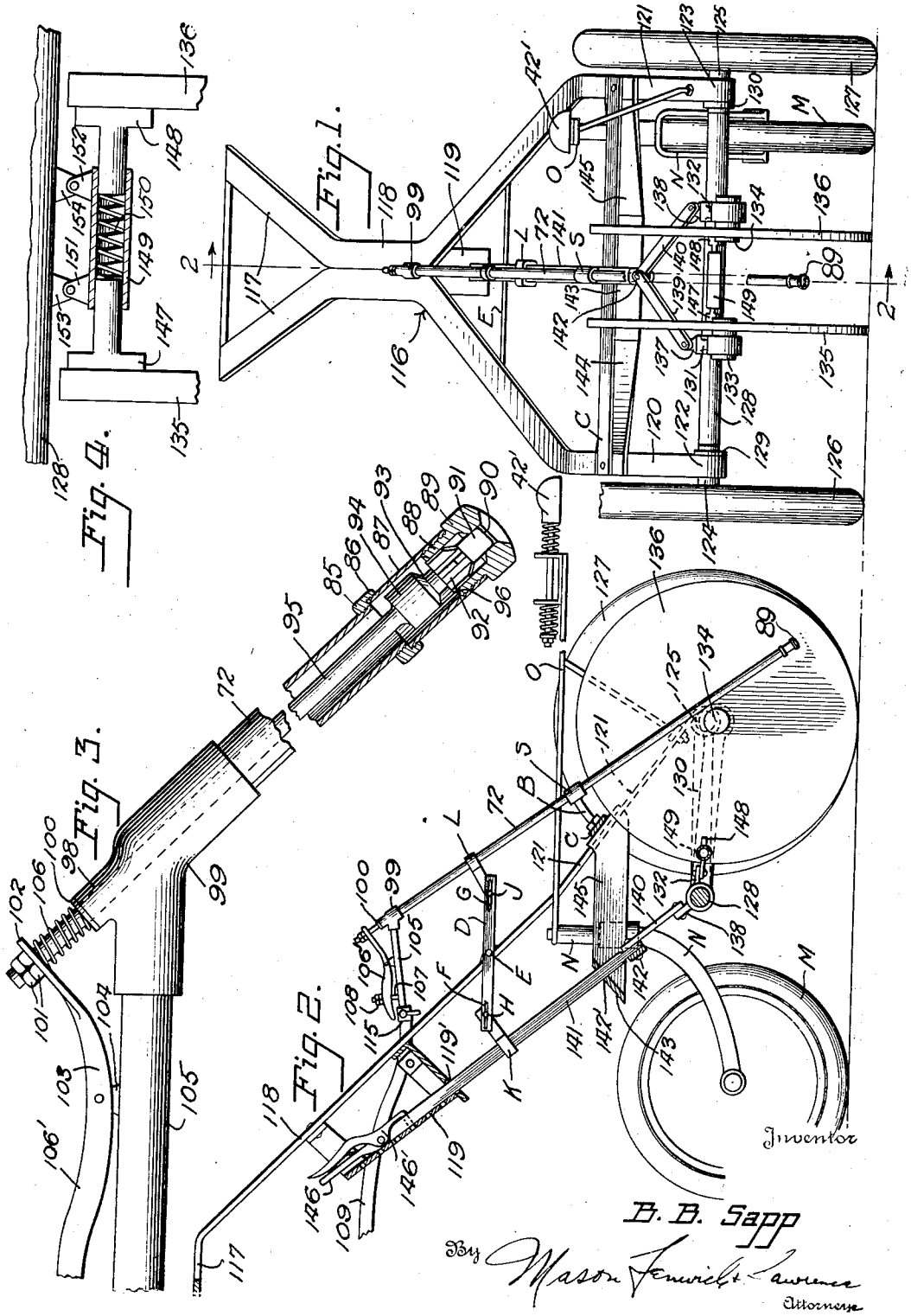
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ROAD MARKING APPARATUS

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## ROAD MARKING APPARATUS

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3 Claims. (Cl. 91—12)

This invention relates generally to road marking apparatus; and more particularly to apparatus of the highway marker type disclosed in my Patent 2,015,695, October 1, 1935.

