F. W. KALLOM AND P. S. TOENNESEN.

SANDING DEVICE.

APPLICATION FILED FEB. 3, 1919.

1,351,760.

Patented Sept. 7, 1920.

2 SHEETS—SHEET 1.

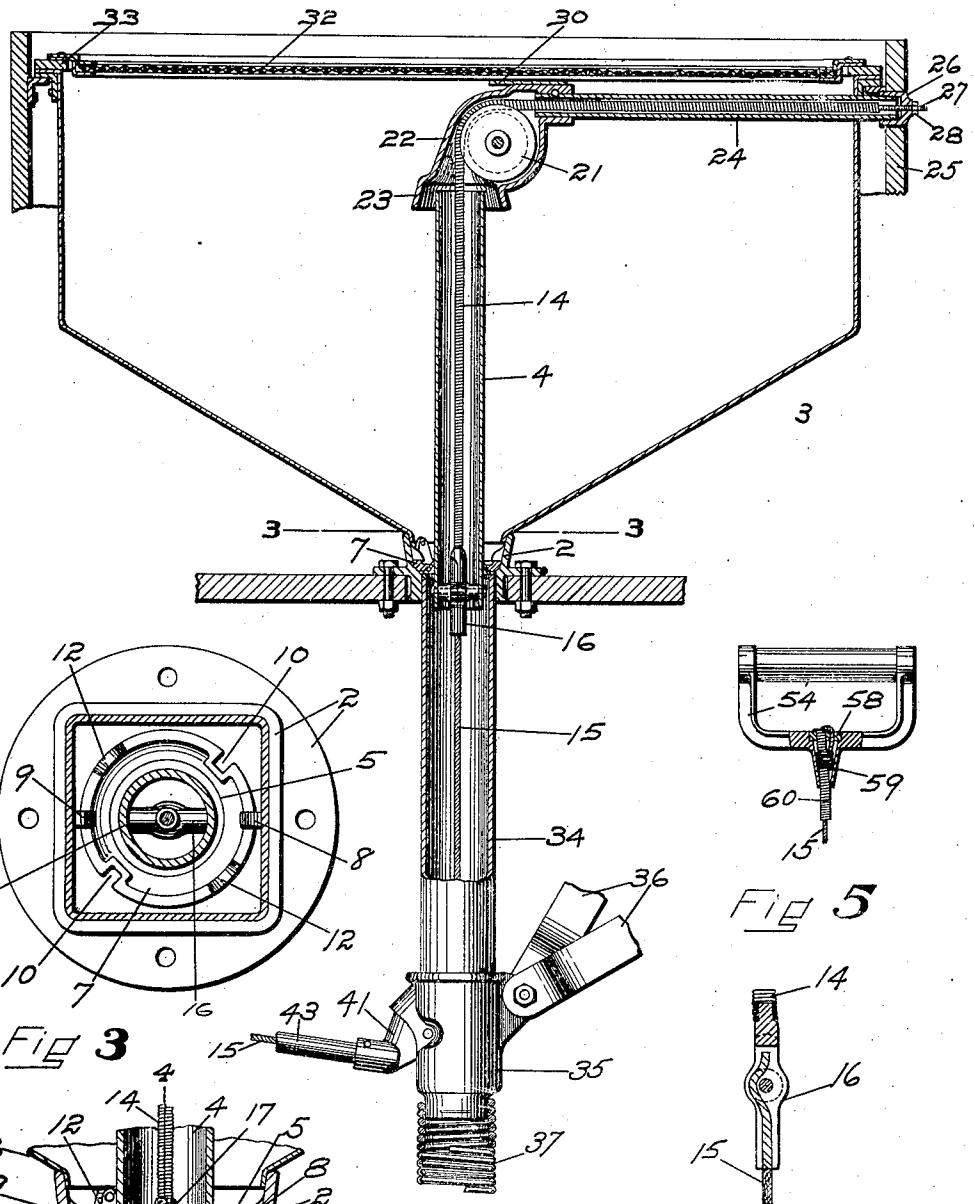



Fig 1




Fig 3

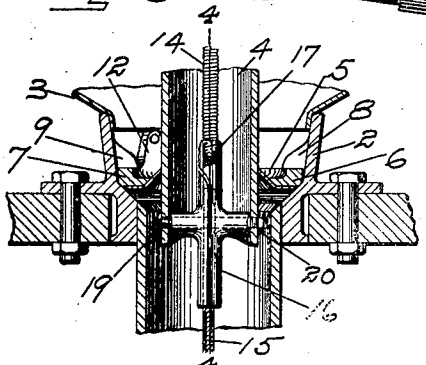



Fig 2




Fig 5




Fig 4

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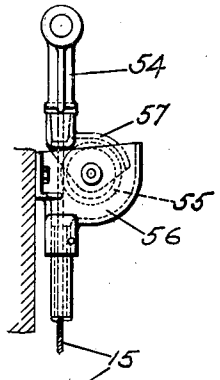



