June 10, 1930. J. H. KIRKMAN 1,763,432

ROAD MARKING MACHINE

Filed April 16, 1929 5 Sheets-Sheet 1

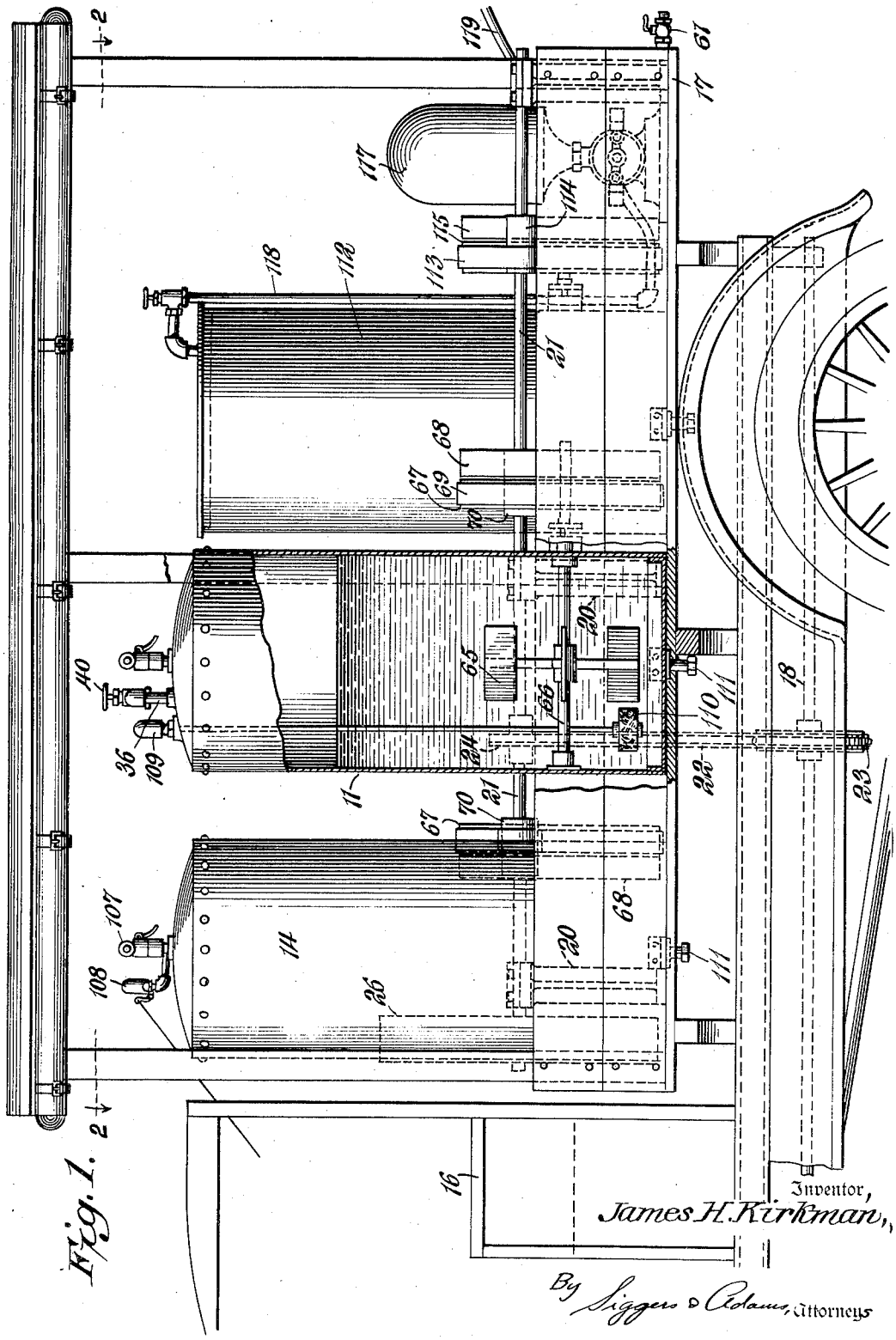


Fig. 1.

