Dec. 10, 1929. S. J. SOUTHEY, JR 1,738,738

PAINTING MACHINE

Filed Dec. 30, 1924 2 Sheets-Sheet 1

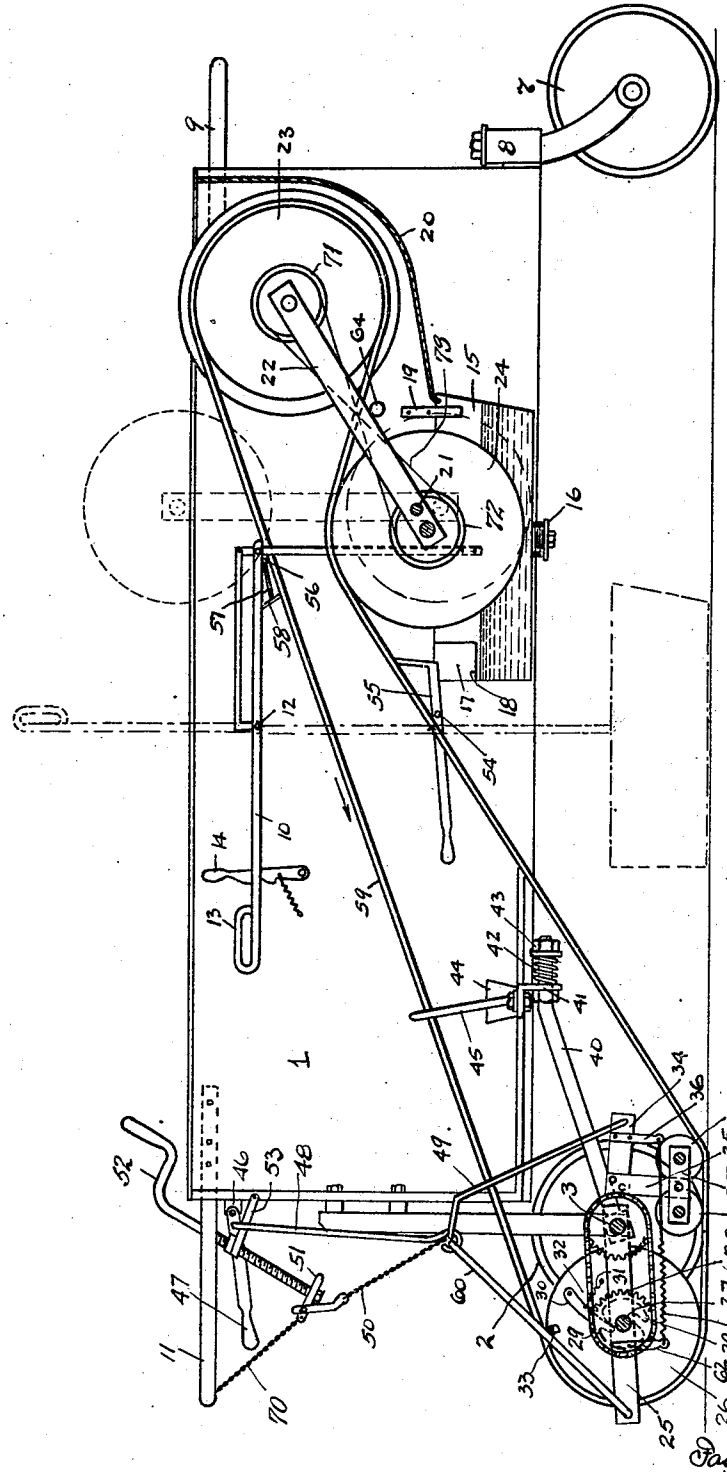


Fig. 1.

