Sept. 19, 1950 D. A. KELLY 2,522,677

VEHICLE SANDER

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Fig. 1.

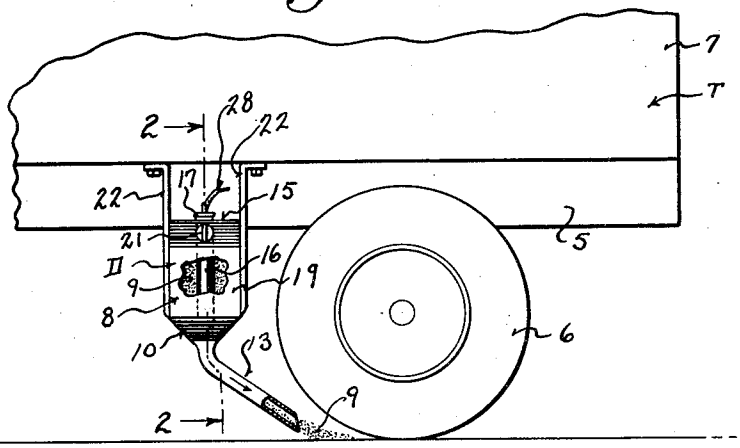
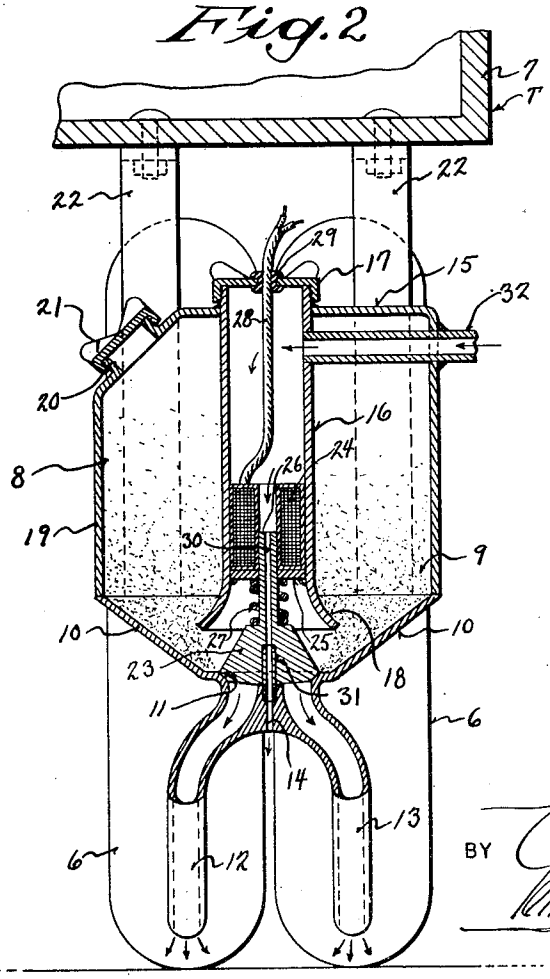


Fig. 2



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VEHICLE SANDER

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2 Claims. (Cl. 291—36)

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This invention apertains to vehicle sanding equipment, and more particularly to a novel device under the control of a driver of an automobile, for automatically supplying sand in front of the wheels of the automobile on slippery pavements and roadways.

One of the primary objects of my invention is to provide a device for supplying sand to a slippery roadway in front of the wheels of an automotive vehicle, embodying a hopper for the sand and a novelly arranged electrically operated valve for controlling the flow of sand from the hopper.

Another salient object of my invention is to provide novel means for arranging a control valve directly in the hopper of a sanding device, so as to obtain, as nearly as possible, a clear path for the sand to the delivery spouts, thereby causing the sand to flow more rapidly and with more velocity, so that the sand will be spread in front and in close proximity to the vehicle's wheels.

A further object of my invention is to provide, in vehicle sanding equipment, a hopper with a centrally located outlet valve and a centrally disposed protecting tube for the operating mechanism of the valve, the tube having its lower end flared outwardly above and around the valve to protect the valve from undue sand weight for easy operation and for preventing the sand packing or contacting the stem of the valve and the core of the operating solenoid, the sand around the tube forming in effect a heat insulator for the tube and thereby eliminating the condensing of moisture in the operating mechanism of the valve.

A further important object of my invention is to provide means for directing a flow of heated fluid through the tube to further prevent condensation and to keep the sand from freezing in the hopper in extremely cold weather.

A still further object of my invention is to provide a vehicle sanding equipment which will be of a durable and compact order and one which will work effectively under various climatic conditions.

With these and other objects in view, the invention consists in the novel construction and arrangement of parts, as will be hereinafter more specifically described and claimed in the accompanying drawing, in which drawing,

Figure 1 is a side elevational view showing my novel sanding device incorporated with the chassis of a truck, parts of the sanding equipment being shown broken away and in section.

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Figure 2 is an enlarged vertical sectional view through the sanding equipment taken on the line 2—2 of Figure 1, looking in the direction of the arrows.

Referring to the drawing, in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter D generally indicates my improved sanding device for an automotive truck or the like T.

The truck T forms no part of the present invention and only a fragment of same has been shown to illustrate the application of my sanding device D thereto.

As shown, the truck T includes a chassis 5, having dual rear wheels 6. Any type of body 7 is mounted upon the chassis. While I have shown my sanding device applied to a truck for the rear wheels thereof, it is to be understood that the same can be used with the front wheels thereof also.

