C. SPENCER.

SANDING DEVICE.

APPLICATION FILED FEB. 28, 1922.

1,428,814.

Patented Sept. 12, 1922.

2 SHEETS—SHEET 1.

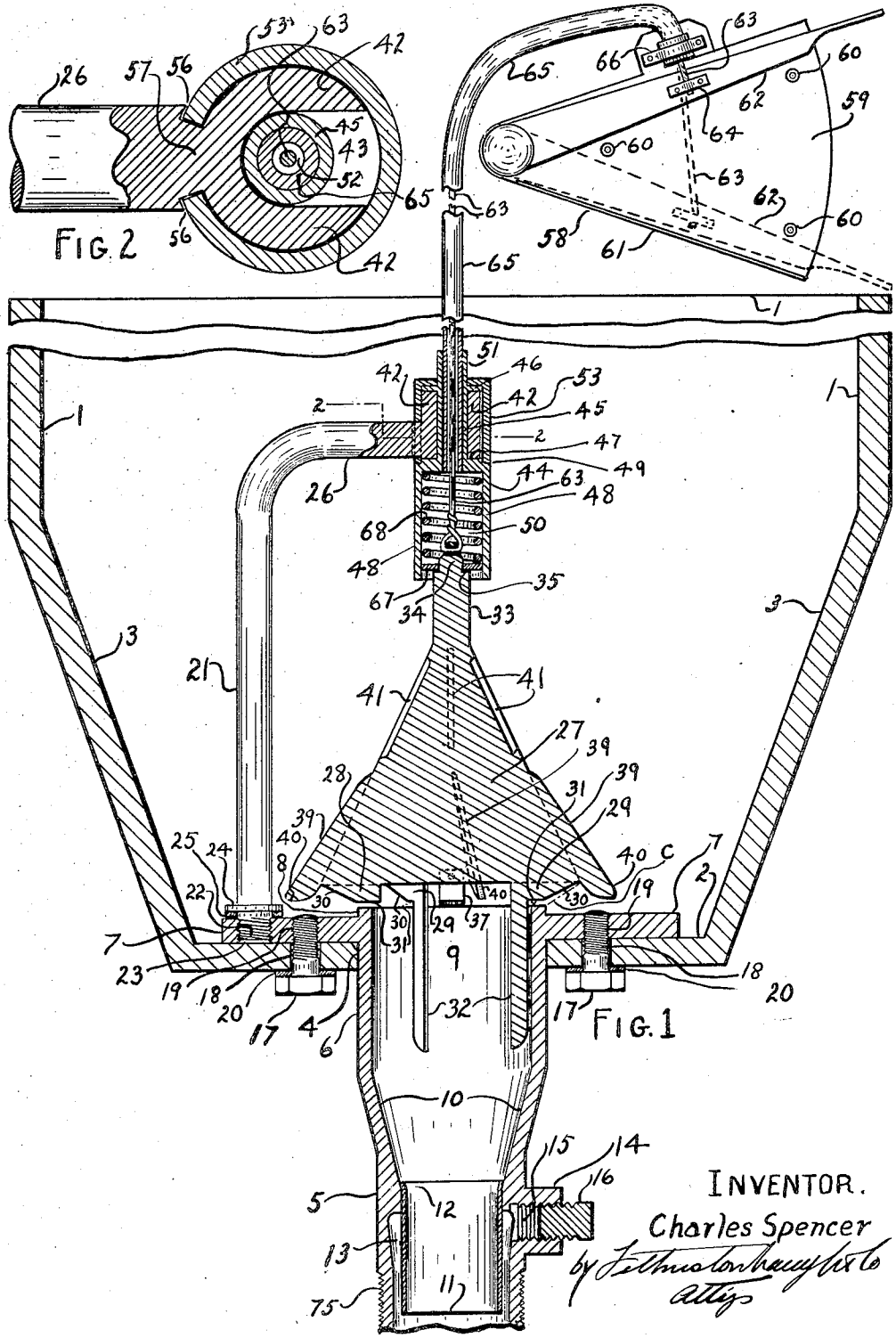


FIG. 2

FIG. 1

INVENTOR.