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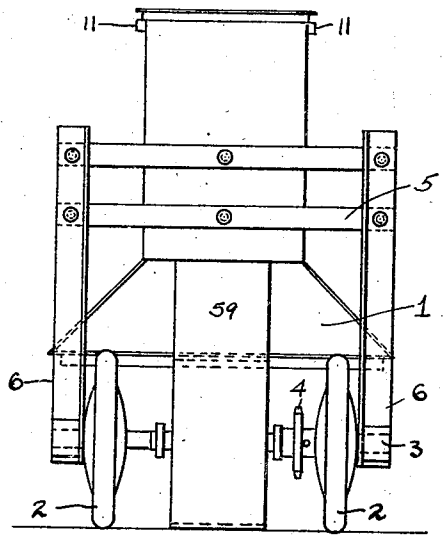


Fig. 2

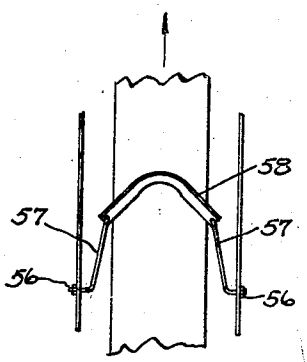


Fig. 3

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UNITED STATES PATENT OFFICE

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PAINTING MACHINE

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This invention, as indicated, relates to painting machines. More particularly it comprises an apparatus adapted especially for placing zone marks upon paving to serve as guides for traffic.

In view of the long distances over which it is frequently necessary to mark traffic lanes the use of hand marking devices is found to be too slow a process and it is also one involving considerable danger for the persons making the same. The principal object of the present invention is to provide an improved type of wheeled casing having a tank carrying a large supply of paint and being adapted to distribute said paint to the road surface at a relatively high rate of speed and with even margins and along a perfectly true line.

Another object of the invention is to provide a power drive for a painting mechanism which will cause the applicator belt making contact with the road surface to travel at the speed of movement of the machine so that there is no frictional contact of the belt with the road surface. A further object of the invention is to provide various adjusting means so that the applicator belt may be applied to or removed from the road surface with the minimum of effort. Other and further objects of the invention will appear in the course of the following description. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:

Fig. 1 is a longitudinal vertical section showing the construction of the painting machine with the applicator belt in contact with the road surface; Fig. 2 is a front elevation of the painting machine; and Fig. 3 is a detail view showing an adjustable equalizing bracket for controlling the distribution of the paint transversely of the applicator belt.

As is shown in the drawings, the apparatus comprises a casing 1 of substantially rectangular form, having at its forward end a pair of road wheels 2 connected to a transverse axle 3 which carries a drive sprocket 4. The transverse axle is supported in an auxiliary frame 5 secured to the front end of the casing, said frame having a pair of depending arms 6 having journals at its lower end within which the ends of said axle are adapted to be rotatably received. At the rearward end of said machine a single trailer wheel 7 is provided, said wheel being swivelly supported in a journal 8 secured to the rearward face of said body. At each side of the rearward portion of said casing a guiding handle 9 is provided by means of which the operator may control the position of said machine and move it along the desired path at the rate of travel found most advantageous. A similar handle 11 is provided at the forward portion of the casing. At a point approximately central of the casing a transverse pivot 12 is provided upon which a jointed lever support 10 for the paint reservoir 15 is pivoted. The forward end of said jointed lever is provided with a handle 13 and adjacent thereto a spring catch 14 is provided to hold said jointed lever support in several positions of adjustment. The paint reservoir comprises a rectangular tank or vessel 15 having a drain plug 16 provided centrally of its under side. When it is desired to fill the reservoir 15, the latch 14 is tripped to release the jointed lever support 10 which may then be moved to the dotted line position shown in Fig. 1. The reservoir will then rest upon the road surface or adjacent thereto in a position readily accessible.

Adjacent the forward end of the reservoir a compartment 17 is provided adjacent its upper portion with a perforated bottom or screen 18 through which the paint is returned to the reservoir and is strained so as to remove all foreign material. A stop 19 is provided upon said casing in a position to receive the side edges of the paint reservoir when the same is restored to operative position. A drain pan 20 is provided adjacent the rearward portion of the casing, which drain pan curves forwardly with its forward edge downwardly turned so as to enter over the

rearward edge of the paint reservoir. Transversely of the casing at a point adjacent to the operative position of the paint reservoir a transverse pivot 21 is provided upon which the pulley supporting frame 22 is adapted to swing. Said pulley supporting frame carries adjacent its ends a pair of rollers 23, 24, the roller at the upper edge being provided with a flange and the roller carried at the lower end having a plain surface. The pivot for the frame is positioned closely adjacent and slightly above the pivot for the lower roller which permits said frame to have a greater swing at its upper end than at its lower end. Thus the flanged roller which serves as a belt pulley may be turned to a position vertically above the lower roller which is adapted to dip into the interior of the paint reservoir and is moved rearwardly therein when the supporting frame is turned to a vertical position. Each of the rollers 23, 24 has a small belt pulley 71, 72, respectively, secured concentrically thereto at one side, over which a crossed drive belt 73 is engaged. The paint applying roller 24 is thus positively driven.

