

(No Model.)

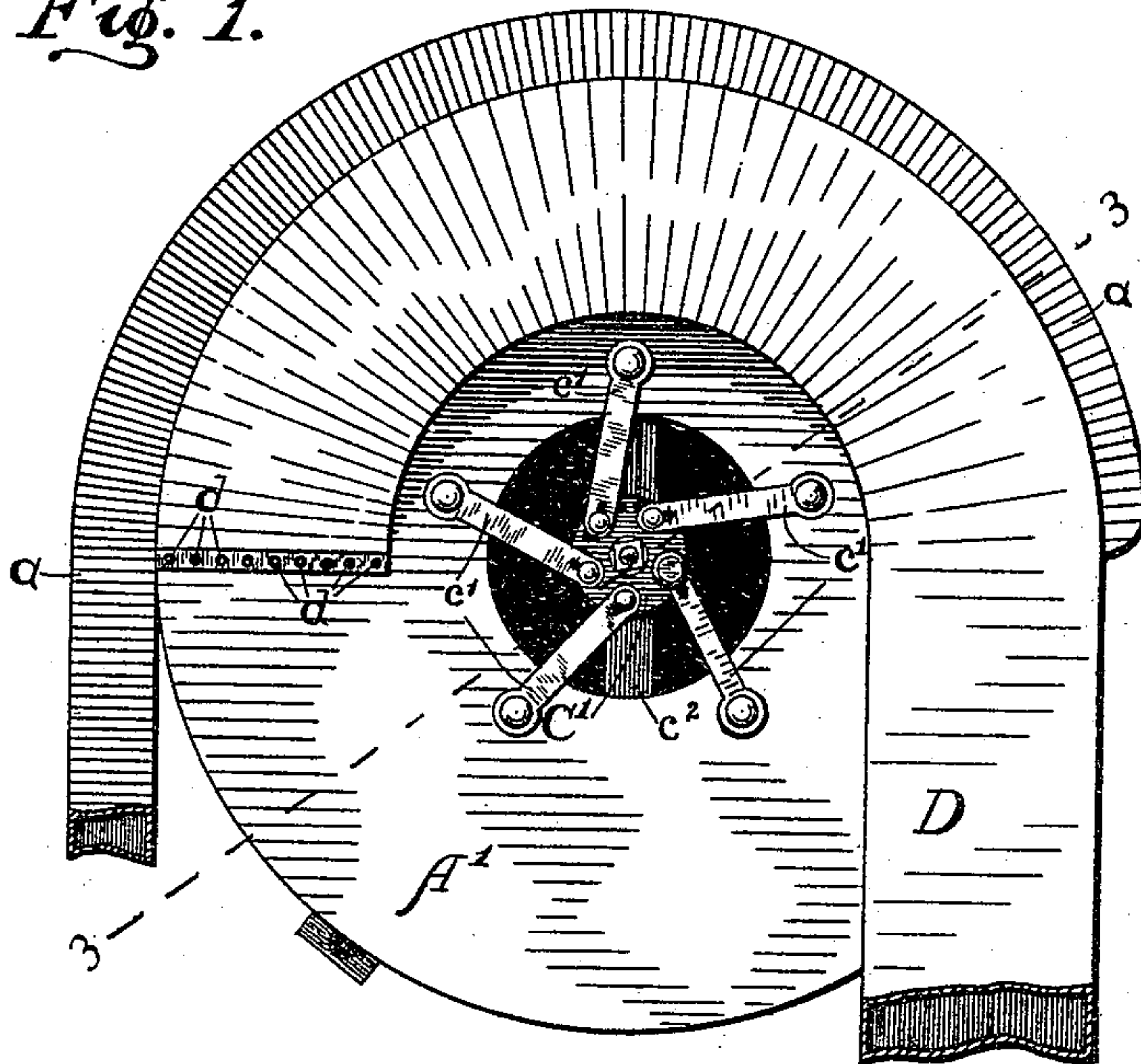
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E. BRETNEY.  
DUST COLLECTOR.

