C. W. GRAHAM.

COATING MACHINE.

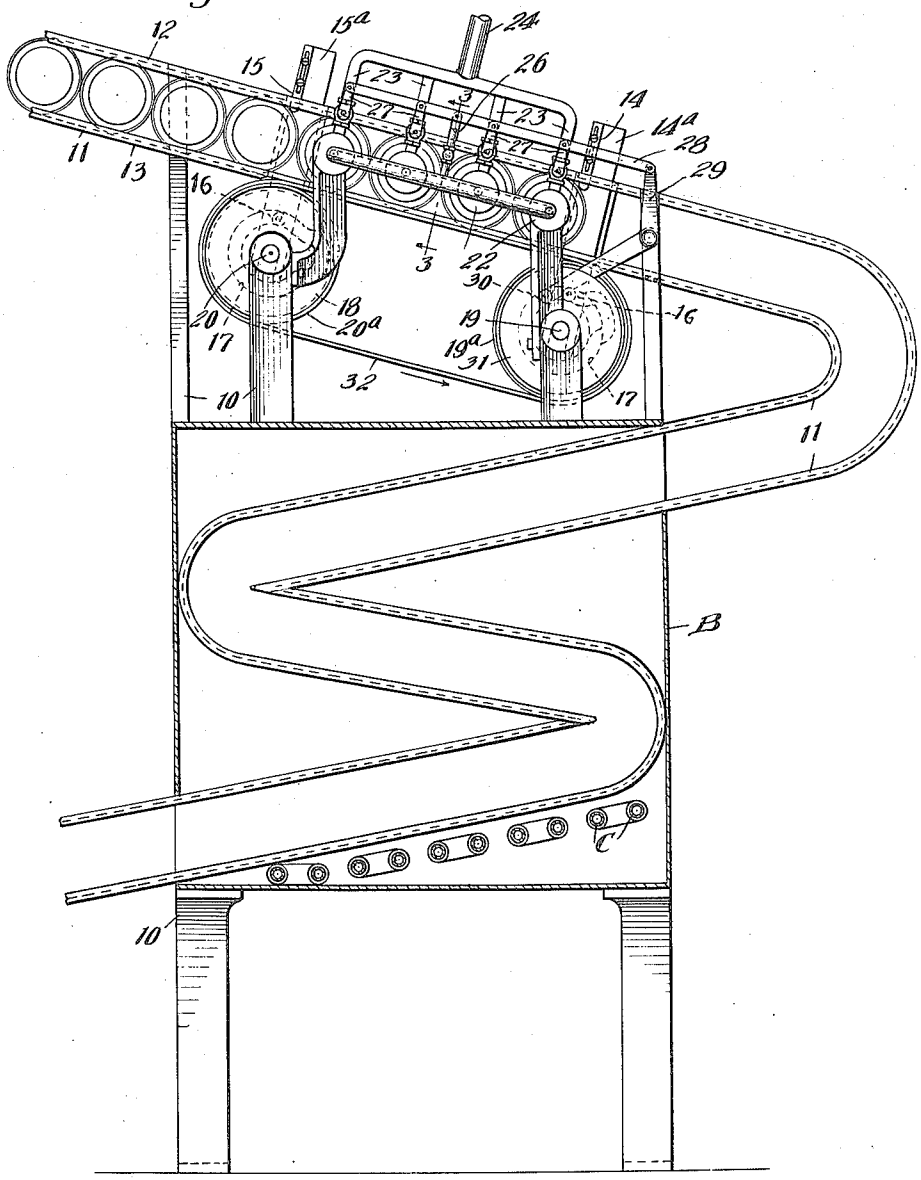
APPLICATION FILED JUNE 17, 1912.

1,198,020.

Patented Sept. 12, 1916.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:

Wm Geiger

Pearl Abrams.

Inventor:

Charles W. Graham

By Munday, Evarts, Adcock & Clarke

his Attys.

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2 SHEETS—SHEET 2.