As has been indicated, the depending arms 6 secured to the forward end of the casing carry a transverse axle 3 upon which the forward road wheels 2 are carried. The depending arms are pivoted adjacent their upper ends to a pair of transversely extending cross bars of the auxiliary frame which thus permits considerable latitude of transverse motion of the supported parts so that they may accommodate themselves to inequalities in the surface of the pavement. Extending forwardly from said axle a pair of supporting arms 25 are provided which are centrally apertured to provide journals for the forward applicator belt pulley 26. On one end of the axle 27 of said pulley a clutch member 28 is provided having a pair of ratchet teeth 29 adapted to be engaged by a pivoted dog 30 pinned to the outer surface of the pulley and held in engagement with said ratchet teeth by means of a spring and bracket 31, 32. A stop 33 is provided on the outer face of said pulley, spaced a short distance from said dog, to limit the motion thereof in an outward direction. Extending rearwardly from the axle 3 a pair of supporting arms 34 are provided carrying a pair of downwardly depending extension arms 35, 36, one of said extension arms serving as a support for a frame member 37 which is suitable apertured adjacent its ends to receive the journals of a pair of small rollers 38, 39.

A radius rod 40 is journaled at its forward end upon the transverse axle 3 and at its rearward end extends through an angle member 41 bolted to the under side of the casing. A shock absorbing spring 42 is mounted upon the rearward end of said radius rod and an adjusting nut 43 serves to regulate the tension of said spring. Upon the upper side of said angle bar a drip pan 44 is provided and adjacent thereto a pair of applicator belt guides 45 extend in an upward direction.

Adjacent the forward upper edge of the casing a bracket 46 is provided upon which an applicator controlling handle 47 is pivoted. A link 48 is connected with said handle adjacent said pivot point and its lower end is looped about a pair of yokes 49, 60, the ends of which are secured respectively to the supporting arms extending forwardly and rearwardly of the transverse axle 3. At a point adjacent at which the link engages said yokes, a spring 50 is engaged thereover and the upper end of said spring is connected by means of a chain 70 with the forward handle 11 of the apparatus. At the point of junction of said spring with the lower end of said chain a screw-threaded plate 51 is provided which engages over the shank of a pressure adjusting handle 52 which is rotatably engaged through a supporting bracket 53 secured to the forward end of the casing.

At a point slightly forward of the paint reservoir a transverse pivot 54 is provided upon which is engaged a scraper plate 55. Said scraper plate has an upturned forward edge adapted to ride against the outer face of the applicator belt at a position immediately above the screened compartment 17 of said paint reservoir; and at a point above and slightly rearwardly of the transverse pivot for said scraper plate a transverse pivot 56 is provided for each of the support arms 57 of a paint equalizer bar 58. Said bar as illustrated in Fig. 3 comprises a stirrup-shaped member having a central portion cut away on its under side so as to throw a greater amount of paint toward the central portion of said applicator belt as it passes under said member.

As is clearly shown in Fig. 1, the applicator belt 59 extends longitudinally of the apparatus with its rearward end at a higher elevation than its forward end. The pulley supports for the applicator belt at the forward portion of said casing are adapted to hold the same in operative contact with the surface of the paving to be coated when the applicator handle 47 is turned to a downward position and the pressure adjusting handle has been adjusted to the proper extent. When said applicator handle is swung to an upward position the applicator belt will be drawn away from the paving surface and the marking of the device will be discontinued.

The means for holding the forward rollers in operative relation with the road surface comprises a spring 61, the forward end of which is secured to a depending arm 62 on the forward supporting arm for the applicator pulley and the rearward end of which is connected with the downwardly projecting arm 36 upon the rearwardly extending supporting bracket arm 34, heretofore described. The

spring thus acts to hold said parts together upon the one side of the point of support of said bracket arms and when the applicator handle is moved in the opposite direction said supporting arms project on opposite sides of said axle.

