Sept. 3, 1929. P. J. BARORD 1,726,941

APPARATUS FOR COATING

Filed Aug. 26, 1927 2 Sheets-Sheet 1

Fig. 1.

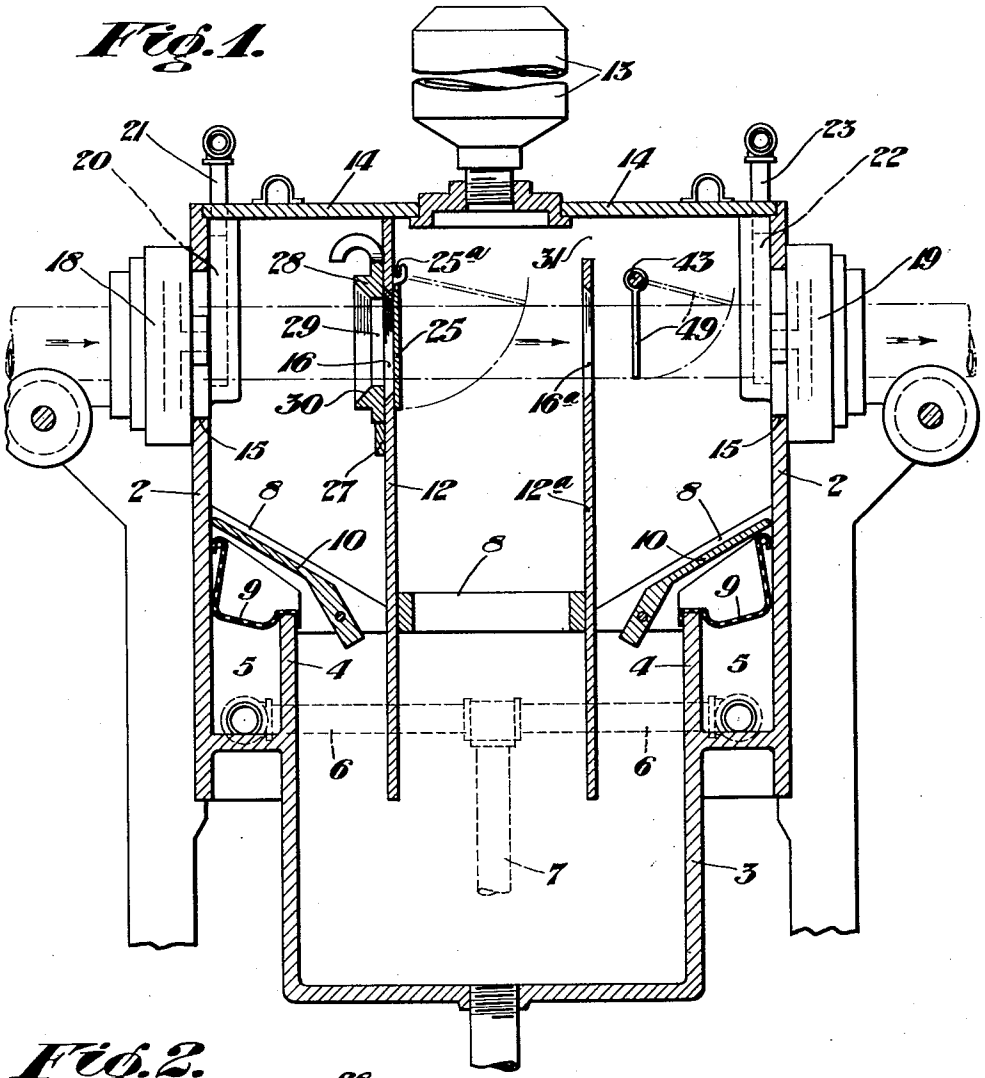


Fig. 2.

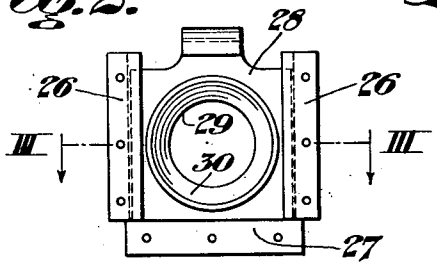
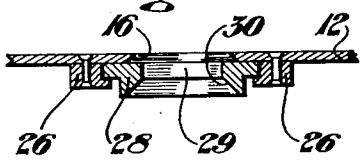


Fig. 3.



