(No Model.)

B. F. ORTMAN & H. R. TAYLOR.

DUST COLLECTOR.

No. 297,436. Patented Apr. 22, 1884.

Fig. 1.

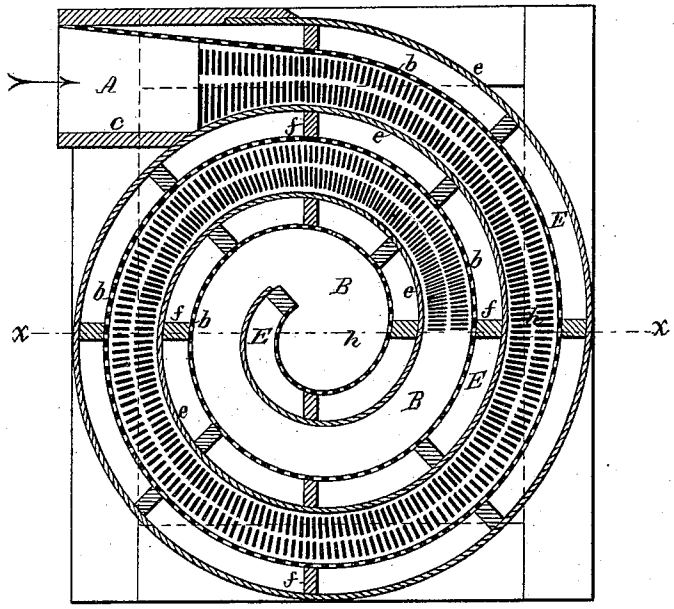


Fig. 2.

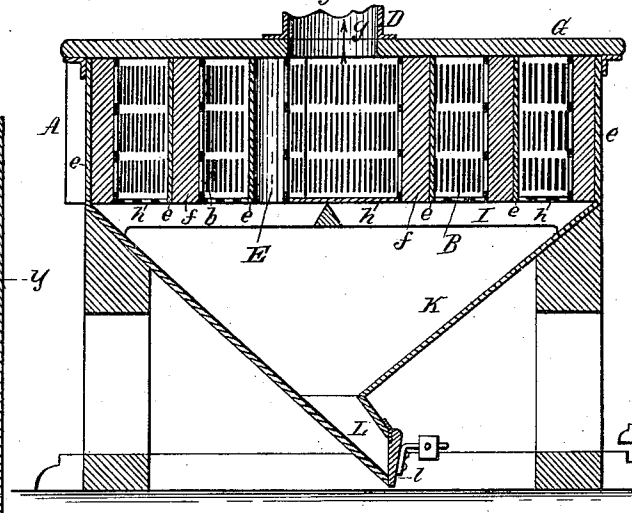


Fig. 4.

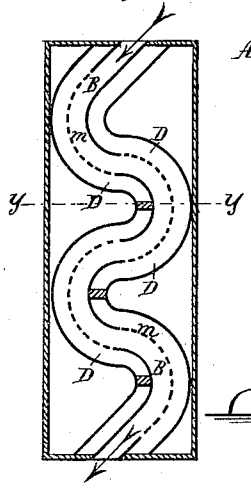


Fig. 5.

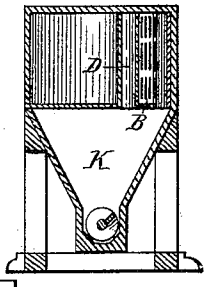
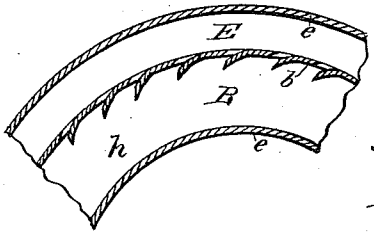


Fig. 3.



Witnesses.

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BARNIM F. ORTMAN AND HORATIO R. TAYLOR, OF BUFFALO, NEW YORK.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 297,436, dated April 22, 1884.

Application filed January 23, 1884. (No model.)

To all whom it may concern:

Be it known that we, BARNIM F. ORTMAN and HORATIO R. TAYLOR, both 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 an improvement in that class of machines which are employed in flouring-mills for separating the dust from the air which has passed through middlings-purifiers, grain-separators, or other machines in which an air-current is employed for separating materials of different gravities. In dust-catchers as ordinarily constructed the separation of the dust from the air is effected either by sifting or straining the air through filter-cloths or by discharging the dust-laden air into large rooms, in which it is permitted to come to a state of comparative rest, whereby the dust is permitted to drop out of the air. The first-mentioned system requires complicated machinery to render it effective in a continuous operation, and the last-mentioned system is objectionable because the dust-rooms occupy much valuable space in a mill.