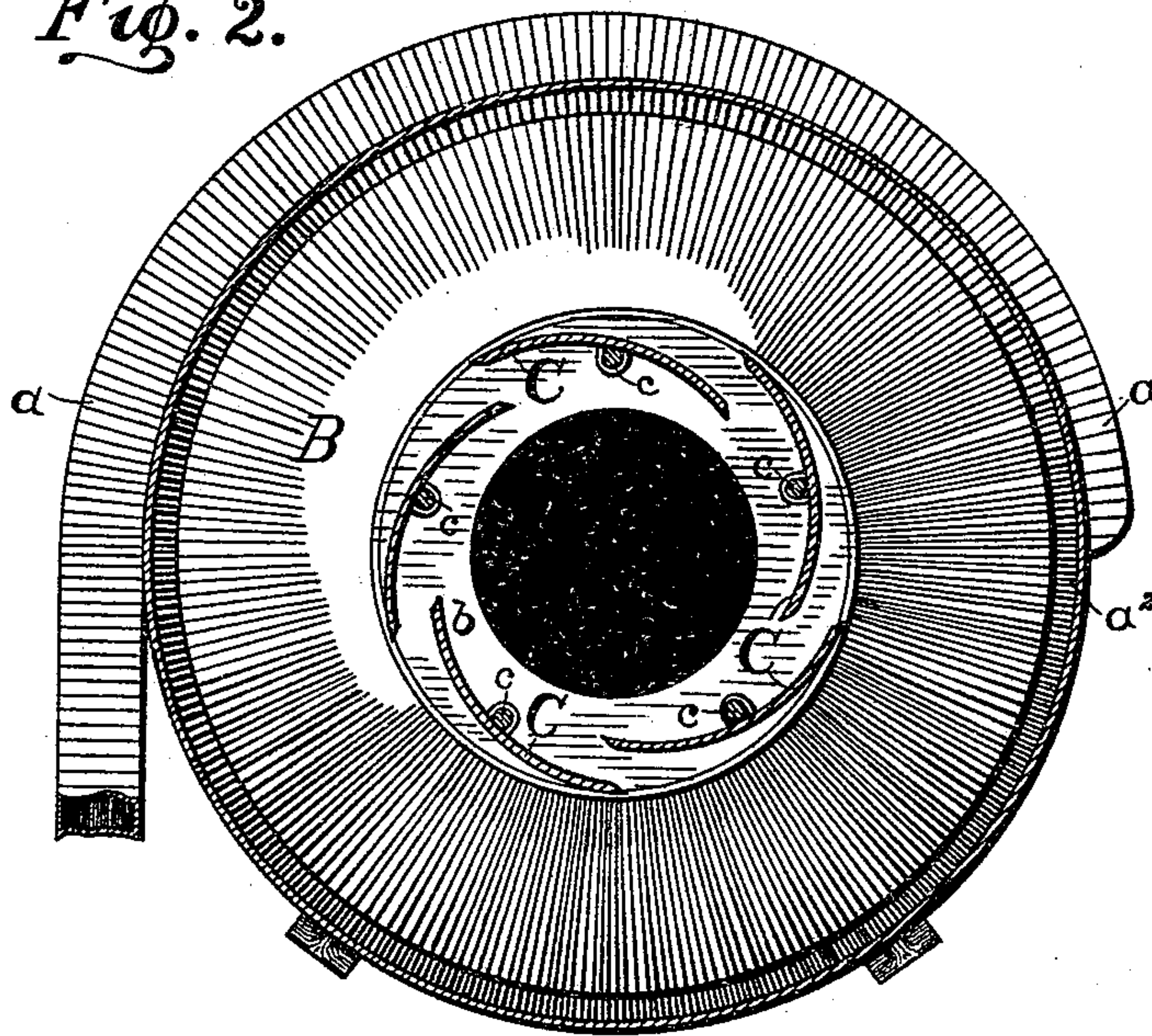
No. 438,523.

Patented Oct. 14, 1890.

*Fig. 1.*



*Fig. 2.*



**WITNESSES.**

D. Rhodes.

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ATTORNEYS.

**ATTORNEYS**

(No Model.)

