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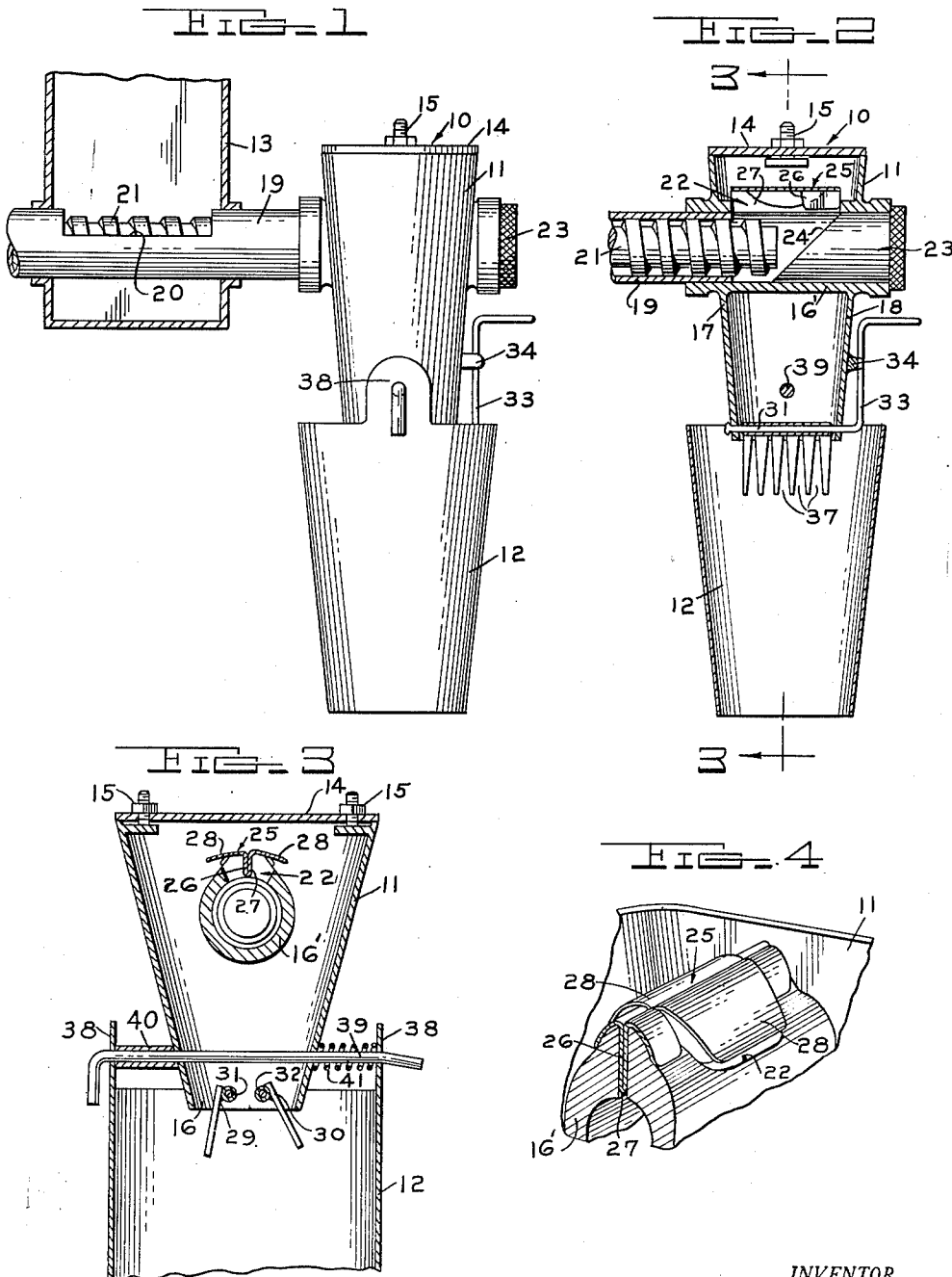
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2,593,960

