Sept. 20, 1938. G. S. MARSHALL 2,130,356

ROAD MARKING DEVICE

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Fig. 1.

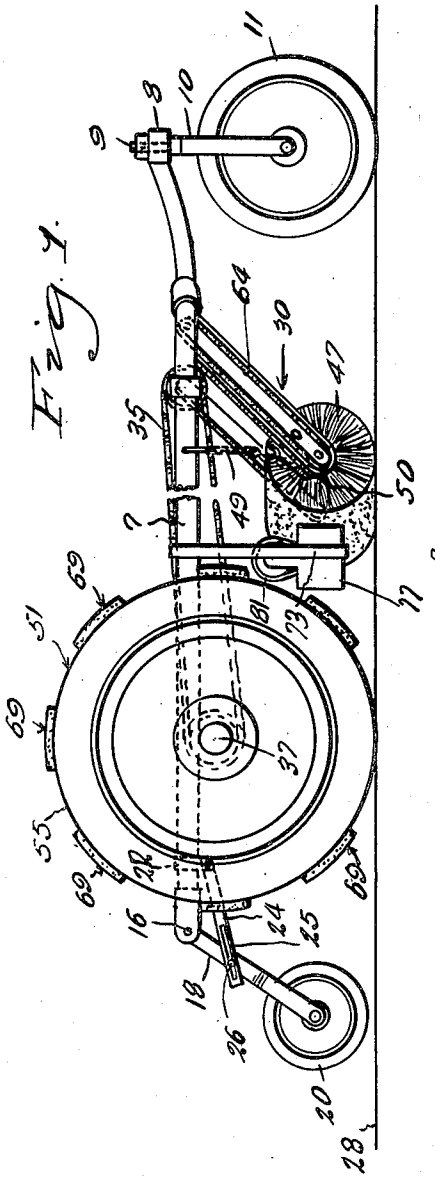
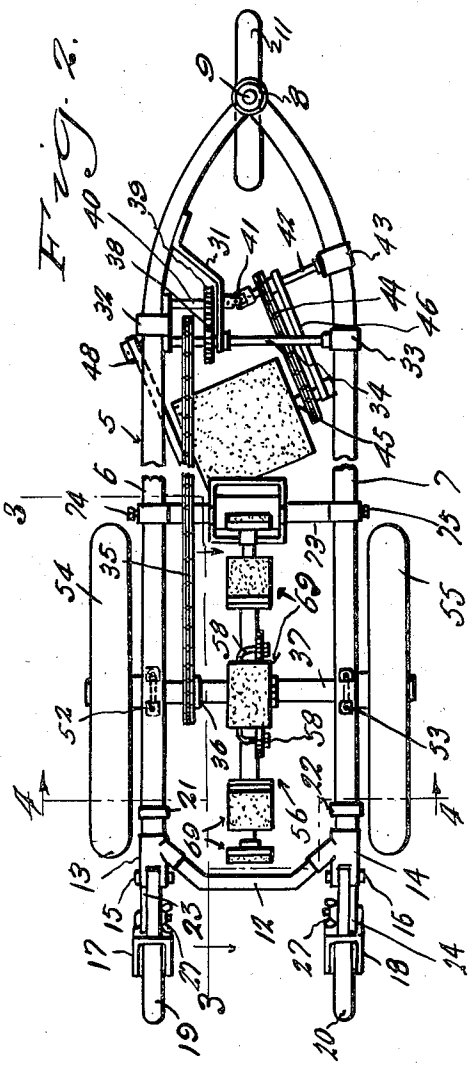


Fig. 2.



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Fig. 5.

