May 1, 1934. J. S. LITTLEFORD, JR 1,957,144

ROAD REPAIR APPARATUS

Filed Oct. 25, 1929 2 Sheets-Sheet 1

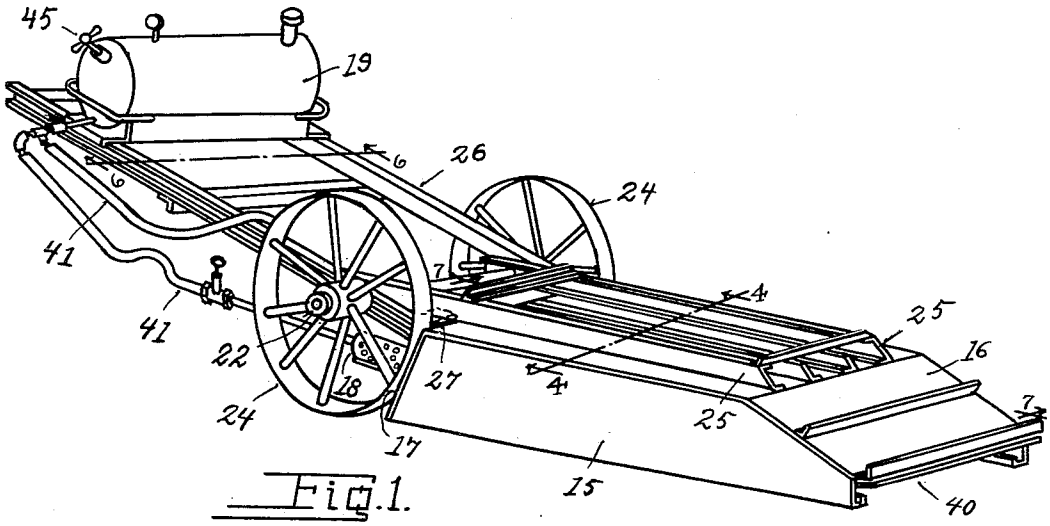


Fig. 1.

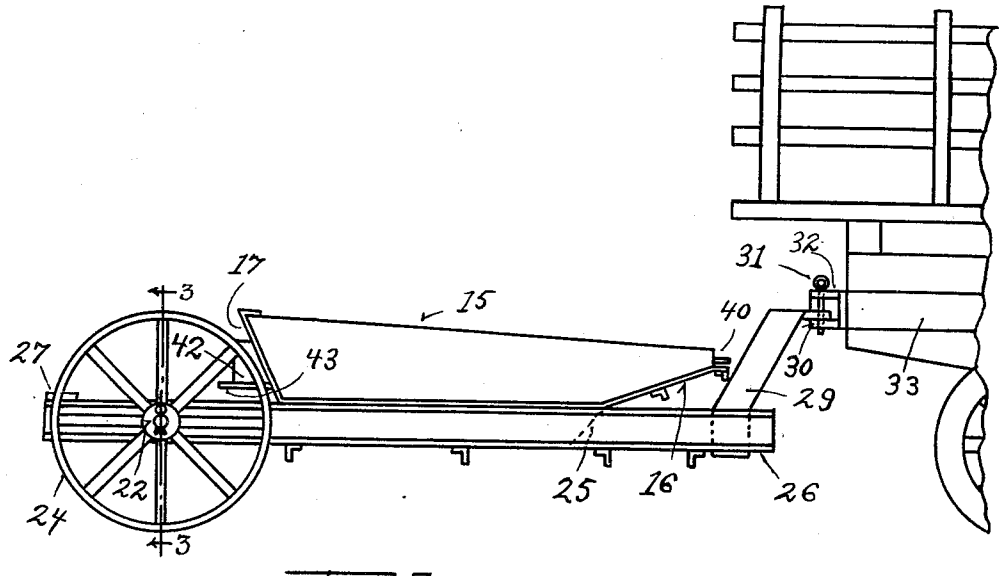


Fig. 2.

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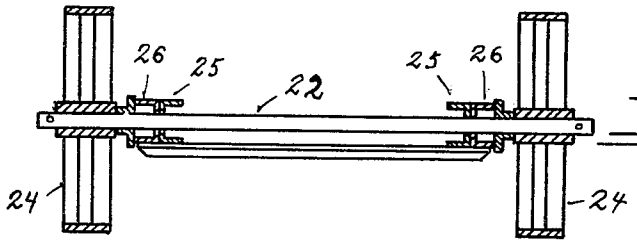


Fig. 3.

