

(No Model.)

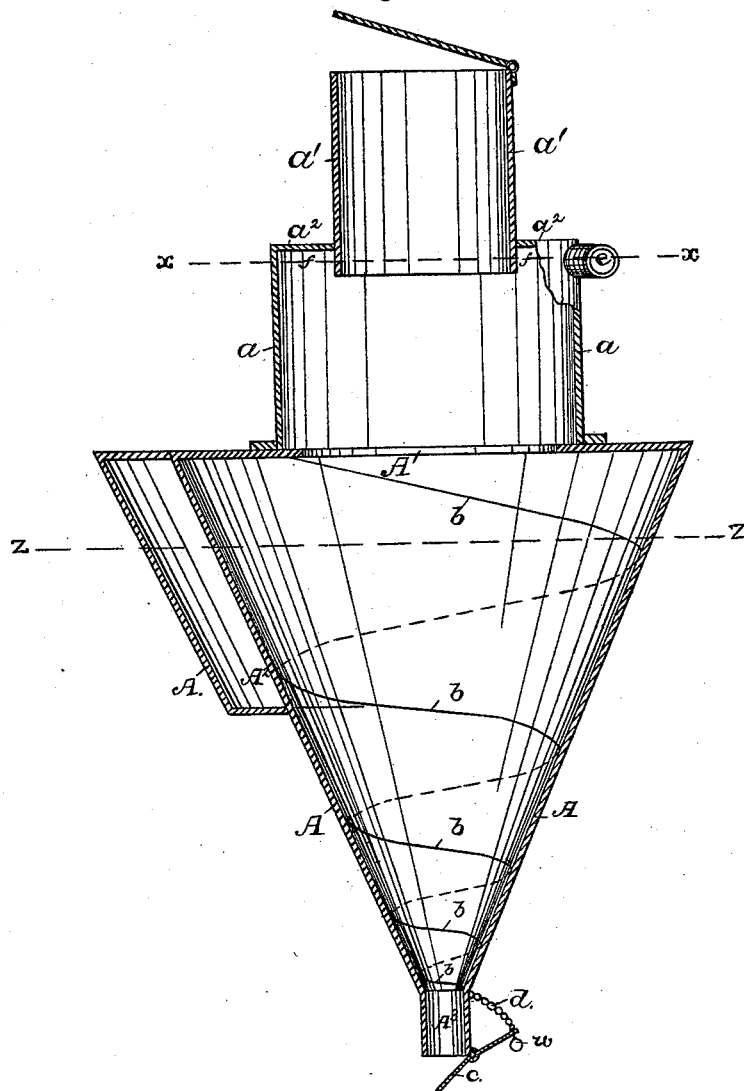
3 Sheets—Sheet 1.

W. E. ALLINGTON & W. H. CURTIS.
DUST COLLECTOR.

No. 418,834.

Patented Jan. 7, 1890.

Fig. 1.



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(No Model.)

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Fig. 2.

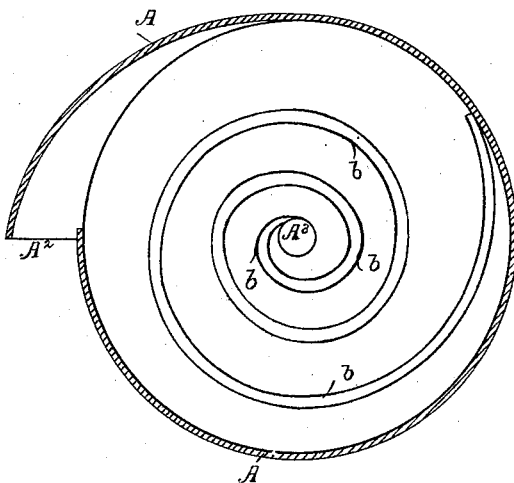
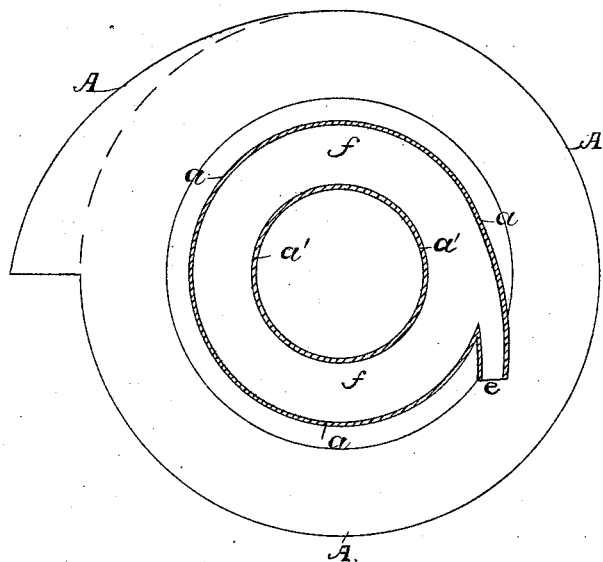


Fig. 3.



