No. 845,563. PATENTED FEB. 26, 1907.

A. LOTZ.

PROCESS OF SEPARATING SOLID MATERIAL HELD IN SUSPENSION BY AIR CURRENTS.

APPLICATION FILED NOV. 14, 1904.

Fig. 1.

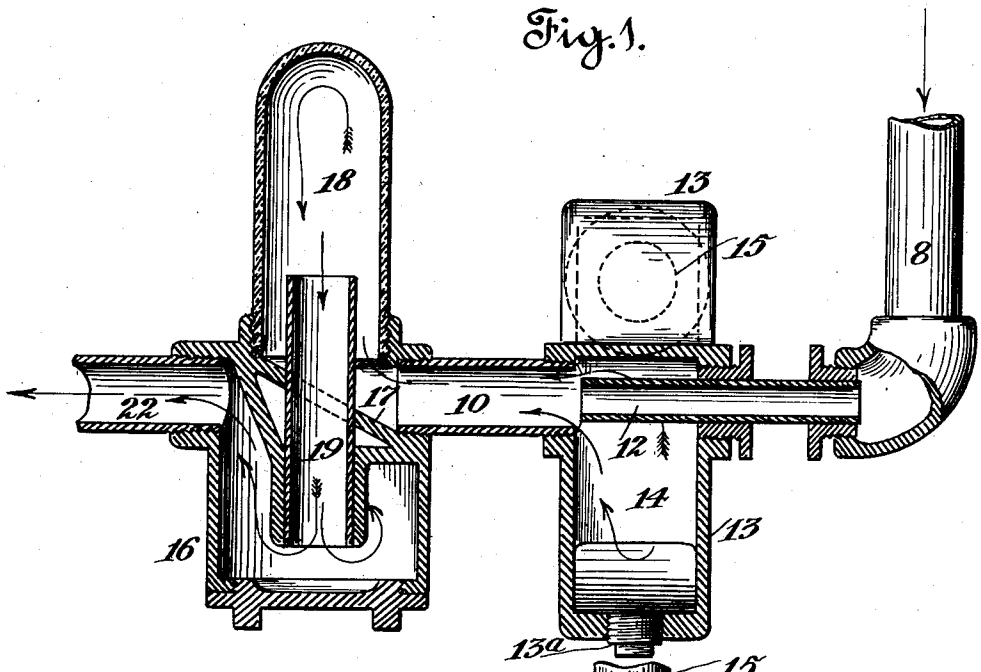


Fig. 2.

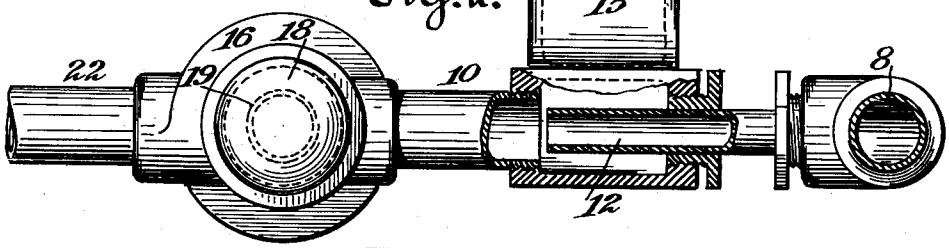
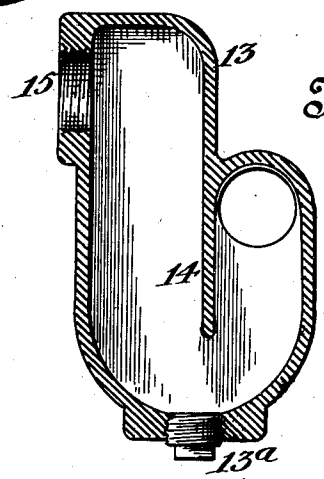


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

AUGUSTUS LOTZ, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO SANITARY DEVICES MANUFACTURING COMPANY, A CORPORATION OF CALIFORNIA.

PROCESS OF SEPARATING SOLID MATERIAL HELD IN SUSPENSION BY AIR-CURRENTS.

No. 845,563. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed November 14, 1904. Serial No. 232,660.

