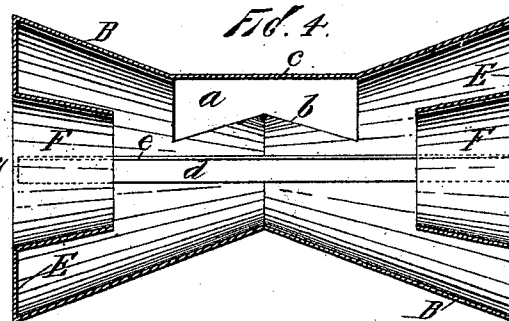
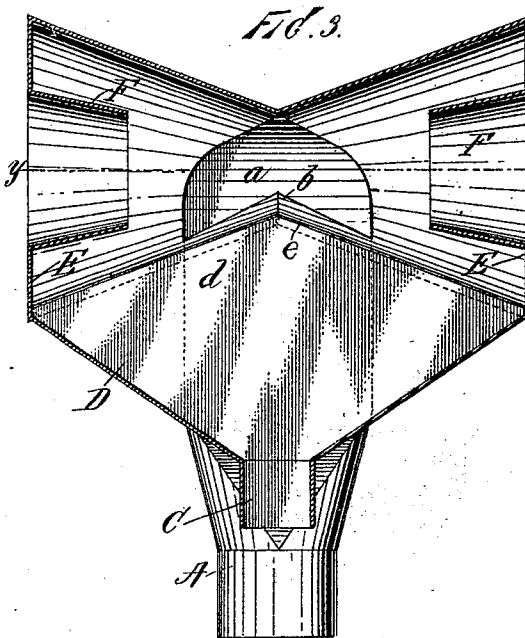
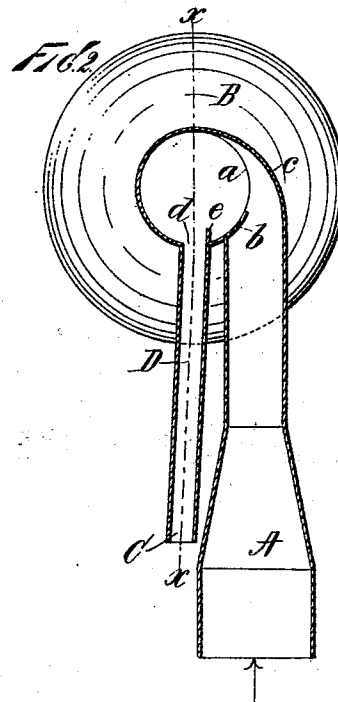
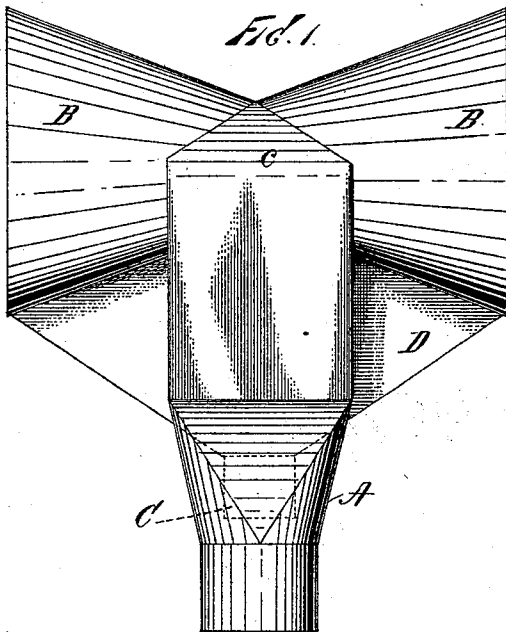


(No Model.)

M. F. GALE.
DUST COLLECTOR AND SEPARATOR.

No. 516,371.

Patented Mar. 13, 1894.



Witnesses:
John Buckler,
L. H. Osgood.

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UNITED STATES PATENT OFFICE.

MOSES F. GALE, OF BROOKLYN, NEW YORK.

DUST COLLECTOR AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 516,371, dated March 13, 1894.

Application filed September 13, 1893. Serial No. 485,376. (No model.)

To all whom it may concern:

Be it known that I, MOSES F. GALE, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Dust Collectors and Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to that class of devices employed for the purpose of collecting dust and other materials from a moving current of air and separating the collected matters from the air,—which devices are commonly known as dust collectors and separators.

The principal object of my invention is to produce a compact machine of few and simple parts, easy and cheap to construct, which machine will automatically collect and deliver the dust or materials free from the air blast, and which will be certain and effective under any power of blast sufficient to carry the materials into the machine.

To accomplish this and to secure other and further advantages in the matters of construction, operation and use, my improvements involve certain new and useful arrangements or combinations of parts and particular features of invention, as will be herein first fully described and then pointed out in the claims.