Fig. 2

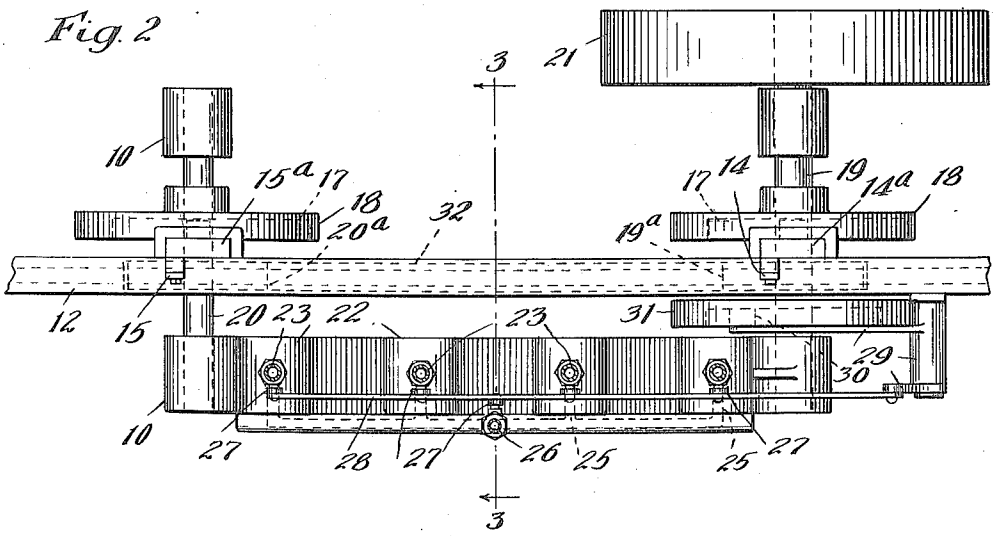


Fig. 3

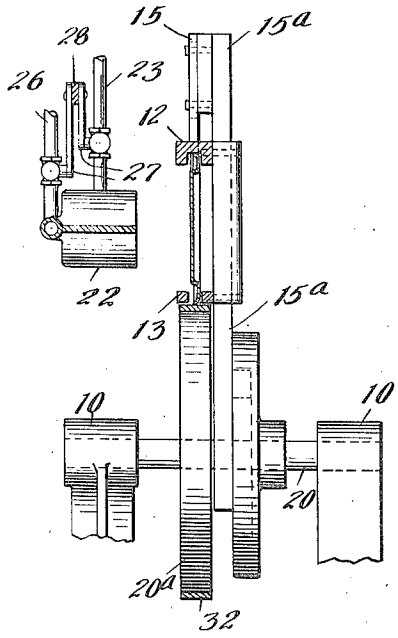
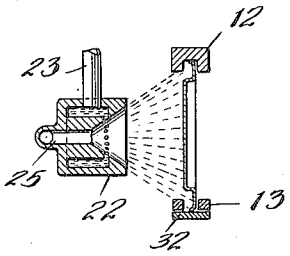


Fig. 4



Witnesses:

Wm Geiger

Pearl Abrams.

Inventor:

Charles W. Graham

By Munday, Evarts, Adcock & Clarke,

his Attys

UNITED STATES PATENT OFFICE.

CHARLES W. GRAHAM, OF HUNTINGTON, NEW YORK, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

COATING-MACHINE.

1,198,020. Specification of Letters Patent. Patented Sept. 12, 1916.

Application filed June 17, 1912. Serial No. 704,022.

To all whom it may concern:

Be it known that I, CHARLES W. GRAHAM, a citizen of the United States, residing in Huntington, in the county of Suffolk and State of New York, have invented a new and useful Improvement in Coating-Machines, of which the following is a specification.

This invention relates to improvements in an apparatus for coating, spraying or otherwise treating articles, such for instance as can ends, jar tops, etc.

The object of the invention is to provide a machine which will automatically spray or coat can ends or other articles with a film of protective lacquer or other liquid and do the same uniformly at high speed and at small expense.

Another object of the invention is to so arrange the elements that several can ends or other articles may be treated simultaneously and to apply the coating of lacquer or other liquid while the can ends or other articles are in a vertical position and to apply the coating to an entire face of the article.

Another object of the invention is to combine the spraying or coating mechanism with a drying or heating oven for baking the lacquer or other liquid on the can ends or other articles in such a way that the articles after being treated are passed through the drying oven without the necessity of being handled by an operator, and to so combine the spraying or coating devices with the oven that the entire structure will occupy a comparatively small space.

The invention furthermore consists in the improvements in the parts and devices and in the novel combinations of the parts and devices herein shown, described or claimed.

In the drawings forming a part of this specification, Figure 1 is a vertical sectional view of an apparatus embodying my improvements; Fig. 2 is a plan view of the structure shown in Fig. 1. Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1 and looking in the direction of the arrows, and Fig. 4 is a detail sectional view showing one of the spraying nozzles and the manner of applying the coating to the can ends.

