No. 839,071. PATENTED DEC. 18, 1906.

G. H. LUTZ.

MACHINE FOR HEATING SURFACES.

APPLICATION FILED FEB. 10, 1906.

Fig 1

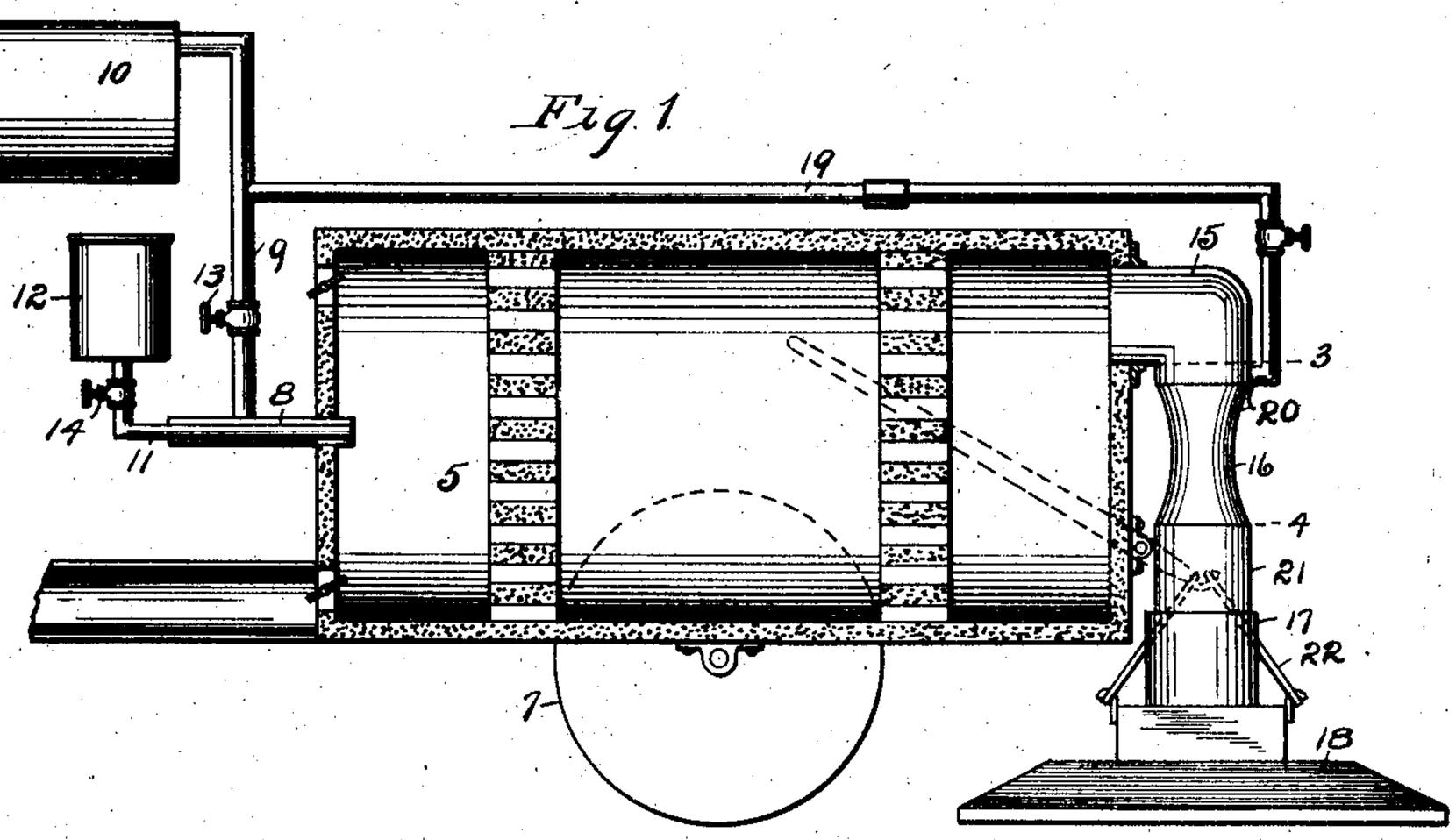


Fig 2

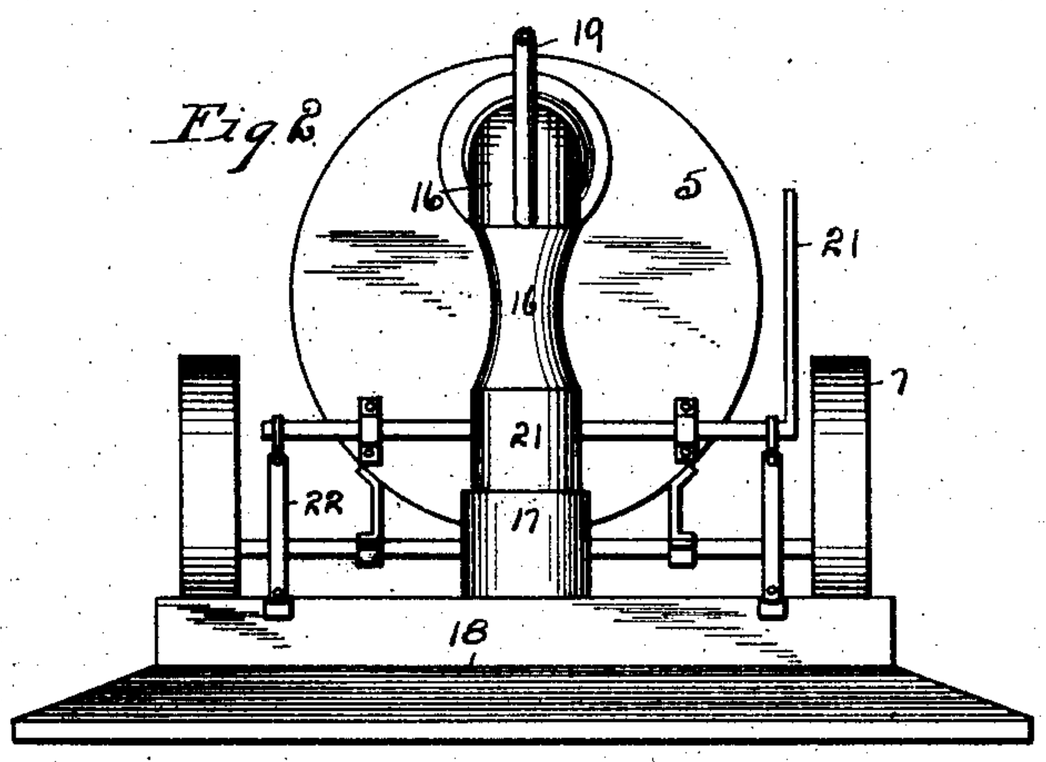


Fig 3

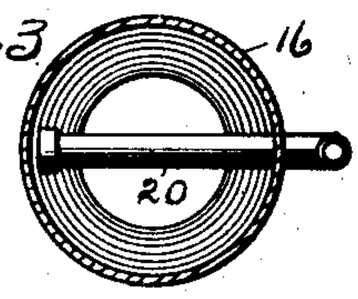
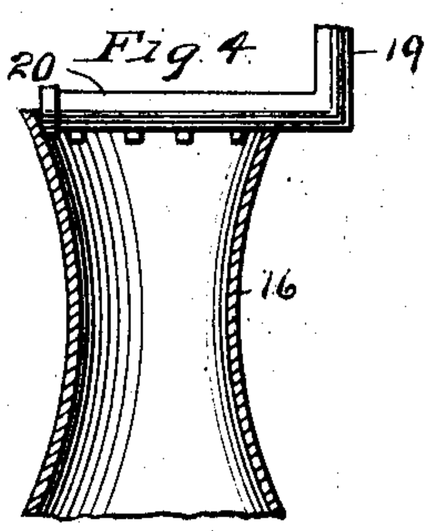


Fig 4



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UNITED STATES PATENT OFFICE.

GEORGE H. LUTZ, OF KANSAS CITY, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO EQUITABLE ASPHALT MAINTENANCE COMPANY, A CORPORATION OF MISSOURI.

MACHINE FOR HEATING SURFACES.

No. 839,071. Specification of Letters Patent. Patented Dec. 18, 1906.

Application filed February 10, 1906. Serial No. 300,422.

To all whom it may concern:

Be it known that I, GEORGE H. LUTZ, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Machines for Heating Surfaces; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to a machine for heating surfaces, and more particularly to a machine for heating asphalt pavements. I am aware that machines of this character have been in use which employ fans for driving a fluid heating medium produced in the combustion-chamber through a suitable conduit which directs it upon the surface to be heated, but have found that the excessive heat of the combustion-chamber seriously interferes with the operation of the fan machinery and decreases the efficiency of the machine.

