W. P. MOTT.

SAND BLAST APPARATUS.

APPLICATION FILED OCT. 9, 1909.

975,782.

Patented Nov. 15, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

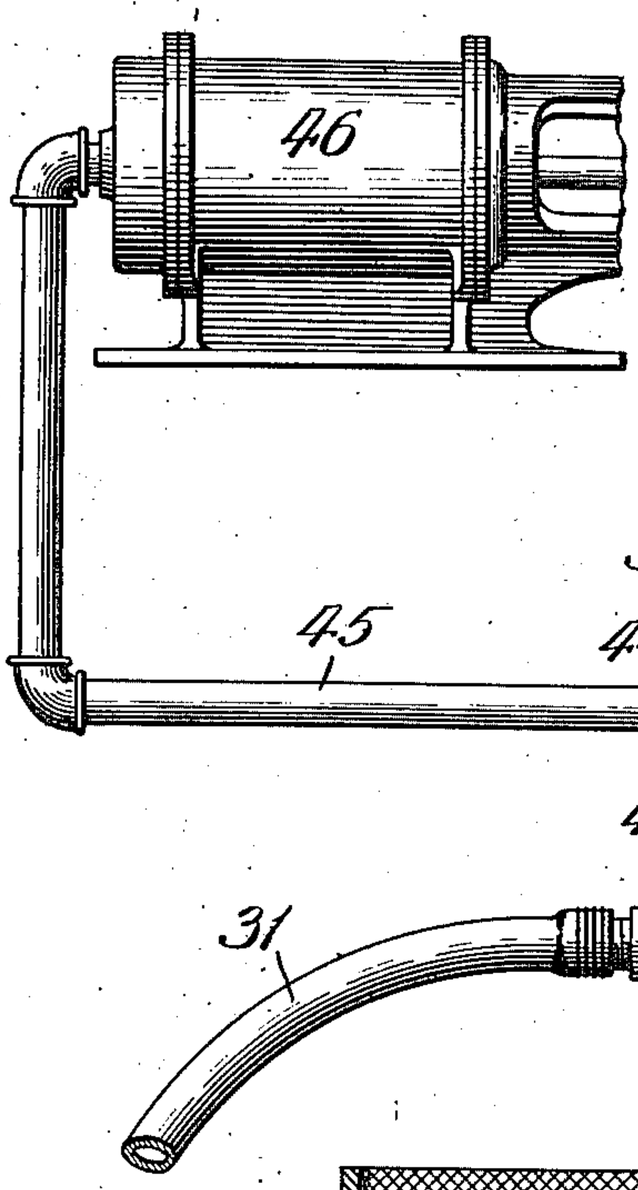
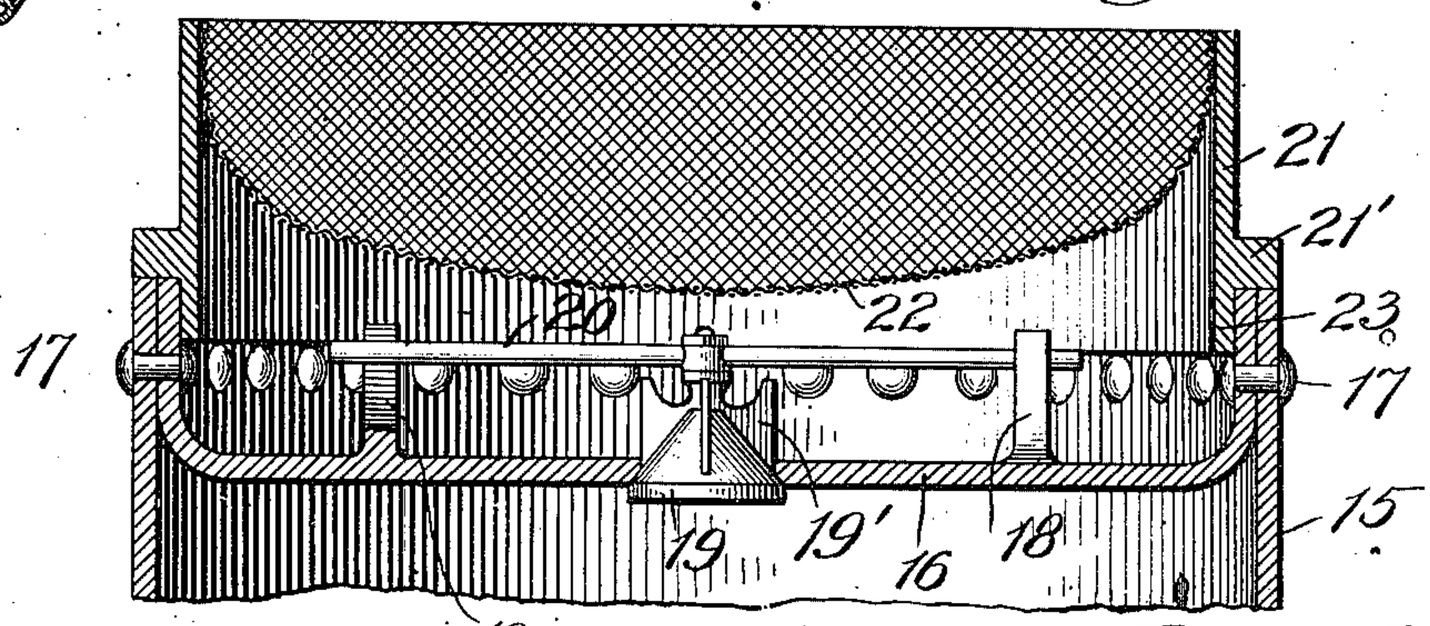