One of the primary objects of the invention is to provide an apparatus of the character referred to which can be manuactured at considerably less cost than the apparatus described in my patent aforesaid, and which can be operated at comparatively high speed for painting a traffic-guiding line on the pavement or surface of the highway.

Another object of the invention is to provide a traffic-guide line painting mechanism operable to be drawn by a vehicle to paint lines of extended length, such, for example, as extend longitudinally of a highway, which mechanism is also manually operable to paint short lines.

A further object of the invention is to provide a novel and improved means for applying paint to the pavement or surface of the highway and which can be adjusted to vary the widths of the traffic-guiding lines as may be desired.

Pursuant to this object the device comprises paint confining surfaces, in the form of discs, which ride along the road surface, and which are adjustable toward and away from each other in accordance with the desired width of traffic guiding lines. Means are also provided to scrape the disc to remove excess paint therefrom, the scraping means being adjustable with the discs toward and away from each other and maintained in constant contact with the surfaces of the discs regardless of their position of adjustment.

Another object of the invention is to provide apparatus of this character with means whereby the paint can be applied at predetermined intervals during the movement of the apparatus along the highway to provide interruptions of predetermined lengths in the traffic-guiding line. Thus, in accordance with the practice of the present invention, an operator is able to apply traffic guiding lines wherever desired on a highway by mechanical means.

To these and other ends, the invention consists in certain improvements and combinations and arrangements of parts all as will be hereinafter more fully described, the features of novelty being pointed out particularly in the claims at the end of the specification.

In the drawing:

Figure 1 is a front elevation of a traffic guiding line marking machine, embodying the present invention;

Figure 2 is a cross sectional elevation taken on line 2—2 of Figure 1;

Figure 3 is a fragmentary, longitudinal section to an enlarged scale of a nozzle adjustable to control the spray of paint or the like on the highway; and

Figure 4 is a detail, partly in section, illustrating, to an enlarged scale, certain scraper elements shown in Figure 1.

Throughout the several figures of the drawing, like parts are designated by the same reference characters.

The improved road marking apparatus is adapted to be operated with any suitable vehicle, and, in the preferred practice of the invention, the vehicle carries a suitable paint supply means such as a tank and pumping mechanism for supplying paint to a machine for painting the traffic-guiding lines. The present invention is directed to the machine for painting the traffic guide lines. In addition to the painting machine, the apparatus preferably includes a means for guiding the apparatus along a line previously drawn on the highway.

The device of the present invention is adapted to spray paint on a highway or road, the paint being directed and confined to a specified line by mechanism which will be hereinafter described. The paint is sprayed by a nozzle 89, Figure 3, which receives its supply through a tube 72 from a flexible hose 109, the flexible hose being connected to a paint supply mechanism not shown. The nozzle 89 and the tube 72 are equipped with manually operated valve mechanism for predetermining the flow of paint as desired, the nozzle and its control mechanism comprising structure now to be described.

The lower end of the tube 72, Figure 3, is screw threaded to receive the internal screw threads of a collar 85 having an internally screw-threaded flange 86 projecting therefrom to receive a cylindrical casing 87, the lower end of which is internally screw threaded to receive the externally screw threaded flange 88 of a nozzle 89. The nozzle 89 is provided with a fan shaped spraying aperture 90 in which is slidably mounted a cleaning plate 91 extending from the lower end of a collar 92 formed on or suitably secured to a valve stem 93 which projects from a valve member 94 formed integral with, or suitably secured to, a control rod 95. The lower end of the member 94 is beveled to fit a correspondingly beveled seat 96 formed on the inner end of the flange 88. The collar 92 is provided with a series of radial slots 97 to permit paint to pass around the valve stem

92 and along the sides of the cleaning plate 91 to the fan shaped outlet 90, the leaf operating to spread the paint which flows in the form of a triangle from the nozzle outlet 90 to the road surface.