The object of our invention is to produce a machine which is simple in construction, small and compact, and which requires no moving parts for its operation.

Our invention consists, to these ends, of a machine in which the dust is separated from the air by the dust-particles being permitted to continue their motion by their own momentum and to enter a chamber or space provided for their reception, while the air is deflected and finally discharged freed from the dust, as will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a horizontal section of a dust-catcher embodying our invention. Fig. 2 is a vertical sectional elevation on line *x x* of Fig. 1. Fig. 3 is a horizontal section, on an enlarged scale, of a portion of the machine. Fig. 4 is a horizontal section illustrating a modified construction of the machine. Fig. 5 is a vertical cross-section in line *y y*, Fig. 4.

Like letters of reference denote 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 imperforate 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 dead-air chamber 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 dead-air chamber E, between the perforated wall *b* and the outer tight wall *e*, to break the continuity of the air-chamber 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 dead-air chamber E, and provided at the center with an opening, *g*, with which the discharge-spout D connects. *h* represents the bottom plate of the air-passage B. This plate is preferably made of perforated metal, except at the center of the machine, where the air passing over it is almost completely freed from the dust, and where it may be made imperforate.

I represent horizontal pieces which support the spiral walls, *b* and *e*.

K represents a hopper or other suitable receptacle arranged underneath the dead-air 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 dead-air chamber, 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 air, entering the spiral passage B through the spout A, is continually deflected out of its course by the outer perforated spiral wall, *b*, of the passage B. The dust-

particles tend by their momentum to persist in their onward movement, and those of the particles which arrive opposite a perforation in the wall *b* pass through the perforation into the dead-air chamber E and drop by gravity into the hopper K below. The air-particles do not enter the dead-air chamber because of the resistance offered by the air contained in said chamber. This separation of the dust-particles from the air is continued throughout the spiral air-passage B, and the latter is made of sufficient length to cause a complete separation of the dust from the air, and the latter is discharged through the spout D in a pure condition.

The perforations in the wall *b* are preferably made in the form of upright slots, having their rear edges bent inwardly, as represented in Fig. 3, to facilitate the entrance of the dust-particles into the dead-air chamber. Any dust-particles which settle upon the bottom plate, *h*, of the air-passage B are moved along by the air-current until they reach a perforation, when they drop into the hopper K.

The construction represented in Figs. 1 and 3 renders the machine very compact; but, if preferred, an air-passage may be arranged in zigzag form, as represented in Figs. 4 and 5. In the last-mentioned construction the air-passage B is bounded by perforated plates *m*, forming its outer curved walls, which deflect the air-current out of its course, and each side of the air-passage is provided with a dead-air chamber, D, both of which discharge the dust into the hopper K below. The vertical perforated wall *b* keeps itself free from dust without the aid of any cleaning device.

The dust-collector is preferably so arranged with reference to the middlings-purifier, grain-separator, or other machine with which it is connected that the fan, which causes the air-current in the machine, drives the dust-laden air through the dust-collector.

We claim as our invention—

1. In a dust-collector, the combination of a bent or curved air-passage constructed with a perforated wall, which deflects the dust-laden air out of its course, and a dead-air chamber, which receives the dust-particles, which are driven through the said perforated wall by their momentum, while the air passes off through said passage in another direction, substantially as described.

2. In a dust-collector, the combination, with a spiral passage having an outer perforated wall, of a spiral dead-air chamber arranged on the outer side of said perforated wall, substantially as described.

3. In a dust-collector, the combination, with a bent or curved air-passage constructed with a perforated wall, which deflects the dust-laden air out of its course, of a dead-air chamber arranged on the outer side of said perforated wall, and partitions arranged in said dead-air chamber, whereby its continuity is broken, substantially as described.

4. In a dust-collector, the combination, with a bent or curved air-passage constructed with a perforated outer wall, which deflects the dust-laden air out of its course, and with a perforated bottom, of a dead-air chamber arranged on the outer side of said perforated wall and below said perforated bottom, substantially as described.

5. The combination, with the spiral air-passage B, having an outer perforated wall, *b*, inlet-spout A, and discharge-spout D, of the spiral dead-air chamber E, open at the bottom, and a receiver, K, arranged below the said chamber E, substantially as described.

6. The combination, with the spiral air-passage B, having an outer perforated wall, *b*, inlet-spout A, and discharge-spout D, of the spiral dead-air chamber E, provided with partitions *f*, and receiving-hopper K, substantially as described.

Witness our hands this 19th day of January, 1884.

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Witnesses:
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F. L. BROWNE.