Fig. 2.



Witnesses:

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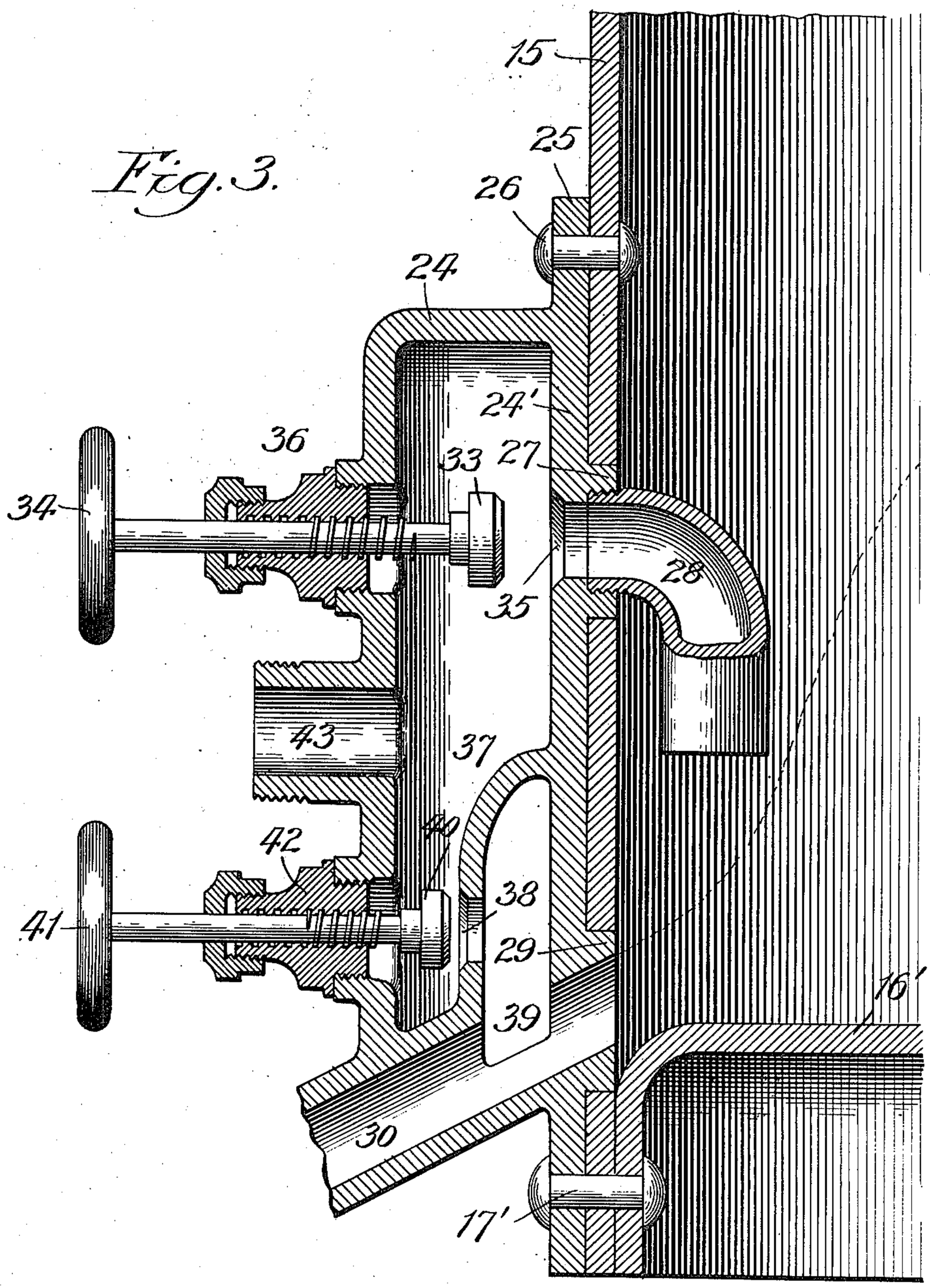
2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM P. MOTT, OF CHICAGO, ILLINOIS.