Witnesses:

Edwin Gruebb

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Fig. 4.

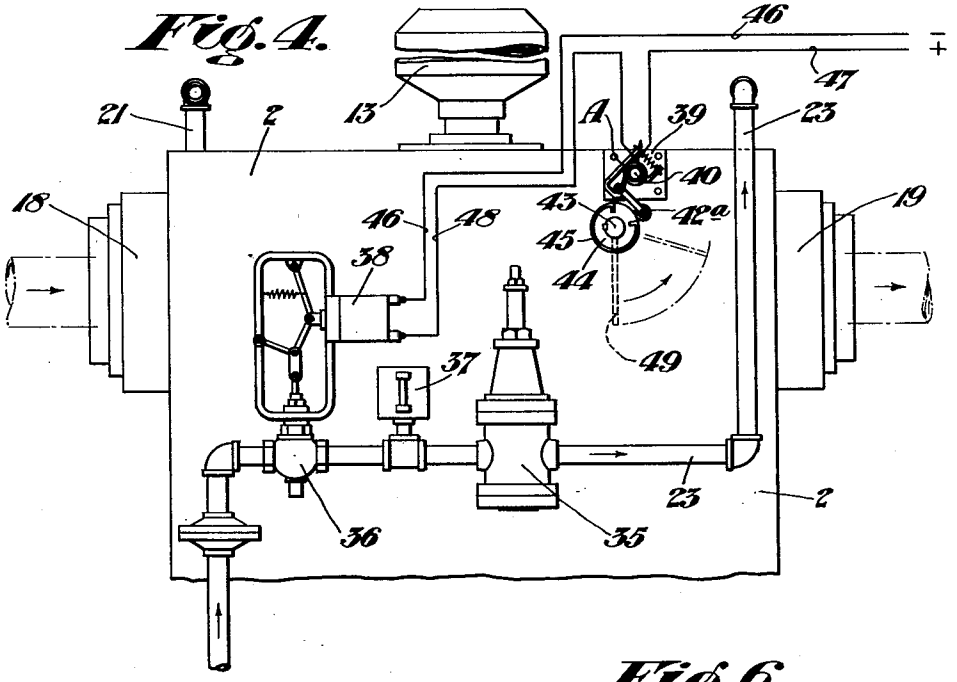


Fig. 6.

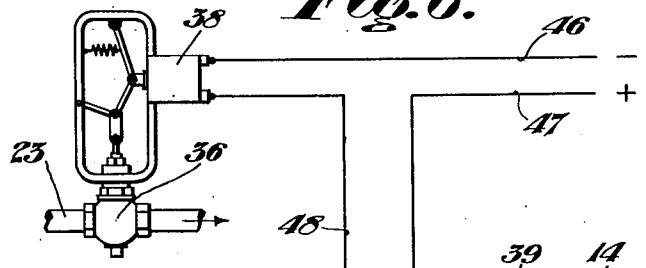
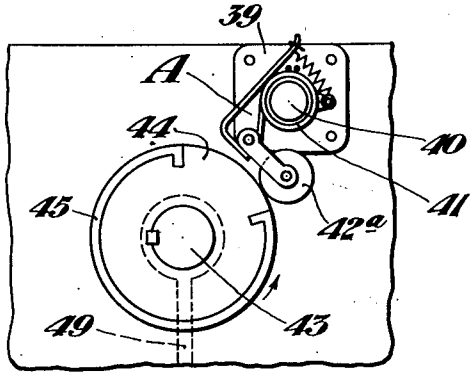


Fig. 5.



Witnesses:

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Patented Sept. 3, 1929. 1,726,941

UNITED STATES PATENT OFFICE.

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APPARATUS FOR COATING.

Application filed August 26, 1927. Serial No. 215,711.

This invention relates to coating apparatus and more particularly to apparatus for coating pipes, beams, and similar objects with paint or other liquid coating materials, wherein excess coating is wiped off of the objects by gaseous fluid under pressure discharged through a wiping nozzle.

The present invention applies to that class of coating apparatus shown and described in my co-pending application, Serial No. 131,892, filed August 27, 1926, and has for its object the provision of a novel form of control mechanism for automatically controlling the flow of gaseous fluid through the wiping nozzle.

