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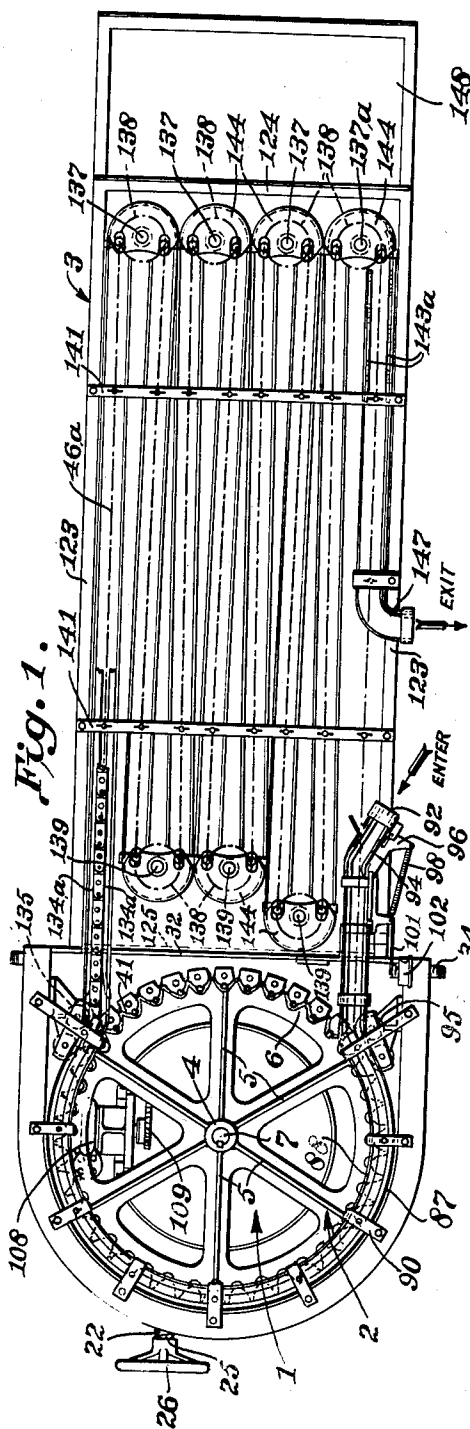
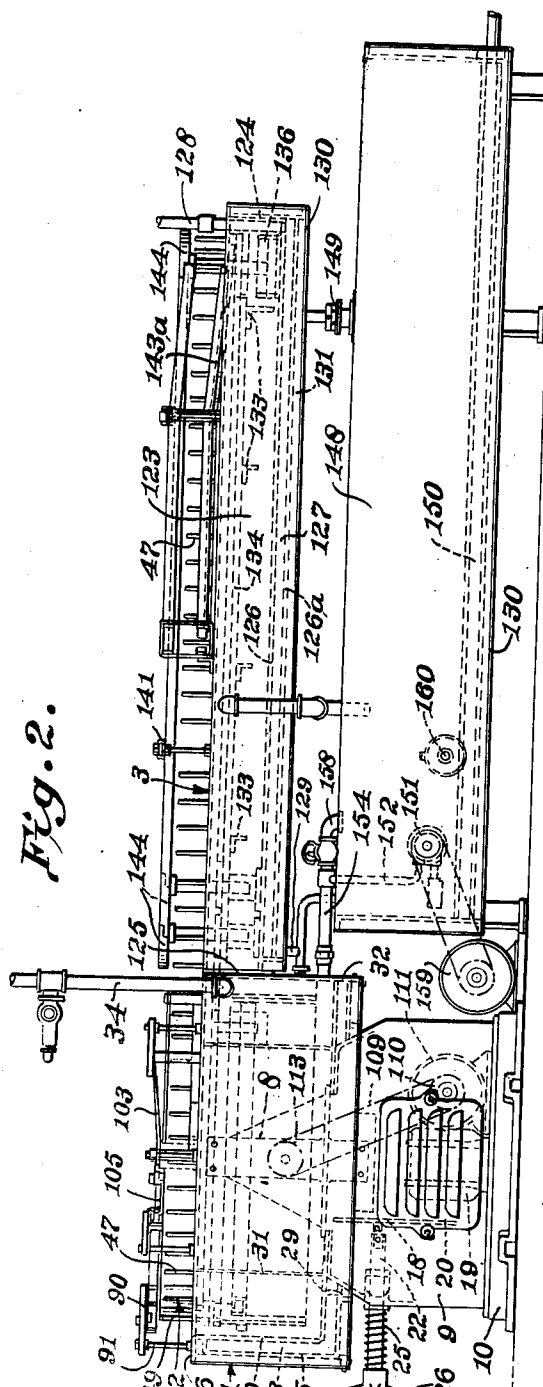
A. L. KRONQUEST

2,084,093

MACHINE FOR COATING CANS

Filed Dec. 30, 1935

11 Sheets-Sheet 1



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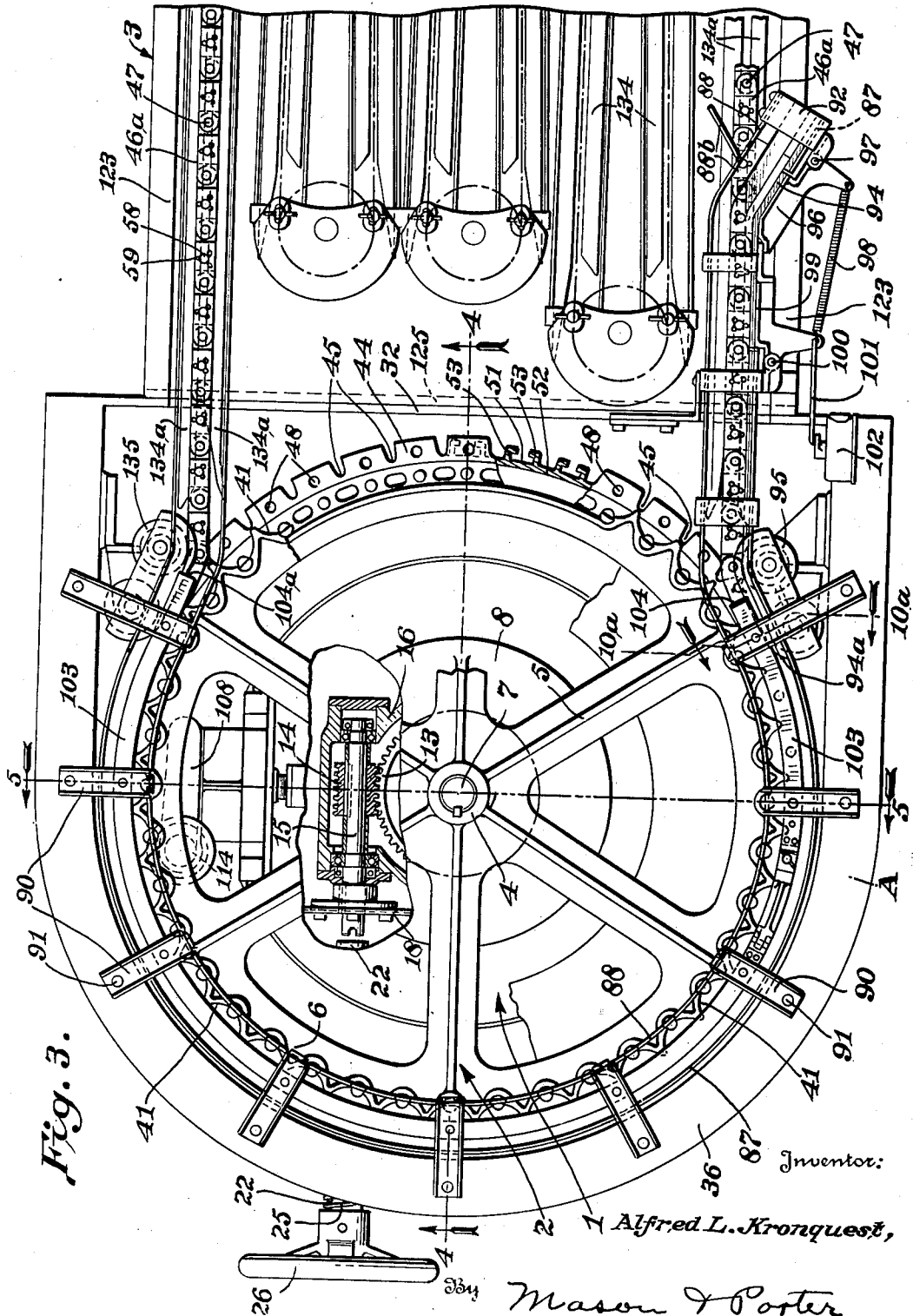
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MACHINE FOR COATING CANS

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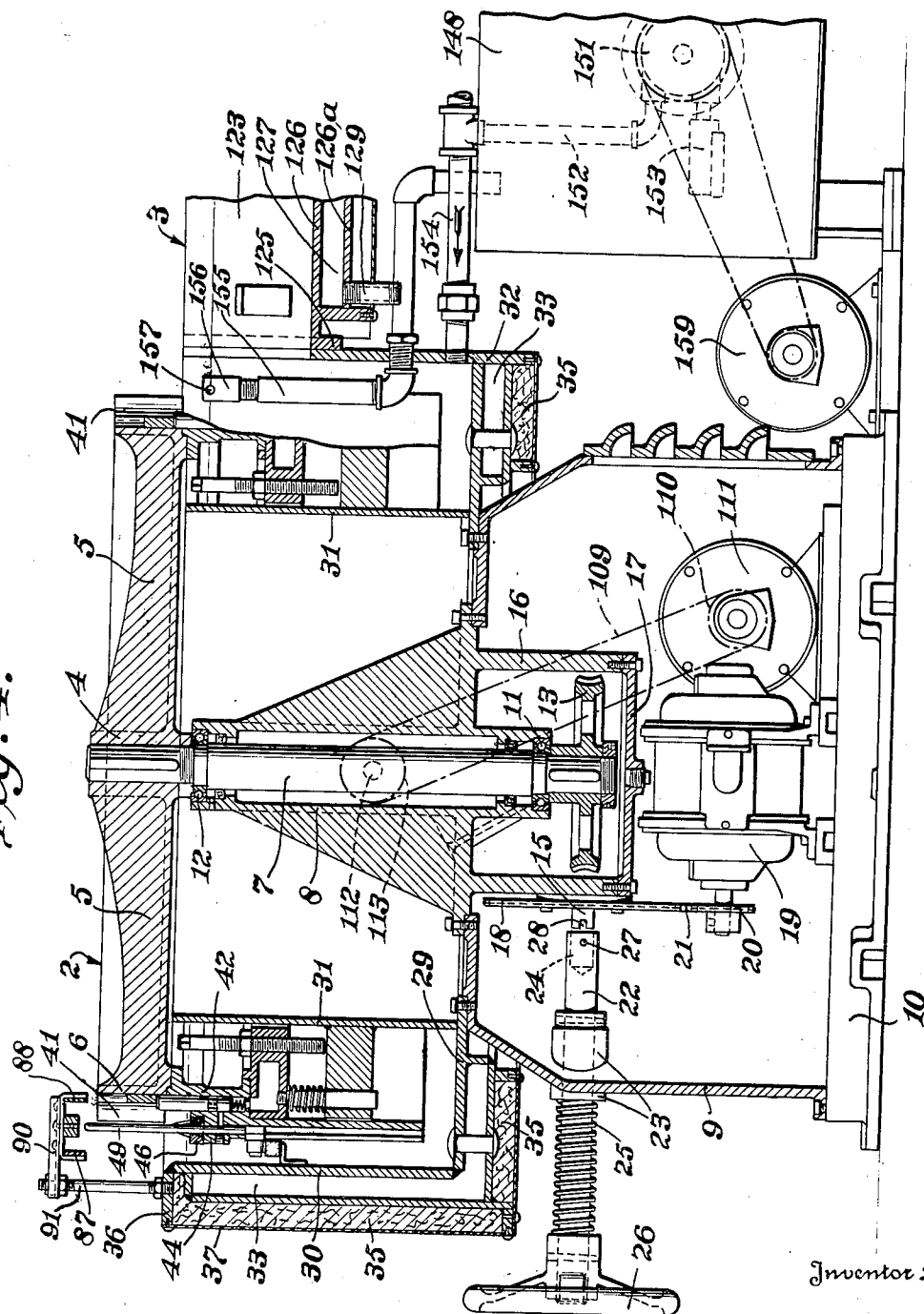
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Fig. 4.



