

No. 854,516.

PATENTED MAY 21, 1907.

P. C. MILLER.
DUST COLLECTOR.
APPLICATION FILED AUG. 17, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

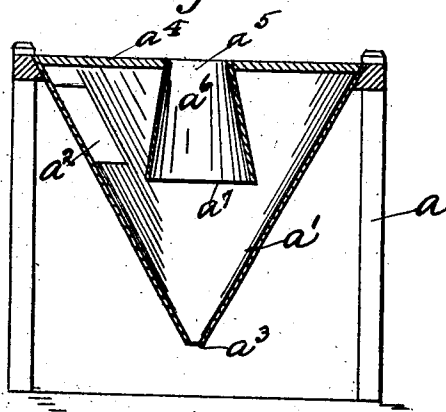


Fig. 2.

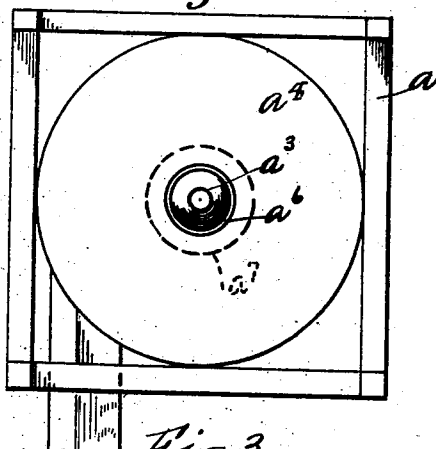
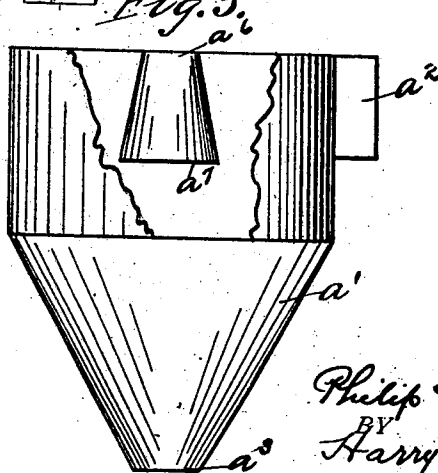


Fig. 3.

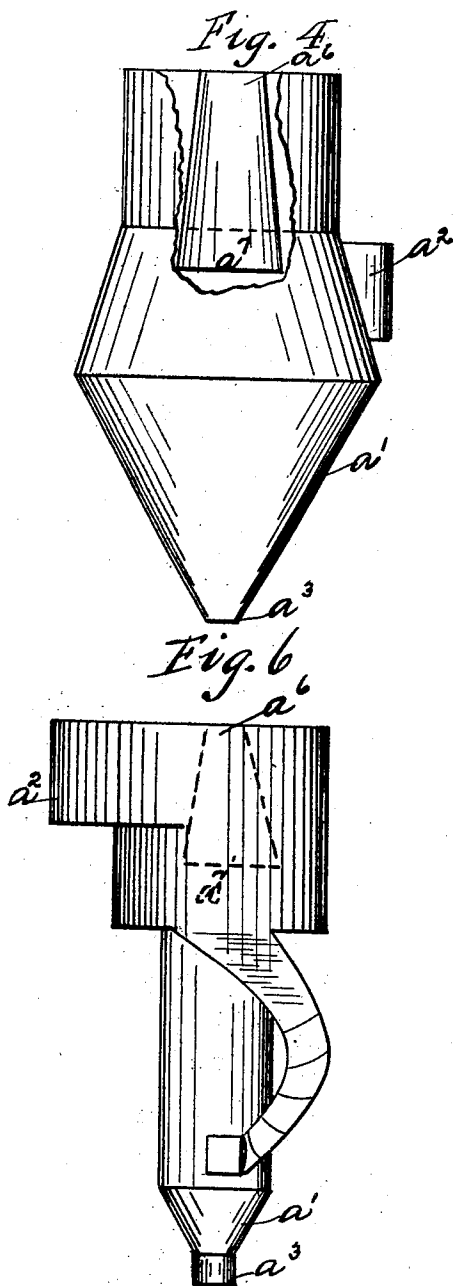


WITNESSES:
C. W. Ransom
N. H. Stickel

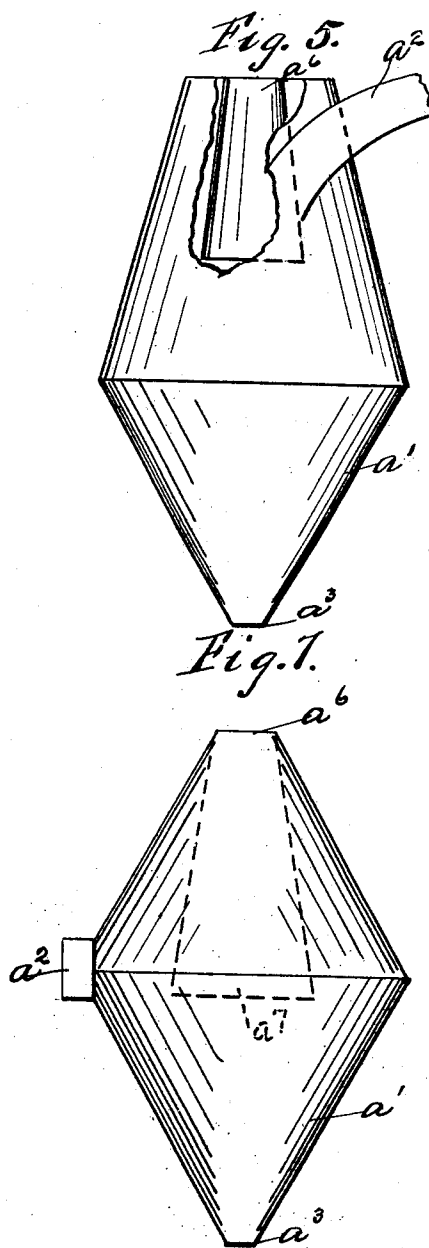
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2 SHEETS—SHEET 2.



