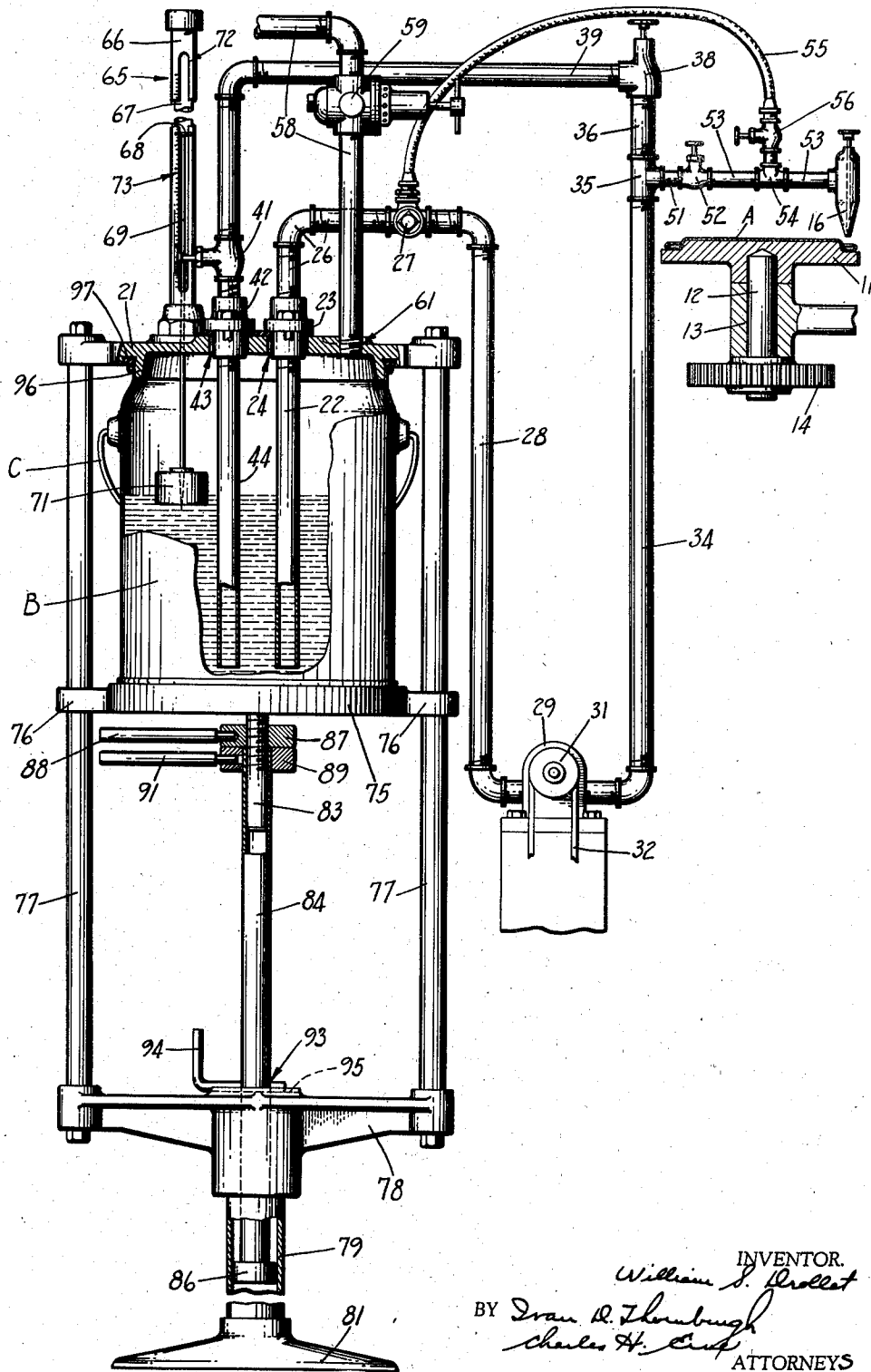


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DISPENSING DEVICE

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DISPENSING DEVICE

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The present invention relates to a mechanism for coating articles with a liquid coating material or the like and has particular reference to improved tank devices for retaining the liquid to be used by the coating mechanism.