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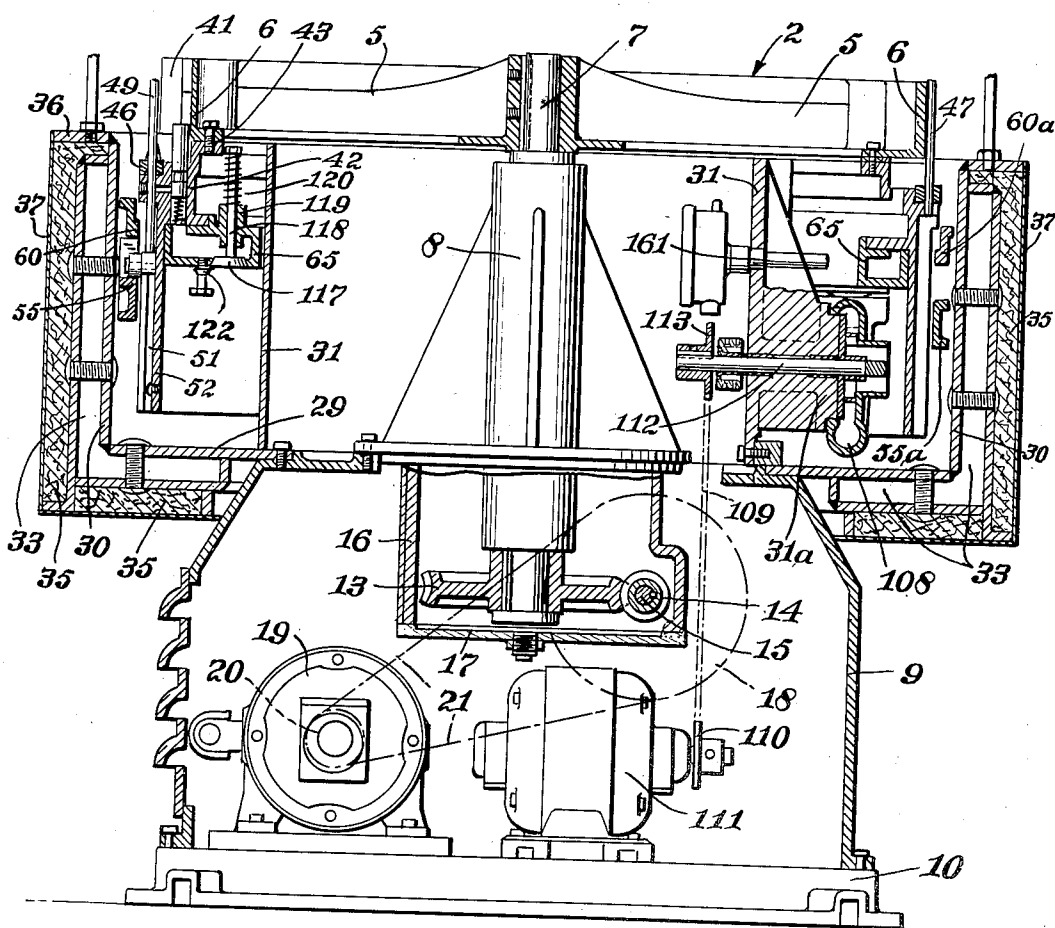
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Fig. 5.



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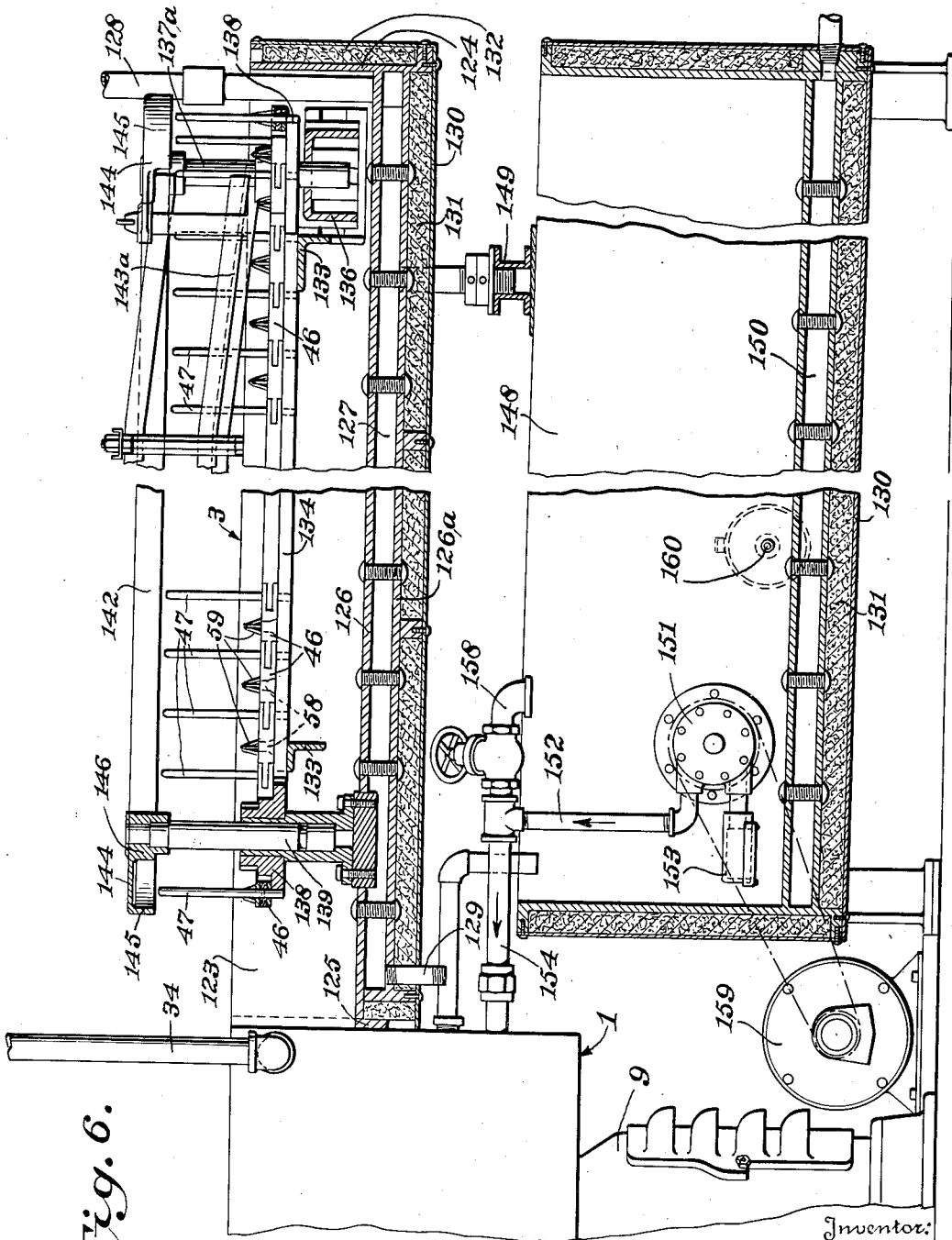


Fig. 6.

