May 15, 1928. 1,669,614

W. A. HEXT

SURFACE HEATING APPARATUS

Filed June 26. 1924 2 Sheets-Sheet 1

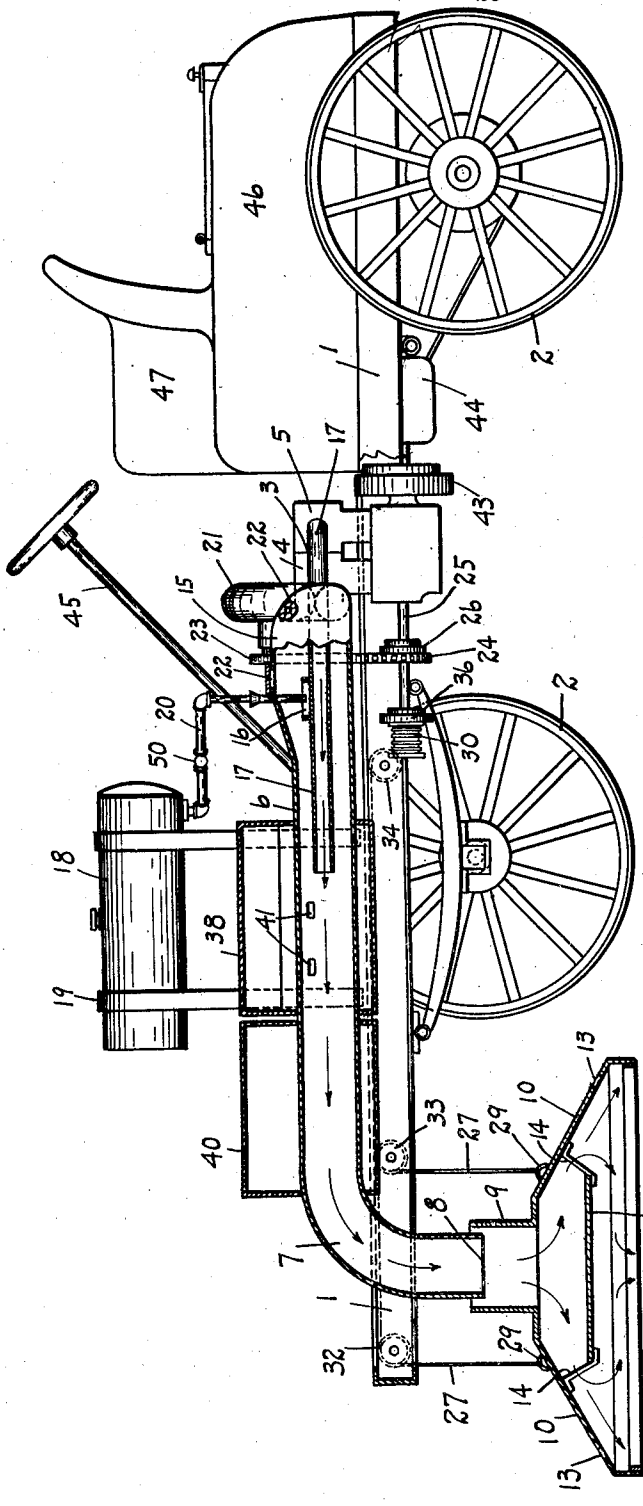


FIG. 1.

INVENTOR.
William A. Hext
By Johnson & Kreeger
ATTORNEY.