SAND-BLAST APPARATUS.

975,782. Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed October 9, 1909. Serial No. 521,908.

To all whom it may concern:

Be it known that I, WILLIAM P. MOTT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sand-Blast Apparatus, of which the following is a specification.

The principal objects of my invention are to provide a new and improved device for handling sand for sand blast cleaning purposes and for regulating the supply of the same.

A further object of my invention is to provide a storage chamber for sand in connection with apparatus for regulating the passage of the sand therefrom to the point where it is utilized in a cleaning jet.

Another object is to provide a storage tank with means for removing obstructions from the outlet thereof.

A still further object is to provide a storage tank for sand with means for readily introducing the sand therein for refilling the same.

These and various other objects will be made more readily apparent in the following specification and claims taken with the accompanying drawings.

My invention is defined in the appended claims, but for the purpose of clearly explaining its principles and advantages, I have illustrated one specific embodiment in the accompanying drawings, and I now proceed to describe it in this specification.

Referring to the drawings—Figure 1 is a side elevation of the apparatus. Fig. 2 is a vertical section of the top part of the storage chamber, and Fig. 3 is an enlarged vertical section of the outlet regulating apparatus.

The vertical drum 15 is closed at the top by the concave head 16 secured by the rivets 17. A similar head 16′ at the bottom is secured by the rivets 17′. On the top head 16 are two inclined guides 18 on which rests the cross arm 20 carrying the valve 19. This valve 19 is adapted to close a central opening in the top head 16, the valve being held tight on its seat by rotating the cross arm 20, so as to cause its ends to ascend the inclined guides 18. When the valve 19 is to be opened, the arm 20 is rotated in an opposite direction, so as to drop the valve 19 down and thus afford an opening between the guide wings 19′. A rim 21 stands on top of the upper edge of the drum 15 and supports the sieve 22. An inner lip 23 acts as a guide to hold the rim 21 definitely in place, a shoulder 21′ being provided to rest upon the top edge of the drum.

Affixed to the side of the drum 15 at its lower end by means of rivets 26 through the flange 25 is the casing 24 shown in section in Fig. 3. One wall 24′ of this casing fits tight against the drum wall 15, and has two nipples or flanges 27 and 29 which project through holes in the side wall of the drum 15. The elbow 28 is screwed into the nipple 27 and projects downwardly therefrom as shown. The conduit 30 leads from the nipple 29 through the control valve 32 to the hose 31 which leads to the sand blast jet.

The nipple 27 is surrounded on the inner face of the casing 24 by a valve seat 35 adapted to be engaged and closed by the valve 33 which may be manipulated by the handle 34. The stem for the valve 33 has a screw threaded engagement with the bushing 36, which is screwed into an opening in the side wall of the casing 24.

The partition 37 extends across the lower part of the casing 24, as shown in Fig. 3, the smaller compartment opening at 39 into the conduit 30. The partition wall 37 has an opening therethrough with a valve seat 38 adapted to be closed by the valve head 40, which in turn may be manipulated by the handle 41. The stem of the valve 40 has screw threaded engagement with the bushing 42 screwed into an opening in the side wall of the casing 24. The casing 24 has a flanged opening 43 to which the pipe 45 is connected through the control valve 44. This pipe 45 leads from a source of compressed air, as, for example, the air cylinder 46 of an air compressor.

The mesh of the screen 22 is such that the sand will pass therethrough, any larger particles that might form obstructions, being held back however. Thus the storage chamber 15 may be charged with sand by rotating the cross bar 20, so as to lower the valve 19, the sand being thrown into the screen 22. When the storage chamber 15 is sufficiently charged, the screen 22 may be raised temporarily so as to give access to the cross bar 20. Rotation of this cross bar 20, so as to cause its ends to ascend the inclines 18, will close the valve 19. Thereafter the valve 32 may be opened. Of course, in many cases the hose 31 will lead

to a point higher than the storage chamber 15. But in any case a supply of compressed air will be relied upon to drive the sand through the conduit 30 and hose 31 to the point where it is to be applied.

The compressed air will be admitted to the chamber 24 by opening the valve 44; then by opening the two valves 40 and 33, it wil. be admitted into the conduit 30 at the opening 39 and into the sand chamber through the elbow 28. The opening of the two valves 33 and 40 and the relative extent of opening will determine the force of the air blast along the conduit 30 and hose 31 and will also determine the proportion of sand in the air. If the valve 40 is wide open and the valve 33 is nearly closed, then there will be only a small proportion of sand that will find its way down into the conduit 30 to mingle with the air entering said conduit through the opening 39. On the other hand, if the valve 33 is wide open and the valve 40 is opened only a little, then the blast of air from the elbow 28 will sweep a large quantity of sand directly into the conduit 30 and the proportion of sand to the air entering the opening 39 will be very great. It will readily be understood that between the two extremes just described, any desired quantity of air can be admitted to the pipe 31 and any desired proportion of sand can be swept along thereby. Thus it will be seen that the device described by me affords a very convenient and practicable means for regulating the force of the air blast and the proportion of sand in the air blast.

