



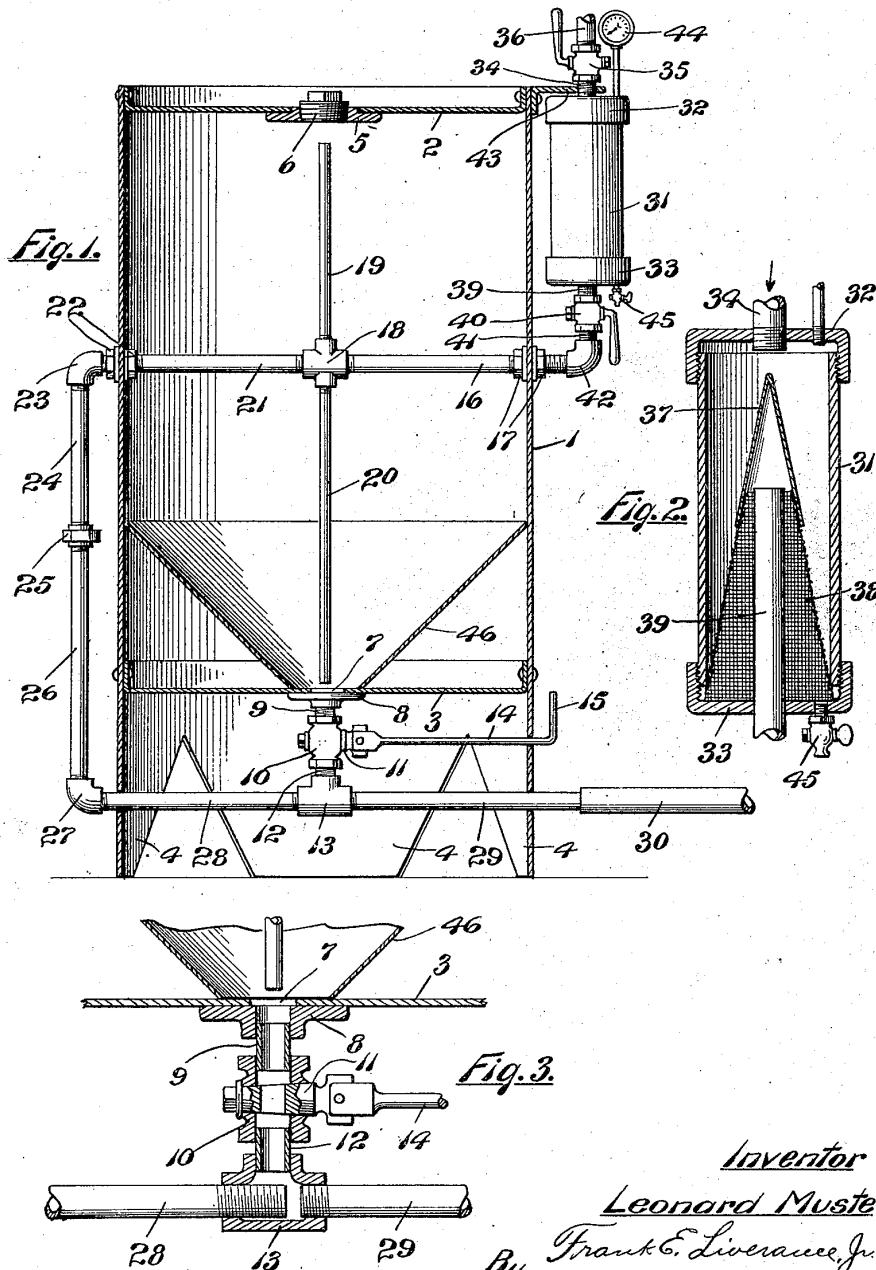
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L. MUSTE

SAND BLAST MACHINE

Filed Oct. 9, 1920





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UNITED STATES PATENT OFFICE.

LEONARD MUSTE, OF GRAND RAPIDS, MICHIGAN.

SAND-BLAST MACHINE.

Application filed October 9, 1920. Serial No. 415,838.

