(No Model.) 2 Sheets—Sheet 1.

B. F. ORTMAN.

DUST COLLECTOR.

No. 387,437. Patented Aug. 7, 1888.

Fig. 1.

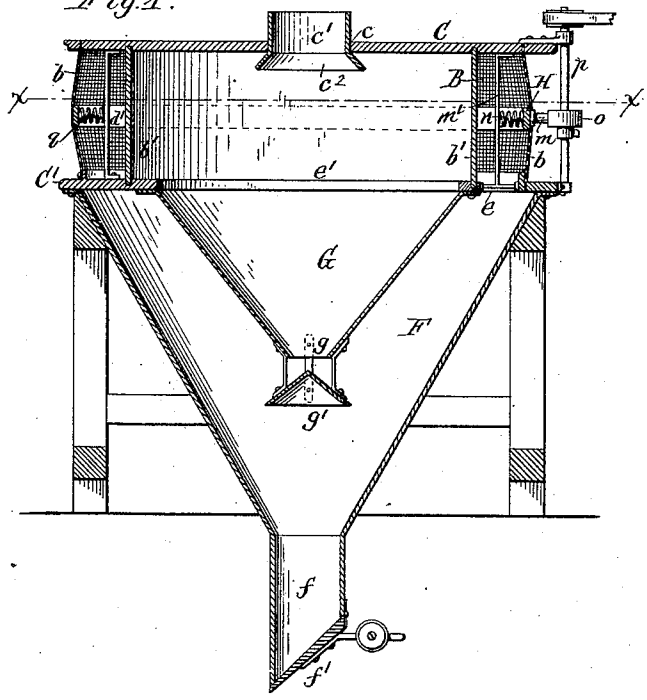
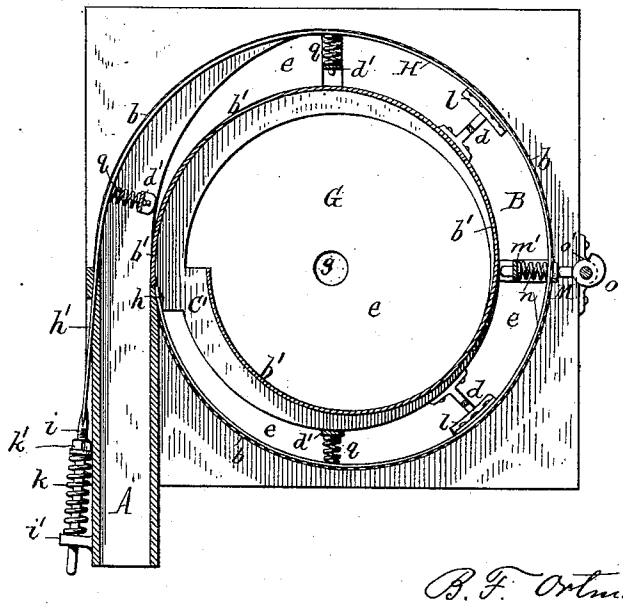


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

B. F. ORTMAN.

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Fig. 3.

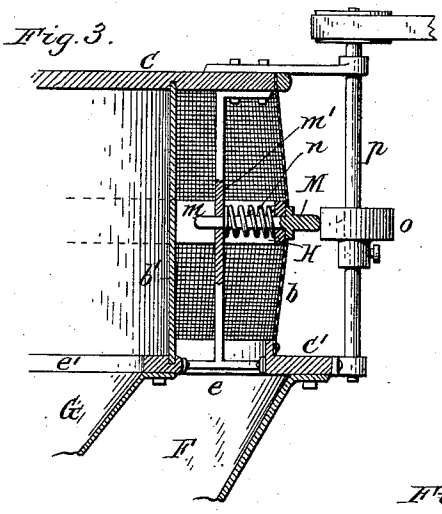


Fig. 5.

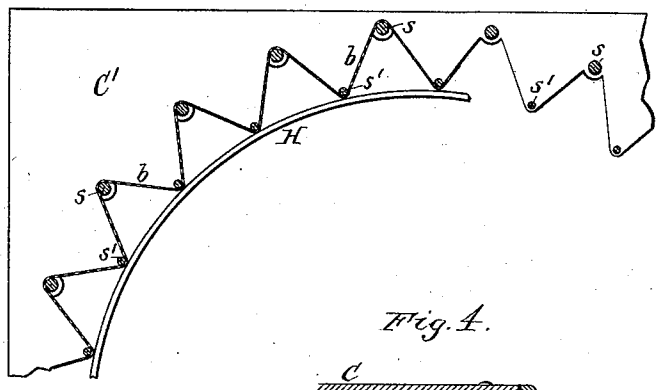


Fig. 6.

