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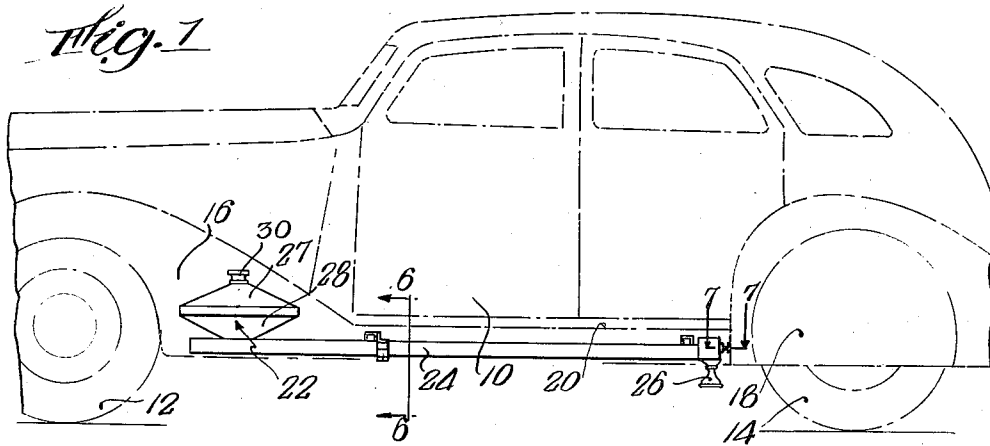
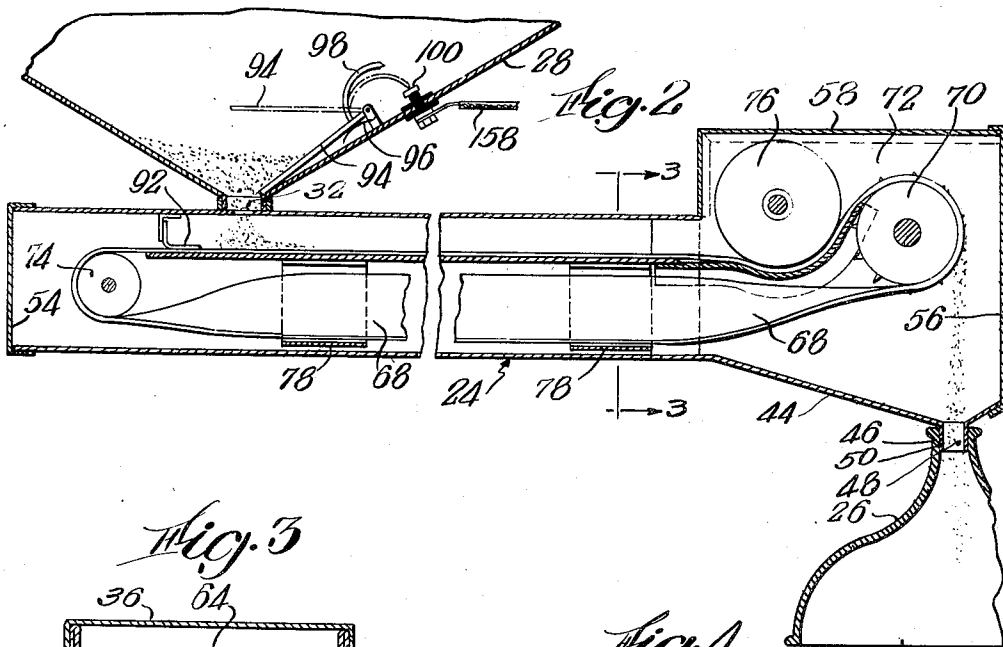
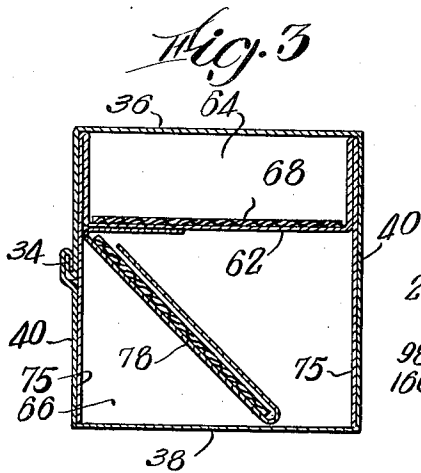
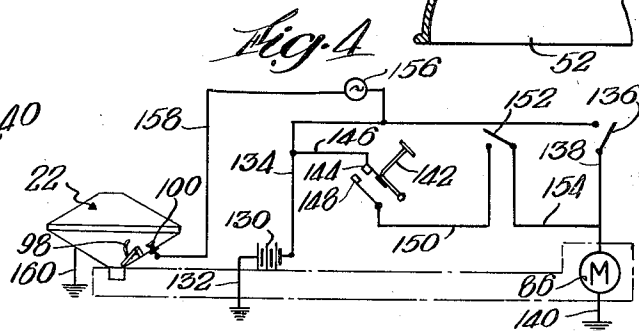
R. C. KIRK

