Aug. 13, 1940. A. E. GLEASON 2,210,934

SPRAYING MECHANISM

Filed Aug. 4, 1939

Fig. 1.

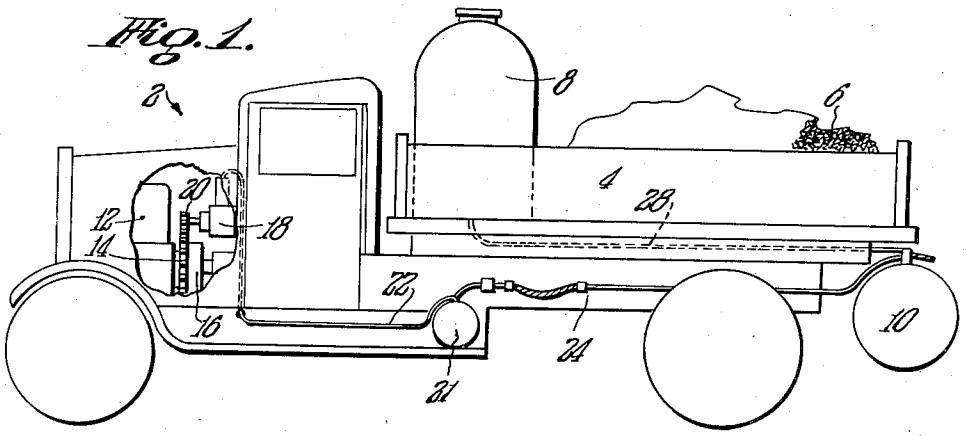
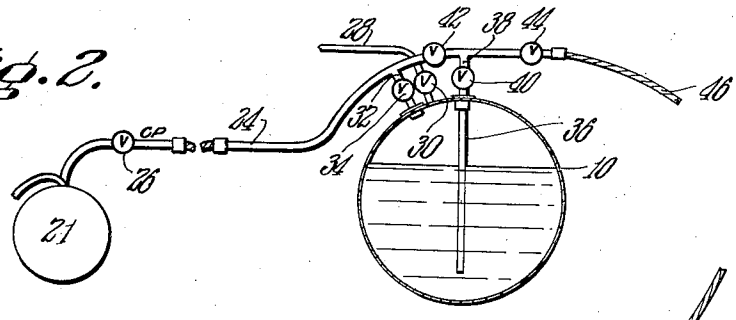


Fig. 2.



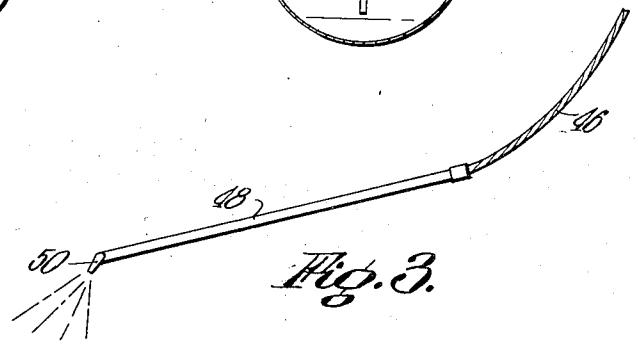


Fig. 3.

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Patented Aug. 13, 1940 2,210,934

UNITED STATES PATENT OFFICE

2,210,934

SPRAYING MECHANISM

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Application August 4, 1939, Serial No. 288,400

2 Claims. (Cl. 299—34)

My invention relates to improvements in road building or spraying apparatus and it is directed more particularly to improvements in apparatus for distributing or spraying road building material. The novel features of the invention are directed to the provision of apparatus for distributing or spraying road building material in a more or less liquid condition and this apparatus is characterized by its simplicity in form and its efficiency in operation.

Heretofore, it has been customary in connection with road building or road surfacing operations to provide two trucks, one of which carries not only a tank for supplying the building material but also a manually operated pump which pumps the material so as to facilitate spraying, and the other of which carries the crushed rock for use in the road under construction. Such a procedure entails not only much extra equipment but also much extra labor, all of which is costly.

There is the further objection to the prior art devices that the spraying material, which usually includes some bituminous material such as tar, coal tar pitch, or the like is prone to congeal and to harden so as to clog the pump and the delivery pipe and the nozzle thereof.

According to my invention, the spraying material is discharged from a supply tank by means of air pressure which comes from an air tank whereat the connections are so arranged that air may be forced through the delivery pipe and the nozzle thereof so as to overcome the objectionable clogging. Not only is the apparatus simple in its form and efficient in its operation, but also it is possible to employ a lesser number of trucks to do a certain piece of road construction in view of the compactness of the same.

It is an object of the invention to provide a mechanism whereby the quantity and quality of the binder material which is distributed over a certain area of road will be accurately controlled.

It is another object to provide such a control whereby the same may be easily and quickly changed according to the desires of the operator.

It is a still further object to provide a means whereby the binder material may be thoroughly removed from the device when the same is not in use so as to prevent clogging of the vital pipe lines leading to and from the various tanks.

Various other novel features and advantages of the invention will be observed from the following description of the preferred form of the invention reference being had to the accompanying drawing wherein:

Fig. 1 is a side elevational view of a motor truck showing the spraying apparatus of the invention associated therewith;

Fig. 2 is a sectional elevational view of the device of the invention through the supply tank thereof for the purpose of spraying; and

Fig. 3 is a side elevational view of the nozzle of the spraying apparatus of the invention.

Referring now to the drawing more in detail, the invention will be fully described. Like numerals in different figures refer to like parts.

