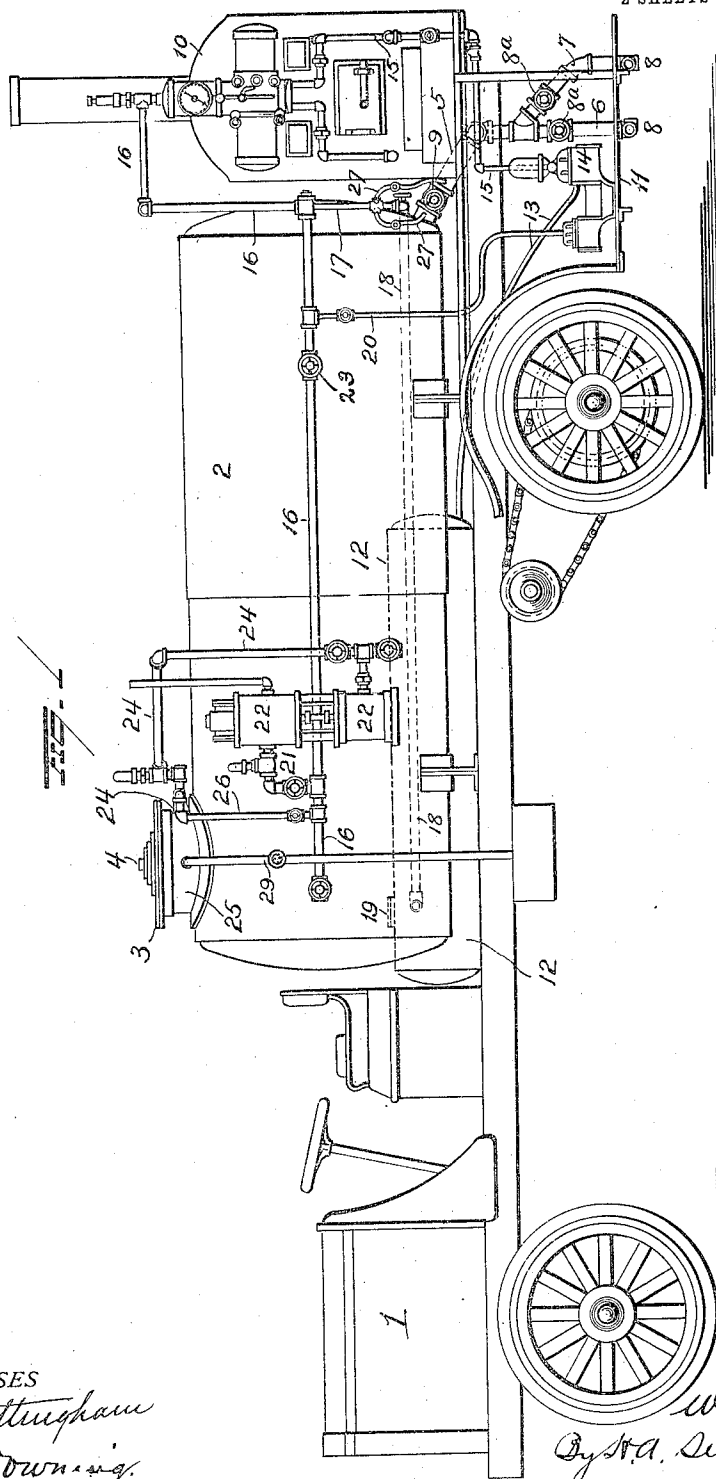


W. CRESSY.
 SPRAYING APPARATUS.
 APPLICATION FILED OCT. 13, 1913.

1,104,633.

Patented July 21, 1914.

