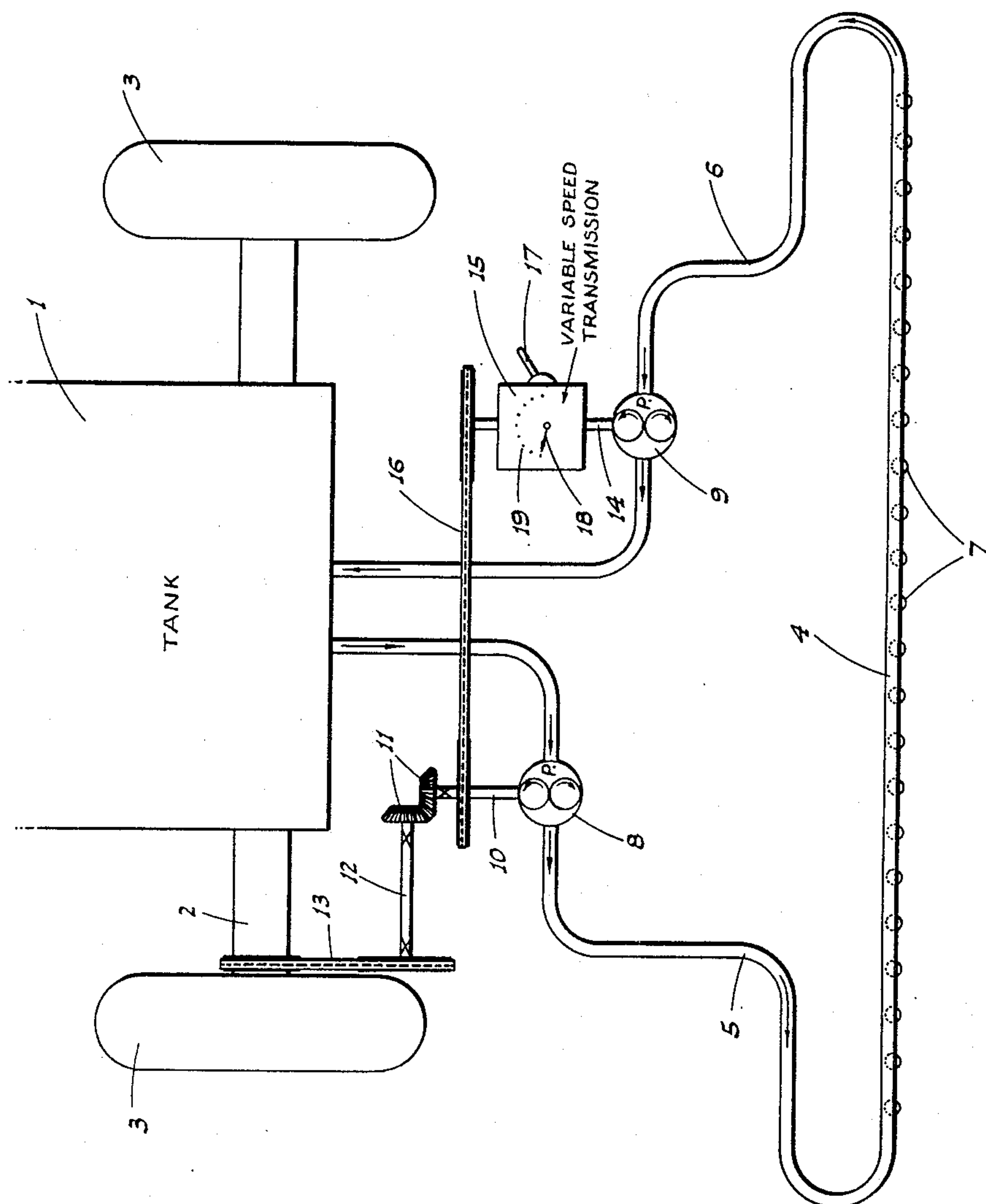


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F. G. GRAMATKY  
ASPHALT SPREADING DEVICE

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## UNITED STATES PATENT OFFICE

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## ASPHALT SPREADING DEVICE

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3 Claims. (Cl. 299—46)

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This invention relates generally to an improved device for spreading or distributing hot liquid asphalt or the like.

In particular the invention is directed to, and it is a major object to provide, a novel device for spreading or distributing hot liquid asphalt and road oils uniformly on roads, streets, and other areas in a manner such that the rate of distribution per distance traveled of the spreading equipment is the same regardless of the speed of travel of said spreading equipment or truck. This is of great advantage, for the reason that the specifications for road construction or the like now require very accurate control of the application, in uniform quantity, of liquid road material, such as asphalt and road oils.

Heretofore it has been the practice to spread or distribute hot liquid asphalt and road oils pumping the same into what is called a spreader bar, which is a transverse pipe or hollow bar with spray nozzles attached to it in spaced-apart relation. Due to the fact that the hot liquid asphalt and road oils must be spread at a high temperature, and for other reasons such as the prevention of settlement, such asphalt and oils must be circulated at all times; i. e., fed from a supply tank, through the spreader bar, and thence a portion returned from the latter to the tank.

To accomplish this there is presently used a single pump driven by a power take-off shaft on the truck, or by an auxiliary motor. After passing through the spreader bar the returning oil in a return pipe is passed through a restriction to allow a pressure, as is necessary, to be created in said spreader bar. The result is that the material spread by said bar is not uniform in respect to the distance traveled, where the speed for such distance varies.

