(No Model.)

B. F. ORTMAN.

DUST COLLECTOR.

No. 361,232. Patented Apr. 12, 1887.

Fig. 1.

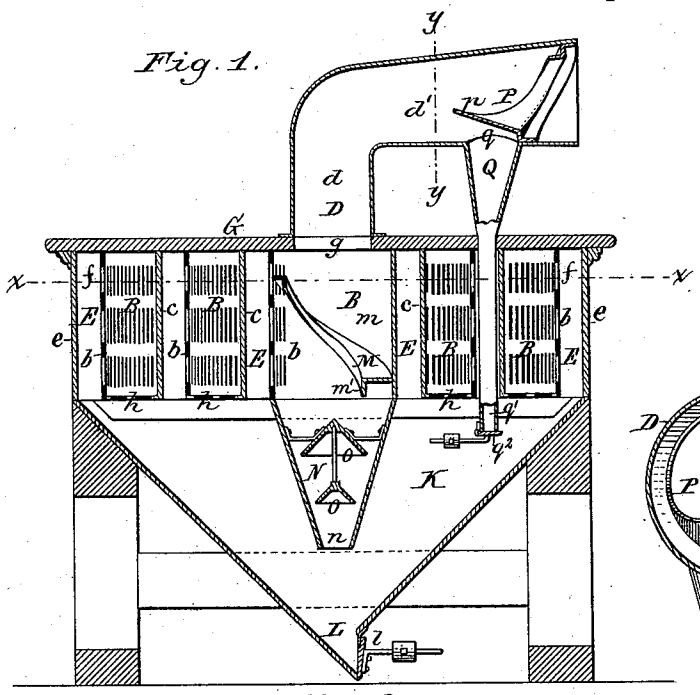


Fig. 3.

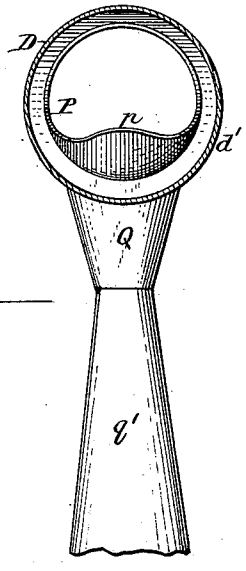
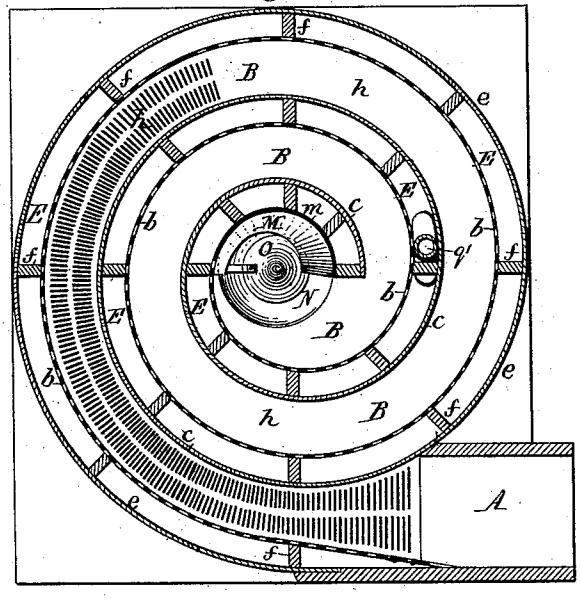


Fig. 2.



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UNITED STATES PATENT OFFICE.

BARNIM F. ORTMAN, OF BUFFALO, NEW YORK.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 361,232, dated April 12, 1887.

Application filed June 8, 1886. Serial No. 204,518. (No model.)

To all whom it may concern:

Be it known that I, BARNIM F. ORTMAN, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Dust-Collectors, of which the following is a specification.

This invention relates to a dust-collector in which the dust is separated from the air by the momentum of the dust particles, which latter are permitted to continue this motion and to enter a chamber provided for their reception, while the air is deflected out of its course and escapes in another direction. A machine of this kind is described and shown in Letters Patent of the United States No. 297,436, granted to me April 22, 1884. When these machines are used for collecting very fine or light dust—such as is sometimes discharged from middlings-purifiers—the dust-collector sometimes fails to intercept the very lightest part of the dust, and this light material escapes through the air-discharge pipe and is blown into the mill.

The object of this invention is to intercept this light dust by means of supplemental or auxiliary dust-collecting devices.

My invention consists, to that end, of the improvements which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved dust-collector. Fig. 2 is a horizontal section in line *x x*, Fig. 1. Fig. 3 is a cross-section, on an enlarged scale, in line *y y*, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A represents the air-spout, through which the dust-laden air enters the machine, and which is connected with the spout through which the air is discharged from the middlings-purifier, grain-separator, or other machine.

B represents a spiral air-passage forming a continuation of the spout A and having its outer vertical wall, *b*, constructed of perforated metal, wire-gauze, or other similar perforated material, while its inner wall, *c*, is constructed of wood, sheet metal, or other imperforated material. The inner end of the spiral air-passage B connects with a spout, D, through which the air is discharged from the machine after the dust has been separated from the air.

E represents a spiral chamber for the reception of the dust, arranged on the outer side of the air-passage B and bounded on the inner side by the perforated wall *b* and on its outer side by a tight wall, *e*.

f represents upright boards or partitions arranged in the chamber E, between the perforated wall *b* and the outer tight wall, *e*, to break the continuity of the chamber E and prevent the air from flowing through the same along the outer wall, *e*.

