June 8, 1943. R. C. KIRK 2,321,395

SANDING DEVICE

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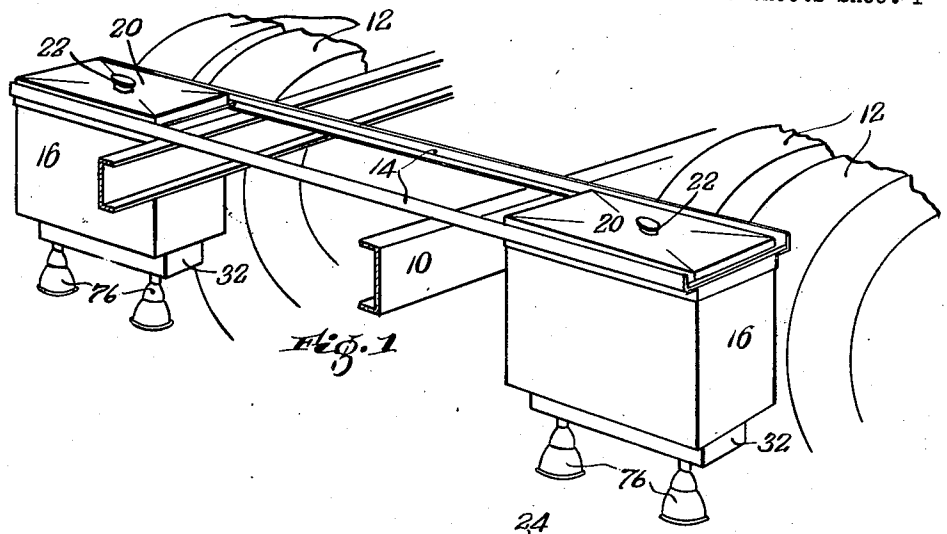
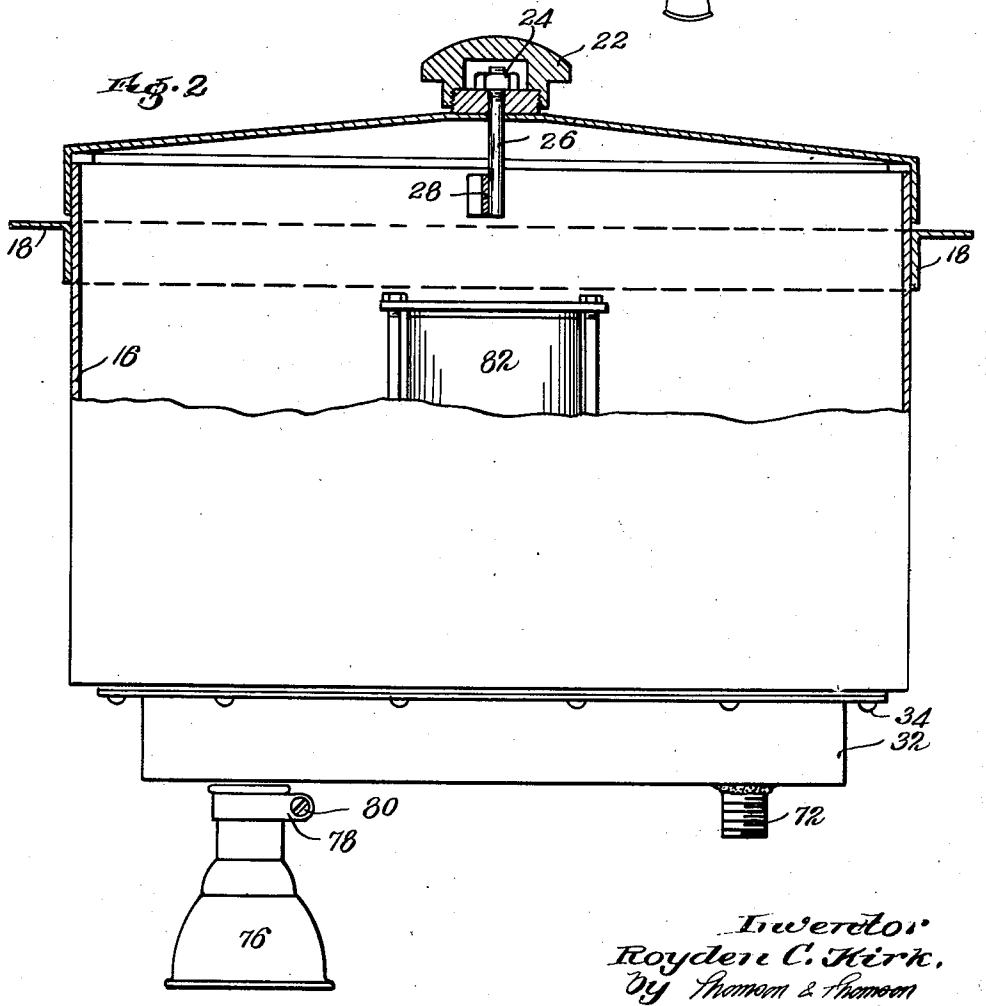