Inventor,
James H. Kirkman,
By Siggers & Adams, Attorneys

June 10, 1930. J. H. KIRKMAN 1,763,432

ROAD MARKING MACHINE

Filed April 16, 1929 5 Sheets-Sheet 2

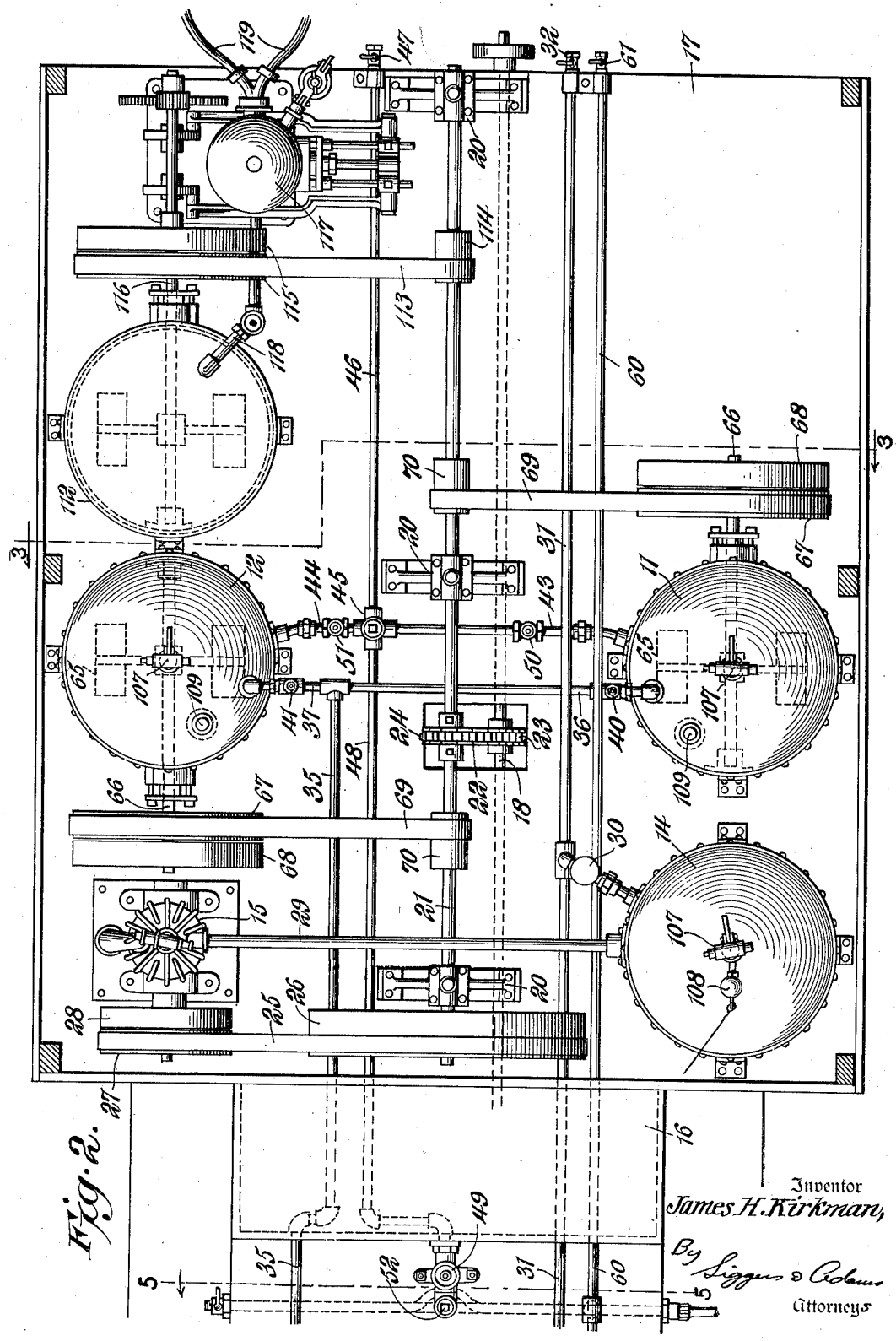


Fig. 2.

Inventor
James H. Kirkman,
By Siggers & Adams
Attorneys

June 10. 1930. J. H. KIRKMAN 1,763,432

ROAD MARKING MACHINE

Filed April 16, 1929 5 Sheets-Sheet 3

Fig. 9.