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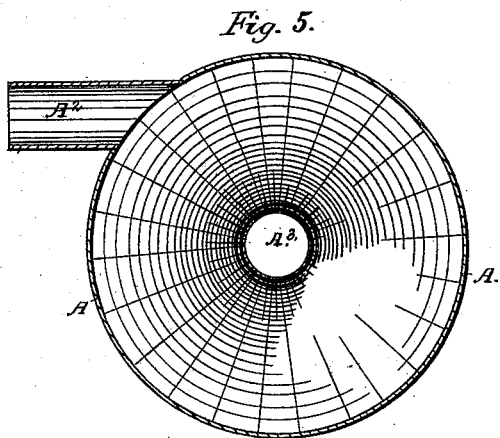
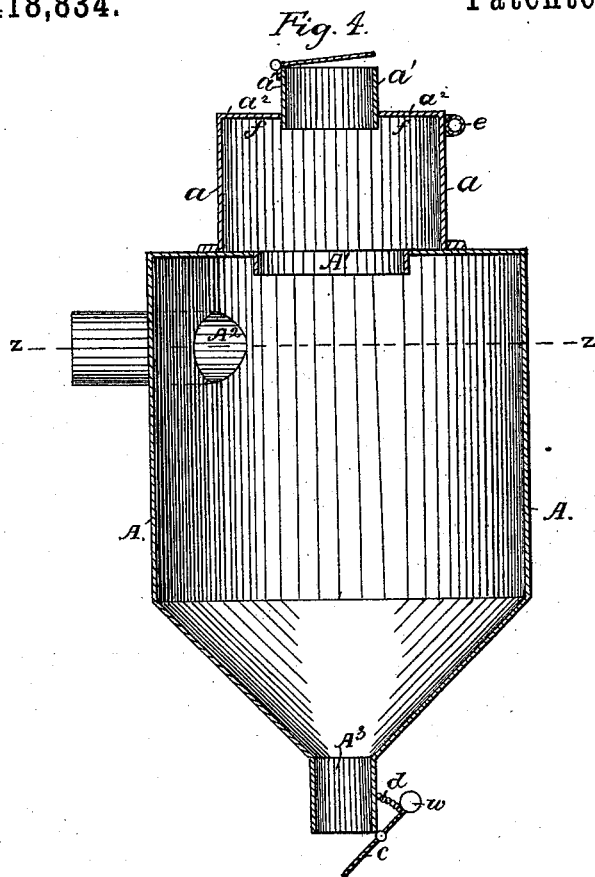
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Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM E. ALLINGTON, OF EAST SAGINAW, AND WILLIAM H. CURTIS, OF JACKSON, MICHIGAN.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 418,834, dated January 7, 1890.

Application filed December 13, 1886. Serial No. 221,350. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM E. ALLINGTON, a citizen of the United States, residing at East Saginaw, in the county of Saginaw and State of Michigan, and WILLIAM H. CURTIS, a citizen of the United States, residing at Jackson, in the county of Jackson and State of Michigan, have invented new and useful Improvements in Dust-Collectors; and we do hereby declare the following to be a full and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in dust-collectors; and it consists in the construction, combination, and arrangement of the parts thereof, which will be more fully hereinafter described, and definitely pointed out in the claims.

Heretofore in machines of this class, when the air travels at high velocity, the perpendicular velocity of the air through the exit at the top of the machine has held the finer particles of dust in suspension against the centrifugal force and carried large quantities of the very fine dust out into the open air, unless the exit was reduced to so small an area that serious back-pressure was produced.

The object of our invention is to provide a suitable chamber or covering for the exit of the separating cone or pipe by virtue of the increased area of which the perpendicular velocity of the air toward the final exit can be reduced, and in which the dust-laden air can be further rotated to effect a thorough and complete separation of the fine dust before the final discharge of the purified air.

A further object of our invention is to provide a chamber of such a shape that the final exit can be made of greater area than used in other machines, and thus get relief from all back-pressure.

A further object of our invention is to provide suitable means for preventing fire from communicating with the interior of said machine and to provide a suitable lid or cover for covering the opening for the escape of air when the machine is not in operation.

We obtain these objects by the device illustrated in the accompanying drawings, where-

in like letters of reference indicate similar parts in the several views, and in which—

Figure 1 is a vertical sectional view of our dust-collector, showing its internal arrangement. Fig. 2 is a transverse sectional view taken through the line Z Z, Fig. 1. Fig. 3 is a transverse sectional view taken through the line X X, Fig. 1. Fig. 4 is a vertical sectional view of a modification of our improved device, which accomplishes substantially the same result; and Fig. 5 is a transverse section thereof, taken on the line z z of Fig. 4.