APPARATUS FOR MARKING ROAD SURFACES

Filed May 26, 1947

2 SHEETS—SHEET 1



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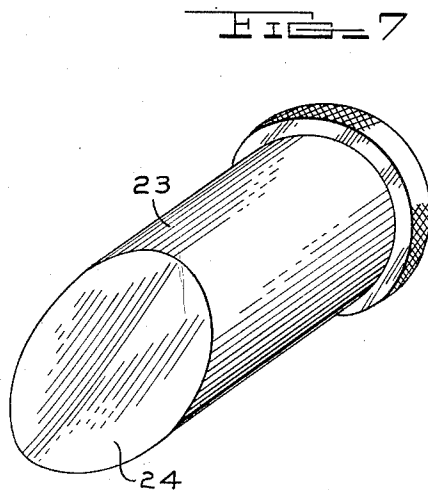
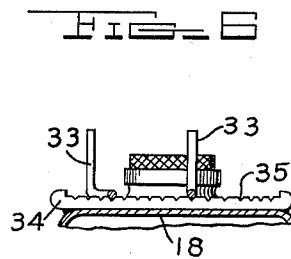
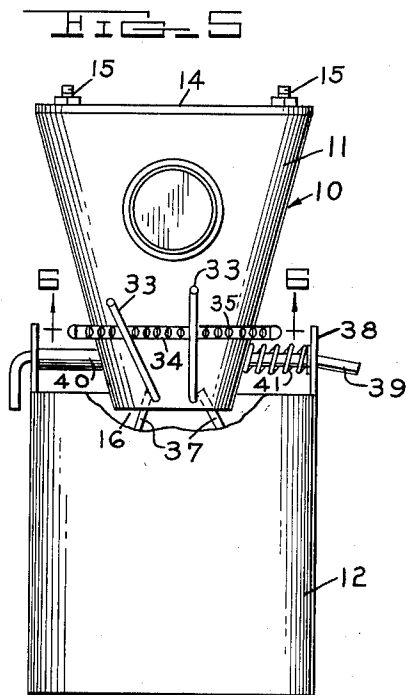
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APPARATUS FOR MARKING ROAD SURFACES

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2 SHEETS—SHEET 2



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APPARATUS FOR MARKING ROAD SURFACES

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11 Claims. (Cl. 275-2)

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This invention relates generally to equipment of the type employed to mark the surface of a road to indicate traffic lanes.

In dividing road surfaces into traffic lanes, it is customary to employ mobile equipment having provision for spraying or otherwise applying lines of predetermined color and width on the road surface as the equipment is propelled along the road. It has also been proposed to distribute beads or particles of light reflecting material on the freshly painted lines so that the latter will be visible at night.

The present invention concerns itself more particularly with the equipment for applying the beads or light reflecting substance on the previously painted lines and has as one of its objects to more uniformly distribute the substance throughout the width of the lines. As a result, the light reflecting characteristics of the lines are substantially uniform throughout the area of the latter and the opposite side edges of the lines are well defined.

A more detailed object of this invention is to provide a distributor for the light reflecting particles in the form of a housing having a discharge opening at the bottom thereof and adapted to be supported on the mobile equipment in a position to register the discharge opening with the painted line. The road marking substance or light reflecting material is supplied to the upper end of the housing and falls by the action of gravity through the discharge opening onto the painted line before the paint has an opportunity to dry, so that the paint serves as a binder for the material.

Another object of this invention is to provide means in the delivery end of the housing for deflecting the light reflecting material laterally within limits determined by adjusting the angular position of the deflector with respect to the path of flow of the material and thereby enable distributing the material throughout the entire area of lines regardless of their width.

A further feature of this invention is to provide a pair of laterally spaced deflectors at the delivery end of the housing adjustable independently of one another to direct varying quantities of material either to the right or left of the delivery end of the housing. Thus, by carefully adjusting the deflectors wind deflection and other factors tending to interfere with uniform application of the material may be compensated for.

Still another object of this invention is to provide the housing with a supply tube having an

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opening at the top through which the light reflecting material passes into the housing and having means for deflecting the material passing upwardly through the opening in opposite directions extending laterally outwardly from the tube.

A still further object of this invention is to divide the outlet opening in the top of the supply tube into two parts of substantially equal area with a rib on the deflector, so that two streams of material are directed into the housing at opposite sides of the tube.