In the drawings, 10 denotes a frame adapted to suitably support the various parts of the apparatus and to which is secured at the upper end thereof, an inclined runway or chute 11, the same being extended in a zigzag course beyond the coating devices, hereinafter described, through the heating or drying chamber B, and out at the lower end thereof where the can ends or other articles are adapted to be discharged into a bin or onto a conveyer adapted to receive the treated articles. As more clearly shown in Figs. 3 and 4, the runway or chute 11 is provided with upper and lower grooved members 12 and 13 spaced apart sufficiently to allow the can ends or other articles to roll easily therealong but yet at the same time to maintain the articles in a vertical position. The runway at its upper end is connected to any suitable source of supply, not shown, for the can ends or other articles, and down which the can ends feed continuously one after the other. At one point in the travel of the can ends along the runway 11, the same are arrested in their bodily movement of translation, temporarily, by means of alternately movable fingers 14 and 15, the same being movable into the path of the can ends, to alternately stop and release the can ends a predetermined number at a time, the apparatus in the drawing being shown as arranged to allow four can ends at a time to be treated. These fingers 14 and 15 are mounted on slides 14^a and 15^a, respectively, each having a projection 16 adapted to engage in cam grooves 17 formed in the cams 18, 18 mounted respectively on the transversely arranged shafts 19 and 20, said shafts being adapted to be operated in unison by a belt 32 passing over the pulleys 19^a and 20^a, the shaft 19 being driven by means of the pulley 21 from any suitable source of power, not shown.

Arranged adjacent the runway at the side thereof is a plurality of spraying nozzles 22, 22, each supplied with lacquer or other liquid coating to be applied to the can ends through a plurality of branch pipes 23, 23 communicating with the main supply pipe 24 connected to a suitable source of supply or tank, not shown. Each of the spraying nozzles 22 is furthermore provided with a compressed air nozzle 25, said air nozzles being supplied from a main pipe 26 connected to a suitable source of compressed air. The lacquer or other liquid and the compressed air is adapted to be supplied automatically and intermittently to each of

the nozzles while the can ends or other articles are being prevented from movement along the chute by means of valves located in each of the branch pipes 23 and the compressed air supply pipe 26, each of said valves being provided with a lever arm 27, all of said lever arms 27 being pivotally connected to a common operating bar 28, the latter being pivotally connected at one end to one arm of a bell crank lever 29 suitably pivoted to the frame of the machine, said bell crank lever having its other arm provided with a projection 30 adapted to be operated by the cam 31 keyed to the shaft 19.

In order to insure a uniform application of the lacquer to the can ends or other articles I deem it preferable to rotate the articles while they are being prevented from movement along the runway, and to accomplish this result the runway is provided with a movable bottom on which the can ends or other articles are supported while being sprayed. This movable bottom is preferably in the form of the endless belt 32 supported on pulleys 19^a, 20^a keyed to the shafts 19 and 20 and driven from the shaft 19 in the direction indicated by the arrow *a* in Fig. 1. The belt 32 is preferably driven at such a rate as to give the can ends or other articles two or more complete rotations while being coated.

From the foregoing description it will be seen that the can ends or other articles are coated uniformly and rapidly a purality at a time and after being so treated are conducted by the runway under the influence of gravity through the heater or drying oven B, said oven B being heated as shown, by means of a number of steam pipes C, C, and the length of the runway within the drying oven is made long enough so that the lacquer or other liquid will have sufficient time to dry or harden on the can ends or other articles before the latter emerge from the oven.

From the foregoing description it will also be noted that the apparatus is comparatively narrow and therefore will require only a small space in the factory where used, and at the same time does away with the necessity of special apparatus or an operator for transmitting the articles after the same have been coated, to the drying oven.

Many changes and variations may be made in the details of the apparatus herein shown and described, without departing from the spirit of the invention, and such changes and variations are contemplated as fairly fall within the scope of the claims appended hereto.

I claim:—

1. In an apparatus of the character described, in combination: an inclined runway along which the articles are adapted to pass under the influence of gravity, a movable member adapted to temporarily stop the bodily movement of translation of the articles while in the runway, means for projecting said member into and withdrawing it from the runway, means for rotating the articles while they are stopped by said member, and lacquer-spraying devices directed at and out of contact with the vertical ends of said articles for treating the articles while the same are being rotated.