2 SHEETS-SHEET 1.



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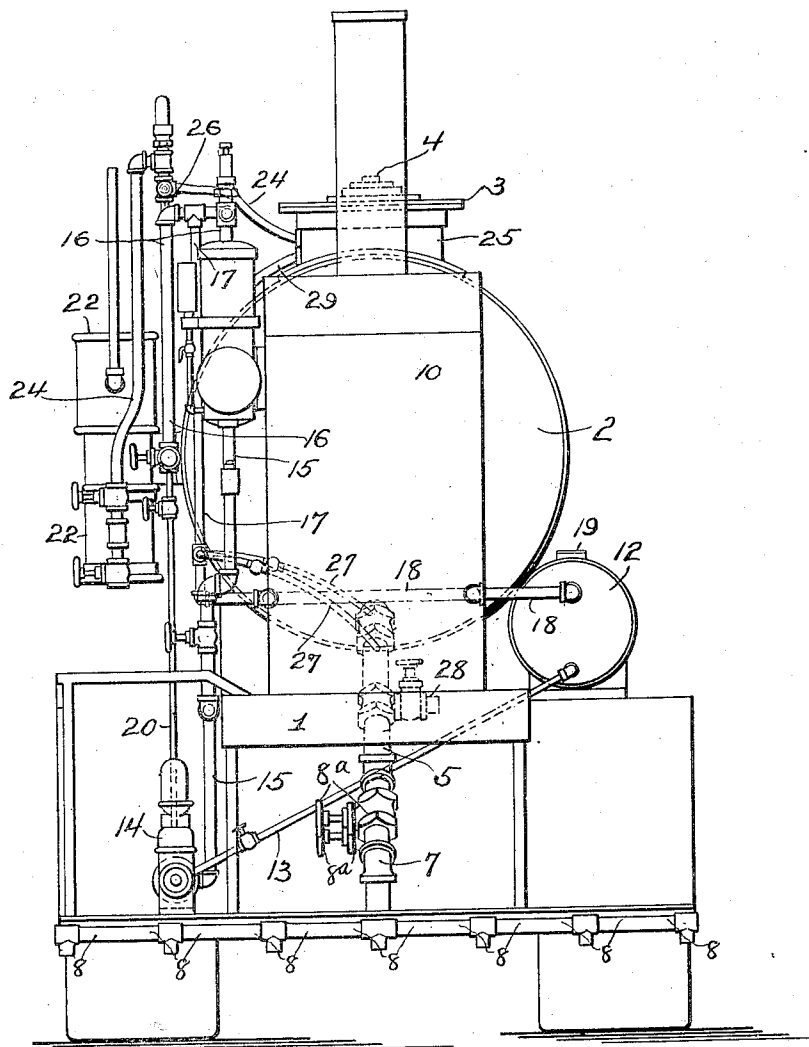


FIG. 2.

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UNITED STATES PATENT OFFICE.

WALTER CRESSY, OF GLOUCESTER, MASSACHUSETTS.

SPRAYING APPARATUS.

1,104,633.

Specification of Letters Patent.

Patented July 21, 1914.

Application filed October 13, 1913. Serial No. 794,937.

To all whom it may concern:

Be it known that I, WALTER CRESSY, of Gloucester, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Spraying Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to apparatus for spraying asphalt on road beds.

Asphalt when cold is a solid, and when hot it is of such viscosity that it will not flow by gravity through spray pipes or nozzles, hence in order to properly apply it to the crushed rock forming the body of the road bed, it must be reduced to a fluid condition and maintained under pressure.

The object therefore of my invention is to provide an apparatus adapted to receive fluid asphalt from a central station, convey it, within a reasonable time, to the place where it is to be applied; maintaining it in fluid condition while in transit; and forcing it out under pressure through spraying nozzles.

A further object is to provide means whereby the tank may be readily and quickly filled.

With these and other objects in view my invention consists in an automobile truck carrying a tank provided with a discharge pipe; a steam generator for supplying steam to the heating pipes within the tank and to steam pipes leading to the discharge pipe, and an air pump actuated by steam for exhausting the air from the tank when filling the latter and for supplying compressed air to the latter while spraying.

My invention further consists in the details of construction and combination of parts as will be more fully explained and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of my improved apparatus, and Fig. 2 is a view in rear end elevation.

