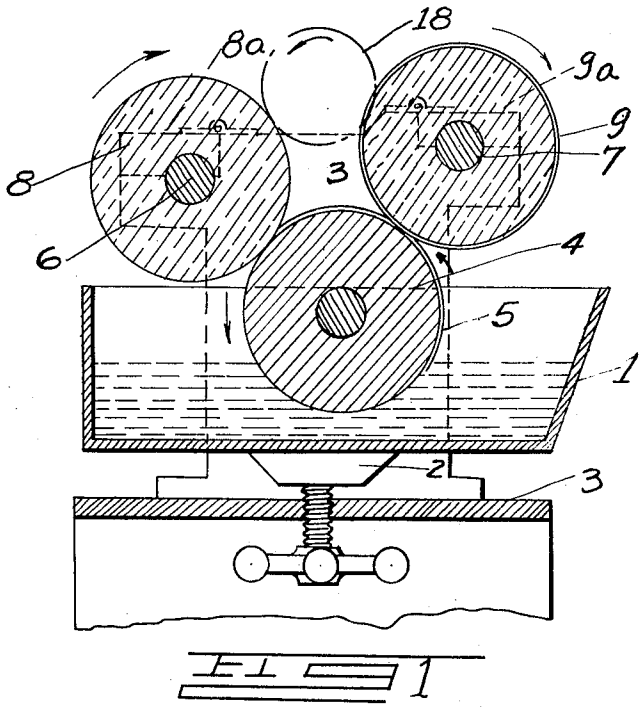


FIG 1

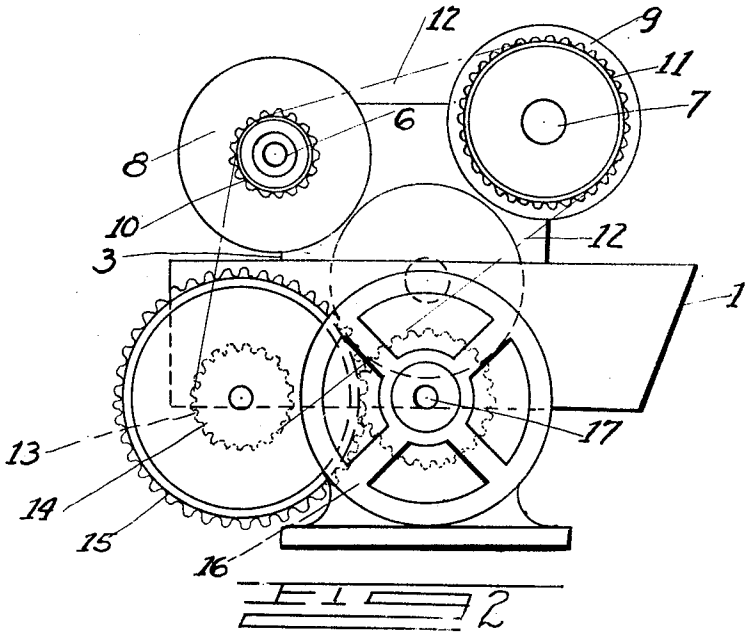


FIG 2

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UNITED STATES PATENT OFFICE.

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COATING MACHINE AND PROCESS OF COATING CYLINDRICAL OBJECTS.

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My invention relates to coating machines and process of coating cylindrical objects such as wrapped cans with coating material such as varnish.

It is the object of my invention to provide coating rolls adapted to carry a layer of the coating material, which rolls are so constructed and mounted, and which rolls are operated at such a speed that cylindrical objects having depressed portions and annular grooves in their outer peripheries will be coated with a smooth layer of the coating material.

In wrapping food stuffs and many other classes of material which are affected by moisture or air, it has long been known that cans which are wrapped with wet wrappers, which are afterward shrunk on by heat will have more thoroughly sealed joints than cans which are wrapped with a plain unmoistened wrapper. It has further been proposed to varnish the labels of wrappers and then shrink them onto can bodies, but this has not been practical as the varnishing prior to applying to the can bodies prevents the proper shrinkage of the wrappers, and mars the appearance of the wrapped cans.

By the use of my novel process and by the use of machines incorporating the mechanical principle involved in the ensuing description, cans may be wrapped with moist wrappers. The wrappers can then be shrunk onto the cans by heat and as a final step a coating of varnish may be applied which will make a doubly leakproof package, and the varnish will be evenly distributed in any annular grooves or channels.

Referring to the drawings in which I have shown diagrammatically a suitable machine far carrying out my process:

Figure 1 is a diagrammatic section.

Figure 2 is a diagrammatic side elevation showing a simple type of drive for the varnishing rolls.

