F. EBERHART.

AUTOMATIC CAN SPRAYING MACHINE.

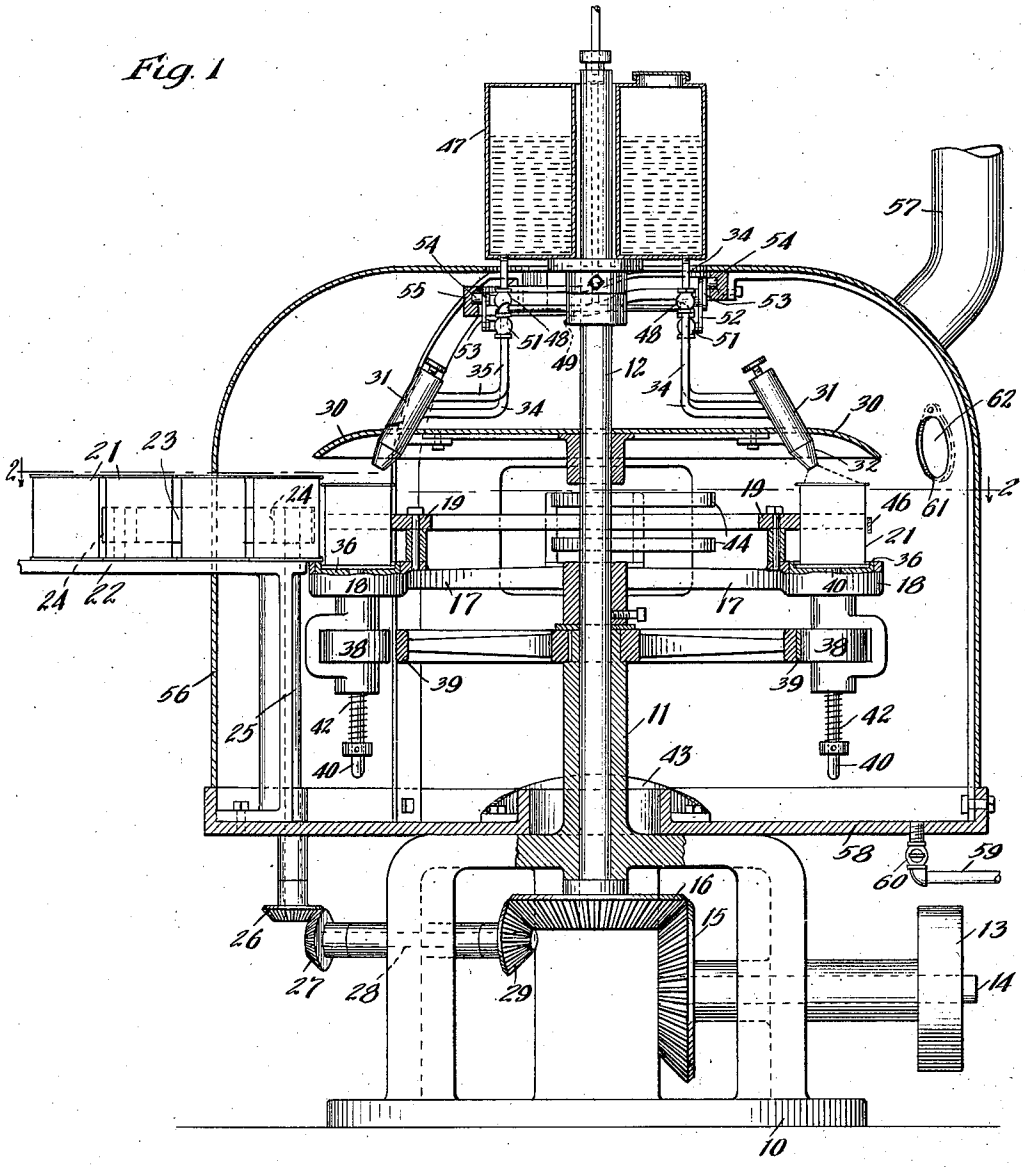
APPLICATION FILED MAR. 3, 1913.

1,185,889.

Patented June 6, 1916.

3 SHEETS—SHEET 1.

Fig. 1



Witnesses:

Wm. Geiger.

Pearl Abrams.