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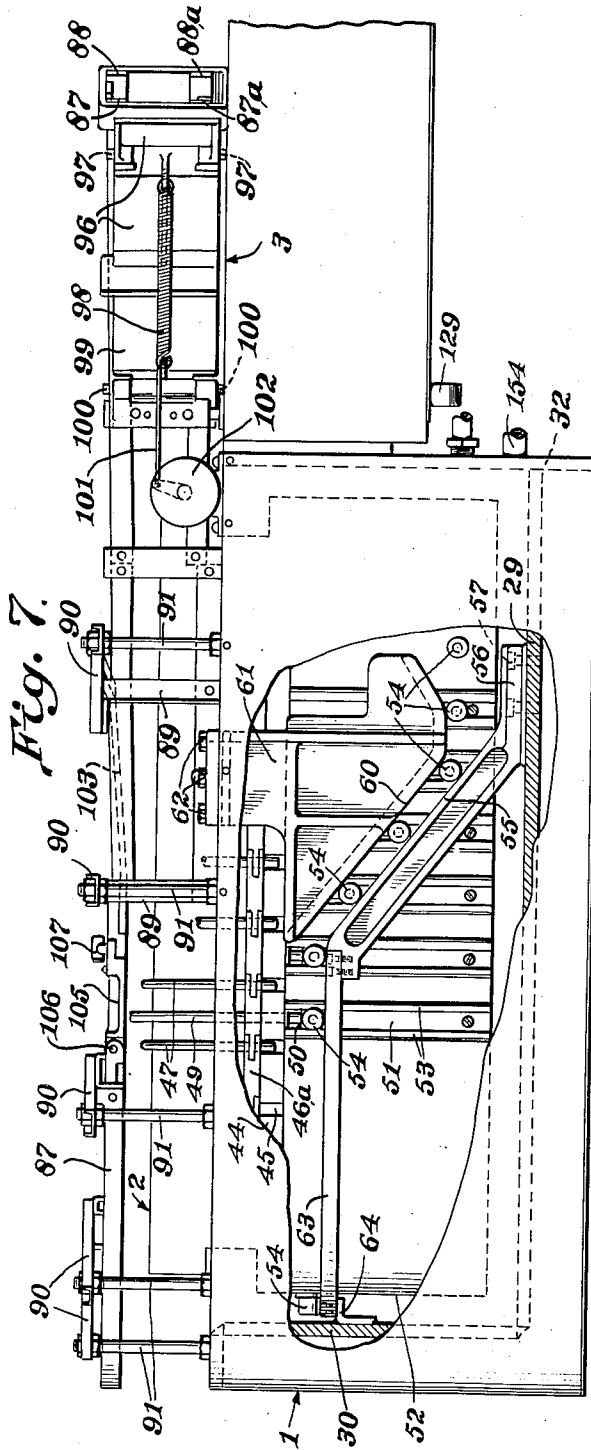
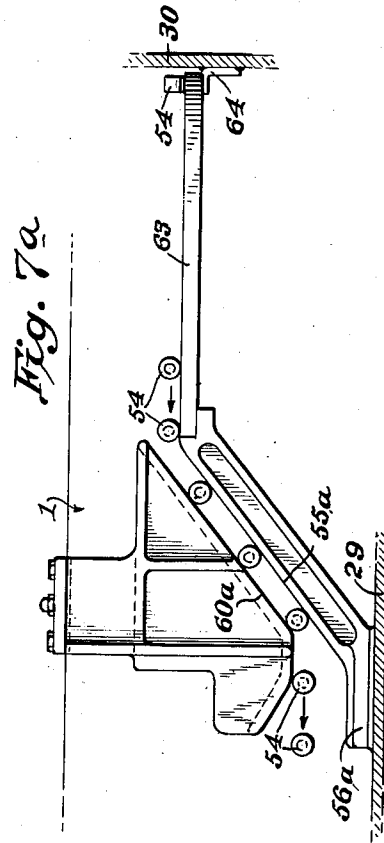
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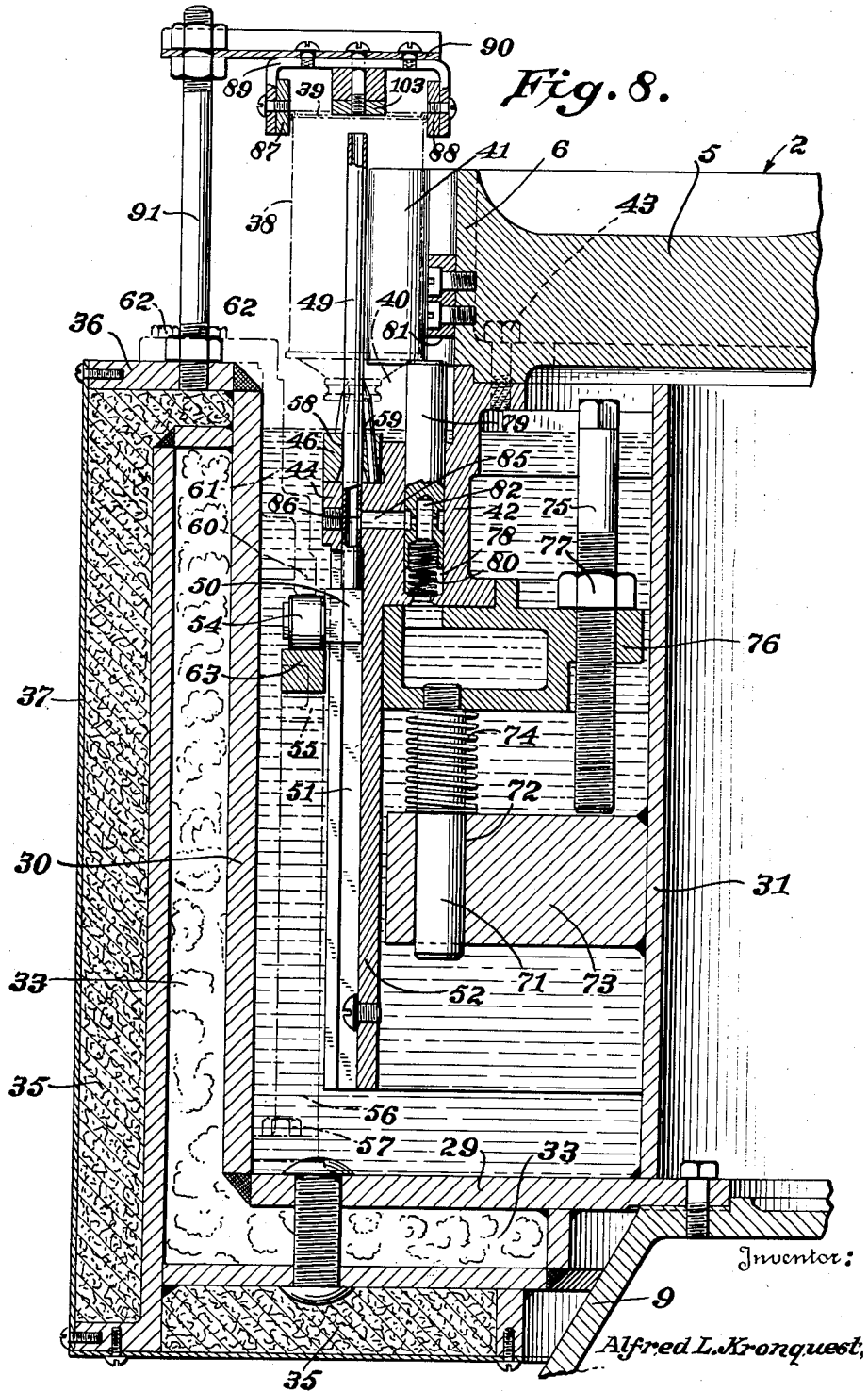
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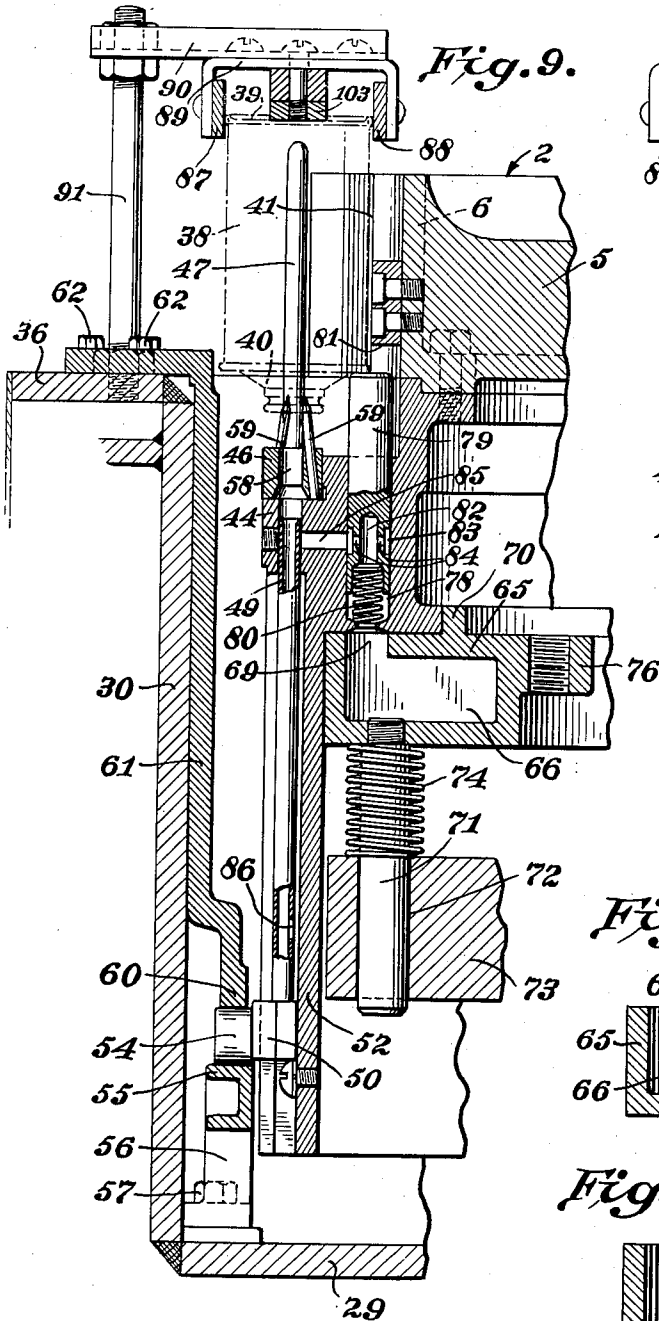
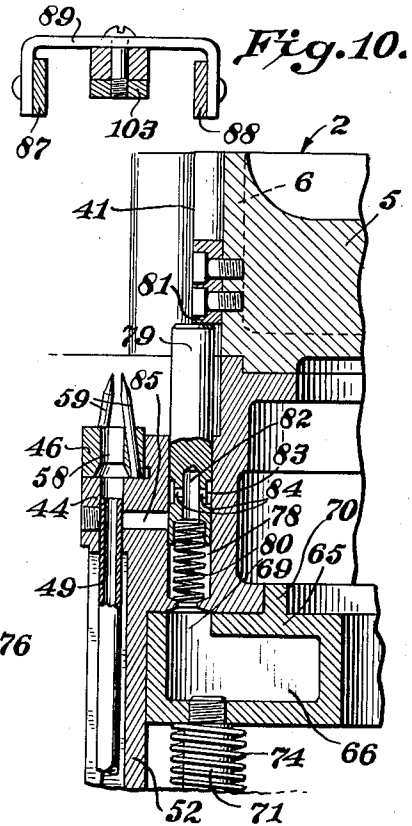
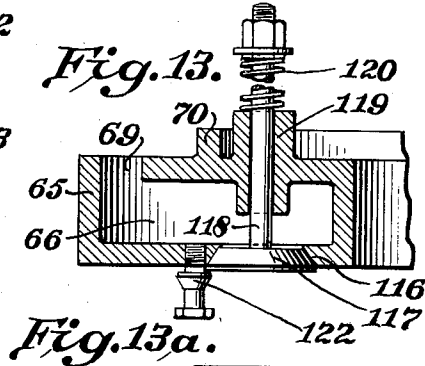
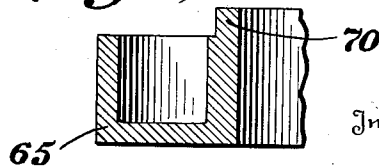
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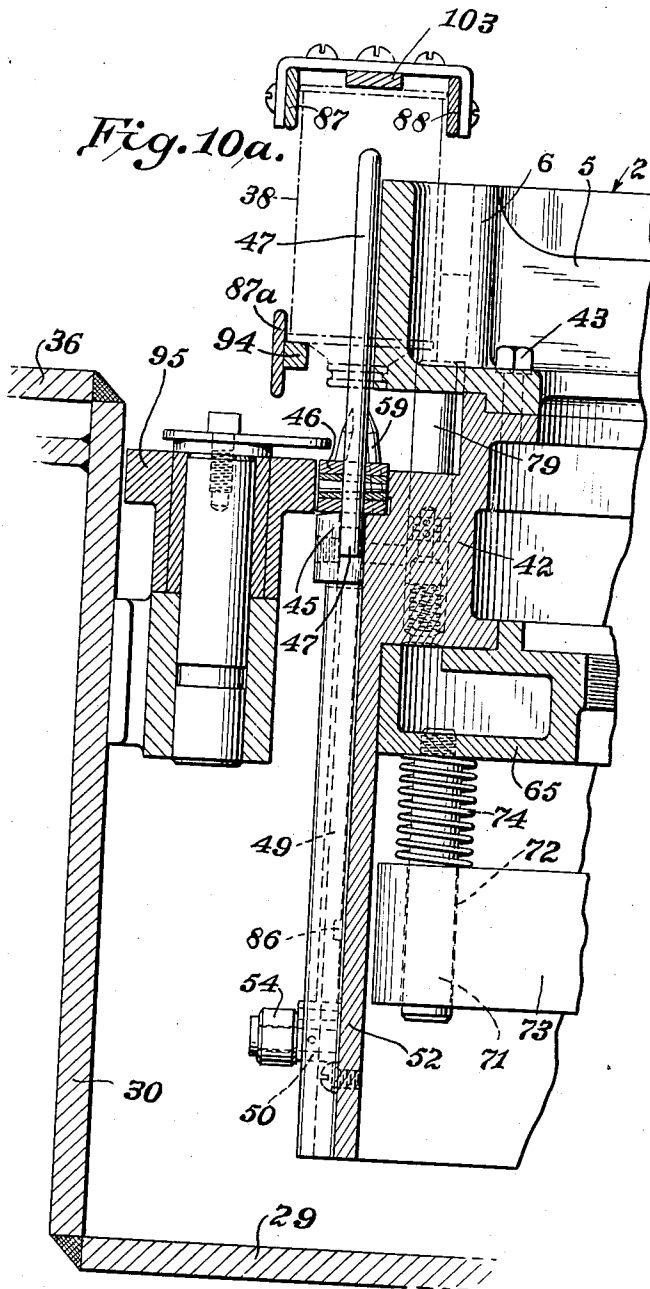
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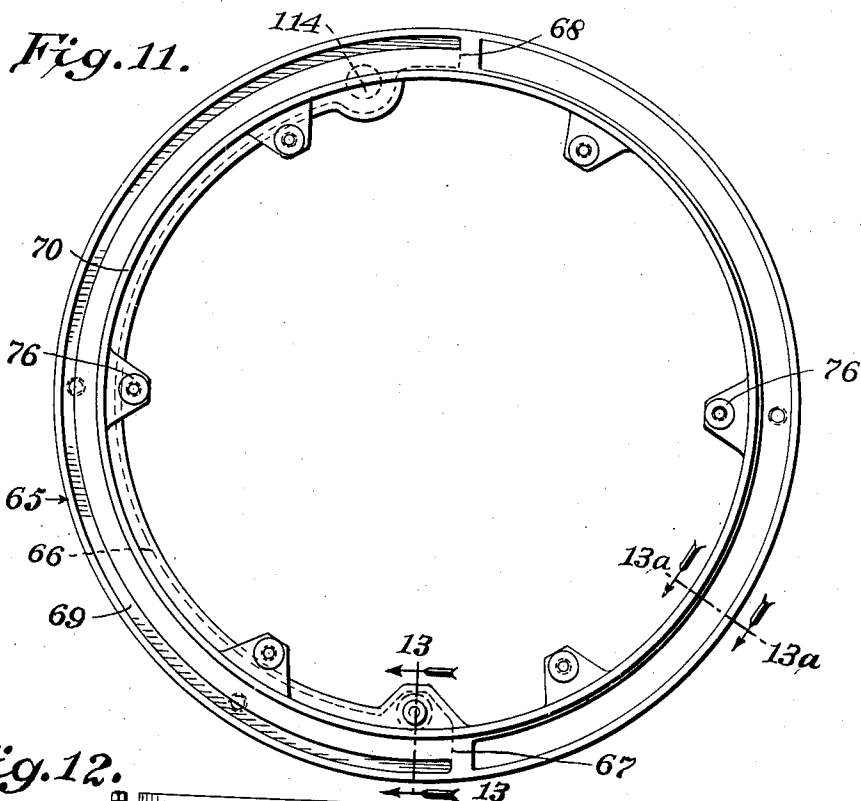
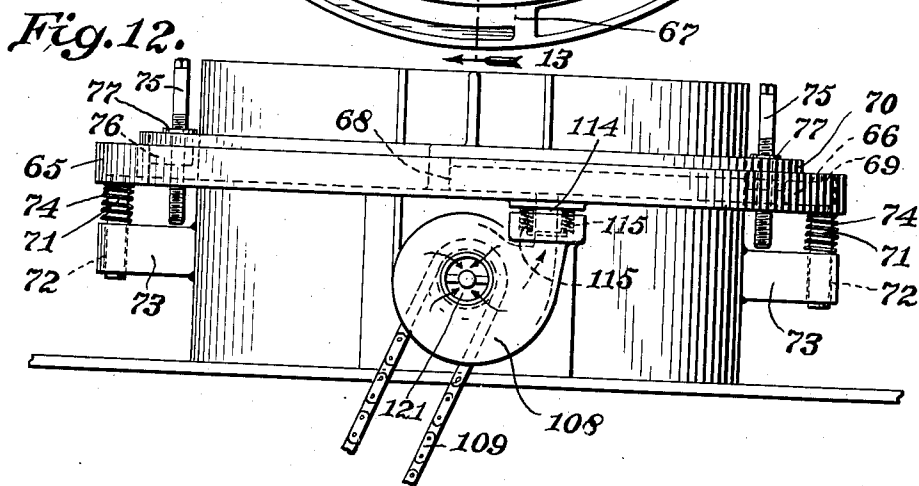
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11 Sheets-Sheet 10