Generally indicated at 1 is the varnish pan which may be mounted for vertical adjustment on a screw actuated bracket 2 extended through the frame 3 of the machine. A roller 4 which may be called the feed roll, extends within the tank and thus carries on its outer periphery a coating of varnish such as is indicated at 5. The feed roller 4 may be rotatably mounted in the frame 3 of the machine and although the roller must, of course, be rotated to feed varnish, in my preferred type of machine no independent drive for the roller 4 is provided, a drive which may be controlled to rotate the feed roll at a predetermined rate will not be objectionable. There are two rollers having shafts 6 and 7 and bodies 8 and 9 respectively, composed of rubber or other suitable varnish distributing material, such as is commonly used in ink distributing rollers. In the diagram I have shown the shaft and roller 6 and 8 on the left with regard to a line extended vertically upward from the axis of the feed roller, and the shaft and roller 7 and 9 on the right with respect to a line drawn upwardly from the feed roller.

The shafts are preferably demountably mounted in the frame of the machine as by means of hinged bearing blocks 8^a and 9^a, which allow the resilient rollers to be lifted out of their bearings and cleaned off so as not to allow a coating of the varnish to dry and harden on the smooth resilient outer surface of the rollers.

For driving the rollers and the feed roller I have shown the sprocket wheels 10 and 11 driven by a chain 12 which is driven by a pinion 13. The pinion is mounted on a shaft 14 which carries a large gear 15 which meshes with a gear 16 which is mounted on the shaft of a motor 17 which drives the machine. The small sprocket 10 which drives the roller 8 is preferably adapted to rotate the roller 8 at about twice the speed of the roller 9 which is driven by the larger sprocket 7. The roller 9 bears against the feed roller 4 and thus causes it to rotate within the varnish tank. The roller 8 which rotates at the fastest rate bears gently against the feed roller so that a light film of varnish will be distributed over its outer periphery.

It will be noted that the two rubber rollers do not touch each other and the distance apart will be such that a cylindrical object will fit between the rollers in the manner indicated by the can shown in dotted lines at 18. The speed of rotation of the can will then be governed by the speed of that roller which is rotated at the fastest speed and the varnish will thus be built up on the roller moving at the slower speed so that the layer of varnish which becomes coated on the can will be thoroughly pressed into any uneven annular channels or indentations which are present on the article to be coated.

While I have shown a simple form of

machine, it will be apparent that many modifications which will eliminate the necessity for hand feeding of each article to be coated will readily occur to those skilled in the art. The method which I claim in combination with the machine of which I have shown diagrammatically one preferred modification, is the method of controlling the speed of rotation of an article to be coated on one roller moving at a high rate of speed and distributing a layer or coating on the article by means of a roller against which the periphery of the cylindrical object also abuts, and driving the latter at a considerably lower rate of the speed than the first mentioned roller.

While I have shown a combination of rollers in which the cylindrical object will be moved by gravity toward a line between the rollers, it will be obvious that other positions of angular adjustment may be arranged which will not affect the principle involved.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. That process of coating cylindrical objects which consists in rotating the objects by peripheral contact with a relatively rapid moving roller, and applying a coating of material to the cylindrical objects by peripheral contact with a relatively more slowly rotating roller.

2. That process of coating cylindrical objects which consists in rotating the objects by peripheral contact with a relatively rapidly rotating roller and distributing by peripheral contact with a relatively more slowly rotating roll, a layer of the coating on the cylindrical objects and supplying the coating on the relatively slow moving roller by surface engagement with a feed roller inserted in a source of supply.

3. In a machine for coating cylindrical objects, a plurality of coating rollers, a source of supply for coating material, means for rotating one of said rollers at a certain speed, and means for rotating another at a lesser speed, means for applying a relatively thick coating to that roller which rotates at the slowest speed and means for applying a relatively lighter coating to the roller moving at the fastest speed.

4. In a machine for coating cylindrical objects, a plurality of coating rollers, a source of supply for coating material, means for rotating one of said rollers at a certain speed, and means for rotating another at a lesser speed, means for applying a relatively thick coating to that roller which rotates at the slowest speed and means for applying a relatively lighter coating to the roller moving at the fastest speed, said coating roller mounted in interspaced position so as to provide an interspaced area between said rollers of sufficient size to provide retainment for a segmental portion of a cylindrical object to be coated.

5. In a machine for coating cylindrical objects, a plurality of coating rollers, a source of supply for coating material, means for rotating one of said rollers at a certain speed, and means for rotating another at a lesser speed, means for applying a relatively thick coating to that roller which rotates at the slowest speed and means for applying a relatively lighter coating to the roller moving at the fastest speed, said coating rollers having resilient outer peripheries.

6. In a machine for coating cylindrical objects, a plurality of coating rollers, a source of supply for coating material, means for rotating one of said rollers at a certain speed, and means for rotating another at a lesser speed, means for applying a relatively thick coating to that roller which rotates at the slowest speed and means for applying a relatively lighter coating to the roller moving at the fastest speed, said coating rollers having resilient outer peripheries, and a feeding roller for coating driven by peripheral contact with the relatively slowly moving coating roller.

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