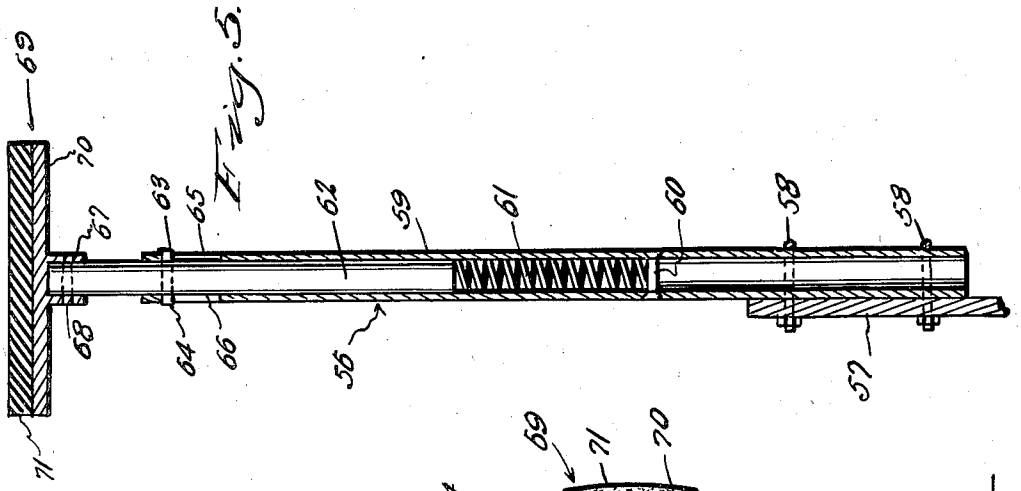


Fig. 4.

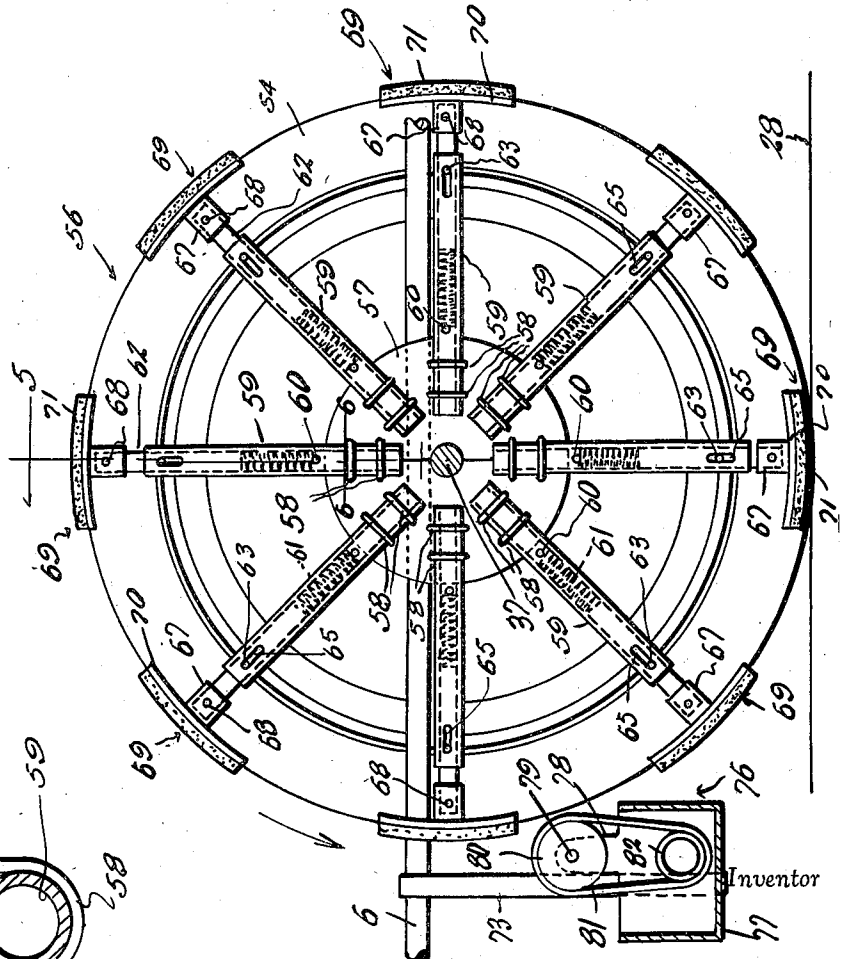
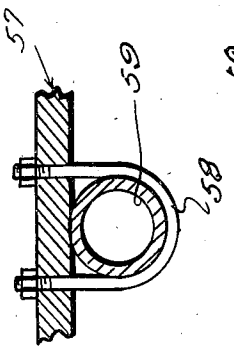


Fig. 6.