The present invention overcomes such objection, and obtains a uniform rate of distribution of the hot liquid asphalt or road oils regardless of the speed of travel; it being another important object of this invention to accomplish such result by means of the employment of positive displacement pumps in both the feed pipe and return pipe of the device, such pumps being positively driven in unison from one of the truck wheels, but with the pump in the return pipe actuated from the drive means by a variable-speed transmission. In this way adjustment of the variable speed transmission is employed to accurately control the output from the spreader bar, with such output remaining constant irrespective of the speed of travel.

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It is also an object of the invention to provide a spreading device, for hot liquid asphalt and road oils, which—while being simple in structural assembly—is nevertheless highly accurate in operation for the accomplishment of the intended purpose.

Still another object of the invention is to provide a practical and reliable spreader device for hot liquid asphalt, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

The figure of the drawing is a diagrammatic plan view showing the device as in use on a spreader truck or the like.

Referring now more particularly to the characters of reference on the drawings, the numeral 1 indicates the supply tank of a spreader truck, and in which tank a large quantity of hot liquid asphalt or road oil is carried; the truck including an axle 2 fitted at opposite ends with road wheels 3. As usual, the spreader truck has a transverse tubular spray or spreader bar 4 mounted in connection therewith rearwardly of the wheels 3; there being a feed pipe 5 leading from the tank 1 to one end of the spreader bar 4, and a return pipe 6 leading from the opposite end of said spreader bar to said tank, the direction of flow in such pipes being indicated by the arrows. The spreader bar 4 is fitted, along the length thereof, with a plurality of spaced spray nozzles 7.

A positive displacement pump 8 is interposed in the feed pipe 5, while a separate positive displacement pump 9 is interposed in the return pipe 6. The pump 8 includes a pump drive shaft 10 positively driven from one of the wheels 3 by mechanism including a direction-changing bevel gear assembly 11, a countershaft 12, and an endless chain and sprocket unit 13 connected between one of the wheels 3 and said countershaft 12.

With the above arrangement it will be evident that the pump 8 is driven positively from the related wheel 3 and at a proportionate speed.

The pump 9 includes a pump drive shaft 14 having a variable-speed transmission 15 connected thereto, and in turn such transmission is positively driven from the drive shaft 10 of pump 8 by an endless chain and sprocket unit 16.

The variable-speed transmission 15 includes a movable lever 17 whereby to manually and selectively regulate the output speed of said trans-



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mission; i. e. the speed of drive of the shaft 14. The transmission 15 includes a setting indicator or pointer 18 which reads on an external scale 19 calibrated in terms of gallons spread per foot of travel.

The gear ratio of the transmission is such that pump 9 always has an output of less than the pump 8.

When the described device is in operation the speed of the truck will directly and proportionately vary the speed of the pump 8, as aforesaid, and as the variable-speed transmission is direct-driven from the pump 8, the return pump 9 will likewise proportionately vary in speed regardless of the setting of said transmission. Therefore, the amount delivered out of the spreader bar 4 will proportionately vary directly with the speed of travel, and thus deliver or spread a uniform amount of the hot liquid asphalt or road oil per lineal foot of travel; such amount being controlled by the setting or adjustment of the variable-speed transmission 15.

By use of the variable-speed transmission 15 there is definite control of hot liquid asphalt or oil returning in pipe 6 to the tank 1, and knowing the relationship of the speed of travel to the speed or the output of each of the two pumps, the quantity of such hot liquid asphalt or road oil delivered out of the spreader bar 4 can be accurately calculated and controlled.

As the pumps 8 and 9 are of positive displacement type, the temperature and viscosity of the hot liquid asphalt or road oil being pumped does not adversely affect the operation of the device, as above.

While the device is primarily intended for the spreading or spraying of hot liquid asphalt or oil directly onto a road or the like, it may also be used with equal effectiveness to spray such material into the mixing box of a pick-up type road machine; i. e. a road machine which picks up loose road material, mixes such material with a quantity of hot liquid asphalt or oil, and then returns the mix to the road surface. In this type of operation it is also requisite that the hot liquid asphalt or oil be introduced in an amount proportionate to the speed of travel.

From the foregoing description it will be readily seen that there has been produced such a device as substantially fulfills the objects of the invention, as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations therefrom may be resorted to as do not form a departure

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from the spirit of the invention, as defined by the appended claims.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

1. A spreading device for liquid road material, mounted on a traveling implement and comprising a supply tank, a spreader bar, a feed pipe connected between the tank and spreader bar, a first pump interposed in the feed pipe, a return pipe connected between the spreader bar and the tank, a second pump interposed in the return pipe, and means to drive said pumps at speeds proportionate to the speed of travel of the implement; the drive means for said second pump being adjustable to selectively vary the speed of drive thereof.

2. A spraying device for liquid road material, mounted on a traveling implement and comprising a supply tank, a spraying unit, a feed pipe connected between the tank and the spraying unit, a first pump interposed in the feed pipe, a return pipe connected between the spraying unit and the tank, a second pump interposed in the return pipe, and means to drive said pumps at speeds proportionate to the speed of travel of the implement and so that the output of the second pump is less than that of the first pump.

3. A spreading device for liquid road material comprising, with a truck having driven wheels and a material supply tank, a spreader bar, a feed pipe connected between the tank and spreader bar, a first pump interposed in the feed pipe, a return pipe connected between the spreader bar and the tank, a second pump interposed in the return pipe, drive means between one of the wheels and the first pump, and other drive means between the first named drive means and said second pump; said other drive means including an adjustable transmission arranged so that the output of the latter will always be less than that of the first pump.

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