2,212,865

SANDING DEVICE FOR AUTOMOBILES

Filed March 17, 1936

2 Sheets-Sheet 1



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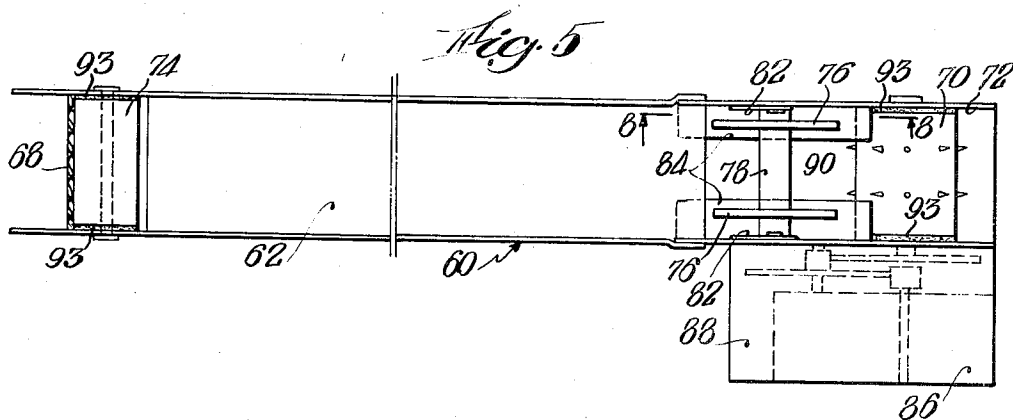
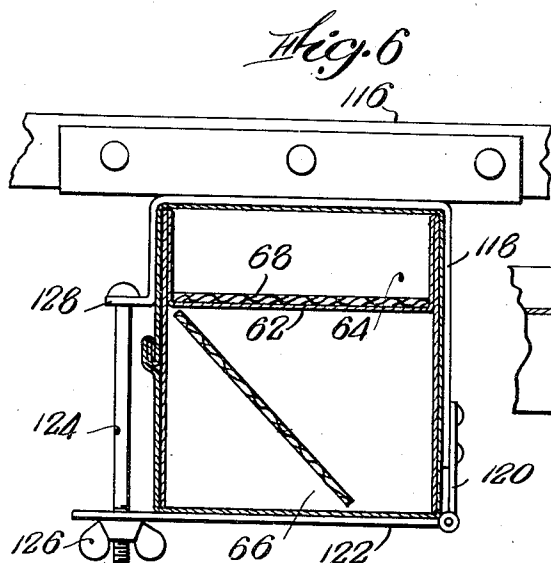
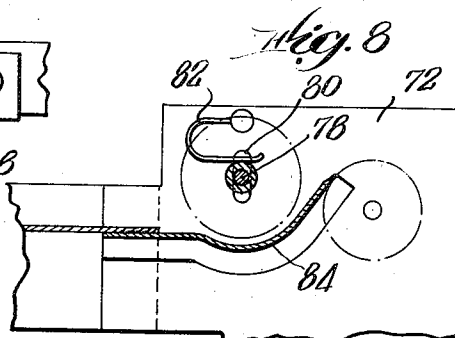
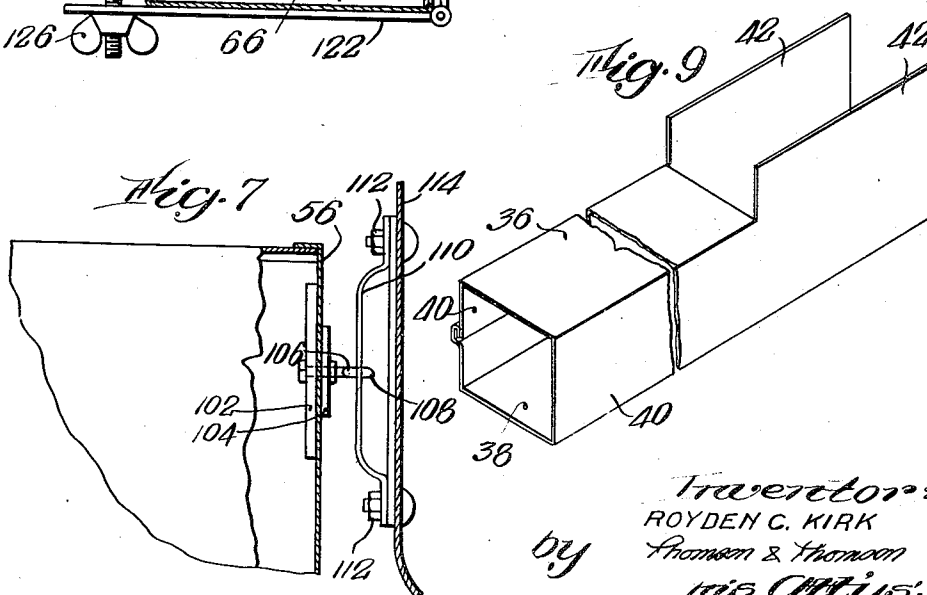
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SANDING DEVICE FOR AUTOMOBILES