It will be noted that when the flanged pulley wheel at the rearward portion of said casing is in operative position against the stop 64, shown in Fig. 1, that tension will be placed upon the applicator belt and it will be rotated rearwardly over the pulley immersed within the paint of the paint reservoir and thence will pass around the flanged pulley beneath the paint equalizing strirrup and through the belt guides and over the pulleys adjacent the lower front end of said casing and into contact with the pavement. The belt will then pass upwardly over the scraper plate and again will start its travel over the paint applying pulley. Thus there will be continuously applied to the outer side of the belt a film of paint from the paint reservoir which will be distributed over the belt as it progresses downwardly beneath the paint equalizer and will be brought to the required degree of adhesiveness as it reaches the surface of the pavement. The rate of travel over the pavement of the applicator belt is equal to the rate of forward progression of the apparatus so that there is no friction between said belt and the surface of the pavement.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. An apparatus of the character described having in combination a wheeled structure, a paint reservoir mounted thereon, an applicator belt for transferring paint from said reservoir to a road surface, a pivoted frame, a pair of guide pulleys mounted on opposite ends of said frame, one of said guide elements being adapted to project within said paint reservoir and contact with the outer side of said applicator belt for transferring paint from said reservoir to said applicator belt, and a plurality of guide elements for said belt adjacent the road surface and adapted to hold said belt in contact therewith.

2. An apparatus of the character described having in combination a wheeled structure, a paint reservoir mounted thereon, an applicator belt for transferring paint from said reservoir to a road surface, a pulley supporting frame, a pair of belt supporting pulleys rotatably supported adjacent each end of said frame, a pivot for said frame positioned adjacent the lowermost pulley and adapted to hold said pulley within the paint tank while allowing a large swing of the upper most of said pair of pulleys, means for holding said frame in belt tightening position, and a plurality of guide elements for said belt adjacent the road surface and adapted to hold said belt in contact therewith.

3. An apparatus of the character described having in combination a wheeled structure, a paint reservoir mounted thereon, an applicator belt for transferring paint from said reservoir to a road surface, a pulley supporting frame, a flanged and a plain surfaced belt supporting pulley supported adjacent each end of said frame, a pivot for said frame positioned adjacent the lowermost pulley and adapted to hold said pulley within the paint tank while allowing a large swing of the uppermost of said pair of pulleys, means for holding said frame in belt tightening position, a pair of power pulleys projecting from each of the first-mentioned pulleys, a crossed power belt for operating said plain and flanged pulleys in unison, and a plurality of guide elements for said belt adjacent the road surface and adapted to hold said belt in contact therewith.

4. An apparatus of the character described having in combination a wheeled structure, a paint reservoir mounted thereon, an applicator belt for transferring paint from said reservoir to a road surface, a pulley supporting frame, a flanged and a plain surfaced belt supporting pulley supported adjacent each end of said frame, a pivot for said frame positioned adjacent the lowermost pulley and adapted to hold said pulley within the paint tank while allowing a large swing of the uppermost of said pair of pulleys, means for holding said frame in belt tightening position, a pair of power pulleys projecting from each of the first-mentioned pulleys, a crossed power belt for operating said plain and flanged pulleys in unison, a drain pan extending around said flanged pulley and into the upper edge of said paint reservoir, and a plurality of guide elements for said belt adjacent the road surface and adapted to hold said belt in contact therewith.

5. An apparatus of the character described having in combination a wheeled structure, a paint reservoir mounted thereon, an applicator belt for transferring paint from said reservoir to a road surface, a plurality of pulley wheels for actuating said belt adjacent said paint reservoir and adjacent the road surface, means for driving said belt from the wheels of said supporting structure, and a clutch for controlling the application of said driving power to said belt.

6. An apparatus of the character described having in combination a wheeled structure having a pair of wheels at the forward end and a single wheel at the rearward end, a handle for moving said wheeled structure and

guiding the same positioned at each end of said wheeled structure, a paint reservoir mounted on said wheeled structure, an applicator belt for transferring paint from said reservoir to a road surface, a plurality of pulley wheels for actuating said belt positioned between said forward wheels and actuated thereby, and means for simultaneously elevating the pulleys adjacent said road surface.

7. An adjustable equalizing device for an applicator belt of a painting machine which comprises a U-shaped stirrup having a central area of lesser width than the remaining portions thereof, and means for holding said member in belt contacting position adjacent a paint reservoir.

Signed by me, this 16 day of December, 1924.

SAMUEL J. SOUTHEY, JR.