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Fig. 7.

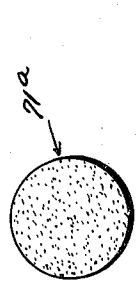


Fig. 8.

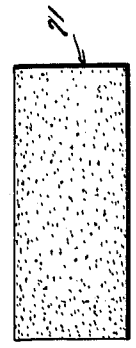


Fig. 9.

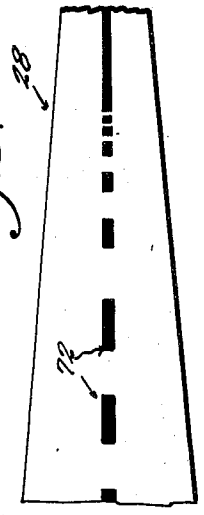


Fig. 4.

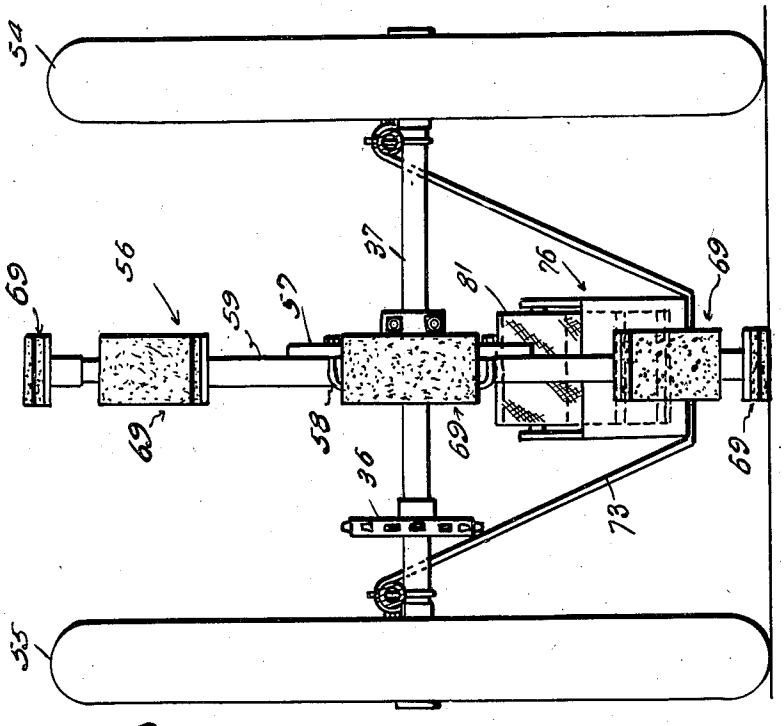
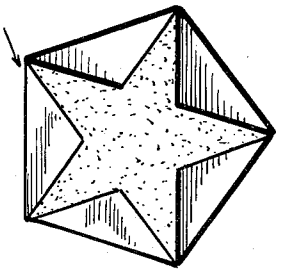


Fig. 10.



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2,130,356

UNITED STATES PATENT OFFICE

2,130,356

ROAD MARKING DEVICE

George S. Marshall, Laredo, Tex., assignor to Highway Marking Machine Company, Laredo, Tex.