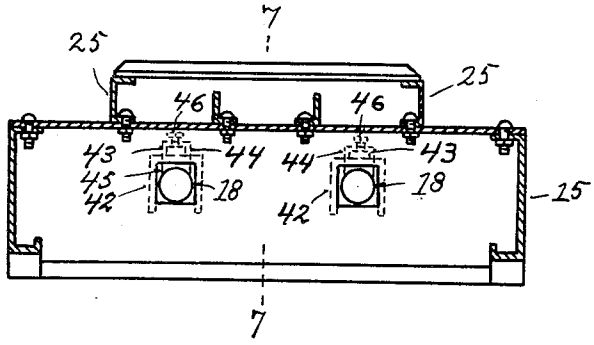


Fig. 4.

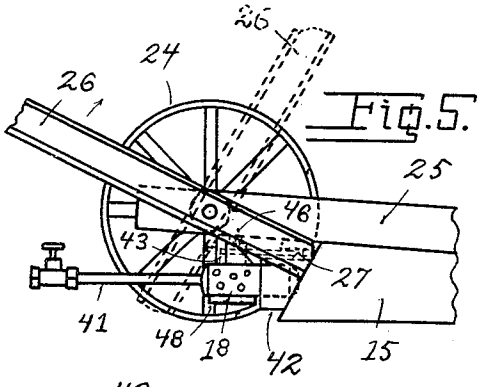


Fig. 5.

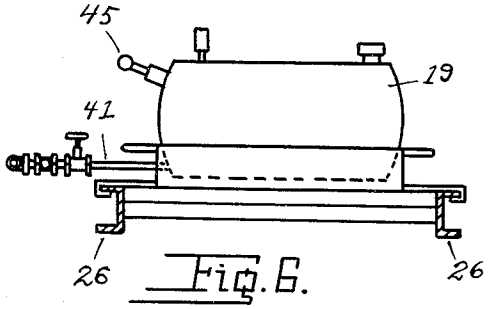


Fig. 6.

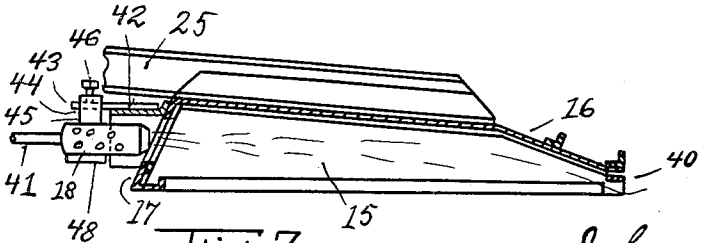


Fig. 7.

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1,957,144

UNITED STATES PATENT OFFICE

1,957,144

ROAD REPAIR APPARATUS

John S. Littleford, Jr., Fort Thomas, Ky., assignor to Littleford Brothers, Cincinnati, Ohio, a copartnership composed of John S. Littleford, Thomas S. Littleford, Roger S. Littleford, John S. Littleford, Jr., and Bernice L. Wadsworth

Application October 25, 1929, Serial No. 402,421

9 Claims. (Cl. 126—271.2)

My invention relates to improvements in road repair apparatus. One of its objects is to provide an improved road heating apparatus adapted to heat a section of the road to be repaired in order to drive away moisture and melt or soften the tar component of the road-bed so that fresh asphalt or tar impregnated material may be applied so as to attain a firm bond between the new and the old road material, and so as to avoid chilling the new road material before it has formed a bond with the old road material. Another object is to provide road heating apparatus adapted to be conveniently moved about from place to place while heating the road and also adapted to be converted into a trailer vehicle and transported from place to place where road repairs may be required.

Another object is to provide a relatively light weight and readily portable road heater. Another object is to provide a blow torch road heater adapted to the use of liquid fuel in the heating of the road, and which can be quickly and efficiently applied. My invention also comprises certain details of form and arrangement and combination of components, all of which will be fully set forth in the description of the accompanying drawings, in which:

Fig. 1 is a perspective view of my improved road heating apparatus in position to heat a section of the road.

Fig. 2 is a side elevation of the same in its collapsed and inverted position, adapted to be employed as a trailer vehicle.

Fig. 3 is a vertical sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a vertical sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is a side elevation of a portion of the heater shown in Fig. 1.

Fig. 6 is a vertical sectional view taken on line 6—6 of Fig. 1.

Fig. 7 is a vertical section taken through the heater or hood on line 7—7 of Fig. 4.