Fig 7

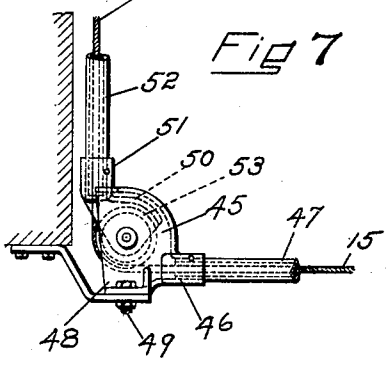
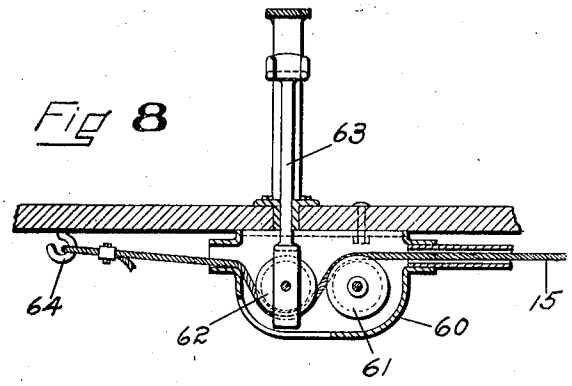



Fig 8



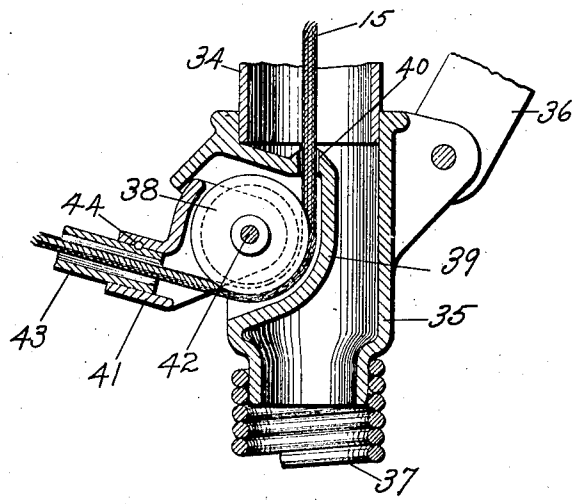




Fig 6

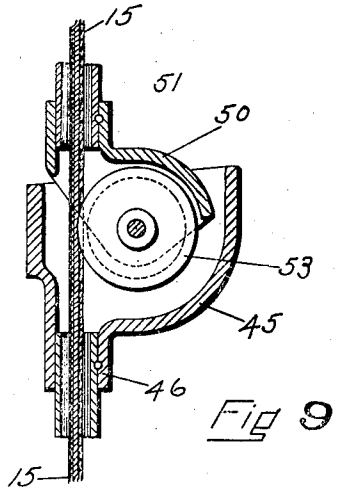



Fig 9

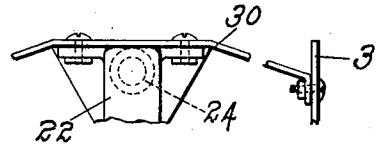



Fig 10

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# UNITED STATES PATENT OFFICE.

FRANK W. KALLOM, OF MALDEN, AND PETER S. TOENNESEN, OF EVERETT, MASSACHUSETTS.

## SANDING DEVICE.

1,351,760. Specification of Letters Patent. Patented Sept. 7, 1920.

Application filed February 3, 1919. Serial No. 274,604.

*To all whom it may concern:*

Be it known that we, FRANK W. KALLOM and PETER S. TOENNESEN, citizens of the United States, residing respectively, at Malden and Everett, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Sanding Devices, of which the following is a specification.

This invention relates to sanding devices of the character used on street cars and is concerned particularly with the general type of sanding device disclosed in our prior Patent No. 1,168,398, granted January 18, 1916. This type of sanding device has proved very successful and the present invention is directed to the perfection and improvement of sanding devices of this character with a view particularly to reducing the cost of manufacture and installation of such devices, facilitating repair, improving their reliability and ease of operation, and generally improving this type of sanding device.