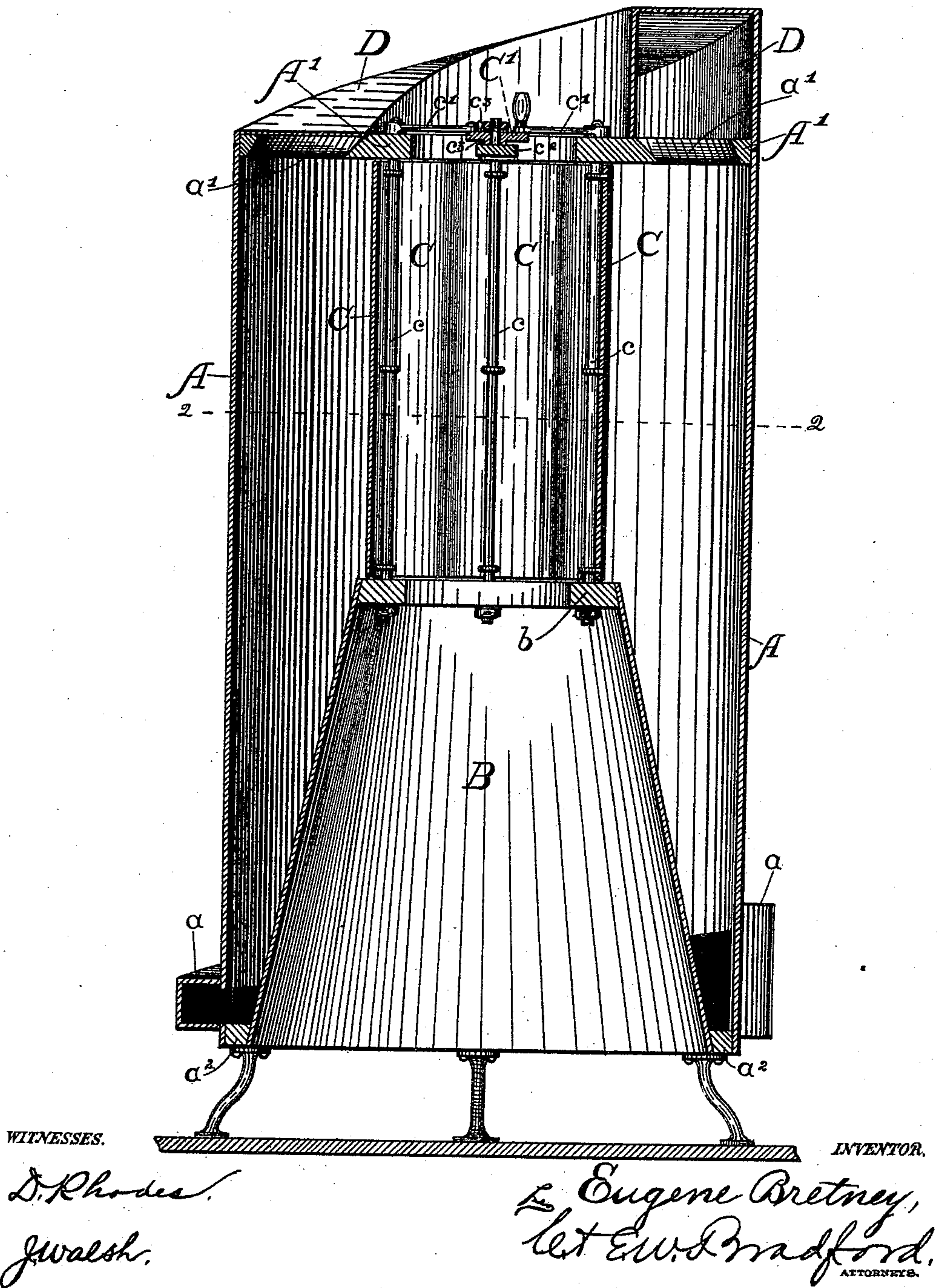
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Fig. 3.





# UNITED STATES PATENT OFFICE.

EUGENE BRETNEY, OF INDIANAPOLIS, INDIANA.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 438,523, dated October 14, 1890.

Application filed August 12, 1889. Serial No. 320,504. (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 an improved construction of dust-collector for use in collecting dust, shavings, and similar material discharged from milling, wood-working, and such machinery, by which construction a simple, cheap, and effective machine for the purpose is provided, as will be hereinafter more fully described and claimed.

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 dust-collector embodying my said invention; Fig. 2, a horizontal section of the same on the dotted line 2 2 in Fig. 3, and Fig. 3 a central vertical sectional view of the same on the dotted line 3 3 in Fig. 1.

In said drawings the portions marked A represent the outside wall or casing; B, an interior wall; C, a series of regulating-valves constituting in effect a central tubular guard or cylinder, and D an inlet-spout.

