

No. 636,279.

Patented Nov. 7, 1899.

J. M. NEWHOUSE.

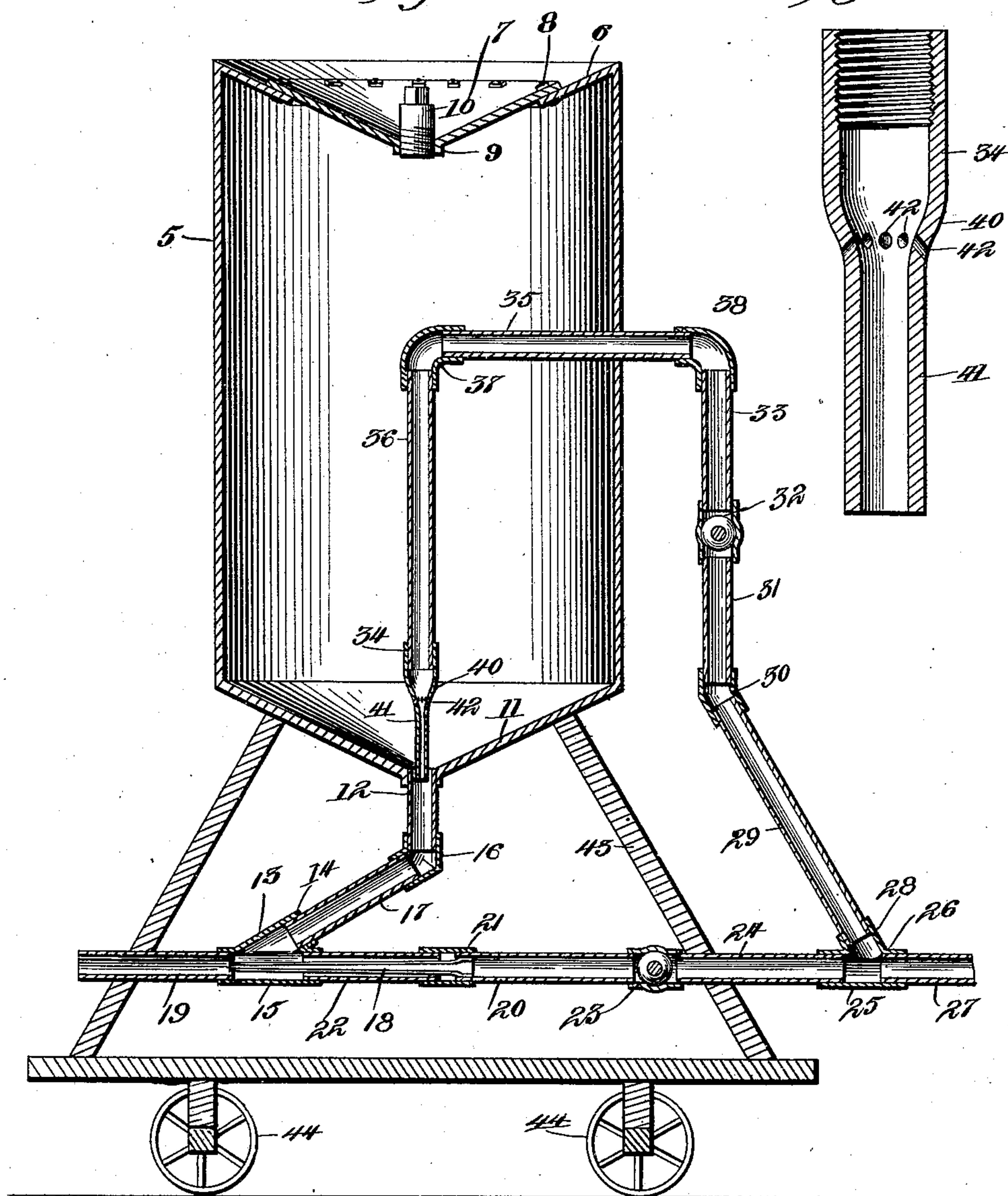
SAND BLAST.

