

(No Model.)

H. FARRAR.
DUST COLLECTOR.

No. 435,057.

Patented Aug. 26, 1890.

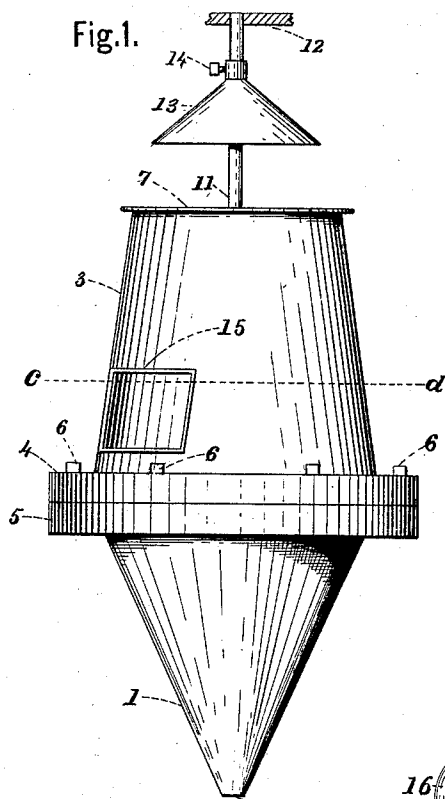


Fig.3.

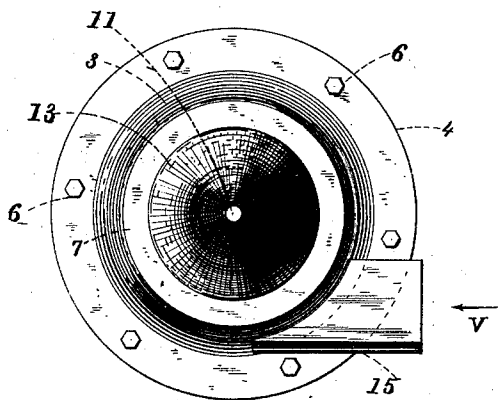


Fig.4.

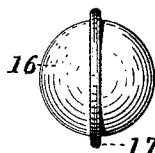
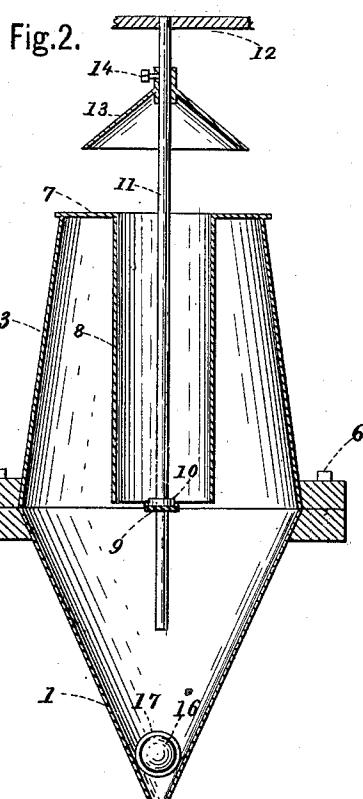
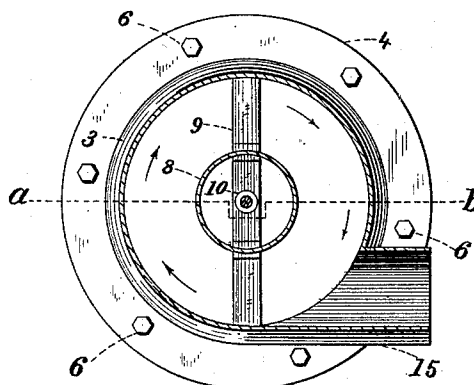


Fig.5.



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UNITED STATES PATENT OFFICE.

HENRY FARRAR, OF BUFFALO, NEW YORK.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 435,057, dated August 26, 1890.

Application filed June 23, 1890. Serial No. 356,495. (No model.)

To all whom it may concern:

Be it known that I, HENRY FARRAR, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Dust-Collectors, of which the following is a specification.

The object of my invention is to produce a suitable machine for separating the dust from air taken from middlings-purifiers, smut-machines, or for other analogous machines, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation looking in the direction of the arrow *v*, Fig. 3. Fig. 2 is a vertical central section on the line *a b*, Fig. 5. Fig. 3 is a top plan view. Fig. 4 is an enlarged elevation of the ball used in the lower portion of the dust-collector case. Fig. 5 is a horizontal section on the line *c d*, Fig. 1.

