(No Model.)

C. F. VERRELL.

DUST ARRESTER.

No. 522,923. Patented July 10, 1894.

Fig. 1.

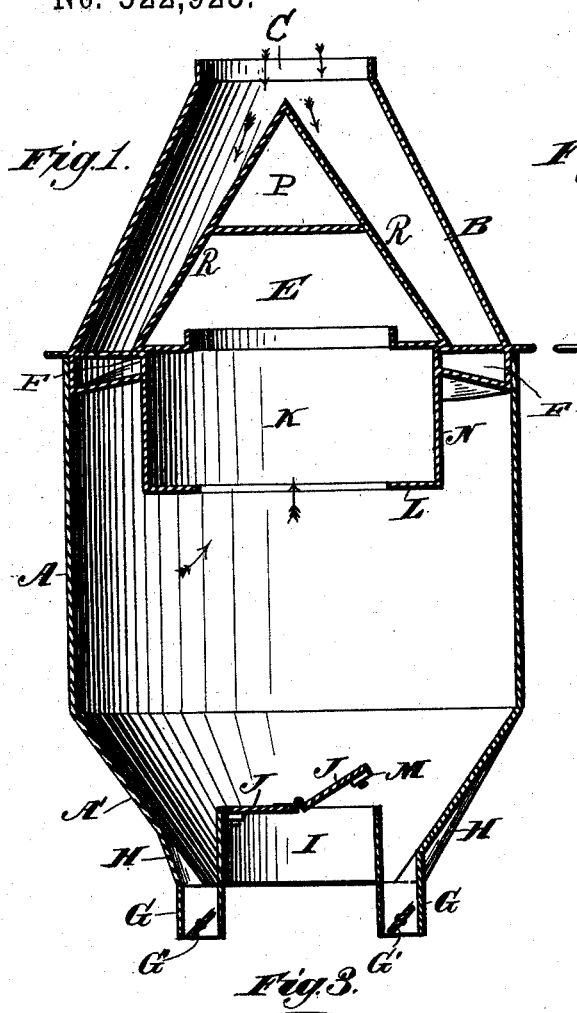


Fig. 2.

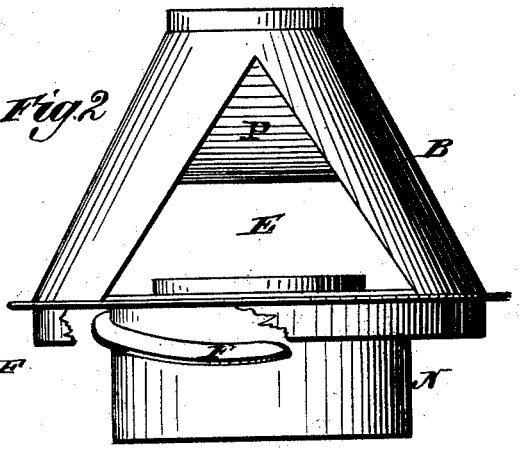


Fig. 4.

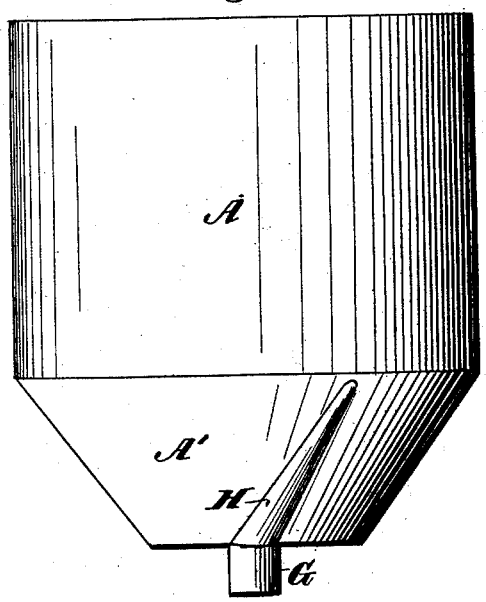
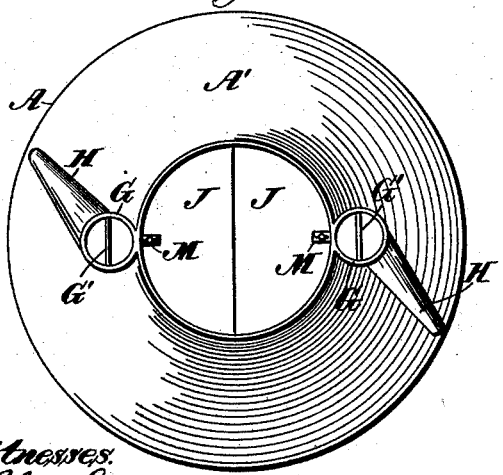


Fig. 3.



Witnesses.
Robt Ewett.
Dennis Sumby.

Inventor
Charles F. Verrell.
By Edward Taygart
Atty.

UNITED STATES PATENT OFFICE.

CHARLES F. VERRELL, OF GRAND RAPIDS, MICHIGAN.

DUST-ARRESTER.

