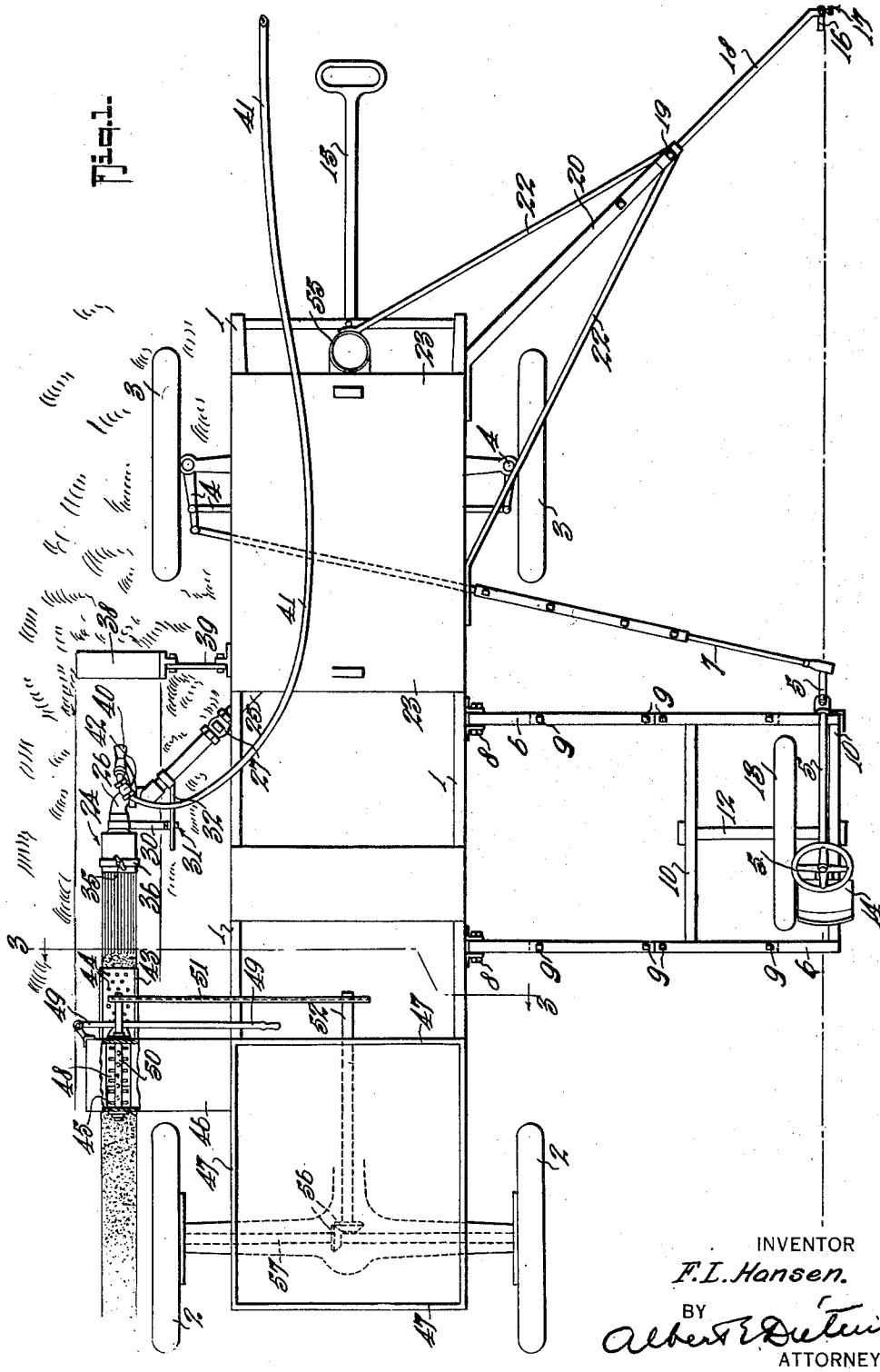
Dec. 14, 1926. 1,610,773

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TRAFFIC LINE LAYING APPARATUS

Filed Jan. 15, 1924 3 Sheets-Sheet 1

Fig. 1.