The manner in which it is proposed to accomplish these objects will be readily understood from the following description and the novel features of the invention will be particularly pointed out in the appended claims.

Referring now to the accompanying drawings,

Figure 1 is a vertical cross-sectional view illustrating a sanding device embodying the present invention;

Fig. 2 is a vertical cross-sectional view showing, on a larger scale, certain of the details of construction of the structure shown in Fig. 1;

Fig. 3 is a horizontal cross-sectional view taken substantially on the line 3—3, Fig. 1;

Fig. 4 is a vertical cross-sectional view through the clamp shown in Fig. 2;

Fig. 5 shows, partly in cross-section and partly in side elevation, the construction by which the cable is secured to the operating handle;

Fig. 6 is a cross-sectional view showing certain of the guiding devices for the cable;

Fig. 7 is a side elevation showing additional parts of the operating mechanism for the sanding device;

Fig. 8 is a cross-sectional view showing another operating means that may be employed;

Fig. 9 is a cross-sectional view through one of the pulley housings shown in Fig. 7; and

Fig. 10 is a rear elevation of the housing for the pulley shown in Fig. 1.

The construction shown comprises a base 2 constructed to be secured to a suitable support and shaped to receive the lower end of a hopper 3 in which the sand is placed. A discharge tube 4, open at both ends, projects through the bottom of the hopper and is mounted to be raised and lowered. This tube is closely surrounded within the base 2 by a scraper 5, preferably made of sheet metal and having an upwardly tapered part, as shown in Fig. 2, to rest against the outer surface of the tube 4 and act as a scraper, and also provided with a horizontal flange portion 6 that rests in a seat formed for it in the base 2. A collar 7 rests on this flange 6 and holds the scraper in its operative position in the base, the collar itself being held under two ears 8 and 9 that are formed on the base. This collar also is provided with notches 10 which register with the ears 8 and 9 when the collar is turned into a suitable position, thus permitting the withdrawal of the collar from the base and permitting also the subsequent removal of the scraper. In order to facilitate this operation the collar is provided with two ears or projections 12 at substantially diagrammatically opposite points and each ear has a hole formed therethrough so that a U-shaped wire having its ends turned outwardly away from each other may be inserted in the ears 12 and the collar thus lifted out of the base.

The discharge tube 4 is normally held in its raised position by a coiled spring 14 and it may be lowered in opposition to the action of this spring by pulling on a flexible cable, or the like, 15, both the parts 14 and 15 being secured to the lower end of the tube 4 by a clamp 16. The construction of this clamp is best illustrated in Figs. 2 and 6. In the construction shown in Fig. 2 the upper end of the clamp 16 is drilled to receive the lower end of the spring 14. An eye is formed in this spring and a cotter pin extending through this eye and through the upper end of the clamp secures the spring to the clamp. The lower portion of the clamp is split longitudinally and a curved groove 18 is formed in it to receive the upper end of the cable 15. A bolt 19 extends through the walls of the tube 4, and a nut 20 threaded on this bolt se-

cures the clamp in place and also binds the two parts of the clamp on the upper end of the cable. The fact that the cable is kinked in the clamp, due to this grooved construction, makes this a very secure means for anchoring the cable to the tube.

Fig. 4 shows the construction illustrated in Fig. 2 with a slightly different arrangement for connecting the spiral spring to the clamp. In this construction the clamp is provided with a reduced upper end that is threaded and the lower end of the spiral spring 14 is threaded on to this reduced portion.

A pulley 21 is mounted in the hopper at a point adjacent to the upper limit of the range of movement of the upper end of the tube 4 and is supported in a housing 22 which terminates at its lower end in a hood 23 to receive the upper end of the tube 4. The spiral spring 4 runs over this pulley 21 and through a tube or pipe 24, one end of which is secured in a nipple formed in the housing 22, while its other end is secured either in the wall of the hopper or in a stationary support 25 for the hopper. In the construction shown the outer end of the tube 24 has a cap 26 threaded thereon and a stem 27 projects loosely through this cap and is threaded into the turns of the spring 14. A nut 28 also is threaded on the stem 27. This construction not only securely anchors the upper end of the spring 14 but it provides a very simple and convenient form of adjustment for varying the tension of this spring, it being merely necessary to turn the nut 28 in one direction or the other, as required, to move the stem 27 in or out and thus decrease or increase the tension of the spring.

