(No Model.)

J. S. ASH.

DUST COLLECTOR.

No. 385,037. Patented June 26, 1888.

FIG. 1.

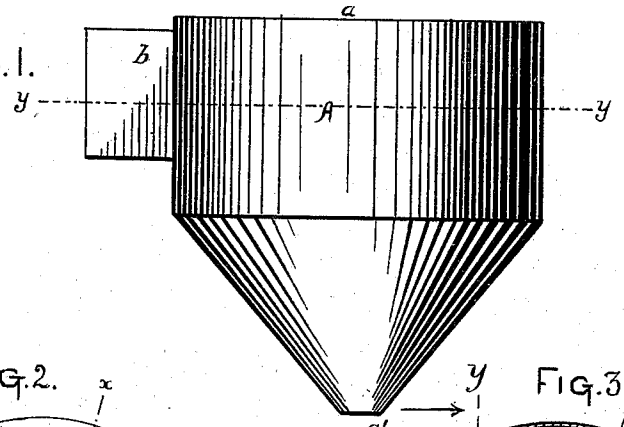


FIG. 2.

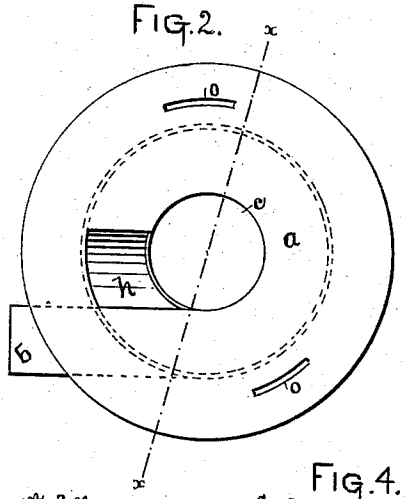


FIG. 3.

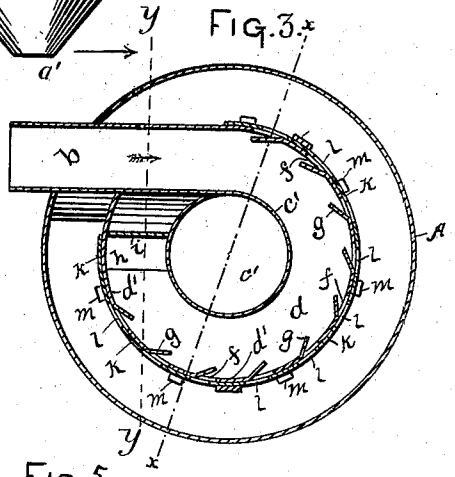


FIG. 4.

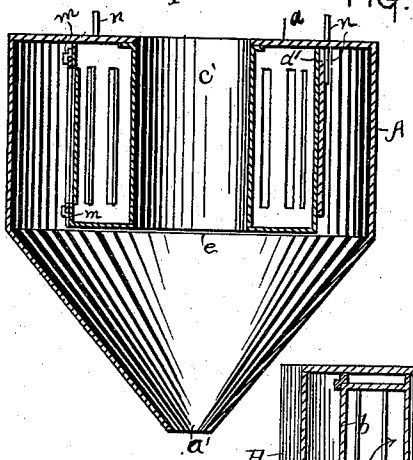


FIG. 5.

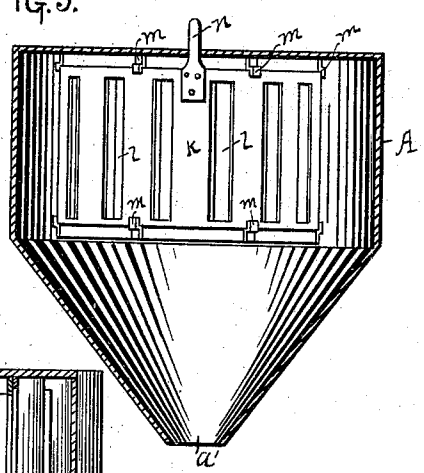
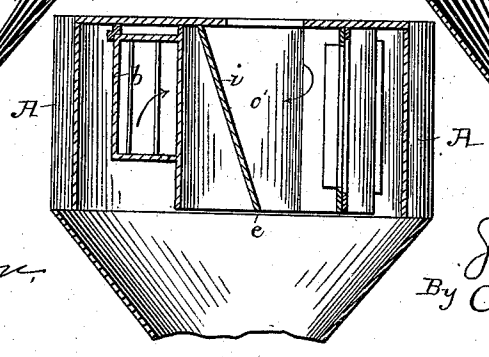


FIG. 6.



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UNITED STATES PATENT OFFICE.

JOSEPH S. ASH, OF CANAL WINCHESTER, OHIO, ASSIGNOR OF ONE-HALF TO CHARLES B. COWAN, OF SAME PLACE.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 385,037, dated June 26, 1888.

Application filed June 10, 1887. Serial No. 240,893. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. ASH, a citizen of the United States, residing at Canal Winchester, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Dust-Collectors, of which the following is a specification.

My invention relates to the improvement of dust-collectors for use in mills, factories, &c.; and the objects of my invention are to produce a simple and effective device of this class by means of which the particles of dirt or dust may be readily separated and collected from a current of dust-laden air forced therethrough; to provide for the escape of the air thus purified, and at the same time avoid the meeting of the opposing currents of purified and dust-laden air, and thus prevent retarding the force of the current; to regulate the size of the apertures through which the dust is intended to escape to conform to the character of the dust and dirt to pass therethrough, and at the same time regulate the force of the air-current therethrough, and to provide means of operating said regulating device from the outside of the machine, and to provide a central air-conductor from the interior of the machine. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved collector. Fig. 2 is a plan view of the same. Fig. 3 is a transverse section taken on line *y y* of Fig. 1. Fig. 4 is a vertical section taken on line *x x* of Figs. 2 and 3, and Fig. 5 is a sectional view through the outer walls of the device. Fig. 6 is a vertical section on line *y y* of Fig. 3.