In Fig. 1, a truck is generally indicated by **2** which has a tilting truck body **4**. The body **4** is adapted to carry road building material, such as crushed rock or the like as indicated by **6**. A storage tank **8** likewise disposed in said body is provided for spraying over the road building material and a supply tank **10** for the binding material also used in conjunction therewith is carried by the truck at its rear end substantially as shown.

At **12** is indicated the motor of the truck **2** which may have a gear **14** disposed on the fly wheel **16** thereof. An air compressor is represented at **18** which has a gear **20** in mesh with the gear **14** of the flywheel so that as the motor **12** is operated a compressor is simultaneously placed in operation so as to supply air to an air tank **21** through a conduit **22**.

An air pipe **24** extends from this tank **21** and there is conveniently located therein a valve **26**, which valve being of a variable constant pressure type is manually adjustable so that the air pressure in the pipe **24** is of some predetermined constant value. A pipe **28** extends from the storage tank **8** to the supply tank **10**, and in this pipe **28** there is a valve indicated by the reference **30**.

The binding material flows from the storage tank **8** to the supply tank **10** when the valve **30** is open so that the supply tank is supplied with a desired quantity of the binding material. An air inlet pipe **32** extends from the air line **24** to the supply tank **10**, and in this line **32** there is a shut-off valve **34**. A pipe **36** extends downwardly within the supply tank **10** substantially as shown and it is connected by means of a connection **38** to the pipe **24**. There is a valve **40** in the connection **38**. Other valves **42** and **44** in the line **24** are provided as shown. Conduit **46** extends from the pipe **24** and a nozzle generally indicated by **48** on the outer end of the conduit has a discharge head **50** at its extremity. When the supply tank **10** contains a supply of material to be sprayed, the valves **30** and **42** are closed while the valves **34**, **40** and **44** are opened.

With the engine of the vehicle in operation,

air is delivered to the air tank 21 so that with the valve 26 set to deliver air at some predetermined air pressure, air is forced into the supply tank 10 so that the liquid from the tank passes out therefrom through the conduit 46 whereupon it is discharged by the spray nozzle 48 and the discharge head 50.

The air pressure may be varied depending upon the consistency of the material being sprayed all to the end that the material is sprayed more efficiently and more economically than has heretofore been possible.

Whereas in prior art devices which have been previously referred to, where only 150 gallons of the spraying material has been pumped by hand per day for use with only 3 or 4 tons of rock, the apparatus of this invention permits 700 gallons to be sprayed in conjunction with 15 or 16 tons of rock which have been spread upon the roadway.

To fill the supply tank 10, the air supply is cut off and the valve 30 is opened whereby the tank 10 may be readily and easily filled with the spraying material which is to be sprayed. To overcome clogging of the discharge conduit or the nozzle or the head in association therewith, the valves 34, 30 and 40 may be closed and the valves 42 and 44 may be opened so that the air passes through pipes 24 and through conduit 46 without even entering the tank 10.

If it is desired the storage tank may be placed on the truck body instead of in the dump truck itself so that said dump truck may be raised or lowered irrespective of the storage tank.

According to my invention, it is possible to carry the spraying material with a supply of crushed rock or the like all in the same vehicle thereby effecting economy in road construction equipment and labor. By reason of the novel construction of this apparatus, the spraying material is more readily and more economically sprayed while at the same time the equipment may if desired be flushed with air so as to assist in maintaining this efficient performance.

While I have described the invention in great detail and with respect to the present preferred form thereof, it is not desired to be limited thereto since changes and modifications may be made therein without departing from the spirit and scope of the invention. The invention may be embodied in other specific forms without departing from the essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. Portable apparatus for spraying liquid-binding material and the like onto roads comprising in combination, a storage tank for binding material, a supply tank for binding material, connections between said storage tank and said supply tank including valve means, a device for supplying air under pressure and an air supply tank permanently connected thereto, a spray nozzle, a single main conduit connecting said air tank and said spray nozzle including constant pressure valve means for controlling the flow of air in said conduit from said air supply tank, a first connection between said main conduit and said supply tank for conducting air into said tank including independently operable valve means for controlling the flow of air from said main conduit into said supply tank, a second connection from said main conduit into and downwardly of said supply tank including independently operable valve means, a valve in said main conduit between said first and second connections, and a valve in said main conduit between said nozzle and said second connection, all adapted and arranged in co-operative relationship whereby air may be directed either from said main conduit through said first named said connection into said supply tank to force liquid therefrom out through said second connection into said main conduit and out said spray nozzle, or through said main conduit and out said spray nozzle past said supply tank, or from said main conduit through said supply and into said storage tank.

2. Portable apparatus for spraying liquid-binding material and the like onto roads comprising in combination, a storage tank for binding material, a supply tank for binding material, connections between said storage tank and said supply tank including valve means, a device for supplying air under pressure and an air supply tank permanently connected thereto, a spray nozzle, a single main conduit connecting said air tank and said spray nozzle, a first connection between said main conduit and said supply tank for conducting air into said tank including independently operable valve means for controlling the flow of air from said main conduit into said supply tank, a second connection from said main conduit into and downwardly of said supply tank including independently operable valve means, a valve in said main conduit between said first and second connections, and a valve in said main conduit between said nozzle and said second connection, all adapted and arranged in co-operative relationship whereby air may be directed either from said main conduit through said first named said connection into said supply tank to force liquid therefrom out through said second connection into said main conduit and out said spray nozzle, or through said main conduit and out said spray nozzle past said supply tank.

ALTON E. GLEASON.