(No Model.) 2 Sheets—Sheet 1.

E. BRETNEY.

DUST COLLECTOR.

No. 408,074. Patented July 30, 1889.

Fig. 1.

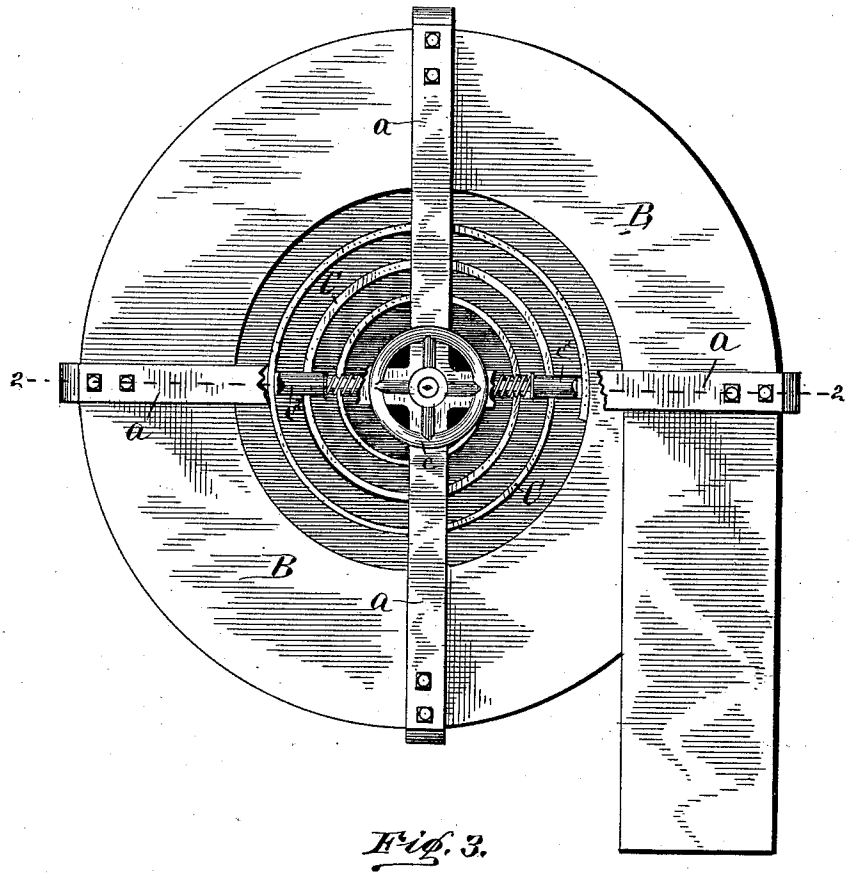
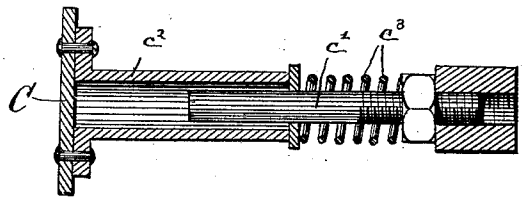


Fig. 3.



WITNESSES.

