

(No Model.)

3 Sheets—Sheet 1.

C. G. ROLLINS.

DUST CATCHER.

No. 311,036.

Patented Jan. 20, 1885.

Fig. 1.

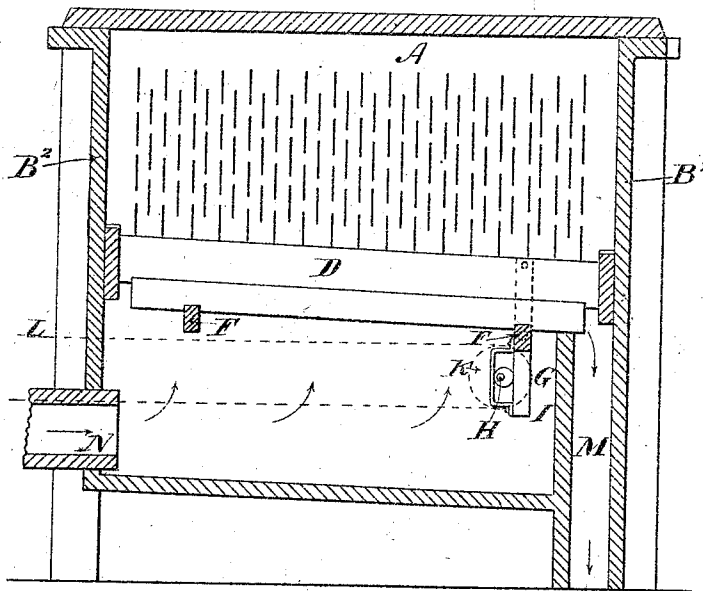
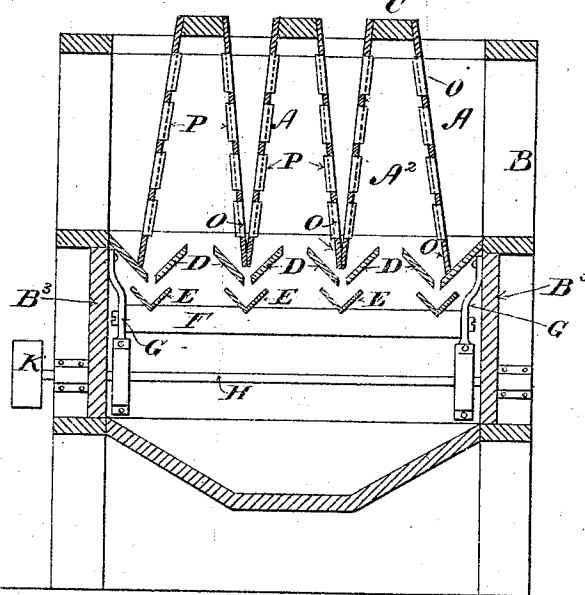


Fig. 2.



Witnesses

R. H. Sanford.

Electus A. Pratt

Inventor

Charles G. Rollins

By Anasoa Pail
his atty.

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C. G. ROLLINS.

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Fig. 3.

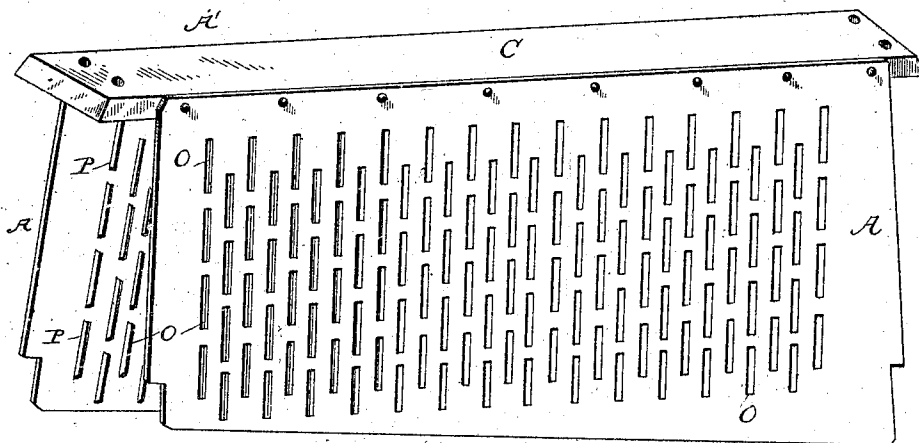
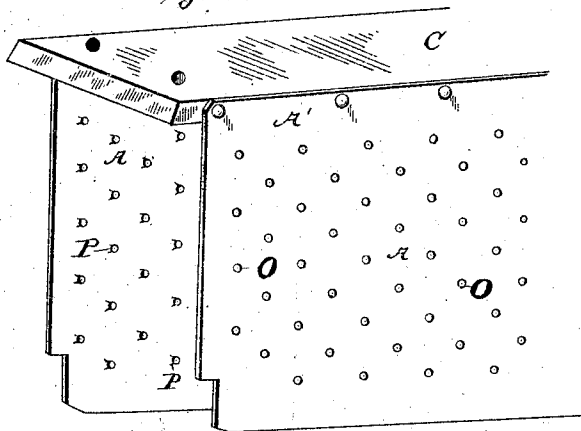


Fig. 5.



