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APPARATUS FOR MARKING PAVEMENTS AND THE LIKE

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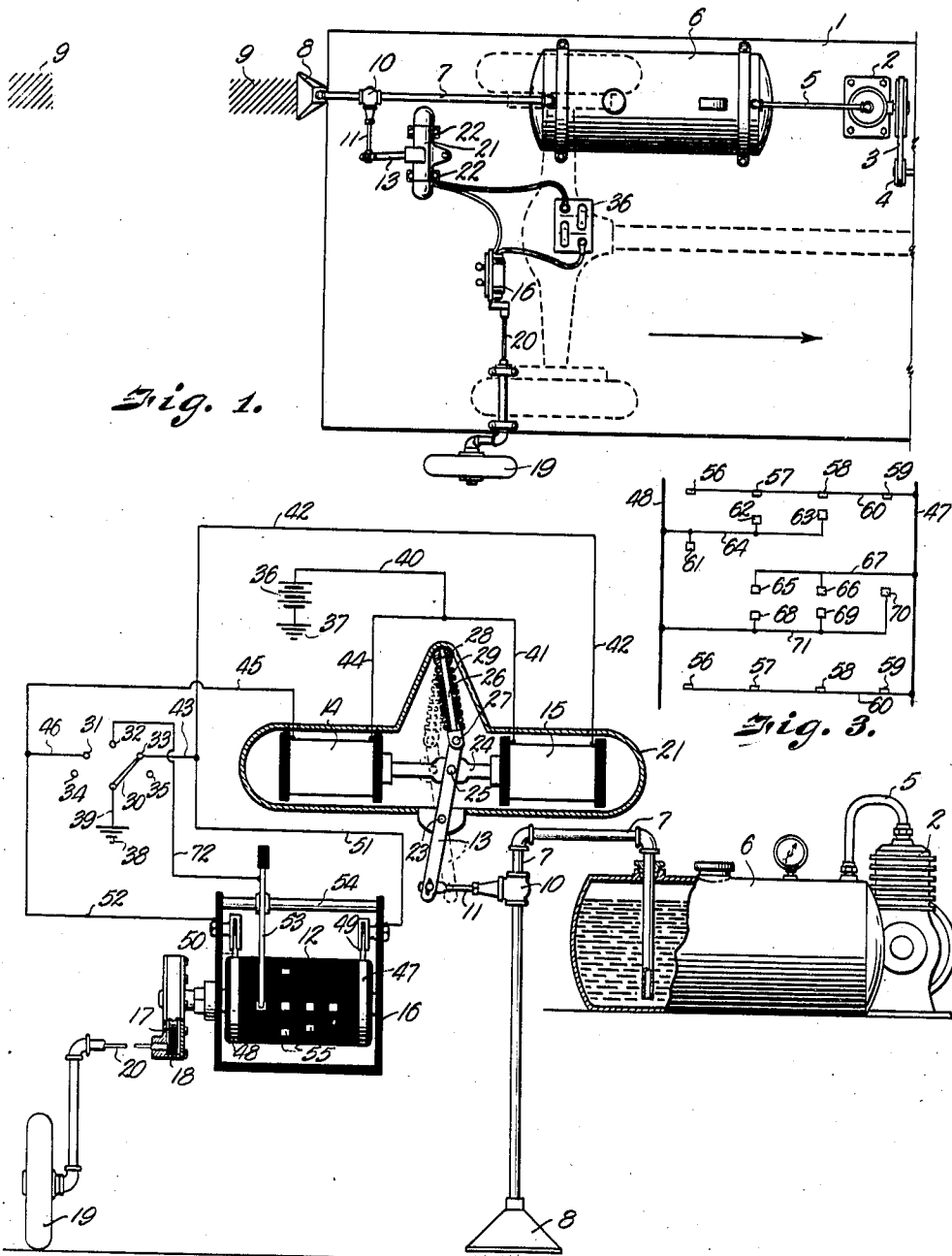


Fig. 2.

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APPARATUS FOR MARKING PAVEMENTS
AND THE LIKE

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5 Claims. (Cl. 91-12)

My invention relates to apparatus for marking or painting lines on pavements, highways, streets, playgrounds and the like.

It has become universal practice to mark highways with a center stripe or painted line to indicate the side of the road on which oppositely bound traffic should keep. The cost of striping center lines on highways is considerable in that a large quantity of paint is employed. Furthermore, the paint must be of special composition, since it must stand heavy traffic and exposure to the weather. The paint, therefore, is expensive.

In order to save expense in the matter of paint, it has become the practice to mark center lines with a broken stripe. A broken stripe will serve the purpose to make the respective sides of the highway and a considerable quantity of paint is thus saved. On hills and curves an unbroken stripe is still used, in most cases.

The operation of painting stripes on highways is usually conducted from a vehicle bearing a supply of paint and spraying means. When a broken stripe is to be painted, an operator must start and stop the supply of paint. This is a tedious operation.

One object of my invention is to provide an automatic means for painting broken stripes or center lines on highways.

Another object of my invention is to provide an automatic means in which the type of broken line can be accurately predetermined and automatically performed.