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UNITED STATES PATENT OFFICE

2,084,093

MACHINE FOR COATING CANS

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Application December 30, 1935, Serial No. 56,740

26 Claims. (Cl. 91-44)

The invention relates to new and useful improvements in a machine for coating the interior surface of a can.

An object of the invention is to provide a machine for coating cans wherein the can travels continuously in an inverted position during the application of the coating thereto and the draining of the surplus coating therefrom.

A further object of the invention is to provide a machine of the above type with a series of coating units which travel with the cans and operate in succession upon the cans for coating the same.

A still further object of the invention is to provide a machine of the above type with a means common to all of the coating units for supplying the coating material under pressure to said units.

A still further object of the invention is to provide a coating machine of the above type with a coating nozzle which is moved into the can during the travel thereof for supplying the coating to the interior of the can, and wherein said coating nozzle is withdrawn from the can for the draining of the surplus coating therefrom and the discharge of the can from the machine.

A still further object of the invention is to provide a machine of the above type with a means associated with each coating unit for regulating the supply of coating to the nozzle so that the coating is discharged from said nozzle only during a portion of the travel of the can with the coating unit.

A still further object of the invention is to provide a machine of the above type in which there is a means associated with each coating unit so that if there is no can to be coated, no coating will be admitted to the nozzle.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings—

Figure 1 is a top plan view showing more or less diagrammatically a coating machine embodying the improvements;

Fig. 2 is a side elevation of the same;

Fig. 3 is an enlarged plan view of the turret portion of the machine with which the coating units are associated;

Fig. 4 is an enlarged sectional view centrally through the turret on the line 4-4 of Fig. 3;

Fig. 5 is a sectional view through the turret on the line 5-5 of Fig. 3;

Fig. 6 is a longitudinal sectional view through the draining section of the machine, showing a portion of the turret section and also showing the main supply tank for the coating material;

Fig. 7 is a view partly in side elevation and partly broken away and in section showing in particular the cam operating to raise the nozzle into the can;

Fig. 7a is a view in detail showing the cam for lowering the nozzle after the coating operation has been performed;

Fig. 8 is an enlarged sectional view through one of the coating units and showing a can in place and the nozzle positioned for supplying coating to the interior of the can;

Fig. 9 is a view similar to Fig. 8, but showing the nozzle as withdrawn;

Fig. 10 is a view similar to Fig. 9, but showing the can removed and the no-can, no-coating control in raised position cutting off the supply of coating to the nozzle;

Fig. 10a is a sectional view on the line 10a-10a of Fig. 3;

Fig. 11 is a view partly in plan and partly in section of the manifold which supplies the coating material under pressure to all of the coating units;

Fig. 12 is a side view showing the mounting for the manifold for the coating, and also the pump for supplying the coating material to the manifold;

Fig. 13 is a sectional view on the line 13-13 of Fig. 11, and showing in place the relief valve for permitting the discharge of the coating material from the manifold so as to maintain a continuous supply of coating in the manifold under a substantially uniform pressure;

Fig. 13a is a section on the line 13a-13a of Fig. 11;

Fig. 14 is a transverse sectional view through the draining tank midway between the ends thereof;

Fig. 15 is a view in side elevation showing the construction of the canway where the cans enter the machine;

Fig. 16 is a detail in side elevation showing a portion of the canway and the conveyor at the place where the cans are ejected from the machine, and

Fig. 17 is a view in plan of the parts shown in Fig. 16.

