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D. P. CLEVELAND

CLEANING AND PAINT REMOVING APPARATUS

Filed July 25, 1921

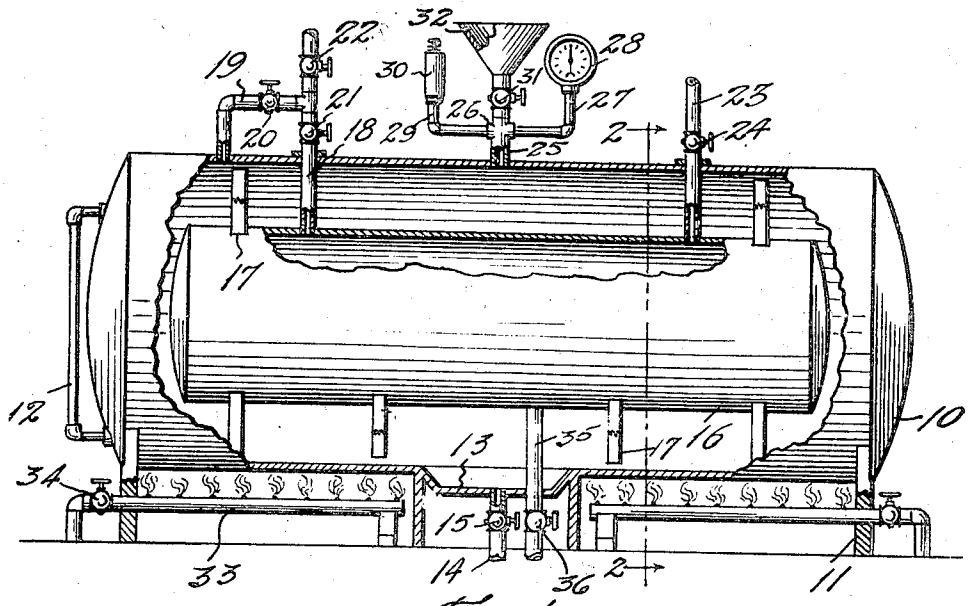


Fig. 1.

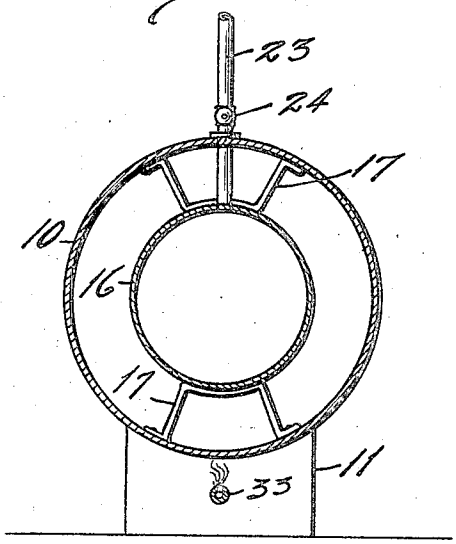


Fig. 2.

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UNITED STATES PATENT OFFICE.

DAVID P. CLEVELAND, OF DALLAS, TEXAS, ASSIGNOR TO UNIVERSAL PAINT REMOVER AND MOTOR CLEANING COMPANY, A TRUST ESTATE, OF DALLAS, TEXAS.

CLEANING AND PAINT-REMOVING APPARATUS.

Application filed July 25, 1921. Serial No. 487,502.

To all whom it may concern:

Be it known that I, DAVID P. CLEVELAND, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Cleaning and Paint-Removing Apparatus, of which the following is a specification.

This invention relates to new and useful improvements in cleaning and paint removing apparatuses.

The purpose of the invention is to provide an apparatus in which two functions may be combined. First, to provide an apparatus whereby an equalized air pressure may be employed within a receptacle for discharging therefrom a suitable cleaning fluid for the purpose of removing dirt, grease and the like from various articles. The second function is to utilize the same receptacle for the heating of a chemical solution, whereby the gaseous pressure in the receptacle will discharge the chemical therefrom, which may be combined with the equalized air pressure for spraying on a painted surface for the purpose of removing the paint from said surface.

In carrying out the invention I provide a tank within which is supported an air drum of less diameter. A compressed air conductor leads into the drum and a discharge pipe leads from the drum. A by pass connection is established between the compressed air conductor and the tank so that compressed air may be delivered into the tank as well as into the drum. Means is provided for heating the tank and a fluid conductor leads from the tank so that the chemicals or cleaning fluid may be conveyed from said tank. Means for filling the tank together with a pressure gauge and a safety valve are also included.

A construction designed to carry out the invention will be hereinafter described together with other features of the invention.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings, in which an example of the invention is shown and wherein:

Fig. 1 is a side view of an apparatus constructed in accordance with my invention, portions being broken away to illustrate interior constructions, and

Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1.

In the drawings the numeral 10 designates an elongated metal tank preferably of a cylindrical shape and suitably constructed and lined to resist chemical action from acids and the like. The tank may be mounted upon supports 11, at each end or in any suitable way and may either be stationary or portable. At one end of the tank a glass liquid gauge 12, is provided for indicating the level of the fluid within the tank. At the center of its bottom the tank has a sump 13, from which a discharge pipe 14 extends. A cut-off valve 15 is included in the pipe 14.