Fig. 1

Fig. 2



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Fig. 3

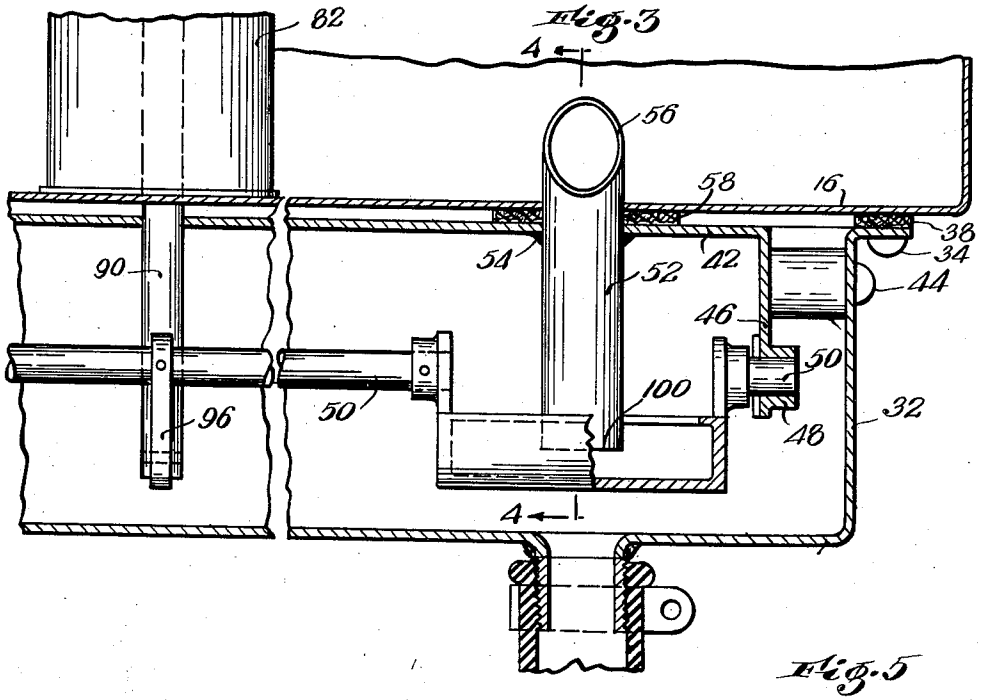


Fig. 4

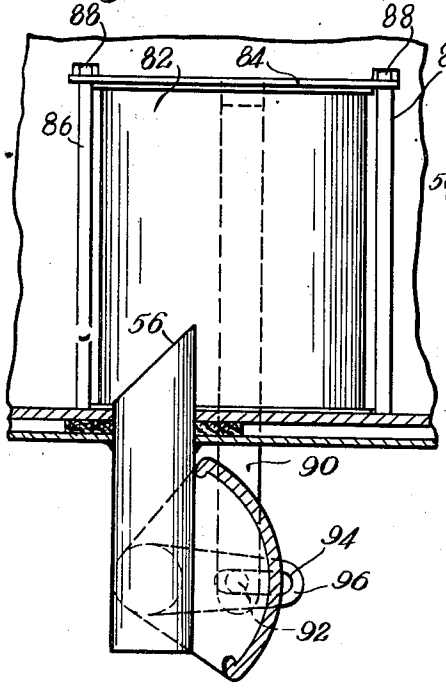
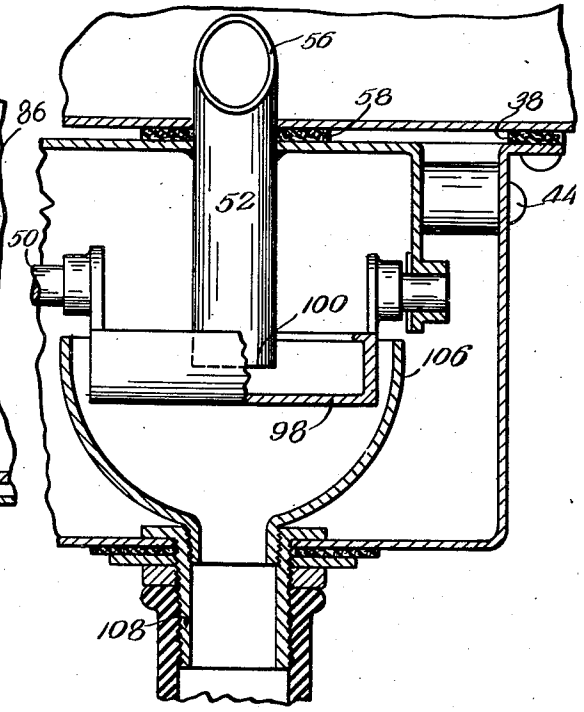