It is the object of my present invention to provide a new and improved means for drawing the fluid heating medium from the combustion-chamber and forcing it onto the pavement. In accomplishing this object I have provided the improved details of structure, which will presently be fully described, and pointed out in the claims, reference being had to the acccompanying drawings, forming part of this specification, and in which—

Figure 1 is a central longitudinal section through a combustion-chamber of a suitable type, showing a blower and the connections between same and its steam or air supply. Fig. 2 is an end view of the machine. Fig. 3 is a transverse sectional view on the line 3 3, Fig. 1. Fig. 4 is a central vertical section of a portion of the outer pipe between the lines 3 3 and 4 4, Fig. 1.

5 represents a combustion-chamber of a suitable type, which is carried by a truck-frame 6, supported on wheels 7, and a set of forward wheels. (Not shown.)

8 is a pipe entering the forward end of the combustion-chamber, and connected with pipe 8 is a supply-pipe 9, leading to the tank 10, containing steam, compressed air, or a similar blowing agent. Extending through pipe 8 is a fuel-supply pipe 11, connected at its outer end with a tank 12, containing suitable liquid fuel. If so desired, a burner may be attached to the inner ends of the pipes 8 and 11 and the supply of steam or air and fuel is controlled by the valves 13 and 14 on the pipes 9 and 11, respectively.

