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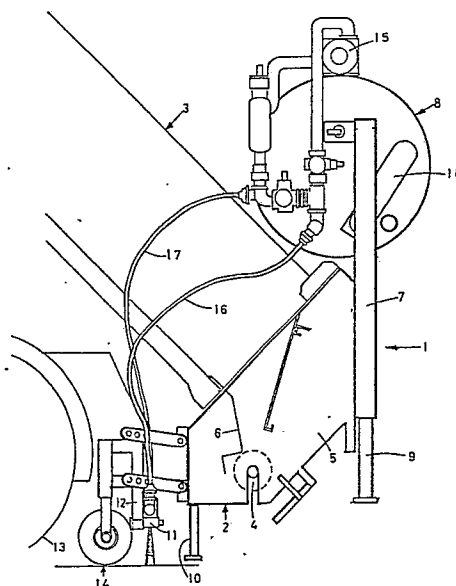
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54 **Equipment for combined spreading of binder and aggregate for road covering.**

57 The present invention relates shortly to an equipment (1) for combined spreading of binder and aggregate onto roads and similar. A tank (8) for binder hanged onto a vehicle, also provided with a store of aggregate, is connected to a ramp (12) with spreader nozzles (11). The equipment is also including a box-like part (2) having devices (4, 6) for controlled spreading of the aggregate. The equipment (1) constitutes a unit which is removably mountable onto vehicles. The ramp (12) with spreader nozzles (11) is located behind the rear wheels of the vehicle but in front of the box-like part (2) seen in the normal direction of driving.



Description

EQUIPMENT FOR COMBINED SPREADING OF BINDER AND AGGREGATE FOR ROAD COVERING

The present invention relates to an equipment for combined spreading of binder and aggregate for covering roads, and more closely to such an equipment which is mountable onto a common lorry having tipper body, when coverings are to be carried out and which thereafter easily can be mounted for next time of use.

When covering or surfacing roads and then especially in connection with repairs of roads, firstly a layer of binder, normally asphalt tar, is sprayed over the road or parts of the road. Over this layer of binder there is afterwards spread a relatively thin layer of aggregate such as stone material or other granulated material constituting the surface layer. The binder is normally spread by the aid of a vehicle provided with spreader means, as an exception manually. The aggregate is thereafter spread over the sprayed binder in conventional way by the aid of a lorry provided with tipper body which during moving with the tipper body in discharging position empties the aggregate.

In this connection there are some problems. The spreading of the aggregate should preferably be so adapted that it is spread only over the areas coated by binder. Outside these areas the aggregate does not fulfil any function but is brought away by the vehicles thereafter running on the road and uncoated binder is torn away by the wheels of the vehicles passing by and is splashed around onto i.a. the vehicles from which it is difficult to remove. Further, the lorry spreading the aggregate has to drive backwards into the parts of the road coated by binder as the wheels of the lorry otherwise should move into the binder and on one hand deteriorate its adhesitivity and on the other hand make the vehicle dirty by binder.

Hence, there is a great problem in the adaptation of the spreading of the material to the areas which are to be coated and in order to be convinced that the area in question is covered both binder and aggregate are spread over a larger surface than necessary. To this, it is necessary to add the difficulty for the operator to start and stop the spreading of the aggregate from the tipper body during the driving backwards of the lorry to some extent of accuracy.

Per se, there are special vehicles for surfacing use but in connection with such vehicles as well as in connection with other ways of surfacing more than one person are to be utilized for the work. Further, in many countries the special vehicles can be used only during a short time of the year while they are garaged without any use during a longer part of the year. This type of vehicles as well as the fact that many workers must be working simultaneously with the surfacing works add to the high costs for the covering or surfacing. The object of the present invention is to remove the above problems. This object is reached by an equipment of the type referred to in the claims, from which it also is clear what is especially characterizing the invention.

The invention is closer described in the following with reference to the attached drawing which is a schematical side-view of the equipment in accordance with the invention mounted onto a lorry tipper body and in operative position.

The equipment 1 is tail-gate mounted on a lorry tipper body 3 and extends across the whole width of the tipper body. It includes a box-like part 2 open towards the body 3 for receiving aggregate such as stone material or other covering material from the body 3 when this is in tipped position. In the bottom of the box-like part 2 there is a rotatable spreader roller 4 extended between the opposite short walls 5 of the box-like part 2. By the aid of a series of adjustable gates 6 in connection with roller 4 the roller 4 during rotation can spread the material in sections, i.e. not necessarily along the whole width of the tipper body 3.