In said drawings, 1 represents the lower portion of the case, which is made in the form of an inverted cone having a small opening 2 at the bottom. 3 represents the upper portion of the casing. It is made slightly tapering from the bottom up, and the two parts 1 and 3 are united together by the flanged portions 4 and 5, secured rigidly together by bolts 6. The upper portion 3 is provided with a top 7, having a central opening, to which is secured an inside imperforate cylindrical case 8, which projects down nearly to the inverted conical portion 1, but not into it, and is secured at the bottom by a supporting cross-brace 9. If it were projected down into the case 1, it would cause the air to bear downward with too much force, and, causing too much disturbance in the lower case 1, would thereby interfere with the proper working of the machine. If its lower end were not placed down far enough, it would then permit too free an outlet through the tube 8, and in this way disturb the proper operation of the machine. Its proper position is therefore very near to the top of the case, but not into it. (See Fig. 2.) In the center of the cross-brace 9 is a stationary bearing 10, in which is rigidly secured a stationary vertical shaft 11, having its opposite or upper end secured to any convenient part of the ceiling of the room,

in which it is placed, for instance, at the point 12. A short distance above the top of the portion 3 is a cone-shaped cover 13, adapted to be adjusted at any point on the shaft 11 by a set-screw 14, but is never brought down low enough to close or cover the outlet-opening below it. The object of this cover 13 is to provide a convenient means for adjusting the pressure of air within the casing, so as to regulate it in proportion to the force of the incoming dust and air through the inlet-spout 15. If the cover 13 be located too high up, the outlet of air will be too great up through the outlet-tube 8, and would be liable to carry up and out some dust with it. If placed low enough down, it can be made to force the air down instead of up. Consequently this adjustable cover 13 is an important factor in the operation of the machine. It will be noticed that the cover 13 is made in the form of a hollow cone and is mounted on the shaft 11, so that its lower or inside portion is entirely free and unobstructed, and that no cross-braces of any kind are used over the outlet-opening, so that it is also free and clear.

Near the bottom of the upper case 3 is a tangential inlet-spout 15. (Shown in Figs. 1, 3, and 5.) This spout is located horizontally and a slight distance above the cone-shaped case 1, so that the air in the lower case receives only an indirect rotary motion by the action of the air and dust in the case 3 above it, as will be more clearly hereinafter shown. In the lower case is placed loosely a light ball 16, having a surrounding projecting rib 17, the object of which is to leave an opening around the ball between it and the sides of the case 1 for the free dust at all times to pass down. This ball is continually in motion while the machine is in operation, the action of the air in the case 1 being of sufficient force for that purpose, although it is not intended to be as great as it is in the separating-chamber in the upper case 3, because it receives its motion only from the friction of the moving air in the case 3.

The operation of the machine is as follows: The air charged with dust, consisting of the finer and lighter particles of flour passing from a middlings-purifier (or other machine) being forced in the usual way, passes in straight

lines through the inlet-spout 15 until it strikes the curved inner sides of the case 3, when it is deflected and assumes a rotary motion, the dust being thrown to the sides of the case 3, from which it falls through the more slowly-moving air in the case 1 and through the opening 2. The ball 16, being made of thin sheet metal, is very light and easily kept in constant motion by the slight movements of the air at the point where it is located. Consequently the opening at the point 2 is always free for the dust to pass through. The clear air, entirely separated from the dust, passes out through the tube 8, the dust being wholly separated therefrom as it enters the lower end of said tube.

The upper case 3 can be in the form of a straight cylindrical case, if desired, having the inner walls vertical, or substantially so; but I prefer the tapering form shown, as the interior walls incline inward, so that dust is not so liable to lodge or adhere to them. This form is therefore preferable.

I claim as my invention—

1. In a dust-collector, an upper separating-case forming the upper portion of the collector, a horizontal inlet-spout connected tangentially therewith located slightly above the lower edge of the same, a central vertical discharge-tube having its outlet at the top of the

upper case to which it is connected and its lower open end slightly above the bottom edge of the upper case, and a lower separating-case tapering from the top or large end downward to a small outlet-opening, its upper end being connected with and entirely open to the lower end of the upper chamber, and a vertical central shaft provided with a vertically-adjustable cone-shaped cover located on said shaft above the upper case and outlet-opening, substantially as described.

2. In a dust-collector, the combination, with a lower tapering dust collecting and discharge case having a small outlet-opening at the bottom, of a light ball provided with a rib and located within the outlet-opening, a separating-case located above the lower case connected therewith and covering the same, a tangential inlet-spout in the separating-case located above the open top of the lower collecting-case, whereby the air and dust are conducted into it and made to rotate therein, and an air-outlet tube having its lower end above the top of the lower case and its outlet end at the top of the upper case, substantially as described.

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