An object of the invention is the provision of improved tank devices for a liquid coating mechanism wherein the tank may be quickly moved into and out of operating position so that when desired it may be readily cleaned or refilled.

Another object is the provision of such a tank device wherein different tanks may be used in the device so that when changing from one liquid to another the tank being used may be readily removed and another tank with the desired liquid therein quickly shifted into place thereby avoiding the necessary work of emptying and cleaning the tank preparatory to changing the liquid.

Another object is the provision of a tank device of this character wherein the container in which the liquid is shipped and stored may be used as a tank so that when replenishment of the liquid is required it is only necessary to remove the empty container and replace it with a new filled one.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawing, discloses a preferred embodiment thereof.

Referring to the drawing:

The single figure is a side elevation of a tank device embodying the instant invention, the view illustrating a portion of a coating machine and also a liquid retaining container in place in the device, parts being broken away and other parts being shown in section.

As a preferred embodiment of the invention the drawing illustrates a tank device which is adapted for use with a can end lining machine for applying a gasket of liquid compound material to the curl of a can end A. By way of example such a tank device is illustrated in connection with a machine of the character disclosed in United States Patent 938,460, issued November 2, 1909, to W. F. Butler, on Machine for applying cement to can caps, principal parts of which are shown in the drawing.

In such a machine a can end A to be lined is supported in an inverted position on a rotating plate 11 which is secured to a vertical driving shaft 12 carried in a bearing 13 formed in the frame of the machine. At its lower end the shaft carries a gear 14 which may be rotated in any suitable manner, in time with the other

moving parts of the machine, for revolving the plate 11.

Above the rotating can end and in line with its upturned curl there is disposed a liquid dispensing nozzle 16 for depositing a predetermined quantity of liquid compound into the can end curl as the end rotates through one revolution. In the instant invention the nozzle receives the compound by way of pipe lines leading from a tank or container B. The tank is carried in a tank device or rack which includes a top plate or cover member 21 which seals off the top of the tank when it is in place in the rack.

The pipe lines are primarily designed to convey different classifications of compounds, such as solvent compounds and water base compounds. The solvent compounds are preferably drawn from the tank by way of a pump while the water base compounds are forced out by compressed air. Therefore the pipe lines are arranged so that portions of them are used for both types of compound while other portions are used only for its particular kind of compound.

In the case of solvent compounds the pipe line includes a vertical outlet or tank pipe 22 the upper end of which is threadedly secured in a flanged coupling 23 bolted to the top of the tank cover member 21 in an airtight connection. The coupling is disposed in an opening 24 formed in the cover member. The outlet pipe extends down into the tank B and terminates just short of its bottom so that it will be immersed in the compound within the tank.

Above the tank cover member 21 the coupling 23 carries a compound pipe 26 which connects with one side of a three-way valve 27. The opposite side of the valve is connected by a pipe 28 to the inlet end of a rotary pump 29 which is actuated in any suitable manner, such as for example, by a pulley 31 and a belt 32. The outlet end of the pump is connected by a pipe 34 to a T 35. A short pipe 36 connects the opposite end of the T with a return relief valve 38.

The relief valve 38 is also connected to a return pipe 39 which includes a cut-off valve 41. Adjacent the cut-off valve, the return pipe is threaded into a coupling 42 similar to coupling 23 and bolted to the tank cover member 21 in an airtight connection adjacent this latter coupling. The coupling 42 projects through a hole 43 in the cover member and has secured to it a depending return pipe 44 which extends down into the tank. Hence a complete circuit is provided from the tank, through the pump and back into the tank.

