Nov. 13, 1934. W. A. STEWART 1,980,301

OIL HEATER

Original Filed Aug. 20, 1932 4 Sheets-Sheet 1

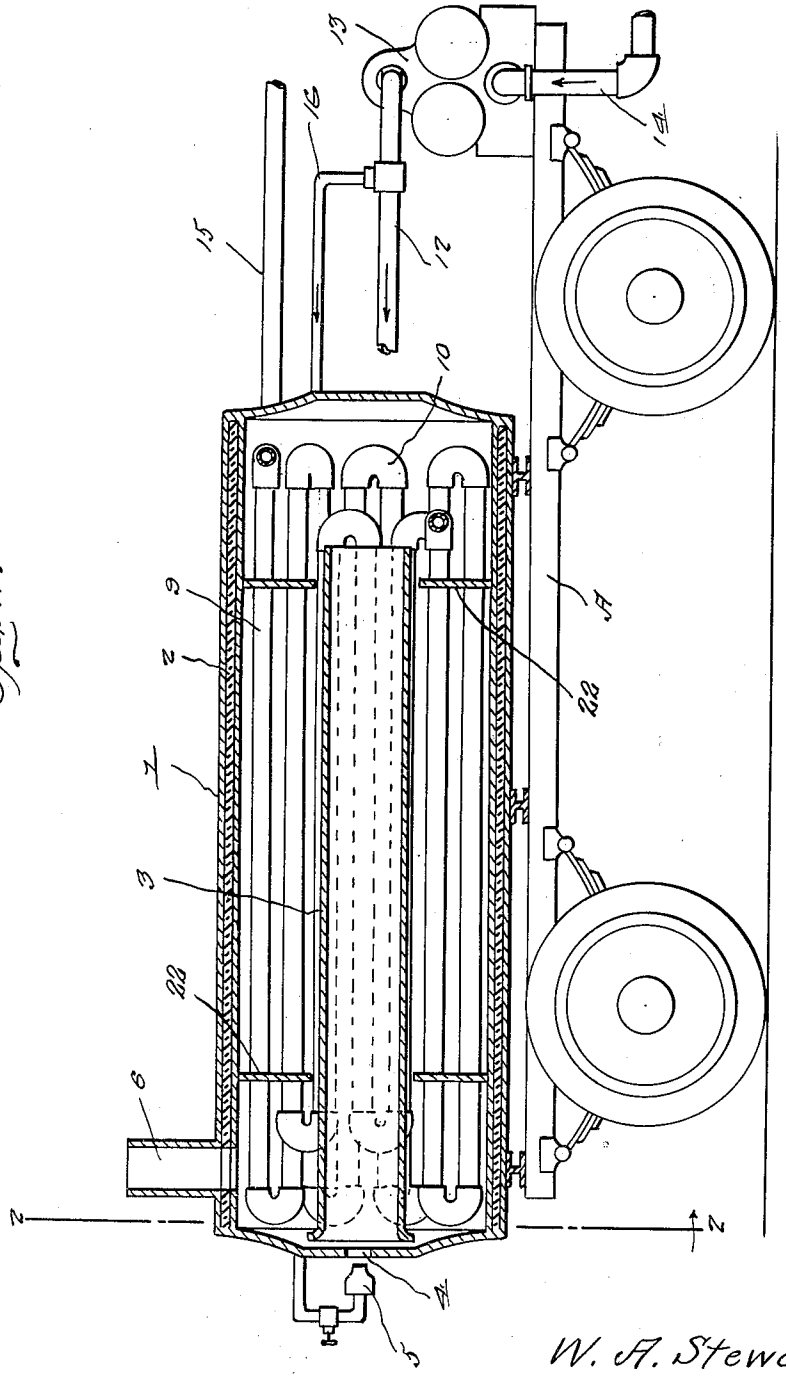


Fig. 1.