The upper end of the control rod 95 passes slidably through an extension 98 formed on an elbow fitting 99 screw threaded onto the upper end of the tube 72. A screw threaded collar 100 threaded onto the end of the extension 98 forms a guide for the control rod 95. The outer end of the rod 95 is screw threaded to receive the lock nuts 101 which engage one end 102 of a hand operated lever 103 pivoted between its ends on a fulcrum 104 which is suitably secured to and projects from a pipe 105 screw-threaded into the elbow fitting 99. The end 102 of the lever 103 is apertured to receive slidably the projecting end of the control rod 95, and a tension spring 106 surrounding said projecting end is interposed between the collar 100 and the end 102 to maintain the valve member 94 normally in closing position.

The other arm 106' of the lever 103 is apertured to receive slidably a rod 107, Figure 2, fixed to the pipe 105 and screw threaded at its outer end to receive the adjusting lock nut 108. It will be obvious that the valve member 94 and the nozzle element connected thereto can be adjusted into any desired position with respect to the nozzle 89 by adjusting the nuts 108 on the screw threaded end of the rod 107. A further adjustment may also be secured by adjusting the lock nuts 101 on the outer screw threaded end of the control rod 95. The outer end of the pipe 105 is shaped to receive the end of a flexible hose 109 which extends to a paint supply mechanism, preferably transported on a vehicle accompanying the painting machine.

A valve 115 of standard construction is connected to the pipe 105 to control the flow of paint therethrough see Figure 2.

The frame 116 of the marker shown in Figure 1 is preferably constructed from a bar of wrought iron, or other suitable material, bent to form a triangular shaped handle member 117, the sides of which are brought together to form a straight support 118 for a bracket 119 in which is mounted adjusting mechanism to be described hereafter. From opposite sides of the straight support 118, the bar forming the framework is bent outwardly to form the parallel branches 120 and 121 bent at their lower ends to form bearings 122 and 123 for the stub shafts 124 and 125 upon which are rotatably mounted the rubber tired wheels 126 and 127, respectively.

The rod 141 extends through an aperture 119' formed in the bracket 119 and terminates in a handle 146. Spring operated latching mechanism 146' mounted on the handle and engaging apertures in bracket 119 serves to lock the rod 141 detachably in any position of lengthwise adjustment. As the rod 141 is moved toward or from the guide rod 128, the links 132 and 133 will be moved outwardly or inwardly relative to each other to effect adjustment of the paint confining disks 135 and 136 simultaneously toward and away from each other.

Scrapers 147 and 148 are slidably mounted on a tube 149 in which is arranged a compression spring 150 holding the outer ends of the scrapers in yielding contact with the inner surfaces of the paint confining disks 135 and 136. The tube 149 is provided with apertured lugs 151 and 152 by means of which the said tube may be bolted or otherwise secured to the outer ends of lugs 153 and 154 projecting from the guide rod 128.

In this auxiliary apparatus, the paint spraying tube 72 is slidably mounted in a sleeve S formed on the end of a bracket B which is suitably secured to a cross bar C secured at its opposite ends to the ends of the branches 144 and 145 where they are connected to the branches 120 and 121 of the arms of the framework 116. As the rod 141 is adjusted to move the paint confining disks 135 and 136 toward and from each other, the tube 72 is automatically lowered or raised correspondingly.

A cylindrical guide rod 128 is suitably secured at its opposite ends to straps 129 and 130 secured to and extending rearwardly from the branches 120 and 121 of the frame 116. A pair of links 131 and 132 are slidably connected, each at one of its ends, to the guide rod 128. The outer ends of said links have suitably secured thereto the inwardly projecting pivots 133 and 134 upon which are rotatably mounted the paint confining disks 135 and 136.

The links 131 and 132 are mounted for simultaneous adjustment toward and from each other on the guide rod 128. To secure this adjustment, the ends of the links which slide on the guide rod 128 are provided with apertured lugs 137 and 138 to which are pivoted, respectively, the ends of links 139 and 140, the other ends of which are pivotally connected to each other and to the end of an adjusting rod 141 by means of the pivot pin or rivet 142.

The rod 141 is slidably mounted in an aperture 142' formed in a U-shaped cross bar 143 having the outer ends of its branches 144 and 145 riveted or otherwise suitably secured to the branches 120 and 121 of the frame 116.

