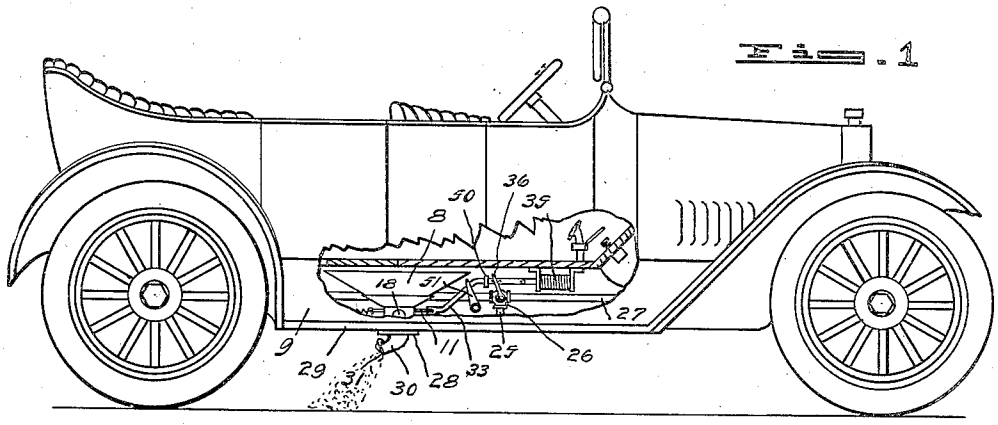
G. B. LAMPING AND J. A. DU LANEY.

SAND DISTRIBUTING APPARATUS FOR MOTOR VEHICLES.

APPLICATION FILED FEB. 24, 1920.

1,354,570. Patented Oct. 5, 1920.