In the drawings—

Figure 1 is a side elevation of the coating chamber of a machine embodying this invention.

Figure 2 is a longitudinal vertical sectional elevation through the coating chamber.

Figure 3 is a plan of the baffle plate nearest the coating nozzle.

Figure 4 is a side elevation of the upper portion of the machine shown in Figure 1;

Figure 5 is a side elevation on a larger scale of the circuit closing mechanism; and

Figure 6 is a front elevation of the circuit closing device, the view also including diagrammatically the automatic valve and the connections thereto.

Referring more particularly to the drawings, the numeral 2 designates the coating chamber which is provided at its bottom with a settling basin or tank 3. A pair of end walls 4 extend upwardly from the ends of the basin or tank 3 in spaced relation to the end walls of the coating chamber forming overflow chambers 5 for receiving the coating material overflowing from the settling basin or tank 3.

A pair of branch drain pipes 6 lead from the overflow chambers 5 to a main drain pipe 7, which pipe conducts the fluid back to the source of supply (not shown).

A grate or open support 8 extends longitudinally or from end to end of the coating chamber 2 above the settling basin or tank 3 and overflow chambers 5. Filter screens 9 are supported on the grate or support 8 and the walls 4 above each of the chambers 5, and cover plates 10 are hingedly supported on the grate 8 and arranged to normally overlie the chambers 5 so as to cause any liquid or coating material descending in the coating chamber to flow into the basin 3 from which it may overflow into the chambers 5 through the screens 9.

A pair of baffle plates 12 and 12^a are mounted transversely in the coating chamber 2 in longitudinally spaced relation for a purpose to be described.

An exhaust head 13 communicates through the top of the coating chamber 2 with the space between the baffle plates 12 and 12^a.

The top of the chamber 2 at each side of the exhaust head 13 is closed by hinged closures 14 so that access may be readily had to the interior of the coating chamber 2.

The end walls of the coating chamber are provided with openings 15 through which the work or object to be coated passes. The baffle plates 12 and 12^a are also provided with openings 16 and 16^a, respectively. The openings 15, 16, and 16^a are of sufficient size to permit the largest size object or workpiece to pass.

The openings 15 form nozzle seats in which are seated the nozzles 18 and 19. Different sized nozzles are used for different sizes of objects. However, the bases of all the nozzles are of the same size so as to fit the openings 15.

The nozzle 18 is adapted to coat the object or work-piece by directing a stream of coating material thereon and, therefore, is connected through a cored conduit 20 with a coating supply pipe 21.

The nozze 19 is adapted to direct a stream of air under pressure onto the object or workpiece to remove or wipe off all excess coating material and, therefore, is connected through a cored conduit 22 with an air supply pipe 23.

The supply pipe or main 23 is provided intermediate its ends with an automatic constant pressure regulator 35 and with a flow control valve 36 adapted to be opened and closed to permit and stop the flow of gaseous fluid to the nozzle 19. A standard lubricator 37 is provided for permitting enough lubricant to enter the fluid to keep the parts of the regulator 35 lubricated.

The regulator 35 is adapted to be set so as to maintain a pressure to the nozzle 19 of less than the normal pressure in the main or pipe 23 so that sudden drops or increases

in the main pressure will not be delivered to the nozzle.

The valve 36 is adapted to be opened and closed by a solenoid operating mechanism 38, which mechanism is adapted to have its circuit controlled by a make and break switch A operable by the object being coated as it passes through the coating chamber.

The make and break mechanism A comprises a bracket support 39 having a spindle 40 thereon. An insulator sleeve 41 is mounted on the spindle 40 and a pair of contact rollers 42 and 42ª are mounted on the sleeve 41 so as to be insulated from each other and from the spindle 40.

A shaft 43 extends transversely of and is journaled in the chamber 2 and has one end projected outwardly therefrom. A contact or bridging-wheel or disk 44 is keyed on the extended end of the shaft 43 and serves to bridge the rollers 42. The wheel or disk 44 has a body portion composed of insulating material and a contact or bridge strip 45 is mounted on and extends around a portion of the periphery thereof.

The solenoid 38 has one line 46 of a source of electric current connected thereto, while the other line 47 is connected to the contact roller 42 and the roller 42ª is connected to the other side of the solenoid by a line 48 so that when the rollers 42 and 42ª are bridged by the strip 45 on the disk 44 the circuit to the solenoid will be closed, while when said rollers are in engagement with the body of the disk 44 the circuit will be broken.