To all whom it may concern:

Be it known that I, LEONARD MUSTE, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Sand-Blast Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a sand blast construction for the projection of sand under air pressure against any surface to be finished by the abrasive action of the sand. It is a primary object and purpose of the present invention to make a machine of this character and equip it with means for causing an even feed of sand to be acted upon by air pressure so that at all times the sand shall flow evenly from the machine without plugging or stopping of the sand flow. A further object of the invention is to separate any water or oil from the sand or from the air going to the sand which causes the intermittent projection of wet oily sand from the machine, this being very undesirable in sand blast machines. A still further object of the invention is to provide means whereby the sand at the bottom of the sand holding receptacle shall be acted upon directly by air pressure to force it from the receptacle into the air current, and at the same time cause the entire quantity of sand in said receptacle to be forced downwardly therein by air pressure. Many other objects and purposes, all tending to simplicity of structure, cheapness of construction and repair of the same, and ease of obtaining parts for repair from regular stock carried by retailers of plumbing supplies, will appear fully as understanding of the invention is had from the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is a vertical section through the sand blast machine.

Fig. 2 is an enlarged vertical section through the oil and water separator, and

Fig. 3 is an enlarged vertical section illustrating the construction and connection of the parts through which the sand passes from the holding receptacle to the air pipe.

Like reference characters refer to like parts in the different figures of the drawing.

In the construction, a sand holding receptacle is used comprising a cylindrical shell 1 of metal, the upper end of which is closed by a top plate 2 while a bottom plate 3 is secured below the top plate but a distance above the lower end of the shell, parts of the shell below the bottom being cut away to leave feet 4 for supporting the shell on the floor. The top plate 2 has a flange 5 secured thereto having a threaded opening through it for the entrance of a closing plug 6. Sand is entered into the receptacle through the opening in the flange, this opening afterward being closed by the plug 6. The bottom also has an opening 7 made through it and a flange 8 is connected to the bottom at such opening. The flange 8 also has an opening through it, into which a nipple 9 is screwed, connecting to which is an ordinary plug valve casing 10, a plug valve 11 being rotatably mounted therein. A second nipple 12 is threaded into the lower end of valve casing 10 and a T-coupling 13 connected with the lower end of the nipple. A rod 14 is attached to the valve 11 and extends outwardly beyond the wall of the shell of the receptacle, being turned upwardly to make a handle 15 for turning the valve from open to closed position and back.

A section of pipe 16 passes through one side of the shell 1 and an air tight connection is made at the point of passage by suitable lock nuts 17 as shown. This pipe at its inner end screws into one end of a cross coupling 18. An upwardly extending pipe 19 threads into the cross at its upper side and a similar pipe 20 into the lower side, the former extending nearly to the top plate 2 and the latter nearly to the opening 7 in the bottom 3. A section 21 of pipe threads into the opposite end of the cross and passes through the opposite side of the shell, having an air tight connection through lock nuts 22. An elbow 23 is connected to the outer end of pipe 21 with which a vertical section of pipe 24 connects, it in turn being connected by a union 25 with a second vertical pipe 26. Pipes 24 and 26 parallel the side of the shell, and pipe 26 at its lower end is joined by an elbow 27 with one end of a horizontal pipe 28, the other end of which threads into one end of the T-coupling a relatively long distance so as to pass by the lower end of the nipple 12 as shown in Fig. 3. A pipe 29 threads



into the opposite end of the T 13 and extends outwardly a distance, having one end of a hose 30 connected thereto. The hose may be of any desired length and equipped at its end with the usual nozzle, the same as in all sand blast machines.

The air which is to pass through the pipes described is in many cases more or less impregnated with water and oil, the latter coming from the air compressor. I have devised a novel separator for the oil and water which is interposed in the air passage pipes between the air reservoir and the sand blast machine. In the construction of the separator, a length of large pipe 31 is used and threaded at both ends to receive upper end lower closing caps 32 and 33. The air from the air compressor or air tank passes into the compartment thus made through a pipe 34 threaded through the upper cap 32. Preferably, a shut-off valve 35 is placed in the entrance pipe, indicated at 36, and the part 34 is a nipple connecting the valve with the cap 32. Within the separator, a cone 37 of metal is located at the upper end of a conical screen 38, the point of the cone coming directly below the lower end of nipple 34, and the screen extending outwardly to the bottom of the separator. The outlet pipe 39 from the separator extends through the screen and into the lower portion of the cone 37, passing through the bottom cap 33 and having threaded connection with a second shut-off valve 40, from the lower end of which a nipple 41 extends and connects to the outer end of the section of pipe 16 by means of an elbow 42. The separator lies alongside of the shell 1 near the upper end thereof and is braced by a bracket 43 to hold the same stationary. A gage 44 is connected with the upper cap of the separator, and a drain cock 45 with the lower cap as shown.

