Nov. 7, 1950 S. G. STORBERG 2,529,197

SANDING DEVICE

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Fig. 4

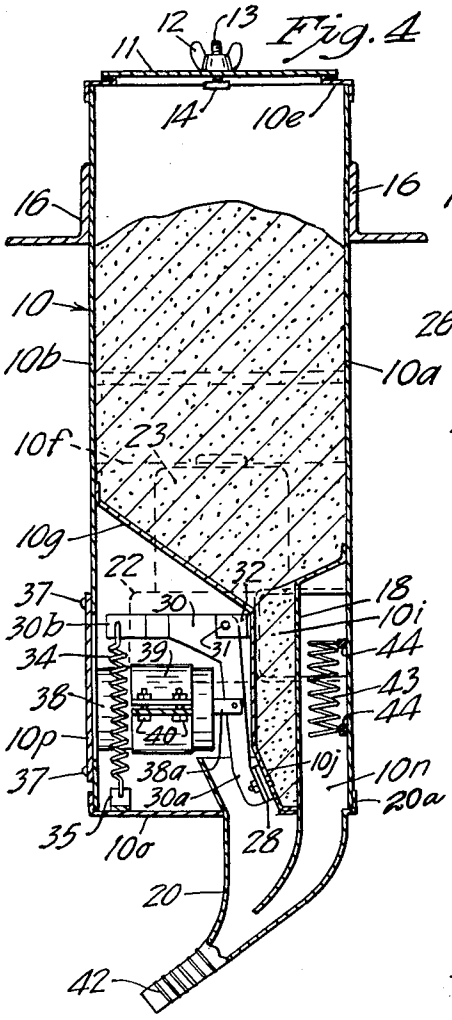


Fig. 1

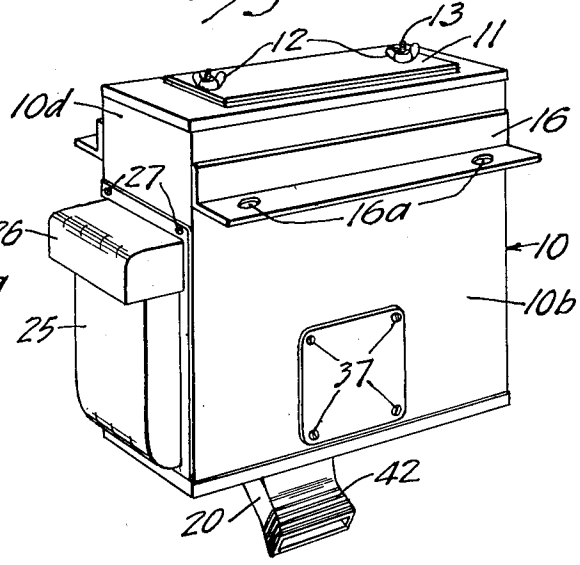


Fig. 5

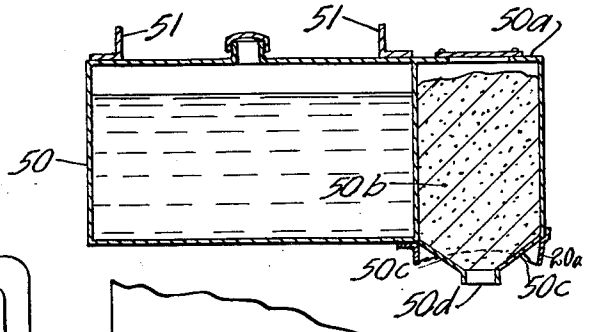
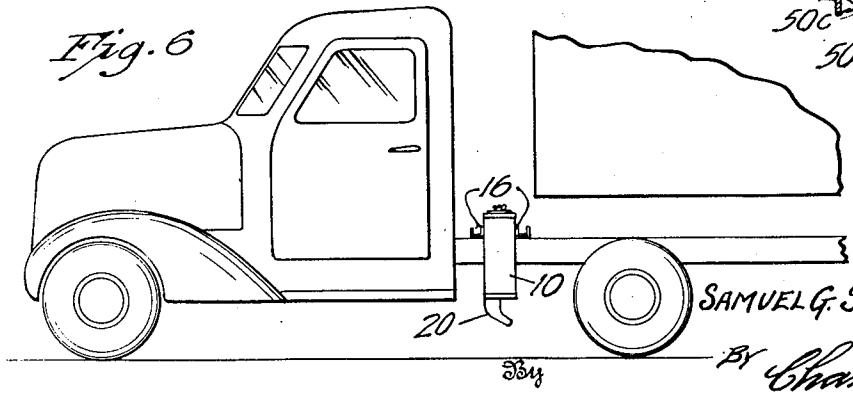