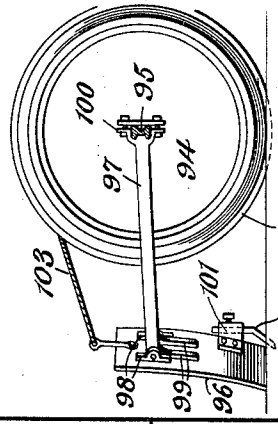
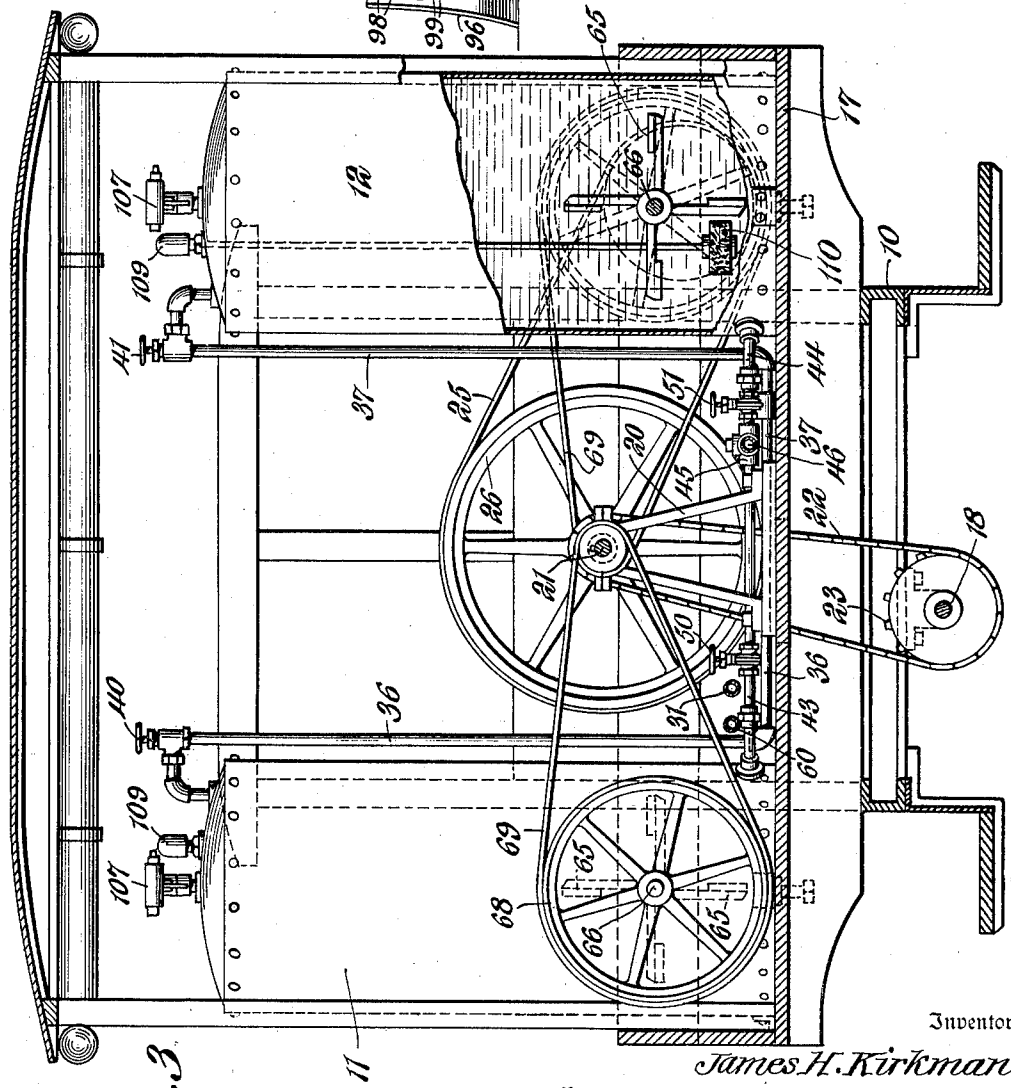


Fig. 3.



