

(No Model.)

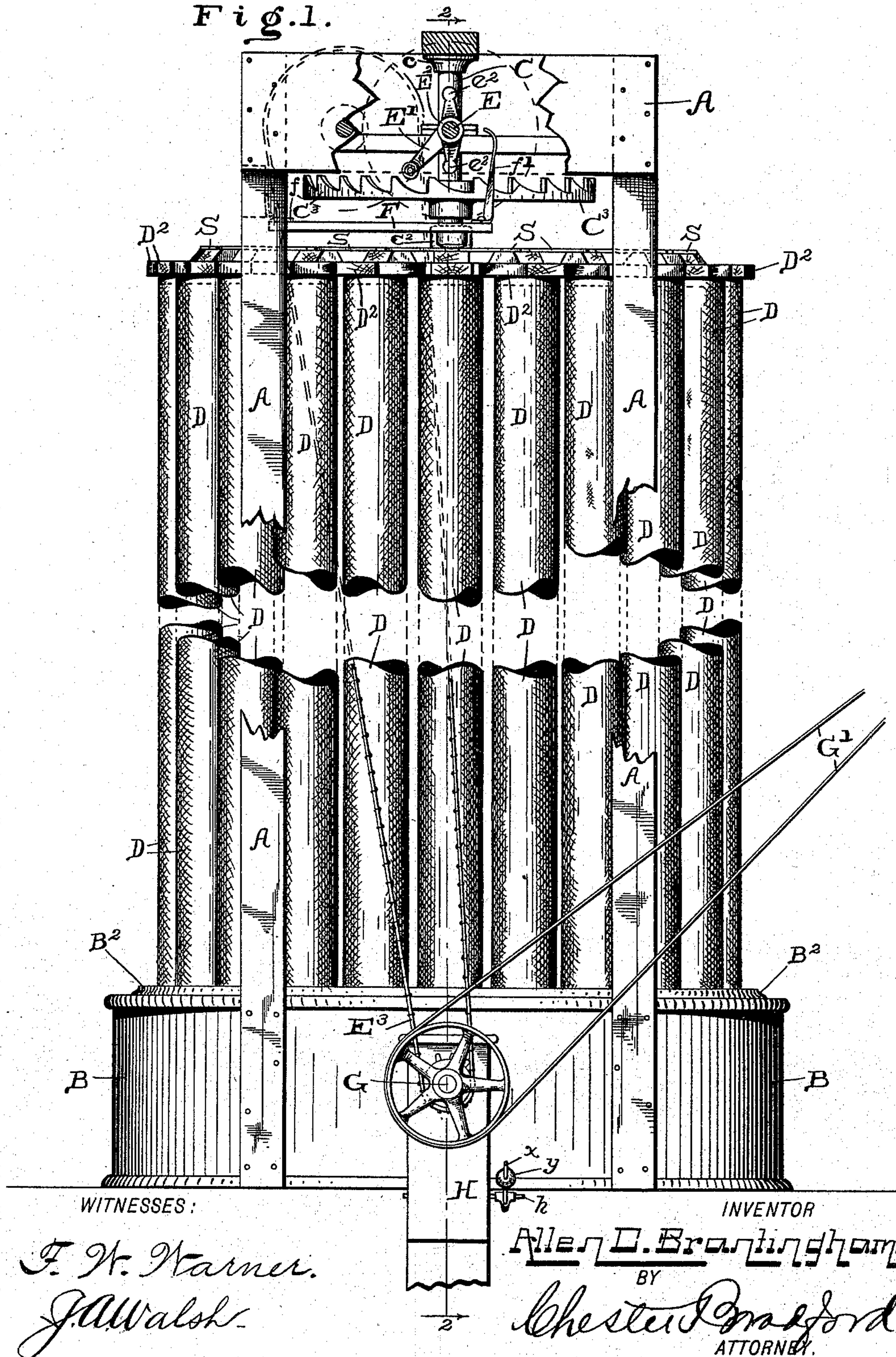
3 Sheets—Sheet 1.

A. C. BRANTINGHAM.  
DUST COLLECTOR.

No. 527,935.

Patented Oct. 23, 1894.

Fig. 1.