I dispose concentrically within the tank a cylindrical drum 16 preferably considerably less in diameter and also less in length than the tank. This drum is held in position by brackets 17 or other suitable means. An air supply pipe 18 leads thru the tank to the drum. A by-pass pipe 19 including a cut-off valve 20 extends from the pipe 18 to the tank 10. A cut-off valve 21 is located in the pipe 18 between the tank and the point at which the by-pass pipe is connected, so that by closing the valve 21 air cannot pass into the drum 16. A controlling valve 22 is included in the pipe 18 in advance of the connection with the pipe 19, so that the supply of air may be cut off from both the tank and the drum. The pipe 18 is connected with a suitable air compresser or other source for supplying compressed air which is not shown. An air discharge pipe 23 leads from the drum thru the tank and includes exteriorly of the tank a cut-off valve 24.

A filling pipe 25 is connected in the top of the tank 10 and is surmounted by a cross connection 26. An angular pipe 27 leads from one side of the cross connection and supports a pressure gauge 28, while a similar pipe 29 leads from the other side of the connection and supports a safety pressure valve 30, which may be of any suitable construction and is well known in the art. A feed valve 31 is mounted on top of the connection 26 and supports a filling hopper 32. The valve 31 is closed when the apparatus

is in operation and the gauge 28 and safety valve 30 are exposed to the pressure from the tank 10 so as to perform their functions in the usual way. When it is desired to place liquids and chemicals into the tank, the valve 31 is opened so that the same may pass from the hopper 32 thru the pipe 25 into said tank.

Under the tank 10 I provide suitable burners 33 disposed on each side of the sump 13 and each including a controlling valve 34 for supplying the fuel. These burners are suitably operated to heat the tank 10 and its contents. When it is not desired to employ a heated liquid, the burners may be cut off. It is to be understood that the tank 10 may be heated in any suitable manner, the burners being merely a suitable means.

In using the apparatus for cleaning purposes the valve 31 is opened and the valves 15 and 24 are closed. The drum 16 having been filled with compressed air thru the pipe 18, will contain compressed air under a given pressure. The valve 20 being closed, no air can enter the tank 10. The fluid and cleaning chemicals are introduced into the hopper 32 and fed into the tank 10. By opening the valve 20, compressed air is admitted thru the by-pass pipe 19 into the tank. It will be seen that if the means for supplying compressed air thru the pipe 18 is kept in operation, the pressure of the compressed air stored in drum 16 will equalize the pressure of the compressed air which passes thru the pipe 19, thus supplying compressed air to the tank 10 at an even pressure at all times. This pressure will be indicated by the gauge 28, the valve 31 having been closed after the tank is charged. Upon opening the valve 15, the cleaning fluid will flow out thru the pipe 14 and may be conducted to the point where it is to be used. It is not necessary to heat the cleaning fluid and, therefore, the burners 33 are not used.

For removing paint the tank 10 is charged with a suitable fluid and chemicals, such as water in which an alkali has been dissolved, and the burner 33 ignited. The valves 15, 20 and 24 are closed and the drum 16 is filled with compressed air. As the chemical fluid in the tank is heated it will expand and create a pressure within the tank which will be increased by the gases given off by the chemical alkali. When the valve 15 is opened the pressure within the tank 10 will be sufficient to force out a portion of the paint removing fluid which may be suitably conveyed thru the pipe 14 and connected to a nozzle, not shown, or other discharge device with which the pipe 23 is also connected. By opening the valve 24 the hot chemical fluids will be discharged by means of the compressed air which is supplied at an even pressure. It will be seen that the apparatus may be quickly converted for any use and is very simple in operation. A clean out pipe 35 leads from the bottom of the drum down thru the sump 13 and includes a cut-off valve 36. It is obvious that the tank 10 may be charged with sufficient liquid and chemical to perform a certain amount of work, so that when the specified work is complete the nature of the next charge may be changed to suit the work to be done. This makes for a practical and economical apparatus.

It will be seen that the heated fluid within the tank 10 will heat the compressed air in the drum 16. This is of considerable advantage because the heated air will heat the liquid from the pipe 14 so that it will be sprayed or atomized onto the work in a hot state. In removing paint it is necessary that the liquid sprayed onto the work be extremely hot.

It is to be understood that the drum 16 may be suitably constructed and may be coated on the outside with a chemical resisting material if necessary. In view of the wide use of this apparatus it is obvious that various changes in the dimensions and constructions as well as modifications may be made without departing from the spirit of the invention.

What I claim is:

1. In an apparatus of the character described, a tank, a discharge pipe leading from the tank, an air drum disposed within the tank, means for supplying compressed air to the drum, a by-pass connection between said compressed air supply means and the tank, a discharge pipe leading from the drum, means for introducing a charge into the tank, and means for heating the tank and its contents.

2. In an apparatus of the character described, a tank, an air drum supported within the tank, a supply element having a cut-off valve connected with the tank, a discharge conductor including a valve connected with the bottom of the tank, a compressed air supply pipe leading thru the tank into the drum, a by-pass pipe leading from the air supply pipe to the tank and including a cut-off valve, cut-off valves mounted in the air supply pipe on each side of the point of connection with the by-pass pipe, an air discharge pipe leading from the drum thru the tank and including a cut-off valve, and burners for heating the tank located under the same.

3. In an apparatus of the character described, a tank, an air drum supported within the tank, a supply element having a cut-off valve connected with the tank, a discharge conductor including a valve connected with the bottom of the tank, a compressed air supply pipe leading thru the tank

into the drum, a by-pass pipe leading from the air supply pipe to the tank and including a cut-off valve, cut-off valves mounted in the air supply pipe on each side of the point of connection with the by-pass pipe, an air discharge pipe leading from the drum thru the tank and including a cut-off valve, burners for heating the tank located under the same, a safety pressure valve connected with the tank, and a pressure gauge connected with the tank.

In testimony whereof I affix my signature.

DAVID P. CLEVELAND.