No. 795,750. PATENTED JULY 25, 1905.

W. E. ALLINGTON.

DUST COLLECTOR.

APPLICATION FILED APR. 14, 1904.

Fig. 1

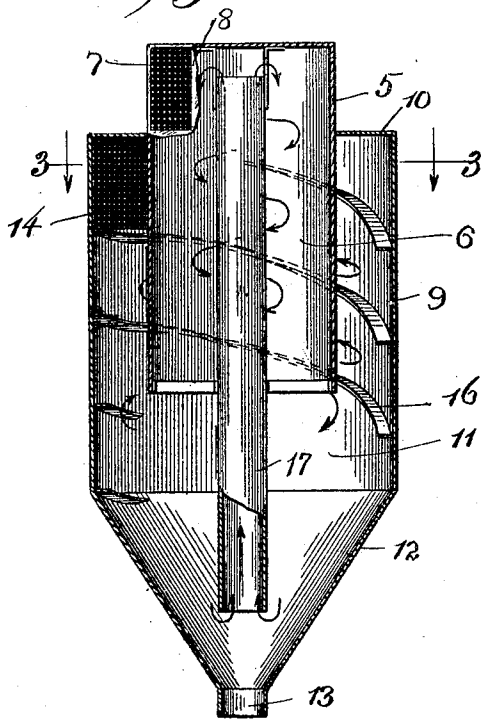


Fig. 2.

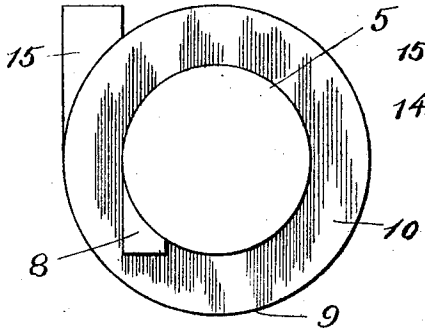
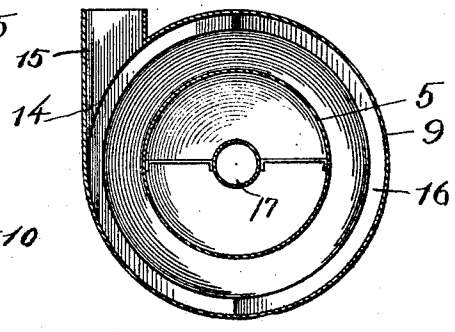


Fig. 3



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UNITED STATES PATENT OFFICE.

WILLIAM E. ALLINGTON, OF SAGINAW, MICHIGAN.

DUST-COLLECTOR.

No. 795,750. Specification of Letters Patent. Patented July 25, 1905.

Application filed April 14, 1904. Serial No. 203,082.

To all whom it may concern:

Be it known that I, WILLIAM E. ALLINGTON, of Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Dust-Collectors; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in dust-collectors, and more particularly to dust-collectors of the type known as "centrifugal machines," wherein the dust particles are driven to certain areas of the machine, as the result of centrifugal action, and the purified air is permitted to escape.

A salient object of my invention is to provide a machine of the class described particularly adapted for the heavier class of work, such as is encountered in woodworking-shops and the like, wherein the arrangement is such that the air may escape very freely and the back pressure upon the fan or blower employed in conjunction with the collector thereby kept down.

Other and further objects of my invention will hereinafter become apparent from the following description taken in conjunction with the drawings.

In the drawings, wherein I have illustrated an operative embodiment of my invention, Figure 1 is a central vertical section of the machine. Fig. 2 is a top plan view, and Fig. 3 is a transverse section on line 3 3 of Fig. 1.

Throughout the various figures like numerals of reference refer always to like parts.

In the drawings, 5 indicates a casing member, preferably cylindrical in form, closed at its top and preferably open at its bottom and inclosing what I will term the "inner separating-chamber" 6. The opening at the bottom of chamber 6 may be less than the entire end area of the casing, though I prefer the present form for simplicity.

7 indicates an inlet-orifice, into which leads an inlet-spout 8, longitudinally or otherwise arranged, so that the introduction of air therethrough induces a whirl in the chamber 6.