(Application filed Aug. 10, 1899.)

(No Model.)

Fig. 1.

Fig. 2.



Witnesses

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SAND-BLAST.

SPECIFICATION forming part of Letters Patent No. 636,279, dated November 7, 1899.

Application filed August 10, 1899. Serial No. 726,806. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. NEWHOUSE, a citizen of the United States, residing at Marble Cliff, 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 designed for the cleaning of stone, metals, &c., although it will be readily seen from the following description that the structure may be adapted to any use of the sand-blast.

The object of the invention is to provide a machine in which clogging may be prevented, in which a high pressure may be maintained to supply the sand at a distant point, in which the feed of the sand may be regulated without changing the pressure, in which the pressure may be regulated without changing the feed of the sand, and a construction in which there is an economy of sand and also in which the work may be performed with a lower pressure than is ordinarily employed.

In the drawings forming a portion of this specification, and in which similar numerals of reference designate corresponding parts in both views, Figure 1 is a vertical section of the apparatus, the air-compressor and the nozzle, which may be of any construction, being omitted. Fig. 2 is a detail longitudinal section of the air-nozzle within the sand and compression chamber.

Referring now to the drawings, 5 represents a preferably cylindrical casing having a preferably reëntrant funnel-shaped upper end 6, having a central opening for the introduction of sand, and which opening has a removable and frusto-conical cover 7 attached thereto through the medium of bolts 8, the central opening of said cover having a threaded inwardly-directed flange 9, which is screw-threaded for the reception of a plug 10, the entire structure of this upper end being air-tight. The lower end 11 of the casing 5 is also funnel-shaped and projected downwardly, and leading from the central opening thereof is a pipe 12, having connection with a pipe connection 13 through the medium of the stem 14 thereof, which lies, preferably, at an angle of forty-five degrees to the head 15. Intermediate the pipe 12 and connection 13

are an elbow 16 and nipple 17, which form the suction-pipe of an air-siphon, the nozzle 18 of which passes centrally of the head 15 and enters the delivery-pipe 19, connected with the forward end of said head. The nozzle 18 is tapered from its base toward its discharge-point, as readily understood, and the rear enlarged end of the nozzle has an air-tight connection with a nipple 20, threaded into a connection 21, which in turn is threaded upon a nipple 22 in threaded engagement with the rear end of the head 15. This siphon, as above mentioned, is of the ordinary construction and operation well known.

Connected with the rear or inlet end of the nipple 20 is a regulating-valve 23, with which is also connected a nipple 24, leading to one end of the head 25 of a T connection 26, the opposite end of said head being connected through the medium of a pipe 27 with any suitable air-compressing means. The stem 28 of the T connection 26 lies at an angle of less than ninety degrees to the nipple 24, and extending from the said stem is a pipe 29, connected with an elbow 30, which in turn is connected with a pipe 31, opening into a regulating-valve 32. A pipe 33 is connected with the opposite end of the valve 32, and which pipe is in direct connection with a nozzle 34, within the casing 5, through the medium of pipes 35 and 36 and connecting L's 37 and 38, the pipe 35 passing through the wall of the casing 5 with an air-tight joint.

The nozzle 34 has an enlarged threaded base, as shown, forming means for engagement with the lower end of the pipe 36, said nozzle being diminished from the base to a point below the pipe 36 by a tapered formation 40, and from which tapered portion it is continued downwardly in cylindrical form, as shown at 41, and has its discharge end opening into and just below the upper edge of the nipple 12. Just above the cylindrical portion of the nozzle are formed outwardly and downwardly extending perforations 42, outlining a circle about the outer periphery of the nozzle, for a purpose to be presently explained.

In Fig. 1 of the drawings the casing 5 is shown as supported upon a frame 43, having wheels 44 to enable the apparatus to be removed from place to place, although, as it will be readily appreciated, the casing may

be swung from a frame or suspended from a fixed point or otherwise arranged to permit its removal, or, if preferred, may be fixed.

