C. B. HANTHORN.

LACQUERING MACHINE FOR CANS.

APPLICATION FILED JUNE 9, 1908.

919,858.

Patented Apr. 27, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

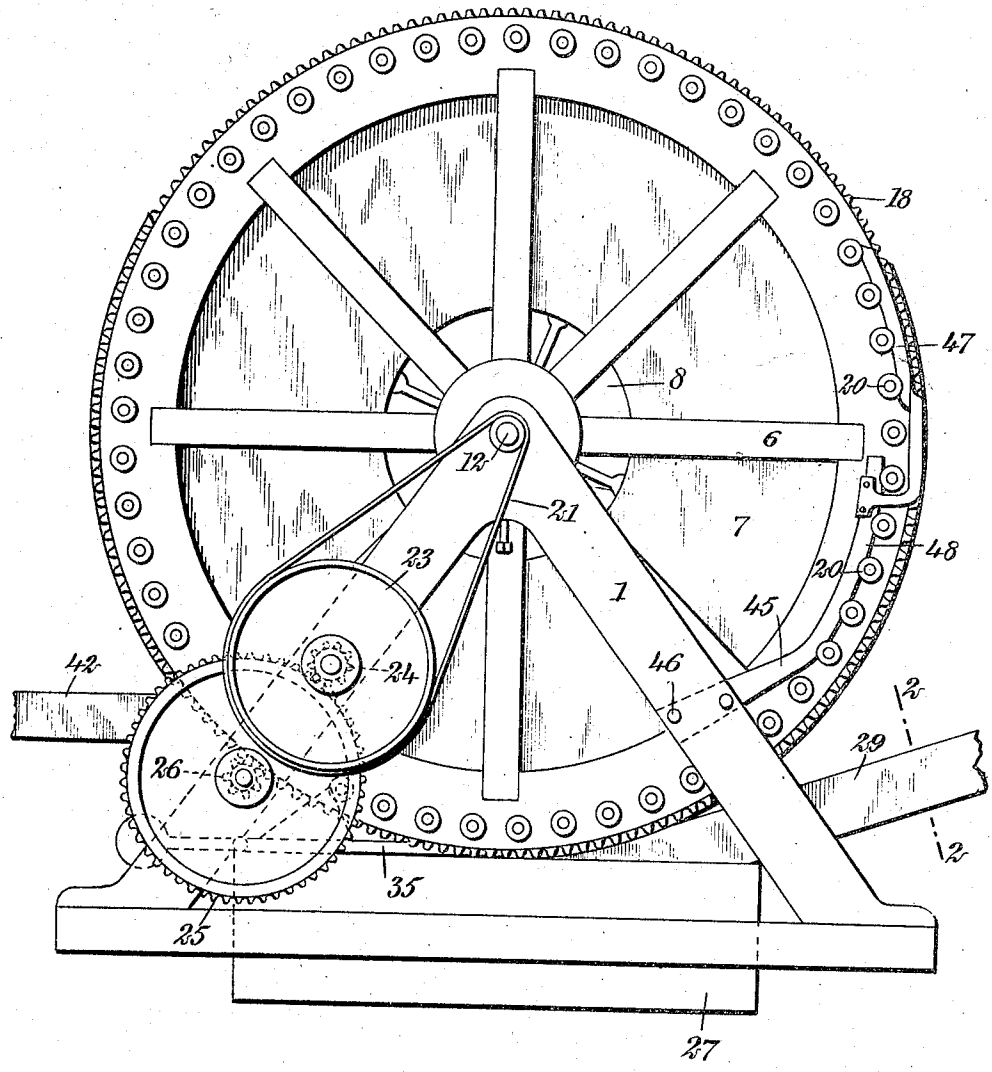
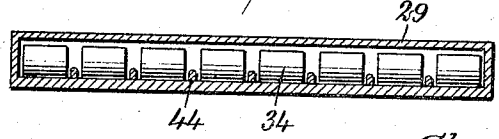


Fig. 2.



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Fig. 3.