In the drawing the equipment 1 is shown in the operative position or the normal position, i.e. mounted onto the end or tail-gate of a sloping lorry tipper body 3. During transport to and from the place of work the tipper body 3 is in lowered position and the equipment 1 is then satisfactory raised so that it cannot engage the road surface. In the shown position the aggregate or similar is all the time discharged from the tipper body 3 down into the box-like part 2.

Two, in this normal position substantially vertical stands 7 are attached one at each short wall 5. These carry between them at the upper ends thereof a tank 8 for binder and at the lower ends adjustable accommodation legs 9. Tank 8 which in the shown embodiment of the invention is pivotably mounted, occupies all the time occupies the same position regardless of whether the tipper body 3 is sloping, as shown, or lowered. The stands 7 are located so to say as far back as possible. At the opposite long side of the box-like part 2 which is located at or below the rear lower end edge of the tipper body 3 there is also a pair of accommodation legs 10 which are movable upwards and downwards in order to make possible a simple accommodation of the equipment 1 in cooperation with the legs 9 when the equipment is out of use.

A set of spreader nozzles 11 is arranged in a ramp 12 which is so attached to the box-like part 2 that the ramp is possible to lower and to raise and it is extending in front thereof towards the rear wheels 13 of the lorry. The ramp 12 is adjustable in elevation and maintains said elevation above the ground by the aid of a wheel device 14 running onto the ground. The nozzles 11 are individually possible to open and to close.

Tank 8 is provided with a pump 15 pumping binder from tank 8 to nozzles 11 through a supply conduit 16 and the excess in return to the tank 8 through the return conduit 17. In order to maintain the binder relatively movable there is a heating device 18 within the tank 8. This part of the equipment 1 for spreading binder is generally conventional but the pivotable

hanging of the tank 8 is novel in this connection.

In the visual field of the driver, such as on the front part of the engine casing there is mounted a sight. This sight consists of a laying rectangular frame divided into squares, alike a laying ladder and the number of squares corresponds to the number of gates 6 of the equipment 1 normally a number of nine. This sight is adjusted in relation to the normal driving position of the driver in connection with a special measuring.

When the driver is driving towards e.g. a damage in the road surface to be repaired, the driver is looking through the sight towards the damage. In relation to the number of squares of the sight covered by the damage the driver operates buttons on a control panel in the driver's cabin corresponding to the start and the end of the damage as well as to the width thereof.

The control panel and the spreader equipment itself are interconnected by a computer or similar device. This device is aware of the distance of movement of the lorry so that when the nozzle ramp 12 has reached the damage the number of nozzles 11 corresponding to the width of the damage is opened for spreading of binder. When the spreader 2 for aggregate thereafter has reached the spread binder, corresponding number of gates is opened for spreading aggregate. During the course of covering the driver may as well by the aid of the buttons on the control panel set the adequate number of nozzles and gates for repair of the successive damage. When the lorry is moved over the first damage the discharges are closed in series and remain closed up to the start of the next discharge for covering.

The described equipment makes covering or surfacing possible in nine directly to each other joining strips each of which being possible to start and stop in any position. Thereby, it is possible to cover just the areas which are desired to be covered without covering other areas. Further, each working operation can be carried out by only one person who is then both driver of the vehicle and operator of the covering equipment.

The amount of binder is determined by the adjustment of the nozzles which can be fixed or controllable as well as by the speed of the lorry so that the amount of binder will be the same regardless of the speed of the lorry. Due to the fact that the nozzle ramp 12 maintains the same level above the ground regardless of the altered height of the ground a very smooth covering of the binder is obtained due to which fact any excess "for the safety sake" never has to be added. The amount of aggregate, such as gravel, is determined by the distance between the spreader roller and a special gap lid having the same extent as the roller and which is located between the roller and the adjustable gates. The amount of aggregate is also determined by the rotational speed of the spreader roller which is alterable and which preferably is related to the speed of the lorry so that also correct amount of aggregate is discharged regardless of the speed of the lorry.