Fig. 6



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SANDING DEVICE

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Fig. 2

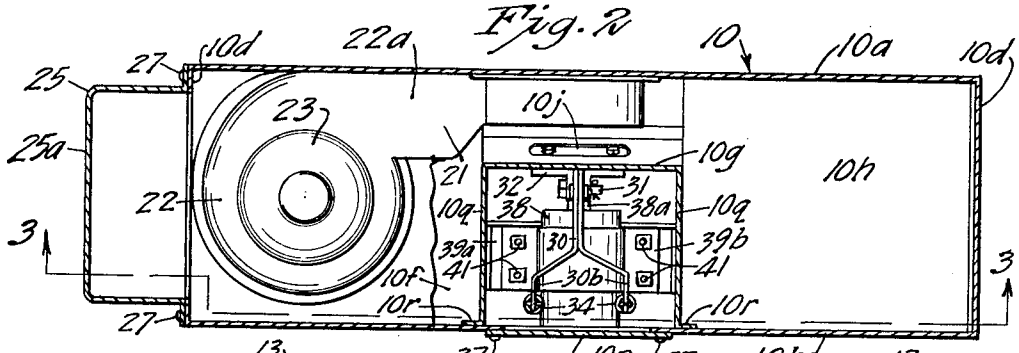
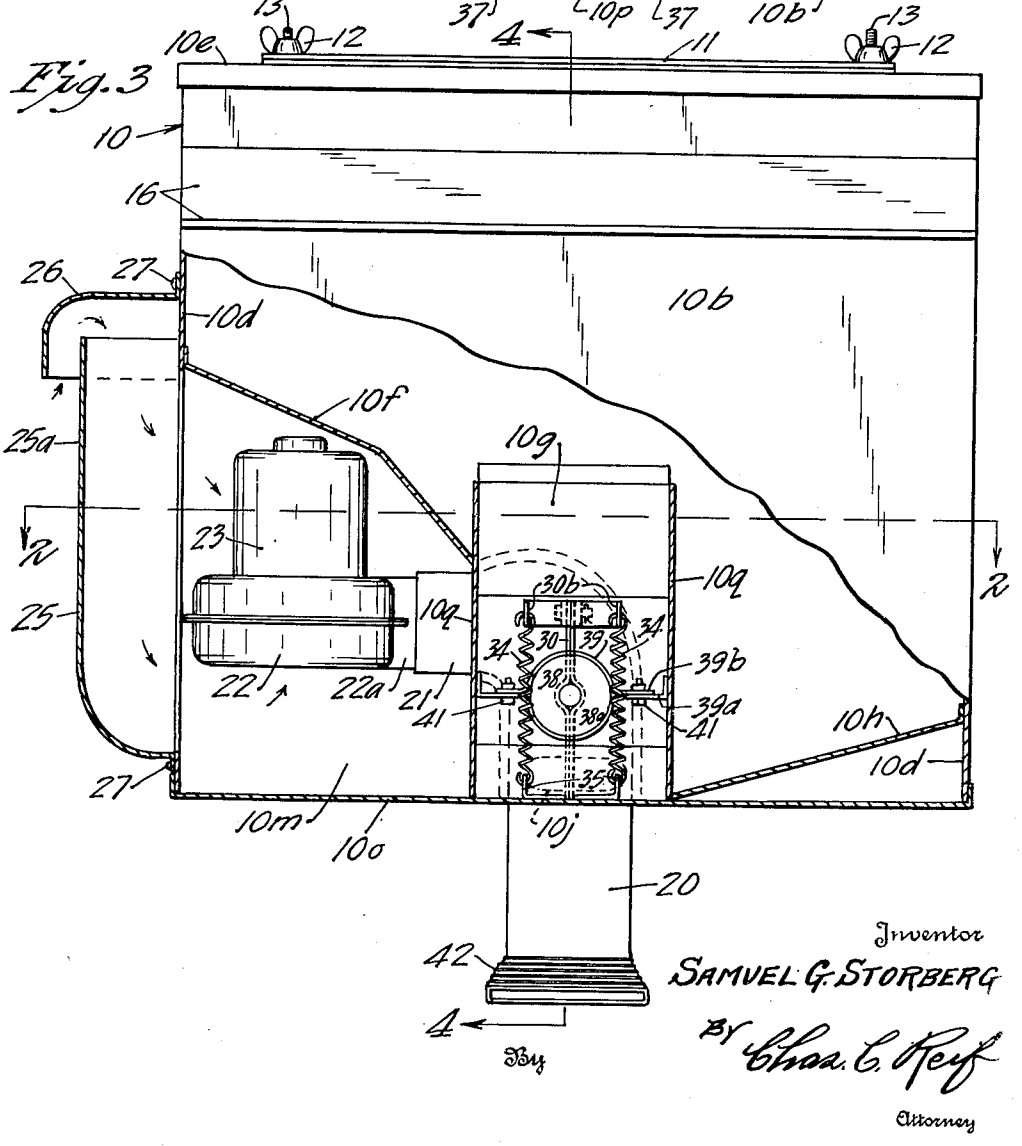