The tube 24 assists in supporting the pulley housing 22 in its operative position and as a further means to this end the housing is secured to the middle of a metal strap or brace 30, Figs. 1 and 10, which extends from one side to the other of the hopper 3 and has its ends turned downwardly and secured by screws to the opposite sides of the hopper, the housing thus being braced in three directions against movement.

It will now be understood that when the hopper 3 is filled with sand a pull on the cable 15 will lower the discharge tube 4 thus allowing the loose dry upper layers of sand in the hopper to flow down through the tube 14. As soon as the cable 15 is released the spring 14 will immediately raise the tube 4 to its upper position again, the upper end of the tube entering the hood 23 which prevents the flow of sand into the tube, even if the hopper is filled to a point above the level of the hood. This hood also prevents sand or stones from falling into the tube 4 when the hopper is being filled. Any tendency of the sand to wedge in between the outer surface of the tube 4 and the base 2 is prevented by the scraper 5 which also prevents sand from working down along the tube and through the bottom of the hopper.

The manner in which the hopper is mounted obviously will depend largely upon the design of the car in which it is to be used. If desired a screen 32 may be placed loosely on the top of the hopper so that the sand may be poured through this screen in filling the hopper and the screen thus will prevent the passage into the hopper of stones or other pieces of foreign material too large to flow freely through the tube 4. A metal rim 33 supports the screen 32 and rests on the upper edge of the hopper.

When the tube 4 is lowered it slides down within a pipe 34, the upper end of which fits into the bottom of the base 2 and the lower end of which is supported in a bracket or fitting 35. This bracket is provided with ears to which braces 36 are bolted that serve to steady the bracket against lateral movement and also to support the bracket in the desired vertical position. A flexible discharge spout 37 is threaded on to the lower end of the bracket 36 and conducts the sand to a point under the car wheel.

This bracket 35 also forms a part of a housing for a pulley 38 over which the cable 15 is guided. As clearly shown in Fig. 6, this housing consists of a partition 39 shaped to partially surround the pulley and having an opening 40 through which the cable 15 passes, the wall of this partition immediately surrounding the opening being tapered, as shown at Fig. 6, to direct the sand away from the cable and thus prevent any substantial amount of sand from passing through the opening. Another housing member 41, mounted for adjustment about the pivot stud 42 on which the pulley 38 revolves, is provided with a nipple to receive one end of a pipe 43 through which the cable 15 travels toward the front of the car into position to be operated by the motorman. A slip joint is provided between the pipe 43 and the nipple 41 and the nipple is drilled, as indicated at 44, to receive a cotter pin. Consequently, when the two parts 41 and 43 have been assembled, as shown in Fig. 6, a drill is run through the hole 44 to form a groove in one side of the pipe 43 and the cotter pin is then forced through this hole and its ends spread apart so that it secures the pipe against withdrawal.

The connections between the sand box and the handle or treadle used to operate the sanding device also will vary with different designs of cars, and the present invention provides connections which facilitate the installation of the apparatus in different types of cars. Usually it is preferable to inclose the cable 15 in pipes or tubing and to run the cable over pulleys wherever it turns a corner. A very convenient form of

fitting for making these connections is illustrated in Figs. 7 and 9. This fitting comprises a housing 45 having a nipple 46 to receive a pipe 47, the connection between the parts 46 and 47 being like that between the parts 41 and 43 in Fig. 6. This housing also may be provided with a nipple 51 to receive a pipe 52 and form a slip joint connection with the pipe, and this housing member 50 is mounted on the pivot on which the pulley 53 that is protected by the housing rotates, so that the part 50 is free to assume any angle that may be necessary.

The pipe 48, Fig. 7, usually is located beneath the floor on which the motorman stands. The pipe 52 incloses the cable 15 where it is led through the floor and up to a handle 54 located within convenient reach of the motorman, so that it is merely necessary for him to grasp the handle and pull it toward him in order to lower the delivery tube 4 and discharge sand. The cable 15 adjacent to the handle is led over a pulley 55 inclosed in housing members 56 and 57 like those illustrated at 45 and 50, respectively, in Fig. 7.