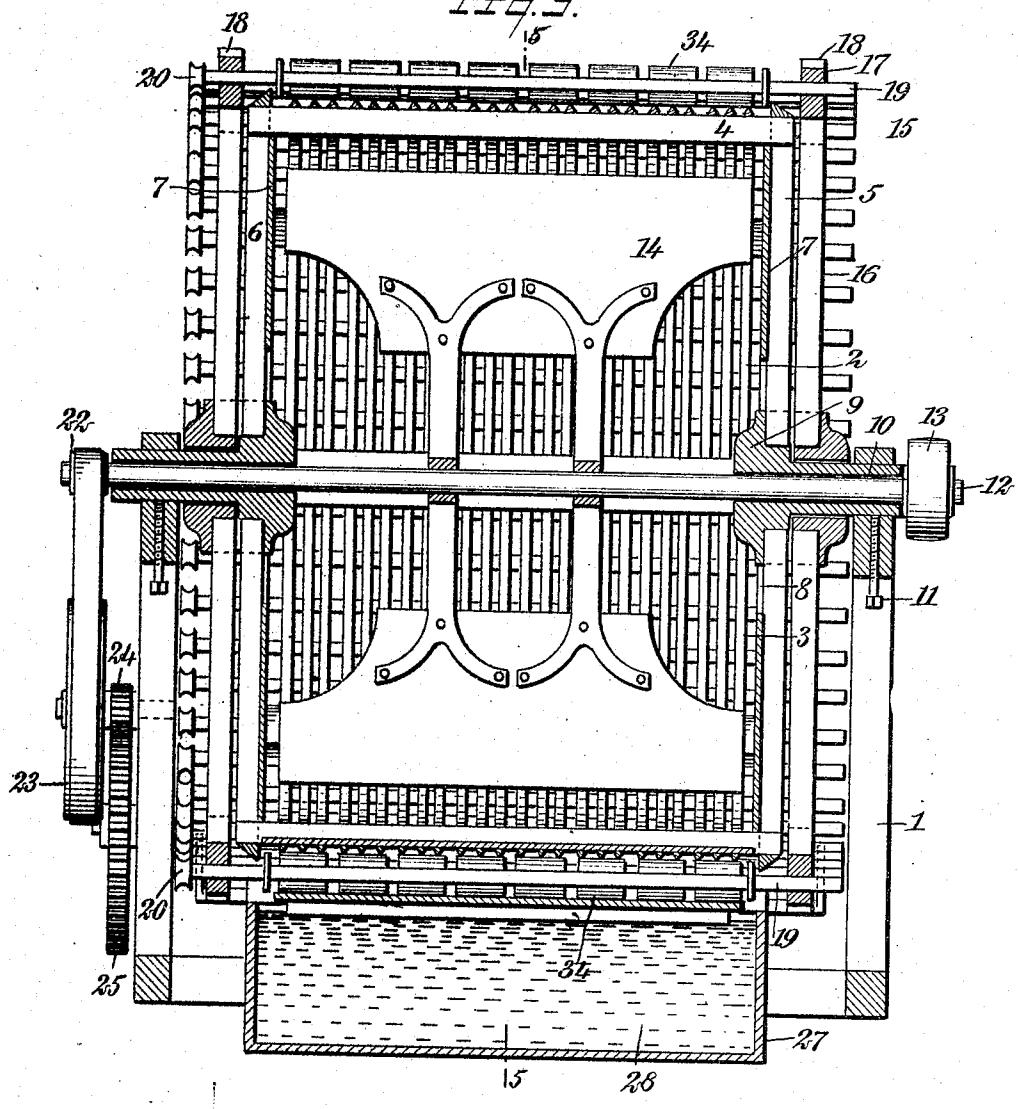
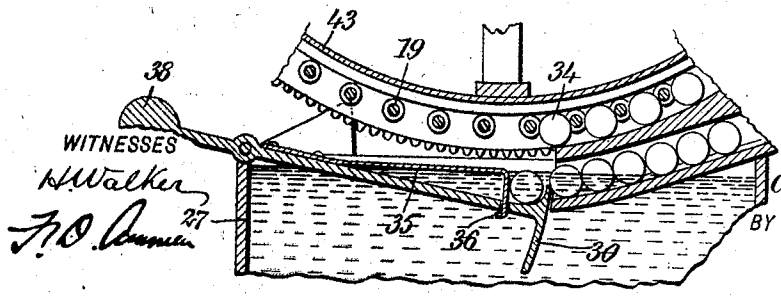


Fig. 4.



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Fig. 5.