A trip lever 49 is keyed on the shaft 43 and is positioned in the path of travel of the pipe or other object to be coated so that when the object being coated passes through the chamber 2 it will engage the trip lever 49 and rock said lever and shaft 43, thereby rotating the disk 44 so as to cause the contact strip or face 45 on the disk 44 to bridge the rollers 42, 42ª and close the circuit to the solenoid. Energization of the solenoid 38 will open the valve 36. The lever 49 is of sufficient weight to normally remain in the position at which the rollers 42, 42ª are in engagement with the body of the disk 44 and the circuit to the solenoid is broken, and said lever is adapted to automatically return to its normal position by gravity as soon as said lever is released by the article being coated. It will be understood, however, that a spring may be used to aid in the action of the lever 49 if desired.

The baffle plate 12 extends transversely from side to side of the chamber 2 downwardly from the top of the chamber 2 through the grate or support 8 and an appreciable distance into the basin 3 so as to extend into the coating liquid in the basin, whereby the lower end of the baffle will be sealed.

The baffle plate 12 as heretofore stated, is provided with an opening 16 through which the object being coated passes. The opening 16 is adapted to be normally closed by a hinged closure or trap door 25 which is removably hinged to the baffle plate at 26 and is of sufficient weight to normally remain closed by gravity. The opening 16 is preferably of sufficient size to permit the passage therethrough of the largest size object for which the machine is designed. In order to more closely approximate the size of the article or object being coated, the baffle plate 12 is provided with guideways 26 extending vertically along each side of the opening 16, and a stop 27 extending horizontally below the opening 16, and a gag or reducing plate 28 is slidably mounted in the guideways 26. The plate 28 is provided with a reduced opening 29 closely approximating the size of the object being coated, and different sizes of the plates 28 are substituted for the different sizes of objects coated.

The opening 29 is preferably flared outwardly toward the coating nozzle as at 30, so as to guide the object being coated through the opening 29.

The baffle plate 12ª, which is provided with an opening 16ª, extends transversely from side to side of the coating chamber 2, and from a point short of the top of the chamber 2 down into the coating liquid in the basin 3 so that the lower end of the baffle is sealed and the upper end is spaced from the top wall to form an opening or passageway 31 through which the air or other wiping fluid discharged by the nozzle 19 may pass into the space between the baffle plates 12 and 12ª and escape through the exhaust head 13.

In operation, assuming that the apparatus is equipped with annular nozzles and baffle plates having round openings therein for coating pipe, a pipe will be passed through the nozzle 18 and its forward end will pass through the opening 29 in the gag plate 28 and engage the trap door or closure 25 and force said door upwardly. The pipe will then continue its movement through the chamber 2 and engage the trip lever 49 which will be rocked so as to rotate the shaft 43 and wheel or disk 44 and bridge the contact rollers 42, 42ª. Bridging of the rollers 42, 42ª will close the circuit to the solenoid 38 and thereby open the valve 36 so as to permit the gaseous fluid under pressure to be discharged through the nozzle 19 to wipe off all excess coating material. The air discharged by the nozzle 19, which is under high pressure, will strike the baffle plate 12ª and be directed up over the plate 12ª and into the space between the plates 12 and 12ª from which it will escape through the exhaust head 13.

Due to the fact that the gag plate 28 has an opening approximating the size and shape of the object or pipe being coated, no appreciable amount of air will escape through the baffle 12 while the object is passing therethrough and, therefore, the coating material

will not be blown back through the nozzle 18 while the pipe is passing through the baffle 12, and as soon as the pipe passes through the baffle plate 12 the trap door 25 will automatically close by gravity and effectively seal the opening 16 in the baffle plate against the passage of air therethrough.

From the above it will be readily understood that I have provided an effective means for preventing the blowing back of the coating material discharged by the nozzle 18 by the wiping air from the nozzle 19.

While I have shown and described one specific embodiment of my invention, it will be understood that I do not wish to be limited thereto since various modifications may be made without departing from the scope of my invention as defined in the appended claims.