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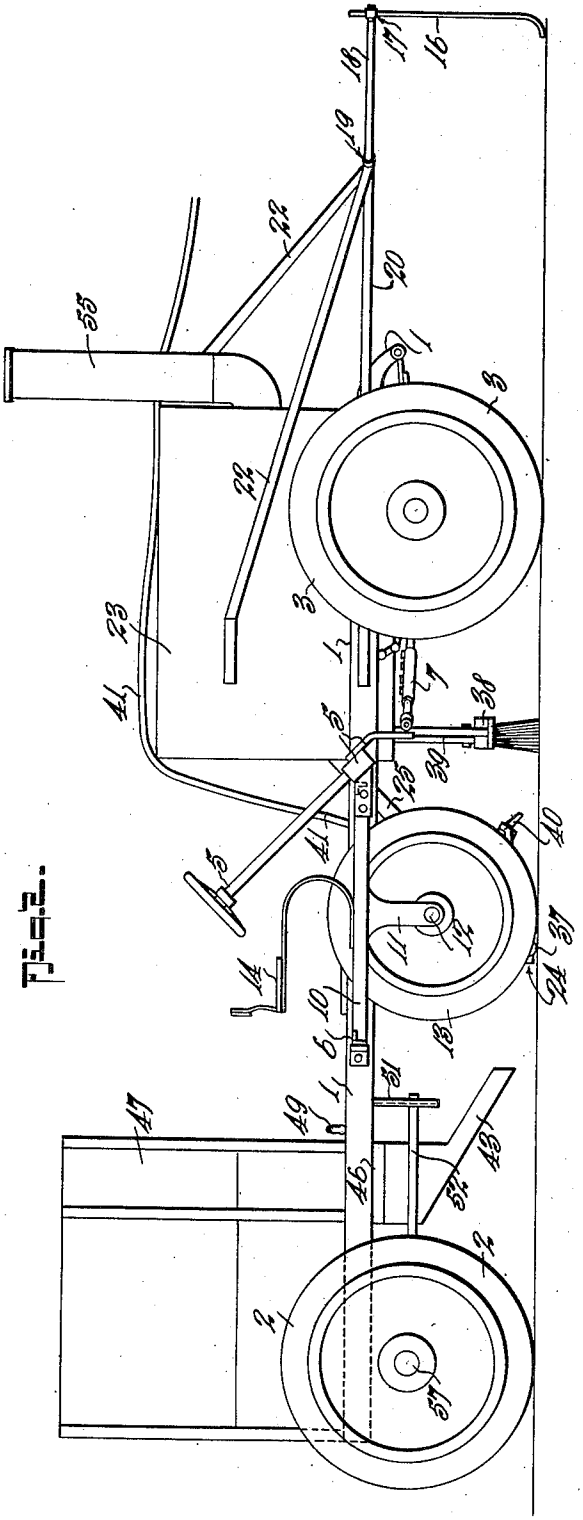


Fig. 2.

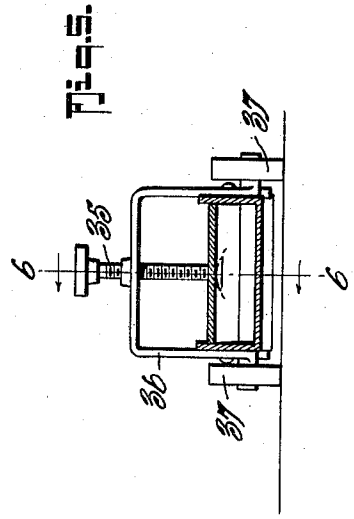


Fig. 5.