In addition to the foregoing the present invention embodies means in the supply tube beyond the outlet opening for directing the light reflecting material upwardly through the outlet opening in the tube and adjustable to enable varying the quantity of material passing upwardly along either side of the dividing rib on the deflector.

The foregoing as well as other objects will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a side elevational view partly in section of road marking equipment embodying the features of this invention;

Figure 2 is a vertical sectional view through a part of the equipment shown in Figure 1;

Figure 3 is a sectional view taken on the plane indicated by the line 3-3 of Figure 2;

Figure 4 is a fragmentary perspective view of a part of the equipment;

Figure 5 is an end elevational view of the equipment shown in Figure 1;

Figure 6 is a sectional view taken on the plane indicated by the line 6-6 of Figure 5; and

Figure 7 is a perspective view of a part of the equipment.

The equipment forming the subject matter of this invention may be used in connection with road marking equipment having a carriage adapted to be propelled over a road surface and having provision for spraying paint on the surface of the road to form a line. The carriage and paint applying means form no part of the present invention and accordingly are not shown herein. It will suffice to point out that the apparatus embodying the features of this invention may be mounted on the carriage in a position to distribute the light reflecting substance on the freshly painted line, so that the paint forms, in effect, a binder for holding the particles of light reflecting material in position on the road surface.

With the above in view reference is made more in detail to the drawings, wherein it will be noted that the numeral 10 indicates generally a device or apparatus for applying beads or some equivalent light reflecting material on the previously painted line. The apparatus 10 comprises a distributor in the form of a housing 11, a shield 12 for the delivery end of the housing and a hopper 13 for supplying the substance or light reflecting material to the housing 11.

The housing 11 is adapted to be supported in a vertical position and is closed at the top by a cap 14 in the form of a plate removably secured to the housing by fastener elements 15. The opposite sides of the housing taper inwardly to the bottom of the housing and the latter is formed with an outlet opening 16 through which the light reflecting material in the housing 11 is discharged by the action of gravity.

The light reflecting material is fed into the hopper 11 adjacent the upper end of the latter by a tubular portion 16' having the opposite ends open and projecting through the front and rear walls 17 and 18 respectively of the housing. The light reflecting material is conducted from the hopper 13 to the tubular portion 16' by a tube 19 having the rear end sleeved in the front end portion of the tube 16' and having the opposite end projecting into the hopper 13. The latter end of the tube 19 is formed with an elongated slot 20 through the top wall thereof to enable the light reflecting material in the hopper 13 to pass into the tube 19. The light reflecting material collected in the tube 19 is fed rearwardly into the tube 16' by a screw 21 rotatably supported in the tube 19 and projecting rearwardly into the front end portion of the tube 16'. Any suitable means not shown herein may be employed for rotating the screw 21 in a direction to feed the light reflecting material from the hopper 13 to the tube 16'.

The light reflecting material is discharged from the tube 16' into the upper end of the housing 11 through an opening 22 formed in the top of the tube 16', and is directed upwardly through the opening 22 by a baffle in the form of a plug 23. The plug 23 is inserted into the rear end of the tube 16', and is provided with a surface 24 at the front end which is inclined in a direction to direct the particles of light reflecting material upwardly through the opening 22.

The particles of light reflecting material passing upwardly through the outlet opening 22 contact a deflector 25 preferably formed of sheet metal and having a central depending rib 26. The rib 26 projects into the outlet opening 22 and divides the latter into two parts in the manner clearly shown in Figure 3 of the drawings. The depending rib 26 also engages in vertical slots 27 formed in the upper end of the tube 16' at opposite sides of the opening 22 and thereby serves to removably hold the deflector 25 in assembled relation on the tube.