Application May 14, 1936, Serial No. 79,775

9 Claims. (Cl. 91—12)

My invention relates generally to means for marking highways and other pavements, and particularly to means of this character which is especially adapted to be pulled or pushed over a road to mark lines upon the road surface defining traffic lanes, and an important object of my invention is to provide a practical efficient arrangement of this character which makes the lines in a manner and form providing the expenditure of paint far below that presently required for the purpose, the said arrangement being characterized by a small number of simple parts, capable of being manufactured and assembled inexpensively.

Other important objects of my invention will be apparent from a reading of the following description taken in connection with the drawings, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawings:—

Figure 1 is a side elevational view of the embodiment.

Figure 2 is a top plan view of Figure 1.

Figure 3 is a longitudinal sectional view taken through Figure 2 approximately on the line 3—3.

Figure 4 is a transverse vertical sectional view taken through Figure 2 approximately on the line 4—4 and looking toward the right in the direction of the arrows.

Figure 5 is a transverse vertical sectional view taken through Figure 3 approximately on the line 5—5 looking toward the left in the direction of the arrows.

Figure 6 is an enlarged fragmentary horizontal sectional view taken through Figure 3 approximately on the line 6—6.

Figure 7 is a plan view of a circular road mark.

Figure 8 is a plan view of a rectangular road mark.

Figure 9 is a perspective diagram of a road marked with a center line composed of the oblong marks as shown in Figure 8.

Figure 10 is a plan view of a star-shaped mark.

Referring in detail to the drawings, the numeral 5 generally designates a suitable frame composed of longitudinal side members 6 and 7 which converge at their front ends to meet in the journal 8 in which is journaled the stub shaft 9 on the fork 10 which carries the road engaging front wheel 11.

The rear ends of the side members 6 and 7 are joined by a cross member 12 which may conveniently include fittings 13 and 14 comprising bifurcated rear ends supporting the pivots 15 and 16 on which are pivoted the upper ends of the auxiliary wheel carrying forks 17 and 18 which carry the auxiliary wheels 19 and 20. Secured to the side members 6 and 7 in front of the fittings 13 and 14, respectively, are bands 21 and 22 which have pivoted thereto the adjusting links 23 and 24 which are slotted as indicated by the numeral 25 to engage a bolt 26 on the fork, which bolt has thereon a wing nut 27 which enables fastening the bolt in a position to sustain the auxiliary wheels above the road surface 28 or in contact therewith.

Between and to the rear of the converging portions of the side members 6 and 7 is arranged the road brushing and cleaning arrangement which is generally designated 30 and which comprises the brace 31 and the fitting 33. A rotary shaft 34 is journaled in the fittings 33, 31 and 32 and has thereon a sprocket carrying the sprocket chain 35 which is trained over a sprocket wheel 36 on the marking wheel shaft 37. The shaft 34 also has a gear 38 in mesh with a gear 39 on an auxiliary shaft 40 which is journaled in the fitting 32 and also in the brace 31 and has a universal connection 41 with an obliquely arranged shaft 42 whose laterally outward end is journaled in a fitting 43 mounted on the side member 7 of the frame 5. The shaft 42 has fixed thereto a sprocket over which the sprocket chain 44 is trained. The sprocket chain 44 is also trained over a sprocket on the brush shaft 45 and a support 46 is connected to and between the shaft 42 and the shaft 45, the support 46 being pivoted to the shaft 42 so that the brush 47 may swing up and down with inequalities in the road surface.

Pivoted to a portion of the frame side member 6 is the obliquely depending pivoted support 48 which has a pin and slot connection with the brush shaft 45 axially outwardly of one end of the brush 47 and opposite the position of the support 46.

By means of these arrangements the brush 47 which is cylindrical in form and fixed to the brush shaft 45, has sufficient freedom to rise and fall with the inequalities in the road surface. The weight of the brush and the appurtenances thereto are sufficient to maintain the brush in its depressed ground engaging position. To keep the brush out of engagement with the road surface a suitable arrangement such as a chain 49 is provided which is attached to the side member 7 of the frame 5 and has at its lower end means for engaging a portion of the support or the shaft 45 while the brush is in an elevated position.