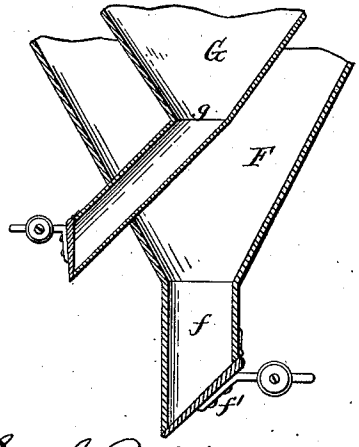
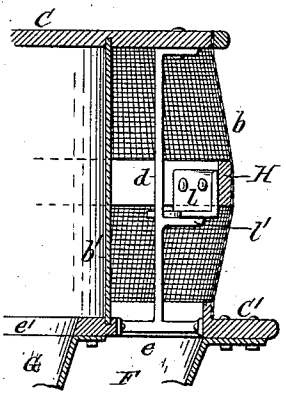


Fig. 4.



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UNITED STATES PATENT OFFICE.

BARNIM F. ORTMAN, OF BUFFALO, NEW YORK.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 387,437, dated August 7, 1888.

Application filed May 28, 1887. Serial No. 239,627. (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 a new and useful Improvement in Dust Collectors, of which the following is a specification.

This invention relates to an improvement in that class of dust-collectors in which the dust-laden air-current is caused to travel in a spiral course, whereby the dust particles are thrown against the outer wall of the separating-case, while the air moves onward and is discharged free from dust.

The object of my invention is to increase the separating capacity of this class of machines and to enable the same to separate and collect very fine and light dust.

The invention consists of the improvement which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 represents a sectional elevation of my improved dust-collector. Fig. 2 is a horizontal section in line *x x*, Fig. 1. Fig. 3 is a sectional elevation, on an enlarged scale, of a portion of the machine, showing the knocker whereby the filter-cloth is jarred. Fig. 4 is a sectional elevation on an enlarged scale, showing the manner of supporting the elastic coil or band which bears against the inner side of the filtering-cloth. Fig. 5 represents a modified form of the separating-case. Fig. 6 represents a modified construction of the dust receptacle or hopper.

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

A represents the inlet spout of the machine, into which the dust-laden air is delivered from a middlings-purifier or other machine.

B represents the spiral air-passage or separating-case, which is connected with the spout A and forms a continuation of the same. The air passage or case B is composed of an outer upright wall, *b*, constructed of filter-cloth, and an inner tight wall, *b'*, constructed of wood or other suitable material.

C C' represent the top and bottom plates of the separating-case, which are connected by standards or uprights *d d'*, and to which the filter-cloth *b* is secured at its upper and lower edges by tacks or other suitable means. The top plate, C, is provided with an opening, *c*, through which the purified air escapes, and which is surrounded by a collar, *c'*, having at its lower end a conical deflecting-ring, c^2, which depends into the separating-case and prevents the air which follows the top plate from reaching the exit without diving. The bottom plate, C', of the separating-case is provided between the filter-cloth *b* and the tight wall *b'* with a spiral opening, *e*, and within the tight wall *b'* with a central opening, *e'*, through which the dust is discharged from the separating-case.

F represents a dust receptacle or hopper arranged below the separating-case B and receiving the dust which falls through the opening *e* between the filter-cloth *b* and the inner imperforate wall, *b'*. The hopper F is provided at its lower end with a discharge-spout, *f*, having an automatic discharge-valve, *f'*.

G represents a hopper arranged within the dust-receptacle F and receiving the dust falling through the opening *e'* within the inner tight wall, *b'*. The inner hopper, G, is secured to the under side of the bottom plate, C', and is provided at its lower end with an opening, *g*, below which is arranged a conical deflector, *g'*, which prevents air-currents from passing directly upward into the hopper G.

H represents an elastic coil or band, which bears against the inner side of the filter-cloth *b* midway between the top and bottom plates, C C', and whereby the filter-cloth is tightened or stretched. The elastic coil H is secured with its inner end, *h*, to the tight wall *b'* or other stationary part of the machine, and projects with its outer end, *h'*, through an opening in the side of the air-passage B. The outer end of the coil H is provided with a screw-bolt, *i*, which passes through a lug or ear, *i'*, secured to the outer side of the inlet-spout A.

k represents a spiral spring which surrounds the screw-bolt *i* and bears with one end against the lug *i'* and with its opposite end against a screw-nut, *k'*, which works on the screw-bolt *i*. Upon turning the screw-nut *k'* in the proper direction to compress the spring *k*, the latter, by its reaction, forces the end *h* of the elastic coil H toward the air-passage B, thereby increasing the length of the coil which bears against the filter-cloth, pressing the latter

outwardly and taking up any slack in the cloth. The coil H is supported by lugs or ears *l*, secured to the inner side of the coil and resting loosely upon ears *l'*, formed on the uprights *d*.