Inventor:

Felix Eberhart

By Munday, Evarts, Adcock & Clarke,

his Attys.

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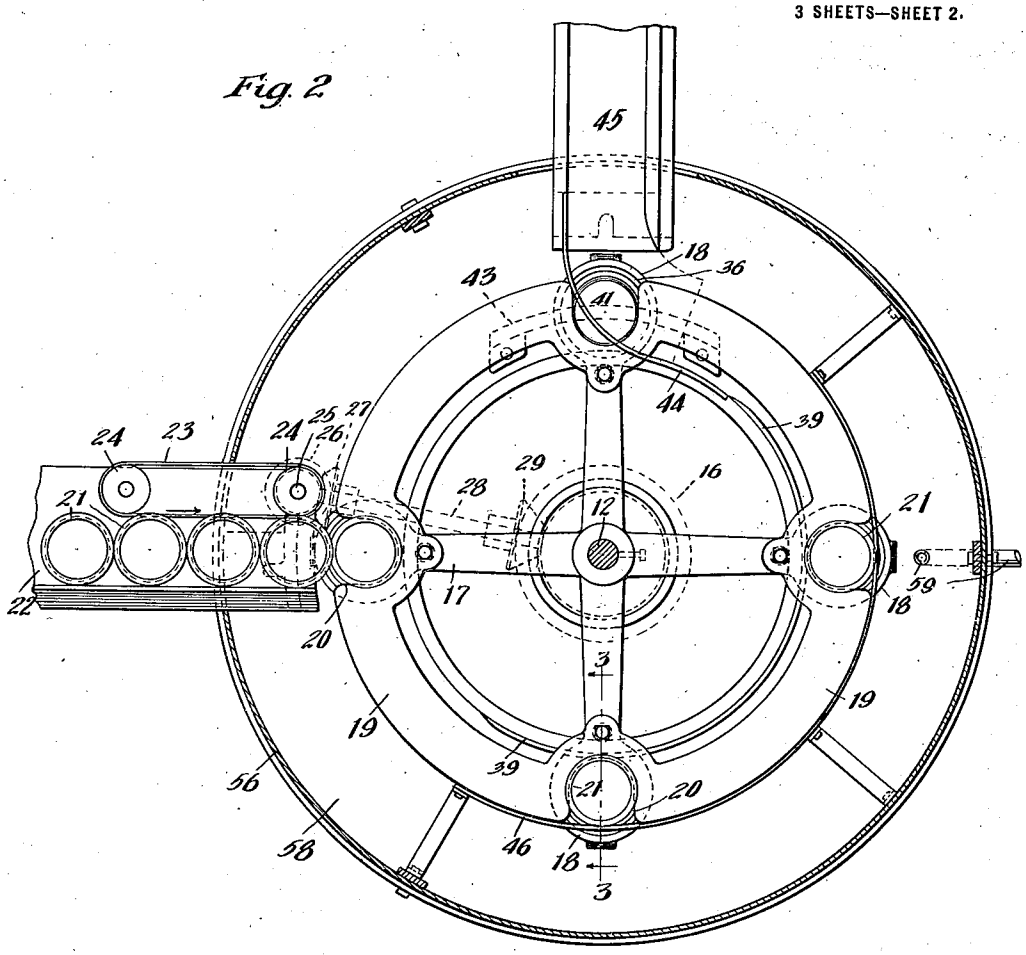
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3 SHEETS—SHEET 2.

Fig. 2



Witnesses:

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3 SHEETS—SHEET 3.