The described brush mechanism is forwardly in the frame 5 from the road marking mechanism

which is generally designated **51** and which includes the already mentioned marking shaft **37** which is revolubly mounted in bearings which are secured by U-bolts **52** traversing the side members **6** and **7**, the shaft **37** being provided laterally outwardly of the frame **5** with road surface engaging wheels **54** and **55** of suitable type, and preferably pneumatic tired.

Mounted in the approximate center of the shaft **37** is the marking wheel which is generally designated **56**, and whose detailed structure is shown in Figures 3 and 5.

The marking wheel **56** comprises the disk **57** which is constituted by two semi-circular plates, which are fastened to the shaft **37** by half-collars on the plates traversed by bolts. Secured to one side only of the disk by means of pairs of U-bolts **58** are the tubular spokes **59** which are provided intermediate their ends thereof with interior cross members **60** which act as anchors for the inward ends of helical springs **61** which operate against the axially inward end of the marking pad plungers **62**. The marking pad plungers are secured slidably in place and against rotation by means of laterally projecting pins **63** and **64** which work in slots **65** and **66** which are made in the walls of the tubular spoke **59** adjacent the radially outward end thereof. The purpose of having the disk **57** sectional is to enable removing the marking wheel from the axle **37** without removing either of the wheels **54** and **55**.

Socketed on the outer end of the plunger **62** by means of a socket **67** and a securing pin or screw **68** are the marking pads **69** which comprise the plate portion **70** and the compressible marking pad per se **71**. It will be understood that the plate **70** and the marking pad **71** may be of any suitable shape, such as circular, oblong, rectangular, star-shaped, or any combination of these or other designs suitable for marking a highway or other pavement for traffic directing purposes. As clearly shown in Figure 3, there are a number of the spokes **56**, and although the number of such is not limited, eight in an arrangement of the type described herein appear preferable, so that the marks **72** made by the selected marking pads **71**, **71***a*, or **71***b* and the like, will be sufficiently closely spaced to give the proper traffic lanes defining effects. As shown in Figure 9 of the drawings the marks **72** are spaced at such distances from each other that in perspective the spaces between the marks disappear in the distance and produce the appearance of a continuous line; while at a less distance from the observer, an attention compelling flitting appearance of the marks give unmistakable traffic definition. To a motorist driving along the road **28** marked in accordance with the present invention, the line made in accordance with the present invention appears in the distance to be continuous, and in the foreground to be active and attention compelling, whereby the driver is rendered less apt to fail to see or to disregard the road markings.

As clearly indicated in Figure 3, the marking plates **70** and the conforming marking pads **71** are curved in longitudinal cross section to conform with the curvature of the periphery of the circle defined by the periphery of the ground engaging wheels **54** and **55**, beyond which the pads **71** project as indicated in Figure 3 by reason of the presence of the springs **61**, when the pads are not engaged with the road surface **28** as is the lowermost pad shown in Figure 3. In this position the lowermost pad is compressed against the tension of the spring **61** to a position approximately flush with the periphery of the ground engaging wheels at the point of engagement with the road surface **28**. The curvature of the pads and their supporting plates **70** being as stated, there is no slipping or scuffing or incomplete contact with the road surface, even where expected irregularities in the road surface exist. It is to be observed that the arrangements of the fastening U-bolts **58** for securing the spokes **59** to the disk **57**, permit radial expansion or contraction of the individual spokes, to enable securing a proper adjustment of the radial projection thereof.