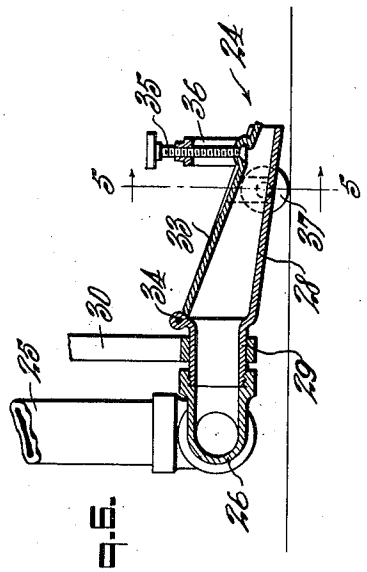


Fig. 6.

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TRAFFIC LINE LAYING APPARATUS

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Fig. 5.

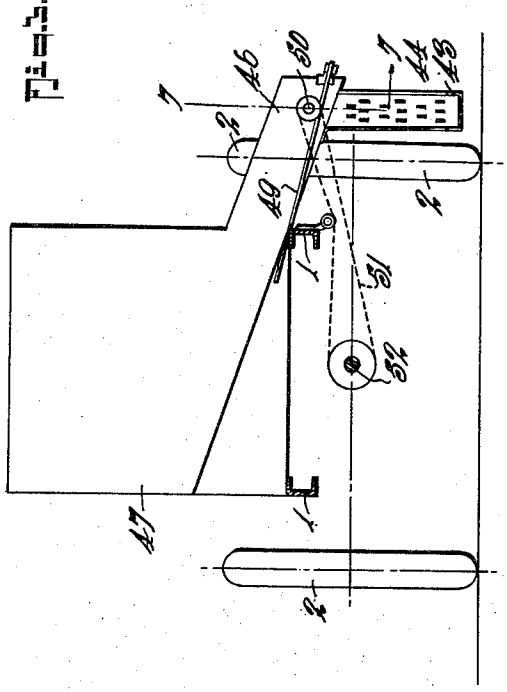


Fig. 7.

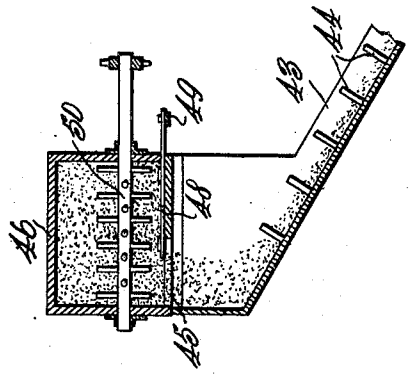


Fig. 6.

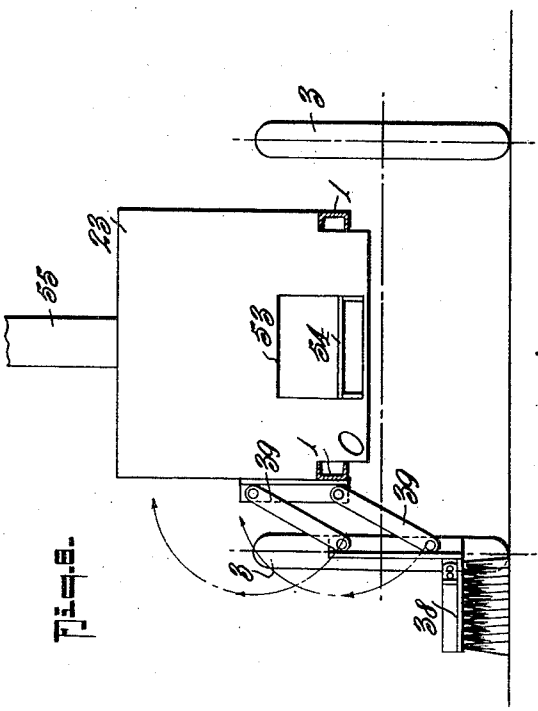
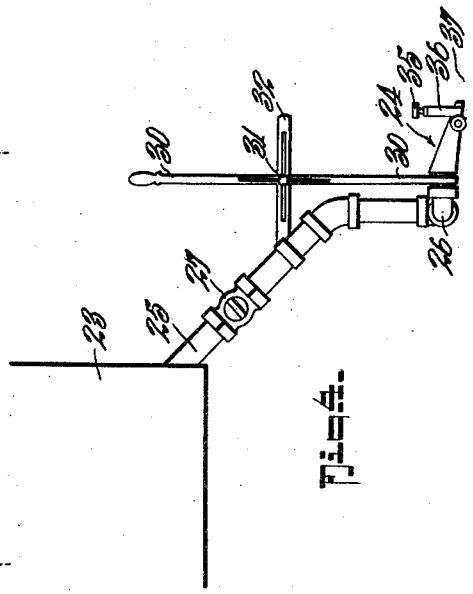