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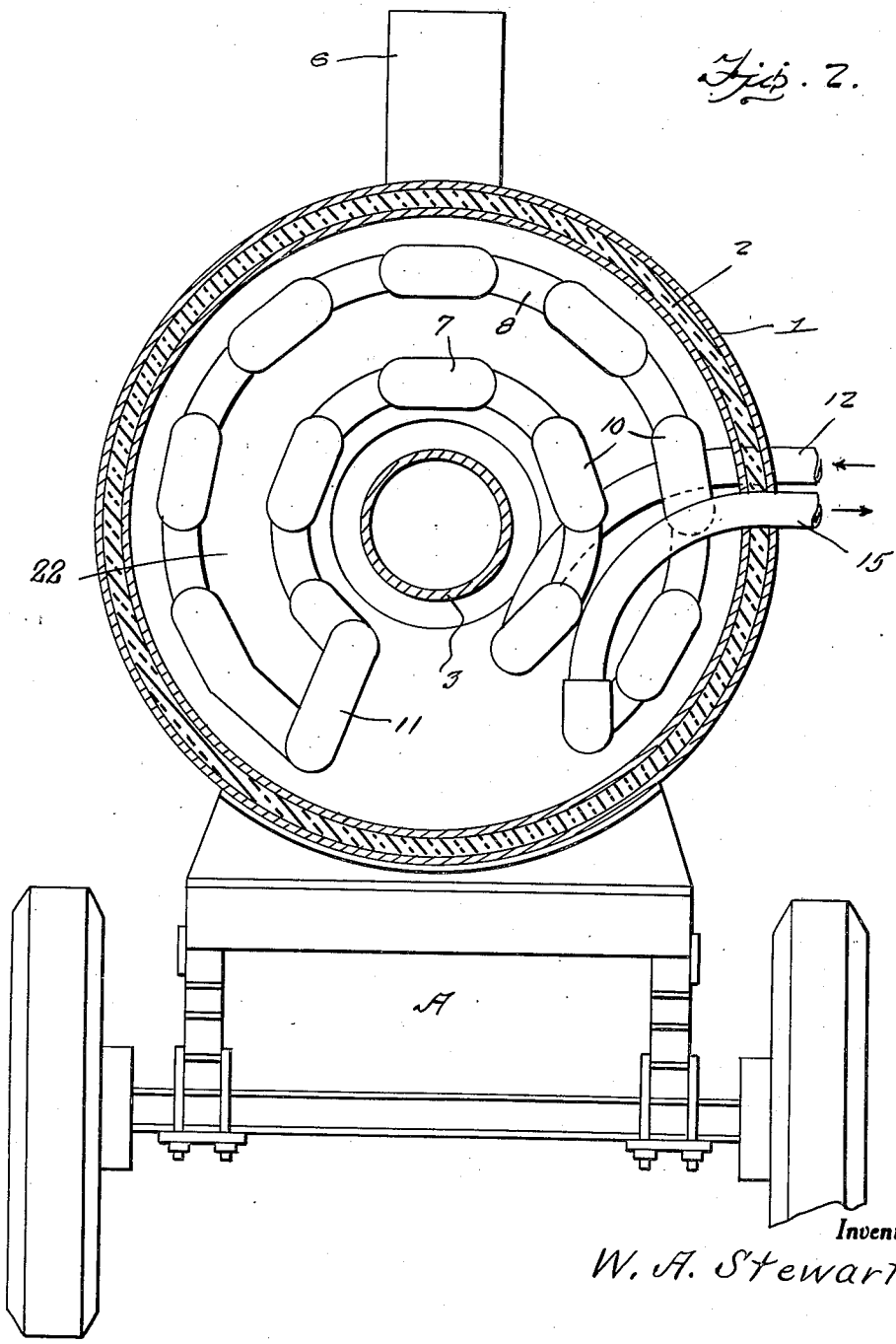


Fig. 2.

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OIL HEATER

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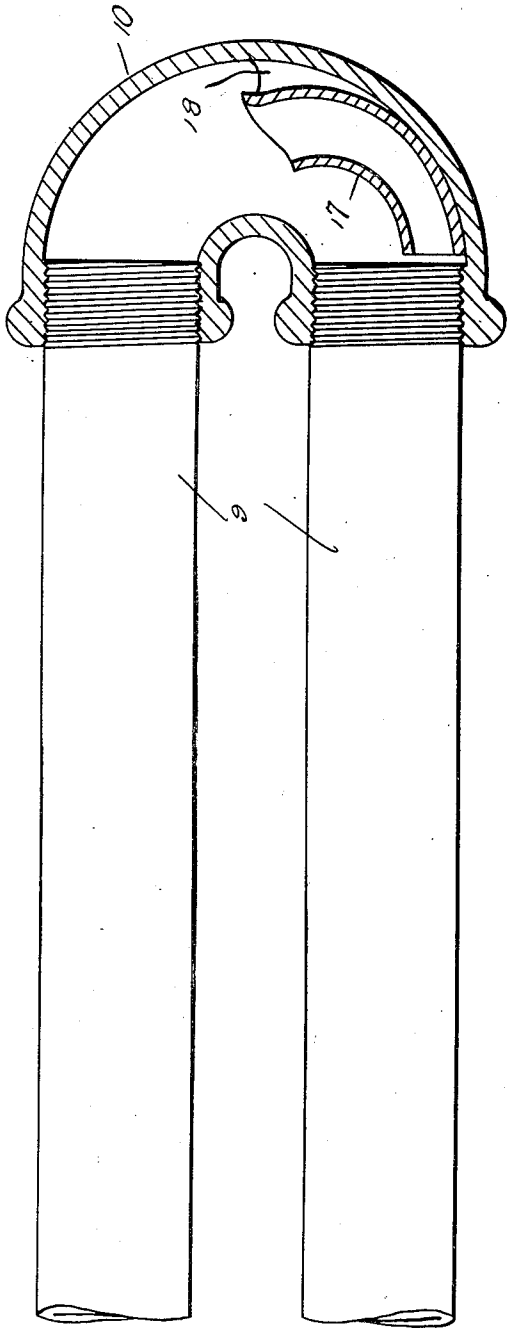