Fig. 3



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SANDING DEVICE

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6 Claims. (Cl. 291—22)

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This invention relates to a sanding device and particularly to a sanding device for an automotive vehicle such as a truck, or other automobile. It is very desirable on certain automotive vehicles which are quite heavy and which pull heavy loads to have a sanding device to assist in stopping when the road is slippery.

It is an object of this invention to provide a simple and compactly arranged sanding device mounted on the vehicle and arranged for easy operation.

It is a further object of the invention to provide a sanding device for a vehicle comprising a receptacle for sand or other comminuted frictional material which is conveniently mounted on the vehicle, together with mechanism for discharging sand and regulating the discharge thereof conveniently disposed below said receptacle.

It is a further object of the invention to provide a sanding device for a vehicle such as an automotive truck, comprising a pair of receptacles for containing sand or other comminuted frictional material, which receptacles may conveniently be formed as extensions of a gas tank or gas tanks of the truck.

It is more specifically an object of the invention to provide a sanding device for a vehicle comprising a receptacle for sand or other comminuted material, which receptacle is preferably closed, a discharge spout to which said sand or material is delivered, means for directing air into said spout for discharging said sand and material therefrom, valve mechanism for controlling the discharge of said sand, said means and valve mechanism being disposed in a compartment formed beneath said receptacle.

It is also an object of the invention to provide a sanding device for a vehicle comprising a receptacle for containing comminuted frictional material, a receptacle having a discharge opening, a valve for controlling said opening, a lever carrying said valve, and simple, compact and efficient means for moving said valve, said device also preferably including one or more heaters.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which—

Fig. 1 is a perspective view of a receptacle used and parts carried thereby;

Fig. 2 is a horizontal section taken substantially on line 2—2 of Fig. 3;

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Fig. 3 is a view partly in front elevation and partly in vertical section taken on line 3—3 of Fig. 2;

Fig. 4 is a vertical section taken substantially on line 4—4 of Fig. 3;

Fig. 5 is a view in vertical section showing a modified construction of receptacle; and

Fig. 6 is a view in side elevation indicating a truck and the location of the device thereon.