Fig. 5



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Fig. 6

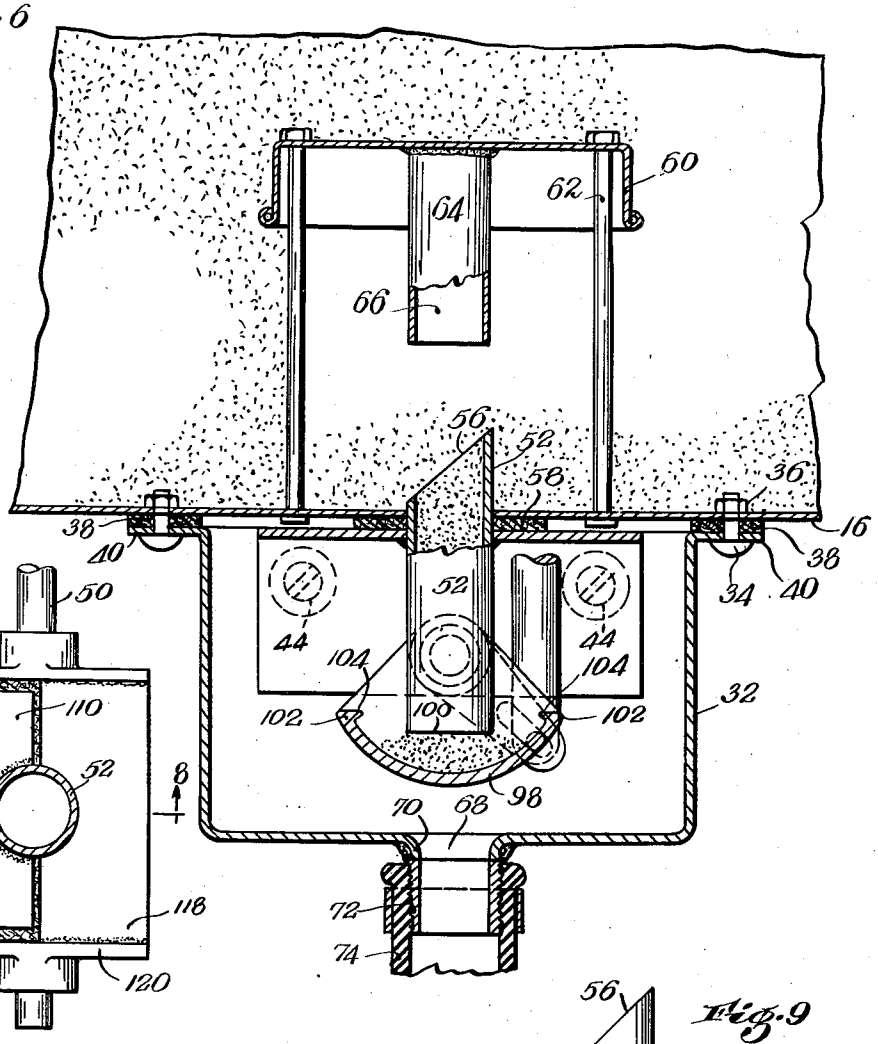


Fig. 7

Fig. 8

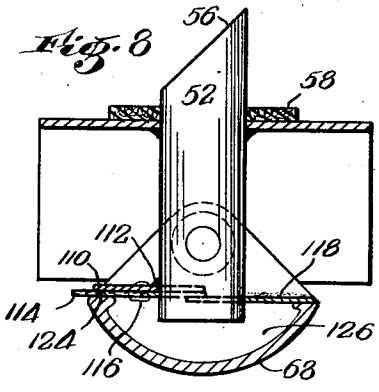
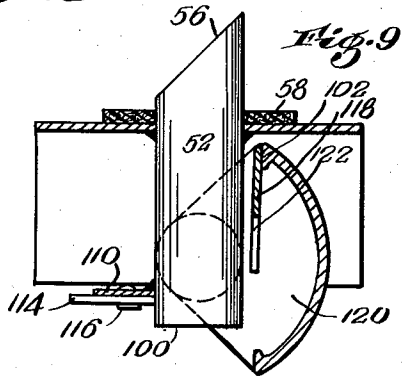


Fig. 9



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UNITED STATES PATENT OFFICE

2,321,395

SANDING DEVICE

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Application March 10, 1941, Serial No. 382,482

2 Claims. (Cl. 291—29)

This invention relates to improvements in sanding apparatus designed for installation on vehicles, particularly motor vehicles, and operative under control of the operator to deposit sand on the ground adjacent the wheels of the vehicle in order to provide traction and prevent skidding.

The invention is directed more particularly to sanding apparatus for trucks, busses and trailers having double sets of rear wheels. The sanding apparatus is adapted to deliver sand adjacent each of the four wheels, it being understood however that certain of the improvements disclosed and claimed may be applicable to many types of sanding apparatus for vehicles generally.

One of the principal problems encountered in the design of the sander for motor vehicles is the proper design of valves to control the flow of the sand. When the sand is flowing past the seat of the valve, whether it be a slide valve, a vertically reciprocable valve, a swingable flapper valve, or a rotatable valve, it is difficult to provide for proper closing and seating of the valve due to the fact that sand is caught at the seat and prevents closing of the valves. The sand passage should be controlled to avoid leakage and waste of the sand when the sanding apparatus is not being used. It is also desirable to close off the sand passage so as to prevent the entrance of moisture which may freeze and clog the sand delivery.