Fig. 3.

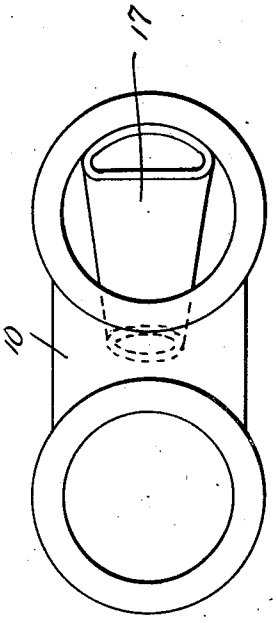


Fig. 4.

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OIL HEATER

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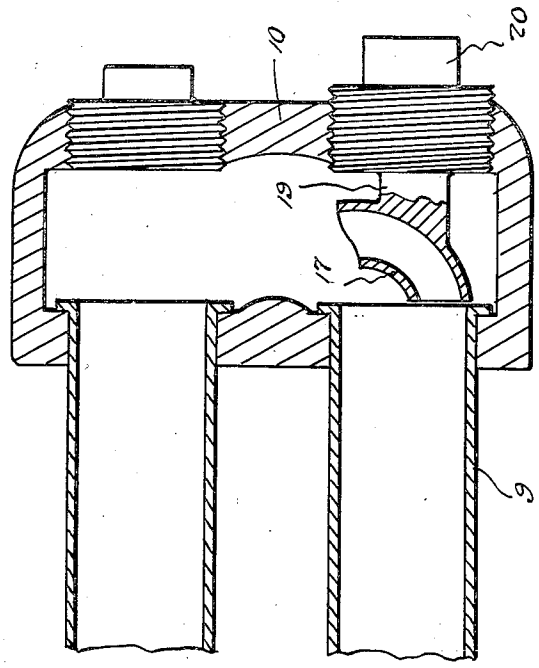


Fig. 5.

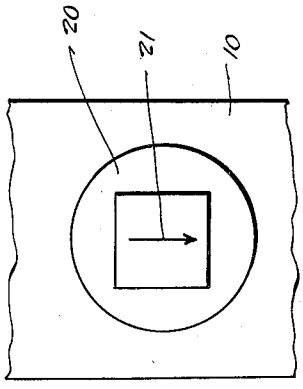


Fig. 7.

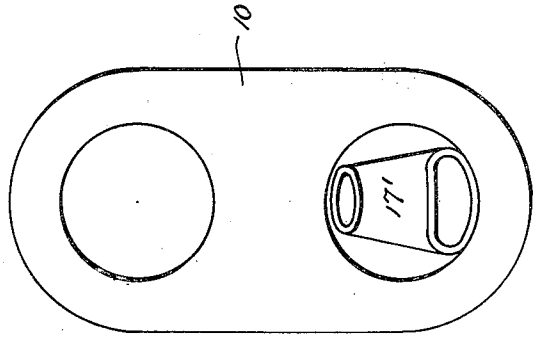


Fig. 6.

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Patented Nov. 13, 1934 1,980,301

UNITED STATES PATENT OFFICE

1,980,301

OIL HEATER

William A. Stewart, Helena, Mont.

Application August 20, 1932, Serial No. 629,705
Renewed April 9, 1934

2 Claims. (Cl. 122—248)

This invention relates to an oil heater, mainly designed for heating oil used on roads and the like, the general object of the invention being to provide a housing containing coils through which the oil is forced, and an elongated tube placed at the center of the housing, and into which flames are projected from an oil burner or the like, whereby the oil passing through the coils is heated without danger of coking, as there is when the flame comes directly against the tube thru which the oil is passing.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a longitudinal sectional view through the invention showing the same supported by a truck.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary elevation with parts in section showing means for causing the oil at the center of a part of the coil to be directed against the sides of portions of the coils to insure heating of the entire body of oil flowing through the coil.

