Dec. 29, 1936. H. A. EMMONS 2,065,998

HIGHWAY MARKER

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Fig. 1.

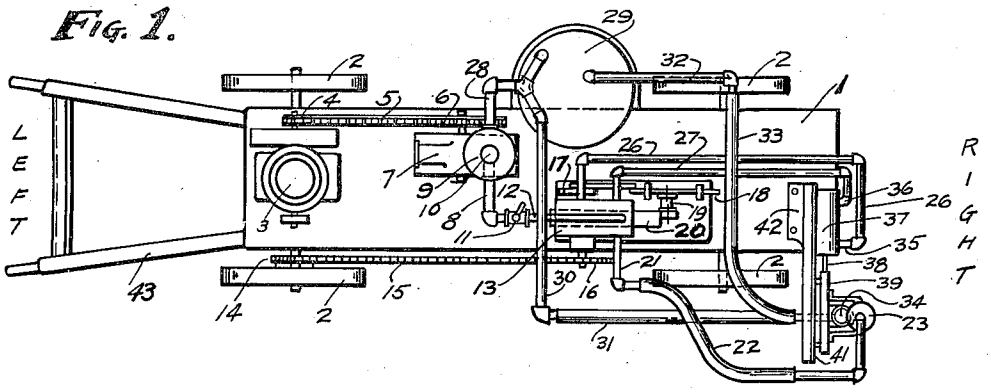


Fig. 3.

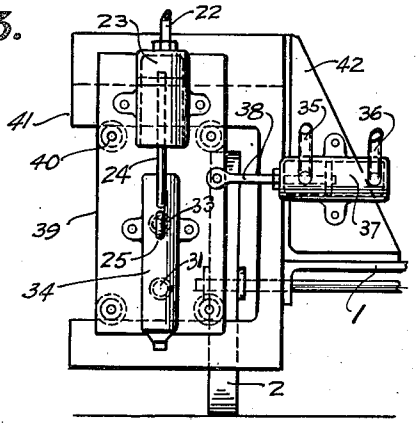
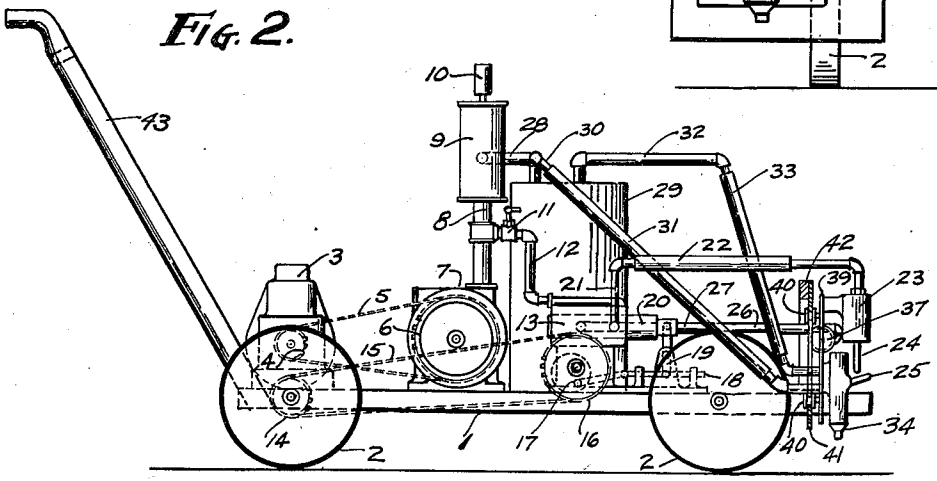


Fig. 2.



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Fig. 4.

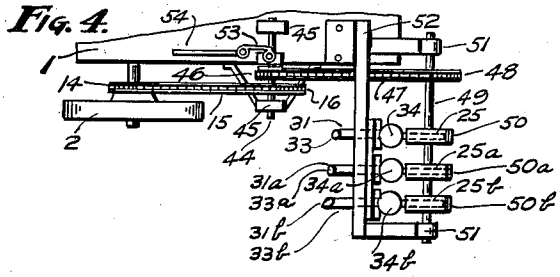


Fig. 5

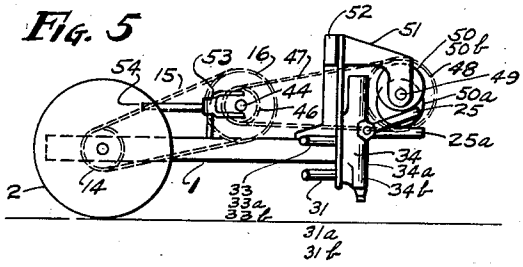
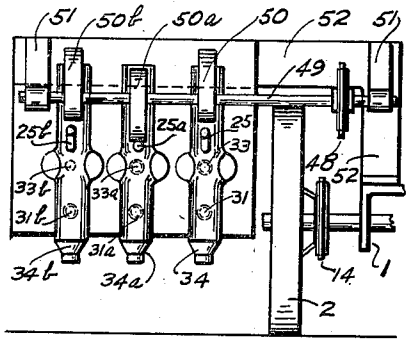


Fig. 6.