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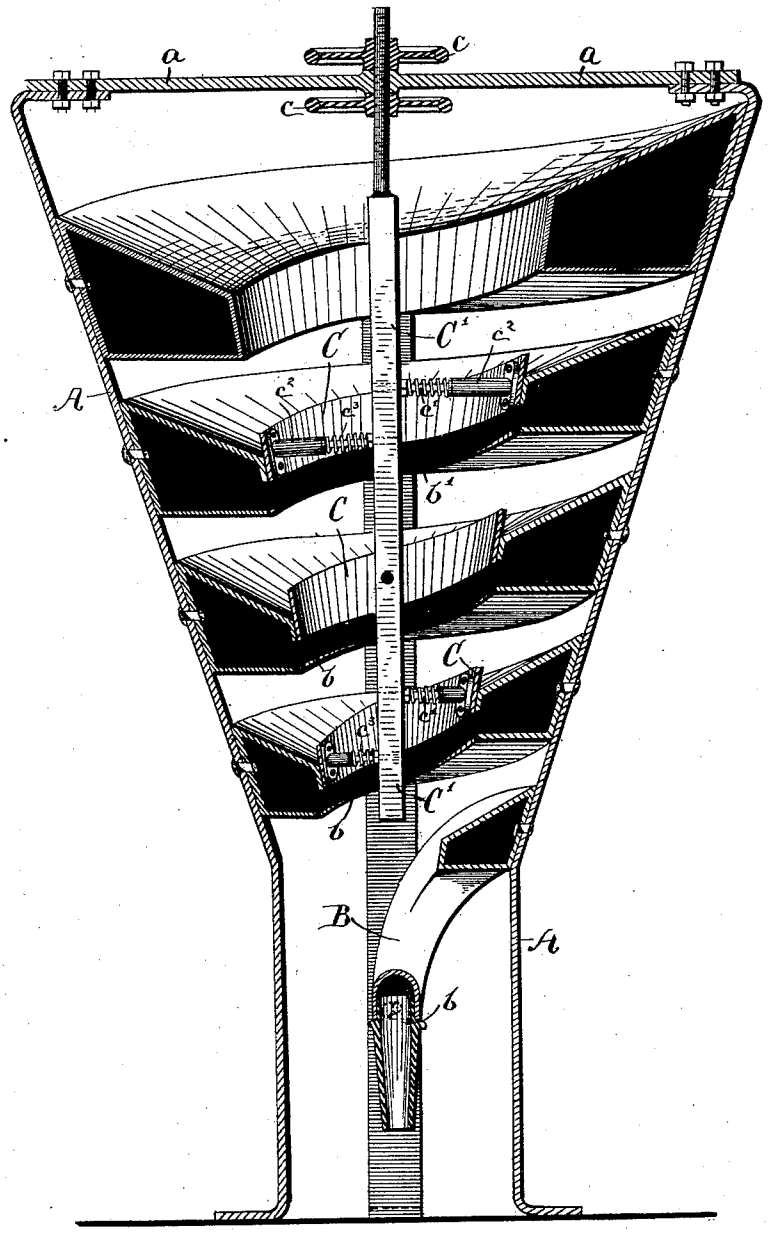
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Fig. 2.



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UNITED STATES PATENT OFFICE.

EUGENE BRETNEY, OF INDIANAPOLIS, INDIANA.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 408,074, dated July 30, 1889.

Application filed May 14, 1889. Serial No. 310,764. (No model.)

To all whom it may concern:

Be it known that I, EUGENE BRETNEY, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Dust-Collectors, of which the following is a specification.

The object of my said invention is to provide a simple and effective device for collecting dust, shavings, and similar matter, discharged from milling, wood-working, and similar machinery, without creating a vortical motion of the air, and thus avoid opposing currents and back-pressure. I accomplish this object by forming a spiral separating-chamber, contracted in size from the receiving to the discharging end, and having an inclined or deflecting top, with suitable valves and openings, as will be hereinafter more fully described.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a top or plan view of a machine embodying my said invention; Fig. 2, a central vertical section through the same on the dotted line 2 2 in Fig. 1; and Fig. 3, a detail sectional view, showing the connection between the sliding valve and rod on which it is supported, on an enlarged scale.

In said drawings, the portion marked A represents the supporting-frame; B, the spiral casing, and C the valve.

The frame A consists of a number of posts or legs, (four being shown,) secured to the floor or other part of the mill on which the machine is to be supported, extending up alongside and secured to the casing, being flared out to correspond with the direction of the sides of said casing, and connected together at the top by cross-bars *a* or a spider having arms to engage with the top end of each post.