Inventor,
James H. Kirkman,
By
Siggus & Cadams
Attorneys

June 10, 1930. J. H. KIRKMAN 1,763,432

ROAD MARKING MACHINE

Filed April 16, 1929 5 Sheets-Sheet 4

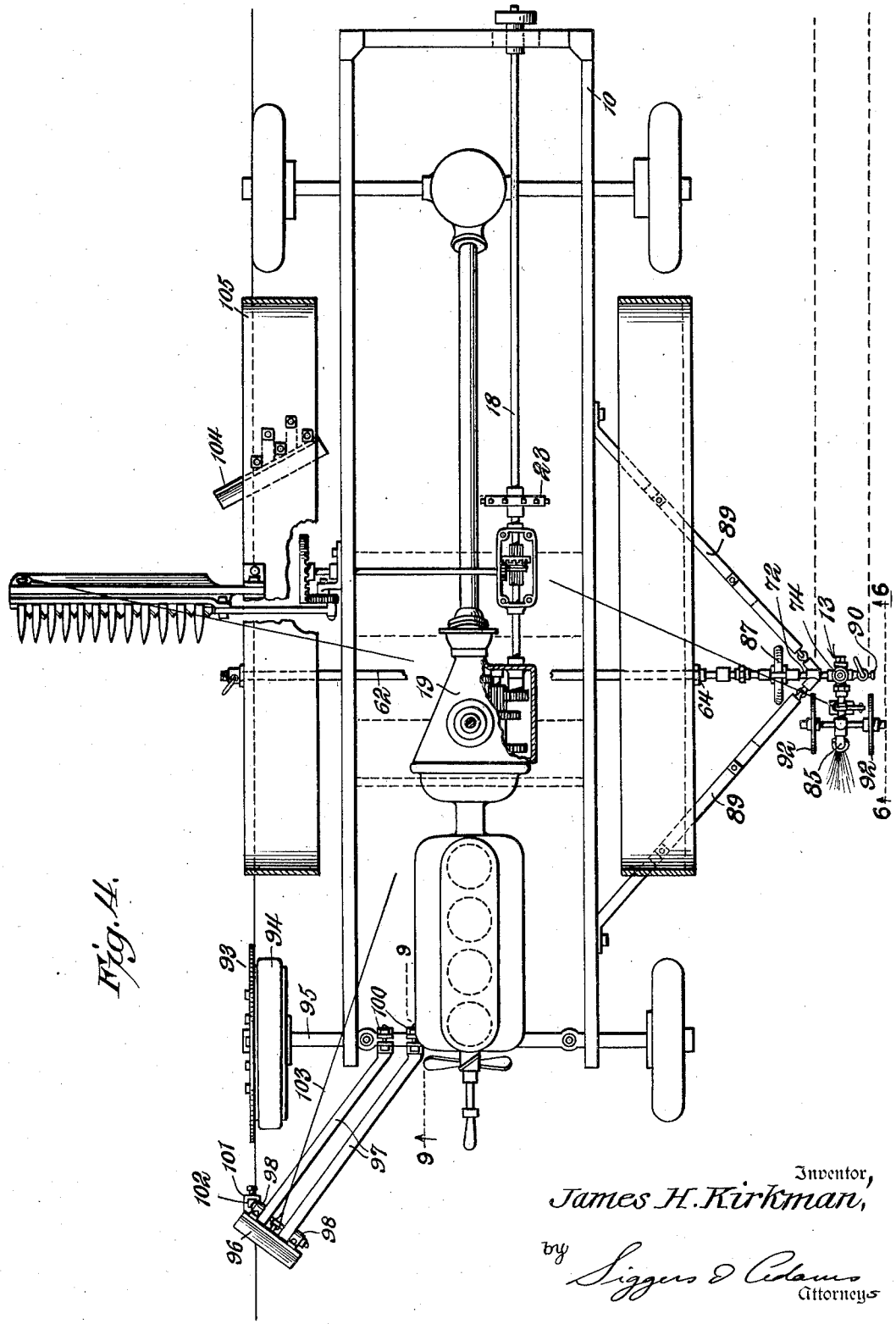


Fig. 4.

Inventor,
James H. Kirkman,
by Siggers & Adams
Attorneys

June 10, 1930. J. H. KIRKMAN 1,763,432

ROAD MARKING MACHINE

Filed April 16, 1929 5 Sheets-Sheet 5

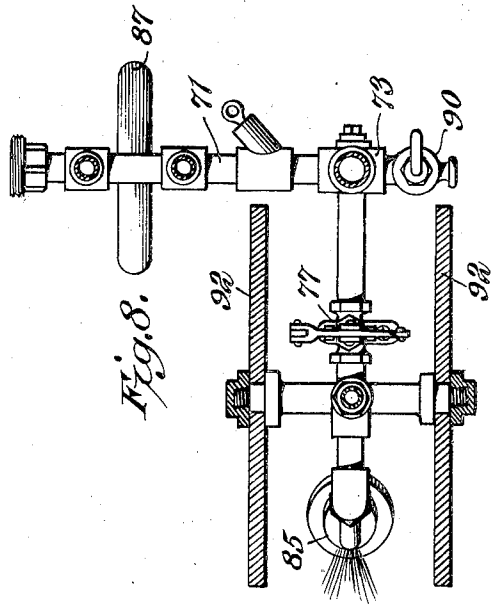


Fig. 8.

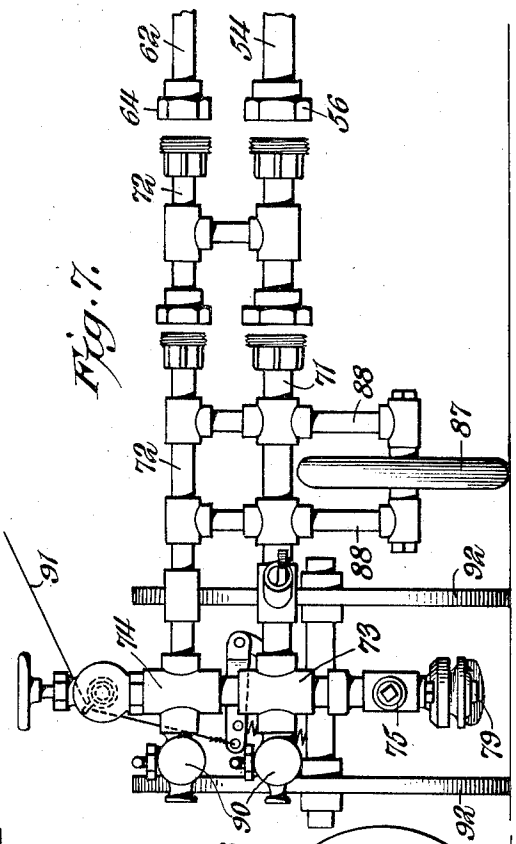


Fig. 7.