The connection from this circuit to the nozzle 16 is made at the T 35. This connection includes a short nipple 51 threaded into the T, a cut-off valve 52 and a pipe 53 having the nozzle secured to its outer end. Intermediate the length of the pipe 53 there is located a T 54 which is connected by a flexible hose 55 to the three-way valve 27. This is a by-pass hose used only with the air pressure hereinbefore mentioned and includes a cut-off valve 56.

When the by-pass cut-off valve 56 is closed to shut off the hose 55 at one end and the three-way valve 27 is turned to cut off the hose 55 at its other end, and the two cut-off valves 41, 52 are open the pump draws the compound up through the tank pipe 22 and forces it into the pipe 34 through which it flows toward the relief valve 38. The relief valve is set to create a given pressure at the nozzle and hence when the compound is pumped against the valve it flows out at the T 35 into the pipe 53 and nozzle 16. When the pressure of the compound against the valve exceeds the nozzle pressure, the valve opens and permits the excess compound to flow into the return pipes 39, 44 and thus back into the tank for recirculation.

When a water base compound is used the pump 29 is cut out of the circuit and compressed air is introduced directly into the tank for forcing the compound into the nozzle by way of the by-pass hose 55. For such a compound the cut-off valves 41, 52 are closed, the cut-off valve 56 is opened, and the three-way valve 27 is turned to permit communication between the pipe 26 and the by-pass hose 55. This setting of the three-way valve also closes off the pump pipe 28. The air is introduced into the tank by way of a supply pipe 58 which preferably includes a pressure regulator valve 59. One end of the pipe is threaded into a hole 61 formed in the cover member 21 and the other end leads to a suitable source of supply of compressed air such as a tank or a compressor. Thus the compound is forced directly from the tank into the nozzle under a desired pressure and hence no return pipes are needed.

An indicator or gauge 65 is provided to show the quantity of compound in the tank. This gauge includes a vertical tubular member 66 which is erected on the cover member 21 and which encloses a glass tube 67. Inside the glass tube there is disposed an indicating disc 68 which is secured to the upper end of a vertical rod 69 which extends down into the tank through a hole in the cover member. A float 71 attached to the lower end of the rod rides on the surface of the compound in the tank.

Thus the indicator disc 68 moves up and down in the glass tube with the rise or fall of the compound and hence shows the level of the compound in the tank. A slot 72 in the tubular member 66 permits a visual view of the indicator disc through the glass tube and a scale 73 adjacent the slot shows the quantity of compound in the tank.

The rack that holds the tank B in place while its contents are being used, includes a vertically movable table 75 having lateral extensions 76 which surround a pair of vertically disposed guide rods 77. At their upper ends the rods are bolted to the cover member 21. At their lower ends they are bolted to a pedestal bracket 78. Bracket 78 is carried on the upper end of a pedestal sleeve 79 which is secured in a base 81.

The tank table 75 is supported on a short threaded stem 83 which loosely fits within the upper end of a vertical tube 84. The lower end

of the tube extends down into the pedestal sleeve 79 and an enlarged head 86 formed on the end of the tube keeps it in a central position within the sleeve.

Adjacent the table 75 the stem 83 carries a locking nut 87 which is provided with a bar handle 88. This locking nut rests on top of a collar 89 which is secured to the upper end of the tube 84. A holding handle 91 is secured in the collar. Adjacent the pedestal bracket 78 the tube 84 is formed with a transverse hole 93 in which a removable table holding key 94 is retained. This key rests on the top of the pedestal bracket in a groove 95 formed therein.

Hence when a tank B is first placed in the rack for use it is positioned on the table 75, which at that time is in a lowered position, and the table is then manually raised vertically until the key hole 93 in the tube 84 comes into register with the groove 95. The key 94 is then positioned in the groove and inserted into the key hole. The key thus takes the weight of the table and the tank and supports them in their raised position. In this position the top of the tank is adjacent but not touching the tank cover member 21. A depending flange 96 formed on the cover member fits inside the upper end of the tank and thus centralizes the tank on the table.

