

(No Model.)

R. E. WARDHAUGH.
ELECTRIC DUST COLLECTOR.

No. 470,608.

Patented Mar. 8, 1892.

Fig. 1.

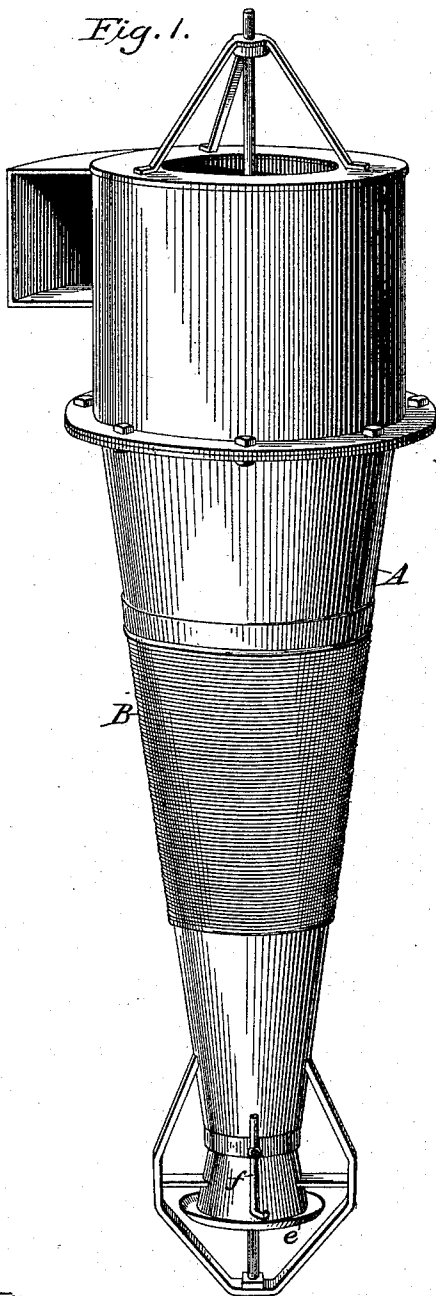
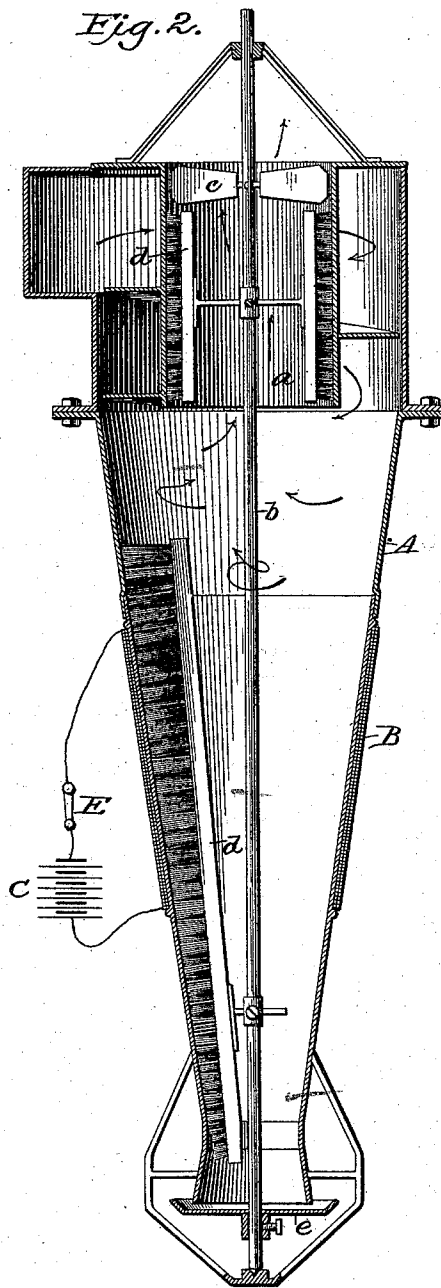


Fig. 2.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

RICHARD E. WARDHAUGH, OF JACKSONVILLE, ILLINOIS, ASSIGNOR OF
ONE-HALF TO WILLIAM W. ALLIS, OF MILWAUKEE, WISCONSIN.

ELECTRIC DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 470,608, dated March 8, 1892.

Application filed October 2, 1889. Serial No. 325,765. (No model.)

To all whom it may concern:

Be it known that I, RICHARD E. WARDHAUGH, a citizen of the United States, residing at Jacksonville, in the county of Morgan and State of Illinois, have invented certain new and useful Improvements in Electric Dust-Collectors, of which the following is a specification.

My invention relates to dust-collectors, and more especially to such as are employed for the collection of the fine floating dust incident to the manufacture of flour.

The invention consists, essentially, in combining with the body of the collecting-chamber a coil of insulated wire and means for producing and causing a current of electricity to flow through said coil, and thereby to electrify the collecting body or chamber and cause the floating particles to adhere to its surface.