Similar letters refer to similar parts throughout the several views.

A represents the dust-box, the upper portion of which is cylindrical in form and provided with a permanent top plate, *a*, the lower portion of the box being in the form of an inverted cone and having an opening, *a'*, at its apex.

Formed in the center of the top plate, *a*, is an air-hole, *c*, about which is secured the upper end of a vertical downwardly-extending cylindrical air-pipe, *c'*, said pipe extending within the box to about the center of its length, as shown in Fig. 4 of the drawings. The wall of the upper portion of the box is provided at a point in its side adjoining the top plate, *a*, with a spout-hole, through which is made to pass and project a pipe or spout, *b*, the inner end of which opens into and connects with an internal circular chamber, *d*, formed by a circular wall, *d'*, made to project downwardly from the under side of the top plate, *a*, between the central pipe, *c*, and outer wall of the box, A, and having a bottom plate, *e*, provided with a central hole, about which is secured the lower end of the pipe *c*, the latter forming the inner side wall of the chamber *d*. The inner side wall of the spout *b* is continued inward to meet the pipe *c*, forming at that point a partition between the walls of the chamber. Adjoining the upper edge of this partition there is formed in the top plate, *a*, an air-hole, *h*, from one edge of which is made to extend diagonally downward to the bottom of the chamber *d* a plate or second partition, *i*. Formed at intervals in the outer wall of the chamber *d* are vertical slots *f*. From the rear edge of each of these slots is made to project inwardly at a slight angle with the wall, with which they are preferably formed, a vertical wing, *g*. The slots *f* are adapted to be covered, or partially so, by means of a damper, *k*, consisting of a thin strip of metal having formed at intervals therein a number of slots, *l*, corresponding with the slots *f* of the chamber-wall. This damper is held in position against the outer wall of the chamber by means of guide-lugs *m*, secured to the outer surface of the chamber-wall above and below the slots therein and made to project a short distance over the upper and lower edges of the damper.

Riveted or otherwise secured to the upper side of the damper at suitable points on either side of the center of its length are the lower ends of arm, *n*, the upper ends of which are made to project through curved slots *o o*, formed in the top plate, *a*, to form handles, by means of which the damper may be worked backward or forward, as desired, to open or close the slots *f*.

The device above described may be supported in any well-known manner.

The operation of my device is as follows: A

current of dust-laden air being forced into the spout *b*, in the usual manner, it will be seen that the force of the current traveling in a circle through the chamber *d* tends to drive the particles of dust against the outer wall of the chamber, the wings *g* operating to guide the same out through the slots *f* and allow it to escape into the space between said chamber and the wall of the box A. The centrifugal force of the air which escapes with the dust through the slots against the inner surface of the box A will cause the heavier ingredients to follow said inner surface spirally downward until they reach and pass out the opening *a'* in the bottom of the box. The surplus air which fails to pass through the slots *f*, having been purified by its passage through the circular chamber *d*, will pass out through the the air-hole *h* in the top plate, *a*, being deflected upwardly by the inclined partition of the end of the chamber. It will also be seen that the central pipe, *c*, will afford an escape for the air within the cone, the latter having been separated from the dust, as above described.

The difficulty usually experienced in the use of dust-collectors wherein the ingoing and outgoing currents of air are made to meet, thus retarding the force of the current and again mingling the purified or partially-purified air with the dust-laden current, is, as will be seen, readily obviated by the construction of my device.

It will also be seen that by means of the damper K, adapted to be operated from the exterior of the box, the size of the slots may be regulated to conform not only to the character of the dirt to pass therethrough, but to the amount of draft desired.

I do not claim in this case the construction claimed by me in another application for patent bearing Serial No. 264,009.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a dust-collector, the combination of a cylindrical box having a conical bottom and an opening, *a'*, in the bottom thereof, a top plate, *a*, having a central vertical pipe, *c'*, therein and an opening, *h*, on one side of said pipe, an interior wall forming an annular chamber, *d*, around said central pipe, and a lateral inlet-spout, *b*, leading into said annular chamber, the outer wall of said chamber having vertical slots, and a curved slotted damper held against said wall and controlled substantially as described.

2. In a dust-collector, the combination of a cylindrical box having a conical bottom and an opening, *a'*, in the bottom thereof, a top plate, *a*, having a central vertical pipe, *c'*, therein, an interior wall forming an annular chamber, *d*, around said central pipe, and a lateral inlet-spout, *b*, leading into said annular chamber, the outer wall of said chamber having vertical slots and inwardly-projecting wings *g*, and a curved slotted damper held against said wall, substantially as described.

3. A dust-collector consisting of a cylindrical box having a top plate, a conical bottom, a central vertical pipe therein, an interior wall forming an annular chamber, *d*, around said central pipe, and a lateral inlet-spout leading into said cylindrical box and into said chamber *d*, the outer walls of said chamber *d* having vertical slots, and a curved slotted damper loosely held against said wall and provided with arms projecting through curved slots in said top plate for actuating said damper.

JOSEPH S. ASH.

Witnesses:
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C. B. CURRIER.