

PATENT SPECIFICATION (11)

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(54) MACHINE FOR RENEWING ROAD SURFACES

(71) I, REINHARD WIRTGEN, a German Citizen, of 5461 Windhagen, Hohner Strasse, Federal Republic of Germany, do hereby declare the invention, for which I pray that a patent may be granted to us, and the method by it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a machine for renewing road surfaces, particularly asphalt road surfacing of the kind comprising a wheeled chassis upon which are mounted a cutter or paring device for removing the old surface, and a laying device intended for putting on the new surface and connected via conveying equipment with a tank-like supply bin situated at the forward end of the chassis and for containing the new surfacing material.

In a known machine of the kind stated the supply bin has a relatively small holding capacity in order to keep the overall dimensions of the machine small. The result is that a truck loaded with the new surfacing material must well-nigh continually travel ahead of the machine, during operation of the machine. Moreover, residual quantities in the supply bin can be removed from the latter only with difficulty. A further disadvantage of the known machine stems from the fact that the front axle of the machine is non-uniformly loaded during the laying operation owing to the rigid correlation of the supply bin with the chassis, as, with a freshly-filled supply bin, the load acting on the axle is many times greater than with an almost emptied supply bin. Thus differing depths of cutting or paring may result, as the cutter or paring device is disposed on the chassis.

The object of the invention is to provide a machine of the kind stated for renewing road surfaces in which the supply bin has as large a capacity as possible, can be easily filled and particularly easily emptied and is so connected to the chassis that, when emptied, non-uniform loading of the machine can be eliminated or at least substantially reduced.

In accordance with the invention, I provide a machine for renewing road surfaces, particularly asphalt road surfacing, comprising a wheeled chassis upon which are mounted a cutter or paring device for removing the old road surface and a laying device intended for putting on the new surface and connected via conveying equipment with a tank-like supply bin situated at the forward end of the chassis and for containing the new surfacing material, the supply bin being provided with support wheels and being articulated to the chassis for swivelling movement about a horizontal or substantially horizontal shaft extending transversely to the direction of travel of the machine.

With a machine of the kind stated in according with the invention it is therefore possible to have a supply bin of relatively large capacity as, when the supply bin is not in use, it can be swivelled into a position in which it does not inconveniently increase the overall dimensions of the machine. The swivellable articulation of the supply bin to the chassis enables removal of residual quantities from the supply bin without difficulties involving not inconsiderable simplification of the cleaning of the supply bin. Finally, through the provision of support wheels on the supply bin and the articulation of the supply bin to the chassis, it is brought about that variations in the filling of the supply bin do not have as a consequence any, or at most only insignificant changes in the load on the chassis. Beyond that, it is, however, also possible to increase the load on the pair of chassis-supporting wheels which is adjacent to the supply bin, by swinging the supply bin upwardly, which is desirable, for example, if a hard and intractable road surface has to be removed.

In one embodiment of the machine according to the invention, the supply bin is directly articulated to the chassis. It is however more appropriate to mount the supply bin on one end of a supporting frame carrying part of the conveying equipment and the other end of which is articulated

to the chassis. This involves the advantage that the supply bin can be particularly easily loaded and emptied.

At least one hydraulic actuator may be provided for swivelling the supply bin. The particular advantage of this construction is that the hydraulic actuator or actuators can be linked up with an available hydraulic system. In a preferred construction, a hydraulically-operating cylinder is arranged on each of the two sides of the supporting frame, one end of said cylinder being articulated to the chassis and the other end thereof being articulated to the supporting frame at a point between the horizontal or substantially horizontal shaft and the supply bin. Such a construction is particularly compact with high mechanical loading capacity.

The number of support wheels provided on the supply bin can well-nigh be freely chosen. It has been shown that the provision of two support wheels is appropriate. In a preferred construction, the support wheels are at the lower ends of vertical length adjustable legs. This makes it possible to swing the supply bin into different positions by means of the hydraulically-operating cylinders on the two sides of the frame with simultaneous adjustment of the height of the bin through the length-adjustable legs mounting the support wheels without giving rise to a change in the load on the chassis. It has proved advantageous to adjust the length-adjustable legs hydraulically.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawing, which is a partly-schematic side elevation with a part in section of a machine for renewing road surfaces.

Referring now to the drawing, the machine comprises a chassis 1 with a pair of driven and steerable front wheels 2, and a pair of rear wheels 3. A driving motor 4 is supported on the chassis towards the rear and an operator's cab 5 is in front of the motor 4. Forward of the cab 5 on the chassis 1 is the fuel tank 6 associated with the motor 4, and forward of the tank 6 a container 7 for liquids, the container 7 being operative connected with a heating device 8 mounted at the underside of the chassis behind the pair of front wheels 2. Behind the heating device 8 is a cutter or pairing device 9 with a cutter or pairing roller 10. At the rear end of the machine is a laying device 11 which is connected via conveying equipment 12 consisting of two belt conveyors 13 and 14, with a supply bin 15 situated ahead of the machine.

The supply bin 15 is mounted on one end of a supporting frame 16, the other end of which is articulated to the chassis 1

to swivel about a shaft 17. To effect swivelling movement of the supporting frame 16, in which the rollers of the belt conveyor 14 are supported, there is on each side of the frame a hydraulically-operating cylinder 18 articulated at one of its ends to the chassis 1 and at the other of its ends to the supporting frame 16. The supply bin 15 is supported from the road surface 20 by wheels to be trimmed. Each of the two legs mounting the wheels 19 is vertically adjustable by means of a hydraulically-operating cylinder 21, so that the supply bin 15 can be shifted not only by actuation of both of the operating cylinders 18 and 21 into different positions in which it is supported as before from the road surface 20, but also, by actuation of the operating cylinder 18 only into a position in which its total weight acts on the pair of front wheels 2 adjacent thereto.