In case the sand should choke up at the opening from the chamber 15 into the conduit 30, this can readily be remedied by closing the valve 33, then opening the valve 47, and thereafter opening the valve 40. Because of the removal of back pressure in the chamber 15 by reason of opening the valve 47, it follows that when the valve 40 is opened, the air will pass through the opening 39 back into the chamber 15 and will push the obstructions back from the conduit 30.

While I have described my improved apparatus as for the purpose of discharging sand in the form of a blast for cleaning purposes, yet it will be evident that my invention is not limited in its use to the discharging of sand, but may be used for discharging other cleaning or scouring materials than sand.

I claim:

1. In a device of the class described, a sand chamber having an opening in its top wall, a valve to control said opening, a cross arm carrying the valve, and inclined guides for the ends of the cross arm.

2. In an apparatus of the character described, the combination with a chamber containing a cleaning or scouring material, of an outlet conduit for said material, two compressed air supply conduits for controlling the discharge of material from said chamber to said outlet conduit, and means for relatively varying the supply of compressed air through said two conduits and thereby regulating the discharge of material from said chamber to said outlet conduit.

3. In an apparatus of the character described, the combination with a chamber containing a cleaning or scouring material, of an outlet conduit for said material, two compressed air supply conduits for controlling the discharge of material from said chamber to said outlet conduit, valves separately controlling said compressed air supply conduits for relatively varying the supply of compressed air therethrough and thereby regulating the force and proportions of air and material discharged from said chamber through said outlet conduit.

4. In an apparatus of the character described, the combination with a chamber containing a cleaning or scouring material, of an outlet conduit from said chamber, a compressed air supply conduit projecting into said chamber and directed toward said outlet conduit, and means for controlling the flow of compressed air through said supply conduit.

5. In an apparatus of the character described, the combination with a chamber adapted to contain a cleaning or scouring material, of an outlet conduit from said chamber, a compressed air supply conduit projecting into said chamber and directed toward said outlet conduit, a second compressed air supply conduit communicating with said outlet conduit adjacent said chamber, and means for relatively varying the supply of compressed air through said air supply conduits, thereby regulating the discharge of the material from said chamber through said outlet conduit.

6. In an apparatus of the character described, the combination with a receptacle adapted to contain a cleaning or scouring material, of an outlet conduit leading from said receptacle, a chamber to which compressed air is supplied, a conduit leading from said chamber into said receptacle and directed toward said outlet conduit, a second compressed air supply conduit leading from said chamber into said outlet conduit adjacent said receptacle, and means for relatively varying the supply of compressed air to said air supply conduits, thereby regulating the force and proportions of the mixture of air and material discharged through said outlet conduit.

7. In a device of the class described, a sand chamber having bottom and side walls meeting at an angle, a sand outlet conduit leading from the meeting place of these walls, a branch passage for compressed air

leading into the sand outlet conduit, and a compressed air pipe projecting into the chamber above the sand outlet conduit and directed toward the same within the chamber.

8. A device of the class described, a sand chamber, a casing fastened to the side wall of the same near the bottom thereof, a compressed air supply pipe leading to the casing, a conduit leading from the chamber, passages from the casing to the chamber and from the casing to the sand conduit, and valves to control said passages.

9. In a device of the class described, a sand chamber, a casing attached to the side wall thereof, said casing comprising an outlet conduit from the chamber, a compressed air pipe leading to the casing, passages from the casing to the said outlet conduit and to the chamber, the passage to the chamber being directed toward the outlet conduit, and valves controlling both of said passages.

10. In a device of the class described, a drum in which to store sand, a casing having a flange riveted to said drum, said casing comprising an outlet conduit from the drum, a partition across the casing, a compartment on one side of the partition communicating with the outlet conduit from the drum, a passage into the drum from the casing on the other side of the partition, an opening through the partition, and valves to control said passage and opening.

11. In a device of the class described, a sand chamber, a casing attached thereto on the outer side, said casing comprising a conduit from the chamber, a partition wall across the casing with an opening therein, a passage above the partition wall from the casing into the chamber, valves controlling said opening and passage, and bushings in the casing wall to support the stems for the said valves.

12. In a device of the class described, a sand chamber, an outlet conduit leading therefrom, a compressed air inlet conduit leading into the said outlet conduit, and a valved opening from the chamber at a point remote from the said outlet conduit.

In testimony whereof, I have subscribed my name.

W. P. MOTT.

Witnesses:
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