M represents a knocker whereby the filter-cloth *b* is jarred and the dust adhering to the same is dislodged. The knocker M consists of a horizontal bolt, *m*, which is secured to the elastic coil H and projects with its outer end through the filter-cloth *b*. The inner end of the bolt *m* is arranged to slide in a standard, *m'*, secured at its ends to the top and bottom plates, C C'.

n represents a spiral spring which surrounds the bolt *m* and is interposed between the standard *m'* and the elastic coil H, so as to force the coil and the bolt outwardly.

o represents a cam which bears against the outer end of the bolt *m*, and is adapted to move the bolt and the coil H inwardly. The cam *o* is mounted on a vertical shaft, *p*, journaled in suitable bearings secured to the case B, and is provided with an offset, *o'*, which allows the bolt *m* to move outwardly under the pressure of the spring *n* when the offset passes the outer end of the bolt.

q represents spiral springs which are secured with their outer ends to the elastic coil H and with their inner ends to the standards *a'*. The springs *q* permit the elastic coil H to yield when the same is moved inward by the bolt *m*, and force the coil outward against the filter-cloth *b* when the bolt is released by the offset *o'* of the cam *o*.

The dust-laden air enters the inlet-spout A and passes into the spiral air-passage B, in which it is continually deflected out of its course, a portion of the air escaping through the pores of the filter-cloth, while the dust is intercepted. Part of the dust is here separated from the air by this filtering operation, and part by reason of the deflection of the air-current by the spiral outer wall of the air-passage. The residue of the dust-laden air enters the space within the inner imperforate wall, *b'*, in which it whirls and deposits the residue of the dust against said wall.

The jarring of the filter-cloth *b* detaches the dust therefrom and keeps its meshes open. The dust collected in the outer hopper, F, consists, principally, of heavy reddish material, while the dust deposited in the inner hopper, G, consists, principally, of light material, such as fine flour. If desired, these two products may be discharged separately from the machine through separate spouts, as shown in Fig. 6.

In the modified construction of the separating-case shown in Fig. 5 the filter-cloth *b* is arranged in zigzag form to increase its filtering-surface. In this construction the filter-cloth passes loosely around outer rigid upright rods, *s*, and inner flexible or elastic rods, *s'*. The elastic coil H strikes the flexible rods *s'* when operated upon by the knocker and vibrates said rods, whereby the filter-cloth is jarred and the dust detached therefrom. The air-exit *c* in the head of the separating-case relieves the air-pressure against the filter-cloth to such an extent that the dust which is deposited against said cloth can be easily shaken off without interrupting the air-current.

My improved machine is very simple and compact. It possesses a large separating capacity and enables the fine light dust to be effectually separated from the air.

I claim as my invention—

1. A dust-collector provided with a curved separating-case having an inner tight wall, an outer wall constructed of filter-cloth, and an air-exit through which the residue of the purified air escapes without passing through the filter-cloth, substantially as set forth.

2. In a dust-collector, the combination, with a curved separating-case having an outer wall constructed of filter-cloth and an inner tight wall, of a chamber surrounded by said separating-case and communicating therewith, and an air-exit formed in the top of said chamber, substantially as set forth.

3. In a dust collector, the combination, with the curved separating-case having an outer wall constructed of filter-cloth, of a band bearing against the filter-cloth and an adjusting device connected with said band, whereby the filter-cloth is stretched, substantially as set forth.

4. The combination, with the curved separating-case B, having its outer wall constructed of filter-cloth, of the band H, bearing against the cloth, a screw, *i*, connected with the band H, a spring, *k*, applied to said screw, and a fixed abutment, *i'*, and a screw-nut, *k'*, between which the spring is arranged, substantially as set forth.

5. The combination, with the curved separating-case B, constructed with an outer wall, *b*, of filter-cloth, of an elastic band, H, bearing against said cloth, a radial bolt, *m*, connected with said band, a cam, *o*, whereby said bolt is moved inwardly, and springs *q*, whereby the band is moved outwardly, substantially as set forth.

Witness my hand this 25th day of May, 1887.

BARNIM F. ORTMAN.

Witnesses:
FRED. C. GEYER,
CHESTER D. HOWE.