It will further be noted from Figures 3 and 4 of the drawings that the deflector 25 is provided with flanges 28 which project laterally outwardly from opposite sides of the rib 26 in positions to intercept the light reflecting material passing upwardly through the outlet opening 22 at opposite sides of the rib 26. It follows from the foregoing that the light reflecting material passing upwardly through the outlet opening 22 is divided by the rib 26 into two streams, and the flanges 28 serve to direct the particles in the two streams laterally outwardly into the hous-

ing so that one stream passes downwardly at one side of the tube 16' and the other stream passes downwardly at the opposite side of the tube 16'. Thus the deflector 25 not only provides for a more uniform distribution of the particles of light reflecting material in the housing 11, but also prevents this material from building up in the form of a cone-shaped column above the outlet opening 22. In this connection it is pointed out that in cases where the deflector is omitted, a column of the light reflecting material collects above the outlet opening 22, and this column of material ordinarily remains after use of the apparatus is discontinued. As a consequence this quantity of material is usually wasted subsequent to each operation of the device and this is, of course, objectionable. However, the deflector 25 prevents the accumulation of any column of material above the outlet opening 22, and as a result, minimizes waste of material.

The particles of material supplied to the housing 11 in the above manner are discharged from the housing through the outlet opening 16 at the bottom of the latter. The pattern that the material makes on the road surface may be varied by a pair of additional deflectors 29 and 30. These deflectors are in the form of plates and extend transversely of the outlet opening 16. The upper ends of the deflectors are spaced laterally from each other to enable the passage of material therebetween and, of course, are also spaced from the adjacent side walls of the housing 11 in the manner clearly shown in Figure 3 of the drawings. It will further be noted from Figure 3 that the upper ends of the deflectors are respectively welded or otherwise permanently secured to the rock shafts 31 and 32. The rock shafts extend through aligned openings formed in the front and rear walls of the housing 11 adjacent the discharge opening 16 and the rear ends of the rock shafts are provided with cranks 33 which project upwardly adjacent the rear wall of the housing 11 exteriorly of the latter where they may be conveniently engaged for manipulating the deflectors 29 and 30. The cranks 33 may be independently operated to angularly adjust the deflectors, and are held in any one of a number of selected adjusted positions by means of a bar 34. The bar 34 is secured to the rear wall 18 of the housing 11 and is provided with a plurality of notches 35 for selectively engaging the cranks.

With the above construction it will be noted that the particles of light reflecting material passing through the discharge opening 16 onto the road surface may be directed laterally in opposite directions to vary the width of the pattern or to alter the quantity of particles deposited on different portions of the area of the pattern. For example, if it is found that a strong cross wind prevails and that the particles are blown toward one side of the pattern, the deflectors 29 and 30 may be adjusted to alter this condition. In this connection it will be noted that both deflectors are formed with elongated slots 37 of sufficient width to enable the passage of particles of material therebetween, so that regardless of the relative adjusted positions of the reflectors, a substantially uniform distribution of the particles on the pattern is obtained.

In order to also overcome the tendency for cross winds to disrupt the pattern, provision is made for suspending the shield 12 from the delivery end of the housing 11. The shield 12 is tubular in cross section and has a diameter

substantially greater than the size of the outlet opening 16 so as not to interfere with the flow of particles of light reflecting material from the outlet opening to the road surface. The upper end of the shield is provided with diametrically opposed upwardly extending lugs 38 adapted to assume positions at opposite sides of the housing 11 and having aligned openings therethrough for receiving a pin 39 which extends transversely through the housing adjacent the delivery end of the latter. The shield is centered with respect to the delivery end of the housing by a sleeve 40 and a coil spring 41. The sleeve 40 acts as a spacer and is positioned on the pin 39 between one of the lugs 38 and the adjacent side of the housing. The spring 41 is supported on the pin between the opposite side of the housing and adjacent lug. The opposite ends of the spring respectively engage the housing and adjacent lug on the shield and serve to yieldably maintain the housing against the sleeve or spacer 40. The lower end of the shield extends in a position in as close proximity to the road surface as is practical in order to minimize any tendency for cross winds to interfere with proper distribution of the particles of reflecting material on the road surface.

What I claim as my invention is:

1. Road marking equipment for applying solid particles of material along a predetermined line on the road, comprising a distributor in the form of a downwardly tapering housing adapted for movement along a road surface and having a delivery opening at the bottom shaped to discharge solid particles of a marking substance on the road surface along a line determined by the path of travel of the housing over the road, rotatable conveyor means for supplying solid particles of a marking substance to the upper portion of said housing and dropping the same through said opening, a pair of deflectors pivotally supported in laterally spaced relation to each other and extending across the path of travel of the marking substance passing through the delivery end of the housing, and means for independently adjusting the deflectors.