Other and further objects of my invention will appear from the following description.

In the accompanying drawing which forms part of the instant specification and is to be read in conjunction therewith, and in which like reference numerals are used to indicate like parts in the various views;

Figure 1 is a top plan view of a portion of a vehicle equipped with one embodiment of my invention.

Figure 2 is a diagrammatic view showing the arrangement and electrical connections embodying my invention.

Figure 3 is a diagrammatic view of a development of the commutator used in my invention.

Referring now to the drawing, the vehicle body 1, which may be of any suitable type, carries a compressor 2, driven by a V-belt 3 from any suitable powered shaft 4. The compressor transfers compressed air through pipe 5 to a paint container 6. A paint supply pipe 7 is adapted to convey the paint under pressure imposed by the compressed air to a dovetail spray 8 to deposit

the paint on pavement in the form of a stripe 9. The pipe 7 is controlled by a valve 10 which is operated through a valve stem 11. The valve stem is actuated by a lever 13 through a pair of electromagnets 14 and 15, controlled by a rotary controller 12 within the housing 16. The rotary controller 12 is driven through a gear 17 and a pinion 18. The pinion 18 is actuated from a fifth wheel 19 through a flexible shaft 20. It will be seen that the rotation of the controller 12 is a function of the distance traveled by the vehicle since the fifth wheel 19 contacts the ground and is carried by the vehicle. The electromagnets 14 and 15 are housed within a casing 21 and secured to the vehicle by bolts 22. The lever 13 is pivoted to the housing 21 at 23. It is pivoted to armature 24 at 25. The armature 24 is actuated by electromagnets 14 and 15. The rod 26 is pivoted to the end of lever 13 at 27. The end of the rod passes through a pivoted guide member 28. A spring 29 is compressed around the rod 26 as can readily be seen by reference to Figure 2. The arrangement is such that the rod 26 and the lever 13 form a toggle mechanism. When the end of the lever which is connected to the armature 24 passes dead center, the spring 26 throws it the remainder of the way and holds it in a given position. In the position shown in full lines in the drawing, the valve is shown in open position, thrown to this position by energization of the electromagnet 15.

A switch arm 30 is adapted to make contact with contact points 31, 32, and 33. Contact points 34 and 35 are "rest" positions. The electromagnets are energized from any suitable source as from a storage battery 36. One side of the storage battery is grounded at 37. The switch arm 30 is grounded at 38 through conductor 39. In the position shown in Figure 2, current flows from the battery through conductor 40, through conductor 41, through the winding of electromagnet 15, through conductor 42, through conductor 43, through switch arm 30 to ground, thus completing the circuit. Contact point 33 is the contact point for manual operation for opening the valve 10 to permit the paint to be sprayed. When the switch 30 is moved to contact contact point 31, current will flow from the battery 36 through conductor 40, through conductor 44, through the winding of electromagnet 14, through conductor 45, through conductor 46 to contact point 31, thence through contact arm 30, through conductor 39 to ground and thence to the other side of the battery through ground 37, thus energizing the electromagnet 14 and causing the ar-

mature 24 to travel to the left as shown in Figure 2, moving the valve stem 11 to cause the valve to move to closed position.

When it is desired to operate the paint spraying device automatically, the switch arm 30 is brought into contact with contact point 32. The controller 12 comprises an insulating material having conducting bands 47 and 48. A brush 49 makes electrical contact with the band 47. A brush 50 makes electrical contact with the band 48. Conductor 51 makes electrical contact with the brush 49, while conductor 52 makes electrical contact with brush 50. An adjustable brush 53 is slidable along a mounting rod 54. A plurality of conducting contact points, indicated generally in Figure 2 by the reference numeral 55 are adapted to make contact with the brush 53. Figure 3 is a development of the electrical connections with the controller 12. The series of contact points 56, 57, 58 and 59 are connected by conductor 60 to the conducting strip 47. The contact points 61, 62 and 63 are connected to the conducting strip 48 by conductor 64. Contact points 65 and 66 are connected by conductor 67 to conducting strip 47. Contact points 68, 69 and 70 are connected by conductor 71 to the conducting strip 48.

In the position shown in Figure 2, the adjustable brush 53 is in contact with contact point 56. The brush 53 is connected by conductor 72 to the contact point 32. When switch arm 30 makes contact with contact point 32, current will flow from the battery through conductor 40, through conductor 41, through the winding of electromagnet 15, through conductor 42, through conductor 51, through brush 49, through conducting strip 47, through conductor 60, through contact point 56, through brush 53, through conductor 72 to contact point 32, through switch arm 30, through conductor 39 to ground 38, thence to ground 37, back to the other side of the battery 36. This will energize the winding 15 and move the parts to the position shown in Figure 2, permitting paint to spray. The rotation of the controller 12 will bring contact point 61 into contact with the brush 53, due to movement of the vehicle along the ground through the agency of the fifth wheel 19, the flexible shaft 20, the pinion 18 and the gears 17.