In the present illustrated embodiment of the invention, the coating machine includes a turret section where the coating is applied to the interior of the can, and a draining section wherein the surplus coating is drained from the can and the coating set by the cooling thereof. Associated with the turret section is a tank for the coating material which is, in shape, a segment of an annulus. Also associated with the draining

section of the machine is a tank for the coating material, and these two tanks are connected. The tanks are steam-jacketed so that a coating material of a thermo-plastic character may be reduced to a liquid form for application to the interior of the can. In the turret section is a rotating turret having at the outer portion thereof a support which overhangs the tank containing the coating material. Mounted on this turret are a series of coating units, each of which includes a nozzle or coating pipe. There are two stationary cams which operate upon these nozzles one after another for raising and for lowering the same. The cans to be coated are placed in pockets in the rotating turret by means of a traveling conveyor consisting of a series of blocks which are pivotally connected. Each block contains gauge fingers over which the mouth of the can is placed and centrally of the gauge fingers is an opening through the block through which the nozzle is raised into the can. The can is moved along guide rails by means of a post which is an extension of the pivot joining the blocks. This post extends beneath the blocks for a short distance, and the lower end of each post engages in succession a recess in the turret in the nature of a sprocket wheel, and thus it is that when the turret is rotated, it causes the conveyor for the cans to move with the turret. This conveyor not only encircles a portion of the turret, but it runs back and forth in a circuitous path in the draining tank. The cans are brought to the coating units by the conveyor and are placed in a pocket in the turret which centers the can over the nozzle. Associated with the turret is a manifold for supplying the coating under pressure to each coating unit. This manifold is stationary, and the coating is supplied thereto by a pump, the pump taking its coating from the tank. There is an outlet from the manifold back into the tank which is controlled by a spring-closed valve. This enables the manifold to be supplied with coating material at a predetermined desired pressure. As the coating units travel over the manifold, they are brought into communication therewith. The communicating port between the manifold and the nozzle of each coating unit contains a valve which is normally closed so as to cut off the supply of the coating material to the coating nozzle. When a can is placed in a pocket in the turret for coating, it contacts with this valve, and during the travel of the can it is forced downward so as to open the valve and permit the coating to be supplied to the coating nozzle of the coating unit with which the can is associated. If there is no can, then no coating is supplied to the coating unit. The cans are delivered to the conveyor in an inverted position and are conveyed in succession to the traveling coating units. The nozzle is raised into the can while it is traveling and the coating discharged therefrom so as to flood the interior of the can with coating material. The nozzle is then withdrawn, and as the can continues its travel, the surplus coating will drain therefrom back into the tank. As the can travels in a circuitous path through the draining section, there is ample time for the excess coating to drain from the inverted can and the coating to cool sufficiently so as to set. The cans are then discharged from the machine.

Referring more in detail to the drawings, the coating machine as shown in Figures 1 and 2 includes a turret section 1 in which is mounted for rotation, a turret 2. It also includes a draining

section which is indicated at 3. The turret section of the machine and the operating mechanism therefor is shown in detail in Figures 3 to 5. Referring in particular to Fig. 4, the turret 2 includes a hub portion 4 having radially extending arms 5 carrying at their outer ends a supporting rim 6. The hub portion 4 is fixed to the upper end of a shaft 7. This shaft 7 is mounted for rotation in a bracket bearing 8 rigidly secured to a lower housing 9. This lower housing 9 is mounted on a supporting base 10.

There is a combined end thrust and radial ball bearing 11 at the lower end of the bracket bearing 8, and a radial ball bearing 12 at the upper end of the bracket. The shaft 7 is mounted in this bearing and the hub 4 is keyed to the upper end of the shaft. At the lower end of the shaft is a worm wheel 13. This worm wheel 13 meshes with a worm gear 14 carried by a shaft 15 mounted in suitable bearings in a depending skirt 16 which is formed integral with the bracket bearing 8. A cover plate 17 is attached to the lower end of the skirt 16 thus forming a chamber in which the worm wheel 13 is located. The shaft 15 carries a sprocket wheel 18.

Mounted on the base 10 is a motor 19. A sprocket wheel 20 is carried by the shaft of the motor, and a sprocket chain 21 runs over the sprocket wheels 20 and 18, and thus the turret is rotated. The turret may be turned by a hand mechanism when the motor circuit is broken. This hand mechanism includes a shaft 22 mounted for endwise movement in a bearing 23 carried by the lower housing section 9. The inner end of this shaft 22 is provided with a recess 24. Surrounding the shaft 22 is a spring 25, and on the outer end of the shaft is a hand-wheel 26. When the shaft is pressed endwise, the recessed end of the shaft will pass over the end of the shaft 15 and a pin 27 carried by the shaft 22 will enter a recess 28 formed in the end of the shaft 15, and thus it is that the shaft 22 is connected to the shaft 15 so that it may be rotated by the turning of the hand-wheel 26.

This turret section of the machine includes a tank section. Said tank section includes a bottom plate 29 which is rigidly secured to the lower housing 9, an outer wall 30 which is concentric to the center of rotation of the turret, and an inner wall 31 likewise concentric to the center of rotation of the turret. The inner wall extends all the way around the turret. The outer wall is semi-cylindrical and is connected to parallel extensions which are connected to the inner transverse wall 32 (see Figures 1 and 3). The draining tank section is also connected to this transverse wall 32 as will be hereinafter more fully disclosed.

In order that the coating material in the coating tank be heated and maintained in a liquid form, there is a heating chamber 33 which extends underneath the bottom plate 29 and up along the outer wall 30. This chamber is preferably supplied with steam from a steam pipe 34 (see Fig. 6). Outside of the steam chamber 33 is insulation as indicated at 35 in Fig. 4 of the drawings. Attached to the upper end of the wall 30 is a cover plate 36, and the outer wall 37 enclosing the insulation is attached to this cover plate at the upper end and the extension 70 of the wall of the steam chamber at its lower end.

The machine is particularly adapted for the coating of a can body which is used for packaging beverages, such as beer. It is well known 75

that the can must be coated on the interior thereof with a non-metallic material which prevents the beer from contacting with the metal, and the purpose of the machine is to flow a thermo-plastic material over the entire inner surface of the can after it is completed and ready for filling. The can is illustrated in the drawings and consists of a cylindrical body portion 38 to which a bottom end 39 is secured in the usual manner. The top end 40 is cone-shaped and is seamed to the can body, likewise in the usual manner. This cone-shaped end terminates in a mouth portion to which a sealing cap may be attached. The can during coating thereof is maintained in an inverted position and the coating material is delivered to the interior of the can so that the entire inner surface is flooded with the coating material.

Associated with the turret is a series of coating units which operate upon the cans in succession. The turret overhangs the tank for the coating material as shown in Fig. 8, and the outer face of the rim support 6 of the turret is formed with a series of segmental pockets indicated at 41 in the drawings. These pockets are shaped so as to conform to the curvature of the can. Attached to the under side of the rim support 6 is a supporting ring 42. Said ring is fastened to the rim support by suitable bolts, one of which is indicated at 43 (Fig. 8). The ring 42 extends outward beyond the pockets in the rim support and provides a supporting ledge 44 on which the conveyor for the can rests and travels while the can is being coated. This extension forming the supporting ledge has recesses formed therein as indicated at 45 in Fig. 3 of the drawings. The conveyor for the cans is in the form of a series of blocks 46 which have interengaging hinge ears, and a post 47 extends through these ears and pivotally connects the adjacent blocks. These blocks 46 pass over the supporting ledge 44 and rest thereon. The post 47 extends below the block a short distance and the lower ends of the posts engage in succession the recesses 45 in the turret ring. These recesses 45 are in the nature of a sprocket wheel which, operating upon the post, impart movement to the conveyor as the turret rotates.

Each section of the ring between the recesses 45, 45 is provided with an opening 48. A nozzle or coating pipe 49 is mounted for reciprocation in this opening 48. The pipe 49 is secured to a crosshead 50. This crosshead is T-shaped and is adapted to slide in a T-shaped guideway 51 formed in the depending skirt 52 of the ring 42. The guiding recess 51 is formed by integral ribs 53, 53 having flanges projecting toward each other at their outer edges. This guiding recess is directly beneath the opening 48 in the ring extension. The crosshead 50 carries a roller 54 which is adapted to engage a cam 55. This cam 55 is in the form of a bar having a foot portion 56 which is secured to the bottom plate 29 by suitable bolts, one of which is indicated at 57. This cam 55 is curved to conform to the shaping of the turret so that the roller 54 as it travels with the turret can contact with the cam, and as it moves along the cam, the nozzle or pipe 49 will be raised. The nozzle or pipe 49 is traveling with the turret, and the turret and conveyor are traveling together, and therefore, the pipe may be raised through an opening 58 in the conveyor block. Mounted on the conveyor block are a series of guide fingers 59 which center the mouth of the can directly over the opening 58 in

the block 46, and therefore, the nozzle or pipe will move up into the can to a position adjacent the bottom end thereof as shown in Fig. 8 of the drawings. Associated with the lifting cam 55 is a guiding member 60. This guiding member 60 is formed at the lower edge of a plate 61, and the plate 61 is bent laterally at its upper end so as to overlie the top plate of the tank. Bolts 62, 62 pass through this plate and secure it to the top of the tank.

When the roller reaches the upper end of the cam 55, it passes on to a supporting rail 63, and thus the pipe is retained in its raised position. This supporting rail 63 is mounted on the upper end of the cam 55, and on a bracket 64 attached to the outer wall of the tank. This rail 63 leads around to the opposite side of the machine where there is a lowering cam for lowering the pipe or nozzle, and this lowering cam will be described later.

Associated with the turret is a manifold 65 which is provided with a chamber 66. The manifold is ring-shaped and the chamber 66 is segmental, extending throughout only the region in which coating is to be applied to the can. This manifold is shown in plan in Fig. 11. The chamber 66 extends from a point 67 to a point 68. There is a slot 69 in the upper wall of the manifold which extends from one end thereof to the other. This manifold underlies the ring 42. The lower face of the ring and the outer face of the manifold are machined so as to have a tight running contact with each other. There is a rib 70 on the manifold which engages the inner face of the ring 42 and the outer face of the manifold engages the skirt 52 of the ring. This manifold has a series of posts 71 threaded into the lower wall thereof, and these posts slide freely in openings 72 formed in lugs 73 which are in turn welded to the inner wall 31 of the tank. A spring 74 surrounds the post and bearing against the under face of the manifold, yieldingly forces the same upward, so as to maintain a sealed contact between the upper machined face of the manifold and the under face of the ring. There are a series of bolts 75 threaded through projecting ears 76 carried by the manifold. These bolts are adapted to be placed very close to the upper face of the ears 73 and may be adjusted to different set positions. A lock nut 77 threaded on to each bolt serves to hold said bolt in a set position. The purpose of these bolts will be described later.

The ring 42 is provided with an opening 78 which is disposed centrally of each pocket 41 and at the inner side thereof. Mounted for movement in this opening is a valve rod 79. A spring 80 contacting with the lower end of the valve rod normally raises the same until it is brought into contact with an adjustable stop 81. The valve rod is provided with a longitudinal port 82. There is an annular recess 83 surrounding the valve rod and radial ports 84 connecting the longitudinal port 82 with this annular recess 83. The ring is also provided with a radial port 85. When the valve is in the position shown in Fig. 10, communication between the chamber 66 and the radial port 85 is cut off. When, however, the valve rod is moved to a lower position, as indicated in Fig. 9, then the recess 83 is brought into register with the port 85 and communication is established between the chamber 66 and the port 85. The port 85 at its outer end communicates with the opening in which the pipe 49 moves. The pipe is hollow, opening at its upper end, thus forming

a discharge nozzle. The pipe, however, is closed at its lower end. The pipe has an opening 86 in the wall thereof, which opening is so disposed that it is in register with the port 85 only when the pipe is in its raised position, as shown in Fig. 8. When the pipe is lowered to the position shown in Figures 9 and 10, then communication between the port 85 and the interior of the pipe is cut off.