The casing B is of a spiral form, and is tapered or contracted in size and also in area from top to bottom, ending in a discharge-nozzle *b* at the lower end, with which may be connected any suitable spout for conducting the products collected to any point desired, or they may be discharged directly beneath the machine, if preferred. In cross-section the bottom of the casing is substantially in a horizontal plane, while the outer wall tapers inwardly from top to bottom. The top wall is inclined downwardly from the outer to the inner edge, and the inner wall is substantially parallel with the outer wall, thus forming a casing which extends in a spiral and inward direction, with a continually decreasing area from the receiving to the discharging end, and the top of which is adapted to serve as a deflector to throw all particles of dust, dirt, shavings, or other similar substances against the outer wall and on the outer portion of the air-current. Each turn or coil of the casing is securely riveted to the frame, as shown, thus supporting it rigidly in a fixed position. The top portion is formed imperforate for a short distance, usually for about the length of one turn, but from a suitable point near the top to near its lower end a continual slot or opening *b'* is formed in the inner wall, preferably at its lower edge, as shown, for the escape of the purified air, said opening preferably narrowing in width from top to bottom to maintain the same size relative to the capacity of the casing throughout.

The valve C consists of a spiral plate supported on a vertical rod C' and adapted to cover the slot or opening *b'*, or such portion of it as may be desired. The rod C' is supported centrally within the casing from the cross-bars of the frame, being preferably formed screw-threaded at its top, and provided with a nut or hand-wheel *c* on each side of the bearing, by which it and through it the valve may be adjusted vertically. It is provided at intervals throughout its length with short arms *c'*, screwed into its sides, which extend out and into hollow arms c^2, which are secured to and project out from corresponding points on the spiral valve C, a spring c^3 being interposed between the two parts, as shown in Fig. 3, to hold said valve tightly against its seat on the inner wall of the casing.

In operation the dust-laden air is forced by a blow-fan, as usual, through the inlet-opening at the top, and passes downwardly, being whirled around and around by this force and the shape of the casing through the spiral chamber, the downwardly-inclined top and centrifugal force of the current operating to

throw and carry the particles of dust, &c., upon the outer side of the current toward the discharge-opening. As the air-chamber diminishes in size and area, the purified air is continually forced out through the opening *b'*, (which is adjusted to the desired size by means of the valve, as described,) while the products collected therefrom are maintained within the casing and, together with the residuum of air not escaping through the opening or slot *b'*, pass through the discharge-opening, its velocity being regulated by allowing more or less air to escape through the opening for the escape of the purified air.

Having thus fully described my said invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A dust-collector consisting of a spiral casing having an inlet-opening, a dust-outlet, and an air-outlet through its inner wall, substantially as set forth.

2. A dust-collector consisting of a spiral casing of contracting size, provided with an inlet-opening, a dust-outlet, and an outlet for the discharge of the purified air, substantially as set forth.

3. In a dust-collector, a spiral separating-chamber having an inlet-opening, a dust and air outlet, and a valve for regulating said air-outlet, substantially as set forth.

4. In a dust-collector, a spiral separating-chamber having an inlet-opening and a dust and air outlet, the top of said chamber being a tapered or deflecting wall, substantially as set forth.

5. In a dust-collector, a spiral separating-chamber contracted in size from the inlet to the outlet opening and the tapered deflecting top or wall, and an air-discharge opening formed in the inner wall, substantially as set forth.

6. In a dust-collector, a spiral separating-chamber tapered from top to bottom, a top deflecting or tapered wall and inlet and outlet opening, an air-discharge opening formed in the inner wall, and an adjustable valve for said air-discharge opening, substantially as set forth.

7. A dust-collector consisting of the frame, the tapered spiral separating-chamber, the top wall of which is inclined from its outer to its inner edge, and an opening for the escape of the purified air formed in the inner wall and extending from near its top to near its bottom, substantially as set forth.

8. In a dust-collector, the combination of the frame, the spiral casing having inlet and outlet openings, the opening for the discharge of the purified air, and the valve C, supported on the adjustable rod C' and connected therewith by an adjustable connection, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 9th day of May, A. D. 1889.

EUGENE BRETNEY. [L. S.]

Witnesses:
E. W. BRADFORD,
C. W. H. BROWN.