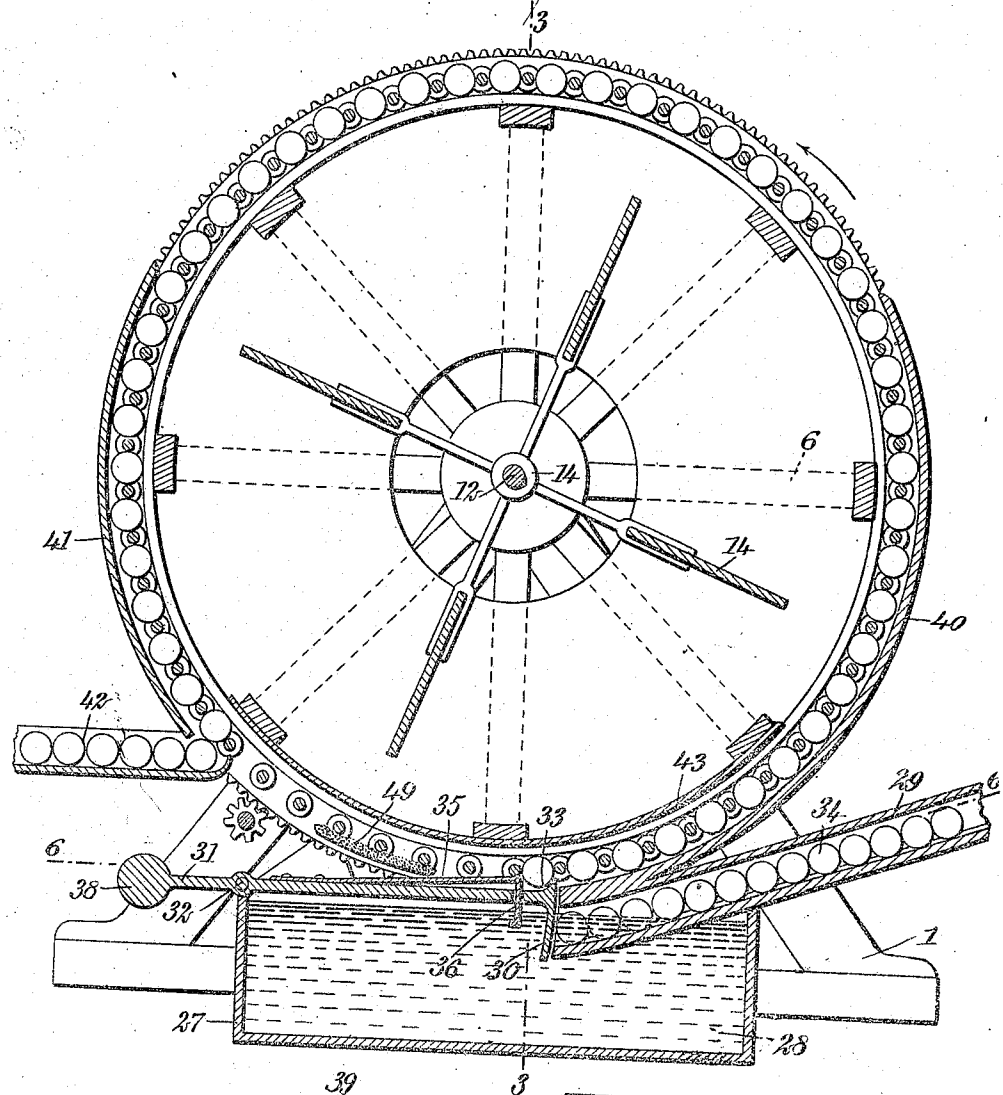
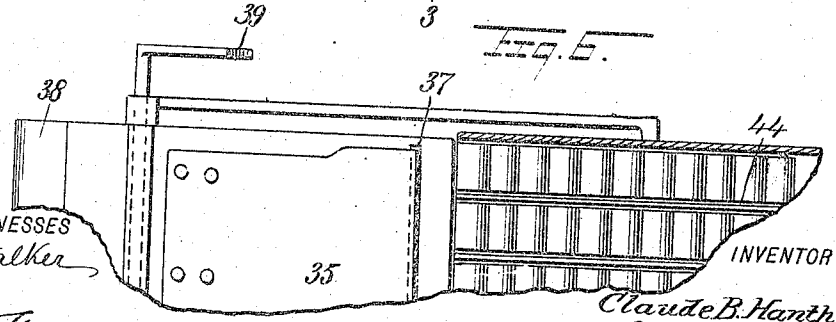


Fig. 6.



