(No Model.)

C. F. VERRELL.

DUST ARRESTER.

No. 434,216. Patented Aug. 12, 1890.

Fig. 3.

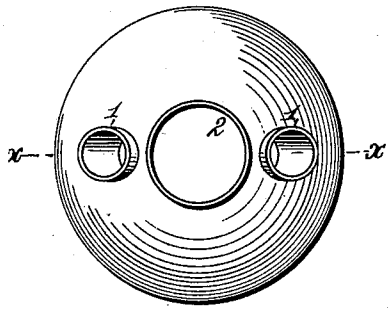


Fig. 1.

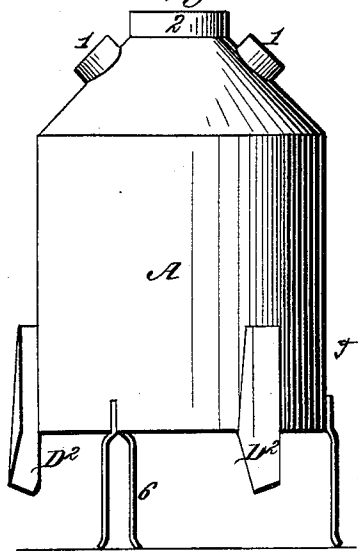


Fig. 2.

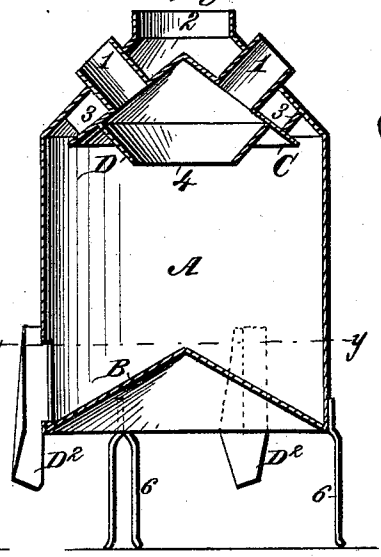


Fig. 6.

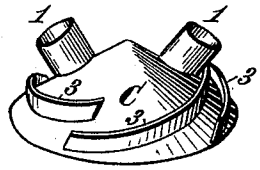


Fig. 4.

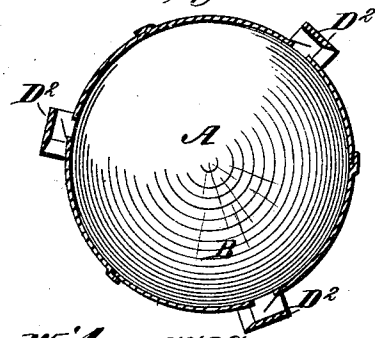
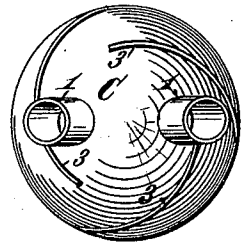


Fig. 5.



Witnesses.
Robt Ernett.
J. A. Rutherford

Inventor:
Charles F. Verrell.
By Edward Taggart.
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES F. VERRELL, OF GRAND RAPIDS, MICHIGAN, ASSIGNOR OF ONE-HALF TO F. A. RICKARD AND GIDEON BARSTOW, OF SAME PLACE.

DUST-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 434,216, dated August 12, 1890.

Application filed January 10, 1890. Serial No. 336,602. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. VERRELL, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Dust-Arresters, of which the following is a specification.

My invention relates to a new and improved cylindrical dust-arrester in which the dust-laden air is delivered into the dust-arrester at the same end from which the air freed from dust escapes.

The objects of my invention are to construct a dust-arrester which will effectually separate all dust and solid particles from the air, and which will occupy but a very small space; also, to so construct the dust-arrester that the dust may be taken from one or more discharges, while the other dust-discharge openings may be closed or shut off when required. These objects I accomplish by means of the mechanism illustrated in the drawings hereto annexed, which drawings are made a part of this specification.