In order to secure the cable 15 in the handle 54 it may be brought through a hole drilled in a washer 58, Fig. 5, and passed downwardly through another hole in said washer thus forming a loop, the extreme end of the cable being lashed to another part of the cable lying within a nipple 59 that is formed on the handle. Preferably the cable at this point is inclosed in a flexible armor 60 which serves to protect it. The washer 58 is located in a seat formed for it in the body of the handle so that the strain on the cable, when the handle is pulled, tends to force this washer more firmly into its seat.

In installing the apparatus the pipe connections and fittings should all be installed and one end of the cable fastened in the clamp 16. The cable should then be threaded through the pipe connections and over the guide pulleys and cut off at a point which permits the handle to assume the position in which it is shown in Fig. 7 when the tube 4 is at the upper limit of its range of movement. The cable can then be secured in the handle as shown in Fig. 5 and the apparatus will be ready to operate.

If a treadle construction is desired instead of a hand operated arrangement, the apparatus shown in Fig. 8 may be used. That is, the cable 15 can be led into a fitting 60, secured below the floor, and run over a pulley 61 supported in this fitting and under a pulley 62 mounted on the lower end of a foot-operated plunger 63 that projects upwardly through the floor. The end of the cable is fastened at 64. Consequently when the plunger 63 is depressed the cable 15 will be pulled over the pulley 61 and the tube 4 will be depressed by a distance equal to twice the length of the downward movement of the plunger 63. When the plunger is released the spring 14 will return it to its raised position at the same time that it returns the discharge tube 4 to its upper position.

What is claimed as new, is:—

1. A sanding device, comprising a hopper, a discharge tube extending through the bottom of said hopper and arranged to be raised or lowered relatively to the hopper, means for normally holding said tube in a raised position with the upper end thereof above the level of the sand in the hopper, means for lowering said tube, and a hood within which the upper end of the tube rests when in its elevated position.

2. A sanding device, comprising a hopper, a discharge tube extending through the bottom of said hopper and arranged to be raised or lowered relatively to the hopper, a pulley mounted on a stationary axis located adjacent to the upper limit of movement of the upper end of said tube, means for lowering said tube, and means for normally holding said tube in its raised position comprising a flexible member running over said pulley.

3. A sanding device, comprising a hopper, a discharge tube extending through the bottom of said hopper and arranged to be raised or lowered relatively to the hopper, a pulley mounted on a stationary axis adjacent to the upper limit of movement of the upper end of said tube, a spiral spring running over said pulley and having one end secured to said tube whereby it is operative to hold the tube normally in a raised position, and means for lowering the tube against the action of said spring.

4. A sanding device, comprising a hopper, a discharge tube extending through the bottom of said hopper and arranged to be raised or lowered relatively to the hopper, a pulley mounted on a stationary axis adjacent to the upper limit of movement of the upper end of said tube, a housing for said pulley, means for securing said housing in a stationary position, a spiral spring running over said pulley and having one end secured to said tube whereby it is operative to hold the tube normally in raised position, and means for lowering the tube against the action of said spring, and a horizontal tube connected with said housing.

5. A sanding device, comprising a hopper, a discharge tube extending through the bottom of said hopper and arranged to be raised or lowered relatively to the hopper, a pulley mounted on a stationary axis adjacent to the upper limit of movement of the upper end of said tube, a spiral spring extending over said pulley and downwardly within said tube from the upper end thereof,

a flexible cable for lowering said tube and a device securing said cable and said spring to said tube.

6. A sanding device, comprising a hopper, a discharge tube extending through the bottom of said hopper and arranged to be raised or lowered relatively to the hopper, a clamp mounted within said tube, a cable having one end secured in said claimp and a spiral spring extending downwardly into the tube from the upper end thereof and having its lower end secured to said clamp.

7. A sanding device, comprising a hopper, a discharge tube extending through the bottom of said hopper and arranged to be raised or lowered relatively to the hopper, a sheet metal scraper through which said tube slides comprising an outer flange and a central upwardly tapered portion closely surrounding said tube, a base in which said scraper is mounted and a collar removably secured in said base and holding said scraper in its operative position.

8. A sanding device, comprising a hopper, a discharge tube extending through the bottom of said hopper and arranged to be raised or lowered relatively to the hopper, means for normally holding said tube in its elevated position, and means for lowering said tube comprising a cable secured to the tube, a guide through which the cable runs, a pulley over which the cable is guided and to which said guide is secured, and a two-part housing for said pulley, said parts of said housing being angularly adjustable with reference to each other about the axis of rotation of the pulley.

In testimony whereof we have signed our names to this specification.

FRANK W. KALLOM.
PETER S. TOENNESEN.