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,212,865

SANDING DEVICE FOR AUTOMOBILES

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Application March 17, 1936, Serial No. 69,307

9 Claims. (Cl. 291—23)

This invention relates to improvements in a sanding device for motor vehicles which may be operated under control of the driver to deposit sand in front of the rear wheels of the vehicle to prevent skidding under icy or slippery conditions of the road surface.

Although sanding devices are commonly used on railway locomotives and street cars, and there are many prior patents proposing sanding devices for motor vehicles, such devices have not gone into commercial use to any extent. The principal objection has been to the troubles which occur when rotatable or slidable valves are employed to control the delivery of the sand. Such valves stick and freeze up thereby disabling the sanding device when it is most required. Furthermore, it is difficult to produce the proper flow of the sand by the action of gravity alone. Another problem has existed in the selection of a convenient location on the motor vehicle for the receptacle or receptacles for the sand supply. The sand supply capacity should be large enough so as not to require frequent filling of sand, and must be disposed in an inconspicuous but accessible location. The present disclosure is believed to satisfy the many problems and objections which must be met in a commercially practical sanding device.

It is an object of my invention to eliminate valves for positively restricting the flow of the sand by forming a trap adjacent the delivery so that the sand must be raised from the trap to the point of delivery and will only be delivered during operation of the device.

It is further an object of my invention to convey the sand from the source of supply to and through the trap and to the point of delivery by an endless belt on which the sand is smoothly deposited in an even layer from the source of supply.

A still further object of my invention resides in the placement of the sand supply in two large receptacles beneath the front mudguards at the rear of the front wheels and to convey the sand beneath the running boards on each side of the vehicle to delivery spouts which deposit the sand in front of the rear wheels.

Another object of my invention is to avoid clogging or freezing at the discharge by providing a bell shaped discharge member which acts as a splash guard and prevents clogging of the small opening at the upper end through which the sand flows from the casing of the device.

Further and additional objects and advantages of my improvements will be more readily appar-

ent and more fully described in the following disclosure of a specific embodiment of my invention, as illustrated in the accompanying drawings, in which:

Fig. 1 is a diagrammatic elevation of a motor vehicle showing the installation of the sanding device on one side of the vehicle.

Fig. 2 is a fragmentary longitudinal section of the device.

Fig. 3 is a cross-section on the plane indicated 3—3 in Fig. 2.

Fig. 4 is a circuit diagram of the electrical connections.

Fig. 5 is a plan view partially in section of the operative parts and illustrating the interior construction.

Fig. 6 is a cross-section on the plane indicated 6—6 in Fig. 1 and showing the front support.

Fig. 7 is a partial section on the plane indicated 7—7 in Fig. 1 and showing the rear support.

Fig. 8 is a detail vertical section of a portion of the device showing the mounting of the idler disks at the discharge end; and,

Fig. 9 is a perspective view of the rear end of the casing.