Fig. 4.



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UNITED STATES PATENT OFFICE.

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TRAFFIC-LINE-LAYING APPARATUS.

Application filed January 15, 1924. Serial No. 686,353.

The invention relates to apparatus for laying a traffic line upon streets or roadways such as are usually utilized for marking such streets or roadways to guide traffic thereover.

Due to the greatly increasing vehicle traffic over modern roadways and streets it is a common practice to mark the said highways with guide lines such for example as those drawn down the center of a highway to divide the same for the purpose of guiding traffic going in opposite directions, especially at curves. These traffic lines are often made by hand by the use of an applying brush and a suitable coating of paint or similar substance, and attempts have been made to devise machines for laying the line, but in all such attempts the machines produced are impractical because of the expense to manufacture the same, the lack of coordination of the necessary elements thereof, and the difficulty in handling the machine, all of which tend to make the laying of a traffic line such as will meet the requirements either impossible or impractical.

Therefore it is the object of my present invention to provide a machine which will lay a perfect traffic line, of sanded asphalt or other desired material, such as will meet all of the requirements of a practical traffic line, which machine is of a very simple construction, easy to operate, and in which provision is made for adjusting the thickness of the material laid, and of the devices for guiding the laying of such material so as to adapt the machine to use upon road-beds of various widths.

It is a further object of the invention to provide means for supporting the operator of the machine in a position where he can most effectively observe the guiding devices for governing the laying of the traffic line and for steering the machine, the said supporting means being also adjustable to adapt the machine to use upon road-beds of various widths.

With the above and other objects in view which will hereinafter appear the invention further resides in those novel details of construction, combination and arrangement of parts, all of which will be first fully described, then be particularly pointed out in the appended claims, reference being had to the accompanying drawings in which:

Figure 1 is a somewhat diagrammatic plan view of the invention, parts being broken away and in section.

Figure 2 is a somewhat diagrammatic side elevation of the invention.

Figure 3 is a cross section taken on the line 3—3 on Figure 1.

Figure 4 is a detail side elevation illustrating the manner of arrangement of the asphalt discharge nozzle and the roadway cleaning brush.

Figure 5 is an enlarged detail cross section taken on the line 5—5 on Figure 6.

Figure 6 is an enlarged detail longitudinal section through the asphalt discharging nozzle as indicated by the line 6—6 on Figure 5.

Figure 7 is a detail cross section taken on the line 7—7 on Figure 3.

Figure 8 is a somewhat diagrammatic rear elevation of the asphalt kettle.

In the drawings, in which like numerals of reference indicate like parts in all of the figures, 1 indicates the chassis or framing of the machine which may be of any desired construction, as for example the chassis of any acceptable type of automobile, such as will include the rear supporting wheels 2 and the front supporting and steering wheels 3 provided with the usual steering connections 4 adapted to be operated by the operator of the machine through the medium of the steering wheel and steering devices indicated at 5, and which are mounted upon the side frame 6 supported by the frame 1 to project laterally thereof as is indicated in Figure 1 of the drawings, the connecting rod 7 forming the connection between said steering connections 4 and steering devices 5.