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LACQUERING-MACHINE FOR CANS.

No. 919,858. Specification of Letters Patent. Patented April 27, 1909.

Application filed June 9, 1908. Serial No. 437,500.

To all whom it may concern:

Be it known that I, CLAUDE B. HANTHORN, a citizen of the United States, and a resident of Portland, in the county of Multnomah and State of Oregon, have invented a new and Improved Lacquering-Machine for Cans, of which the following is a full, clear, and exact description.

This invention relates to a machine for the purpose of lacquering cans.

The object of the invention is to produce a machine which will operate automatically to receive cans which are fed to it, in such a way that the cans will be dipped in a bath of lacquer and dried before delivery from the machine.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is an end elevation of a machine constructed according to my invention; Fig. 2 is a cross section through the feed chute, taken on the line 2—2 of Fig. 1; Fig. 3 is a vertical section taken on the line 3—3 of Fig. 5; Fig. 4 is a vertical section upon an enlarged scale, taken at the point where the cans are dipped in the bath; Fig. 5 is a cross section through the machine, taken on the line 5—5 of Fig. 3; and Fig. 6 is a view showing a part of the dipping plate in plan, and showing a portion of the feed chute in cross section on the line 6—6 of Fig. 5 and indicating the manner in which the cans are fed to the machine.

Referring more particularly to the parts, and especially to Figs. 1, 3 and 5, 1 represents the frame of the machine. This frame supports a fixed barrel 2, the body of which is formed of circumferentially disposed slats or ribs 3 disposed slightly apart as indicated. These slats or ribs are attached to longitudinal rails or stringers 4 which connect fixed heads 5. These heads 5 are formed of radial spokes 6 as shown in Fig. 3, and on the inner sides of these heads circular plates 7 are attached which form the heads of the barrel, as will be readily understood. These plates 7 are formed with central openings 8 for a purpose which will be more fully described hereinafter. The centers of the spiders or heads 5 are formed with hubs 9 having reduced necks 10 which are rigidly attached in the frame 1 by set screws 11 as indicated in Fig. 3. These hubs and necks are tubular as shown, so as to support a rotatable fan shaft 12. This shaft is provided with a belt pulley 13 by means of which it is rotated from an engine, and on the body of this shaft within the barrel, I provide a fan 14 the rotation of which will draw air in through the openings 8 in the heads, and force the same outwardly between the slats 3.

On the tubular necks 10 there is rotatably mounted a drum 15, which drum is formed of spider heads 16 the spokes of which are attached to rims 17. The outer edges of these rims are formed into gear wheels by means of the teeth 18 as shown in Fig. 1, and these rims project beyond the slats 3 and receive a plurality of bars 19 which are disposed slightly apart and constitute can holders, for they receive the cans between them as indicated. These bars 19 are extended at the left, as indicated in Fig 3, and are provided with rollers 20 which have a function in rotating the cans after they have been dipped. The manner in which they operate to produce this result will be described more fully hereinafter. The drum 15 is rotated continuously by means of a belt 21 which passes from a small belt pulley 22 on the end of the fan shaft around a larger belt pulley 23. This pulley 23 carries a rigid pinion 24 which meshes with a large gear wheel 25, and this gear wheel 25 has a shaft which is provided with pinions 26 meshing with the aforesaid gear wheels formed of the teeth 18. In this way, when the fan shaft is driven, the drum will be rotated at a reduced speed.

Under the drum and barrel there is provided a tank 27 which holds a bath 28 of lacquer. Extending into the upper portion of this tank from the right, as indicated in Fig. 5, there is provided a feed chute 29, and the lower end of this feed chute is normally closed by a downwardly projecting gate 30 which is formed on the forward end of a dipping plate 31, the said dipping plate being mounted at the edge of the tank to rock upon a pivot 32. On its upper side the free edge of the dipping plate near the chute, is provided with an upwardly projecting rib 33

which facilitates the operation of the dipping plate in taking the cans 34 one by one from the feed chute.