Charles Spencer

by Fitzmaurice Barney & Co

attys

C. SPENCER.

SANDING DEVICE.

APPLICATION FILED FEB. 28, 1922.

1,428,814. Patented Sept. 12, 1922.

2 SHEETS—SHEET 2.

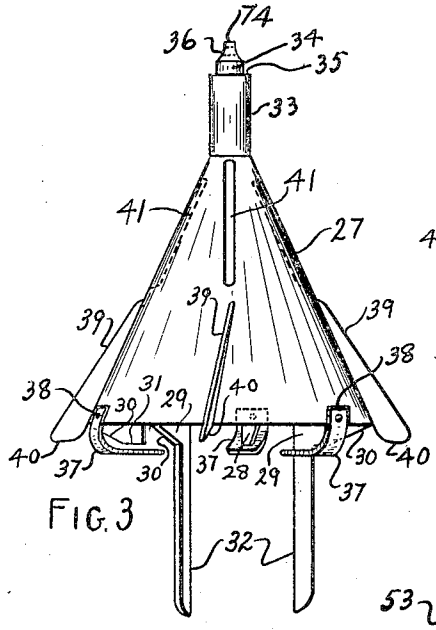


FIG. 3

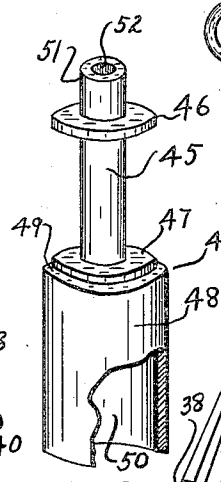


FIG. 6

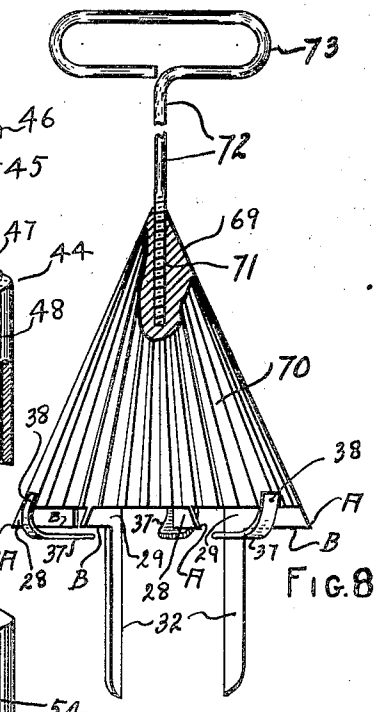


FIG. 8

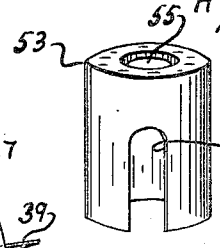


FIG. 7

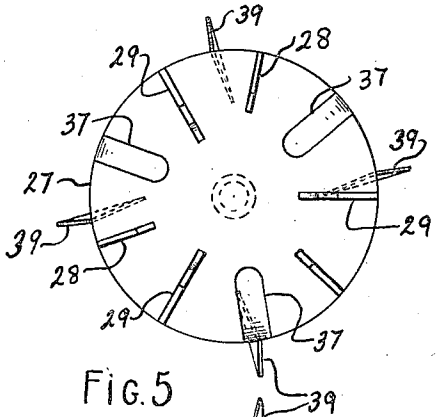


FIG. 5

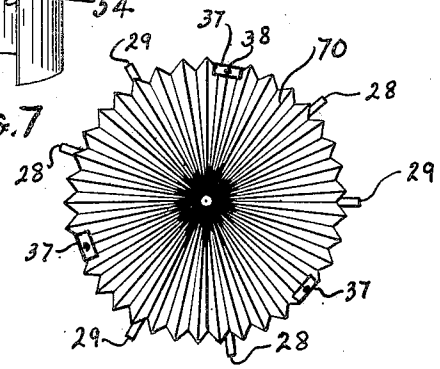


FIG. 9

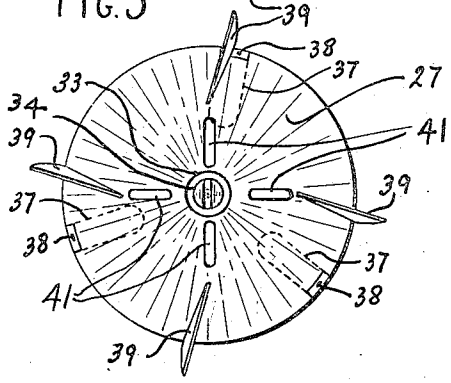


FIG. 4

INVENTOR

Charles Spencer

by Fitzgerald, Brooks & Co

Attys

Patented Sept. 12, 1922. 1,428,814

UNITED STATES PATENT OFFICE.

CHARLES SPENCER, OF HAMILTON, ONTARIO, CANADA.

SANDING DEVICE.

Application filed February 28, 1922. Serial No. 539,954.

To all whom it may concern:

Be it known that I, CHARLES SPENCER, a subject of the King of Great Britain, and a resident of the city of Hamilton, in the county of Wentworth, Province of Ontario, Dominion of Canada, have invented certain new and useful Improvements in Sanding Devices, of which the following is a specification.

My invention relates to improvements in sanding devices for railways and the like, the chief object of the present invention being to insure a full and free flow of sand from the sand container. Further objects will appear in the following specification.

My invention consists essentially of a sand container having a discharge orifice in the bottom thereof, an upwardly directed cone shaped cap associated with the discharge orifice and supported in spaced relation thereabove, means for raising and lowering the cap above the orifice, means for oscillating the cap about its vertical axis simultaneously with the aforesaid up and down movement, sand agitating elements on the inclined peripheral surface of the cone shaped cap, the cap being normally supported in spaced relation above the discharge orifice in a position to shut off the flow of sand thereinto, the sand being free to flow into said orifice as the cap is raised, all as hereinafter more particularly described and illustrated in the accompanying drawings in which:

Fig. 1 shows in sectional elevation my invention applied to a sand container, the container and an operating cable for the device being broken away intermediately.

Fig. 2 is a fragmentary section on the line 2, 2 of Fig. 1.

Fig. 3 is a side elevation of one form in which a cone shaped cap, used in my invention, may be made.

Fig. 4 is a top plan view of Fig. 3.

Fig. 5 is a bottom plan view of Fig. 3.

Fig. 6 is a perspective view of a mounting used in my invention, partly broken away to show the construction.

Fig. 7 is a perspective view of a thimble shaped retaining member used in my invention.

Fig. 8 is a side elevation, partly broken away, showing a modified form in which the cone shaped cap may be made.

Fig. 9 is a top plan view of Fig. 8.

In the drawings like characters of reference indicate corresponding parts in the different views.

1 indicates any ordinary sand container, 2 being the bottom and 3 the inclined lower portions of the side walls thereof. The bottom 2 is provided with an orifice 4.

5 is an open ended tubular discharge element having the upper cylindrical portion 6, carrying the flange 7 adjacent to the upper end thereof.

The cylindrical portion 6 projects slightly above the top of the flange 7 at 8 which upwardly disposed portion will be referred to hereinafter.

The upper portion 9 of the bore of the discharge element 5 is cylindrical, below which portion the bore tapers inwardly at 10, thus forming a restricted portion of the bore.

11 is an open ended cylindrical tube detachably carried within the element 5 and extending downwardly from the bottom of the tapering portion 10. The upper end of this tube is slightly flared at 12 for retaining it in place.