It will be observed from Figure 1 of the drawings that the frame 6 is pivotally connected to the frame 1, as at 8, and is laterally adjustable, to make extension or contraction thereof possible, as at 9, and to include cross braces 10 for supporting the bracket bearings 11, which in turn support the shaft 12 upon which the supporting wheel 13 is mounted, and that a driver's seat 14 is carried by the frame 6 in proper position for being in cooperative relation with the steering devices 5. It will also be observed from that figure that the connecting rod 7 is made in two parts, one adjustably connected to the other, so that the said rod

may be extended or contracted to correspond with the condition of the frame 6.

A towing connection 15 may be provided and pivotally connected to the front end of the chassis frame so as to permit a means of connection for any desired towing agency, such as a tractor or truck, whereby the machine may be drawn along the roadway. I do not desire, however, to be limited to the trailer structure hereinbefore disclosed in detail, it being readily apparent that the chassis frame 1 may be provided with a suitable power plant whereby to derive its own propelling power without transcending the scope of the invention as set forth in the appended claims.

The invention as herein disclosed is adapted to be drawn along the road by a towing agency and in order to provide for guiding the laying of the line in the manner later to be described so that the same will be laid at the desired point on the road-bed I provide a guiding rod 16 which is vertically suspended in an adjustable manner, as at 17, in an extensible carrying rod 18 which is itself adjustably mounted, as at 19, in the supporting sleeve 20 extending forwardly laterally from the machine, by the supporting arms 22 secured to the asphalt kettle 23 supported upon the front end of the chassis 1 and the chassis itself.

It will be observed from Figure 1 of the drawings that the driver's seat is in a position in alignment with the guide rod 16 and the edge of the roadway, it being understood that when the machine is in operation the guide rod 16 is adjusted to be suspended vertically above the edge of the roadway farthest to the right of the machine, and by reason of the position of the operator's seat 14 upon the frame 6 he can very readily observe the relation of the said guide rod and the roadway edge to thereby effectively guide the laying of the traffic line in an even manner and at the desired point along the road-bed.

The asphalt discharge nozzle is generally designated 24 and is in communication with the asphalt kettle 23 through the piping line 25 and the adjustable goose neck connection 26, a valve 27 being spliced into the piping 25 at a point adjacent the said kettle for a purpose later to be described.

More specifically, the discharge nozzle 24 is constructed to comprise a bottom member 28 in the nature of a U-shaped trough, tapered from the rear end to the discharge end and which has connected therewith a continuation in the nature of a neck 29 which is adapted to be secured to, to cooperate with, the goose neck connection 26. A lever 30 of strap iron or other suitable material is secured to the neck 29, projects vertically laterally therefrom and is slot and adjustable bolt connected as at 31 to the supporting arm 32 secured to the piping 25, the said lever serving to effect adjustment of the nozzle with relation to the road-bed over which it is traveling.

The nozzle 24 also includes an adjustable top portion 33 in the nature of a plate adapted to closely engage the flanges of the bottom member 28 to cooperate therewith in forming the nozzle 24, and the rear end of this member 33 is hingedly connected, as at 34, to the rear end of the bottom member 28 and is provided with a swivel screw member 35 connected to the front end thereof and adapted to cooperate with the inverted U bracket 36 secured to the lower member 28 in effecting a raising and lowering of the front end of the upper member 33 to adjust the thickness of the discharge opening of the nozzle 24 and thereby regulate the amount of flow of asphalt therefrom.

The bottom member 28 of the nozzle may be provided, at its front corners, with suitable supporting rollers 37 which will engage the road-bed as the machine is drawn along and prevent wear of the nozzle 24 such as would effect the perfect discharging action thereof.