Fig. 3

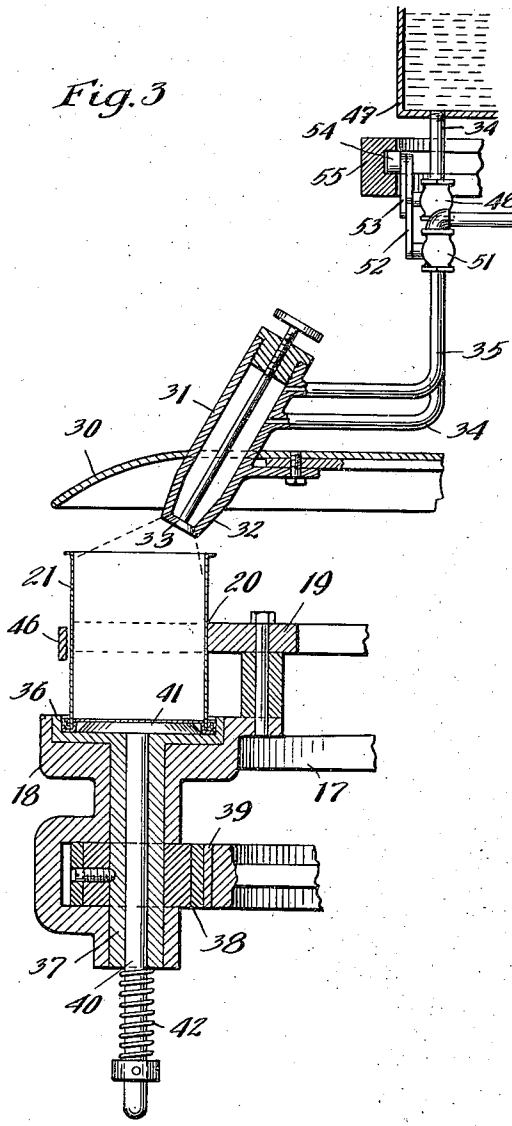
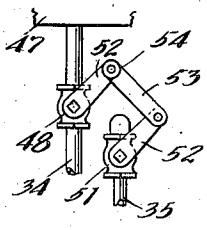


Fig. 4



Witnesses:

Wm. Geiger

Pearl Abrams.

Inventor

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UNITED STATES PATENT OFFICE.

FELIX EBERHART, OF NEWARK, NEW JERSEY, ASSIGNOR TO AMERICAN CAN COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

AUTOMATIC CAN-SPRAYING MACHINE.

1,185,889. Specification of Letters Patent. Patented June 6, 1916.

Application filed March 3, 1913. Serial No. 751,775.

To all whom it may concern:

Be it known that I, FELIX EBERHART, a citizen of the United States, residing in Newark, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Automatic Can-Spraying Machines, of which the following is a specification.

This invention relates to improvements in machines for coating open mouth cans or food preserving containers with lacquer or other suitable equivalent material.

One object of the invention is to provide a machine that applies a coating of lacquer or other equivalent material to the inside of the can or container, having large output and which is entirely automatic in its operation.

Another object of the invention is to provide a machine of the type above indicated, having all its parts designed and arranged to insure an equal and uniform application of the lacquer to the interior of the cans, and yet which at the same time will use a minimum amount of the lacquer necessary to accomplish the desired result.

A still further object of the invention is to provide a spraying or coating machine so designed that the application of the lacquer or other material is carried on within a hood or shell, whereby the escape of the volatile vapors from the lacquer or other compound to the room in which the machine is operating is prevented, and means provided for carrying off the volatile fumes.

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

In the drawing forming a part of this specification, Figure 1 is a vertical, sectional view showing a machine embodying my improvements. Fig. 2 is a horizontal, sectional view, taken substantially on the line 2—2 of Fig. 1. Fig. 3 is an enlarged detail sectional view of a portion of the mechanism, taken substantially on the line 3—3 of Fig. 2, and illustrating more particularly one of the spray nozzles and one of the chucks, and Fig. 4 is a detail view showing the mechanism for operating the valves controlling the supplies of lacquer and compressed air.

In the drawing, the machine as shown comprises a base 10, having an upwardly extended hollow hub 11, in which is rotatably mounted a vertical shaft 12, the latter being rotated from any suitable source, (not shown) by means of pulley 13, horizontal shaft 14 and bevel gears 15 and 16. Secured to the shaft 12 and rotatable therewith is a carrier 17 which is in the form of a four armed spider and is provided with four chuck housings 18, equally spaced around the periphery of the carrier. The carrier is also provided with an upper, annular member 19, having a plurality of pockets 20 disposed in alinement with the chuck housings 18, said pockets 20 being adapted to receive and properly center the cans 21 as the same are fed to the carrier from the platform 22 by means of an endless belt 23, suitably supported on pulleys 24, one of which is driven by means of a vertical shaft 25, having a bevel gear 26 at the bottom thereof, the latter meshing with a bevel gear 27 mounted on a short, horizontal shaft 28, having a bevel gear 29 at its inner end meshing with the bevel gear 16. Also secured to the shaft 12 and rotatable therewith is a shield disk 30, to which is secured a plurality of spraying nozzles 31, the number of spraying nozzles corresponding to the number of chucks on the carrier, and each spraying nozzle having a hollow, cylindrical portion 32, an adjustable valve 33 and connected to a lacquer supply pipe 34 and a pipe 35 for supplying air under pressure to the nozzle, whereby the lacquer is forced out past the valve in a jet or spray in the manner indicated by the dotted lines in Fig. 3 to thereby apply a coating of the lacquer or other equivalent material to the inner walls of the can.