I claim—

1. In an apparatus for coating the surface of an object with paint or other fluid coating material, a coating nozzle, a wiping nozzle adapted to discharge fluid under pressure against the coated object to remove excess coating material therefrom, a fluid supply main connected to said wiping nozzle, a valve for controlling the flow of fluid to said nozzle, and means interposed between the two nozzles operable by the object being coated for operating said valve.

2. In an apparatus for coating the surface of an object with paint or other fluid coating material, a coating nozzle, a wiping nozzle adapted to discharge fluid under pressure against the coated object to remove excess coating material therefrom, a fluid supply main connected to said wiping nozzle, a valve for controlling the flow of fluid to said nozzle, and electrical means operably interposed between the two nozzles and operable by the object being coated for operating said valve.

3. In an apparatus for coating the surface of an object with paint or other fluid coating material, a coating nozzle, a wiping nozzle adapted to discharge fluid under pressure against the coated object to remove excess coating material therefrom, a fluid supply main connected to said wiping nozzle, a valve for controlling the flow of fluid to said nozzle, electrical means for actuating said valve, and means interposed between the two nozzles operable by the object being coated for making and breaking the circuit to said electrical means.

4. In an apparatus for coating the surface of an object with paint or other fluid coating material, a coating nozzle, a wiping nozzle adapted to discharge fluid under pressure against the coated object to remove excess coating material therefrom, a fluid supply main connected to said wiping nozzle, a valve for controlling the flow of fluid to said nozzle, a solenoid for actuating said valve, a switch for making and breaking the circuit to said solenoid, and a trip lever mechanism for operating said switch, said trip lever mechanism being interposed between the two nozzles operable by the object being coated.

5. In an apparatus for coating the surface of an object with paint or other fluid coating material comprising, in combination, a coating chamber, means adjacent one end of said chamber for applying coating to the object to be coated, and a wiping nozzle adjacent the other end of said chamber for discharging a stream of gaseous fluid under pressure against the coated object to remove excess coating material therefrom, a fluid supply main connected to said wiping nozzle, a valve for controlling the flow of fluid through said main to said nozzle, and means for actuating said valve including a trip lever mounted within and intermediate the ends of said chamber, said lever being in the path of travel of said object being coated and being adapted to be actuated thereby.

6. In an apparatus for coating the surface of an object with paint or other fluid coating material comprising, in combination, a coating chamber, means adjacent one end of said chamber for applying coating to the object to be coated, and a wiping nozzle adjacent the other end of said chamber for discharging a stream of gaseous fluid under pressure against the coated object to remove excess coating material therefrom, a fluid supply main connected to said wiping nozzle, a valve for controlling the flow of fluid through said main to said nozzle, electrical means for actuating said valve, means for making and breaking the circuit to said electrical means, and a trip lever for actuating said circuit making and breaking means, said lever being mounted within and intermediate the ends of said chamber, said lever being in the path of travel of said object being coated and being adapted to be actuated thereby.

7. In an apparatus for coating the surface of an object with paint or other fluid coating material comprising, in combination, a coating chamber, means adjacent one end of said chamber for applying coating to the object to be coated, and a wiping nozzle adjacent the other end of said chamber for discharging a stream of gaseous fluid under pressure against the coated object to remove excess coating material therefrom, a fluid supply main connected to said wiping nozzle, a valve for controlling the flow of fluid through said main to said nozzle, a solenoid for actuating said valve, a switch for making and breaking the circuit to said solenoid, and a trip lever for actuating said switch, said lever being mounted within and intermediate the ends of said chamber, said lever being in the path of travel of said object being coated and being adapted to be actuated thereby.

8. In an apparatus for coating the surface of an object with paint or other fluid coating

material comprising, in combination, a coating chamber, means adjacent one end of said chamber for applying coating to the object to be coated, and a wiping nozzle adjacent the other end of said chamber for discharging a stream of gaseous fluid under pressure against the coated object to remove excess coating material therefrom, a fluid supply main connected to said wiping nozzle, an automatic constant pressure regulator in said main, a valve for controlling the flow of fluid through said main to said nozzle, a solenoid for actuating said valve, a rotary switch for making and breaking the circuit to said solenoid, a shaft for operating said switch and a trip lever on said shaft within said chamber, said lever being in the path of travel of said object being coated and being adapted to be actuated thereby.

In testimony whereof, I have hereunto signed my name.

PAUL J. BARORD.