WITNESSES

C. Hough
C. E. Jones

INVENTOR

Charles G. Rollins.
BY *Chas. Gooch*
ATTORNEY

(No Model.)

C. G. ROLLINS.

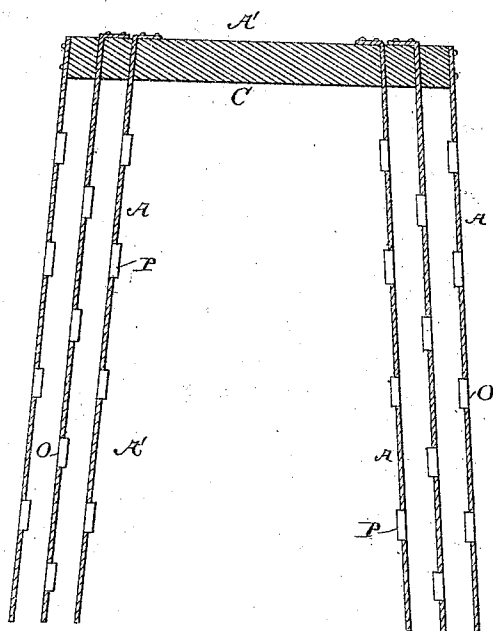
3 Sheets—Sheet 3.

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Fig. 4.



WITNESSES:

E. Hough
C. E. Jones

INVENTOR:

Charles G. Rollins
By Chas. J. Booth
attorney

UNITED STATES PATENT OFFICE.

CHARLES G. ROLLINS, OF MINNEAPOLIS, MINNESOTA.

DUST-CATCHER.

SPECIFICATION forming part of Letters Patent No. 311,036, dated January 20, 1885.

Application filed June 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, CHARLES G. ROLLINS, a citizen of the United States of America, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Dust-Catchers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in that class of dust-collectors which are employed in mills for freeing the dust-laden air discharged from middlings-purifiers and other machines from the dust or solid particles which it contains.

As dust-collectors are ordinarily constructed, the dust-laden air is sifted or strained through filter-cloths, which intercept the dust and permit the air to pass through. The meshes of the filter-cloths become filled with dust, and hence it becomes necessary to provide jarring or brushing devices for removing the dust from the cloth. Moreover, it is found impracticable to remove the dust by jarring or brushing the filter-cloths while the air is passing through them, and hence it becomes necessary to provide devices for cutting off the air-current from all or part of the cloths while they are being cleaned.

The object of my invention is to provide a dust-collector which shall effectually filter or strain the dust from the dust-laden air passed into the dust-collector, and to dispense with all devices for cleaning the air-strainers. By "filtering" or "straining" the air I mean passing it through a medium which, while it allows the air itself to pass through, intercepts the dust or fluff carried by the air and does not allow it to pass through such medium.

To this end my invention consists, generally, in the construction, combination, and arrangement of devices hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of my machine. Fig. 2 is a vertical cross-section of the same. Fig. 3 is perspective-view of one of the dust-catchers; Figs. 4 and 5, modified arrangements of the same.

B represents a suitable supporting-frame.

A² is a chamber of any suitable size and shape, with its inclosing-walls supported by the frame B.

N is a spout or pipe through which the dust-laden air from the milling machinery is conducted into the chamber. The walls of the chamber A², or portions thereof, are composed of metal plates A, preferably arranged as shown in Fig. 2. These plates are provided with fine perforations O, which are usually formed by puncturing the metal, thereby leaving lips or flanges P, which, when the plates are in position, extend inwardly into the chamber. These perforations are very fine, the spaces between the edges of the lips being too small to allow the passage therethrough of the dust contained in the air introduced into the chamber, while permitting the escape of the air. The plates are preferably arranged in an upright position, and the dust which is intercepted by the plates slides down over the smooth surfaces of the projecting lips and over the smooth surfaces of the plates between the rows of perforations. The collector is thus self-cleaning, and no brushing, jarring, or other cleaning devices are needed, and it is not necessary at any time to cut off the air-current from the collector or from any part thereof. The collector is thus more efficient, as it never becomes clogged with dust, and it is more simple in construction than those heretofore in use. In some instances the flanges may be omitted, the inside of the plates being smooth; but in this case the perforations should be as fine as the spaces between the lips are in the other case.