On its upper side the dipping plate is provided with a spring plate 35 which is attached rigidly to the upper side of the plate near its pivot 32. The other edge of this spring plate 35 tends to hold itself slightly elevated from the dipping plate, and it is formed with a downwardly projecting wing 36 which extends through a slot 37 formed in the dipping plate as shown. The wing 36 lies a short distance removed from the rib or lip 33, so that a pocket is formed at this point which is adapted to receive a can.

The dipping plate 31 is extended rearwardly as shown, and formed with a counterweight in the form of a transverse bar 38 which tends to hold the plate in the elevated position shown in Fig. 5.

The pivot 32 of the dipping plate is in the form of a shaft which projects at the sides, and is provided with triangular shaped cam plates 39 which project upwardly so that they may come into the path of the projecting extremities of the rods 19. As one of these rods strikes the plates 39, it depresses the dipping plate to the lower edge of the chute 29 so that the foremost can advances into the pocket between the rib or lip 33 and the spring plate 35. As soon as this rod has passed the plates 39, the weight 38 operates to raise the can to the lower side of the barrel, where it places it between two adjacent rods. The can will then advance with the rotating drum.

In order to retain the cans upon the drum when fed to it as described, the lower portion and side of the drum is covered by a curved shield or guard plate 40 as indicated in Fig. 5. As the cans are passing over the upper side of the barrel, they are left uncovered, as they will then hold themselves on the barrel by gravity. On the opposite side of the drum where the cans are descending, a similar guard plate or shield 41 is provided, which retains the cans and enables them to be delivered to a delivery chute 42 as indicated in Fig. 5.

In order to shield the lacquer bath from the draft created by the fan, the under side of the barrel is provided with a curved screen 43 which covers the tank and protects it as suggested. In this way the loss of lacquer by evaporation is reduced.

The drum is made of sufficient length to receive a number of cans placed end to end, as indicated in Fig. 3. In the illustration I have represented eight rows of cans. In order to separate the cans into rows as shown, in feeding them to the tank, the lower side of the chute 29 is formed with longitudinally disposed ribs 44, as indicated in Fig. 6.

It will be observed that in the act of taking the can, the vertical wing 36 of the spring plate operates as a stop for the can, which passes onto the dipping plate.

The level of the bath is kept sufficiently high so that when the can passes onto the dipping plate as indicated in Fig. 4, the can will be completely immersed in the bath. The fact that the plate 35 is resilient, enables the plate to withdraw downwardly when struck by the rods 19 as they advance.

After the cans have been fed to the drum from the feed chute, they are rotated first in one direction and then in the other, by means of a turning bracket 45 which is attached to the frame at 46. This bracket has two curved segments 47 and 48, which are disposed respectively on opposite sides of the rollers 20. The faces of these segments lie in the paths of the faces of the rollers, so that they will rotate the rods 19 as they pass the bracket. In this way, the cans which have been lacquered are rotated first in one direction and then in the other. This rotation makes the coating of lacquer more uniform on the can body, and also assists the drying operation. In this connection, it should be understood that the draft created by the fan operates to dry the lacquer as the cans pass from the feed chute to the delivery chute.

Immediately over the dipping plate I provide a wiper 49, the upper face of which is formed of absorbent material, and this face is adapted to be struck by the rods 19 of the drum as it rotates, in order to wipe off the superfluous lacquer carried thereby. This wiper drains into the tank 27.

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

1. In a machine of the class described, in combination, a rotatable drum, means for dipping cans and feeding the same to said drum, a fan within said drum, means for driving said fan to develop a draft against said cans carried by said drum, and means for rotating said cans on said drum to expose all sides thereof to said draft.

2. In a machine of the class described, in combination, a rotatable drum having a plurality of longitudinally disposed rods thereupon, means for dipping cans and feeding the same into the spaces between said rods, guard plates adapted to retain said cans on the sides of said drum, a fan within said drum, and means for rotating said fan to develop a draft against said cans.

3. In a machine of the class described, in combination, a tank containing a bath, a chute extending into said tank, a rotatable drum, automatic means actuated by the rotation of said drum for dipping and advancing cans from said chute to said drum, and means for drying the cans on said drum.

4. In a machine of the class described, in

combination, a rotatable drum, a tank therebelow, a feed chute extending into said tank, a dipping plate adapted to take cans from said chute, means for actuating said dipping plate from said drum, and means for drying the cans on said drum.