May 15, 1928. 1,669,614

W. A. HEXT

SURFACE HEATING APPARATUS

Filed June 26. 1924 2 Sheets-Sheet 2

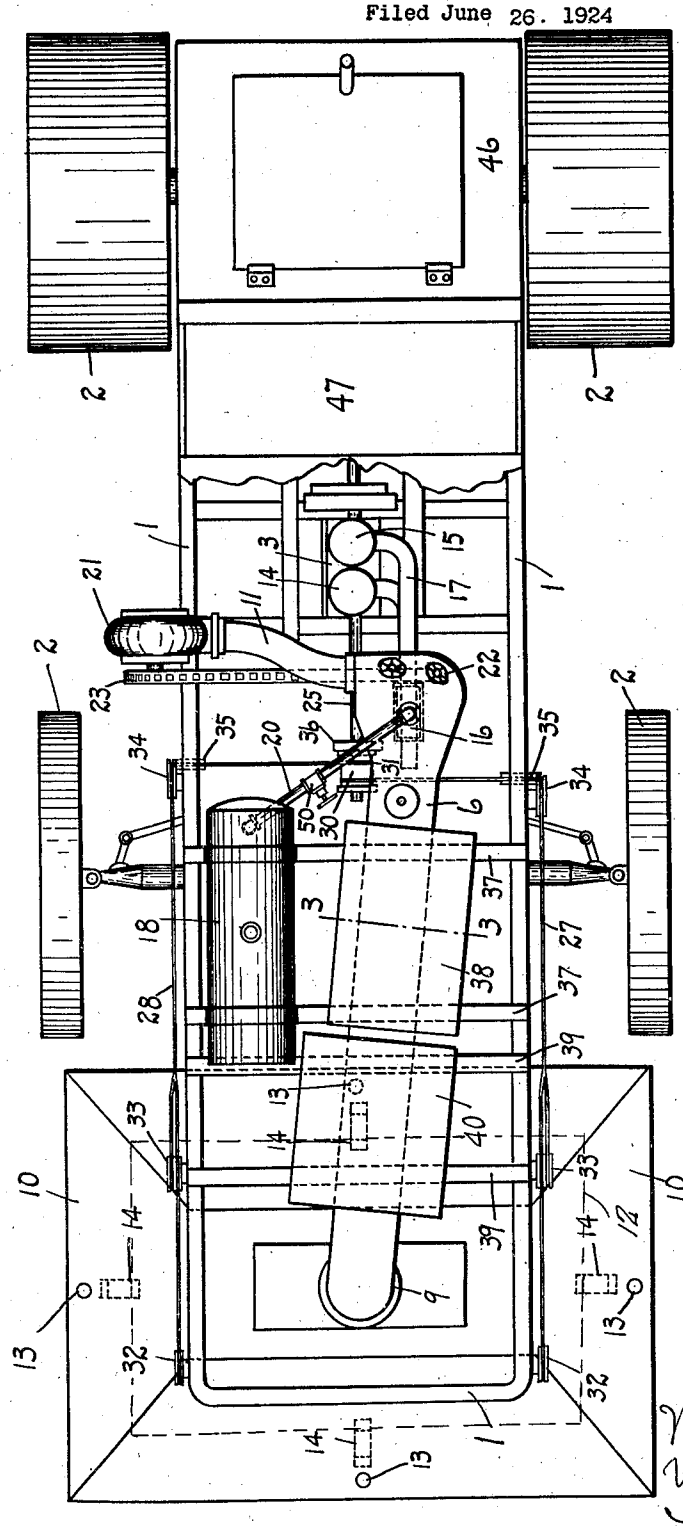


FIG. 2.

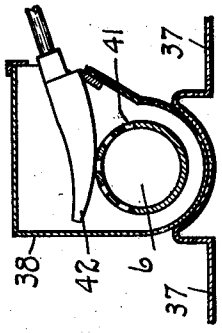


FIG. 3.

INVENTOR
William A. Hext
By John W. Frehli
ATTORNEY.

Patented May 15, 1928. 1,669,614

UNITED STATES PATENT OFFICE.

WILLIAM A. HEXT, OF CINCINNATI, OHIO.

SURFACE-HEATING APPARATUS.

Application filed June 26, 1924. Serial No. 722,610.

The object of my invention is to provide a unique and highly efficient heating device or apparatus for heating the surface of an asphalt, bitulithic or similar street when repair is necessary, which will be operated by a combustion engine and the heat applied through a heat conveying pipe and heating hood.

In carrying my invention into effect I provide between the hot air conveying pipe and the engine, a combustion chamber in which I place a vaporizing cup or pan, to which I feed fuel, also providing for the intake of air to provide proper combustion; also extending the exhaust pipe from the engine through said combustion chamber and partly into the hot air conveying pipe, the suction created by the exhaust tending to draw the heated air out of the combustion chamber and the pressure created by the exhaust in the conveying pipe forcing said air through said pipe.

Its various features and advantages will readily become apparent from the following specification and claims.