The purpose of the valve rod 79 is to cut off all supply of coating material to the nozzle when there is no can to be coated. The can is guided between guide rails 87 and 88 which contact with the upper end of the can. These guide rails are carried by a series of U-brackets, and these brackets are supported by bracket arms 90 carried by posts 91 which are secured to the cover plate 36. The guide rails 87 and 88 are shaped to conform to the path of travel of the cans. In the region where the can is nested in the pocket in the traveling turret, the guiding rails are curved about the center of rotation of the turret.

The conveyor, as noted above, is made up of a series of blocks 46 which are pivotally connected in the manner of an endless chain. The endless conveyor chain, as a whole, is indicated by the numeral 46a. The chain slides along guide rails with the posts forming the pivot for connecting the adjacent blocks passing between the guide rails. These guide rails are so disposed that the conveyor 46a travels along a straight line of travel as it approaches the turret, and then it follows around the turret with the posts contacting with the notches formed in the turret so that the turret serves as a driving sprocket for the conveyor. There is a canway which leads to and into the machine. This canway is so shaped that the cans will pass by gravity along the canway as they enter the machine. At the entrance into the machine, there is a bracket 92 mounted on the frame of the machine. There are other similar brackets, and extending through these brackets are extensions of the can guide rails 87 and 88. There are guide rails 87a and 88a which contact with the double seam at the lower end of the can and serve to guide the can in its movement. There is a supporting rail associated with this canway which is indicated at 94 (see Fig. 3). This supporting rail extends along the left-hand guiding rail 87a and terminates at 94a. As the cans move along this canway, they will move into the path of travel of the conveyor 46a. The posts 47 on the conveyor are spaced a distance slightly greater than the diameter of the cans so that the cans may readily pass between the posts. The canway, as shown in Fig. 3, is at an inclination to the path of travel of the conveyor 46a, as noted above, and therefore, the cans will be placed in succession between the traveling posts. The guide rail 88 has a portion 88b bent inward toward the path of travel of the conveyor, and thence outward, and this aids in the directing of the can as it passes between the posts. The conveyor will cause the cans to move along on the supporting rail 94. The conveyor passes around an idler 95 and this will place the can in the pocket of the turret. It is still supported by the rail, as shown in Fig. 10a.

The canway is provided with a swinging gate 96 pivoted at 97, which gate is closed by a spring 98. In case a can when it moves into the conveyor contacts with a post, this swinging gate 96 can yield so as to aid in the placing of the cans between the posts.

There is also a gate 99 which is pivoted at 100.

The spring 98 is connected to this gate and yieldingly forces the same to closed position. A rod 101 is connected to the gate and to a switch so that in case of a jam, the gate 99 will yield, and moving outward, will operate through the rod 101, a switch 102 for stopping the machine.

When a can approaches the end of the supporting rail 94a, it moves underneath a cam bar 103 carried by the U-bracket 89. This cam bar extends from a point 104, where the cans are brought into the pockets in the turret, to a point 104a, at the other side of the path of travel of the turret, where the cans are moved out of the pockets. The purpose of this cam bar is to force the cans downwardly after they pass off from the guide rail 94 so as to depress the valve rod 79 and thus open the port to permit the coating material to pass into the pipe or discharge nozzle. The turret in its travel brings the valve rod beneath the can before the can leaves the end 94a (see Fig. 10a) of the supporting rail 94, so that when the can passes off from the supporting rail, it then rests on the valve rod. The cam bar 103 is so shaped that it will positively move the can down on to the valve rod and it will force the valve rod downward against the tension of the spring, holding it raised, and this will bring the can mouth down over the guiding fingers 59. This positioning of the can in the turret pocket and the lowering of the same, opens communication between the chamber 66 and the port 85, and it also places the can so that it is centered relative to the opening 86 in the conveyor block 46. The cam bar 103 has a section 105 thereof made separate, and this separate section is pivoted at 106 so that it may be maintained in a position in alignment with the cam bar, or released and lifted to a raised position. A locking bolt 107 is provided for holding the section 105 of the cam bar in its lowered or closed position. The purpose of this movable section is to permit the ready removal of a can from the coating station for the purpose of inspection when desired, or in case of a jam. The cam bar 103 is so shaped that the can is lowered to move the valve rod so as to open the port, and then the can is retained in its lowered position.

After the can is placed and the valve rod depressed, then the cam 55 operating on the roller 54 will raise the pipe or nozzle into the can and place the same well up toward the bottom of the can. This upward movement of the pipe or nozzle brings the opening 86 into register with the port 85, and thus the coating fluid will pass out through the nozzle and flood the entire interior of the can. Excess coating material will flow out of the mouth of the can, but there will be a layer of the coating material adhering to every particle of the wall of the can. As long as the can is in contact with the valve rod, holding it depressed, and the pipe is in raised position, the coating material will flow from the chamber 66 of the manifold into and out of the can. Inasmuch as the turret overhangs the tank, the coating material discharged from the can passes back into the tank.

The chamber 66 of the manifold 65 is supplied with coating material by a pump 108. This pump is of the usual character and is driven by a sprocket chain 109 which runs over a sprocket wheel 110 carried by the shaft of a motor 111. The inner wall 31 of the tank is provided with a thickened bearing support 31a (see Fig. 5). The pump shaft is indicated at 112. This shaft extends through this bearing support and carries

the sprocket wheel 113 over which this sprocket chain 109 runs. The pump is at the inner end of the shaft and is located in the tank containing the coating material; while, of course, the sprocket wheel and the chain driving the same are located inside of the inner wall of the tank. The tank does not travel; neither does the pump travel with the turret, nor does the manifold travel with the turret. The pump casing at the outlet therefor is provided with a telescoping flanged sleeve 114. Springs 115 bearing against the flanged sleeve hold it in fluid tight connection with the manifold. The purpose of this yielding sleeve connection between the pump casing and the manifold is to permit the manifold to move and be yieldingly held pressed against the under side of the traveling ring of the turret. If the pressure on the coating discharged to the chamber 66 becomes excessive, it may force the manifold away from the traveling ring. This tendency of the manifold to move away from the ring is resisted by the supporting springs 74, and it is further limited in its movement by the yielding fluid connection between the stationary manifold and the traveling ring, but at the same time, permits a certain amount of movement of the manifold away from the ring without the breaking of parts.

The pump is so disposed as to supply the manifold with the coating material at a point adjacent the end 68 thereof (see Fig. 11). Adjacent the other end of the manifold 67 is an opening 116 in the bottom wall of the manifold which is controlled by a valve 117. This valve is mounted on a stem 118 which slides in a bearing 119 in the upper wall of the manifold, and a spring 120 encircling the stem of the valve normally holds it in its raised closed position. The chamber 66 is filled full of the coating material through the operation of the pump. The pump, as noted, is located in the tank containing the coating material, and the coating material passes into the pump through an intake port 121. As soon as the tank is filled, then this valve 117 is forced open so that the coating material will flow back into the tank. This insures that the tank may be kept filled with coating material and free from air, and also the coating material will be maintained under a desired pressure which can be regulated by adjusting the thumb nuts serving as an abutment for the spring 120. There is an adjustable stop 122 for limiting the movement of the valve, and it will be preferably forced to an open position so as to allow a certain amount of the fluid to pass continuously into and out of the chamber 66. This stop screw can be adjusted to increase the flow, if desired. The slot 69 in the inner wall of the manifold leads to the chamber 66, and as the turret rotates, the passage controlled by the valve rod at each coating unit will be brought over the slot 69 and a communication maintained with the manifold while the turret is traveling through substantially 180 degrees. The remainder of the manifold serves as a support for the ring, but it does not, in any way, function in the supplying of coating to the coating stations.

As above noted, the pipe or nozzle is raised into the can through the operation of the cam 55 on the roller 54. These cams are so disposed that the pipe is raised to supply the coating substantially at the radial line A, in Fig. 3 of the drawings. The pipe or nozzle remains raised with the roller running on the rail 63. While

the coating units are traveling through an arc of substantially 150 degrees, then the roller comes into contact with a member 60a similar to the member 60, but which serves as a cam for forcing the roller 54 downward, and this retracts the pipe from the can. There is a member 55a similar to the cam 55 on the opposite side of the machine which serves as a control member to regulate the downward movement of the roller 54, and the lowering of the pipe from within the can. As soon as the pipe or nozzle starts to move downward, the opening 86 in the pipe is closed and this stops the flow of the coating material.

Attached to the upper housing of the turret section of the machine is a draining section through which the cans are conveyed in a circuitous path to permit the excess coating material to drain from the can and the remaining film covering the interior of the can to set. This draining tank is preferably rectangular in outline. The two side walls 123, 123 are parallel with each other and are connected at their outer ends by an end wall 124. The side walls are connected at their inner ends by an end wall 125, and this end wall 125 is securely bolted to the transverse wall 32 of the turret section of the machine. Joining the side walls and the end wall is a bottom wall 126. Spaced beneath the bottom wall 126 is a second bottom wall 126a. This forms a chamber 127 which is supplied with steam from the pipe 128. An outlet pipe 129 is also connected to this steam chamber 127. The end walls and the side walls project beneath the bottom wall, and a plate 130 is attached thereto and encloses a heat insulating material 131. There are also plates 132 at the ends and sides of the tank which likewise enclose insulating material 131. This draining tank is connected with the tank that is associated with the turret, and the coating material can flow freely from one tank into the other. Both tanks are heated by the steam jackets above described, and thus the coating material which is of a thermo-plastic character is kept in a liquid form.

Extending from one side of the draining tank to the other are angle bars 133. Mounted on these angle bars are guiding rails 134, 134 on which the conveyor rests and moves. These guiding rails are spaced so that the lower ends of the posts 47 pass between the guiding rails and direct the movements of the conveyor 46a. The guiding rails 134a, 134a extend into the turret section of the machine. The blocks which constitute the conveyor, when they leave the turret, engage an idler roller 135, and this directs the conveyor so that the posts will pass between the guide rails and into the draining tank. The guide rails extend from the left-hand end of the draining tank (Fig. 1) to a point adjacent the right-hand end. At the right-hand end of the tank there is a cross beam 136, and fixed to this cross beam are a series of fixed bearing posts 137. On each bearing post is a sprocket disk 138, that is, a member which has notches at spaced intervals therein. This sprocket disk has its upper face substantially on the same level as the guiding rails, and the conveyor leaving the ends of the guiding rails which terminate adjacent the sprocket disk passes on to this sprocket disk and is supported thereby. The lower ends of the posts associated with the conveyor enter the notches in the sprocket disks and causes the same to rotate. The sprocket disks are mounted for free rotation on the fixed bearing posts. There are four of these bearing posts with a 75

sprocket disk on each at the right-hand of the tank. There are supporting brackets at the left-hand end of the tank in which are mounted bearing posts 139. As shown there are three of these bearing posts and associated with each bearing post is a sprocket disk. There are guide rails extending from the sprocket disks at one end of the tank to the other and thus it is that the conveyor passes from one end of the tank to the other in a circuitous path, and finally passes from the draining tank into the turret section and around the turret wheel. It is the turret wheel which serves as the driving means for the conveyor, and these sprocket disks are merely idlers for supporting and directing the movement of the conveyor.

