

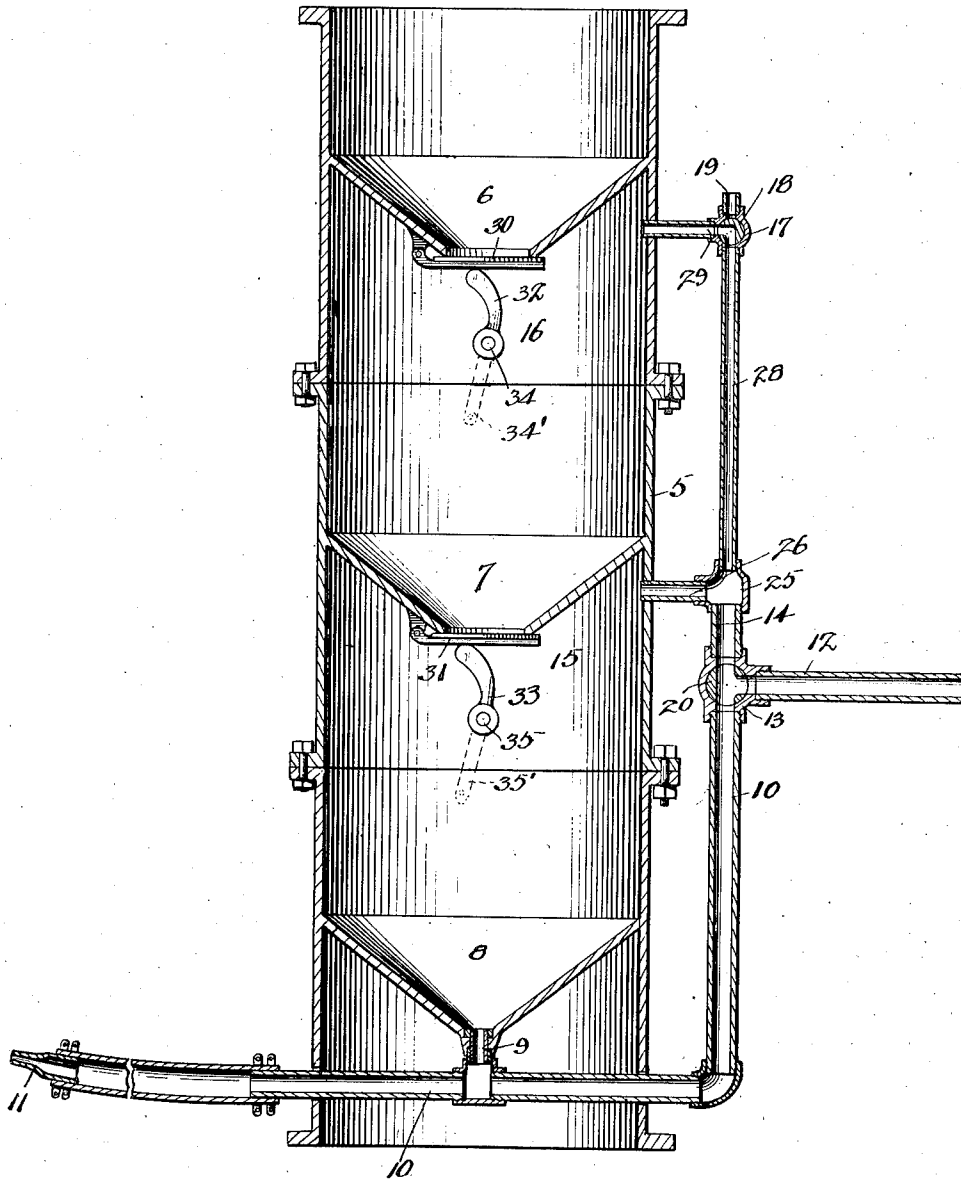
No. 699,405.

Patented May 6, 1902.

R. C. NEWHOUSE.
SAND BLAST.

(Application filed Dec. 10, 1901.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

RAY C. NEWHOUSE, OF COLUMBUS, OHIO.

SAND-BLAST.

SPECIFICATION forming part of Letters Patent No. 699,405, dated May 6, 1902.

Application filed December 10, 1901. Serial No. 85,399. (No model.)

To all whom it may concern:

Be it known that I, RAY C. NEWHOUSE, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a new and useful Sand-Blast, of which the following is a specification.

This invention relates to sand-blasts, and more particularly to that class used in cleaning stone, metals, &c., although it will be understood from the following description that it may be used for other specific purposes.

The object of the invention is to provide such a construction of sand-holding casing as will permit of the sand being drawn therefrom in suitable quantity and which will insure a proper feed should there be a tendency of the sand to choke the outlet because of being damp or from any other cause.

An additional object of the invention is to provide a construction and arrangement which will permit of the tank being recharged without stopping the operation thereof.

In the drawing forming a portion of this specification there is shown a vertical section of the apparatus, partly in elevation.

Referring now to the drawing, the apparatus consists of an upright cylindrical casing 5, having three downwardly-directed frusto-conical partitions 6, 7, and 8, and connected with the central opening of the lowermost partition 8 is an outlet-pipe 9, through which sand is adapted to pass to the pipe 10, from which it is blown through the nozzle 11 at the end thereof. The outlet-pipe 9 is in the form of a removable bushing, which may be withdrawn for substitution of a bushing of different internal diameter, so that the rate of feed of sand may be changed.

The pipe 10 extends at both sides of pipe 9 and has an air-feed pipe 12 connected therewith through the medium of a valve-casing 13, from which extends a pipe 14, leading to the compartment 15 above the partition 8 and with which compartment it is connected by means of the T connection 25 and the nipple 26. With the opposite end of the head of the T connection 25 is connected a pipe 28, which forms a continuation of the pipe 14 and which at its upper end is connected with a valve-casing 17, which in turn is connected with the compartment 16 by means of the nipple 29, said casing having also a blow-off pipe 19.