Referring to the drawings, a device is shown comprising a receptacle 10 adapted to contain sand, cinders or similar fine or comminuted material. While said receptacle could be variously formed, in Figs. 1 to 4 it is shown as being substantially rectangular in vertical and horizontal cross section, the same having front and rear walls 10*a* and 10*b* respectively and end walls 10*d*. Said receptacle has a top wall provided with an opening 10*e* which is adapted to be closed by a removable plate 11 which will be held in place by some suitable means, such as the wing nuts 12 threaded on screws 13 which will be secured in bars 14 or other suitable members disposed at the inner side of the top wall. Receptacle 10 will be mounted on the frame of the vehicle in front of the rear wheels in any suitable manner, as by the angle bars 16 secured to the side walls 10*a* and 10*b* respectively in any suitable manner, as by welding. The horizontal flanges of bars 16 are provided with holes 16*a* through which attaching bolts may pass. A plate 10*f* forms a portion of the bottom of receptacle 10 and has portions inclining downwardly and inwardly, said plate being suitably secured to the inner side of said receptacle. A plate 10*g* also forms part of the bottom of receptacle 10 and inclines downwardly toward side 10*a*. Another plate 10*h* also forms a portion of the bottom of receptacle 10 and is secured to and extends downwardly from one wall 10*d*. Said plates converge toward a discharge passage 10*i* formed by a substantially vertical portion of plate 10*g*, the lower end of which is bent to extend substantially horizontally. The other side of passage 10*i* is formed by a plate 18 which is secured to the inner side of wall 10*a*, the same extending downwardly and inwardly for a short distance and then extending vertically parallel to the vertical portion of plate 10*g*. Plate 10*g* has a discharge opening 10*j* in a portion thereof, which portion is slightly inclined to the vertical. The side walls 10*a* and 10*b* of receptacle 10 and one end wall 10*d* are extended below the bottom portions of said receptacle so that a compartment 10*m* is formed below said receptacle the sides of which are alined

with the sides of said receptacle. A discharge chute **20** is provided, the same having a flange **20***a* fitting along the outer side of side wall **10***a*, said chute having an open upper portion disposed within compartment **10***m* and with which opening **10***j* communicates. Chute **20** has walls which converge and are directed downwardly and rearwardly toward a wheel of the vehicle on which the sanding device is installed. Plate **18**, already described, extends below plate **10***g* some distance into chute **20**, the same terminating quite a distance from the end of the chute and forming with wall **10***a* a passage **10***n*. Passage **10***n* communicates with a laterally extending passage formed in a laterally extending conduit **21**. A fan **22** is provided which will be suitably supported and disposed in compartment **10***m*, said fan comprising a casing having a discharge portion **22***a* which connects with conduit **21**. A motor **23** is supported on the casing of fan **22** and is directly connected to fan **22**. One side wall **10***d* has an opening therein of considerable vertical extent which communicates with compartment **10***m* and a casing **25** is secured to said wall **10***d*, the same having an outer side **25***a* extending parallel to said wall, the upper end of casing **25** being open. A hood **26** is secured to wall **10***d*, which, like casing **25**, can be secured in any suitable manner, as by screws **27**. Casing **26** has downwardly extending walls enclosing the upper end of casing **25**, the lower side of hood **26** being open.