The bore of the element 5 surrounding the greater portion of the tube 11 is of greater diameter than said tube so that an annular chamber 13 is formed about said tube.

14 is a boss formed on the element 5 and having a threaded orifice 15 extending therethrough, which communicates with the upper end of the annular chamber 13. 16 is a threaded plug closing said orifice.

The discharge element 5 extends downwardly from the bottom of the container 1, the cylindrical portion 6 engaging the orifice 4 and the flange 7 resting upon the bottom of the container. 17 are cap screws extending upwardly through orifices 18 in the bottom of the container and engaging threaded orifices 19 in the flange 7.

20 are spring washers.

The lower end of the discharge element 5 is threaded at 75 to receive the usual sand delivery pipe which conveys the sand to its point of deposit on the rail.

21 is an upright standard, the lower end

of which is threaded at 22 and engages a similarly threaded orifice 23 in the flange 7.

24 is a collar carried by the standard 21 and 25 is a spring washer.

The upper end of the standard 21 is bent to form a horizontal arm 26 the purpose of which will be referred to hereinafter.

27 is a solid metal cone.

About the base of the cone are the integrally formed spaced depending blades 28 and 29. The under edge of each of the blades 28 and 29 is inclined inwardly and downwardly at 30 from the circumference of the base of the cone and terminates in the horizontal portion 31.

The blades 29 extend downwardly to form the guide fingers 32, the outer edges of which engage the wall of the cylindrical bore 9, for locating the position of the cone and maintaining it centrally above the orifice in the discharge element 5.

33 is an integrally formed cylindrical portion extending upwardly from the top of the cone and terminating in a portion 34 of reduced diameter thus forming an upwardly disposed shoulder at 35.

The upper end of the portion 34 is formed into a lug 74 having an orifice 36 extending therethrough.

37 are bent springs secured at 38 in recesses in the lower edge of the cone and extend radially inward in spaced relation below the base of the cone.

39 are vanes equally spaced circumferentially about the lower portion of the inclined surface of the cone and are pitched or inclined to the axis of the cone. These vanes extend downwardly at 40 below the base of the cone for a purpose as will hereinafter appear.

41 are a series of corrugations formed on the upper portion of the inclined surface of the cone and are spaced circumferentially thereabout. These corrugations are parallel to the longitudinal axis of the cone.

The horizontal arm 26 of the standard 21 extends inwardly and terminates in a cylindrical portion 42 having a recess 43 formed therein, the inner portion of said recess being circular and disposed concentrically above the axis of the discharge element 5 and cone 27.

44 is a mounting having the upper cylindrical portion 45 adapted to engage within the recess 43 and carrying the spaced flanges 46 and 47 adapted to engage the top and bottom faces of the portion 42, thus supporting said mounting 44 upon the standard 21 concentrically above the cone.

48 is a depending cylindrical portion of increased diameter extending downwardly from the flange 47, and 49 is a shoulder formed at the junction of the flange 47 with the depending portion 48.

The depending portion 48 is provided with a cylindrical recess 50 for a purpose as will appear.

51 is a cylindrical portion of the member 44 extending above the flange 46.

The member 44 is provided with an axial passageway 52 extending therethrough and communicating with the upper end of the recess 50.

53 is a thimble shaped retaining member having a longitudinal cut-away portion 54 extending upwardly from the lower end thereof and partially of the length of the thimble. The upper end of the thimble is provided with the central orifice 55.

The thimble 53 is adapted to engage the upper portion of the mounting 44 in such a way that the peripheral edges of the flanges 46 and 47 slidably engage the bore of the thimble and the top portion 51 of the mounting 44 extends through the orifice 55 in the top of the thimble.

In the mounted position the lower end of the thimble engages the shoulder 49.