My sanding device includes a hopper 8 of a sufficient size for containing a desired amount of sand or other anti-skid material 9. The hopper preferably has its lower end tapered or of an inverted frusto pyramidal shape, so that the sand in the hopper will gravitate to a central point. There is a hopper arranged on each side of the truck in front of each pair of the dual drive wheels 6, but for the sake of simplicity I have shown the hopper for one side of the truck only. The central portion of the tapered bottom wall 10 of the hopper 8, is provided with an outlet opening 11, and the wall of this opening is shaped to form a valve seat. This valve seat is of a relatively large size so that sand can freely flow therethrough. Communicating with the valve seat and carried by the tapered bottom wall 10, is a pair of rearwardly inclined sand delivery spouts 12 and 13. These spouts 12 and 13 terminate in close proximity, as is possible, to the wheels 6, directly in front thereof. The space between the delivery spouts 12 and 13 at their point of connection with one another and the tapered bottom wall 10, is provided with a combination guide and fluid outlet bore 14, having a purpose, which will be later set forth.

Secured to the top wall 15 of the hopper 8 is a centrally located protecting tube 16. The upper end of the tube projects above the top wall of the hopper and can be closed by any desired type of cap 17. The tube 16 depends downwardly from the top wall and terminates directly above the valve seat in spaced relation thereto and this lower end of the tube is outwardly flared as is shown at 18, for a purpose, which will later ap-

pear. One side wall 19 of the hopper is provided with a filling neck 20, and this neck can be closed by any preferred type of removable cap 21. The neck is so-arranged that the same can be easily reached from the side of the truck so as to permit the convenient filling of the hopper with sand or other desired type of abrasive granular material.

The hopper is rigidly connected in front of the wheels 6 to the chassis or other convenient part of the truck body by any desired means, such as brackets 22.

Arranged directly within the hopper 8, below the flared end 18 of the tube 16, is a vertically sliding valve body or plug 23. The body of the valve is preferably tapered toward its upper end to conform to the flared end of the tube and the lower end of the valve body is shaped to snugly fit upon the valve seat 11.

The tube 16 is utilized for forming a protecting housing for the operating mechanism for the valve body. This operating mechanism can include a solenoid as 24. The inner wall of the tube adjacent to its lower end can be provided with a shoulder 25, against which the solenoid is shoved. This solenoid can be inserted in the tube through the upper end opening thereof. Centrally formed on the valve body is an upwardly extending stem 26. This stem can carry the core for the solenoid or the stem itself can form the core. An expansion spring 27 is coiled about the stem and normally urges the valve downward on its seat. Upon the energizing of the solenoid, the core or valve stem 26, and consequently, the valve body, is raised well into the flared end of the tube. This permits the free, unobstructed flow of sand from out of the hopper into delivery spouts 12 and 13, and the head of the sand gives the desired velocity thereto so that the sand will flow well back under the wheels of the truck.

The flared end 18 of the tube also functions admirably for keeping the main head of the sand off of the valve body when the valve body is in its closed position, hence the valve body can be quickly and easily raised as soon as a circuit is closed through the solenoid.

It is to be noted that the electric conduit wires 28 for the solenoid lead through a rubber grommet 29 carried by the cap 17.

It is highly desirable to prevent condensation with the tube 16 and around the valve and to keep the sand in a free flowing condition. To bring this about I have provided means for permitting the flow of heated gases through the tube, solenoid and valve. Attention is directed to the fact that the valve body 23 and its stem is provided with an axial bore 30 and that the lower end of the valve has formed thereon or is provided with a guide tube 31, which extends into the bore. This guide tube is slidably mounted in the guide bore 14. Leading into the hopper 8 is a conduit pipe 32 and this conduit communicates with the upper end of the tube 16. The pipe 32 is tapped into the exhaust pipe of the automobile or truck. Consequently, hot products of combustion from the engine of the truck will flow through the pipe

32 into the tube 16 directly through the valve body and out of the bore 14. The tube 16 is thus maintained in a hot or warm condition and the sand will be prevented from freezing and the condensing of vapors will be eliminated.

Attention is also directed to the fact that as the tube 16, the solenoid and the valve are all centrally located within the hopper, that the sand itself will form a heat insulator.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

1. In a sanding device for motor vehicles, a hopper having a tapered bottom provided with a centrally disposed outlet in its lower end, said outlet being provided with a valve seat, a centrally located protecting tube in said hopper extending from the top wall of the hopper downwardly toward the valve seat, the lower end of said tube being provided with an outwardly annular flared terminal arranged in close proximity to the valve seat, a valve body movable on and off the seat into the flared terminal having a valve stem, and an operating mechanism for the valve body disposed within said tube, said operating mechanism including a solenoid, and a core for said solenoid carried by the valve stem, and conduit means for circulating hot gas through the tube, solenoid, core and valve body.

2. In a sanding device for motor vehicles, a hopper having a tapered bottom provided with a centrally disposed outlet in its lower end, said outlet being provided with a valve seat, a centrally located protecting tube in said hopper extending from the top wall of the hopper downwardly toward the valve seat, the lower end of said tube being provided with an outwardly annular flared terminal arranged in close proximity to the valve seat, a valve body movable on and off the seat into the flared terminal having a valve stem, and an operating mechanism for the valve body disposed within said tube, said operating mechanism including a solenoid, and a core for said solenoid carried by the valve stem, and conduit means for circulating hot gas through elements comprising the tube, solenoid, core and valve body, said elements having an axial bore therethrough.

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