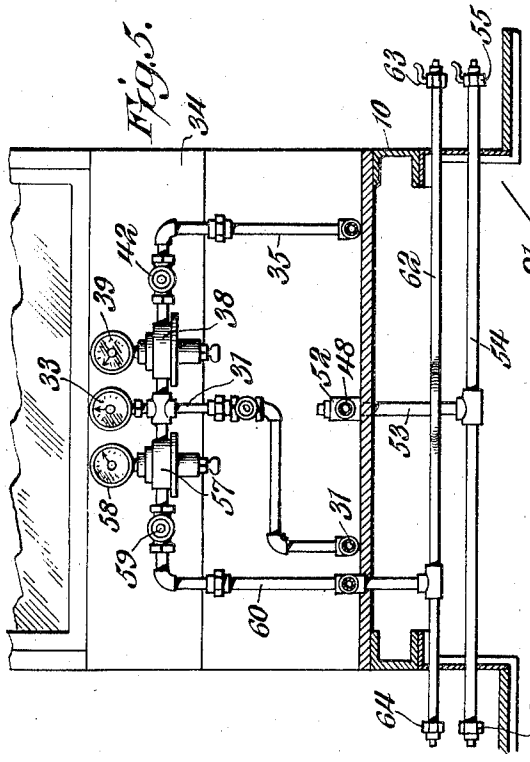


Fig. 5.

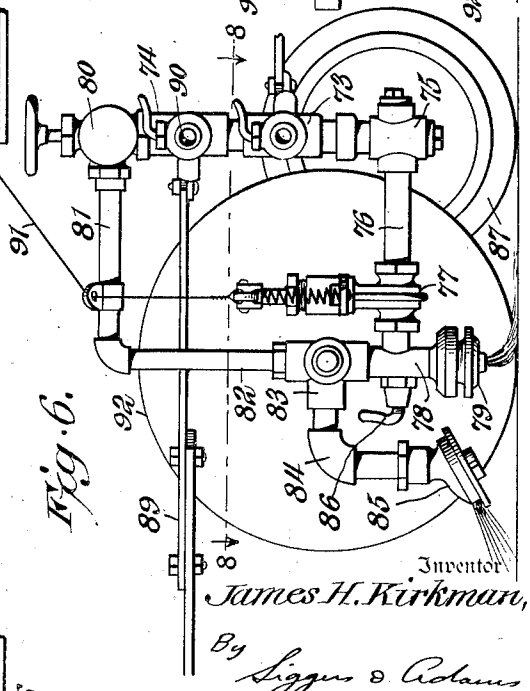


Fig. 6.

Inventor
James H. Kirkman,
By Siggers & Adams
Attorneys

Patented June 10, 1930 1,763,432

UNITED STATES PATENT OFFICE

JAMES H. KIRKMAN, OF SMITHFIELD, NORTH CAROLINA

ROAD-MARKING MACHINE

Application filed April 16, 1929. Serial No. 355,459.

This invention relates to painting machines and among other objects aims to provide an improved apparatus mounted on a self-propelled vehicle for marking traffic guide lines on roads and for applying paint to various surfaces.

In the drawings:

Fig. 1 is a side elevation, partially in section, of a portion of the improved apparatus mounted on a motor vehicle;

Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a plan view of the motor vehicle chassis and parts of the apparatus associated therewith;

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 2;

Fig. 6 is a side elevation of the road marker device looking in the direction of the arrows in Fig. 4, and drawn on a larger scale;

Fig. 7 is a rear view of the same;

Fig. 8 is a horizontal sectional view taken on the line 8—8 of Fig. 6, and

Fig. 9 is a section view taken on the line 9—9 of Fig. 4.

Referring to the drawings, the preferred embodiment of the invention is there shown as being mounted on a motor truck 10 of any approved construction. The apparatus includes generally paint receptacles or tanks 11 and 12 from which the paint is forced under pressure either to a road marking device in the form of a paint distributor 13 mounted on one side of the truck or to valved outlets to which suitable spray guns may be connected for painting houses or the like. Air pressure is supplied to the receptacles 11 and 12 from a compressed air tank 14 which is in turn supplied with air from a compressor 15.