Within the sand containing receptacle, a funnel-like member 46 of sheet metal is placed, its lower end coming around the opening 7 in the bottom 3, the sand being carried down the sides of the member to the opening.

In operation, the air coming to the separator strikes against the point of cone 37 and is directed outwardly against the inner sides of the wall 31 and must come back through the screen 38 in order to pass out through pipe 39. Any oil or water in the air is screened therefrom and goes to the bottom of the separator where it may be drained off through the cock 45. The air, freed of the oil and water passes from the separator and through pipe 16 to the cross 18, and thence upwardly through pipe 19 and down through pipe 20, this causing the sand to have air pressure exerted upon it entirely over its upper surface, while the pressure of air at the lower end of pipe 20 forces the

sand through the opening 7, the nipples 9 and 12 and through the opening in valve 11 when turned to proper position. The excess of air passes out through pipe 21 and therefrom through the various connections to the T 13 passing from the end of pipe 28 and causing a suction on the sand which draws the sand into the air current as it passes outwardly through pipe 29 and hose 30. The pressure of air at the lower end of pipe 20 insures that the sand shall not clog or block in passing through opening 7 to the T 13 and stops the sand from packing in the bottom around and above opening 7 from pressure from above.

This construction of sand blast machine is effective and may be manufactured at low cost. All of the parts can be made with comparatively simple threading tools, except such parts as are always carried in stock in plumbing supply houses where they can be readily obtained. The control of the different valves are all at the same side of the machine, and easily accessible. Access to any part of the machine for repair is easy, practically any part liable to need any repair being on the outside and easily reached. Repair parts likely to be needed are found always in stock or can be obtained at any plumbing shop. The oil and water separator is simply constructed and may be cheaply manufactured. The stand is always free from accumulations of water or oil and dry sand is sure to be delivered from the machine. Clogging or stopping of the sand from the sand containing receptacle is insured against. In every respect the construction is practical and efficient, and may be manufactured and marketed at low cost. The appended claims define the invention and I consider myself entitled to all forms of construction falling within their scope.

I claim:

1. In a construction of the character described, a container for sand having a bottom with an outlet thereto, an air conduit pipe passing horizontally through the container between its upper and lower ends, a second pipe located substantially horizontally under the bottom of the container, a third pipe connecting one end of each of the first and second pipes, means located between and connecting the bottom of the container with said second pipe, whereby sand in the container may be passed therefrom through the outlet to said second pipe, two oppositely extending vertical branch pipes connected with the first pipe inside the container, one extending nearly to the upper side of the container, and the other to a point directly over said bottom outlet, and means for controlling the passage of sand from the container to said second pipe.

2. In a construction of the character described, a container for sand having a bot-



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5 tom with an outlet thereto, an air conduit
pipe passing transversely through the con-
tainer between its upper and lower ends, a
four-way coupling interposed in the length
of said pipe within the container, upper and
lower branch pipes attached to said coup-
ling, said upper pipe terminating near the
upper end of the container and said lower
pipe directly over the opening in the bot-
tom of the container, a vertical pipe con-
10 nected to one end of said first pipe, a second
horizontal pipe connected to the lower end

of the vertical pipe and passing under the
container, conduit connections between said
container and the second horizontal pipe 15
for the passage of sand from the container
through said bottom opening to the second
horizontal pipe, and means attached to the
opposite end of the first pipe to filter the
air before its passage to said pipe, substan- 20
tially as described.

In testimony whereof I affix my signa-
ture.

LEONARD MUSTE.