It is an object of my invention to provide in a sanding device for motor vehicles a vertically disposed outlet tube for the discharge of the sand having associated therewith a swingable valve member which does not seat against the end of the outlet tube but instead is spaced therefrom and is pocket-shaped in form to retain a portion of the sand adjacent the end of the outlet tube, thereby cutting off the flow of the sand and which is designed to hold the sand from shaking out of the pocket of the valve.

It is a further object of my invention to provide means associated with the swingable valve and the outlet tube adapted to form a closed chamber about the outlet tube whereby the sand retained by the swingable valve member is confined in the pocket in which it has been trapped.

Further objects and advantages of my improvements will be more readily apparent from the following description of a preferred embodiment thereof as disclosed in the attached drawings, in which:

Fig. 1 is a perspective view illustrating the installation of the sanding equipment on the chassis of a truck having double sets of rear wheels;

Fig. 2 is an elevation of one of the sand receptacles partially in broken section to show the interior of the receptacle, one of the bell-shaped sand exit covers being removed;

Fig. 3 is a transverse section taken through a portion of the bottom of one of the sand receptacles and showing the mounting of the rotatable valve for controlling the delivery of the sand;

Fig. 4 is a vertical section taken on the plane indicated 4—4 in Fig. 3, but with the valve in open position;

Fig. 5 is a sectional view similar to Fig. 3 but showing a modified construction;

Fig. 6 is a sectional view taken on the same plane as Fig. 4 showing further details of the construction and with the valve in closed position;

Fig. 7 is a plan view of a modified construction of the valve mechanism;

Fig. 8 is a vertical section taken on the plane indicated 8—8 in Fig. 7; and

Fig. 9 is a view similar to Fig. 8 but showing the valve in open position.