Referring to Fig. 1, a motor vehicle 10 is diagrammatically illustrated which includes front and rear wheels 12 and 14, front and rear mudguards 16 and 18, and a running board 20. My invention relates to the provision of means under the control of the operator for depositing sand adjacent to and in the path of travel of the wheels, and in the specific embodiment illustrated the sand is deposited immediately in front of the rear wheels 14.

In order to provide a source of supply for the sand having sufficient capacity to eliminate frequent replenishment, and to provide simple and efficient sand delivery, separate sanding devices are used for each of the rear wheels and having independent sand supply receptacles on each side of the vehicle. Since the devices on both sides of the vehicle are identical I have illustrated and shall describe only the construction on one side.

The essential parts of the sanding device, as shown in Fig. 1, are a sand supply receptacle 22, a conveyor casing 24 and a discharge member 26. The sand receptacle 22 should have a capacity of from 30 to 50 pounds of sand depending on space limitations of the particular car, and is located beneath the front mudguard at the rear of the front wheel, and will be concealed from view by the apron of the fender or mudguard. The casing 24 extends beneath the running board

20 and is concealed thereby. The discharge member 26 is positioned within a few inches of the rear wheel to deposit the sand as required.

The sand receptacle is constructed from upper 5 and lower cone-shaped parts 27 and 28 which are joined together at their large ends to form a double cone having a removable filling cap 30 at the top and a discharge opening 32 at the bottom. A receptacle of this shape will permit 10 complete discharge of the sand and may be readily filled to the top so that there will be no waste space.

The box-shaped conveyor casing 24 is formed from a single strip of metal, the longitudinal 15 edges of which are folded over each other at the rear side, as shown at 34, in Figs. 3 and 6. The casing provides top and bottom walls 36 and 38 and side walls 40. A T-shaped cut is formed in the top wall 36 of the casing at the rear end 20 thereof, and the cut portions 42 of the top wall are bent up to form extensions of the side walls 40, as shown in Fig. 9. Also at the rear end of the casing the bottom wall 38 is pressed downwardly to form the discharge trough 44. The 25 sand is delivered from the casing through a short nipple 46 having a relatively small discharge passage 48. The discharge member 26 has a small mouth 50 at the upper end which fits on the nipple 46 and has a large downwardly-directed 30 bell-shaped mouth 52 forming a splash guard and preventing clogging of the small passage 48 from material thrown up by the wheels. The front end of the casing 24 is closed by a cap 54 and the rear end by a cap 56. A cover 58 is also provided in engagement with the free edges of the 35 extension side walls 42.

The casing 24 is adapted to slidably receive the H-shaped frame 60 on which the conveyor belt is 40 mounted. The cross-wall 62 of the frame 60 forms a partition between the upper sand passageway 64 and the lower chamber 66, and serves as a support for the upper run of the endless fabric conveyor belt 68. The belt 68 is driven 45 by a toothed roller 70 at the rear end of the casing which is mounted in the side plates 72. The plates 72 are soldered to the rear end of the H-shaped frame 60. At the front end the belt is guided by an idler roller 74 mounted in the side walls 75 of frame 60. The lower run of 50 the belt passes through guiding brackets 78 which tip the belt, as clearly shown in Figs. 2 and 3, to dump any sand thereon into the bottom of the casing.

It will be noted that the axis of the driving 55 roller 70 is above the axis of the idler roller 74, but the top run of the belt is horizontal up to a point just in front of the driving roller. The disk members 76 are idler members which hold the belt down at this point and direct its course up and over the driving roller. The disks 76 are 60 mounted on a shaft 78, the ends of which are received in bearing slots 80 formed in the side plates 72, and spring members 82 are provided for urging the shaft 78 and disks 76 downwardly. The 65 disks hold the belt against flanges or shelves 84 which are pressed in from the side plates 72. The driving roller 70 is driven from a motor 86 in motor box 88 through suitable speed reduction gears. The flanges or shelves 84 extend only part 70 way across the casing and leave an opening 90 through which any sand which gets beneath the conveyor belt will be dumped into the bottom of the casing and be discharged along with the rest of the sand. At the front end a sealing strip 75 92 is provided to prevent forward passage of the

sand as it is delivered by gravity from the supply receptacle on to the belt. The ends of the rollers 70 and 74 are covered with felt 93 adapted to contact the side walls and prevent binding of the rollers from sand. The bearings for the shaft 5 78 are protected by felt in a similar manner.