WHAT I CLAIM IS:—

1. A machine for renewing road surfaces, particularly asphalt road surfacing, comprising a wheeled chassis upon which are mounted a cutter or paring device for removing the old road surface and a laying device intended for putting on the new surface and connected via conveying equipment with a tank-like supply bin situated at the forward end of the chassis and for containing the new surfacing material, the supply bin being provided with support wheels and being articulated to the chassis for swivelling movement about a horizontal or substantially horizontal shaft extending transversely to the direction of travel of the machine.

2. A machine according to Claim 1, in which the supply bin is directly articulated to the chassis.

3. A machine according to Claim 1, in which the supply bin is mounted on one end of a supporting frame carrying part of the conveying equipment and the other end of which is articulated to the chassis.

4. A machine according to any one of Claims 1 to 3, in which at least one hydraulic actuator is provided for swivelling the supply bin.

5. A machine according to Claim 4, in which a hydraulically-operating cylinder is arranged on each of the two sides of the supporting frame, one end of said cylinder being articulated to the chassis and the other end thereof being articulated to the supporting frame at a point between the horizontal or substantially horizontal shaft and the supply bin.

6. A machine according to any one of the preceding Claims, in which the supply bin is provided with two support wheels.

7. A machine according to any one of the preceding Claims, in which the support



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to the chassis. This involves the advantage that the supply bin can be particularly easily loaded and emptied.

5 At least one hydraulic actuator may be provided for swivelling the supply bin. The particular advantage of this construction is that the hydraulic actuator or actuators can be linked up with an available hydraulic system. In a preferred construction, a hydraulically-operating cylinder is arranged on 10 each of the two sides of the supporting frame, one end of said cylinder being articulated to the chassis and the other end thereof being articulated to the supporting frame at a point between the horizontal or substantially horizontal shaft and the supply bin. Such a construction is particularly compact with high mechanical loading capacity.

20 The number of support wheels provided on the supply bin can well-nigh be freely chosen. It has been shown that the provision of two support wheels is appropriate. In a preferred construction, the support wheels are at the lower ends of vertical length adjustable legs. This makes it possible to swing the supply bin into different positions by means of the hydraulically-operating cylinders on the two sides of 30 the frame with simultaneous adjustment of the height of the bin through the length-adjustable legs mounting the support wheels without giving rise to a change in the load on the chassis. It has proved advantageous to adjust the length-adjustable legs hydraulically.

40 An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawing, which is a partly-schematic side elevation with a part in section of a machine for renewing road surfaces.

45 Referring now to the drawing, the machine comprises a chassis 1 with a pair of driven and steerable front wheels 2, and a pair of rear wheels 3. A driving motor 4 is supported on the chassis towards the rear and an operator's cab 5 is in front of the motor 4. Forward of the cab 5 on the chassis 1 is the fuel tank 6 associated with the motor 4, and forward of the tank 6 a container 7 for liquids, the container 7 being operative connected with a heating device 8 mounted at the underside of the chassis behind the pair of front wheels 2. Behind the heating device 8 is a cutter or pairing device 9 with a cutter or pairing roller 10. At the rear end of the machine is a laying device 11 which is connected via 60 conveying equipment 12 consisting of two belt conveyors 13 and 14, with a supply bin 15 situated ahead of the machine.

65 The supply bin 15 is mounted on one end of a supporting frame 16, the other end of which is articulated to the chassis 1

to swivel about a shaft 17. To effect swivelling movement of the supporting frame 16, in which the rollers of the belt conveyor 14 are supported, there is on each side of the frame a hydraulically-operating cylinder 18 articulated at one of its ends to the chassis 1 and at the other of its ends to the supporting frame 16. The supply bin 15 is supported from the road surface 20 by wheels to be trimmed. Each of the two legs mounting the wheels 19 is vertically adjustable by means of a hydraulically-operating cylinder 21, so that the supply bin 15 can be shifted not only by actuation of both of the operating cylinders 18 and 21 into different positions in which it is supported as before from the road surface 20, but also, by actuation of the operating cylinder 18 only into a position in which its total weight acts on the pair of front wheels 2 adjacent thereto.

WHAT I CLAIM IS:—

1. A machine for renewing road surfaces, particularly asphalt road surfacing, comprising a wheeled chassis upon which are mounted a cutter or paring device for removing the old road surface and a laying device intended for putting on the new surface and connected via conveying equipment with a tank-like supply bin situated at the forward end of the chassis and for containing the new surfacing material, the supply bin being provided with support wheels and being articulated to the chassis for swivelling movement about a horizontal or substantially horizontal shaft extending transversely to the direction of travel of the machine.

2. A machine according to Claim 1, in which the supply bin is directly articulated to the chassis.

3. A machine according to Claim 1, in which the supply bin is mounted on one end of a supporting frame carrying part of the conveying equipment and the other end of which is articulated to the chassis.

4. A machine according to any one of Claims 1 to 3, in which at least one hydraulic actuator is provided for swivelling the supply bin.

5. A machine according to Claim 4, in which a hydraulically-operating cylinder is arranged on each of the two sides of the supporting frame, one end of said cylinder being articulated to the chassis and the other end thereof being articulated to the supporting frame at a point between the horizontal or substantially horizontal shaft and the supply bin.

6. A machine according to any one of the preceding Claims, in which the supply bin is provided with two support wheels.

7. A machine according to any one of the preceding Claims, in which the support

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wheels are at the lower ends of vertical, length-adjustable legs.

8. A machine according to Claim 7, in which the length-adjustable legs are hydraulically adjustable.

9. A machine for renewing road surfaces, particularly asphalt road surfacing, substantially as hereinbefore described with reference to the accompanying drawings.

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