My improvements in a sanding device for motor vehicles are herein disclosed in sanding equipment designed for installation on trucks or trailers of the type having double sets of rear wheels which requires that the sand be discharged in the path of each of the four wheels. It will be understood, however, that my improvements may be embodied in various types of sanding equipment for other types of trucks or for pleasure vehicles.

In Fig. 1, 10 is the frame of the truck having the double seats of rear wheels 12. A pair of angle irons 14 are mounted transversely on the frame 10 and constitute supports for the pair of said receptaces 16 which are suspended from the angle irons 14 on opposite sides of the frame 10 immediately in front of the double sets of wheels 12. Angle members 18 may be secured to the receptacles 16 to form support flanges which rest on the angle irons 14.

The cover 20 of each of the sand receptacles is designed for removal to permit filling the sand receptacle and provides a water-tight seal with the sand compartment when fitted thereon. The removable cap 22 conceals a nut 24 threaded to a bolt 26 which is fixed to a cross-bar 28 of the casing and secures the cover in place. The cover 20 may be crowned as shown and tightening of

the nut 24 will insure an even pressure and a tight fit between the cover and the casing.

The mechanism for controlling the delivery of sand from the receptacle may be mounted in a housing 32 which is secured to the underside of the bottom of the receptacle 16 by the bolts 34 and nuts 36. A felt gasket 38 may be provided between the flanges 40 of the housing 32 and the bottom of the receptacle 16 to provide a tight fit which will prevent the entrance of water which might freeze and cause clogging. A cross brace 42 is fitted within the housing 32 and secured to the side walls thereof by the screws 44. The cross brace 42 has depending end portions 46 provided with bearings 48 which serve as a mounting for the rockable shaft 50. A pair of sand discharge tubes 52 are fixed in openings of the cross brace 42 such as by welding at 54. The upper end of each of the tubes 52 which extends into the sand compartment is cut off at an angle as indicated at 56 in Figs. 4 and 6. A felt washer 58 is fitted around the tube 52 between the cross brace 42 and the bottom of the casing 16 to provide a tight seal for the joint.

In order to prevent packing of the sand in the sand compartment over the outlet tube 52, a canopy 60 may be provided mounted on posts 62, and it is found to be desirable to include a depending tubular member 64 fixed to the under side of the canopy or cover 60 and open at its lower end as indicated at 66 to provide an air pocket immediately above the discharge tube 52. As indicated in Fig. 6, the canopy together with the depending tube prevent packing and clogging of the sand immediately over the point of discharge and the inclined end of the discharge tube 52 further assists in preventing clogging of the sand.

The bottom of the housing 32 may be provided with outlet ports 68 formed by turning down an annular lip 70 from the bottom of the housing 32 and welding thereto a threaded nipple 72 to which may be secured the neck 74 of the bell-shaped splash guard 76 which is preferably made of rubber. The neck 74 of the splash guard may be tightly secured by a strap 78 clamped by the screw 80.

Means are provided to rock the shaft 50 and control the delivery of the sand as will be hereinafter described and, as shown, I provide an electrical solenoid 82 mounted within the sand receptacle 16 and secured by the cover 84 which is fixed to upstanding posts 86 by nuts 88. The plunger 90 of the solenoid which extends vertically into the solenoid through the bottom of the sand receptacle 16 is provided with a pin 92 at its lower end engaging the slot 94 in an arm 96 which is fixed to the rockable shaft 50. Suitable electrical connections may be provided for energizing the solenoid from a control in the operator's compartment of the vehicle.