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UNITED STATES PATENT OFFICE

2,065,998

HIGHWAY MARKER

Herbert A. Emmons, Bloomfield, N. J.

Application September 13, 1933, Serial No. 689,220

7 Claims. (Cl. 91—45)

This invention relates to means for painting surface markers on roads, intersections and elsewhere, and particularly to wheel supported devices carrying means for this purpose, irrespective of whether propelled by hand or form a part of or be drawn by animate or inanimate force.

The general object of this invention is to place marks, lines, stripes, patterns, geometrical patterns and other colored designs and indicia on a traveled surface discontinuously or intermittently as desired, by mechanical arrangements described and illustrated in this specification, said patterns, designs, stripes, etc. forming the subject matter of my co-pending application Serial No. 688,627, filed September 8, 1933. By means of my invention herein specified and claimed, it is possible to paint but a portion of the line, stripe, etc., so that a considerable economy in paint and labor is effected, and at the same time produce a traffic guide of desirable legibility both in the daytime and night-time.

Other objects of my invention are concerned with constructional features of the mechanism for readily, accurately and properly placing the discontinuous line, stripe or pattern on a road bed or elsewhere as desired, I have illustrated my invention as applied to a hand or pushed marker, but it is to be understood that I do not limit my invention thereto, as my mechanism may be mounted on an automobile or horse driven vehicle, the manner of propulsion not being claimed as new by me.

Referring to the accompanying drawings:—

Fig. 1 is a top view of a highway marker constructed in accordance with my invention, the source or nature of the operating power being immaterial, but indicated in this illustrative figure as being operated by hand.

Fig. 2 is a vertical plane elevation of the marker shown in Fig. 1.

Fig. 3 is a vertical elevation of the paint applicator, viewed from the right of Fig. 1, Fig. 3 may be mounted on, or in connection with a motor driven, horse driven or otherwise non-manual driven mechanism.

Fig. 4 is a partial top view showing one alternative means of controlling the operation of the applicator in order to properly lay a discontinuous or geometrical pattern or stripe.

Fig. 5 is a fragmentary elevation of the device shown in Fig. 4, while Fig. 6 is a front elevation of the paint applicator showing (in this instance three) a plurality of paint spray guns, which are controlled by the cams.

Referring to these drawings, in Fig. 1, is designated a frame 1 of immaterial construction or dimensions, on which is mounted the paint applicator and the controlling mechanism, the frame being supported as by wheels 2 and propelled and guided by handles 43. It is to be understood that mechanism embodying my invention, instead of being mounted on a "chassis" of its own, may be mounted on, attached to or laid upon a motor-driven or horse-driven truck or the like, as may be desired.

Mounted on the frame 1 is engine 3, carrying sprocket 4, connected by chain 5 to sprocket 6 which causes operation of air compressor 7, the latter being suitably connected by means of pipe 8 to air receiver 9, provided with a pressure relief valve as 10. From air receiver 9, suitable piping 28 conveys air to paint tank 29 of any desired capacity, and by means of pipe 30 and flexible connection 31 air is conveyed to paint gun 34. The paint gun is mounted on slide 39, which is supported on rollers 40 riding in frame 41. The frame 41 is mounted on bracket 42 fixed to frame 1.

From paint tank 29 the paint is conveyed by pipe 32 and flexible connection 33 to the paint inlet of paint gun 34. Air for actuating the ram 23 and slide shifter cylinder 37 is taken from pipe 8 through shut off valve 11 and piping 12 to slide-valve mechanism 13. Valve 11 is used to shut off the air from the slide valve mechanism 13 when the machine is being moved from one painted point to another where it is desired to continue painting.

Sprocket 14 attached to any one of the four wheels 2 is connected by chain 15 to sprocket 16. This 16 drives slide valve 20 of the slide valve mechanism 13 by means of eccentric 17, push rod 18 and lever rod 19. Air is obtained from valve mechanism 13 through pipe 21 and flexible connection 22 for operating ram 23 mounted on shifter slide 39. The ram plunger 24 is located preferably over the trigger 25 of paint gun 34. As valve mechanism 13 allows the air to flow into the cylinder of ram 23, plunger 24 is moved (in this instance) downward operating trigger 25 of paint gun 34 which sprays the paint downward on the road or other surface to be marked or striped.

As frame 1 is moved forward on wheels 2, valve mechanism 13 releases air from ram 23, thus permitting trigger 25 to shut off paint and air from gun 34. As the forward motion of the vehicle is continued, valve mechanism 13 also supplies and releases air through pipes 26 and 27 alternately, to the right and left hand inlets 36 and 35 of the slide shifter cylinder 37. This operates

plunger 38 which is attached to gun mounting slide 39. As air is admitted to inlet 35, the slide moves to the right; when air is admitted to inlet 36, the slide moves to the left. By proper design of 13 the operation of 23 and 37 may be so arranged that any desired length of painted stripe to unpainted portion may be laid where one or more substantially parallel lines are used in any discontinuous manner as shown in my aforesaid co-pending application.