Fig. 1



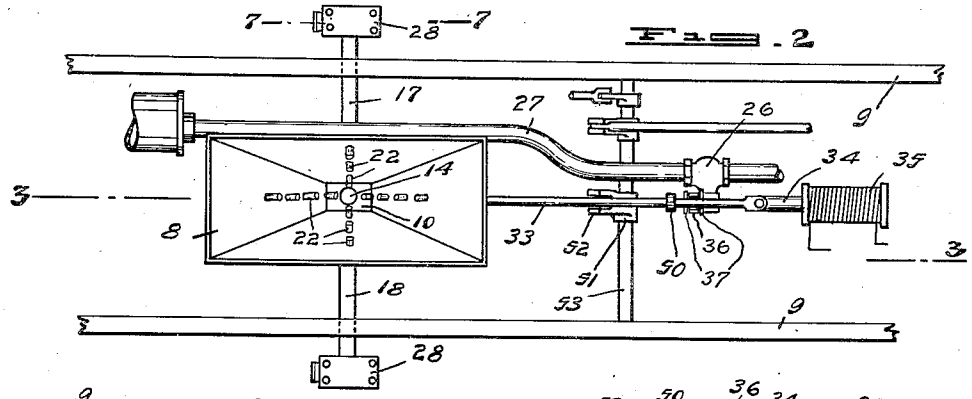


Fig. 2

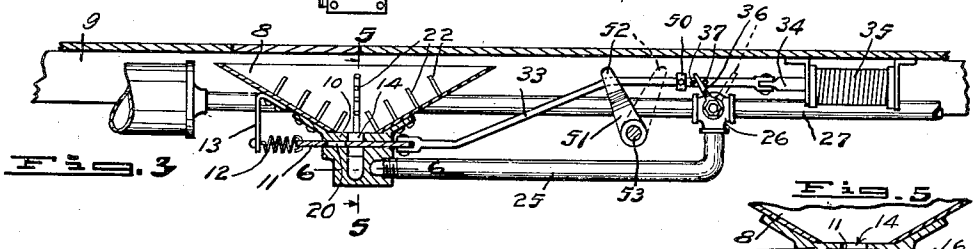


Fig. 3

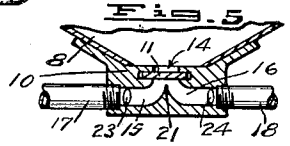


Fig. 5

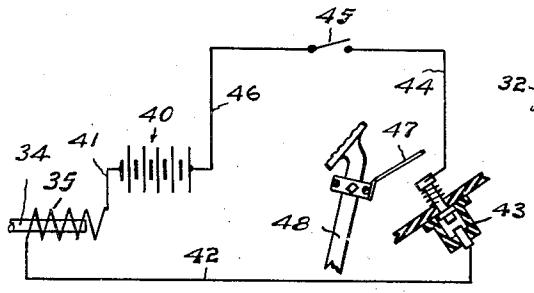


Fig. 4

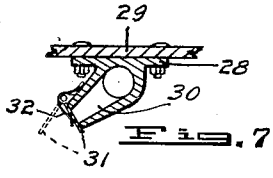


Fig. 7

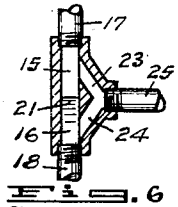


Fig. 6

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SAND-DISTRIBUTING APPARATUS FOR MOTOR-VEHICLES.

1,354,570. Specification of Letters Patent. Patented Oct. 5, 1920.

Application filed February 24, 1920. Serial No. 360,609.

To all whom it may concern:

Be it known that we, GEORGE B. LAMPING and JAMES A. DU LANEY, citizens of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Sand-Distributing Apparatus for Motor-Vehicles, of which the following is a specification.

This invention relates to improvements in devices for preventing motor vehicles from skidding on slippery roads and pavements and the object of this improvement is to provide means that may be carried on a motor vehicle for scattering sand on the driving wheels or on the road bed in front of the driving wheels of such vehicle to prevent skidding.

Another object is to provide sand carrying and distributing devices of cheap, simple and durable construction that may be readily applied to different types of motor vehicles.

A further object is to provide a sand distributing device having actuating mechanism that is connected with the brake mechanism of a motor vehicle in such a manner that sand may be scattered on the road bed each time the brakes are applied.

A still further object is to provide a sand distributing device wherein gas under pressure as the exhaust gas from the engine of the motor vehicle may be utilized for insuring the delivery of the sand each time the valves controlling the discharge of such sand are opened.

Other objects will be apparent from the following description.

In the accompanying drawings Figure 1 is a view in side elevation with parts broken away of an automobile on which our sand carrying and distributing device is installed; Fig. 2 is a detached plan view of the sand carrying and distributing apparatus; Fig. 3 is a view partly in section and partly in elevation of the same substantially on a broken line 3, 3 of Fig. 2; Fig. 4 is a diagram showing the electrical wiring embodied in the device; Figs. 5 and 6 are fragmentary cross sectional views on broken lines 5, 5 and 6, 6 respectively of Fig. 3 and Fig. 7 is an enlarged view in cross section substantially on a broken line 7, 7 of Fig. 2.

Like reference numerals designate like parts throughout the several views.

This apparatus comprises a sand receptacle or hopper 8 arranged to be secured to the body or frame of a motor vehicle 9 at any convenient location. The lower convergent portion of the hopper 8 is provided with a bottom piece 10 wherein a valve or plate 11 is slidably disposed for longitudinal movement. The rear end of the valve plate 11 is connected with one end of a helical tension spring 12 that may be connected at its other end to a bracket 13 that is rigid with the hopper 8, the spring 12 ordinarily holding the valve plate in the closed position shown in Fig. 3.

The bottom piece 10 is provided with a vertically arranged sand discharge opening 14 that connects at a point below the valve plate 11 with two transverse branch passageways 15 and 16 which connect respectively with pipes 17 and 18 that extend outwardly toward opposite sides of the motor vehicle. The valve plate 11 is provided with an opening or slot 20 that is normally in substantially the position shown in Fig. 3 but that may be moved into registration with the opening 14 to permit the sand to discharge from the hopper 8 into the passageways 15 and 16. Where the passageways 15 and 16 intersect each other directly below the opening 14 there is provided a wedge shaped sand dividing member 21, see Figs. 5 and 6, that directs substantially equal portions of the sand to each of the passageways 15 and 16.