Fig. 4 is an end view of the header shown in Fig. 3.

Fig. 5 is a sectional detail view showing this arrangement used on a different form of header.

Fig. 6 is an end view of the header shown in Fig. 5.

Fig. 7 is a fragmentary end view showing the directional arrow of the plug of the header for indicating the position of the deflector member.

In these views the numeral 1 indicates a cylindrical housing which may be mounted on a truck A and the sides of which are provided with the insulating material 2. A tubular member 3 is located in the center of the housing and extends from a point adjacent the front end to a point an appreciable distance from the rear end as clearly shown in Fig. 1, and the front end of this cylinder or housing is formed with an opening 4 adjacent which is arranged an oil burner 5 so that the flame from the burner will be projected into the tubular member 3. By making this member 3 of considerable length as shown, the flame will not pass from the rear end of this cylinder member, but the products of combustion will pass from said rear end and then flow forwardly thru the housing, and escape from the stack 6.

Inner and outer coils 7 and 8 are arranged in the housing with tubular member 3 passing thru the space formed by the inner coil, as shown in Fig. 2, and each of these coils is composed of the elongated pipes 9 and the headers 10, the pipes extending longitudinally of the housing. An elbow or header 11 connects the discharge end of the inner coils with the inlet end of the outer coils and the inlet end of the inner coil is connected by a pipe 12 to a pump 13 located on the truck, the inlet of the pump being connected by a pipe 14 with a supply of oil.

The outlet end of the outer coil is connected by a pipe 15 to a delivery member for supplying the heated oil to the road surface or other point of use.

By providing the elongated tubular member 3 the flames from the oil burner do not come into direct contact with the coils so that the oil is not coked as it would be if the flames came directly against the coils, and this coking interferes with the passage of the oil through the coils and renders it necessary to remove the coils for cleaning purposes after they have been used a short time, or the substitution of new coils for the old ones.

The oil burner 5 may be connected to the pump line 12 by a pipe 16. In order to insure the uniform heating of all the oil passing through the coils I provide means for deflecting the oil at the center of the body of oil passing through the coils to the outer portions of the coils, such means consisting of arcuate-shaped tapered tubes 17 preferably placed in the headers with their large ends located adjacent the center of the headers and their small ends discharging the oil adjacent the sides of the tubes 9 as the oil enters said tubes as clearly shown in Figs. 3 and 4, which show the headers of arcuate formation, and as also shown in Figs. 5 and 7 which show the headers of substantially rectangular form with the tubes welded therein. Thus the oil at the center of the body of oil moving through the coils is deflected to the sides of the coils where this oil will come in contact with the heated walls of the coils.

In Fig. 3 and Fig. 4, the member is connected directly to the inside of the header by a part 18, but in Figs. 5, 6 and 7, the member 17' is connected by a part 19 with a screw plug 20 threaded in a hole in the header and the outer end of said plug is formed with an arrow 21, as shown in Fig.

7 so as to facilitate the proper positioning of the member 17' in the header. The coils may be supported by the circular plates 22 having their central openings of greater diameter than the exterior diameter of the tube 3, so that these plates will act as deflectors or baffles for the products of combustion flowing forwardly into the chimney 6, though the coils and the tube 3 can be supported in any suitable manner.

Thus I have provided simple means for heating oil so that it will flow and can be spread readily, and without danger of coking or burning the oil as it is being heated.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

Having thus described my invention, what I claim as new is:—

1. Means for heating oil used on road surfaces comprising a truck, a housing of cylindrical form supported in a horizontal position on the truck, one end of the housing having a small opening therein, a centrally arranged elongated tube located in the housing and having one end arranged close to the opening in the end of the housing and its other end spaced an appreciable distance from the other end of the housing, a burner for projecting flames through the opening in the end of the housing into the tube, said tube being of sufficient length whereby the flames will be extinguished before the products of combustion pass from the tube at that end opposite the end in which the flames are introduced, coils arranged in the housing and surrounding the tube and projecting beyond the outlet end of the tube and a chimney member connected to the top of the housing adjacent that end which has the opening therein and means for forcing the oil through the coils.

2. A device of the class described comprising a truck, an insulated horizontally arranged cylindrical housing supported on the truck and having a small opening in one end thereof, a burner for projecting flames through the opening, a centrally arranged horizontal tube located in the housing with one end arranged close to the opening to receive the flames and its discharge end located an appreciable distance from the other end of the housing, coils arranged in the housing and extending longitudinally therein and surrounding the tube, these coils extending beyond the discharge end of the tube, a chimney connected to the housing adjacent that end in which the opening is formed, a pump on the truck for pumping oil through the coils.

WILLIAM A. STEWART.