When the brush 53 makes contact with the contact point 61, current will flow from the battery 36 through the conductor 40, through the conductor 44, through the winding 14, through the conductor 45, through the conductor 52, through brush 50, through conducting strip 48, through conductor 64 to contact point 61, through brush 53, through conductor 72 to contact point 32, through switch arm 30, through conductor 39 to ground 38, thence to ground 37, back to the other side of the battery 36. This will energize the electromagnet 14 and move the valve to closed position, the parts being in the dotted line position shown in Figure 2.

In the arrangement shown, the parts are calibrated so that contact points 56 and 61 will band a marking line 10 feet long, with 26 foot unbanded intervals. In other words, the sequence is; paint 10 feet, space 26 feet, paint 10 feet, space 26 feet, etc. When the brush is moved so that contact points 57, 62, 65, and 68 are employed, the arrangement is such that my invention will operate to paint 5 feet, space 13 feet, paint 5 feet, space 13 feet, etc. With the contact points 58, 63, 66 and 69 in use, my device will operate to paint 4 feet, space 14 feet, paint 4 feet, space 14 feet,

etc. With contact points 59 and 70 brought into operation by sliding the movable brush 53 to the right as viewed in Figure 2, my device will paint 18 feet, space 18 feet, paint 18 feet, space 18 feet, etc. It is to be understood, of course, that the distances just given are by way of illustration and not by way of limitation and that this will depend upon the diameter of the controller 12, the gear ratio between pinion 18 and gear 17 and the diameter of the fifth wheel 19. My device is very flexible and any arrangement of painting and spacing may be employed.

In using my device, accurate spacing is obtained and broken lines may be employed for straight portions of the highway with a saving of large quantities of paint, without in any way detracting from the efficiency of the center strip marking on the highway. If, for any reason, it is desired to have a continuous line such as is customary to employ at curves and over hills, the operator need only move the switch arm 30 from the contact point 32 past contact point 33 to the rest position 35. In doing this, a continuous line may be used for painting. In a like manner, when it is desired to place the device in an inoperative condition with valve 10 closed and the solenoids unenergized, the switch 30 is moved past contact point 31 to rest point 34. Due to my automatic timing device, the parts may be synchronized in starting to repaint a highway, and the center line broken strip may be repainted at exactly the same places, with precisely the same spacings as theretofore existed.

It will be seen that I have accomplished the objects of my invention. I have provided apparatus for marking or painting lines on highways, playgrounds, streets and the like in which broken strips may be automatically painted. The type of broken line can be accurately predetermined and the painting automatically performed in so far as painting and spacing are concerned.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations. This is contemplated by and is within the scope of my claims. It is further obvious that various changes may be made in details within the scope of my claims without departing from the spirit of my invention. It is, therefore, to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, I claim:

1. A device for marking lines on pavements, including in combination a vehicle adapted to be moved along the pavement to be marked, a supply of paint, means for spraying paint upon the pavement to be marked, a valve for controlling the supply of paint to said spraying means, a lever for controlling said valve, an armature connected to said lever, a pair of electromagnets for alternately actuating said armature, a beyond-dead-center spring for holding said lever in valve opening and valve closing position, a source of potential, electrical circuits for alternately energizing said electromagnets, said electrical circuits including a rotary controller and an adjustable brush, means for rotating said controller as a function of the movement of said vehicle, and means for adjusting said brush.

2. A device for marking lines on pavements, including in combination a vehicle adapted to be moved along the pavement to be marked, a supply of paint, means for spraying paint upon the pavement to be marked, a valve for controlling

the supply of paint to said spraying means, a lever for controlling said valve, an armature connected to said lever, a pair of electromagnets for alternately actuating said armature, a source of potential, electrical circuits for alternately energizing said electromagnets, said electrical circuits including a rotary controller and an adjustable brush, means for rotating said controller as a function of the movement of said vehicle, and means for adjusting said brush.

3. A device for marking lines on pavements, comprising a vehicle, a valve controlled paint spraying mechanism carried by the vehicle, electromagnetic means coactive with said spraying mechanism to open or close the control valve, a source of electric current, an electric circuit connecting the electromagnetic means and the current source, the electric circuit including a rotary controller and an adjustable brush, and means for rotating said controller as a function of the movement of said vehicle.

4. A device for marking lines on pavements, comprising a vehicle, a valve controlled paint spraying mechanism carried by the vehicle, electromagnetic means coactive with said spraying

mechanism to open or close the control valve, a source of electric current, an electric circuit connecting the electromagnetic means to the current source, the electric circuit including a rotary controller and an adjustable brush, the controller having a plurality of series of contact points and said brush being movable to engage a selected series of points, and means for rotating said controller.

10 5. A device for marking lines on pavements, comprising a vehicle, a valve controlled paint spraying mechanism carried by the vehicle, electromagnetic means coactive with said spraying mechanism to open or close the control valve, a source of electric current, an electric circuit connecting the electromagnetic means to the current source, the electric circuit including a rotary controller and an adjustable brush, the controller having a plurality of series of contact points and said brush being movable to engage a selected series of points, and means for rotating said controller as a function of the movement of the vehicle.

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