The interior of the sand hopper 8 is provided at frequent intervals near and around the discharge opening 14 with outwardly projecting rigid pegs or pins 22 that prevent the sand from packing or from forming into lumps that would not pass through the opening 14.

The sand passageways 15 and 16 are intersected at a short distance from their inlet ends by air or gas passageways 23 and 24 respectively, see Fig. 6, that extend in the same general direction as the sand passageways and by means of which air or gas under pressure may be directed outwardly through the pipes 17 and 18 toward the discharge ends thereof.

The air or gas passageways 23 and 24 both connect with a pipe 25 which is connected by means of a suitable valve 26 with the exhaust pipe 27 of the motor vehicle on which the apparatus is installed.

The outer ends of the pipes 17 and 18 are

connected with heads or fittings 28, see Fig. 7, that are preferably arranged to be secured to the running boards 29 of the motor vehicle in a suitable location to scatter sand in front of the rear wheels thereof. The heads 28 are each provided with a rearwardly and downwardly directed nozzle 30 having an open outer end that is provided with a hinged cap or cover 31 which is normally held in a closed position by a relatively light spring 32 but which may swing outwardly into a position as indicated by broken lines in Fig. 7 to permit sand to discharge. The caps 31 prevent mud and dirt from entering the nozzles 30 and also may serve to hold a small supply of sand at the extreme tip of the nozzle ready for immediate use.

The front end of the valve plate 11 is secured to a rod 33 that extends forwardly to, and is connected with the core 34 of an electromagnet or solenoid 35. When the electromagnet is energized the core 34 will be drawn thereinto and the valve plate 11 moved forwardly from the position shown in Fig. 3 thus moving the perforation 20 into registration with the sand discharge opening 14.

The valve 26 is provided with a handle 36 that is adapted to be engaged by pins 37 on the rod 33 and to be moved substantially from the position shown by full lines to the position shown by dotted lines in Fig. 3 to open the pipe 25 to the pressure within the exhaust pipe 27 and permit some of the exhaust gases to pass into the passageways 23 and 24 and outwardly through the distributing pipes 17 and 18 thereby picking up the sand and insuring its discharge from the nozzles 30.

One terminal of the solenoid 35 is connected directly with the source of supply of electrical current for the vehicle as with a battery 40 by a circuit wire 41, while the other terminal thereof is connected by a circuit wire 42 with one terminal of a switch 43 that is located near the brake pedal of the motor vehicle. The other terminal of the switch 43 is connected by a circuit wire 44 with one terminal of a switch 45 that is located on the steering wheel of the motor vehicle or at another point convenient of access and that is connected by a circuit wire 46 with the battery 40.

The switch 43 is adapted to be engaged by an arm 47 that is adjustably secured to the brake pedal 48 of the motor vehicle and to be closed by such arm 47 when the brake pedal is depressed to set the brakes.

As a mechanical device for opening the sand discharge valve when the brake is set hard an adjustable set collar 50 is provided on the rod 33 and a lever arm 51 having a forked upper end 52 that is arranged to fit over the rod 33 and engage the collar 50 is secured to a rocker shaft 53 that is interposed in the brake mechanism. In ordinary applications of the foot brake the lever arm 51 will be moved forwardly into one position as shown by broken lines in Fig. 3 but not far enough to engage with the set collar 50. If, however, the foot brake is set unusually hard so that there is danger of locking the rear wheels of the vehicle the lever arm 51 will be moved far enough to engage the set collar 50 and open the valves of the sand discharging devices thereby causing sand to be discharged to prevent skidding; the rocker shaft 53 is usually found to be a part of the brake mechanism on the car on which the installation is being made.

In ordinary operation when the streets are wet and it is desired to use sand as a precaution each time the brakes are set the switch 45 is closed and allowed to remain closed so that each time the foot brake pedal 48 is depressed and the switch 43 closed the circuit to the solenoid 35 will be completed and the valves controlling the discharge of sand opened.