Next the tank is further raised into airtight engagement with the tank cover member 21, and is clamped against an annular rubber gasket 97 surrounding the cover member flange 96. This raising and clamping is effected by the lock-nut 87 which is manually rotated by its handle 88 while the holding handle 91 is held stationary. Rotation of the lock-nut raises the table stem 83 while the clamping pressure thus created reacts on the holding key 94.

In removing a tank from the rack the reverse of these operations is effected. The lock-nut 87 is first unscrewed sufficiently to let the tank move down away from the cover member 21 so that the clamping pressure will be released from the key 94. This breaks the air tight connection between the tank and its cover member. Then the key is withdrawn from its hole 93 in the tube 84 and the latter permitted to slide down inside the sleeve 79. This lowers the table and permits of convenient removal of the tank therefrom.

Such a construction of tank device permits the use of various tanks. In fact it has been found very convenient in most cases to use the containers in which the compound was originally shipped and stored as tanks and thereby eliminate the use of a separate tank. These containers are usually of the character which have a five gallon capacity and which are made of heavy gauge sheet metal and thus are admirably equipped to serve as substantial tanks. Such containers are usually formed with a removable cover and a heavy bail C.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A tank device for a coating machine and the like, which comprises a removable vertically reciprocable open top tank for retaining the coating material, a cover plate designed for sealing

the open top of said tank, means for dispensing the coating material, a pipe line connecting said cover plate and the interior of said tank with said dispensing means for conducting coating material to the latter, means for supporting and clamping said tank in sealing engagement with said cover plate, and means for moving said tank supporting means toward and away from said cover plate respectively to clamp the open top of said tank in sealing engagement with said cover plate and to facilitate convenient removal and replacement of said tank.

2. A tank device for a coating machine and the like, which comprises a frame for an open top container adapted to be used as a tank, a cover plate secured to said frame for closing the open top of said container tank when the latter is in place, pipe lines in said cover plate and leading to and from the interior of said container tank for dispensing the contents thereof, a container tank supporting table movable toward and away from said cover plate, a loose support adjacent said table and movable relative to said frame for shifting the table and the container tank thereon into a predetermined position adjacent said cover plate, a removable key insertable into said loose support for holding it in said predetermined position, and means between said loose support and said table for further moving the latter into a clamped position against said cover plate.

3. A tank device for a coating machine and the like, which comprises a frame for an open top container adapted to be used as a tank, a cover plate secured to said frame for closing the open top of said container tank when the latter is in place, pipe lines in said cover plate and leading to and from the interior of said container tank for dispensing the contents thereof, a container tank supporting table movable toward and away from said cover plate, a threaded stem secured to said table, a loose tubular support surrounding said stem and movable in said frame

for shifting the table and the container tank thereon into a predetermined position adjacent said cover plate, a removable key insertable into a key hole in said tubular support for holding the latter in said predetermined position, means for holding said tubular support against rotation in the frame, and a rotatable lock-nut on the table stem and engaging against the end of said tubular support for further moving said table into a clamped position against said cover plate.

4. A tank device for a coating machine and the like, which comprises a frame, a cover plate secured to said frame, means for supporting a container of coating material and for clamping it against said cover plate so that the container will serve as a tank, said container being the original container in which the coating material was shipped and stored, outlet and return inlet pipes secured in said cover plate and extending into said container when the latter is in place, a pipe line connecting said outlet and return inlet pipes to provide a continuous circuit between them, a suction pump and a relief valve in said pipe line for circulating said coating material through the pipe line at a predetermined pressure, a dispensing nozzle connected into said pipe line between said pump and said relief valve for dispensing said coating material, a compressed air connection secured in said cover plate and communicating with the interior of said container, a by-pass pipe cutting out said pump, and a plurality of cut-off valves in said pipe line and in said by-pass pipe for cutting out said by-pass to permit use of the pump for dispensing from said nozzle one kind of coating material and for also cutting out said pump so that the compressed air connection and said by-pass may be used for dispensing from the nozzle another kind of coating material, these different kinds of materials being retained in different containers readily positioned one at a time in said supporting and clamping means.

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