When the cans reach the side of the turret where the conveyor passes into the draining section, they are moved off from the valve rods and rest on the supporting fingers 59. If desired, a supporting rail may be used so as to hold the cans slightly off from said fingers, but it is essential that the fingers shall be close to the can mouth and aid in the draining of the coating material from the can. The cans during their travel through the draining tank are guided by rails which are fixedly mounted on brackets attached to the tank (see Fig. 14). The tank is provided with posts 140 and a bar 141 connects the same. There are a series of these bars, and supported by the bars are the guide rails 142 which contact with the upper portion of the can and guide it while the can is supported on the guiding fingers and is moved along by the travel of the conveyor through the combined action of the supporting fingers and the post which is in the rear of each can. These posts, as noted above, extend below the conveyor and are guided by the rails 134, 134.

At the upper end of each bearing post 137 and also at the upper end of each bearing post 139 there is a cap 144 which is fixed to the bearing post. This cap has a depending flange 145 which is connected to the axis of rotation of the sprocket disk. There is also a hub 146 on said cap, and this provides an annular guiding channel along which the upper end portion of the inverted can travels while the conveyor is passing around the sprocket disk. The conveyor after it passes around the sprocket disk carried by the post 137a, then passes along the side wall of the tank into the turret section where it encircles the turret. Associated with the guiding rails 142, 142 along this straight run of the conveyor into the turret section, are guide rails 143, 143 which contact with the lower end of the can for guiding the same. There are also supporting rails 143a, 143a which engage beneath the shoulder of the can. These supporting rails, as clearly shown in Fig. 6, incline upward, and they gradually lift the can off from the guiding fingers, bringing it up to a position above the top edge of the tank. The posts 47 serve as the sole means for moving the cans along the guide rails after they are elevated off from the supporting fingers 59. The guide rails are curved so as to direct the can away from the conveyor, as clearly shown in Fig. 17. The guide rail 143 at the right, as viewed in Fig. 14, is cut away so as to let the posts travel through the cut-away space which is indicated at 143b (Fig. 16). This shaping of the guide rails so as to direct the can transversely from the conveyor serves as a means for ejecting the can from the machine.

Directly beneath the draining tank is a main supply tank 148. This main supply tank is preferably rectangular and is supported on suitable pedestals. The draining tank extends over the supply tank for a portion of its length and the right-hand end of the draining tank is mounted on a support 149 which in turn is mounted on the tank 148. The tank 148 is of a construction similar to the draining tank, that is, it has insulated side and end walls, and also an insulated bottom wall, and the bottom wall is provided with a steam chamber whereby heat is applied to the main tank for reducing the thermo-plastic coating material to liquid form. The steam chamber associated with the tank 148 is indicated at 150 in Fig. 6 of the drawings. Disposed in the main supply tank is a pump 151 which draws the liquid coating material from the main tank and forces it through a pipe 152 into the tank associated with the turret. Associated with the pump at the intake side thereof is a strainer 153. The pipe 152 is connected with a pipe 154 which passes through the end wall of the turret section of the tank. Located in this section of the tank is an adjustable overflow for regulating the level of the coating material, both in the draining tank and in the supply tank. This means for regulating the level includes a standpipe 155 having a sleeve 156 secured to the upper end thereof. The sleeve is closed at its upper end and has a threaded connection with the pipe 155. There are openings 157 adjacent the upper end of the sleeve. The fluid in the tanks will pass through these openings 157 into the pipe 155 and thus out of the tank associated with the turret and back into the main tank 148, as clearly shown in Figures 4 and 6 of the drawings. By adjusting the sleeve 156 on the standpipe 155, the level of the coating liquid can be varied.

The pipe 154 has a valve-controlled draining section 158 which extends over the main tank and by stopping the pump and opening the valve, the coating liquid may all be drained from the tank associated with the coating machine back into the main supply tank. The pump 151 is driven from a motor 159. Mounted in the side wall of the main auxiliary tank is a thermostat 160 which is connected with the control line so as to insure that the machine will not be started until the coating liquid has reached the proper temperature and liquid form for circulation. There is also a thermostat 161 which is attached to the inner wall of the tank associated with the turret (see Fig. 5) and this thermostat is connected to a usual control circuit so as to insure that the machine will not be started until the coating material in the tank adjacent the coating unit is at the proper temperature so that it may be applied to the cans.

The operation of the machine is thought to be obvious from the detail description which has been given above. The cans are fed into the machine one after another in inverted position and are placed in front of the traveling posts on the conveyor. The cans are supported and directed by guide rails which are stationary and are moved along these guide rails by the posts on the traveling conveyor. When the cans are brought into the turret section of the coating machine they are placed one after another in the pockets of the turret, and after they are fully seated in the pockets, they are moved downward by the cam rail contacting with the upper end of the can, so that the valve rods are moved to open the port

leading from the manifold to the coating unit. As the can continues its travel, the pipe or nozzle is raised into the can, and when it reaches its full upward movement, the opening in the pipe is brought into register with the port 85 and the coating material will flow from the pipe into the can, flooding the interior surface thereof, the surplus coating material flowing from the can back into the tank. The application of the coating material continues while the can is traveling until it is thoroughly supplied with the coating material, after which the pipe or nozzle is moved downward and this cuts off the supply of coating material. The can in its continued travel will be moved out of the turret pocket and off from the valve rod which is returned through the action of the spring thereon. The sole purpose of this valve rod is to prevent any discharge of coating from the nozzle or pipe when it is raised, unless there is a can to be coated. If there is no can placed in the coating unit, the pipe or nozzle will raise to its upper position without establishing any connection between the pipe and the manifold chamber 66.

When the can leaves its support on the end of the valve rod, it is lowered on to the guide fingers 59 and is conveyed along by the guide fingers and the guiding posts through the draining tank. The guide rails are so constructed as to engage a can and raise it off from the guiding fingers and lift it to a level where it can be discharged from the machine. The cans are moved along the draining tank through a circuitous path which is of sufficient length to permit the draining of the surplus material from the cans and the setting of the material before a can is discharged from the machine. A thermo-plastic coating material is used which is liquefied by heat and it will cool quickly as the can travels in the inverted position through the draining section. It is to be noted that the conveyor travels beneath the surface of the coating material, and therefore, the coating material will serve to lubricate the conveyor and the movable parts directly associated therewith. It is also to be noted that the coating material is taken from the tank and delivered to a manifold which supplies all of the coating units, and therefore, all of the cans are supplied with coating material at a uniform pressure and in a uniform quantity.

It is obvious that the path of travel of the conveyor in the draining section may be shortened or lengthened, as desired, and means may be provided, if found necessary, for the cooling of the cans to aid in the setting of the coating material. It is also obvious that many changes in the details of construction and the arrangement of the parts may be made without departing from the spirit of the invention as set forth in the appended claims.

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

1. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, means for operating said conveyor continuously, a series of coating units traveling with said conveyor and operating in succession on said cans for coating the same, each unit including a coating nozzle, means for raising said nozzle into a can as it travels, means contacting with the mouth of the can for centering the same to receive the nozzle and means for supplying coating material from the tank through said nozzle into the can.

2. A machine for coating cans comprising a sup-

porting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, means for operating said conveyor continuously, a series of coating units traveling with said conveyor and operating in succession on said cans for coating the same, each unit including a coating nozzle, means whereby the supply of coating to the nozzle is cut off when there is no can to be coated and means associated with said conveyor for engaging the mouth of the can and centering the same to receive the nozzle.

3. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, means for operating said conveyor continuously, a series of coating units traveling with said conveyor and operating in succession on said cans for coating the same, each unit including a coating nozzle, means for raising the nozzle into the can as it travels, means contacting with the mouth of the can for centering the same to receive the nozzle and means common to all of the nozzles for supplying coating material from the tank thereto.

4. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, means for operating said conveyor continuously, a series of coating units traveling with said conveyor and operating in succession on said cans for coating the same, each unit including a coating nozzle, means for raising the nozzle into the can as it travels, means contacting with the mouth of the can for centering the same to receive the nozzle means common to all of the nozzles for supplying coating material from the tank thereto, and means whereby the supply of coating to the nozzle is cut off when there is no can to be coated.

5. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, means for operating said conveyor continuously, a series of coating units traveling with said conveyor and operating in succession on said cans for coating the same, each unit including a coating nozzle, means contacting with the mouth of the can for centering the same to receive the nozzle, a stationary manifold disposed in said tank, means for supplying said manifold with coating material from said tank under pressure, and means whereby the nozzle of each coating unit is connected with said manifold whereby a supply of coating material is discharged into the can associated therewith.

6. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, means for operating said conveyor continuously, a series of coating units traveling with said conveyor and operating in succession on said cans for coating the same, each unit including a coating nozzle, means for raising said nozzle into a can as it travels, means contacting with the mouth of the can for centering the same to receive the nozzle means for supplying coating material from the tank to the nozzle, and a valve means between the tank and the nozzle controlled by the can for cutting off the supply of coating to the nozzle when there is no can to be coated.

7. A machine for coating cans comprising a

supporting frame, a tank for coating material mounted thereon, a rotating turret having a series of pockets adapted to receive cans to be coated, means for continuously rotating said turret, a conveyor disposed within said tank for conveying and placing cans in an inverted position in succession in the pockets of said turret, a coating unit associated with each pocket and traveling with said turret, each coating unit including a nozzle, means for raising the nozzle into the can in the pocket as the turret rotates, means contacting with the mouth of the can for centering the same to receive the nozzle and means for supplying said nozzle with coating material from said tank when raised.

8. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a rotating turret having a series of pockets adapted to receive cans to be coated, means for continuously rotating said turret, a conveyor disposed within said tank for conveying and placing cans in an inverted position in succession in the pockets of said turret, a coating unit associated with each pocket and traveling with said turret, each coating unit including a nozzle, means for raising the nozzle into the can in the pocket as the turret rotates, means contacting with the mouth of the can for centering the same to receive the nozzle, means for supplying said nozzle with coating material from said tank when raised, and means controlled by the can whereby the supply of coating to the nozzle is cut off when no can is placed in the pocket associated therewith.

9. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said opening and adapted to enter the mouth of the can for centering said can relative to said opening, a coating nozzle, means for reciprocating said nozzle for moving the same through said opening and into said can, and means for supplying coating material from the tank through the nozzle into the can.

10. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said opening and adapted to enter the mouth of the can for centering said can relative to said opening, a coating nozzle traveling with said conveyor and adapted to move up through said opening into the can, means for supporting and causing said nozzle to travel with said conveyor, a stationary cam adapted to operate upon said nozzle for raising and lowering the same, and means for supplying coating material from the tank through the nozzle into the can.

11. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said opening and adapted to enter the mouth of the can for centering said can relative to said opening, a coating nozzle adapted to move up through said opening and into the can, a stationary manifold associated with said tank, means for supplying said manifold with coating

from said tank under pressure, means for supporting and moving said nozzle along said manifold in the conveyor, said supporting means for the nozzle having a port leading from said manifold to the nozzle, said nozzle when in raised position communicating with said port whereby coating material is discharged from said nozzle into the can.

12. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said opening and adapted to enter the mouth of the can for centering said can relative to said opening, a coating nozzle adapted to move up through said opening and into the can, a stationary manifold associated with said tank, means for supplying said manifold with coating from said tank under pressure, means for supporting and moving said nozzle along said manifold in the conveyor, said supporting means for the nozzle having a port leading from said manifold to the nozzle, said nozzle when in raised position communicating with said port whereby coating material is discharged from said nozzle into the can, a valve rod associated with said port, and yielding means for raising said valve rod for closing the port, said valve rod being disposed so that the can rests thereon and depresses the rod to open the port whereby when there is no can to be coated, the port remains closed.

13. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said opening and adapted to enter the mouth of the can for centering said can relative to said opening, a turret, a supporting ring carried by said turret and having a depending skirt, said skirt being provided with a T-shaped guideway, a crosshead movable in said guideway, a nozzle carried by said crosshead and adapted to move up through said opening into the can, a roller carried by said nozzle, and a stationary cam adapted to engage said roller for raising and lowering the nozzle as the turret travels.

14. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said opening and adapted to enter the mouth of the can for centering said can relative to said opening, a turret, a supporting ring carried by said turret and having a depending skirt, said skirt being provided with a T-shaped guideway, a crosshead movable in said guideway, a nozzle carried by said crosshead and adapted to move up through said opening into the can, a roller carried by said nozzle, a stationary cam adapted to engage said roller for raising and lowering the nozzle as the turret travels, and means for supplying coating from the tank through said nozzle into said can.

15. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said

opening and adapted to enter the mouth of the can for centering said can relative to said opening, a turret, a supporting ring carried by said turret and having a depending skirt, said skirt being provided with a T-shaped guideway, a crosshead movable in said guideway, a nozzle carried by said crosshead and adapted to move up through said opening into the can, a roller carried by said nozzle, a stationary cam adapted to engage said roller for raising and lowering the nozzle as the turret travels, a stationary manifold mounted beneath said ring and with which said ring makes a sealed running contact, said ring having a port leading to the nozzle, said manifold having a slot in its upper face with which said port is brought into register, said nozzle having an opening leading thereto adapted to register with said port when the nozzle is in raised position, and means for supplying said manifold with coating material under pressure from said tank.

16. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said opening and adapted to enter the mouth of the can for centering said can relative to said opening, a turret, a supporting ring carried by said turret and having a depending skirt, said skirt being provided with a T-shaped guideway, a crosshead movable in said guideway, a nozzle carried by said crosshead and adapted to move up through said opening into the can, a roller carried by said nozzle, a stationary cam adapted to engage said roller for raising and lowering the nozzle as the turret travels, a stationary manifold mounted beneath said ring and with which said ring makes a sealed running contact, said ring having a port leading to the nozzle, said manifold having a slot in its upper face with which said port is brought into register, said nozzle having an opening leading thereto adapted to register with said port when the nozzle is in raised position, means for supplying said manifold with coating material under pressure from said tank, and yielding means for pressing said manifold against the ring.

17. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a block having an opening therethrough, a series of fingers around said opening and adapted to enter the mouth of the can for centering said can relative to said opening, a turret, a supporting ring carried by said turret and having a depending skirt, said skirt being provided with a T-shaped guideway, a crosshead movable in said guideway, a nozzle carried by said crosshead and adapted to move up through said opening into the can, a roller carried by said nozzle, a stationary cam adapted to engage said roller for raising and lower the nozzle as the turret travels, a stationary manifold mounted beneath said ring and with which said ring makes a sealed running contact, said ring having a port leading to the nozzle, said manifold having a slot in its upper face with which said port is brought into register, said nozzle having an opening leading thereto adapted to register with said port when the nozzle is in raised position, means for supplying said manifold with coating material under pressure from said tank, and a relief valve

connected with said manifold for permitting the coating material to flow from the manifold back into the tank when a predetermined pressure is obtained on the manifold.

18. A machine for coating cans comprising a supporting frame, a tank for coating material mounted thereon, a conveyor disposed within said tank for conveying cans in inverted position, said conveyor including a series of blocks, rods pivotally connecting said blocks and extending above the same for engagement with cans and below said blocks for guiding and driving the conveyor, a rotating turret, a series of coating units carried thereby and adapted to supply coating material from the tank into said cans, said turret having a ring on which the coating units are mounted, a series of recesses adapted to engage the bottom ends of said rods for operating said conveyor, and means for rotating the turret.

19. A machine for coating cans comprising a turret section, a rotating turret mounted therein, a tank associated with said turret, a draining section, a tank associated with said draining section and connected with the tank of the turret section, a conveyor movable in a circuitous path in said tank of the draining section and around the turret in the tank of the turret section, said conveyor including means for conveying the cans in inverted position, said turret having a series of coating units, each including a nozzle mounted on and traveling with the turret, means associated with the nozzles for supplying coating material from the tank through the nozzles into the cans during a portion of the travel of the cans in the turret section and permitting the excess coating to drain from the can and the coating to set while the can is traveling through the draining section.

20. A machine for coating cans comprising a turret section, a rotating turret mounted therein, a tank associated with said turret, a draining section, a tank associated with said draining section and connected with the tank of the turret section, a conveyor movable in a circuitous path in said tank of the draining section and around the turret in the tank of the turret section, said conveyor including means for conveying the cans in inverted position, said turret having a series of coating units, each including a nozzle mounted on and traveling with the turret, means associated with the nozzles for supplying coating material from the tank through the nozzles into the cans during a portion of the travel of the cans in the turret section and permitting the excess coating to drain from the can and the coating to set while the can is traveling through the draining section, and means associated with each of said tanks for heating the same.

21. A machine for coating cans comprising a turret section, a rotating turret mounted therein, a tank associated with said turret, a draining section, a tank associated with said draining section and connected with the tank of the turret section, a conveyor movable in a circuitous path in said tank of the draining section and around the turret in the tank of the turret section, said conveyor including means for conveying the cans in inverted position, said turret having a series of coating units, each including a nozzle, means associated with the nozzles for supplying coating material from the tank through the nozzles into the cans during a portion of the travel of the cans in the turret section and permitting the excess coating to drain from the can and the coating to set while the can is traveling through the

draining section, a main supply tank for the coating material, a pump for delivering said coating material from the supply tank into the tank associated with the turret, and a pipe extending into the tank of the turret section having an adjustable perforated cap at its upper end for determining the level of the coating material in the tank of the turret section, said pipe being disposed so as to direct the overflow into the main tank.

22. A machine for coating cans comprising a turret section, a tank for coating material associated therewith, a draining section, a tank for coating material associated therewith, said tanks being connected, means for supplying said tanks with coating material and maintaining a predetermined level therein, a turret mounted for rotation in the turret section and having a rim support overhanging the opening thereof, a ring carried by said rim support, a plurality of coating units mounted on said ring, each including a vertically reciprocating nozzle, cam means for reciprocating said nozzles, a conveyor movable about said turret and in a circuitous path in said draining tank, the means for reciprocating said nozzles and operating said conveyor being disposed below the level of the coating material in the tanks.

23. A coating machine for cans comprising a turret section, a tank associated therewith, a draining section, a tank associated with the draining section and connected to the first-named tank, means for supplying coating to said tanks and maintaining a predetermined level therein, means for heating said tanks for rendering said coating material fluid, a rotating turret in the turret section, a series of coating units mounted on said turret, a conveyor, means for operating said conveyor from said turret, means for directing the movement of the conveyor whereby said conveyor passes around the turret and back and forth in a circuitous path in the draining tank, said conveyor being disposed beneath the surface of the coating material, guideways for the cans associated with said conveyor, means for directing cans into the guideways and into range of movement of the conveyor, means for removing the cans from the conveyor for discharging the same from the machine, a guideway at the receiving end of the machine having a movable gate formed therein in the region where the cans are placed on the conveyor, and yielding means for holding the gate closed and permitting said gate to yield to aid in the positioning of the cans in the conveyor.

24. A coating machine for cans comprising a turret section, a tank associated therewith, a draining section, a tank associated with the draining section and connected to the first-named tank, means for supplying coating to said tanks and maintaining a predetermined level therein, means for heating said tanks for rendering said coating material fluid, a rotating turret

in the turret section, a series of coating units mounted on said turret, a conveyor, means for operating said conveyor from said turret, means for directing the movement of the conveyor whereby said conveyor passes around the turret and back and forth in a circuitous path in the draining tank, said conveyor being disposed beneath the surface of the coating material, guideways for the cans associated with said conveyor, means for directing cans into the guideways and into range of movement of the conveyor, means for removing the cans from the conveyor for discharging the same from the machine, a guideway at the receiving end of the machine having a movable gate formed therein in the region where the cans are placed on the conveyor, yielding means for holding the gate closed and permitting said gate to yield to aid in the positioning of the cans in the conveyor, a second yielding gate associated with the guideway and the first-named gate therein, and means operated by said gate when forced from its normal position for stopping the machine.

25. A machine for coating cans comprising a rotating turret having can pockets, a guiding means for directing cans in an inverted position into the turret pockets, a supporting rail associated with said guiding means for supporting the can as it is moved toward the turret pocket, a conveyor associated with the turret and with the guiding means having devices for moving the cans along the guiding means and into the turret pockets, said conveyor including a series of blocks, each block having an opening, guiding and supporting fingers carried by the block adjacent said opening adapted to enter the can mouth and center the same over said opening, a coating nozzle adapted to move through said opening into the can, a port in said turret leading to the nozzle and adapted to supply coating material thereto from the tank, a valve rod for closing said port when in its raised position, a spring for raising the valve rod, said valve rod being disposed in said can pocket so that when a can is placed in the can pocket it will rest on the valve rod, and means for depressing said can for opening the port to permit coating material to pass through the port and the nozzle into the can.

26. A machine for coating cans comprising a rotating turret having a series of can receiving pockets, means for placing cans in succession in said pockets in an inverted position, a coating unit associated with each pocket including a nozzle, means for raising said nozzle into the can during the travel of the turret, means contacting with the mouth of the can for centering the same to receive the nozzle, means for supplying coating material through the nozzle into the can when the nozzle is in its raised position, and means associated with each coating unit whereby the supply of coating material is cut off from the nozzle when there is no can to be coated.

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