Referring to Fig. 2, the tanks 11, 12 and 14 and the compressor 15 are shown as being mounted in the rear of the driver's seat 16 on a platform or bed 17 secured to the chassis, the tanks 11 and 14 being at one side of the bed while the other tank 12 and compressor are mounted on the opposite side. The tanks 11 and 12 which are of any desired capacity are preferably cylindrical and mounted upright as shown and both may contain paint of the same color or different colors.

In order to drive the compressor and other mechanism to be later described, a power take-off shaft 18 is connected to the transmission 19 of the vehicle (Fig. 4) and extends longitudinally of the vehicle beneath the platform. Mounted above the platform in suitable bearings 20 is a line shaft 21 which extends longitudinally of the vehicle approximately midway of the sides thereof. The line shaft is shown as being driven by means of a sprocket chain 22 trained over sprocket wheels 23 and 24 secured to the shafts 18 and 21, respectively. The compressor is driven from the line shaft by means of a belt 25 passing over a pulley 26 secured to the jack shaft 21 and a pulley 27 secured to the compressor shaft. To permit the compressor to be operated or stopped as desired, a loose pulley 28 is journaled on the compressor shaft so that the belt may be shifted thereon by any suitable means (not shown.)

The air from the compressor is forced through a pipe 29 into the tank 14 and passes from the tank through an air filter 30 to a main air conduit 31 which extends longitudinally of the vehicle. The conduit terminates at its rear end at a valved outlet 32, while the other end leads to a pressure gauge 33 mounted on the instrument board 34.

In order to apply pressure to the paint in the closed tanks 11 and 12, an air conduit 35 which is connected at one end to the main conduit 31 just below the gauge 33, is connected at its other end by means of a T, to pipes 36 and 37 leading to the tops of the tanks 11 and 12, respectively. To maintain a desired pressure in the tanks, an adjustable automatic regulating valve 38 having a gauge 39 is interposed in the conduit 35 adjacent to the gauge 33. Suitable valves 40 and 41 in the pipes 36 and 37 permit the air to be cut off from the tanks 11 and 12 respectively, while a valve 42 in the con-

duit 35 can be used to cut off the air from both tanks if desired.

The paint under pressure in the tanks may pass through pipes 43 and 44, respectively, to a fitting 45 which communicates with both a pipe 46 leading to a valved outlet 47 at the rear of the vehicle and also a pipe 48 leading to a valve 49 adjacent to the driver's seat 16. Valves 50 and 51 in the pipes 43 and 44, control the flow of paint from the tanks 11 and 12 respectively. The paint may pass from the valve 49 through a clean out fitting 52 and pipe 53 to a transverse pipe 54, one end of which terminates beyond one side of the vehicle at a valved outlet 55 while the other end terminates at an outlet 56 beyond the opposite side of the vehicle.

Air at a desired pressure may pass from the main air conduit through a regulating valve 57, gauge 58 and control valve 59 to a conduit 60 which leads to a valved outlet 61 at the rear of the vehicle. The conduit 60 is also connected to a transverse air pipe 62 arranged adjacent to the pipe 54 and having a valved outlet 63 and an outlet 64 at opposite sides of the vehicle.

In order to keep the paint in the tanks thoroughly mixed, an agitator in the form of a rotatable paddle wheel 65 is arranged in each tank 11 and 12. Herein, the agitator 65 is secured to a shaft 66 which is mounted in suitable bearings and extends through a stuffing box at one side of the tank. Loose and fast pulleys 67 and 68 are mounted on each shaft so that belts 69 connected to pulleys 70 on the shaft 18 may be shifted by suitable means (not shown) to operate or stop the agitators.

The road marking device which is connected to the outlets 56 and 64 is shown in Fig. 1 as being supported from the left side of the vehicle and is arranged so that a well defined strip of paint may be applied in the center of the road in accordance with modern custom. The device is laterally adjustable, as will be later described, so that it may be used on roads of various widths and means are also provided to guide the vehicle so that the paint will be applied parallel to the edge of the road.

The marking device 13 is shown in detail in Figs. 6, 7 and 8 and in the present instance is shown as being formed of standard pipe and pipe couplings. A paint pipe 71 and an air pipe 72 which extend approximately at right angles from the side of the vehicle are connected at their inner ends to the pipes 54 and 62 by couplings 56 and 64. Their outer ends are connected to cross fittings 73 and 74 respectively, which in turn are secured to but are not in communication with each other. The paint line leads downwardly from the cross 73 through a double clean out plug 75, then forwardly through a pipe 76 normally closed by a gate valve 77 and into the vertical intake 78 of the paint discharge nozzle 79.