5. In a machine of the class described, in combination, a rotatable drum, a tank therebelow having a dipping bath, a chute extending into said tank, a dipping plate normally forming a gate for said chute and adapted to take cans from said chute, means for actuating said dipping plate from said drum, a fan within said drum, and means for rotating said fan to develop a draft against the faces of said cans.

6. A rotatable drum having openings through the cylindrical side thereof, means for dipping cans and feeding the same to said drum, means for retaining said cans on the cylindrical side of said drum, and means for forcing a drying draft through said cans while held upon said drum.

7. In a machine of the class described, in combination, a rotatable drum having a body formed of circumferential slats, means for dipping and feeding cans to said drum, means for retaining said cans on said slats, a fan within said drum, and means for rotating said fan to develop a draft against said cans.

8. In a machine of the class described, in combination, a rotatable drum, a tank disposed therebelow having a bath therein, a feed chute extending into said tank, a depressible dipping plate normally forming a gate for said chute, means for normally holding said plate in a position to close said chute, means for depressing said dipping plate actuated by the rotation of said drum whereby said cans will be advanced to said drum, and means for retaining said cans on said drum.

9. In a machine of the class described, in combination, a rotatable drum, a tank therebelow having a bath, a chute extending in said bath, a depressible dipping plate normally closing said chute, means for depressing said dipping plate to receive cans from said chute, means on said dipping plate for retaining said cans, means tending to return said dipping plate to feed the cans to said drum, and means for retaining said cans on said drum.

10. In a machine of the class described, in combination, a rotatable drum, a tank therebelow, a chute extending in said tank, a depressible dipping plate normally closing said chute, a resilient member on the upper side of said plate lying adjacent to the face of said drum and forming a stop for the cans received on said plate from said chute, and longitudinally extending retaining members carried by said drum adapted to hold the cans therebetween and engaging said resilient member carried by said plate.

11. In a machine of the class described, in combination, a rotatable drum having longitudinally disposed rods, a barrel disposed within said drum and having openings through the wall thereof, a fan within said barrel adapted to develop a draft against cans held thereupon, a tank below said barrel, means for feeding cans from said tank onto said drum, and means for excluding the draft created by said fan from said tank.

12. In a machine of the class described, in combination, a drum, a barrel rotatable thereabout and having a plurality of longitudinally disposed rods disposed apart to form spaces adapted to receive cans, a feed chute extending under said drum, and a feed plate adapted to take cans from said chute and present the same to said drum, said feed plate having a spring plate on the upper surface thereof forming a stop for the cans coming onto said plate from said chute, said spring plate being depressible and depressed by said rods in taking the cans from said feed plate.

13. In a machine of the class described, in combination, a rotatable drum, a tank therebelow, a feed chute extending into said tank, a dipping plate receiving cans from said feed chute and having a slot therein, and a spring plate on the upper side of said dipping plate having a vertical extension passing downwardly through said slot and forming a stop for the cans coming onto said dipping plate from said chute, said drum having longitudinally disposed rods forming spaces therebetween receiving the cans from said dipping plate, said spring plate being depressed by said rods in taking the cans from said dipping plate.

14. In a machine of the class described, in combination, a rotatable drum, a tank therebelow having a bath, a chute extending into said tank, a depressible dipping plate adapted to receive cans from said chute, a shaft constituting a pivot for said dipping plate and extending at the sides thereof, arms carried by said shaft, said drum having members adapted to engage said arms to depress said plate automatically, means tending to return said plate to feed the cans to said drum, and means for retaining the cans on the body of said drum as it rotates.

15. In a machine of the class described, in combination, a drum, means for dipping cans and advancing the same to said drum, means for rotating said cans on said drum, and means for rotating said drum.

16. In a machine of the class described, in combination, a drum having a plurality of longitudinally disposed rods, means for dipping cans and advancing the same into the spaces between said rods, means for rotating said drum, and means for rotating said rods to rotate said cans.

17. In a machine of the class described, in combination, a rotatable drum, a tank therebelow having a bath, means for dipping cans in said bath and advancing the same on said drum, rods on said drum retaining said cans and separating the same, and a wiper adjacent to said tank adapted to wipe said rods.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLAUDE ELDING HANTHORN.

Witnesses:

A. V. R. SNYDER.

S. C. SCHURICK.