At the rear end of the combustion-chamber is a suitable outlet, into which is fitted a suitable conduit for directing the fluid heating medium, comprising a pipe 15, having a short horizontal member and a depending member 16, extending downwardly and telescoping within a collar 17 of a hood 18. Connected with the steam or air supply pipe 9 is a branch 19, which extends backwardly to the rear of the combustion-chamber and thence downwardly below the outlet in said chamber and is provided at its lower end with an arm 20, extending into the depending pipe member 16. In the bottom of arm 20 is a series of perforations for the outlet of the steam or air, which is blown downwardly in member 16 through the hood 18 onto the pavement.

21 is a lever which is pivoted on the rear of the machine and is provided at its outer end with chain 22 for supporting hood 18.

In use the machine is placed in position and the hood lowered over the part of the pavement to be heated. Oil is then turned on from the fuel-tank, and a sufficient quantity of air or steam from tank 10 is admitted to the branch surrounding the oil-pipe to form a proper mixture for ignition and the maintenance of a suitable flame in the combustion-chamber. As soon as the chamber has become heated the valve in branch 19 is opened and the steam or air admitted to arm 20, through the perforations in the bottom of which it escapes into branch 16. The pressure in tank 10 forces the steam or air out of arm 20 in a jet, causing a suction which serves to draw the heated air out of the combustion-chamber and forces it downwardly through the hood onto the pavement. By utilizing steam or compressed air as the blowing agent the parts are simplified to such an extent that the tendency of the parts to become deranged through the intense heat of the machine is limited to a minimum and the efficiency of the machine increased. This increase of efficiency is due to the fact that

the location of the jet-blower in the conduit in a position to cause the fluid heating medium to flow toward the surface to be heated not only induces a very forcible flow of said medium, but modifies the heating effect of the latter by adding its volume to the said medium, so that instead of having an excessively hot medium which burns the pavement a moderately yet sufficiently hot medium is directed with great force against the surface, with very much higher efficiency.

Suitable air-inlets for the combustion-chamber may be provided and other well-known parts of such machinery be supplied.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. An apparatus for heating surfaces, comprising means for supplying a fluid heating medium, a conduit for directing the fluid heating medium against the surface to be heated, and a jet blast discharging into the conduit in a direction to cause a flow of the fluid heating medium toward the surface to be heated and directing the said medium with the blast medium added thereto, against said surface.

2. An apparatus for heating surfaces, comprising a heating-chamber into which air is passed to develop a fluid heating medium, a conduit through which the fluid heating medium thus developed is directed upon the surface to be heated, a jet blast discharging into said conduit, drawing the heating medium from the combustion-chamber, mingling the blast medium with said heating medium to modify the effect of the latter, driving said heating medium thus modified against the surface to be heated.

3. In an apparatus for heating surfaces, the combination of a combustion-chamber, means for supplying a fuel medium to said chamber for combustion therein, whereby a fluid heating medium is developed, a conduit for conducting the fluid heating medium from the combustion-chamber to the surface to be heated, a jet-blower discharging into said conduit and developing therein a flow of the fluid heating medium toward the surface to be heated, and means for supplying a blowing agent to said jet-blower, independent of the fluid heating medium, whereby the fluid heating medium is drawn out of the combustion-chamber, modified by a blowing agent and forced through the conduit to the surface to be heated.

4. In an apparatus for heating surfaces, the combination of a fuel-supply, a combustion-chamber utilizing the fuel-supply to develop a fluid heating medium, means for supplying a blowing agent, means for conducting a portion of said blowing agent to the fuel-inlet of the combustion-chamber, a conduit conducting the fluid heating medium from the combustion-chamber to the surface to be heated, a jet-blower discharging into said conduit in a direction to draw the fluid heating medium from the combustion-chamber and cause it to flow toward the surface to be heated and a connection through which an independent portion of the blowing agent is delivered to the jet-blower and mingled with the fluid heating medium in imparting a flow to the latter.

5. In a machine for heating surfaces, a heating-chamber, means for heating the interior of said chamber, a vertical air-conducting pipe having communication with the interior of said chamber, a hood at the lower end of said pipe, a jet member located in a horizontal position in said pipe, and means for supplying a fluid blast agent to said jet member.

6. In a machine for heating surfaces, a heating-chamber, means for heating the interior of said chamber, a vertical air-conducting pipe having communication with the interior of said chamber, a hood at the lower end of said pipe, a jet member located in a horizontal position in said pipe and having jet-holes in its lower portion, and means for supplying a fluid blast agent to said jet member.

7. In a device of the class described, a combustion-chamber, a fuel-supply tank having a feed-pipe to said chamber, a blowing-agent-supply tank, a pipe surrrounding said fuel-feed pipe and connected with said blowing-agent-supply tank, a suitable hood, a heat-conducting pipe connecting said hood with an outlet in the combustion-chamber, a branch connected with the pipe connecting said blowing-agent-supply tank and said combustion-chamber, and having an outlet in said heat-conducting pipe, and means for regulating the feed of the blowing agent through its main feed-pipe and branch.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE H. LUTZ.

Witnesses:
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