Means may be provided for indicating that the supply receptacle requires filling with sand, and I have shown a pivoted arm 94 in the receptacle normally urged to swing upward by a 10 spring 96. The arm 94 has a contact finger 98 adapted to engage an insulated contact button 100 when raised, but is normally held down by the sand in the receptacle, as shown in Fig. 2.

The entire sanding device is assembled as a 15 unit and mounted upon a motor vehicle, as shown in Fig. 1, in which position it is supported at the front and rear ends as illustrated in Figs. 6 and 7. In Fig. 7 the end cap 56 is reinforced by a pair of inner and outer disk members 102 and 104, and a stud bolt 106 is attached thereto. The stud member 106 has an eye-shaped portion 108 which is received in a bracket 110 fastened by bolts 112 to the lower end of the rear fender 114 or other suitable part of the chassis of the motor 20 vehicle. The support illustrated provides for a universal mounting of the rear end of the casing of the sanding device upon the motor vehicle, whereby the front end may be swung down and outwardly to permit filling of the sand receptacle. It is, of course, to be understood that, if desired, the sanding device may be permanently mounted and provision made for filling the sand receptacle without displacing it from its position.

The front end of the casing of the sanding 35 device is mounted as illustrated in Fig. 6, in which 116 is a suitable part of the chassis on which is mounted the bracket 118 having a hinge member 120 secured thereto for hinging a bottom plate or strap 122 which is fastened by the bolt 40 124 and wing nut 126 to the out-turned lip 128 of the bracket 118. It will be obvious that the rear end of the casing is first mounted on the vehicle as illustrated in Fig. 7 and then the front part of the casing is swung up to position and 45 the strap 122 fastened by the wing nut 126, thereby holding the casing firmly in position.

The electrical connections for operating the sanding device are diagrammatically illustrated in Fig. 4, in which the battery 130 is grounded at 50 one side, as at 132, and has a lead 134 to the manually operable switch member 136 which is suitably mounted on the dashboard of the vehicle, and a lead 138 extends from the switch to the motor 86 which is grounded as indicated at 55 140. The sanding device may also be automatically operated by the brake pedal 142 which has a contact 144 connected to the battery through leads 146 and 134. The contact 144 is adapted to engage a contact 148 connected by the lead 60 150 to a manually operable switch 152 which in turn is connected by the leads 154 and 138 to the motor. By closing the switch 152, the sanding device will be automatically operated whenever the brake pedal is depressed. Also provided, is 65 an indicating light 156 connected to one side of the battery and by a lead 158 to the contact button 100 inside the sand receptacle. The sand receptacle is grounded as at 160. When the arm 94 is released by emptying of the sand from the 70 receptacle the finger 98 will engage the contact 100 and complete the circuit to light the light 156.

The sand receptacle is filled with clean, dry sand which will pour out of the receptacle into the conveyor casing and be deposited upon the 75

conveyor belt. After a certain quantity of sand has been deposited on the belt it will form a natural seal and prevent further delivery until some of the sand has been taken away by movement of the conveyor belt. When the motor is actuated the belt will be placed in operation and the sand will pass through the casing beneath the running board of the vehicle. At the rear end the sand will pile up adjacent the disk members 76 and form a natural seal which will prevent delivery of the sand except while the conveyor belt is being actuated. The movement of the conveyor belt will draw some of the sand upward and over the driving roller. As the sand drops off the conveyor belt at this point it is free to discharge through the small opening at the bottom of the casing and through the bell shaped discharge member or splash guard. The rise of the sand at the discharge end of the belt should be sufficient so that a natural seal will be formed by the sand even when the motor vehicle is going uphill and prevent any flow of the sand out of the device when the belt is not operating. Since the casing is entirely closed except for the small discharge opening there is no possibility of water getting into the sand and freezing, and the large mouth of the bell-shaped discharge member will prevent water splashing up and freezing at the discharge opening.

It will be understood that various changes and modifications may be resorted to in the practice of my invention without departing from the spirit thereof as expressed in the appended claims.

I claim:

1. A sanding device for motor vehicles comprising a sand receptacle located beneath a front mudguard of the vehicle at the rear of a front wheel, an endless belt for conveying sand from said receptacle beneath a running board of the vehicle, and means for discharging the sand from the conveyor belt in front of a rear wheel of the vehicle.