SPECIFICATION forming part of Letters Patent No. 522,923, dated July 10, 1894.

Application filed April 6, 1892. Serial No. 428,070. (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.

This invention is an improvement on the Letters-Patent No. 434,216, issued to me August 12, 1890; and it has for its object to improve the prior construction, and to avoid the production of a partial vacuum at the center of the cylinder.

To accomplish these objects my invention consists in the features of construction and the combination and arrangement of devices hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure (1) shows a vertical sectional view of a dust arrester constructed in accordance with my invention. Fig. (2) shows a side elevation of the upper part of the dust arrester removed from the main shell, designed to illustrate the air openings for the purified air, and also the air conduits which give the dust laden air a whirling motion within the main cylinder of the dust arrester. Fig. (3) shows an inverted plan view of the dust arrester; and Fig. (4) shows a side elevation of the lower part of the dust arrester turned into position to show the inclined ways or grooves which lead to the discharge opening for the dust.

Similar letters refer to similar parts throughout the several views.

A. represents the main shell of the dust arrester, the lower part of which is inclined inwardly as shown by A′.

B. represents the upper part of the dust arrester shell, which is provided with a tubular projection N. partially closed by an inwardly projecting flange, as shown by L. L.

K. represents the opening from the inside of the main cylinder A. to the open air vent E.

C. represents the opening or inlet for the dust laden air.

R. R. represent wedge shaped partitions which convey the air into the circular downwardly-inclined conduits F. F.

P. represents an inverted wedge shaped formation, which has a tendency to divide the air current as it rises from the cylinder purified from the dust, and cause it to pass out at either side of the shell B.

Each of the conduits F. leads from the opening C., one on either side of the shell, into the inner side of the main shell A., and as the air is driven with considerable force in the direction shown by the arrow, it is whirled so as to form a vortex, causing the dust and heavier particles to mass in contact with the inner surface of the shell A., and to fall downward by gravity, until such dust or heavier particles reach the grooves or conduits H., which conduits H. extend upwardly and obliquely from the openings G. G. to or near the lower end of the perpendicular portion of the main shell A. These conduits H. may be varied in depth, but should be of sufficient size to collect the dust as it is thrown revolving in contact with the lower portion of the cylinder, and to conduct the same to the openings G.

I have shown two openings G, one on each side of the central opening, but a greater or lesser number of openings may be used, and the central opening is preferably left open continuously, as I have found by actual experience that when the machine is in operation there is a continual upward draft of air through the central opening I, and by constructing this opening so that it is separate from the opening or openings G, which discharge the dust, the upward current of air is entirely separated from the downward current of dust, and the wall of the central opening I entirely separates the inward and upward current from the outward and downward current, thereby entirely preventing the inward current from carrying dust upward into the cylinder, which I deem of much importance in thoroughly separating the dust from the air.

I use a short cylinder for the opening I, and this cylinder may or may not be provided with doors J. The central opening is preferably of considerable size so as to allow access to the dust arrester for cleaning; but the principal object of this construction is to have an opening separated from the opening from which the dust is discharged, in order to prevent the ingoing current of air from carrying dust back into the separator.

M represents catches for holding down doors J when they are used, and G′, G′ represent valves or doors which are used for the purpose of closing the dust apertures G, which valves or doors G′ may however be dispensed with, their sole object being to regulate the discharge of the dust.

It will be evident that connections may be made with the discharge openings for the purpose of conveying the dust to any suitable receptacle or receptacles.

The inlet I receives the upward draft of air, and by inclosing this inlet, or separating it from the dust outlets, I obtain a substantial advantage. In this type of machines it has been found that the revolving body of air produces a partial vacuum at the center of the cylinder; and that there is an inward flow of air both at the top and bottom. By providing a central opening I and side opening or openings G, the downward flow of dust is not affected by the upward flow of air.

In my patent hereinbefore alluded to, the air is driven against a conical partition instead of against a wedge-shaped partition as the outgoing air flows through two pipes.

In my present invention, while the air is divided by the wedge-shaped partition, it passes upward through the opening K, and is there divided by the inverted wedge-shaped partition so as to freely pass out. This construction avoids the use of the pipes *l* of the prior patent, and allows the escaping air to find an outlet without passing through pipes which intercept the downward current of air.

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

1. A dust arrester, consisting of a case or shell A having an inlet C for the dust-laden air, a wedge-shaped partition P for dividing the current of dust-laden air, circularly inclined conduits F leading from said inlet into the case or shell to impart a revolving motion to the dust-laden air, an inclined lower portion A′, dust-escape openings G, conduits H leading to said dust-escape openings for directing the dust thereinto, and openings K and E for the escape of purified air, substantially as described.

2. A dust arrester, consisting of a case or shell having an inlet C for the dust-laden air, a wedge-shaped partition P, escape opening E, pendent projection N having flange L, outlet opening K, tapering lower end A′, an inlet composed of a cylinder I, a dust-discharge opening G at one side of the said cylinder, and a conduit H leading to said dust-escape opening, 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:
EDWARD TAGGART,
HARRY P. VAN WAGNER.