The switch 43 is preferably made so that it is possible to close the same voluntarily and without the operation of the foot brake pedal thus making it possible to discharge sand when the brakes are not set.

It is a well known fact that a motor vehicle will seldom skid except when the brakes are set. This fact has been borne in mind in the construction of this device and the actuating mechanism therefor has been arranged so that it may be adjusted in such a manner as to cause the sand to be delivered simultaneously with or slightly in advance of the setting of the brakes.

From the above description it will be seen that this device anticipates the skidding and prevents it by sanding the roadbed beforehand instead of seeking by the application of sand to stop a vehicle after it has started to skid.

It has also been found that good results may be obtained when the sand is delivered directly onto the tire of the vehicle and allowed to carry around with such tire instead of being delivered onto the roadbed in front of the vehicle wheel, the essential requirement being to get the roadbed at the point of contact between the two. It may also be found advantageous to deliver sand onto or in front of the front wheels of a motor vehicle to prevent skidding.

From the foregoing description taken in connection with the accompanying drawings the advantages of the construction and of the method of operation of this device will be readily apparent to those skilled in the art to which the invention pertains and while we have described the principle of operation of the invention, together with

the device which we now consider to be the best embodiment thereof we desire to have it understood that the device shown is merely illustrative and that such changes may be made as are within the scope of the following claims.

What we claim is:

1. The combination with a motor vehicle of a sand hopper carried thereon, conduits for conducting sand from said hopper to positions adjacent to wheels of said vehicle, a valve controlling the passage of sand from said hopper to said conduits, electrical means for opening said valve, an energized electric circuit connected with said electrical means and a switch interposed in said electric circuit and arranged to be closed by the application of the foot brake of the vehicle.

2. The combination with a motor vehicle, of a sand hopper carried thereon, a valve controlling the discharge of sand from said hopper, conduits connected with said valve for delivering sand between the roadbed and the wheels of said vehicle, electrical mechanism for opening said valve sumultaneously with the application of the brakes of said vehicle, means for rendering said electrical mechanism inoperative, and mechanical devices for opening said valve in response to a maximum depression of the foot brake pedal of said vehicle.

3. The combination with a motor vehicle of a sand hopper carried thereon, a valve controlling the discharge of sand from said hopper, conduits connected with said valve for conducting sand to locations in front of the driving wheels of said vehicle, a solenoid for opening said valve, an energized circuit connected with said solenoid, a switch interposed in said circuit and arranged to be closed by the application of the brakes of said vehicle, another switch disposed at a convenient location in said vehicle for rendering said circuit inoperative, and mechanical means for opening said valve independently of said solenoid when the foot brake pedal of said vehicle is moved into its maximum depressed position.

4. A sander for motor vehicles comprising a sand hopper arranged to be secured to the vehicle, a valve controlling the discharge of sand from said sand hopper, a solenoid for closing said valve, an energized circuit connected with said solenoid, a switch interposed in said circuit, and adjustable means arranged to be secured to the foot brake pedal of said vehicle for closing said switch at any desired time during the application of the brakes of said vehicle.

5. A sander for motor vehicles comprising a sand hopper arranged to be secured to the vehicle, pegs projecting from the walls of said hopper to prevent the packing of sand therein, a slide valve controlling the discharge of sand from said hopper, a spring for holding said slide valve in a closed position, a solenoid connected with said slide valve for opening the same, sand conduits arranged to receive sand from said hopper and convey the same to the sides of the vehicle, discharge nozzles connected with said sand conduits, yielding flaps arranged to normally close said nozzles, a gas conduit connected with the exhaust pipe of the vehicle and arranged to deliver gas under pressure into said sand conduits, a valve interposed between said gas conduit and said exhaust pipe and arranged to be opened simultaneously with said slide valve, an energized electric circuit connected with said solenoid, a switch interposed in said circuit and arranged to be closed by depression of a foot brake pedal, and an independent switch provided on the steering post of the vehicle for rendering said first named switch inoperative.

Signed at Seattle, Washington, this 16 day of February, 1920.

GEORGE B. LAMPING.
JAMES A. DU LANEY.