2. In an apparatus of the character described, in combination: an inclined zigzag runway along which can ends or other articles are adapted to pass, means located adjacent one portion of the runway for applying a coat of lacquer or other liquid to the can ends, and a drying oven to which the can ends or other articles are adapted to be transferred after being coated, said oven being located beneath said means to thereby save floor space.

3. In an apparatus of the character described, in combination: an inclined runway along which can ends or similar articles are adapted to pass under the influence of gravity, means located adjacent the runway for applying a coat of lacquer or other liquid to the can ends while in the runway, and a drying oven located beneath the upper part of the runway, said runway being returned backward beneath its upper portion and extending into and through the drying oven on a downward inclination.

4. An apparatus of the class described, comprising in combination: an inclined runway down which can ends or similar disk-like articles are adapted to pass in a vertical position under the influence of gravity, mechanism for arresting temporarily the can ends in their movement along the runway, the runway being provided with narrow top and bottom flanges to retain the can ends upright, said flanges being arranged to leave the runway open on one side adjacent said mechanism whereby the entire face of at least one can end is exposed, and means automatically operative for applying a coating of lacquer or other liquid to the exposed face of the can end while the can end is being prevented from movement along the runway.

5. In an apparatus of the class described, comprising in combination: an inclined runway down which can ends or similar articles are adapted to pass in a vertical position edge to edge under the influence of gravity, mechanism for arresting temporarily the can ends in their movement along the runway, the runway being open on one side adjacent said mechanism whereby the face of at least one can end is entirely exposed, and means located where the can end is so arrested and automatically operative where the runway is open for applying

a coating of lacquer or other liquid to the exposed face of the can end while the can end is being prevented from movement along the runway, said means including a spray nozzle connected to a source of supply and an intermittently operated valve in connection with the supply and adapted to turn on and cut off the supply of liquid to the nozzle.

6. An apparatus of the class described, comprising, in combination: an inclined runway down which can ends or similar articles are adapted to move under the influence of gravity while in a vertical position, a member movable into and out of the path of the can ends and adapted to arrest their movement along the runway, and lacquer-spraying devices directed at and out of contact with the said can ends and located where the can ends are so arrested for applying a coating of lacquer to the can ends while the same are being stopped from movement, said runway having a portion of its bottom movable whereby to rotate the can ends while the same are being coated.

7. In an apparatus of the character described, in combination: an inclined runway down which can ends or similar articles are adapted to move in a vertical position under the influence of gravity, devices for applying a coating of lacquer of other liquid to the can ends while the same are prevented from movement down the runway, said runway being provided with a movable bottom consisting of an endless belt at one portion thereof and adapted to rotate the can ends while the same are being coated, mechanism for temporarily arresting a plurality of such can ends while resting on said belt opposite to the several coating devices, and a drying oven, said runway extending into and through the drying oven.

8. In a machine of the character described, in combination: coating means; and a runway for can ends, said runway having upper and lower members in vertical alinement, each member having a narrow channel wide enough to receive the edges of the can ends and arranged to leave substantially the entire faces of the can ends exposed, and whereby the can ends are held in a vertical position during their passage along the said runway, said coating means consisting of a spray nozzle at the side of the runway directed at the open space between said narrow channels, substantially as specified.

9. In a machine of the character described, in combination: a zigzag runway down which articles are adapted to pass under the influence of gravity; means for applying a coating of liquid material to articles during their passage along said runway, said means being located adjacent an upper portion of the runway; and an oven inclosing lower portions of said zigzag runway, whereby to economize on floor space occupied by the machine, substantially as specified.

10. In a machine of the character described, in combination: an inclined runway down which can ends are adapted to pass under the influence of gravity, said runway having a portion of the bottom thereof movable whereby to rotate the ends; automatically operated spraying and coating devices located adjacent the movable bottom portion of said runway; and automatically operated mechanism for stopping the can ends, temporarily, when in position over said movable bottom portion of the runway, substantially as specified.

11. In a machine for spraying and coating disk-like articles, in combination: an inclined runway down which the articles are adapted to pass by gravity edge to edge; means for intermittently arresting a series of said articles in position to be sprayed; a series of nozzles arranged to spray simultaneously the series of articles while they are so arrested; and an endless belt supporting and moving beneath the said articles, at the points where they are so arrested edge to edge, for rotating them.

CHARLES W. GRAHAM.

Witnesses:
W. D. FOSTER,
WALTER HENRY.