Referring to Figs. 4, 5 and 6, wherein is indicated means for mechanically controlling the paint applicators, 1 is the frame, 2 the wheels, on one of which wheels is mounted a sprocket 14 propelling chain 15 and sprocket 16. The latter is mounted on a suitable shaft 44 carried by bearings 45 mounted on frame 1. As shaft 44 is rotated sprocket 46 turns, and by means of chain 47 and sprocket 48, cam-shaft 49 is rotated, thereby rotating the cams 50, 50*a*, 50*b*. A clutch 53 is provided on shaft 44 so that by moving lever 54 the operation of sprocket 46 which controls the cam operation, may be started or stopped at will. Shaft 49 is mounted in suitable bearings 51 mounted on bracket 52 which is rigidly attached to frame 1, and 52 performs a similar function to 42 in Fig. 1. The paint guns 34, 34*a* and 34*b* are mounted on bracket 52 in such manner that revolution of cams 50, 50*a*, and 50*b* operate triggers 25, 25*a*, and 25*b* in a predetermined manner.

Paint may be conveyed to the paint guns through pipes 33, 33*a*, 33*b* and air may be conveyed thereto through pipes 31, 31*a*, and 31*b* in the same or similar manner as in the compressed air controlled machine.

It is to be understood that other devices and arrangements may be made in, or substituted for certain elements as indicated in the foregoing description of my invention, still conserving the breadth of the same. For instance, it must be obvious to one skilled in the art to which this invention appertains that if a properly designed commutator were substituted for valve mechanisms 13 and magnets were substituted for ram 23 and shifter cylinder 37, and these were properly connected to a source of electrical energy, the operation of the machine would be substantially as described in the foregoing.

One method of carrying my invention into effect in the operation of the machine is as follows:—

After starting the engine of the marker (which can lay but one pattern at a time without substituting another timing mechanism) and seeing that 29 has a sufficient supply of paint therein, the machine is placed in position and valve 11 is turned to the "on" position. The vehicle is then propelled in the direction and at the position the stripe is to be made. When the end of the section desired to be painted is reached, the operator turns valve 11 to the "off" position, thus shutting off the flow of paint by stopping off the air from 23 and 37.

What I claim and desire to secure by Letters Patent is:—

1. A road marker comprising a metering wheel for contact with the surface to be marked by paint, a paint applicator, an automatic timer operated by said metering wheel to control the operation of said applicator, a source of power, an air compressor, a paint tank, suitable connections from air compressor to paint tank, and from paint tank to paint applicator, suitable connections from automatic timing control mechanism to paint applicator and to a sliding member on which the applicator is mounted, suitable operating means controlled by said metering wheel for starting and stopping the applicator and for moving a sliding member contained therein to the right or left for determining the spacing at right angles to the road length, all in accordance with the pre-determined pattern desired to be laid, substantially as herein set forth.

2. A highway marker comprising a motoring wheel for contact with the surface to be marked by paint, a paint applicator, an automatic timer operated by said metering wheel to control the operation of said applicator, a paint tank, suitable connections from paint tank to paint applicator, suitable connections from automatic timing control mechanism to paint applicator and to a sliding member on which the applicator is mounted, and operating means controlled by said metering wheel for starting and stopping applicator and for moving a sliding member contained therein to the right or left for determining under control of said timing mechanism the spacing at right angles to the road length, all in accordance with the pre-determined pattern desired to be laid, substantially as herein described.

3. A highway marker for applying to a road surface a plurality of substantially parallel contiguous stripes and comprising a wheeled vehicle including a metering wheel for contacting with the road surface and carrying a paint reservoir, a paint applicator having a plurality of paint applying positions lying in a plane transverse to said vehicle, means for conveying paint from said reservoir to said applicator and operating mechanism controlled by said metering wheel for so regulating the starting and stopping of the flow of paint from said applicator as to cause the latter to be effective to apply paint from first one and then another of said positions.

4. A highway marker according to claim 3, wherein said paint applicator comprises a single spray gun and wherein said operating mechanism includes means for periodically shifting said spray gun laterally from one to another of said paint applying positions.

5. A highway marker according to claim 3, wherein said paint applicator comprises a single spray gun, and wherein is provided a slide on which said gun is mounted and means controlled by said operating mechanism for moving said slide laterally thereby to shift said gun from one to another of said paint applying positions.

6. A highway marker according to claim 3, wherein said paint applicator comprises a spray gun for each paint applying position and said operating mechanism includes means for causing the operation of first one and then another of said spray guns.

7. A highway marker according to claim 3, wherein said paint applicator comprises a spray gun for each paint applying position and said operating mechanism includes a shaft operated under control of said metering wheel and having fixed thereto a plurality of cams, one for each gun for co-operating and causing the operation of said gun.

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