A steel brush 38 is link connected, as at 39, to the side of the asphalt kettle 23 so as to engage the ground in advance of the position of the nozzle 24 to effect a loosening of any particles which may be adhering to the ground so that the road-bed may be effectively cleaned by the blast of air which is ejected by the air nozzle 40 secured to the connection 26 in cooperative relation with the said brush 38. While the steel brush may be secured in any manner in cooperative relation with the machine, the link connection is illustrated because it effects a means of connection such as will permit the brush to be readily elevated out of cooperative relation with the road surface, and the said brush may be heavily weighted, if it be so desired, so as to provide a greater frictional contact thereof with the ground.

Air may be supplied to the nozzle 40 through a suitable flexible hose line 41 connected therewith and to a suitable compressed air supply which may be carried either by the machine itself or by the towing agency, an air valve 42 being spliced into the line 41 that the flow of air to the nozzle 40 may be regulated.

As the line is being formed by the heated asphalt being discharged from the nozzle 24 I desire to cover the line with sand while the asphalt is still in its heated and sticky condition so that the sand will be caused to adhere thereto and thereby provide a traffic line of neat and pleasing appearance and one which will not readily wear and be effaced from the road-bed.

For thus distributing the sand I provide a delivery chute 43 which is supported in

such position that its delivery end will be directly over and closely adjacent to the line of asphalt being laid, the said chute being provided with a plurality of distributing pins 44 which interrupt the passage of sand down the said chute in a manner for effecting an even distribution thereof over the said line being laid.

The delivery chute 43 is supported by and directly beneath and in communication with the discharge throatway 45 of the main sand chute 46, which itself projects laterally from and forms an integral part of the sand bin or reservoir 47 supported upon the frame 1. The bin 47 serves to provide means for carrying a large supply of sand to be distributed over the asphalt line and the said bin may be constructed of wood and lined with tin, or in any other manner found desirable.

The flow of sand through the discharge throatway 45 of the main sand chute 46 is controlled by the slide 48 which may be operated by reason of the connection therewith of the control lever 49 through which adjustment of the slide may be made to increase or diminish the amount of sand flowing through the said discharge throatway.

In order to insure the desired free flow of sand through the discharge throatway 45 under all conditions, I provide an agitator 50 in the nature of a cross shaft with agitating fingers projecting therefrom, and the said agitating member is adapted to be rotated by sprocket and chain transmission 51 from the drive shaft 52. See Figures 1, 3 and 7 of the drawings.

In order to provide for the proper heating of the asphalt to render the same and to keep the same in condition for readily flowing through the nozzle 24, the kettle 23 may be provided with a fire door 53 and a suitable grate 54 upon which a coal or wood fire may be readily built, a flue 55 being also provided to carry off the products of combustion.

In operation, when the invention is constructed in the nature of a trailer as disclosed in the drawings, the same is adapted to be drawn along the roadway by a suitable hauling agency such as a truck or tractor and it is obvious that the said hauling agency may be utilized to carry a suitable supply of asphalt or sand with which to replenish the supply carried by the machine itself as well as a suitable air compressing tank or reservoir, all of which are not shown in the drawings since detailed illustrations thereof are deemed unnecessary to a proper understanding of the invention.

When it is desired to start laying the traffic line the operator, after considering the width of the road-bed upon which the line is to be laid, will adjust the guide rod 16 so that it will project vertically above the right hand edge of the road-bed, or any other continuous line by which the laying of the traffic line may be effectively guided then, after adjusting the valve 27 to permit the flow of the heated asphalt through the piping 25 to the nozzle 24, an adjustment of the nozzle parts 28 and 33, to vary the thickness of the discharge end thereof in consideration of the consistency of the asphalt to be laid, the hauling of the machine over the road-bed is commenced, thus beginning a continuous laying of an asphalt line along the road-bed.

As the machine is drawn along the road-bed the operator, seated upon the seat 14 supported by the frame 6, is in a position directly over the line by which the machine is being guided and where he may readily observe the relation of that line and the guiding rod 16 so as to perfectly guide the laying of the asphalt line by the nozzle 24. As the machine is drawn along the brush 38, being in engagement with the road bed, will serve to loosen all particles which may tend to adhere to the road bed, thus making it possible for the air discharged through the nozzle 40 to very effectively clean the roadway in advance of the nozzle 24 so that the laying of the asphalt line will be clean and even.