In the drawings Figure 1. is an elevation or exterior view of the machine as it appears when looking toward the blast pipe, the latter being assumed in vertical position. Fig. 2. is a vertical cross section through the central part of Fig. 1. Fig. 3. is a vertical section on a plane through line $x-x$ of Fig. 2., and Fig. 4. is a horizontal section on a plane through line $y-y$ of Fig. 3.

In all the figures, like letters of reference, wherever they occur indicate corresponding parts.

While for convenience the blast pipe or inlet pipe leading to the apparatus is shown herein in vertical position and leading upwardly, it should be understood that it may be located in any other position.

A. is the inlet pipe through which the material is delivered to the apparatus, being forced or carried by a blast of air.

The receiving chamber is composed of two conic frustums united at their smaller ends, and with this chamber the inlet pipe A communicates through the opening a extending about equally on each side of the union of the two conical parts B. B. A deflector b , which extends from a point near the axis of the inlet pipe back on lines conforming with the shape of the receiving chamber divides the dust laden blast, compelling about equal portions to be projected into each section of the separator and at the same time directs the whole current toward the canopy c which unites the inlet pipe with the chamber. The dust of the dust laden current entering at opening a , from the peculiar shape and arrangement of the parts thus far described, hugs the inner surface of the chamber being forced toward the outer ends and, being about equally distributed over the inner surface, leaving the air in the central part.

At d is the outlet opening for the dust or other material. It extends about the length of the two shells B B and connects with the delivery or discharge pipe C through a chamber D of suitable form to unite the two parts.

On the side of opening d toward the inlet pipe is a slight ledge e sufficient to intercept the movement of dust or material past opening d which material then enters this opening and passes out through chamber D and pipe C. The outer ends of the conical portions B. B. are partly closed by caps E. E., in the central parts of which are located conical guards F. F. extending inwardly toward the central part of the receiving chamber. Between these guards F. and the walls of sections B. B. are spaces ample to accommodate all the dust or material which can find its way to them from opening a , and those portions of outlet d which extend beyond the inner lines of guards F. are sufficient to allow the material to freely escape. The guards F. being open at each end leave passages for the free escape of air from the central portion of the separating chamber,—and extending inwardly as they do from the ends and being removed from the walls of the chamber, prevent the escape of any portion of the dust, &c., which as above explained hugs the inner surfaces of the chamber. The area of outlet for air thus provided is always greater than that

of inlet to the apparatus so that back pressure within the apparatus cannot occur and the carrying current cannot be impeded. The piping to and from the apparatus will of course be supplied as is usual and is not necessary to be here shown.

The proportions of the different parts and the openings are not of necessity those indicated in the drawings and may be somewhat varied for different materials, but substantially those indicated will be found most advantageous under ordinary circumstances of use. By uniting the conic frustums at their smaller ends, the dust laden blast, from the instant it enters the apparatus expands into a space constantly increasing in capacity, so that, as the outlet openings for air are approached, the blast has less and less power to carry any of the dust with it, and practically none when those openings are reached; whereas, if the frustums were reversed, the power of the blast would be condensed toward the air outlet openings and the dust in large part carried out with the air.

The apparatus may be built of any material, sheet metal being probably best adapted for the purpose. Its use is chiefly for collecting sawdust and shavings, separating the materials from the extra volume of air which is blown in with them, and delivering them free from such air—but obviously other materials may be operated upon. The axis of the receiving chamber, while shown as in a horizontal position, might be otherwise placed if desired.

The machine constructed substantially in accordance with the foregoing explanations is automatic in its operation, has no parts to get out of order or requiring attention, and answers all the purposes or objects of the invention previously set forth.

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

1. In a dust collector and separator, the receiving or separating chamber composed of two conic frustums united at their smaller ends, said chamber being provided with an in-

let for the dust laden blast and outlets for the air and separated dust, the parts being combined and arranged, substantially as shown and described.

2. In a dust collector and separator, the receiving or separating chamber composed of two conic frustums united at their smaller ends, the inlet for the dust laden blast provided with a deflector and the outlet for the dust provided with a narrow ledge on one side, the parts being combined and arranged substantially as shown and described.

3. In a dust collector and separator, the combination with the receiving or separating chamber composed of two conic frustums united at their smaller ends, the same being provided with the open, inwardly projecting guards, substantially as and for the purposes set forth.

4. In a dust collector and separator, the combination with the receiving chamber having inlet and outlet openings as explained, and composed of two conic frustums united at their smaller ends, of the caps for the outer ends of the chamber, and the inwardly projecting guards mounted on said caps, the dust discharge opening extending beyond the inner ends of said projecting guards, substantially as shown and described.

5. The herein described dust collector and separator, the same consisting of the receiving chamber composed of two conic frustums united at their smaller ends, the inlet for the dust laden blast and the outlet for the separated dust provided respectively with a deflector and a projecting ledge, and the caps for the outer ends of the chamber each having the open, inwardly projecting guard, the outlet opening extending beyond the inner ends of the guards all combined and arranged substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

MOSES F. GALE.

Witnesses:

W. J. MORGAN,
WORTH OSGOOD.