In the accompanying drawing forming part of this specification:

Fig. 1, is a side elevation partly in section,

Fig. 2, is a plan view with parts broken away to show construction; and

Fig. 3, is a section on the line 3—3 of Fig. 2.

The operating parts are mounted on a frame work or chassis 1, of any suitable form and construction and supported on wheels 2, the rear wheels being widened to form rollers, so that the apparatus may be used for rolling purposes.

On the chassis 1, I mount and connect in any preferred way a gas, oil, or other combustion engine 3, in the present instance, showing two cylinders 4 and 5; but I may use any number of cylinders.

The chassis 1 supports and carries a hot air or blast pipe 6 which curves downwardly at 7, ending in a mouth 8, and around pipe 6 at its mouth and extending beyond the same, I place a sleeve 9 carried by the upper end of a heating hood 10. A baffle plate 12 is horizontally positioned in the hood 10 beneath the sleeve 9 and is suspended in the hood by brackets 14, with its peripheral edge spaced from said hood. In order to provide a free circulation of air, the hood 10 is provided with a plurality of openings 13 arranged adjacent the lower end thereof.

At the inner extremity of the pipe 6, between it and the engine, I provide an enlarged vaporizing or combustion chamber 15. A vaporizing cup or pan 16 is located in this chamber and rests on the exhaust pipe 17. A tank 18 is supported on brackets 19. This tank holds oil or the like and is provided with a pipe 20, through which the oil flows to the vaporizing cup 16.

In carrying out my invention I provide a blower or fan 21 supported on the chassis 1, the fan supplying air to the chamber 15 through pipe 11 so as to create proper vaporization therein. In the chamber 15 I provide ports or vents 22 for supplying additional air when desired, especially when the blower 21 is not used.

The fan or blower 21 is operated through a sprocket chain 23, which passes therefrom to and over sprocket wheel 24 on engine shaft 25, this blower being placed into and out of operation by the clutch mechanism 26, of usual construction.

The hood 10 is raised and lowered through the agency of cables 27 and 28, which are connected at their outer ends to the hood 10, at points 29, and are wound at their inner ends on the spool 30 on the shaft 25 at point 31, the cables passing over a series of pulleys 32, 33, 34 and 35 mounted on the chassis 1. As shaft 25 turns, the spool 30 revolves and winds or unwinds the cables to raise or permit lowering of the hood 10. The operation of the spool is governed by a clutch and shaft and gear mechanism 36, which is thrown into operation to move the cables in either direction. It may be stated that the hood 10 lowers itself by gravity, but is held in check by the two cables.

I mount a tool heating box 38 on cross beams 37 and on cross bars 39 I mount a box 40 for carrying a supply of asphalt. The pipe 6 passes through both these boxes and heats the same, and to better heat tool heating box 38 are small holes 41 in pipe 6 where it passes through the said tool heating box, see Fig. 3, which shows one of the tools 42 in the box.

The main engine clutch is marked 43 and is mounted on drive shaft 25, and 44 shows the gear box and the steering wheel and its rod are marked 45; at the rear of the apparatus I mount a utility box 46 and a seat 47 for the operator. The transmission gear

and mechanism are the same as used in an automobile truck and need not be here described, as any form may be used.

The vaporizing pan or cup 16 is kept highly heated by the exhaust pipe 17, this heats the gas, oil, or other fuel held therein, and the air from the fan 21 mixing with this fuel heats the air as the gases are consumed. The air is supplied by the blower 21 through pipe 11, or, if the blower is not used, the air is furnished through the vents 22, the vaporizing and burning of the gases in the combustion chamber being continued as long as desired so that the heated products of combustion will always be present in the combustion chamber.

It will be noted that the exhaust pipe 17 extends materially into the pipe 6 and is spaced therefrom, and that it also passes beyond the combustion chamber 15. The exhaust coming from the engine 3 is very hot and traveling in the direction of the arrows in Fig. 1 forces the hot air and gases from the chamber 15 through the pipe 6 and down into the hood 10, consequently the surface upon which the hood is resting is heated to the desired degree; from the point where the mouth of the exhaust 17 ends in the pipe 6 the heated air or gases drawn from the chamber 15 pass off along with the exhaust.