1 represents an automobile truck preferably of the gasoline type, and 2 is a tank of suitable capacity, provided at its top with a manhole covered by a cap 3, the latter being provided with a threaded opening for the attachment of the filling pipe leading from a still, the said threaded opening being normally closed by a screw plug 4. The

tank 2 is provided with a discharge pipe, 5, having two branches 6 and 7, each of which leads to a spray pipe 8. The spray pipes are preferably parallel and at right angles to the length of the truck, and each is provided with a series of nozzles through which the asphalt is projected downwardly into contact with the road bed. By means of the two spray pipes the maximum quantity may be discharged over a given area with the machine moving at a given speed, and lesser quantities may be discharged by proper manipulation of the valves 8^a, in the branch pipes 6 and 7. The discharge pipe 5 is also provided with a quick acting valve 9, which controls the discharge of asphalt from tank 2.

Mounted on the truck 1 in rear of tank 2 is the steam generator 10, which may be of oil or coal burning type, preferably the latter, and is placed transversely of the truck so that its front will be at the side adjacent the operator's platform 11, which latter is suspended from the side of the truck frame at the rear of one of the drive wheels of the truck, so that the operator on the platform, will, in addition to regulating the discharge from the spray pipes, be in a position also to take care of the steam generator and pump.

Mounted on the truck frame at one side of the tank 2, is the feed water reservoir 12, connected by pipe 13 with the pump 14, the latter being connected to the boiler or steam generator 10, by the feed pipe 15. Leading from the dome of the steam generator, is the steam pipe 16, and connected to the latter, is a branch pipe 17 which communicates with the heating coil 18, located within the tank 2 near the bottom of the latter, which coil is of sufficient size and capacity to maintain the asphalt within the tank at a temperature of between 300 and 400 degrees F. This heating coil 18, passes out from the rear end of tank 2 and terminates within the feed water reservoir 12, and operates to heat the boiler feed water in the latter, and any excess pressure that may accumulate in the feed water reservoir 12, will be free to escape through the blow out nozzle 19. The steam escaping into the feed water reservoir 12 condenses therein, and thus adds to the water supply in the feed water reservoir 12. A steam pipe 20 leads to the pump 14 on the operator's platform 11, for actuating the pump, and a pipe 21 connects the steam

pipe 16 with the air pump 22, a valve 23 being located in said pipe 16 for controlling the supply of steam to the pump. An air pipe 24 leads from the air pump into the tank 2 at the top thereof, and preferably in the man hole ring 25, and a steam pipe 26 also leads from the pipe 16 and as shown, connects with the air pipe 24 leading into said tank. All of said pipes are provided with valves for cutting off or controlling the passage of steam, air and water.

27 are steam pipes leading from the generator or from the main steam supply pipe 16, and discharging into the discharge pipe 5 on opposite sides of the valve 9, so that by admitting steam to the pipe in advance of the valve it will heat up and clean out the pipe between the valve and the tank, and by admitting steam at the rear of the valve the spray pipes will be cleaned. The asphalt when cold is a solid, hence in order to apply it by sprayers it must be reduced to a fluid condition by heat, and even then its viscosity is such that it will not flow by gravity but must be pushed or pulled from the tank, hence when the valves in the spray pipes or discharge pipe are closed to shut off the flow, the asphalt within said pipes remains unless blown out by the steam, hence by connecting a steam pipe to the discharge pipe in rear of the valve 9 the pipes may be cleaned after the operation and be thoroughly cleaned and heated before the commencement of the operation. The discharge pipe 5 is also provided with a valved coupling 28, to which a hose may be connected to spray, where the road is of uneven width, or where the specification for the work calls for hose spray, and if desired an overflow pipe 29 may connect with the man hole ring 25 through which excess material may flow into a receptacle to receive the same, the pipe 29 being provided with a valve which of course would be closed while asphalt and other like heavy material is being drawn into the tank by suction.

To fill the tank, the latter is connected to an asphalt still by a pipe coupled to the threaded opening in the man hole cover, and the air exhausted from the tank 2 by the air pump 22, the partial vacuum created in the tank, operating to pull the asphalt which is semi-fluid and heated to a temperature of about 300° F. into the tank from the still. After the tank has been filled to near the top it is disconnected from the still and the opening closed by the screw plug 4. The contents of the tank is kept highly heated by the steam coils within the latter, and the apparatus is then ready for use.