The inner end of the horizontal arm 26 is provided with recesses 56 forming between them a neck 57 which neck is adapted to engage the cut-away portion 54 of the thimble (see Fig. 2).

58 is an operating device comprising the plate 59 adapted to be secured in place by screws 60 and carrying the raised flange 61 along its lower edge.

62 is an operating lever pivotally carried by the plate 59 and 63 is a flexible steel cable having one end secured to the lug 74 of the cone and the other end secured to the operating lever 62 at 64.

65 is a flexible tubular casing rigidly secured at one end, such as by soldering, within the axial passageway 52 of the mounting 44 and rigidly secured at the other end, such as by the clamp 66, to the plate 59. The flexible steel cable 63 extends through the flexible casing 65.

The cable 63 and casing 65 constitute a flexible control connection similar to the well known Bowden wire.

67 is an annular washer carried by the portion 34 of the cone and supported upon the shoulder 35.

68 is a coil spring mounted within the bore 50 of the mounting 44 and having its upper end engaging the inner end of said bore and its lower end engaging the washer 67.

In the modification shown in Figs. 8 and 9, the construction of the cone 69 is very much similar to that already described with the exception that in place of providing the depending ribs 28 and 29 with the inwardly and downwardly inclined edge 30, these ribs are constructed with the outer edge thereof inclined outwardly in alignment with the projected inclined surface of the cone (see at A in Fig. 8).

The horizontal under face of these ribs

is similar to the under face 31 of the previously described ribs 28 and 29 with the exception that it is slightly longer (see at B in Fig. 8).

In this modified construction the pitched vanes 39 and the corrugations 41 are replaced by the corrugations 70 which cover the entire inclined surface of the cone.

The construction and disposition of the springs 37 is identical in this case with that already described. Also in this modified construction the portion 33 and associated parts are omitted and the upper end of the cone is provided with a threaded axial orifice 71 into which is fitted an upwardly extending shaft 72, the lower end of which is threaded to engage the orifice 71 and the upper end formed into a handle portion 73.

The construction and operation of my invention is as follows:

Consider first the application illustrated in Figs. 1 to 7 inclusive.

The manner of mounting the device within the container will be clear from an examination of Fig. 1 taken in conjunction with the foregoing description and is briefly as follows.

The discharge element 5 is mounted within the orifice 4 in the bottom of the container and is secured in place by the cap screws 17.

The standard 21 may be secured to the element 5 either before or after mounting the latter in the container.

One end of the flexible casing 65 is passed through the orifice 55 in the thimble 53 and is then soldered in position within the passageway 52 of the mounting 44, while the other end is secured to the plate 59 of the operating device 58, which device is mounted in a convenient position to be operated by the driver of the vehicle.

The coil spring 68 is inserted within the recess 50 of the mounting 44.

The washer 67 is mounted upon the portion 34 of the cone so as to engage and be supported by the shoulder 35.

One end of the flexible cable 63 is secured to the cone by passing it through the orifice 36 in the lug 74 and the whole is then passed upwardly into the lower end of the mounting 44, the washer 67 being a sliding fit in the recess 50.

The other end of the cable 63 is then secured to the lever 62 at 64.

The cone 27 is now mounted over the discharge element 5 by inserting the guide fingers 32 thereinto, which fingers maintain the cone centrally located above the discharge orifice.

The mounting 44 and associated parts are now supported by the standard 21 by engaging the portion 45 within the recess 43. It is to be noted that since the flanges 46 and 47 engage respectively the top and bottom faces of the portion 42 of the standard, that the mounting 44 is held against vertical movement. In order to lock it against accidental disengagement laterally from the standard, the thimble 53 is provided, and it will be evident that when this is moved downwardly into its operative position (see Figs. 1 and 2), disengagement of the mounting 44 from the standard 21 is rendered impossible.