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PHILIP C. MILLER, OF CHICAGO, ILLINOIS.

DUST-COLLECTOR.

No. 854,516.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed August 17, 1904. Serial No. 220,998.

To all whom it may concern:

Be it known that I, PHILIP C. MILLER, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Dust-Collectors, of which the following is a specification.

My invention relates to that class of dust collectors in which the separation of the dust from the air is caused by projecting a current of air into a chamber at a tangent, so that a centrifugal motion will be produced which will tend to cause the particles of dust to be projected to the periphery of said current of air and against the wall of the chamber, whence they will travel downward toward an orifice in the bottom; while the air which has been freed from the dust particles escapes from the top of the said chamber. It is customary in devices of this character to insert a downwardly depending tubular guard through which the purified air escapes. The air escaping through this tubular guard still having its gyrating movement, escapes only at the edge of the outlet, and the axis of said current is not only of no value as an outlet but really draws in a current of air. For this reason, since only the outer edge of the orifice is available to discharge the air current, it has been found necessary in the practical construction of dust collectors to construct the opening at the top of the chamber, which is provided for the escape of the purified air, of a much greater area than the feed, and since these dust collectors, although light, are necessarily very bulky, a very considerable space is exposed to the atmosphere, which is objectionable because of the liability of rain entering through said opening and being led to the interior of the building and feeders which it clogs up by wetting the dust and causing it to collect in them, but it is also very liable to receive sparks from the smoke-stack of the factory where it is used, and in this way cause a fire, as it is generally set on the boiler room roof over the shavings vault. These objections can, of course, be overcome by hooding the opening, but this is a decidedly expensive method, owing to the large size of the opening.

The object of my invention is to provide a tubular guard constructed in such a manner that it will permit the reduction of the opening to the minimum without creating too much back pressure.

The method of accomplishing the foregoing may be more readily understood by hav-

ing reference to the accompanying drawings, which are hereunto annexed and are a part of this specification, and in which

Figure 1 is an elevation partly in section, of a dust collector, showing my improved tubular guard. Fig. 2 is a plan view of the same. Figs. 3, 4, 5, 6, and 7 are views showing my improved guard applied to various types of dust collectors to which my invention is applicable.

Similar letters refer to similar parts throughout the entire description.

In the drawings, *a* represents the frame of the dust collector. *a*¹ the conical or tapering separating chamber.

*a*² represents the spout through which the dustladen air enters the large end of the separating chamber *a*¹ in a tangential direction.

*a*³ represents the discharge opening for the dust formed at the apex of the separating chamber.

*a*⁴ represents the cover which closes the upper end of the inverted cone *a*¹ and which is provided with a central opening *a*⁵ through which the purified air escapes.

*a*⁶ is my improved tapering tubular guard secured in the opening *a*⁵ projecting downwardly into the separating chamber. This tube is constructed with tapering walls so that the lower end *a*⁷ is of a greater diameter than the top *a*⁶. The dust-laden air being led into the cone *a*¹ through the spout *a*² assumes a rotary motion due to the direction given to it by the spout, forming a vortex in which the dust particles are projected against the inner surface of the cone *a*¹, freeing the inner portion of the whirling current of air from dust. This air being freed from dust escapes through the interior of the tapering tubular guard *a*⁶, the result of the taper being that instead of a very thin layer of air escaping at the outer edges of the opening *a*⁵, while not producing any back pressure causes the strata to thicken, and in this manner utilize nearly, if not all, of the area of said opening. The advantage of this is obvious in that it permits the reduction of the opening *a*⁵ to the minimum, and to such an extent that the expense of hooding it ceases to be of material importance, and in some cases it may not be necessary to hood since the entire area of the opening is used as an outlet, no rain or sparks can enter when the system is operated and at night there are no sparks and the rain would do no damage.

Having described my invention, what I re-

ward as new and desire to secure by Letters Patent is

The combination with a downwardly tapering separating chamber having a tangential dust-laden air inlet, a dust escape at its lower end, and a depending tubular guard tapering upwardly to a restricted air exit; to provide a clear central space for the escape of purified air and eliminate the axial back flow.

2. The combination with a vertical cylin-

der having a tangential dust-laden air inlet, of a downwardly tapering separating chamber having a dust escape at its lower end, and a depending tubular guard tapering upwardly to a restricted air exit; to provide a clear central space for the escape of purified air and eliminate the axial back flow.

PHILIP C. MILLER.

Witnesses:

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G. KLUGE.