As the line is laid and while the asphalt is in its semi-liquid heated state, the sand is evenly distributed thereover by reason of the delivery chute 43 and the other elements which permit and effect the discharging of the sand thereinto.

By reason of pivotally connecting the frame 6 to the side of the machine frame 1 it is possible for the frame to move vertically upon the pivots so as to compensate for uneven conditions of the road, and thereby prevent stress and strain upon the machine which would otherwise be present, and by reason of adjustably mounting the guiding rod 16, the connecting rod 7 and the side beams of the frame 6 laterally of the main frame 1, it is possible to adjust the machine to use on road-beds of varying widths.

By reason of providing the valve 27 in the piping 25 at a point adjacent the kettle it is possible to cut off the supply of asphalt from the said kettle to the nozzle, thereby permitting the asphalt in the piping 25 beyond the valve to drain off so that the same will not remain in the pipe to cool and congeal. This valve will also serve to determine the amount of or pressure of the asphalt flowing to the nozzle.

When the invention is constructed as a trailer as illustrated in the drawings the drive shaft 52 may be caused to rotate by reason of the bevelled gear connection 56 with the cross shaft 57 upon which the rear wheels 2 are mounted, the power being applied by reason of the traction of the said rear wheels upon the roadway. It should be understood that when a power plant is

supplied that the invention may operate under its own power and that the agitator may then be connected up directly with the power shaft of the engine.

From the foregoing description, taken in connection with the drawings, it is thought the novel details of construction, the advantages and the manner of operation of my invention will be readily understood by those skilled in the art to which it relates.

What I claim is:

1. Apparatus of the class described comprising a supporting frame, a kettle carried by the frame for containing the substance of which the line is to be laid, a nozzle for laying the line, a pipe line through which the substance is supplied from the kettle to the nozzle, road cleaning devices carried in advance of the nozzle, a bin carried by the frame and adapted to carry a supply of sand and having a discharge throatway, a distributor chute in communication with the discharge throatway and having its distributing end adjacent the roadway in alignment with the nozzle, and distributing pins in said chute for distributing the sand over the line being laid.

2. Apparatus of the class described comprising a supporting frame, a kettle carried by the frame for containing the substance of which the line is to be laid, a nozzle for laying the line, a pipe line through which the substance is supplied from the kettle to the nozzle, road cleaning devices carried in advance of the nozzle, a bin carried by the frame and adapted to carry a supply of sand and having a discharge throatway, a distributor chute in communication with the discharge throatway and having its distributing end adjacent the roadway in alignment with the nozzle, distributing pins in said chute for distributing the sand over the line being laid, an agitator device cooperative with the discharge throatway to cause the sand to flow freely therethrough, and means to drive said agitator.

3. Apparatus of the class described comprising a supporting frame, a kettle carried by the frame for containing the substance of which the line is to be laid, a nozzle for laying the line, a pipe line through which the substance is supplied from the kettle to the nozzle, road cleaning devices carried in advance of the nozzle, means for adjusting the relation of the nozzle with the roadway, and means for adjusting the discharge opening of said nozzle.

4. Apparatus of the class described comprising a supporting frame, a kettle carried by the frame for containing the substance of which the line is to be laid, a nozzle for laying the line, a pipe line through which the substance is supplied from the kettle to the nozzle, road cleaning devices carried in advance of the nozzle, means for adjusting the relation of the nozzle with the roadway, means for adjusting the discharge opening of said nozzle, a valve in the pipe line adjacent the kettle, a bin carried by the frame and adapted to carry a supply of sand and having a discharge throatway, a distributor chute in communication with the discharge throatway and having its distributing end adjacent the roadway in alignment with the nozzle, distributing pins in said chute for distributing the sand over the line being laid, an agitator device cooperative with the discharge throatway to cause the sand to flow freely therethrough, and means to drive said agitator.