The springs 37 extend below the bottom horizontal edges 31 of the ribs 28 and 29 and thus the cone is normally supported so that these bottom edges 31 are situated above the top edge of the discharge element 5. This provides a certain degree of resiliency to the support of the cone, since normally it is free to move downwardly a slight amount against the action of the springs 37, until the edges 31 of the ribs 28 and 29 engage the top edge of the discharge element 5.

It is to be noted that the engagement between the horizontal bottom edges 31 of the ribs 28 and 29 and the top edge of the discharge element 5 forms a means of limiting the downward movement of the cone and insures that in its lowest position the base of the cone will lie above the top of the discharge element, which distance is governed by the depth at which the edges 31 lie below the base of the cone. This provision is made to prevent the undue blocking of the discharge orifice, which would occur if the cone were free to move downwardly too close over the discharge orifice.

To consider now the operation of the device.

Consider the parts to be in the normal position of rest shown in Fig. 1 in which no sand is flowing.

In this position the springs 37 are supporting the cone freely above the discharge orifice, and the sand about said discharge orifice is lying at rest on an incline indicated by the broken line C in Fig. 1, joining the outer edge of the base of the cone and the top edge of the upwardly disposed portion 8 of the discharge element.

The angle of this incline is slightly less than the angle of rest of the sand so that normally the sand does not flow into the discharge element 5 but when the cone is raised this angle, formed by the line C, joining the outer edge of the cone to the upper edge of the portion 8, will be increased and as soon as the angle exceeds the angle of rest of the sand, the sand will begin to flow into the discharge element and when the cone is lowered the flow will again be cut off.

The driver of the vehicle operates the device by depressing the lever 62 from the position shown in full lines in Fig. 1 to the dotted position, the flange 61 forming a stop for limiting the downward movement of the lever.

In this operation the flexible cable 63 is drawn upwardly through the casing 65,

which in turn draws the cone 27 upwardly against the compression of the spring 68, the cylindrical portion 33 at the top of the cone passing upwardly into the recess 50 of the member 44.

Immediately the lever 62 is released the compression of the spring 68 forces the cone downwardly into its initial position.

During the raising and lowering of the cone, the depending fingers 32 engaging the bore of the portion 9 of the discharge element form guides for the cone and insure that it will always return to its proper position over the discharge orifice.

In order to overcome the well known tendency of the sand to become caked, thus seriously interfering with its free flow into the discharge orifice, I have provided the vanes 39 and corrugations 41 upon the outside inclined surface of the cone, with a view of agitating and breaking up the sand as the cone is raised and lowered.

To further increase this action the vanes 39 are pitched or inclined at an angle to the axis of the cone, so that as the cone is raised these inclined vanes will cause the cone to oscillate about its vertical axis and in this oscillating movement, the action of the corrugations 41 in breaking up the sand will be increased.

The inclined vanes 39 therefore constitute a means for oscillating the cone.

The agitating action is still further increased by extending the vanes 39 below the base of the cone at 40, so that as the cone rotates the depending portions 40 constitute agitators for disturbing the sand directly adjacent to the discharge orifice.

The restricted portion 10 of the discharge element is provided as a means of retarding the flow of sand through the delivery pipes to the rails and will enable a sufficiently large discharge orifice communicating with the container to be used to insure the necessary quantity of sand being fed.

In some instances it may be desirable to employ a cone which will be operated directly by hand, in which case the modified arrangement shown in Figs. 8 and 9 would be suitable.

In this arrangement the cone is provided with a simple shaft 72 extending upwardly therefrom and terminating in a handle 73.

The handle 73 would project above the top of the sand in the container and the device would be operated by raising and lowering the cone directly by hand.

In this case the inclined vanes 39 are not necessary, as no automatic means of oscillating the cone is required since it can be readily oscillated by hand while it is being raised. In the form illustrated the outer surface of the cone is covered with straight corrugations 70 which will effectively agitate and break up the sand as the cone is raised and rotated.