In Fig. 2 the metal plates are shown arranged in pairs, being secured at their upper edges to the opposite sides of longitudinal beams C, which are supported on the frame B. The ends of the chamber are closed by vertical walls B². Below the lower edges of the plates A' the sides of the chamber are inclosed by suitable walls, B³. The plates A' form the side walls of the upper part of the chamber. Under the lower edges of the plates A are slanting boards D. A small opening is left at the bottom between every two boards, and through this the dust falls into the spouts E, which are mounted or supported upon a frame

or series of bars, F. The frame F is suspended from the inner walls of the chamber by straps G, which leaves the frame free to oscillate.

H is a shaft which is journaled within the chamber, and carrying the cams or eccentrics I. Straps J, secured to the depending straps G, pass around the eccentrics I.

K is a pulley keyed upon shaft H, and adapted to receive power through belt L from any suitable motor. As the shaft H is rotated a reciprocating motion is imparted to the spouts E, and the dust collected within said spouts is fed into the discharging-spouts M, through which the dust passes from the chamber.

I prefer to form the perforations in the metal plates in a series of parallel rows extending across the plate, and to arrange the plates in the dust-collector with the rows of perforations extending vertically, as shown in Fig. 1, so that there will be no obstruction to the downward movement of the dust intercepted by the metal plates. The metal plates are provided with perforations, which are narrow slits in the metal; but in some instances round perforations or punctures, as shown in Fig. 5, may be used.

In order to guard against the possibility of any dust escaping through the dust-collector, I sometimes surround the chamber or a part of the walls thereof with other metal plates, as shown in Fig. 4. In this figure I have shown three sets of plates arranged one over another, and with the perforations of one plate opposite the unperforated portions of the contiguous plate or plates. With this arrangement, if any of the dust should possibly get through the first plate, it would be collected by the succeeding plate or plates. In some instances I locate the dust-collector immediately over a middlings-purifier, with the casing of the purifier communicating directly with the dust-catcher. The dust and fluff carried up by the current of air passing through the middlings is intercepted by the metal plates, while the air passes through the fine perforations in the plates. An instance of this arrangement is found in my Patent No. 308,099, November 18, 1884. The self-cleaning feature of the strainers is in this connection of especial value.

In Fig. 2 the upright plates are shown as inclined slightly inward at the top, and this I consider the preferable arrangement; but the plates are in some instances arranged vertically, as shown in Fig. 5.

Other devices than those here shown may be used for removing the dust as it slides down from the metal plates.

Any suitable forcing or induction means may be used for conveying the dust-laden air

from the purifiers or other milling machinery to the chamber of the dust-collector.

I claim as my invention—

1. The combination, in a dust-collector, of air-strainers composed of metal plates having therein a series of fine perforations, and means for conducting dust-laden air to the air-strainers, whereby the air is passed through the perforations of the metal plates, while the dust is intercepted and collected below the strainers, all substantially as described.

2. The combination, in a dust-collector, of air-strainers composed of metal plates having therein a series of fine perforations provided with lips or flanges extending into the dust-collecting chamber, and means for conducting dust-laden air to the strainers, whereby the air is passed through the perforations of the metal plates, while the dust is intercepted and collected below the strainers, all substantially as described.

3. The combination, in a dust-collector, of air-strainers formed of metal plates having therein a series of fine perforations provided with lips or flanges extending into the dust-collector, said perforations being arranged in vertical rows, means for conducting dust-laden air to the strainers, and means under the strainers for conducting the dust from the dust-collector, all substantially as described, and for the purpose set forth.

4. The combination, in a dust-collector, of upright air-strainers formed of metal plates having therein a series of fine perforations, means for conducting dust-laden air to the air-strainers, and conductors arranged under the upright strainers for conveying the dust from the dust-collector, substantially as described.

5. The combination, in a dust-collector, of a series of air-strainers, each composed of a metal plate having therein a series of fine perforations, said series of strainers being arranged with the perforations of each plate opposite the unperforated portions of the next plate or plates, substantially as described, and means for conducting dust-laden air to the strainers.

6. The combination, in a dust-collector, of air-strainers consisting of metal plates provided with a series of fine perforations, and reciprocating spout or spouts for receiving the dust from the air-strainers and conveying it from the collector, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES G. ROLLINS.

Witnesses:

GEORGE ODLUM,
JAMES BRYANT.