Suspended by a U-shaped strap **73** secured as indicated by the numerals **74** and **75** to the respective side members **6** and **7** of the frame **5** and immediately forwardly of the ground engaging wheels **54** and **55** is the paint reservoir which is generally designated **76**. The paint reservoir comprises a box **77** which rests on the bight portion of the supporting strap **73** and which has rising from its opposite ends the brackets **78** in which are journaled the opposite ends of the roller shaft **79** which carries the applying roller **80** over which is trained the paint applying and distributing belt **81**. Keeping the belt down below the surface of the paint in the receptacle **77** is an idle rotary weight **82**. The roller **80** and hence the exterior surface of the paint applying belt **81** is so arranged that the outer surface of the belt is radially inwardly of the outermost position of the pads **71**, so that in engaging the belt **81** while the marking wheel is moving in the counterclockwise direction indicated by the arrow in Figure 3, the pads **71** are compelled to compress and to move their shafts **62** in a radially inward direction, whereby a sufficiently strong engagement of the pads with the belt is produced to effect the desired transfer of paint from the belt to the pads for application to the road surface **28**.

The spindle of the fork **10** of the front wheel **11** may be provided with a steering handle or a draft member whereby the device may be steered if desired by an operator while the device is being pushed or pulled over the road surface. With the brush **47** engaging with the road surface, the various sprocket chains constitute a drive for rotating the brush **47** in a direction opposite to that of the ground engaging wheels whereby to sweep the road surface clean in front of the marking pads, so as to properly prepare the surface to receive the marks. When the device is in use, the auxiliary wheels **19** and **20** are raised as indicated in Figure 1 out of engagement with the road surface **28**. When the device is to be pulled along a surface in an inoperative position, the wheels **19** and **20** are adjusted so as to support the frame with the ground engaging wheels **54** and **55** and the marking wheel out of engagement with the road surface **28**.

Although I have shown and described herein a preferred embodiment of my invention, it is to be definitely understood that I do not desire to limit the application of the invention thereto, and any change or changes may be made in the materials, and in the structure and arrangement of the parts, within the spirit of the invention and the scope of the subjoined claims.

What is claimed is:—

1. A road marking device of the character described, said device comprising an ambulatory frame including a ground engaging wheel having a horizontal axle arranged for rotation therewith, marking arms extending radially from said axle, means mounting said marking arms on said axle,

resiliently mounted road surface marking pads on said marking arms, said pads normally projecting radially beyond the periphery of said ground engaging wheel said pads being arranged to be moved to a marking position level with the periphery of the ground engaging wheels by contact with the road surface as said device is moved upon the road surface, and means on said frame for supplying marking fluid to said marking pads.

2. A road marking device of the character described, said device comprising an ambulatory frame including a pair of ground engaging wheels, an axle connected between and fixed for rotation with said wheels, marking arms extending radially from said axle, means mounting said marking arms on said axle within the frame and between said wheels, resiliently mounted road surface marking pads on the outer ends of said marking arms, said pads being arranged to project radially normally beyond the periphery of said ground engaging wheels for yielding engagement with the road surface as said device is moved upon the road surface, and paint applying means carried by said frame in front of said marking arms for applying paint to said marking pads.

3. A device for marking a road surface, said device comprising an ambulatory frame including two spaced side members, an axle rotatably mounted on and across said side members, ground engaging wheels fixed on said axle outwardly of the said side members, a marking wheel on said axle between said side members, said marking wheel comprising a plurality of radial arms having resiliently mounted road surface marking pads at their outer ends, mounting means fastening said radial arms rigidly to said axle, a cross member mounted on and between said side members forwardly of said marking wheel, and paint applying means suspended from said cross member.

4. A device for marking a road surface, said device comprising an ambulatory frame including two spaced side members, an axle rotatably mounted on and across said side members, ground engaging wheels fixed on said axle outwardly of the said side members, a marking wheel on said axle between said side members, said marking wheel comprising a plurality of radial arms having resiliently mounted road surface marking pads at their outer ends, mounting means fastening said radial arms rigidly to said axle, a cross member mounted on and between said side members forwardly of said marking wheel, paint applying means suspended from said cross member, and a single ground engaging wheel located forwardly of said paint applying means and supporting the front end of said frame.