The air line leads upwardly from the cross 74 to a valve 80 then forwardly through a pipe 81 and downwardly through a pipe 82 to a T 83 arranged above the nozzle 79. From the T, the air line continues forwardly and downwardly through a conduit 84 to the air nozzle 85 which is arranged just in front of the paint nozzle 79 to clear the road of dirt or the like ahead of the paint nozzle. The intake 78 of the paint nozzle is provided with a valve 86 to regulate the flow of paint from the nozzle 79. The intake 78 is secured to the T 83 for rigidity, but is not in communication with the air line.

The pipes 71 and 72 are supported from the ground by means of a wheel 87 journaled in standards 88 secured to said pipes as shown in Fig. 7, the connections to the pipes being such that the pipes are not in communication with each other. Diagonal braces 89 are secured to the pipes 71 and 72 and to the chassis to hold the pipe rigidly and in order that the marking device may be adjusted to apply paint at various distances from the edge of the road, or so that the paint may be applied to the center of roads of various widths, the braces are made adjustable and removable sections are provided in the pipes 71 and 72 which may be replaced by others of different lengths. These sections which are clearly shown in Fig. 7, are provided with suitable union couplings and are preferably secured together as shown so that they may be removed and replaced as a unit.

Suitable valved hose connections 90 may be connected to the crosses 73 and 74 so that paint or air may be obtained for any desired purpose. The valve 77 which is normally closed by spring pressure may be operated from the driver's seat by means of a cable 91 or the like. To prevent the paint from making too wide a strip, as it is applied to the road, a relatively large disc 92 is rotatably mounted on each side of the nozzle 79 on a shaft secured to the T 83. The rims of the discs contact with the road and their axis is directly above the nozzle 79 so that, when the paint under pressure spreads out on touching the road, it cannot go beyond the rims of the discs, but will adhere to the discs and be carried around with them, thus making a well defined edge at the side of the painted strip.

In order to guide the vehicle so that the road may be properly marked, a disc 93 is secured to the outer side of the front right wheel 94, the disc being somewhat larger in diameter than the tire on the wheel so that the edge of the disc may engage the side edge of the road.

Carried by the front axle 95 of the vehicle is a scraper blade 96 which is adapted to

travel along in advance of the right front wheel and remove dirt or other accumulations from the right hand edge of the road. Angularly disposed arms 97 are pivoted at their front ends to ears 98 attached to the upper portion of the scraper blade which is preferably curved forwardly at its lower edges as indicated in Fig. 9. The front ends of the arms 97 have depending portions 99 to abut the rear face of the blade 96 and prevent the lower portion of the latter from tilting rearwardly but permit the blade to be rocked forwardly and upwardly out of contact with the road when not in use. The rear ends of the arms 97 are adjustably connected to the front axle by clamps 100.

To remove the dirt from the edge of the road so that the disc may come in contact therewith, a socket 101 is secured to the lower outer corner of the blade 96 and is adapted to receive the shank of an angular spike 102, the inclined portion of which is adapted to cut a groove in the earth adjacent the edge of the road.

A wire 103 may be secured to an arm projecting upwardly from the scraper blade, and is preferably extended to a point where the driver may rock the blade and secure the wire in any manner to hold the blade in inoperative position.

In order to level off the edge of the road and replace the dirt that may have been thrown therefrom by the passage of the spike 102 and disc 93, a second scraper 104 is secured to the right hand running board 105 of the vehicle and is curved forwardly at its lower edge and angularly disposed in an opposite direction to the scraper 96.

In Fig. 4 a mower 106 is shown as being pivotally secured on the running board 105 and is adapted to be driven from the take-off shaft 18 as shown in Fig. 4, so that the grass or weeds along the right hand side of the road may be cut as the vehicle advances.

Safety valves 107 are provided at the top of each tank 11, 12 and 14 to take care of excess pressure within the tanks and a whistle 108 may be connected to the tank 14 and operated by the driver to warn traffic of the approach of the vehicle.

The safety valves for the tanks 11 and 12 are preferably arranged to serve as plugs for filling openings. To warn the operator when the paint supply in either of the tanks 11 or 12 is getting low, a whistle 109 may be located on top of each tank and is adapted to be operated by a float 110 within the tank near the bottom. A clean out conduit 111 may be provided at the bottom of each tank to remove any residue.

If desired, a tank 112 adapted to contain a fluid such as white-wash, insecticide, or the like, may be arranged near the rear of the platform. An agitator is also arranged in this tank and is driven in a similar manner to the agitators 65 by means of a belt 113 passing around pulleys 114 and 115 on the shaft 18 and agitator shaft 116 respectively. The shaft 116 may also be connected to operate a spray pump 117 adapted to withdraw the white wash from the tank 112 through a valve controlled pipe 118 and discharge it through suitable hose 119.