In this case the springs 37 are identical with those already described, but a slight modification is made in the shape of the depending ribs 28 and 29 whereby the inwardly inclined edges 30 are replaced by the outwardly projecting pointed portions A. These portions A will have the same action as the downwardly projecting portions 40 of the vanes 39 previously explained.

A valuable feature of my invention is that free ventilation of the sand about the discharge orifice is permitted since air is free to pass upwardly through the discharge element 5 and to contact with the sand about the base of the cone. Also since the cone is held at all times in spaced relation above the discharge opening this opening is never closed to the passage of air.

It is to be noted that the complete assembly comprising the discharge element 5, with the standard 21 and parts supported thereby including the cone 27, may be supplied as a unit adapted to be fitted to any suitable sand container and therefore my invention may be conveniently and inexpensively fitted to practically any vehicle already having a sand container, without the necessity of supplying a complete new sanding apparatus.

A further important feature of my invention is that there are no operating rods or moving mechanism located under the vehicle to accumulate mud and become clogged up or frozen thus rendering the sander inoperative.

While I have described my invention in a more or less specific form it is of course to be understood that various modifications may be made in the exact form illustrated without departing from the spirit of the invention or the scope of the claims and therefore the exact forms shown are to be taken as illustrative only and not in a limiting sense.

For instance many other forms of vanes and corrugations might be used on the cone and other ways of causing rotation of the cone might be employed.

Also while I have particularly described the operation of what might be termed a mechanically operated sander, this mechanical device might be used in combination with sanders of the suction or air operated type. For instance, by removing the plug 16 (see Fig. 1) and connecting a compressed air supply to the orifice 15, a suction feed could be applied. In this way the device may be used as a mechanically operated sander, or a suction sander, or as a combination of the two.

From the foregoing it will be evident that I have devised improvements in sanding devices which while permitting of a very sim-

ple and inexpensive construction will also result in great reliability and overcome the trouble hitherto experienced with sanding devices, of the sand packing and caking about the discharge orifice and putting the sander out of action.

What I claim as my invention is:

1. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, and means for raising and lowering said cap.

2. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, and means for rotating said cap.

3. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, means for raising and lowering the cap, and means for rotating the cap.

4. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, means for raising and lowering the cap vertically above the discharge orifice, and means for rotating the cap simultaneously with said vertical movement thereof.

5. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove and agitating elements on the cap.

6. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, and protuberances on the upper face of the cap.

7. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, protuberances on the upper face of the cap, means for raising and lowering the cap vertically above the discharge orifice, and means for rotating the cap.

8. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, means for raising and lowering said cap, depending guides carried by the cap and engaging the discharge orifice for guiding the cap during the aforesaid raising and lowering movement.

9. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported thereabove, said cap being free to move vertically up and down above the orifice, and stop means for limiting the downward movement of the cap to maintain said cap at all times in spaced relation above the discharge orifice.

10. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, and means for raising and lowering said cap above the discharge orifice.

11. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, and means for rotating the cap about its vertical axis.

12. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, means for raising and lowering said cap vertically above the discharge orifice, and means for rotating the cap about its vertical axis simultaneously with said vertical movement thereof.

13. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, and agitating elements on the cone shaped cap.

14. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, and protuberances on the inclined peripheral face of the cone.

15. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, protuberances on the inclined peripheral face of the cone, means for raising and lowering the cone shaped cap vertically above the discharge orifice and means for rotating the cap.

16. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an up-

wardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, protuberances on the inclined peripheral face of the cone, means for raising and lowering the cone shaped cap vertically above the discharge orifice and means for rotating the cap simultaneously with said vertical movement thereof.

17. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, pitched vanes carried by the inclined peripheral face of the cap and means for raising and lowering the cap.

18. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, pitched vanes carried by the inclined peripheral face of the cap and extending below the base thereof, and means for raising and lowering the cap.

19. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, means for raising and lowering the cap, depending guides carried by the base of the cap and engaging the discharge orifice for guiding the cap during the aforesaid rising and lowering movement.

20. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported thereabove, said cap being free to move vertically up and down above the orifice, and stop means for limiting the downward movement of the cap to maintain said cap at all times in spaced relation above the discharge orifice.

21. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported thereabove, said cap being free to move vertically up and down above the orifice, depending ribs carried by the base of the cone, said ribs constituting stops for supporting the cap in spaced relation above the discharge orifice.

22. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, means for withdrawing the cap away from the discharge orifice, and spring means for returning the cap to its initial position.

23. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, means for withdrawing the cap away from the discharge orifice, spring means for returning the cap to its initial position, and protuberances on the upper face of the cap.

24. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of a cap associated with said orifice and movably supported in spaced relation thereabove, means for withdrawing the cap away from the discharge orifice, spring means for returning the cap to its initial position, and means for rotating the cap simultaneously with its movement away from the discharge orifice.

25. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, means for raising the cap vertically away from the discharge orifice, and spring means for returning the cap to its initial position upon the release of said raising means.

26. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, means for raising the cap vertically away from the discharge orifice, spring means for returning the cap to its initial position upon the release of said raising means, and protuberances on the inclined peripheral face of the cone shaped cap.

27. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, means for raising the cap vertically away from the discharge orifice, spring means for returning the cap to its initial position upon the release of said raising means, and means for rotating the cap simultaneously with said vertical movement thereof.

28. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, means for raising the cap vertically away from the discharge ori-

fice, spring means for returning the cap to its initial position upon the release of said raising means, protuberances on the inclined peripheral face of the cone shaped cap, and means for rotating the cap simultaneously with said vertical movement thereof.

29. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, means for raising the cap vertically away from the discharge orifice, spring means for returning the cap to its initial position upon the release of said raising means, and pitched vanes carried by the inclined peripheral face of the cone shaped cap.

30. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice, and movably supported in spaced relation thereabove, a stationary head supported above the cone, a compression spring having one end engaging the head and the other end engaging the top of the cone shaped cap, a cable secured to the cap and extending freely upwardly through the stationary head, and protuberances on the inclined peripheral face of the cone shaped cap.

31. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, a stationary head supported above the cone, a compression spring having one end engaging the head and the other end engaging the top of the cone shaped cap, a cable secured to the cap and extending freely upwardly through the stationary head, and pitched vanes carried by the inclined peripheral face of the cone shaped cap.

32. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, a stationary head supported above the cone and having a recess in the bottom thereof, a compression spring within said recess, an upwardly extending boss at the apex of the cone, said boss freely engaging the recess in the head, one end of the compression spring engaging the top end of the recess and the other end of the spring engaging the boss on the cone, and a cable connected to the boss and extending freely upwardly through the coil spring and stationary head.

33. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, a stationary head supported above the cone and having a recess in the bottom thereof, a compression spring within said recess, an upwardly extending boss at the apex of the cone, said boss freely engaging the recess in the head, one end of the compression spring engaging the top end of the recess and the other end of the spring engaging the boss on the cone, a cable connected to the boss and extending freely upwardly through the coil spring and stationary head, and protuberances on the inclined peripheral face of the cone shaped cap.

34. In a sanding device, the combination with a sand container having a discharge orifice in the bottom thereof, of an upwardly directed cone shaped cap associated with said orifice and movably supported in spaced relation thereabove, a stationary head supported above the cone and having a recess in the bottom thereof, a compression spring within said recess, an upwardly extending boss at the apex of the cone, said boss freely engaging the recess in the head, one end of the compression spring engaging the top end of the recess and the other end of the spring engaging the boss on the cone, a cable connected to the boss and extending freely upwardly through the coil spring and stationary head, and pitched vanes on the inclined peripheral face of the cone shaped cap.

CHARLES SPENCER.

Witnesses:
JOHN G. HAYWARD,
NORIUN COLES.