The equipment in accordance with the present

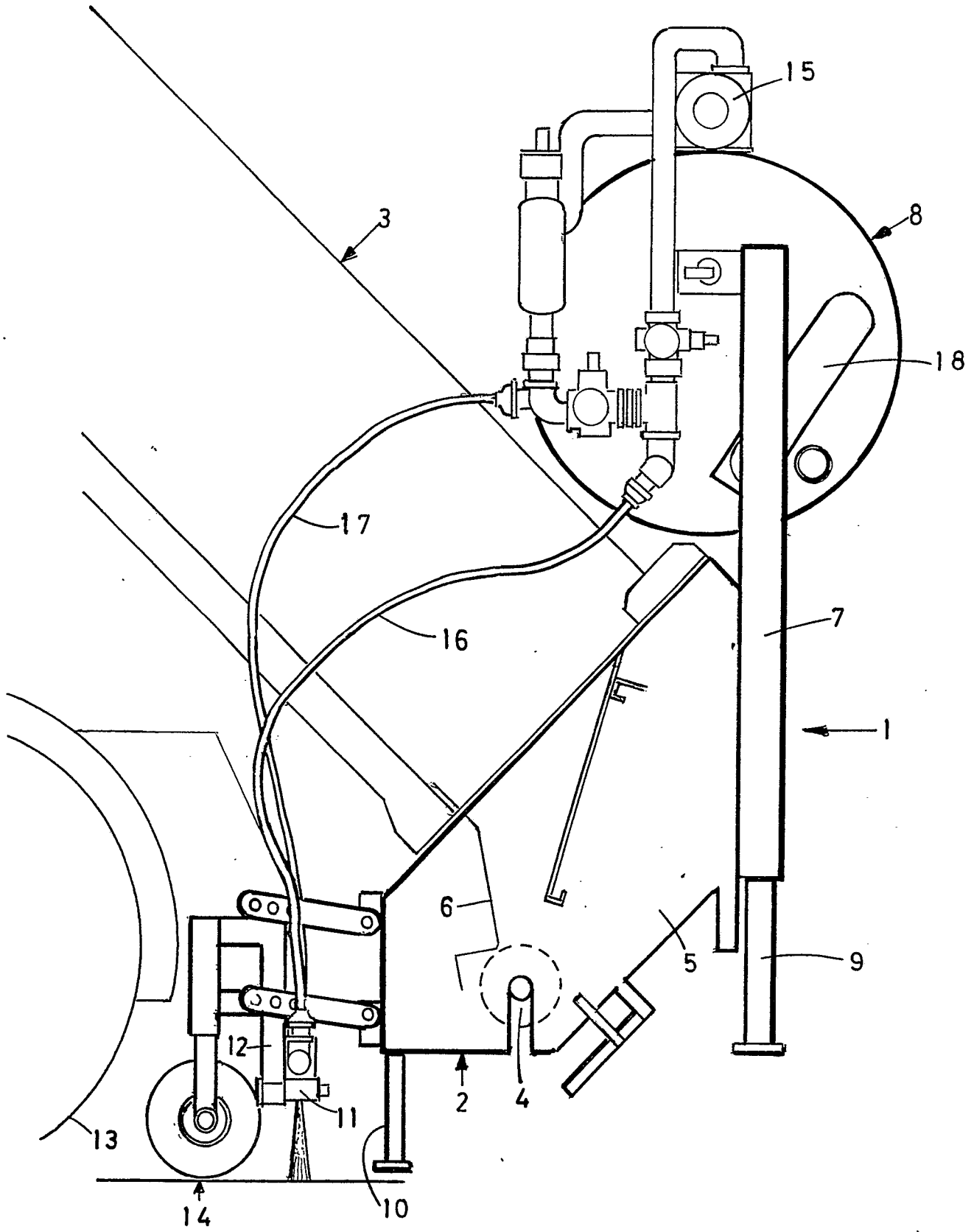
invention is, when it is known, an essential advance within this field of technique although it at a first glance appears to be simple. However, in a smart way it solves all the problems which have been known during many years without being solved. The equipment in accordance with the present invention may be modified in many ways by a man skilled in the art. However, such modifications are intended to be within the scope of protection of the attached claims.

Claims

1. Covering equipment (1) for essentially simultaneous spreading of binder and aggregate onto roads and similar which equipment comprises a tank (8) for binder, a ramp (12) connected to said tank (8) and provided with a set of spreader nozzles (11) for selective spreading the binder, and a box-like part (2) having devices (4, 6) for selective spreading of aggregate, the ramp (12) with spreader nozzles (11) being so located that the binder is spread in front of the aggregate, seen in the normal direction of movement of the vehicle, characterized by the fact that the covering equipment constitutes a unit which is arranged to be removably mountable onto the tail-gate of a tipper body of a lorry.

2. Equipment in accordance with claim 1, characterized by the fact that the tank (8) is pivotably hanged above the box-like part (2).

3. Equipment in accordance with claim 1 or 2, characterized by the fact that the ramp (12) with nozzles (11) is adjustable in elevation above the ground and is arranged to maintain adjusted distance from the ground.





DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
Y	DE-A-3 431 409 (H. WELLMEYER) * Whole document * ---	1,2	E 01 C 19/21
Y	US-A-4 423 980 (WARNOCK) * Figures 1-4; column 3, lines 4-18 * ---	1,2	
A	FR-A-2 223 511 (SATECO) * Whole document * ---	3	
A	FR-A-2 576 336 (SECMAIR) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			E 01 C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 02-12-1988	Examiner DIJKSTRA G.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			