The accompanying drawings illustrate one embodiment of my invention in which 15 represents a relatively shallow sheet metal hood adapted to be inverted over and cover a considerable section of the road. The side walls and rear wall of the hood fit close to the surface or in contact with the surface of the road. The front edge 16 of the hood tapers toward the road and has an open space 40 between its lower edge and the road-bed, through which the products of combustion within the hood may escape. The rear face 17 of the hood is perforated and provided with one or more windshields 42, to receive one or more blow torches 18, which are supplied with liquid fuel through a valve controlled supply pipe 41 from a fuel storage reservoir 19, in which the liquid fuel is under pressure. The pressure of the jet of fuel escaping in the blow torch serves to mix the vaporized fuel with sufficient air to effect perfect combustion of the fuel, and the flame from the blow torch is discharged within the hood which serves to hold the heated gases in contact with that section of the roadway beneath the hood, and the walls of the hood also reflect and concentrate heat downwardly upon the inclosed section of the roadway, thereby quickly raising the temperature of the hood enclosed section of the roadway even in cold weather, to a temperature at which the asphalt or tar contents of the roadway melts and to permit heated new road repair material applied thereto to fuse therewith. The spent products of combustion escape through the opening at the front of the hood.

At the rear of and close to the hood is an axle 22 and a pair of vehicle wheels 24. The hood frame comprises a pair of channel bars 25 attached rigidly to the top of the hood and projecting from the rear end of the hood. These ends are perforated to receive the axle and support the hood relative to the axle 22. In the position shown in Fig. 1, the bottoms of the wheel rims resting upon the roadway are substantially in the same plane with the side and rear edges of the hood, while in the position shown in Fig. 2, the hood is held some distance above the road-bed.

The carrier frame comprises a pair of channel bars 26 also pivotally mounted upon the axle 22. This frame extends rearwardly and upwardly from the axle 22, and shorter arms of the bars 26 extend forwardly and downwardly from the axle, and are provided with projections 27 which project beneath the lower edges of the bars 25 of the hood frame, to limit the relative pivotal movement of the hood frame and carrier frame on the axle 22. An operator by bearing down upon the rear ends of the carrier frame bars 26 may counterbalance the weight of the hood upon the axle 22 so as to lift the hood free from the roadway, whereupon the hood may be manually pushed to a new location, ready to heat a new section of the roadway. The fuel storage reservoir 19, the weight of which varies, is adjustable endwise upon the carrier frame bars 26 to assist in counterbalancing the weight of the hood. A tongue 29 having an eye 30 at the end thereof is attached to and extends up from the rear end of the carrier frame bars 26.

When it is desired to transport the heating apparatus to another locality for use, the torch 18 is detached from the hood 15 and fuel reservoir 19 is detached from the bars 26 and the torch and reservoir are placed in a truck for transportation. The hood is then folded over upon the carrier frame with its bars 25 down between the carrier frame bars 26. The hood thus is inverted from the position shown in Fig. 1 to the position shown in Fig. 2, and the eye 30 of the carrier frame tongue 29 is attached by a coupling pin 31 to a coupling member 32 carried at the rear end of a truck 33, whereupon the device, with a receptacle body formed by its hood, acts as a trailer vehicle and follows the truck to a new locality where road repairs are required.

In order that the torch or torches may operate reliably and efficiently, I provide wind shields 42 which are attached to the rear face 17 of the hood and inclose the forward end of the torch at the top and on both sides, and serve to protect the flame from severe air drafts liable to blow out the flame or adversely affect its operation. Above the wind shield and attached thereto is a polygonal supporting lug 43 which enters a polygonal eye 44 in a projection 45 carried by the torch. A set screw 46 serves to lock the torch to the lug 43, with the forward end of the torch close to the perforation through the rear plate 17 of the hood, in which position the torch receives a full supply of fresh air without liability of being blown out, and only the flame from the torch enters the hood. A pre-heating pan 48 is attached to the torch.

The apparatus herein shown and described is capable of considerable modification within the scope of the claims without departing from the spirit of my invention.

What I claim is:

1. Road heating apparatus comprising a hood adapted to enclose a space over a section of a roadway to be heated, a fluid fuel burner positioned to supply heat to the interior of said hood, carrying wheels rotatably journaled in connection with one end of said hood, a carrying frame pivotally connected to the end of said hood adjacent the journals for the carrying wheels, said frame provided with a stop to limit the relative movement of said frame and hood, said carrying frame serving to counterpoise said hood upon its carrying wheels when said hood is to be moved from place to place while in operative position, and to provide supporting means for said hood in an inverted position when said hood is being transported as a trailer.

2. In a device of the character described, a carrier member and a member comprising a hood and a fluid fuel burner therefor, having at adjacent end portions a pivoted connection on which said members may be folded directly together, means limiting unfolding of said members, and a rolling support adapted to roll on a flat surface and connected to one of said members near its pivoted end, said hood member being carried with its opening upward on said carrier member when the members are folded together, and said members being positioned by said limiting means with the hood opening downwardly adjacent to the flat surface to form an enclosure at the surface, with the carrier member serving as a counterbalancing handle device for said hood, at convenient height for manual grasping, when the members are unfolded.