Mounted in each of the chuck housings 18, and adapted to support and rotate the cans during the rotation of the carrier, is a chuck 36, to which is secured a small friction pulley 38 which, during a part of a complete rotation of the carrier, engages a friction band 39, whereby the cans are axially rotated during a part only of their movement while on the carrier. As more clearly shown in Fig. 2, the friction band 39 extends for approximately only through an arc of 180 degrees. Slidably mounted within each of the spindles 37 is a stem 40, having an ejector plate 41 at the top thereof, said stem 40 being normally held down by means of a spring 42 in a well known manner. The stems 40 are raised during a portion of the travel of the carrier by means of a station-

ary cam track 43 (see Fig. 2), whereby the cans are lifted out of the chucks 36 and are adapted to be ejected from the conveyer by means of spring arms 44 onto a track or guide way 45, leading to a baking oven. A suitable guard rail 46 is provided for retaining the cans or other form of container within the pockets 20 while the same are being rotated.

The point, in the rotation of the can carrier and the connected parts, where the cans to be sprayed are placed on the carrier I term the can feeding or receiving station, and the point where the sprayed cans are removed from the carrier I term the can ejecting station.

Mounted above the spray nozzles and secured to the shaft 12 and rotatable therewith is an annular tank 47, adapted to contain the lacquer or other equivalent material for coating the interiors of the cans, said tank 47 being in communication with each of the spray nozzles 31 by means of the pipes 34, each pipe 34 having included therein a valve 48 operated as hereinafter described. Each of the air pipes 35 communicates with a radial passage formed in the upper portion of the shaft 12, all the radial passageways 49 in turn communicating with an axial bore 50 through which the compressed air is supplied from any suitable source (not shown). Each air pipe 34 has included therein a valve 51, the valves 51 and 48 for each spray nozzle 31 being operated simultaneously by means of lever arms 52 connected by means of a link 53, the latter having a projecting roller 54 engaging in a grooved stationary cam track 55, the cam being so arranged that the compressed air and lacquer are admitted to the spray nozzles only while the chucks 36 are being rotated.

The carrier and spraying devices are all preferably inclosed by means of a hood or shell 56, the latter being provided with suitable openings for permitting the entrance and removal of the cans, and having also an outlet pipe 57 in which may be placed an exhaust fan or other suction device to thereby draw out the volatile vapors or fumes from the lacquer. At the bottom of the hood or shell 56 is formed a drip pan 58 adapted to catch all the heavier parts of the lacquer which fall to the bottom of the machine, the drippings so caught being adapted to be drawn off through a pipe 59, having a controlling valve 60 therein. The hood 56 is also provided with a plurality of holes 61, having pivoted covers 62 thereover, in order to facilitate inspection of the machine while in operation.

Although I have herein shown and described one form of machine embodying my improvements, yet it will be understood that various changes and modifications may be made in the details of construction and arrangement of parts without departing from the spirit of the invention, and all such changes and modifications are contemplated as come within the scope of the claims appended hereto.

I claim:—

1. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: means for supporting and carrying a container in an upright position; and devices for applying a thin coating of fluid material over the internal surfaces of said container while the same is being conveyed; said coating applying devices having actuating means whereby they are carried in parallelism with the can carrier during the entire course of the latter; substantially as specified.

2. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: means, rotatable about a vertical axis, for supporting and conveying a container in an upright position; and devices for applying a thin coating of a fluid material over the internal surfaces of the container while being conveyed, said coating applying devices being maintained constantly in coöperative relation with the cans while the latter are on the can conveying means; substantially as specified.

3. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: means for supporting and conveying a container in an upright position; and devices for applying a thin coating of a fluid material over the internal surfaces of said container while being conveyed, said coating devices being movable constantly in unison and coöperative relation with the supporting and conveying means from the can feeding station to the can ejecting station; substantially as specified.

4. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a central vertical shaft; a can carrier fixed thereon and provided with can holders; spraying devices connected with and carried by the said shaft, constantly in coöperative relation with said holders; means for supplying coating material to said spraying devices; and means for actuating said shaft; substantially as specified.

5. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a central vertical shaft; a can carrier fixed thereon and provided with can holders;

spraying devices connected with and carried by the said shaft, constantly in coöperative relation with said holders; means for supplying coating material to said spraying devices; devices whereby the can holders are rotated on vertical axes; and means for actuating said shaft; substantially as set forth.

6. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of the can or other form of container comprising, in combination: a rotatable carrier, a chuck bodily movable with said carrier and adapted to rotate a container; a spraying device having means whereby it is constantly carried in coöperative relation with said carrier, and arranged to thinly coat the internal surface with a fluid material; and means for rotating the carrier chuck while the carrier is rotating; substantially as specified.

7. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a rotary hood; a rotary carrier located within said hood and adapted to carry a container therewith; and devices carried beneath said rotary hood for applying a thin coating of fluid material to the interior of the container while the same is being conveyed; substantially as specified.

8. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a hood; a rotary carrier located within said hood and adapted to carry a container therewith; and devices, rotatable in unison and coöperative relation with said carrier constantly from the can feeding station to the can ejecting station, for applying a thin coating of a fluid material to the interior of a container while being conveyed; substantially as specified.

9. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a hood; a rotary conveyer located within said hood and adapted to carry a container therewith; devices for applying a thin coating of fluid material to the interior of the container while being conveyed, said devices being rotatable in unison and coöperative relation with the carrier constantly from the can feeding station to the can ejecting station; and mechanism for rotating the container and the coating devices relatively to each other during the movement of the carrier; substantially as specified.

10. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier rotatable about a vertical axis and having a plurality of container holding chucks; means rotating constantly in cooperative relation with said carrier from the can receiving station to the can ejecting station for applying a thin coating of a fluid material to the internal surfaces of containers while on said carrier; and mechanism for rotating the chucks while moving with said carrier; substantially as specified.

11. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier rotatable about a vertical axis and having a plurality of container holding chucks thereon; means rotating constantly in coöperative relation with said carrier from the can receiving station to the can ejecting station, for applying a thin coating of a fluid material to the internal surfaces of containers while on said carrier; and mechanism for rotating the chucks intermittently during a part only of the rotation of the carrier; substantially as specified.

12. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier rotatable about a vertical axis and having a plurality of holders bodily movable therewith; a plurality of coating devices movable in unison with said carrier, the number of said devices corresponding to the number of holders; mechanism for rotating the holders and coating devices relatively to each other during the rotation of the carrier; a tank for containing a supply of lacquer; and means, automatically operated, for controlling the supply of the lacquer to said coating devices, substantially as specified.

13. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier rotatable about a vertical axis and having a plurality of holders bodily movable therewith; a plurality of coating devices movable in unison with the carrier and corresponding in number to the number of said holders; mechanism for rotating the holders and coating devices relatively to each other during a part only of the rotation of said carrier; a supply tank for containing lacquer; and means, automatically operated, for permitting the supply of the lacquer to the coating devices while the coating devices and holders are being rotated relatively to each other, substantially as specified.

14. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier

rotatable about a vertical axis and having a plurality of holders bodily movable therewith; a plurality of coating devices movable in unison with said carrier, the number of said devices corresponding to the number of holders; mechanism for rotating the holders and coating devices relatively to each other during the rotation of the carrier; a tank for containing a supply of lacquer; means, automatically operated, for controlling the supply of the lacquer to said coating devices; and a hood inclosing said carrier and coating devices to thereby prevent escape of volatile fumes from the lacquer, substantially as specified.

15. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier rotatable about a vertical axis and having a plurality of holders bodily movable therewith; a plurality of coating devices movable in unison with said carrier, the number of said devices corresponding to the number of holders; mechanism for rotating the holders and coating devices relatively to each other during the rotation of the carrier; a tank for containing a supply of lacquer; means, automatically operated, for controlling the supply of the lacquer to said coating devices; means for feeding containers to the holders of the carrier successively; and means for ejecting the containers after the same have been coated, substantially as specified.

16. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a rotatable carrier having a plurality of holders thereon and bodily movable therewith; a plurality of coating devices corresponding in number to the number of said holders and movable in unison with the carrier, mechanism for rotating the holders during a part only of a complete rotation of the carrier; and means for supplying lacquer to said coating devices while the holders are being rotated, substantially as specified.

17. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier rotatable about a vertical axis and provided with a plurality of chucks bodily movable therewith; a plurality of coating devices corresponding in number to the number of said chucks and movable in unison with the carrier; each of said coating devices having a lacquer supply and a supply of compressed air; mechanism for rotating the chucks; and means automatically operated, for controlling the supply of lacquer and compressed air to each of the coating devices, substantially as specified.

18. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier rotatable about a vertical axis and provided with a plurality of chucks bodily movable therewith; a plurality of coating devices corresponding in number to the number of said chucks and movable in unison with the carrier, each of said coating devices having a lacquer supply and a supply of compressed air; and mechanism for rotating the chucks, substantially as specified.

19. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier having a plurality of rotatable can holder chucks thereon and bodily movable therewith; a plurality of spraying nozzles movable in unison with said carrier, the number of said spraying nozzles corresponding to the number of chucks, the spraying nozzles being located above the chucks; means for rotating the chucks while the same are moving bodily with the carrier; and automatically operated means for controlling the supply of lacquer to the nozzles, substantially as specified.

20. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier rotatable about a vertical axis and provided with a plurality of rotatable can holding chucks; a plurality of spraying devices movable in unison with said carrier and located above the same; a hood inclosing the carrier and spraying devices; means for feeding cans to the chucks on the carrier; and mechanism for ejecting the cans from the carrier and out of the hood, after the cans have been sprayed, substantially as specified.

21. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a carrier constantly rotatable about a vertical axis and having a plurality of rotatable can holding chucks bodily movable therewith; a plurality of spraying nozzles located above said carrier and movable in unison and cooperative relation therewith from the can receiving station to the can ejecting station; means for rotating the chucks during a part only of a complete rotation of the carrier; automatically operated means for controlling the supply of lacquer to said spraying nozzles; and a hood inclosing said carrier and spraying nozzles; substantially as specified.

22. An apparatus for applying a coating of lacquer or other equivalent material to the interior walls of a can or other form of container comprising, in combination: a car-

rier rotatable about a vertical axis and having a plurality of independently rotatable chucks bodily movable therewith; a plurality of spray nozzles located above said carrier, each spray nozzle being provided with supply pipes for lacquer and compressed air; means for rotating said chucks while the carrier is rotating; a tank for containing the supply of lacquer, said tank and spray nozzles being rotatable in unison with the carrier in and during complete circular rotations; and means including a stationary cam track, for automatically controlling the supply of lacquer and compressed air to the spray nozzles; substantially as specified.

23. An apparatus of the character described comprising, in combination: a carrier rotatable about a vertical axis having a plurality of independently and axially rotatable chucks thereon; a plurality of spraying devices rotatable in unison with the carrier, the number of said spraying devices corresponding to the number of said chucks; a shield disposed above the carrier and on which the spraying devices are supported; means for supplying lacquer or equivalent material and compressed air to the spraying devices; and means for rotating the chucks during a part only of a complete rotation of the carrier, substantially as specified.

24. An apparatus of the character described comprising, in combination: a rotatable carrier having a plurality of independently and axially rotatable chucks thereon; a plurality of spraying devices rotatable in unison with the carrier; means for supplying lacquer or equivalent material and compressed air to the spraying devices; mechanism automatically controlling the supply of lacquer and compressed air; a hood within which said carrier and spraying devices are movable; a conveyer for feeding articles to the carrier; and means for ejecting the articles after the same have been sprayed, substantially as specified.

25. An apparatus of the character described comprising, in combination: a rotatable carrier having a plurality of independently and axially rotatable chucks thereon; mechanism for rotating said chucks axially during a part only of a complete rotation of the carrier; a shield disposed above the carrier and movable in unison therewith; a plurality of spraying devices mounted on said shield, the number of said spraying devices corresponding to the number of chucks; and means, automatically operated, for controlling the supply of lacquer to said spraying devices, substantially as specified.

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