G represents the tight top plate of the machine, covering the air-passage B and chamber E, and provided at the center with an opening, *g*, with which the air-discharge spout D connects.

h represents the bottom plate of the air-passage B, made preferably of perforated metal; but, if desired, it may be made imperforate.

K represents a hopper or other suitable receptacle arranged underneath the chamber E, for the reception of the material which passes into said chamber. The hopper K is tightly connected with the circumferential wall *e* of the chamber E and provided with a discharge-spout, L, which is trapped by a weighted valve, *l*, a conveyer, or some other suitable contrivance, so as to prevent air-currents from passing through the hopper.

The innermost or tail portion of the outer wall, *b*, of the spiral air-passage B is made imperforate, as shown at *m*, and is provided on its inner side with a spiral flange or deflector, M, inclined downwardly.

N is an inverted conical receiver secured in an opening of the bottom plate, *h*, underneath the inner end of the spiral air-passage B, and having at its lower end an opening, *n*, through which the material passes from the receiver N into the receptacle K, which latter incloses the receiver N. Any dust particles which remain suspended in the air-current after the latter has passed beyond the inner end of the perforated wall *b* of the spiral air-passage B are thrown by their momentum against the imperforate curved wall *m* and deflected by the spiral flange M into the conical receiver N. The flange M is preferably provided on its edge with an overhanging lip, *m'*, which prevents dust particles from escaping at the inner edge of the flange. The receiver N, communicating at its upper end with the air-spout and at its

lower end with the receiver K, opens a communication between the dust-chamber E and the discharge-spout D. In order to check or retard air-currents which may tend to pass upwardly through the receiver N, the latter is provided with deflecting-cones O, which are secured axially in the receiver N, one above the other. These cones permit the dust to pass downwardly through the receiver N and prevent strong air-currents from passing upwardly through the receiver.

The air-discharge spout D is composed of a vertical portion, *d*, and a horizontal portion, *d'*, connected by an elbow or knee. The horizontal portion *d'* is provided with a deflecting ring or collar, P, which is secured within the horizontal portion *d'* above a receiver, Q, which is secured to the under side of the portion *d'* of the spout, and connects therewith by an opening, *q*. The deflecting-collar P is secured to the spout D in the rear of or beyond the opening *q*, and has its lower portion provided with a lip, *p*, extending in a forwardly-inclined position over said opening, as shown in Fig. 1. The air-current, moving upwardly through the vertical portion *d* of the pipe D, rebounds from the upper portion of the elbow and strikes the horizontal portion *d'*, near the opening *q*. Any dust particles still contained in the outgoing air-current are intercepted by the collar P and deflected downwardly into the receiver Q. The latter is preferably provided with a discharge-pipe, *q'*, which opens by a trapped discharge, *q²*, into the main dust-receiver K; or, if desired, the receiver Q may be provided with a separate discharge independent of the main receiver. The discharge-pipe *q'* is preferably made flaring toward its bottom, as represented in Fig. 3, to prevent the material from lodging in the pipe.

The bulk of the dust is separated from the air in the spiral passage B, and any light material which has not been separated from the air in said passage is intercepted by the deflectors M and P, and collected in the receivers arranged underneath said deflectors.

I claim as my invention—

1. In a dust-collector, the combination, with a dust-separating passage, of a concave deflecting-wall, a spiral deflecting-flange secured to the inner side of said wall, and a receiver into which the dust is deflected by said flange, substantially as set forth.

2. The combination, with the dust-separating passage and the curved deflecting-wall *m*, of a spiral dust-deflecting flange, M, provided with an overhanging lip, *m'*, and a receiver, N, substantially as set forth.

3. The combination, with the spiral separating-passage B, of a concave deflecting-wall, *m*, arranged at the inner end of said passage, a spiral flange, M, secured to the inner side of the wall *m*, and a receiver, N, substantially as set forth.

4. In a dust-collector, the combination, with a downwardly-tapering dust-receiver, N, provided at its lower end with a dust-exit and at its upper end with an exit for the purified air, of a deflector, O, secured centrally in the dust-receiver over the dust-exit, and separated from the wall of the receiver by an annular opening through which the dust descends, while air-currents, tending to ascend axially through the receiver, are intercepted by the deflector, substantially as set forth.

5. The combination, with the separating air-passage B, surrounding dust-chamber E, and the receiver K, of the deflecting-wall *m*, provided with a spiral flange, M, a conical receiver, N, arranged within the main receiver K, and a deflecting-cone, O, secured in the receiver N, substantially as set forth.

6. In a dust-collector, the combination, with the air-discharge spout D, of an annular deflector, P, arranged in said spout, and a dust-receiver, Q, communicating with said spout below said annular deflector, whereby the dust, moving along the inner side of the air-spout, is directed into the dust-receptacle, while the inner body of purified air escapes through the opening in the annular deflector, substantially as set forth.

7. In a dust-collector, the combination, with the air-discharge spout D, of a dust-receptacle, Q, communicating with said spout by an opening, *q*, and a deflecting-collar, P, secured in the spout and provided with an enlarged lip, *p*, extending over the opening *q*, substantially as set forth.

8. In a dust-collector, the combination, with the separating air-passage B, the main dust-receiver K, and the air-discharge spout D, of a deflector, P, secured in said spout, a dust-receiver, Q, communicating with the air-spout D below the deflector P, and a discharge-pipe, *q'*, extending from the receiver Q to the main receiver K, substantially as set forth.

Witness my hand this 1st day of June, 1886.

BARNIM F. ORTMAN.

Witnesses:
JNO. J. BONNER,
OSCAR SCHAUB.