5. A device for marking a road surface, said device comprising an ambulatory frame including two spaced side members, an axle rotatably mounted on and across said side members, ground engaging wheels fixed on said axle outwardly of the said side members, a marking wheel on said axle between said side members, said marking wheel comprising a plurality of radial arms having resiliently mounted road surface marking pads at their outer ends, mounting means fastening said radial arms rigidly to said axle, a cross member mounted on and between said side members forwardly of said marking wheel, paint applying means suspended from said cross member, a single ground engaging wheel located forwardly of said paint applying means and supporting the front end of said frame, a road surface cleaning roller depending from said frame in front of said paint applying means and to the rear of said single ground engaging wheel, and a sprocket chain drive extending operatively from said axle forwardly to said cleaning roller.

6. A device for marking a road surface, said device comprising an ambulatory frame including two spaced side members, an axle rotatably mounted on and across said side members, ground engaging wheels fixed on said axle outwardly of the said side members, a marking wheel on said axle between said side members, said marking wheel comprising a plurality of radial arms having resiliently mounted road surface marking pads at their outer ends, mounting means fastening said radial arms rigidly to said axle, a cross member mounted on and between said side members forwardly of said marking wheel, paint applying means suspened from said cross member, a single ground engaging wheel located forwardly of said paint applying means and supporting the front end of said frame, a road surface cleaning roller depending from said frame in front of said paint applying means and to the rear of said single ground engaging wheel, and a sprocket chain drive extending operatively from said axle forwardly to said cleaning roller, said cleaning roller being arranged at angle and between the said members of the frame.

7. A device for marking a road surface, said device comprising an ambulatory frame including two spaced side members, an axle rotatably mounted on and across said side members, ground engaging wheels fixed on said axle outwardly of the said side members, a marking wheel on said axle between said side members, said marking wheel comprising a plurality of radial arms having resiliently mounted road surface marking pads at their outer ends, mounting means fastening said radial arms rigidly to said axle, a cross member mounted on and between said side members forwardly of said marking wheel, paint applying means suspended from said cross member, a single ground engaging wheel located forwardly of said paint applying means and supporting the front end of said frame, a pair of rear supporting wheels on the rear end of said frame and normally out of engagement with the road surface, and means mounting said pair of supporting wheels enabling engaging the same with the road surface to elevate said marking wheel out of engagement with the road surface.

8. A device for marking a road surface, said device comprising an ambulatory frame including two spaced side members, an axle rotatably mounted on and across said side members, ground engaging wheels fixed on said axle outwardly of the said side members, a marking wheel on said axle between said side members, said marking wheel comprising a plurality of radial arms having resiliently mounted road surface marking pads at their outer ends, mounting means fastening said radial arms rigidly to said axle, a cross member mounted on and between said side members forwardly of said marking wheel, paint applying means suspended from said cross member, said marking pads each comprising a shank slidably telescoped into a receptor formed in the outer end of the corresponding radial arm and a lateral lug slidably confined in a slot formed in the side of said receptor to prevent rotation of the shank, said marking pad further comprising a relatively wide head having a convex compressible material head fixed to the shank, and spring means within said receptor yieldably pressing said shank and head in a radially outward direction.

9. A device for marking a road surface, said device comprising an ambulatory frame including two spaced side members, an axle rotatably mounted on and across said side members, ground engaging wheels fixed on said axle outwardly of the said side members, a marking wheel on said axle between said side members, said marking wheel comprising a plurality of radial arms having resiliently mounted road surface marking pads at their outer ends, mounting means fastening said radial arms rigidly to said axle, a cross member mounted on and between said side members forwardly of said marking wheel, and paint applying means suspended from said cross member, said mounting means comprising a disk secured axially to said axle and U-bolts having their legs passing through said disk and their bights embracing inner end portions of said radial arms at one side of said disk.

GEORGE S. MARSHALL.