The operation of the device is as follows:

- 5 A suitable quantity of sand having been placed within the casing 5 through either the large opening in the top 6 or the smaller opening in the cover 7, air-pressure is supplied through the pipe 27, and a portion of which
- 10 pressure passes to the nozzle 40, the air passing out through the openings 42, as also through the terminal discharge-orifice. The passage of air through the openings 42 results in the stirring up of the sand, which is at a
- 15 level above said openings, and also results in the establishment of an air-pressure within the casing, and which pressure acts to force the sand through the opening of the bottom and into the nipple 12. This action is assisted
- 20 also by the suction in the pipe 12, due to the passage of a jet of air from the nozzle there-through, the sand which has thus entered the nipple 12 being forced downwardly and into the connection 13, from whence it is thrown
- 25 outwardly and through the pipe 19, due to the siphon action of the nozzle 18, under the influence of air from the pipe 27 passing through nipples 20 and 24.

- 30 By manipulation of the valve 32 the air-supply to the casing 5 may be regulated to regulate the supply of sand passing into the nipple 12, while the valve 23 may be manipulated to vary the pressure of the jet from the nozzle 18, and hence the velocity of the sand-
- 35 blast from the nipple 19. Through the medium of the valves 23 and 32 a large quantity of sand may be delivered either under high or low pressure, or a lesser quantity of sand may be delivered under high or low pressure,
- 40 and thus may the operation of the apparatus be varied and regulated to secure the most effective results under different conditions of operation.

- 45 It will be readily understood that in practice the pipes 12 and 17 are susceptible to clogging, as are also the connections therewith, and with the structure presented the valve 23 may be entirely closed and the valve 32 opened to concentrate the entire pressure
- 50 upon the stoppage and thus to blow it from its place.

- 55 The specific construction herein shown and described may be varied in its details, and any proportions and materials may be employed without departing from the spirit of the invention.

Having thus described the invention, what is claimed is—

1. A sand-blast, comprising a sand-reservoir, a discharge-pipe leading from the reservoir, an air-nozzle opening into said discharge-pipe and adapted to create suction there-through from the reservoir, openings in the nozzle for directing air against the contents of the reservoir, a second nozzle leading into the discharge-pipe below the first-named nozzle and adapted to create suction between it and the first-named nozzle and to exert a discharge-pressure between it and the outlet of the discharge-pipe, and means for supplying air-pressure to said nozzles.

2. A sand-blast, comprising a sand-reservoir, a discharge-pipe having branches, a siphon in one of said branches adapted to create suction from the reservoir, a siphon in a second branch adapted to create suction in the first-named branch and to create pressure in the discharge-pipe, and means for supplying air-pressure to the siphons.

3. A sand-blast, comprising a casing or reservoir adapted to receive sand, an outlet for the reservoir, a nozzle within the reservoir and opening through the outlet, openings in the nozzle communicating directly with the reservoir, a discharge-pipe connected with the outlet, and means for supplying pressure to the nozzle.

4. A sand-blast, comprising a reservoir and adapted to receive sand, an outlet for the reservoir, a nozzle within the reservoir, an opening through the outlet, a discharge-pipe comprising branches, one of which is connected with said outlet, a second nozzle in the second branch of the discharge-pipe and adapted to create suction in the first-named branch, and means for supplying pressure to the nozzle.

5. A sand-blast, comprising a sand-reservoir having an outlet-opening, a siphon in operative relation to said opening and adapted to create suction therethrough from the reservoir, a discharge-pipe connected with said opening, a second siphon in the discharge-pipe and adapted to create suction from the reservoir-opening and to establish pressure at the outlet of the discharge-pipe, means for supplying a fluid under pressure to the siphons, and means for regulating the fluid-supplies independently.

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

JAMES M. NEWHOUSE.

Witnesses:

R. C. NEWHOUSE,
JNO. F. MCINTIRE.