5. Apparatus of the class described comprising a supporting frame, means whereby the frame may be drawn along a roadway, means for steering the movement of the frame, means for guiding the steering action, a kettle carried by the frame for containing the substance of which the line is to be laid, a nozzle for laying the line, a pipe line through which the substance is supplied from the kettle to the nozzle, road cleaning devices carried in advance of the nozzle, and an auxiliary frame connected pivotally to the frame that it may adapt itself to unevenness of the roadway and for providing a station for the operator at a point directly above the roadway edge and in alignment with said guiding means.

6. Apparatus of the class described comprising a supporting frame, means whereby the frame may be drawn along a roadway, means for steering the movement of the frame, means for guiding the steering action, a kettle carried by the frame for containing the substance of which the line is to be laid, a nozzle for laying the line, a pipe line through which the substance is supplied from the kettle to the nozzle, road cleaning devices carried in advance of the nozzle, means for adjusting the relation of the nozzle with the roadway, means for adjusting the discharge opening of said nozzle, an auxiliary frame, connected pivotally to the frame that it may adapt itself to unevenness of the roadway and for providing a station for the operator at a point directly above the roadway edge and in alignment with said guiding means, the said auxiliary frame and the guiding means being laterally adjustable to adapt the apparatus to use on roadways of various widths.

7. The combination with traffic line laying apparatus adapted to be moved over the roadway and including a supporting frame and means to lay the line, of an auxiliary frame projected laterally from and pivotally connected to the supporting frame, means for supporting the auxiliary frame, an operator's seat supported by the auxiliary frame, guide devices adjustably supported by the supporting frame and projected later-

ally therefrom, the said auxiliary frame and guide devices being laterally adjustable with relation to the carrying frame to associate the positions of the operator's seat and said guide devices with a guiding medium upon the roadway.

8. The combination with traffic line laying apparatus including a frame, supporting wheels for said frame, steering devices for said wheels and means for laying a traffic line, of an auxiliary frame projected laterally from the supporting frame, a wheel for supporting the auxiliary frame above the roadway, pivotal connections between said supporting frame and said auxiliary frame, an operator's seat supported by the auxiliary frame, steering devices convenient to the operator's seat, steering connections between the steering devices and wheels supporting the supporting frame that steering of the apparatus can be effected from the operator's seat, and guide devices supported by the supporting frame to project laterally therefrom, the said supporting frame, the steering connections, and the guide devices being laterally adjustable that the operator's seat and the guide devices may be associated with a guiding medium upon roadways of various widths for guiding the laying of the traffic line thereupon.

9. Apparatus of the class described comprising a supporting frame, a kettle carried by the frame for containing the substance of which the line is to be laid, a nozzle for laying the line, a pipe line through which the substance is supplied from the kettle to the nozzle, road cleaning devices carried in advance of the nozzle, the said nozzle including opposing members, one of which includes a neck in communication with the pipe line, a hinge connection between the members, swivel and bracket devices for causing the opposing members to move toward or from each other to increase or diminish the discharge opening therebetween, and lever devices connected with the nozzle whereby the position of the same with relation to the roadbed may be varied.

10. In a traffic line marker, a traveling vehicle, means for carrying marking material on said vehicle, means to lead the material to the desired location adjacent to the road surface and deposit the same in the form of a line or strip to one side of the vehicle and parallel to the direction of travel of the vehicle, said vehicle including operator controlled steering mechanism, and means on the vehicle cooperating with a portion of the road-bed for guiding the operator in steering.

11. In a traffic line marker, a traveling vehicle comprising a chassis including steering gear, an out-rigger seat for the driver of said vehicle, said seat being located to one side of the chassis, a road edge indicator on the vehicle in front of the seat, said steering gear including provisions adjacent to the seat for its operation, means for carrying road marking material on the chassis, means to lead the material to the desired location adjacent to the road-bed and deposit the same thereon in a line or strip as the vehicle travels, for the purposes specified.

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