To effect this automatic adjustment of the paint spraying tube 72, a lever D is pivoted between its ends on a pivot rod E suitably secured to the branches 120 and 121 of the framework 116. The oppostie ends of the lever D are provided with slots F and G slidably and pivotally receiving the pins H and J, respectively, which project from brackets K and L, respectively, suitably secured to the adjusting rod 141 and the paint spray tube 72, respectively. Thus, as seen in Figure 2 of the drawing, as the rod 141 is depressed to spread the disks 135 and 136 apart from each other, the spray tube 72 will be correspondingly raised. As the disks 135 and 136 are adjusted toward each other, by the rod 141 being moved upwardly, the paint spraying tube 72 will be correspondingly lowered.

This auxiliary apparatus is preferably provided with a third supporting wheel M rotatably mounted in a yoke member N which in turn is pivotally secured to the branch 145 of the cross bar 143. A draft bar O is pivotally connected to the upper end of the yoke N and is provided at its opposite end with any suitable means, such as 42', the details of which are unimportant for an understanding of the present invention, for connecting an auxiliary mechanism to the motor vehicle.

The traffic-guide line painting device is adapted to be operated in conjunction with a vehicle of any suitable type for highway marking. During the painting of long lines, for example, when a line is painted lengthwise of the road, the device is attached to the vehicle by means of the connection 42. Lock nuts 101 and 108 are adjusted to govern the quantity of paint flow and the amount of spread. Valve 115 is also set.

When it is desired to make short marks, such as lines transversely of the road, or traffic lane lines at the approach of an intersection, the device is disconnected from the vehicle at the connection 42' and is thereupon operated manually by the handle 117.

The device is readily adjustable for making lines of various widths by drawing the rod 141 up or pushing it down, and holding it in adjusted position by means of the detent carrying latch 146'. This places the discs 135 and 136 respectively closer together or further apart depending upon the desired width of the line to be painted. Automatically as the rod 141 is moved to bring the discs 135 and 136 closer together, for painting narrower lines, the nozzle 89 is projected closer toward the peripheries of the disc 135, 136, and closer to the road, to narrow the base of the triangle of paint flowing from the nozzle 89. As the discs 135 and 136 are positioned farther apart, the nozzle 89 is retracted to widen the base of the triangle.

As the discs 135 and 136 rotate they are scraped by the members 147, 148, Figure 4, to remove excess paint therefrom and to maintain the surfaces of the discs clean. Adjustment of the discs 135 and 136 toward or away from each other, operates automatically to move the scrapers 147, 148 toward and away from each other in conformity with the amount of adjustment of the discs, in a manner and by means as hereinbefore described in detail.

The disclosed structure presents one practical embodiment of the invention which is susceptible of a number of modifications within the spirit of the invention. The invention is not limited by the disclosed structure but its scope is determined by the accompanying claims.

What I claim is:

1. Road marking apparatus including a frame, supporting wheels for said frame mounted to rotate about a common axis thereon, a guide rod extending transversely of said frame, lugs slidable on said guide rod, inwardly projecting pivots carried by said lugs, a pair of paint confining disks rotatably mounted on said pivots and movable toward and from each other and for rotation in contact with the surface of a highway about an axis parallel to and spaced apart from the axis of said wheels, and means for simultaneously adjusting said disks toward and from each other comprising an adjusting rod intermediately located with respect to said lugs, and a pair of links connected to said adjusting rod and to said lugs.

2. Road marking apparatus including a frame, supporting wheels for said frame mounted to rotate about a common axis thereon, a guide rod extending transversely of said frame, lugs slidable on said guide rod, inwardly projecting pivots carried by said lugs, a pair of paint confining disks rotatably mounted on said pivots and movable toward and from each other and for rotation in contact with the surface of a highway about an axis parallel to and spaced apart from the axis of said wheels, and means for simultaneously adjusting said disks toward and from each other, comprising an adjusting rod intermediately located with respect to said lugs, and a pair of links connected to said adjusting rod and to said lugs, and means for holding said disks in adjusted positions.

3. The apparatus set forth in claim 2 in combination with scrapers yieldingly mounted on said frame and maintained in scraping contact with the inner surfaces of said disks in all adjusted positions thereof.

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