It will be understood from the above description that the engine can be used to operate the heating apparatus as a truck to roll and finish the surface of the street; that it can be independently used for producing the heat found necessary when using the device as a surface heater and for this purpose the engine can also be manipulated to raise or lower the heating hood at will; and that the engine can be used to operate the fan or blower when desired. When it is not desired to vaporize fuel in the chamber 15, the fuel can be cut off by valve 50 and the air vents or ports 22 closed and the blower 21 cut off.

While I have described one specific construction for carrying my invention into effect, it will readily be apparent that the same is capable of considerable change and modification, and I wish to be understood that these changes and modifications will still fall within the scope of my invention.

What I claim as new and my invention and desire to secure by Letters Patent is:

1. In a surface heating apparatus, a vehicle, a pipe mounted on said vehicle, a hood supported by the vehicle and communicating with the outlet end of said pipe, an internal combustion engine mounted on the vehicle, a vaporizing chamber arranged at the inlet end of the pipe and having air admission means, an exhaust gas conduit for the engine extending through said vaporizing chamber into the inlet end of the pipe, and means for introducing a combustible fuel into the vaporizing chamber, the exhaust gas conduit being arranged to exert suction in the vaporizing chamber, and to discharge into said pipe.

2. In a surface heating apparatus, a vehicle, a pipe mounted on the vehicle, a hood supported by the vehicle and communicating with the outlet of said pipe, a vaporizing chamber arranged at the inlet end of the pipe, an internal combustion engine mounted on the vehicle, an exhaust gas conduit for the internal combustion engine extending through the vaporizing chamber and terminating within said pipe, a fuel cup arranged on the exhaust conduit within the vaporizing chamber, said vaporizing chamber having an air inlet, and means for feeding fuel into said cup.

3. In a surface heating apparatus, a vehicle, a pipe mounted on said vehicle, a hood supported by the vehicle and communicating with the outlet end of said pipe, a vaporizing chamber communicating with the inlet end of the pipe, a pump for forcing air into said vaporizing chamber, an internal combustion engine mounted on the vehicle, an exhaust conduit for the engine, extending through the vaporizing chamber and terminating within the pipe, and means for feeding fuel into said vaporizing chamber.

4. In a surface heating apparatus, a vehicle, a hood carried by the vehicle, an internal combustion engine mounted on the vehicle, a pipe for conveying gaseous fluid, mounted on the vehicle and discharging into said hood, a vaporizing chamber located between the engine and the inlet end of the conveying pipe, a conduit for conducting the products of combustion from the engine through the vaporizing chamber and into the conveying pipe, means for admitting air to said vaporizing chamber, and means for feeding fuel into said vaporizing chamber.

5. In a surface heating apparatus, a vehicle, an internal combustion engine for driving said vehicle, a gaseous fluid conducting pipe mounted on the vehicle, a hood supported by the vehicle and communicating with the outlet end of said pipe, a vaporizing chamber arranged at the inlet end of said pipe and having air admission means, an exhaust conduit for the engine extending through said vaporizing chamber and terminating within said pipe, and means for feeding fuel into said vaporizing chamber.

6. In a surface heating apparatus, a vehicle, an internal combustion engine mounted on said vehicle, a pipe for conveying heated gaseous fluid, a hood carried by the vehicle and communicating with the outlet end of said pipe, means for raising and lowering said hood, a vaporizing chamber located between the pipe and engine and having an air inlet, an exhaust conduit for the engine

extending through the vaporizing chamber and terminating within said pipe, and means for feeding liquid fuel into said vaporizing chamber.

7. In a surface heating apparatus, a motor driven vehicle, an internal combustion engine mounted on the vehicle and forming the motor for the same, a pipe carried by the vehicle, a hood supported by the vehicle and communicating with the outlet end of said pipe, a vaporizing chamber communicating with the inlet end of the pipe, an air inlet for the vaporizing chamber, a pump driven by said engine for forcing air through said inlet into the vaporizing chamber, an exhaust conduit for the engine extending through the vaporizing chamber and terminating within the pipe, and means for feeding liquid fuel onto the portion of the exhaust conduit which extends through the vaporizing chamber.

In testimony whereof, I affix my signature at Cincinnati, Ohio, this 23d day of June, 1924.

WILLIAM A. HEXT.