A valve **28** of plate-like form is arranged to extend over opening **10***j* and said valve is secured adjacent the lower end of a depending portion **30***a* of a bellcrank lever **30** which is pivotally mounted on a stud **31** carried in a short bracket **32** secured to plate **10***g*. Lever **30** has a pair of laterally extending arms **30***b* and these have connected thereto respectively the upper ends of tensile coiled springs **34**, the lower ends of which are connected to the upturned ends of a bar **35** which is secured to a bottom plate **10***o* which extends between walls **10***a*, **10***b* and **10***d* at the lower ends thereof, and has flanges connected to said walls in any suitable manner, as by welding. Bar **35** can be secured to plate **10***o* by welding. The chute **20** extends through an opening in plate **10***o*. A solenoid **38** is provided, the same being carried in a bracket **39**. Bracket **39** comprises a bar **39***a* having upturned ends secured in any suitable manner, as by welding, to the sides of spaced vertical plates **10***g* which with a vertical portion of plate **10***g* form a solenoid housing. Plates **10***g* have outturned flanges **10***r* secured to the inner side of wall **10***b* in any suitable manner, as by welding. Bar **39***a* has a semi-cylindrical portion embracing the coil portion of solenoid **38** and a second bar **39***b* has a semi-cylindrical portion extending over the top of said coil portion and laterally extending horizontal portions secured to bar **39***a* by the headed and nutted bolts **41**. The core or armature of solenoid **38** has a portion **38***a* pivotally connected to the depending portion **30***a* of lever **30**. Wall **10***b* has an opening therein for giving access to solenoid **38** and adjacent parts, which opening is closed by a plate **10***p* held in place by a plurality of screws **37**. Preferably a heating coil **42** will be provided and will extend around the discharge porton of chute **20**. A heating member **43** may also be provided in passage **10***n* and this can be conveniently supported by small brackets **44** secured to wall **10***a*.

In operation the sand, cinders or other comminuted material **46** will be placed in receptacle **10**. This can be conveniently done by removing plate **11**. The said material will gravitate into passage **10***i* and to opening **10***j*. The movement and jolting of the vehicle will insure that the material will flow to the opening **10***j*. The motor **23** will be connected to a suitable source of power as to the battery of the vehicle. A control button or switch will be provided in convenient position for manipulation of the driver of the vehicle. It will be seen that valve **28** will normally be held in closed position by tension of springs **34**. When it is desired to deliver some sand to the roadway and under the wheels, the driver will close the said switch and this will start motor **23** into operation, which will in turn drive or rotate fan **22**. A blast of air will now be delivered by fan **22** into conduit **21** and into passage **10***n*. With this blast or current of air flowing, solenoid **38** will be energized and the armature portion **38***a* thereof will move to swing lever **30** in a clockwise direction, thus opening valve **28** and permitting said sand or material to drop into chute **20**. This will be engaged by the air and the same forcibly directed in a spray toward the roadway and rear wheel. Additional friction will thus be had for stopping. As soon as solenoid **38** is de-energized, springs **34** will swing lever **30** to close valve **28**. Heat will preferably be constantly applied to heating members **42** and **43**. This will prevent ice forming on spout **42** in very cold weather and will keep the sand in passage **10***i* in fluent condition.

In many trucks, such as those which pull large trailers, a gas tank is carried just in the rear of the cab which is some distance ahead of the rear wheels. With the present invention the receptacle **10** can be conveniently formed as a continuation of one end of such a gas tank. This is shown in Fig. 5. Such gas tanks **50** are commonly supported by a pair of angle bars **51**. The extension **50***a* of the tank would form the compartment **50***b* which would correspond to the sand compartment in receptacle **10**. The compartment **50***b* would be provided with sloping bottom portions **50***c* which would lead to a discharge passage **50***d* corresponding to passage **10***i*. The sloping bottom portions **50***c* would correspond to the bottom portions **10***f*, **10***t* and **10***h* already described, and the parts below bottom portions **50***c* would be the same as already described. The compartments below the receptacle **10** and parts therein will be as already described.

From the above description it will be seen that I have provided a simple, compact and very efficient sanding device. The parts are constructed and arranged for practical and efficient operation. The device can be readily mounted upon various types of vehicles with which it is to be used. The operation of the device is easily controlled. The discharge opening controlled by valve **28** is of sufficient size to insure that the desired quantity of sand will always be available. The fan and motor, as well as the valve, lever and operating parts are disposed in closed compartments so as to be protected from dirt, slush, snow, etc., which are often present beneath the vehicle. The device has been amply demonstrated in actual practice, found to be very successful and efficient and is being commercially made.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a

device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A sanding device for a vehicle having in combination, a receptacle for containing comminuted frictional material having a discharge portion with a wall disposed at a small angle to the vertical and having an opening in the side thereof, a valve for closing said opening, a bellcrank lever having a depending portion adjacent the end of which said valve is secured, said lever having substantially horizontal laterally extending arms, tensile springs fixedly secured at one end and secured respectively at their other ends to said arms for swinging said lever to position normally closing said valve, and a solenoid disposed substantially between said springs having an armature directly connected to said depending portion and movable substantially at right angles thereto for swinging said lever to open said valve.