2. In a sanding device for motor vehicles, a sand receptacle located beneath the front mudguard of the vehicle at the rear of a front wheel, a box-shaped passageway extending from said receptacle beneath a running board of the vehicle to a point adjacent the wheel, an endless conveyor belt in said passageway for conveying the sand from said receptacle, and means for directing the discharge of the sand from said conveyor belt to fall in front of a rear wheel of the vehicle.

3. In a sanding device for motor vehicles, an endless fabric conveyor belt, an idler roller at one end and a driving roller at the other end of the belt, means adjacent the driving roller and bearing upon the top run of the belt to cause said belt to move upwardly towards the driving roller, means for depositing sand by gravity upon the upper run of the belt adjacent the idler roller, means for actuating the driving roller to move the belt and convey the sand towards the driving end of the belt, and means for directing the discharge of the sand as it is delivered from the conveyor belt.

4. In a sanding device for motor vehicles, an endless conveyor belt, laterally spaced rollers for supporting and driving the belt, one of said rollers being positioned a short distance above the level of the other roller, means for depositing sand upon the upper run of the belt at the lower end thereof whereby the sand is conveyed towards the higher end, and roller disk members bearing upon the upper run of the belt near the delivery end whereby the sand is moved upwardly im-

mediately prior to its delivery as the belt moves over the higher roller and delivery of sand is prevented except when the belt is in operation.

5. In a sanding device for motor vehicles, a casing through which the sand is laterally conveyed, a conveyor belt in said casing, means for depositing sand upon the upper run of said belt at one end of said casing, and means for delivering sand from said belt at the other end of said casing, a partition wall in said casing forming a support for the upper run of said belt, said partition having an opening therein adjacent the delivery end for dumping sand that may get beneath the belt and means for twisting the lower run of the belt to dump sand from the inner side of the belt.

6. In a sanding device for motor vehicles, a casing having a partition wall throughout a considerable portion of the length thereof forming upper and lower compartments, a driving roller at one end of the partition wall, an idler roller at the opposite end, an endless conveyor belt supported by said rollers, the upper run of said belt resting on the partition wall, means for depositing sand upon said belt at one end of the casing, valveless means for controlling and directing the discharge of sand from said belt at the other end of said casing and said casing having a discharge opening leading from the lower compartment through which the sand is delivered.

7. In a sanding device for motor vehicles, a casing secured beneath a running board of the vehicle extending forwardly beyond the front end of the running board into the space beneath the front mudguard and terminating at its rear end adjacent the rear mudguard, a conveyor in said casing extending substantially the entire length thereof, a motor at the rear end of the casing for operating the conveyor to move sand rearwardly through said casing, a sand supply receptacle mounted on the front end of the casing in the space beneath the front mudguard and from which sand is delivered by gravity to the front end of the conveyor and said casing having a discharge opening at its rear end through which the sand is delivered during operation of the conveyor in front of the rear wheel.

8. In a sanding device for motor vehicles, a casing secured beneath a running board of the vehicle extending forwardly beyond the front end of the running board into the space beneath the front mudguard and terminating at its rear end adjacent the rear mudguard, a conveyor in said casing extending substantially the entire length thereof, a motor at one end of said casing for operating the conveyor to move sand rearwardly through said casing, a sand supply receptacle mounted on the front end of the casing in the space beneath the front mudguard from which sand is delivered by gravity to the front end of the conveyor and said casing having an unobstructed discharge opening at its rear end through which the sand is delivered in front of the rear wheel during operation of the conveyor.

9. A sanding device for a motor vehicle assembled as a unit and adapted to be readily installed, comprising a relatively long casing, a conveyor in said casing extending substantially the entire length thereof, a motor mounted on the casing at one end thereof for operating the conveyor to move the sand rearwardly through said casing, a sand supply receptacle mounted on the front end of the casing from which sand is delivered by gravity to the conveyor in said casing, said casing having an unobstructed discharge

opening at its rear end through which the sand is delivered, means for pivotally mounting the rear end of the casing at the rear end of the running board of the vehicle, means at the front end of the running board for removably holding and supporting the casing in operating position beneath the running board, said casing extending

forwardly beyond said running board whereby the sand receptacle is received in the space beneath the front mudguard, said mounting means permitting dropping of the front end of the casing when said front end holding means is released to permit filling of the sand receptacle.

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