In the accompanying drawings, A represents a funnel-shaped separator or dust-collector, having a tangential opening at A² on one of its sides formed by bending a portion of its wall outwardly, as shown in section in Fig. 2. The separator A also has a circular opening in its top, at A', as well as an opening formed by the short pipe A³ at its bottom. On the interior of said separator are laid spiral ledges or shelves running around its sides and inclined toward its bottom end.

At the bottom of the separator A is a hinged and weighted lid or cover c, which is held open by the fusible link-chain d, and is closed by the action of the weight w when the chain is severed by heat or other cause. The opening A' at the top of the separator is inclosed by a cylinder a, somewhat larger in diameter than the opening A'. This cylinder extends upward a short distance, and is capped with a chimney or pipe a' and collar a². Just below this collar a² a small pipe e is inserted in the side of the cylinder a. The chimney or pipe a' extends for a short distance down through the collar a², forming a chamber f at the top of the cylinder a. The chimney or pipe a is also provided with a suitable lid or cover, hinged at its top end, for closing the end of said pipe, and said hood may be provided with a suitable device for opening and closing the same.

The operation of the machine shown is as follows: When dust, shavings, or other débris are forced into the opening A² by the action of a fan or any other means, they are given a rotary or whirling motion, and the heavier portions of said débris are carried against the inner peripheral wall of the separator by

centrifugal force, and by virtue of the spiral ledges *b*, under which the débris is forced, and the rotary motion given by the form of the separator *A*, the heavy material is worked 5 down to the opening *A*³ at the bottom, and thence into any suitable receptacle. The light dust in the central portion of the separator *A* is carried up into the cylinder *a* for further separation. By virtue of the rotary motion, which is continued in the cylinder *a*, the 10 dust is carried against the wall thereof, and, by the upward motion of the air toward its vent through the chimney *a'*, the dust is carried to the discharge-pipe *e*, where it is forced 15 out by the rotary motion of the air in the chamber *f*, and thence conducted to a suitable furnace or other depository. The air, freed of its dust and heavy débris, escapes through the chimney or pipe *a'*.

20 In the form of machine shown in Fig. 4, by virtue of the perpendicular walls *A*, the heavy material works down by its weight below the strong currents produced by the fan blowing into the device through the pipe *A*², and 25 thence through the opening *A*³ at the bottom, the operation of the chamber *a* and combined parts being the same as in the other form of machine.

30 It is obvious that many minor changes in the construction and arrangement of the parts of our device can be made without departing in the least from the nature or principle of our invention.

35 We are aware that a funnel-shaped separator having openings at its side, top, and bottom and provided with spiral downwardly-inclined ledges on its inner surface has been used as a dust-collector. We are also aware 40 that a somewhat different form of separator, similar to that shown in Fig. 4, has been used, but without our superposed chamber *a* and its belongings; hence we do not claim said particular constructions or forms of separators, except in connection with the improve- 45 ments that we have made thereon.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a dust-collector, the combination, with 50 a suitable separator formed with a tangential air-inlet opening and an opening in its top and bottom, of an inclosure or chamber ar-

55 ranged above said separator and covering the opening in the upper end thereof, and formed with an outlet-opening in its upper end and with an inlet-opening at its lower end, and provided with a lid or cover for said outlet-opening, substantially as and for the purpose described.

2. In a dust-collector, the combination, with 60 a suitable separator formed with a tangential air-inlet opening and an opening in its top and bottom, and provided with a lid or cover for said bottom opening, of an inclosure or chamber arranged above said separator and 65 covering the opening in the upper end thereof, and formed with an outlet-opening in its upper end and with an inlet-opening at its lower end, substantially as and for the purpose described. 70

3. In a dust-collector, the combination, with 70 a funnel-shaped separator formed with top and bottom openings and provided with a lid or cover for said bottom opening, of an inclosure or chamber arranged to cover the open- 75 ing in the top of said separator formed with an outlet-opening in its upper end and with a discharge-opening for fine dust in the side or periphery of its upper portion, and provided with a lid or cover for said top open- 80 ing, substantially as and for the purpose described.

4. In a dust-collector, the combination, with 85 a separator formed with top and bottom openings and provided with a weighted lid or cover for said bottom opening and with a fusible chain attached to said lid or cover, of an inclosure or chamber arranged to cover the opening in the top of said separator formed 90 with an outlet-opening in its upper end and with a discharge-opening for fine dust in the side or periphery of its upper portion, and provided with a lid or cover for said top opening, substantially as and for the purpose described. 95

In testimony whereof we have hereunto affixed our signatures in presence of two witnesses.

WILLIAM E. ALLINGTON.
WILLIAM H. CURTIS.

Witnesses:

F. E. MOORE,
JNO. P. HOMILLER.