The major problem in sanding equipment of the general type herein disclosed is the proper design of the mechanism for cutting off the delivery of the sand. Some sort of valve mechanism must be provided which is easily operable and which will not become clogged and unworkable by the fine particles of sand. Valve mechanisms designed to close the discharge port at the point where the sand is flowing have caused trouble since sand particles may be caught between the valve and its seat. In the present disclosure I provide rockable valve members 98 which are fixed to the rockable shaft 50 but which do not contact the lower end 100 of the discharge tube 52. As shown in Fig. 6, each of the valve members 98 is scoop-shaped in form and in closed position the side edges 102 are somewhat above the level of the bottom end 100 of the tube 52. The sand which is cut off by the valve member 98 will pile up as shown in Fig. 6, blocking the sand outlet and preventing further delivery of the sand. In order to confine the sand within the trap valve 98, inwardly directed ridges 104 may be provided at the side edges of the valve. When the valve is swung to open position as shown in Fig. 4, the sand is free to flow out of the tube 52 into the housing 32 and out through the passage 68.

In order to insure the delivery of the sand from the housing 32 even when the vehicle is tilted, a cup-shaped member 106 may be mounted within the housing 32 as shown in Fig. 5. The member 106 is threaded to a nipple 108 which forms the outlet member in this modification.

It will be apparent from Fig. 6 that the sand trapped by the closing of the valve 98 even though confined by the ridges 104 might tend to shake out of the valve member and thus continue to flow to a small extent. In order to prevent such possible leakage of sand, I prefer to provide means associated with the outlet tube 52 and the valve 98 which will provide a closed compartment and will entirely shut off the discharge of sand. Such means are disclosed in Figs. 7, 8 and 9 and include a metal plate 110 which is welded at 112 to one side of the tube 52 and has a felt piece 114 secured thereto by the rivets 116. A cooperating metal plate 118 is welded to one edge 102 of the valve member and to the end portions 120 of the valve member. The plate 118 has an arcuate cut-out portion 122 to engage the tube 52 when the valve 68 swings to closed position as shown in Fig. 8. The free edge 124 of the valve member 68 will seat against the felt piece 114. By this arrangement a closed chamber 126 is provided to confine the sand which is trapped by the closing movement of the valve 68. It should be particularly understood that the metal plate 118 will seat against the tube 52 and the edge 124 will seat against the felt 114 at points beyond the sand, and therefore there is no possibility of sand being caught at the points of seating. The closed chamber, however, will confine the sand when the chamber 126 becomes filled up as the result of vibration.

I claim:

1. In a sanding device for motor vehicles, a sand receptacle, a tubular outlet leading downwardly from said receptacle, a rockable valve member mounted to swing about a horizontal axis passing through said tubular outlet above the lower end thereof, said valve member being cup-shaped with its side edges above the lower end of said outlet when in closed position, a horizontal plate fixed to one side of said tubular outlet, said valve member being adapted to seat against said plate to close one side of said valve member, said valve member having a horizontal plate fixed to the other side thereof and adapted to seat against said tubular outlet when the valve member is swung to closed position whereby a closed chamber is formed about the lower end of the outlet to receive and confine the sand thereby shutting off the flow of the sand from said tubular outlet.

2. In a sanding device for motor vehicles, a sand receptacle, a tubular outlet leading vertically downward from said receptacle, a rockable shaft mounted for movement about a horizontal

axis which passes through the lower end of said tubular outlet, a cup-shaped valve member carried by said shaft and arranged to swing beneath the lower end of said outlet to cut off the flow of sand from said receptacle, the side edges of said valve being above the bottom of said tubular outlet when the valve is in closed position, means fixed to said valve member adapted to seat against one side of the lower end of the tubular outlet when said valve is in closed position, and means fixed to the opposite side of said tubular outlet against which said valve member is adapted to seat when in closed position, said means cooperating to provide a closed chamber about the bottom of the tubular outlet when the valve is in closed position to prevent the shaking out of the sand from the cup-shaped valve member, said valve being free to swing when said shaft is rocked to clear the bottom of the outlet tube and permit the unobstructed discharge of sand therefrom.

ROYDEN C. KIRK.