In the accompanying drawings, Figure 1 is a perspective view of a dust-collector embodying my improvements; Fig. 2, a sectional view of the same.

In the drawings I have represented a centrifugal dust-collector, or one in which the dust-laden air is carried under pressure into a circular chamber A in a direction tangential to the outer wall thereof, whereby the dust-laden air is caused to circulate around in said chamber and to form a vortex, the particles of dust and other solid matter being thrown outward against the walls of the chamber by centrifugal force and gliding down said walls to an outlet and discharging at their faces in of the collecting-chamber when, as in the present case, said outlet is placed at the lower end. The purified air escapes centrally from the chamber through a tubular guard or chimney *a*, which is made of such size as to receive the air and permit it to escape with comparatively little pressure, if any. A central shaft *b*, carried in suitable bearings or supports, passes axially through the chamber and is furnished at a suitable point with a wind-wheel *c*, the blades of which may be set with their faces in line with the axis of the shaft or oblique thereto, as preferred, the whirling motion of the air in escaping being sufficient to cause the rotation of the wheel whether the blades be arranged obliquely or not. Secured upon the shaft are brushes *d*, one arranged to sweep

the wall of the main collecting-chamber to remove particles of matter adhering thereto and another arranged in the outlet-pipe or chimney and serving to remove any particles of dust or floating matter that may be lodged therein. Also carried by said shaft just below the outlet-opening of the discharge-opening or dust-outlet of the collecting-chamber is a saucer-shaped disk *e*, upon which the collected dust is deposited, and from which it is discharged by centrifugal action, the concave or saucer shape of the disk causing the retention of a quantity of dust upon it to effectually prevent the inflow of air through the dust-discharge opening.

The features of construction thus far set forth, except the saucer-shaped disk, are not claimed in this application, but are embraced in an earlier application filed in my name, and have been used by me for a considerable time. A finger or scraper *f*, adjustably secured to shell A and extending into the depressed portion of disk *e*, aids in discharging its contents.

The body A of the collecting-chamber is preferably made of sheet-iron, though it may be made of steel, galvanized iron, or other suitable metal or material.

B indicates a coil of insulated wire wound about the body A of the collecting-chamber, preferably on its exterior, and C indicates a battery or other source of electricity, such as a dynamo-electric generator, a storage-battery, or the like, with the two poles of which the opposite ends of the coil B are connected, so that a constant current of electricity may flow through the coils so long as the circuit is complete. For convenience a switch or circuit-breaker E is provided, whereby the circuit may be at any time interrupted, if desirable. The passage of the current through the coil of wire electrifies the body which it surrounds and produces an electrical atmosphere within the chamber, causing the fine floating particles to adhere to its surface with considerable tenacity, practical use of the machine showing a rapid precipitation of the dust upon the inner surface of the chamber.

While I have represented in the drawings a well-known form of dust-collector and have shown and described means for producing the centrifugal action of the air-current, I do not

mean to restrict myself in any manner to this or any other described form of collecting-chamber nor to the application of centrifugal force to effect the separation of the dust from the air. The air-current may simply flow continuously either in a straight, spiral, zigzag, or other path through a chamber electrified in substantially the way above set forth. Obviously, too, the direction of running the wire, its location, whether outside or inside of the chamber, the number of coils, and like matters of detail may be varied at will.

The invention consists, broadly, in the combination, with a collecting-chamber, of an electric conductor and means for producing a current of electricity therethrough in such manner as to cause the electrification of the chamber or the production of an electrified atmosphere therein, which shall cause the precipitation of the particles of dust.

Having thus described my invention, what I claim is—

1. In combination with a dust-collecting chamber, an electric conductor and means for producing a current of electricity through said conductor, substantially as set forth.

2. In combination with the body or chamber of a dust-collecting apparatus, an insu-

lated coil encircling said chamber and an electric generator having its positive and negative elements respectively connected with opposite ends of the coil.

3. The herein-described dust-collector, consisting of the collecting-chamber provided with tangential inlet for the air, an outlet for the dust at one end, a central tubular outlet for the purified air at the other end, a central shaft provided with a fan and brushes for sweeping the interior of the chamber, a disk applied to said shaft and serving to prevent the entrance of air through the dust-outlet, an insulated conductor encircling the collecting-chamber, and a source of electricity having its elements connected with opposite ends of the coil.

4. In combination with chamber A, shaft *b*, provided with a saucer-shaped disk *e* below the dust-discharge.

5. In combination with shell or chamber A, shaft *b*, and disk *e*, finger *f*, extending into the depression of the disk.

In witness whereof I hereunto set my hand in the presence of two witnesses.

RICHARD E. WARDHAUGH.

Witnesses:

S. P. McCULLOUGH,
JOHN DEARLIN.