In the casing 17 is a two-way valve-plug 18, which is adapted to communicate the compartment 16 with the pipe 28 or to communicate said compartment with the blow-off pipe 19, a third position of the valve-plug acting to close all three of the pipes 28, 19, and 29.

In the casing 13 is a three-way plug 20, which is adapted for rotation to connect both pipes 10 and 14 with the pipe 12, as shown in the drawing, or to connect the pipe 12 with either of the pipes 10 and 14, so that air may be blown into the pipe 10 alone or partly into the pipe 10 and partly through the pipe 14 to the compartment 15. A third position of the valve will cut off communication of pipe 12 from both pipes 10 and 14 and at the same time will connect pipes 10 and 14.

Hinged to the under sides of the partitions 6 and 7 are flap-valves 30 and 31, which are adapted to open by gravity, and to close them rockers 32 and 33 are provided and are mounted upon shafts 34 and 35, which are taken through stuffing-boxes in the sides of the compartments and are provided at their outer ends with cranks, (shown in dotted lines at 34' and 35',) so that the shafts may be rocked to engage the rockers with the under sides of the valves and raise the latter to their places.

The operation of the apparatus is as follows: The valve 20 being closed to prevent air from entering any part of the machine, the pipe 28 being closed by the valve 18 and valves 30 and 31 being open, a suitable quantity of sand is placed in the compartment or hopper 6 and passes through the compartment 16 into the compartment 15. The valve 31 is then closed, and valve 20 is opened to communicate both the pipe 10 and compartment 15 with the feed-pipe 12. The air entering from feed or supply pipe 12 establishes a pressure in chamber 15 which is equal to that produced in the blast-pipe 10, and the sand falling by gravity into pipe 10 is carried forward by the air-current and out through the ejection-nozzle 11. It will be understood that while the compartment 16 is open to the atmosphere and compartment 15 is under pressure the valve 31 is held tightly closed, valve 18 being closed, and if it is desired to introduce sand into the machine while in operation a suitable quantity may be placed in hop-

per or compartment 6, from whence it will fall by gravity into compartment 16, valve 30 being open. The valve 30 will then be closed and air admitted to compartment 16 through the valve 18. This results in establishing a pressure within the compartment 16 equal to that in the compartment 15, when if the valve 31 be left unsupported by the rocker it will fall by gravity and allow the sand to pass into the compartment 15. The valve 31 may be then closed and the pressure let out of compartment 16 through the valve 18, when valve 30 may be opened. Then, proceeding as before, sand may be added from time to time.

It will be understood that in practice, owing to the condensed moisture in compressed air and from other causes, the sand often clogs in the opening of the bushing 9 or in the valve that may be substituted therefor, and heretofore it has been necessary to open the casing and remove all sand from the hopper before operations could be resumed. In the arrangement shown if the valve 20 be turned ninety degrees to the left from the position shown in the drawing the pressure will be reduced in the blast-pipe 10 and all the pressure will be brought to bear upon the top of the sand in the compartment 8, when the stoppage will be quickly blown out and operations resumed. If the sand shows a constant tendency to clog, as it often does, the opening to the pipe 10 may be so reduced by means of the valve 20 that the pressure in the blast-pipe 10 shall be slightly less than in compartment 15, when by reason of such inequality of pressure a steady flow of sand into the blast-pipe 10 will be insured.

If it be desired to stop the operation of the blast, the pipe 12 may be closed by means of the valve 20, as heretofore described, when the pressure in the casing and in the pipes connected thereto will be exhausted through the ejection-nozzle 11. When there is no air flowing through the pipe 10, the sand passing through the bushing 9 will pile up in pipe 10 until the bushing is full, when the flow will cease, and thus a cut-off valve between the casing and the pipe 10 at this point is not required.

In practice modifications of the specific construction and arrangement shown may be made and any suitable form of valves may be used without departing from the spirit of the invention.

What is claimed is—

1. A sand-blast comprising a casing, frusto-conical partitions arranged within the casing at different points and forming upper and lower sand-chambers, a blast-pipe connected with the lowermost partition, valves arranged at the other partitions, an air-supply pipe connected with the blast-pipe and with the individual chambers, and means for connecting the chambers and the air-supply pipe individually or simultaneously, substantially as described.

2. A sand-blast comprising a casing, upper, lower and intermediate frusto-conical partitions arranged within the casing and forming upper and lower sand-chambers, a blast-pipe connected with the lower partition, valves arranged at the other partitions, shafts provided with rockers for engaging the valves and having exterior means for operating them, an air-supply pipe connected with the blast-pipe and with the individual chambers, and means for connecting the chambers and the air-supply pipe individually or simultaneously, substantially as described.

3. A sand-blast comprising a casing having upper and lower sand-chambers, a blast-pipe connected with the lower chamber to receive sand therefrom, an air-supply pipe connected with the blast-pipe and with the individual chambers, and means for connecting the chambers and pipe individually or simultaneously with the air-pipe.

4. A sand-blast comprising a casing having upper and lower sand-chambers, a blast-pipe connected with the lower chamber to receive sand therefrom, an air-supply pipe, a pipe leading from the air-supply pipe to the blast-pipe, a pipe connecting the air-supply pipe with the lower chamber, a pipe connecting the air-supply pipe with the upper chamber, a valve for connecting the receiving-chamber or upper chamber with its pipe to equalize pressure in the chambers, and a valve for connecting the pipes of the chambers or the pipe of the blast-pipe individually or simultaneously with the air-supply pipe.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

RAY C. NEWHOUSE.

Witnesses:

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