3. In a device of the character described, a carrier member and a member comprising a hood, having at adjacent end portions a pivoted connection on which said members may be folded directly together, means limiting unfolding of said members, a rolling support adapted to roll on a flat surface and connected to one of said members near its pivoted end, said hood member being carried with its opening upward on said carrier member when the members are folded together, and said member being positioned by said limiting means with the hood opening downwardly adjacent to the flat surface to form an enclosure at the surface, with the carrier member serving as a counterbalancing handle device for said hood, at convenient height for manual grasping, when the members are unfolded, said hood having an aperture at its end adjacent to the pivotal connection, and a fluid fuel burner mounted on said hood for adjustment toward and from said aperture.

4. In a device of the character described, a carrier member and a member comprising a hood and a fluid fuel burner therefor, having at adjacent end portions a pivoted connection on which said members may be folded directly together, means limiting unfolding of said members, a rolling support adapted to roll on a flat surface and connected to one of said members near its pivoted end, said hood member being carried with its opening upward on said carrier member when the members are folded together, and said members being positioned by said limiting means with the hood opening downwardly adjacent to the flat surface to form an enclosure at the surface, with the carrier member serving as a counterbalancing handle device for said hood, at convenient height for manual grasping, when the members are unfolded, and a supply device to supply fuel for said burner mounted on said carrier member for adjustment toward and away from said rolling support.

5. Road heating apparatus comprising a hood adapted to inclose a space over a section of the roadway to be heated, a fluid fuel burner positioned to supply heat to the interior of said hood, an axle and a pair of vehicle wheels attached to one end of said hood, a carrying frame pivoted on said axle and having a limited movement relative to said hood, said carrying frame serving to counterpoise said hood upon said axle when said hood is to be moved in its operative position from place to place on the surface being treated and being adapted to have the hood folded against it and to act as a draw-bar and supporting bar for said hood when said hood is being transported with its opening upward whereby the apparatus may be moved as a trailer vehicle.

6. Road heating apparatus comprising a hood adapted to inclose a space over a section of the roadway to be heated, a fluid fuel burner positioned to supply heat to the interior of said hood, an axle and a pair of vehicle wheels attached to one end of said hood, a carrying frame pivotally attached to said axle and having a limited movement relative to said hood whereby it may be extended from said axle on the side of the axle opposite to the side thereof which the hood is on, and a fluid fuel reservoir supported upon and adjustable longitudinally of said carrying frame and having a flexible connection to said burner, and serving to partially counterbalance said hood upon said axle and wheels.

7. Road heating apparatus comprising a hood adapted to inclose a space over a section of the roadway to be heated, a blow torch carried by

said hood and positioned to supply heat to the interior of said hood and the roadway beneath the hood, an axle and a pair of vehicle wheels attached to one end of the hood, a carrying frame pivoted to said axle and having a limited movement relative to said hood, said carrying frame serving to counterpoise said hood upon said axle when said hood is to be moved in an operative position from place to place on the surface being treated and adapted to have the hood folded against it and to act as a draw-bar and supporting bar for said hood when said hood is being transported with its opening upward whereby the apparatus may be moved as a trailer vehicle.

8. Road heating apparatus comprising an axle provided with a pair of vehicle wheels, a carrying frame pivotally mounted on and lying at one side of said axle, a hood and a fluid fuel burner therefor, said hood being pivotally mounted on said axle and resting on said carrying frame when the latter is used as a draw bar in transporting the apparatus, said hood being capable of swinging on its pivot off of said carrying frame to the other side of the axle to face the roadway for use, leaving the carrying frame in its original carrying position.

9. In a device of the character described, a carrier member and a member comprising a hood, having at adjacent end portions a pivoted connection on which said members may be folded directly together, means limiting unfolding of said members, a rolling support adapted to roll on a flat surface and connected to one of said members near its pivoted end, said hood member being carried with its opening upward on said carrier member when the members are folded together, and said members being positioned by said limiting means with the hood opening downwardly adjacent to the flat surface to form an enclosure at the surface with the carrier member serving as a counterbalancing handle device for the hood at convenient height for manual grasping when the members are unfolded, said hood having an aperture at its end adjacent to the pivotal connection, a fluid fuel burner mounted on said hood for adjustment toward and from said aperture, a supply device to supply fuel for said burner, mounted on said carrier member for adjustment toward and away from said rolling support, and a fluid fuel conducting connection from said supply device to said burner permitting adjustments of the supply device and the burner.

JOHN S. LITTLEFORD, JR.