After the tank has been filled, I prefer to force air into it, as the compressed air prevents the asphalt from foaming, and while spraying, compressed air is continuously supplied to the tank for forcing the liquid

asphalt out through the discharge pipe. Before the discharge valve is opened, the discharge pipe and spray pipes and nozzles should be thoroughly cleansed and heated by steam admitted through pipe 27 at the rear of valve 9, and this should also be done after discharge has been stopped so as to prevent the accumulation of asphalt in the spray pipe and nozzles. The air pump may be kept going continuously after the tank has been filled, or the valve 23 in the steam pipe for the latter may be so located that the operator on the platform 11 may be in a position to actuate same, and if so the pump may be stopped while the apparatus is *en route* from the still to the work after the desired or necessary pressure has been acquired in the tank, and started up again as soon as the discharge pipe is opened. This platform is so located with relation to the steam generator, pump and valves in the discharge pipes, that one operator thereon can control all the parts, except of course the travel of the truck itself.

By mounting the parts on an automobile truck, it is possible to convey the asphalt from a central station to remote points in a comparatively short time, thus doing away with the necessity of having a temporary heating plant near the place where the work is being done.

While *en route* from the still to the work, the pipes can be cleaned and heated by the operator on platform 11 and compressed air forced into the tank above the asphalt, so that by the time the apparatus reaches the work, it is ready to start in, and as soon as it has discharged its contents, it can return immediately to the plant and be refilled. Heretofore these spray tanks have generally been hauled by traction engines, and their contents heated by steam from the tractor, hence heat was available only when the tank was connected with a steam generator. As tractors were slow and could not be used economically for hauling the tanks any distance, it was necessary to locate a temporary heating plant near the work, or provide a series of tanks, to be used successively with means for maintaining the heat in the tanks while idle. Such an equipment was expensive and slow to operate, all of which objections are overcome by the use of my improved apparatus.

By the term asphalt, I mean a bituminous substance of such general character as Trinidad bitumen or Bermudez asphalt, which is of solid consistency and which liquefies when exposed to a temperature of between 300 and 400 degrees F.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without departing from the spirit and scope of my invention. Hence I would have it under-

stood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described but

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. An apparatus for spraying asphalt consisting of a self propelled truck, a steam generator and a tank on said truck, the said tank having a discharge pipe with a valve therein, an air pump having a pipe leading into the tank for forcing air into the same or for exhausting it from the tank, a steam pipe from the generator leading into the tank for heating the contents of the latter, a steam pipe leading to the pump, a steam pipe leading to the discharge pipe, valves in said steam pipes and an operator's platform, the valve in the steam and discharge pipes being within reach of the operator whereby they may be actuated while the truck is moving.

2. An apparatus for spraying asphalt consisting of a self propelled truck, a tank thereon having a filling opening and a discharge pipe, a valve in said discharge pipe, an air pump connected with the tank for exhausting the air therefrom whereby when the filling pipe from the asphalt heater or still is connected with the tank, the asphalt will be drawn into the tank by the partial vacuum in the latter, and also for creating a pressure within the tank for forcing the

asphalt therefrom, heating pipes within the tank, a steam generator carried by the truck, and pipes leading from the steam generator to the air pump, heating pipes within the tank, and to the tank discharge pipe for cleaning the latter preparatory to spraying.

3. An apparatus for spraying asphalt, consisting of a self propelled truck, a tank thereon having a filling opening and a discharge pipe, a valve in said discharge pipe, an air pump connected with the tank for exhausting the air therefrom while filling the tank and also for creating a pressure within the tank for forcing the asphalt therefrom, a heating pipe within the tank, a steam generator carried by the truck, steam pipes leading from the generator to the pump, a heating pipe within the tank, and a discharge pipe, valves in the pipes leading to the pump and discharge pipe and an operator's platform located with relation to said valves and also the valve in the discharge pipe whereby they may be actuated by the operator when the truck is in motion.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WALTER CRESSY.

Witnesses:

WILLIAM E. KERR,
ROBERT F. HARMSTON.