The casing A consists of a cylindrical body, preferably straight, provided with a head or top A', formed with a central opening. At or near the bottom an opening for the discharge of the dust is cut through the casing, preferably extending for about one-half of its circumference. This opening is formed wide at its beginning and continually narrowing toward the opposite side, being covered by an auxiliary casing or spout *a* of a like formation, which terminates in a spout of any desired size, length, or shape for the discharge of the dust and similar substances. Through the top A' is formed an inlet-opening *a'*, extending for about one-half the circumference of said top, which opening is of considerable width and curved, following close to the outside edge of the top, the edges of which opening are preferably tapered toward the casing, so as to give the dust-laden

air an outward inclination as it enters the machine.

The interior casing or wall B is in the form of the base of a cone and about one-half the height of the main casing A. Its lower edge is secured to the lower edge of the outside casing, a narrow ring *a*<sup>2</sup> being preferably interposed between them, forming an annular bottom to the separating-chamber. Said interior wall B is preferably about one-half the diameter at its top of said main casing, and is there provided with an annular supporting-piece *b*, which strengthens and braces said top and also forms bearings for the pivots of the valves C.

The regulating-valves C consist of a series of sections of a tube or cylinder, each mounted upon a vertical pivot-rod *c*, which has a bearing at its lower end in the ring *b* and at its upper end in the top A'. They are arranged in a circular line, and preferably with overlapping edges, as shown, the angle of each section being such as to direct the incoming current over the adjacent edge of each succeeding section and toward the outside of the chamber. The top of each pivot-rod *c* extends through the top or head A', and is provided with a crank-arm *c'*, rigidly secured thereto, each of which is connected to a central hand or crank wheel C', mounted on a cross-bar *c*<sup>2</sup>, secured across the opening in said head. By this means the sections are all made simultaneously adjustable and may be opened out or closed to secure the width of opening between their edges which the work may demand. A stop-pin *c*<sup>3</sup> extends down through the wheel C' into a perforation in the cross-bar for the purpose of securing the parts rigidly in the desired position, a series of holes being formed in said wheel for this purpose. By this arrangement it will be seen that a separating-chamber is provided of an annular form, the outer wall of which is the main cylindrical casing A and the inner wall of which is the tapered casing B and the tube composed of the sections C, extending from the top of said casing B to the top of the machine, the central space within said inner wall being open throughout its length and serves only as a channel through which the purified air may



escape beyond the machine. In this annular chamber the operation of separating the dust from the air takes place, as will be presently more fully described.

5 The inlet-spout D is connected, as usual, with a blow-fan for driving the dust-laden air into the machine, and is mounted on the top of said machine over the semicircular opening or slot  $a'$  in its head, as shown. It is substantially a square pipe at the point where it  
10 first connects with the machine, of a width nearly equal to that of the separating-chamber; but its top is preferably tapered from said point down to an even plane with the  
15 head, to which it is attached at the end of said slot  $a'$  by means of nails or rivets  $d$ , this form serving to impart a downward and circular motion to the dust-laden air at its entrance into the separating-chamber.

20 While the details of construction as particularly described are considered preferable, yet it will be understood that they might be changed in many particulars without departing from my invention, which consists, principally, in the form of the separating-chamber.  
25

The operation of my said invention is as follows: The dust-laden air coming from the blow-fan through the inlet-spout D is given a downward and circular motion as it enters  
30 the machine by reason of the formation of said inlet spout and opening, and is at the same time inclined outwardly against the outer wall by reason of the form of the sides of said opening, as before described. The  
35 regulating-valves being adjusted as indicated in Fig. 2 serve to direct the current toward the outside of the machine and maintain its rotary motion, the dust, dirt, and heavy particles of substance contained in the air being  
40 thrown by centrifugal force on the outside of the current and carried around and around and down toward the bottom of the casing until they pass through the opening near its bottom into the auxiliary casing or discharge-  
45 pipe  $a$  and pass out through its discharge end, which may be extended to whatever place is desired. The body of the air in the meantime strikes the inclined surface of the interior wall or casing B and is directed back  
50 in the oppositely-inclined direction and passes through the openings between the edges of the regulating-valves and out into the surrounding atmosphere through the open top or bottom of the machine.

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

1. A dust-collector formed with suitable inlet and outlet openings, the separating-chamber of which is of annular form throughout  
60 its length.

2. A dust-collector provided with suitable inlet and discharge openings, the separating-chamber of which is annular in form and of  
65 a reduced area toward its discharge-opening, substantially as set forth.