Figure 1 represents a side elevation of a dust-arrester constructed in accordance with my invention. Fig. 2 shows a central vertical section on line *x x*, Fig. 3. Fig. 3 shows a plan view of the same. Fig. 4 is a section on the line *y y*, Fig, 2. Fig. 5 shows a plan view of the inner cone C. Fig. 6 shows a perspective view of the upper cone C, illustrating the air-passages which direct the air which is received laden with dust into the dust-separator.

Similar letters and figures refer to similar parts throughout the several views.

The dust-arrester is composed of a cylinder or body, which is preferably placed in a vertical position, and also of cones arranged within the cylinder, in order to give the proper direction to the air-currents.

A represents the cylinder, which is made preferably of metal. The cylinder has a cone-shaped top, (shown by A^2,) through which there is an opening, (shown by 2,) also side openings, (shown by 1 1.)

C represents a cone in the upper end of the dust-arrester and beneath the cone A^2.

3 3 3 represent curved deflectors, which are preferably attached both to the cone C and to the cone A^2, forming curved air-passages, through which the air is driven into the main cylinder A. The cone C has also an inverted truncated cone attached thereto, (shown in the drawings by D.) An opening in D is shown in Fig. 2 by 4. This opening communicates with the two openings 1 1. At the bottom of the cylinder I provide an upward cone-shaped projection, (shown by B.) The cylinder is also provided with outlets, (shown by D^2 D^2 D^2.) Each one of these outlets consists of a slot cut in the side of the cylinder A and extending preferably about one-third of the length thereof. The object of the outlets is to allow the dust to escape through the openings or perforations in the cylinder A into suitable pipes or tubes, through which the dust may be carried to the dust-vault, or to any other required place. These openings are preferably provided with slides or valves D^3, in order to enable the operator to drive the dust through any one of them at a time when it is found desirable.

6 6 represent legs or supports for the dust-arrester. These legs may be dispensed with, however, as they form no part of my invention. The downwardly-projecting truncated cone D is of less size than the cone C, so as to leave a flat or flange-like space, (shown by 7.)

The operation of my invention is as follows: The air is introduced into the dust-arrester through the opening 2, it being driven by means of a fan-blower or other suitable means. Entering the opening 2, it comes in contact with the upper surface of the cone C and is driven out through the curved passage between the deflectors 3 3 3, which give a circular motion to the dust-laden air. As it comes in contact with the inner periphery of the cylinder or shell A, the momentum causes the heavier particles to mass and revolve in contact with the inner wall of said shell until such solid matter leaves the cylinder through the openings D^2 D^2 D^2, and is conveyed to the dust-vault or other suitable place. The air freed from dust passes down through the center of the cylinder and rises through the opening 4, and is thence discharged freed from dust through the openings 1 1. The inwardly-

projecting bottom B has a tendency to cause the air to rise more readily and pass through the openings above described. I do not wish, however, to limit my invention to a cylinder constructed with a raised bottom, as it may be dispensed with and still the device above described will effectively separate dust from air.

Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

1. In a dust-arrester, the combination, with a cylindrical body and a cone-shaped top having a central ingress-opening and lateral egress-openings, of a cone beneath the outer cone having spiral passages for conducting the dust-laden air laterally into the main chamber and air-ducts leading through the egress-openings in the top, said ducts communicating with the main cylinder by a central opening and lateral openings at the bottoms of the chamber for the discharge of the dust, substantially as described.

2. In a dust-arrester, the combination, with a cylindrical body and a cone-shaped top having a central ingress-opening and lateral egress-openings, of the cone C and truncated cone D, joined together at their bases and forming the separator between the dust-laden entering air and the purified escaping air, and deflectors located between the cone C and the top, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

CHARLES F. VERRELL. [L. S.]

Witnesses:
HUGH E. WILSON,
EDWARD TAGGART.