2. Road marking equipment comprising a distributor in the form of a housing adapted for movement along a road surface and having a delivery opening at the bottom shaped to discharge a marking substance on the road surface along a line determined by the path of travel of the housing over the road, a pair of deflector plates extending across the delivery opening in laterally spaced relationship, said deflector plates having slots of sufficient size to enable the passage of marking substance therethrough, a pivotal mounting for each deflector plate permitting swinging movement of the latter to different angular positions, and means for independently swinging said deflectors.

3. Road marking equipment comprising a distributor in the form of a downwardly tapering housing having a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tube and upward through the outlet opening, a deflector for directing the substance passing through the outlet opening laterally outwardly from the tube into the housing.

4. Road marking equipment comprising a dis-

tributor in the form of a downwardly tapering housing having a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tube and upward through the outlet opening, and a deflector for the substance passing through the outlet opening having a rib for dividing the substance into two streams and having means for directing the streams laterally outwardly in opposite directions.

5. Road marking equipment comprising a distributor in the form of a housing having a removable cap at its upper end and a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tube and upward through the outlet opening, a deflector removably supported on the tubular portion and having a rib dividing the outlet opening into two equal parts, and means projecting laterally outwardly from opposite sides of the rib for directing the substance into the housing at opposite sides of the tubular portion to drop through said discharge opening.

6. Road marking equipment comprising a distributor in the form of a housing having a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tubular portion in a direction toward the outlet opening, and a baffle closing the end of the tubular portion beyond the outlet opening and having the surface thereof adjacent the outlet opening inclined to direct the substance upwardly through the outlet opening.

7. Road marking equipment comprising a distributor in the form of a housing having a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tubular portion in a direction toward the outlet opening, a baffle closing the end of the tubular portion beyond the outlet opening and having the surface thereof adjacent the outlet opening inclined to direct the substance upwardly through the outlet opening, and means for deflecting the substance passing through said outlet opening laterally outwardly in opposite directions.

8. Road marking equipment comprising a distributor in the form of a housing having a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tubular portion in a direction toward the outlet opening, a baffle closing the end of the tubular portion

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beyond the outlet opening and having the surface thereof adjacent the outlet opening inclined to direct the substance upwardly through the outlet opening, and means for selectively rotating the baffle in opposite directions to influence the flow of a greater quantity of substance through the outlet opening at one side thereof.

9. Road marking equipment comprising a distributor in the form of a housing having a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tubular portion in a direction toward the outlet opening, a baffle closing the end of the tubular portion beyond the outlet opening and having the surface thereof adjacent the outlet opening inclined to direct the substance upwardly through the outlet opening, means for deflecting the substance passing upwardly through said outlet opening laterally outwardly in opposite directions, and means for selectively rotating the baffle in opposite directions to cause a greater quantity of the substance to flow in one direction from the outlet opening.

10. Road marking equipment comprising a distributor in the form of a housing having a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tubular portion in a direction toward the outlet opening, a baffle closing the end of the tubular portion beyond the outlet opening and having the surface thereof adjacent the outlet opening inclined to direct the substance upwardly through the outlet opening, a deflector for the substance passing

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through the outlet opening having a rib for dividing the outlet opening into two parts and having means for directing the substance flowing upwardly along opposite sides of the rib laterally outwardly, and means for selectively rotating the baffle in opposite directions to cause a greater quantity of the substance to flow through one of said parts of the outlet opening.

11. Road marking equipment comprising a distributor in the form of a housing having a discharge opening at the bottom thereof, a tubular member extending transversely across the upper end portion of the housing communicating with a source of supply of road marking substance and having an outlet opening at the top communicating with the interior of the housing, means for feeding the substance into the tube and through the outlet opening, a deflector for the substance passing upwardly through the outlet opening having a rib for dividing the outlet opening into two parts and having means for directing the substance flowing upwardly along opposite sides of the rib laterally outwardly, and independently adjustable deflectors at the delivery end of the housing for directing the substance passing through the discharge opening laterally outwardly.

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