3. A dust-collector the outer casing of which is cylindrical and straight and the inner casing of which consists of a tube formed with openings and extending for a portion of the  
70 length of the machine, and a tapered casing extending from the bottom of said tube to the bottom of the machine, whereby a dust-collector is provided the separating-chamber of which is of annular form throughout its length,  
75 but narrowed toward its discharge-opening, substantially as set forth.

4. A dust-collector provided with an inlet and an outlet opening for the discharge of the purified air, the outer wall of which is of  
80 a straight cylindrical form, and the separating-chamber of which is of a straight annular form for a portion of its distance and narrowed from the bottom of this portion to the discharge-opening, substantially as set forth.  
85

5. In a dust-collector, the combination, with the annular separating-chamber, the inlet-opening, the air-outlet, and the dust-discharge outlet, of an internal tapered wall contracting in size toward the center of the machine,  
90 substantially as set forth.

6. In a dust-collector, the combination of a cylindrical separating-chamber having an opening for the discharge of the dust at one end, said end being provided with an internal  
95 wall contracted in size from the end to near the center of the machine, a guard or tube composed of a series of adjustable sections extending from the top of said inner wall to the top of the machine, with openings for the  
100 discharge of purified air between said sections, and an inlet-opening through the top of the machine, substantially as set forth.

7. A dust-collector consisting of an outer cylindrical casing provided with a dust-dis-  
105 charge outlet through its side and an inlet-opening through its top, a central wall extending from near the center of the machine to its discharge end and formed tapered, and a guard between the top of said central wall  
110 and the top of the machine, with openings for the discharge of purified air, substantially as set forth.

8. In a dust-collector, the combination of the outside casing provided with a discharge-  
115 outlet, the interior wall in the bottom of the machine contracted in size from its bottom to its top, and a guard between the top of said internal wall and the top of the machine, substantially as set forth.  
120

9. The combination, in a dust-collector provided with an outside cylindrical casing, an inlet-opening, a discharge-opening, and an opening for the discharge of the purified air, of an internal wall tapered from the bottom  
125 toward the top of the machine and joined with a tubular guard extending to the top of the machine, substantially as set forth.

10. The combination, in a dust-collector, of the outside cylindrical wall having the nar-  
130 rowing discharge-opening covered by a correspondingly-formed discharge-spout or auxil-



iary chamber, the internal tapered wall, the sectional guard, and the inlet-spout, substantially as set forth.

11. The combination, in a dust-collector, of  
5 an outside cylindrical casing provided with a head with a central opening therein, an inlet-opening through said head consisting of a curved slot, an inlet-spout connected with said head above said curved slot, the top of  
10 said inlet-spout being inclined from the beginning of its connection to the end of said slot, the interior tapered casing, and the series of regulating-valves around said opening in the head, substantially as set forth.

12. In a dust-collector, the combination of  
15 the cylindrical casing A, provided with a head and bottom, as described, the narrowing discharge-opening at the bottom, and the downwardly and outwardly inclined inlet-opening  
20 at the top, the tapered internal casing B, and the series of regulating-valves C, mounted between the top of said casing or wall B and the top of the machine on pivot-rods, said pivot-rods being connected to adjusting mechanism,  
25 and said adjusting mechanism, substantially as set forth.

13. In a dust-collector, the combination of  
30 a cylindrical body, the separating-chamber and inlet opening or spout, the discharge-opening for the purified air, and a slot at or near the bottom of said cylindrical body extending for a portion of its circumference and

narrowing from its beginning in the direction of the air-current, with an auxiliary casing secured over said opening and of a corresponding form, terminating in a discharge-spout,  
35 substantially as set forth.

14. In a dust-collector, the combination of the cylindrical body, a separating-chamber formed therein, the dust-discharge opening,  
40 an opening for the discharged purified air, and an inlet for the dust-laden air, consisting of a curved slot in the top or head of the machine, the edges of which are inclined outwardly, and the inlet-spout secured over said  
45 slot, the top of which is formed tapering from the point of its connection with the head to the end of the slot which it covers, substantially as set forth.

15. A dust-collector consisting of an annular chamber having a peripheral wall, in which  
50 chamber the whirling body of air maintains its motion, the inlet for the dust-laden air, the dust-discharge opening, and openings for the discharge of the purified air through the inner wall of the separating-chamber, substantially as set forth.  
55

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 5th day of August, A. D. 1889.

EUGENE BRETNEY. [L. S.]

Witnesses:

E. W. BRADFORD,  
J. WALSH.