2. A sanding device for a vehicle having in combination, a casing, members secured to the sides of said casing for supporting the same upon the frame of said vehicle, the upper part of said casing forming a receptacle for comminuted frictional material, walls converging downwardly in said casing forming the bottom of said receptacle, the sides of said casing extending below said walls to form a compartment in the lower part of said casing, a discharge passage for said material extending downwardly from said bottom and having a wall with a discharge opening adjacent its lower end, a plate-like valve for closing said opening, a bell crank lever disposed in said compartment having a depending arm carrying said valve, a solenoid disposed in said compartment and having an armature connected to said arm and movable substantially at right angles thereto for swinging said lever to open said valve, said lever having substantially horizontally extending substantially horizontal spaced arms above said solenoid and tensile coiled springs disposed at the sides respectively of said solenoid and connected to said spaced arms respectively for normally swinging said lever to close said valve, said springs being connected at their other ends to the bottom of said compartment and casing.

3. A sanding device for a vehicle having in combination, a receptacle for containing comminuted frictional material, a discharge passage leading downwardly from the lower end of said receptacle having a substantially vertical wall with a discharge opening therein adjacent its lower end, a valve comprising a plate adapted to engage said wall and normally close said opening, a bell crank lever, a bracket secured to said wall to which said lever is pivoted, said lever having a depending substantially vertical portion to the lower end of which said valve is secured and having horizontally extending spaced arms, springs connected to said arms respectively for normally swinging said lever to position to close said valve, a solenoid having an armature connected to said depending portion of said lever intermediate the ends thereof for opening said valve, said passage having a second substantially vertical wall, a wall extending downwardly from said receptacle forming with said second wall an air passage, a discharge spout having one side extending from said last mentioned wall and having a partition therein extending downwardly from said second wall, said discharge opening being disposed to discharge material into said spout.

4. A sanding device for a vehicle having in combination, a casing having substantially vertical spaced walls and a bottom wall, downwardly converging walls extending from the sides of said casing, the upper portion of said casing forming a receptacle for comminuted frictional material, said converging walls forming the bottom of said receptacle and extending to a downwardly extending discharge passage having spaced vertical walls, one of said walls having a discharge opening therein, a plate adapted to engage said wall to close said opening and constituting a valve, a bracket secured to said wall, a bell crank lever pivoted to said bracket having an arm extending downwardly to and secured to said valve, said lever having substantially horizontally extending spaced arms disposed in said casing, springs secured respectively to said arms and secured at their other ends to said bottom wall of said casing, a solenoid disposed in said casing between said springs and having an armature connected to said first mentioned arm intermediate the ends thereof for swinging said lever and opening said valve, an air passage formed by the other of said walls of said discharge passage and one wall of said casing, a spout secured to the bottom of said casing and projecting therein to receive from said discharge opening, said spout having one side alined with said last mentioned wall and having a partition therein alined with said other wall to form a continuation of said air passage.

5. The structure set forth in claim 4, and a heating means disposed in said casing between said other wall and said last mentioned wall.

6. A sanding device for a vehicle having in combination, a receptacle for finely divided frictional material having a discharge passage with an opening therein, a discharge spout receiving from said opening, a valve for controlling said opening, a bellcrank lever adjacent the end of one arm of which said valve is carried, springs secured adjacent the other end of the other arm of said lever for closing said valve, and a solenoid having an armature portion secured to said first mentioned arm of said lever for opening said valve, said vehicle having a gas tank adjacent the front end thereof, said receptacle being formed as an extension of and supported by said tank.

SAMUEL G. STORBERG.

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