To all whom it may concern:

Be it known that I, AUGUSTUS LOTZ, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Processes of Separating Solid Material Held in Suspension by Air-Currents, of which the following is a specification.

My invention relates to processes for the purifying of dust-laden air, and is designed and specially adopted for the cleaning of the air discharged from pneumatic carpet-cleaning apparatus after it has been freed of the heavier particles by dry precipitation in a gravity-separator.

To this end my invention consists generally in propelling the air at great velocity through a narrow conduit, in introducing into said confined and swiftly-moving current a water spray or vapor, and by means of the frictional contact of the fluids with their confining walls to so thoroughly commingle them that practically all the dust particles are moistened by the water, so as to be precipitated from the air when discharged from confinement.

It further consists in utilizing the force of the air-current to atomize the water and entrain its vapor and in deflecting the further course of the current to render most effective the frictional action.

In the accompanying drawings, forming part of this specification, I show an apparatus designed to carry out my improved process, and in connection with the description of said apparatus I set forth the steps of my process.

In the drawings, Figure 1 is a longitudinal section; and Fig. 2 is a top plan view, partly broken away, of the apparatus; and Fig. 3 is a vertical cross-section of the atomizing device.

The numeral 8 indicates a pipe through which the air to be purified is brought into the apparatus. This pipe has a reduced nozzle 12, which enters the casing 13 and extends into close proximity to the open end of the pipe 10, leading from said casing. This casing has a vertical partition 14, as shown in Fig. 3, and a removable bottom plug 13ª, by means of which the casing can be cleaned. A water-pipe 15, connected with any suitable source of supply, is adapted to convey water into the casing, entering on the opposite side of the partition 14 from the air-pipe, whence it must descend and pass under the partition 14 to rise into contact with the nozzle 12. The casing therefore constitutes a pocket or well for the holding of a supply of water for the purposes hereinafter described. The pipe 10 leads to and connects with a casing 16, having an inclined diaphragm or partition 17 arranged in front of the outlet of the pipe 10 and a superposed dome-shaped chamber 18, preferably of glass for convenience in observing the working of the apparatus. A vertical tube 19, extending through and projecting above and below the partition 17, connects the dome 18 with the lower part of the casing, and a pipe 22 serves as an outlet for delivery of the air-current to any suitable intermediate receptacle or directly to a vacuum-pump.

The method of operation of the described apparatus is as follows: Water being admitted through the pipe 15 to the pocket or well 13, so that it rises into close proximity to or contact with the pipe 12, the cleaning apparatus is set in operation, whereby dust-laden air is delivered through the series of pipes 8, 12, and 10 at great velocity. The pipe 12 serves as an ejector, whereby the passing current of air atomizes the water in the well, and the water and dust-laden air then pass through the pipe 10 upward and over the deflecting-plate 17 into the dome 18. By reason of the deflecting-plate, abrupt changes of direction of the current, and frictional contact with the confining-walls a violent regurgitation takes place in the dome 18, so that the water and dust-laden air become intimately commingled, whereby the suspended dust particles are moistened by and entrained in the water. The commingled stream then passes down the pipe 19 into the bottom of the casing 16, thence through the pipe 22, from which the dust-laden water is discharged separated from the purified air.

I claim—

1. The process of cleansing dust-laden air which consists in supplying water to a narrow air-conduit, causing a current of dust-laden air to pass through said conduit with such velocity as to entrain and atomize the water supplied, commingling the dust-laden air and atomized water, whereby the dust particles are separated from the air and entrained in the water, carrying away the air

in a purified condition and discharging the dust-laden water.

2. The process of cleansing dust-laden air which consists in supplying water to a narrow air-conduit, forcing a current of dust-laden air through said conduit at such high velocity that it will entrain and atomize the inflowing water, and then directing the current against fixed obstacles and deflecting-walls whereby the atomized water and dust-laden air are thoroughly intermingled and the suspended dust particles are moistened and precipitated.

3. The method of separating solid matter held in suspension in a current of air, consisting in forcing such air at high velocity through a narrow tortuous conduit, admitting water to said conduit and causing the air-current to entrain the inflowing water and carry it forward through the tortuous passage so as to violently commingle it with the air and precipitate and carry off from the air the solid matter in suspension.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 19th day of July, 1904.

AUGUSTUS LOTZ.

Witnesses:
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