When using the machine as a road marker, one of the tanks is filled with white paint, or if desired, both may contain white paint, so that when the supply in one is exhausted, the paint in the other may be used without any interruption in the application of paint to the road. Assuming, however, that tank 11 contains a supply of white paint, and the tank 12 contains black paint for painting bridges, etc., and the tank 112 contains insecticide or white-wash, the engine of the vehicle may be started to operate the compressor while the vehicle is stationary, so that a supply of compressed air may be stored in the tank. At this time, all valves are closed but as soon as enough air pressure is accumulated in the tank 14, the valves 42, 40, 50, 49 and 80 are opened so that when the vehicle starts along the road to be marked, the operator needs only open the valve 59 which carries air to be discharged from the nozzle 85 to clean the road in front of the spray nozzle 79. By pulling the cable 91, the white paint from the tank 11 is forced under pressure through the nozzle 79 to the road.

While the road is being marked, anyone standing at the rear of the platform may spray trees along the road with insecticide or white-wash from the tank 112.

On reaching a small bridge to be painted, the valves 40, 50 and 80 are closed and the air and paint hose of a conventional spray gun (not shown) may be connected either to the valves 73 and 90, valves 63 and 55 or valves 61 and 47. Assuming that the gun is connected at the rear valves, it is only necessary to open these valves 61 and 47, and valves 41 and 51 so that paint is forced from tank 12 through pipe 46 to the gun while air is supplied through pipe 60 to the gun.

It is to be noted, that the paint is ejected from the various paint outlets at a predetermined pressure by adjusting the valve 38 until the desired pressure is indicated on the gauge 39. The air is regulated to the same or a different pressure in the same manner by means of the valve 57 and gauge 58. The regulation of both air and paint pressures insures that the paint is spread evenly.

When the machine is to be used for painting houses, barns, etc., paint of the desired color is introduced into one or both of the tanks by removing the safety valves which are replaced when the tank contains the de-

sired amount of paint. The road marker device may be disconnected and the outlets 56 and 64 closed or a spray gun may be connected to them as desired. Spray guns may also be connected to valves 55 and 63 at the opposite side of the machine or to valves 47 and 61 at the rear, thus making it possible to spray paint from three guns at the same time.

From the foregoing description, it will be seen that this improved portable and compact painting machine is adapted to be used for various kinds of painting either while the machine is in motion or stationary. Moreover, it is particularly adapted for applying well defined traffic guide lines to roads.

Obviously the present invention is not restricted to the particular embodiment thereof herein shown and described. Moreover, it is not indispensable that all of the features of the invention be used conjointly, since they may be employed advantageously in various combinations and subcombinations.

What is claimed is:—

1. In combination with a motor vehicle, means carried thereby for marking a roadway and comprising a paint container; a paint distributor located adjacent to the surface of the roadway; means for forcing the paint under pressure from said container to the distributor for application to the roadway; and means on one front wheel of the vehicle for engaging the side edge of the roadway to automatically guide the vehicle in parallelism thereto.

2. In combination with a motor vehicle, means carried thereby for marking a roadway and comprising a paint container; a paint distributor located at one side of the vehicle and adjacent to the surface of the roadway, means for forcing the paint under pressure from said container to the distributor for application to the roadway; means on one front wheel of the vehicle to guide the vehicle parallel with the edge of the roadway; and spaced disk wheels for confining the paint from the distributor to form a relatively narrow stripe longitudinally of the roadway.

3. In combination with a motor vehicle, means carried thereby for marking a roadway and comprising a paint container; a paint distributor located adjacent to the surface of the roadway; means for forcing the paint under pressure from said container to the distributor for application to the roadway; means for engaging the roadway to automatically guide the vehicle in parallelism thereto; and means mounted in advance of the road-engaging means to cut a trench for the guide means.

4. In combination with a vehicle, a removable paint distributor including a nozzle supported on and projecting from one side of the vehicle adjacent to the road; a disc rotatably mounted on each side of the nozzle and engageable with the road to restrict the lateral flow of paint from the nozzle, means for supplying paint under pressure to the nozzle and removable means at one side of the vehicle arranged to engage the shoulder of the road and automatically guide the vehicle parallel thereto.

5. A marking machine for paved highways, comprising, in combination, a motor vehicle; paint applying means at one side of the vehicle to make a central stripe on the highway; and a disk secured to the outer side of the front wheel of the vehicle opposite from the paint applying means to engage the shoulder of the pavement and guide the vehicle to run parallel with the shoulder.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

JAMES H. KIRKMAN.