9 indicates a casing member, preferably cylindrical in form, concentric with and surrounding the casing member 5, said casing member 9 being provided with a top 10, preferably arranged below the level of the inlet-spout 8 of the inner chamber and closing the annular space between the inner casing member 5 and the outer casing member 9. The chamber 11 within the casing member 9 I will hereinafter refer to as the "outer" chamber. The casing member 9 is closed at its bottom by a hopper 12 of conical form, terminating in a dust-outlet spout 13; but any closing member may be employed and the outlet located at any suitable point at the bottom of the machine.

14 indicates an outlet-aperture from the chamber 11, made in the upper portion of the outer casing, preferably in the peripheral wall thereof.

15 indicates a tangential outlet-spout arranged to receive air from the outlet 14. This spout, however, may be omitted, if desired.

Along the wall 9 of the outer chamber I provide one or more deflecting-ribs 16 of any suitable cross-sectional configuration, disposed in spiral arrangement, such that the spiral leads downward when followed in the direction taken by the air-whirl within the chamber 11.

The structure thus far described forms in itself a complete and operative machine; but I preferably employ as an adjunct to the machine an axially-disposed tube 17, suitably supported in the structure and extending from a point adjacent the dust-outlet 13 to a plane about on the level of the inlet-opening 7 of the inner chamber.

In operation the dust-laden air is blown or otherwise forcibly projected through the tangential inlet 8 and assumes a whirling motion in the inner chamber 6. The dust-laden air follows a spiral path downward in said chamber to the open lower end thereof, and by its whirling motion the dust particles are thrown outward and massed against the peripheral wall 5 of the chamber. Upon escaping from the inner chamber to the outer chamber 11 the air continues its whirling motion, but in an upwardly-tending spiral path, seeking the outlet-opening 14. It will be apparant that the larger coarser dust particles will travel under the influence of gravity into the hopper 12, but those lighter particles which are carried upward by the ascending current of air are maintained by centrifugal action at the outer end of the whirl, where they are caught by the deflectors 16 and directed downward until they reach a plane practically without the influence of the ascending-air current, whence they travel into the hopper 10 and through the dust-outlet 13.

A machine of this construction is particu-

larly adapted for work in environments requiring the use of strong currents of air, as in handling coarse material, and it is, therefore, at times advantageous to employ means to prevent the air from blowing too strongly out of the dust-outlet 13. To this end the tube 17 is employed. It will be apparent that as the air is projected at a high speed through the tangential inlet 8 and begins its whirl in the chamber 6 centrifugal action tends to produce a rarefaction of the central or axial air-column, and an upward draft is thereby induced through the tube 17. It will be apparent that as the air-current flowing through the tube 17 is drawn from a point adjacent the dust-outlet 13 pressure at that point is relieved and the escape of air through said outlet 13 correspondingly reduced.

While I have herein described in some detail one operative embodiment of my invention, it will be apparent that numerous changes in the details of construction might be made therein without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a dust-collector, an inner chamber having an imperforate peripheral wall, open at its lower end through which the material, concentrated by centrifugal force, escapes downwardly; an outer chamber into which, below the top thereof, said inner chamber opens, provided at its lower end with a dust-outlet opening and provided with an air-outlet opening above the open bottom of the inner chamber; a downwardly-directed spiral deflector in said outer chamber, arranged on the peripheral wall thereof for deflecting material downward in said chamber; and a tangential inlet opening into the inner chamber so arranged as to induce a whirl therein.

2. In a dust-collector, an inner chamber having an imperforate peripheral wall, open at its lower end through which the material, concentrated by centrifugal force, escapes downwardly; an outer chamber into which, below the top thereof, said inner chamber opens, provided at its lower end with a dust-outlet opening and provided with an air-outlet opening above the open bottom of the inner chamber; a downwardly-directed spiral deflector in said outer chamber, arranged on the peripheral wall thereof for deflecting material downward in said chamber; a tangential inlet opening into the inner chamber so arranged as to induce a whirl therein, and a tube having an open passage extending from an axial point within the inner chamber to an axial point within the lower conical chamber at the dust-outlet end.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM E. ALLINGTON

In presence of—

FORÉE BAIN,

MARY F. ALLEN.