WITNESSES:

J. H. Warner.  
J. A. Walsh.

INVENTOR

Allen C. Brantingham,  
BY  
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(No Model.)

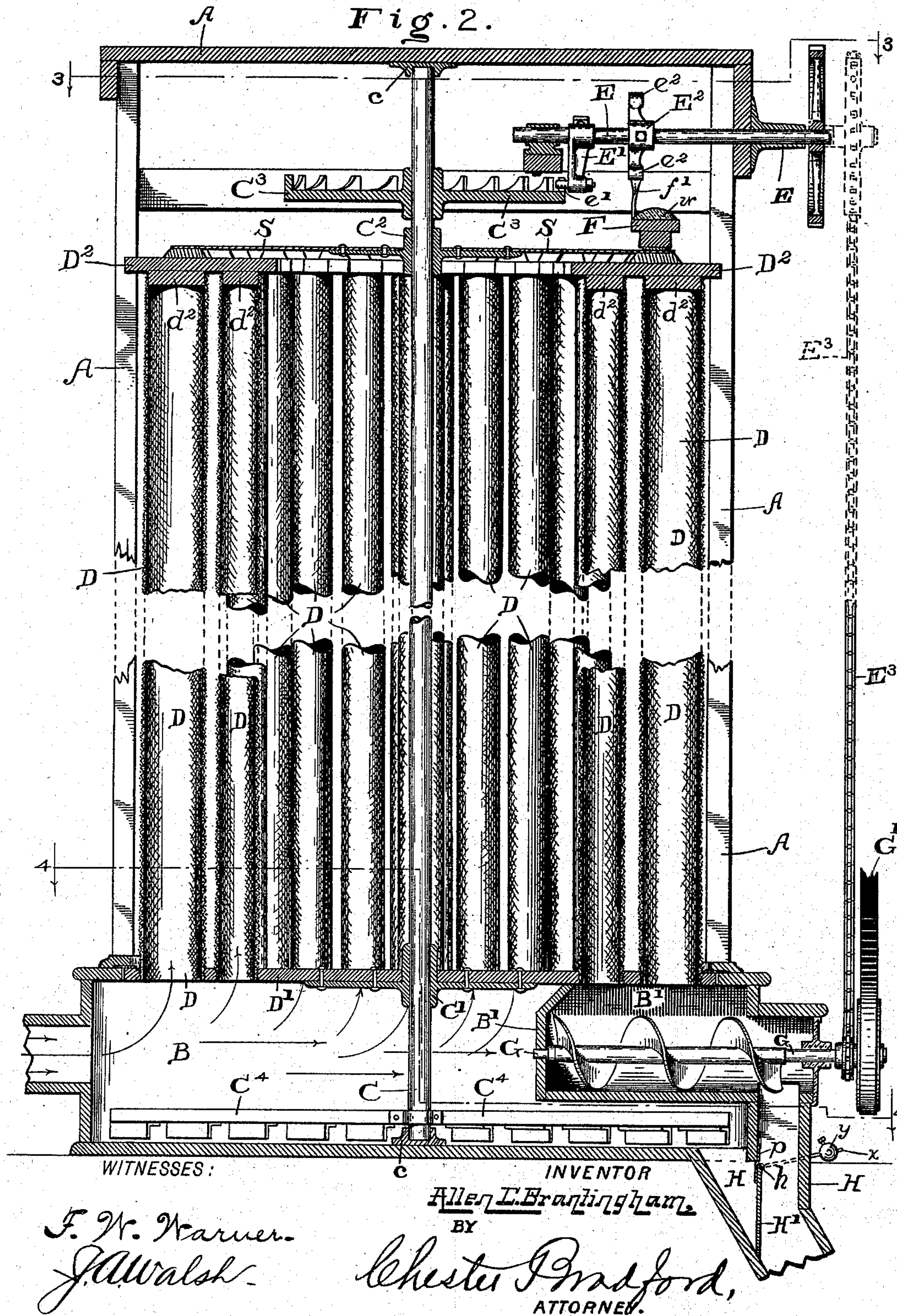
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Fig. 2.





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3 Sheets—Sheet 3.

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Fig. 3.

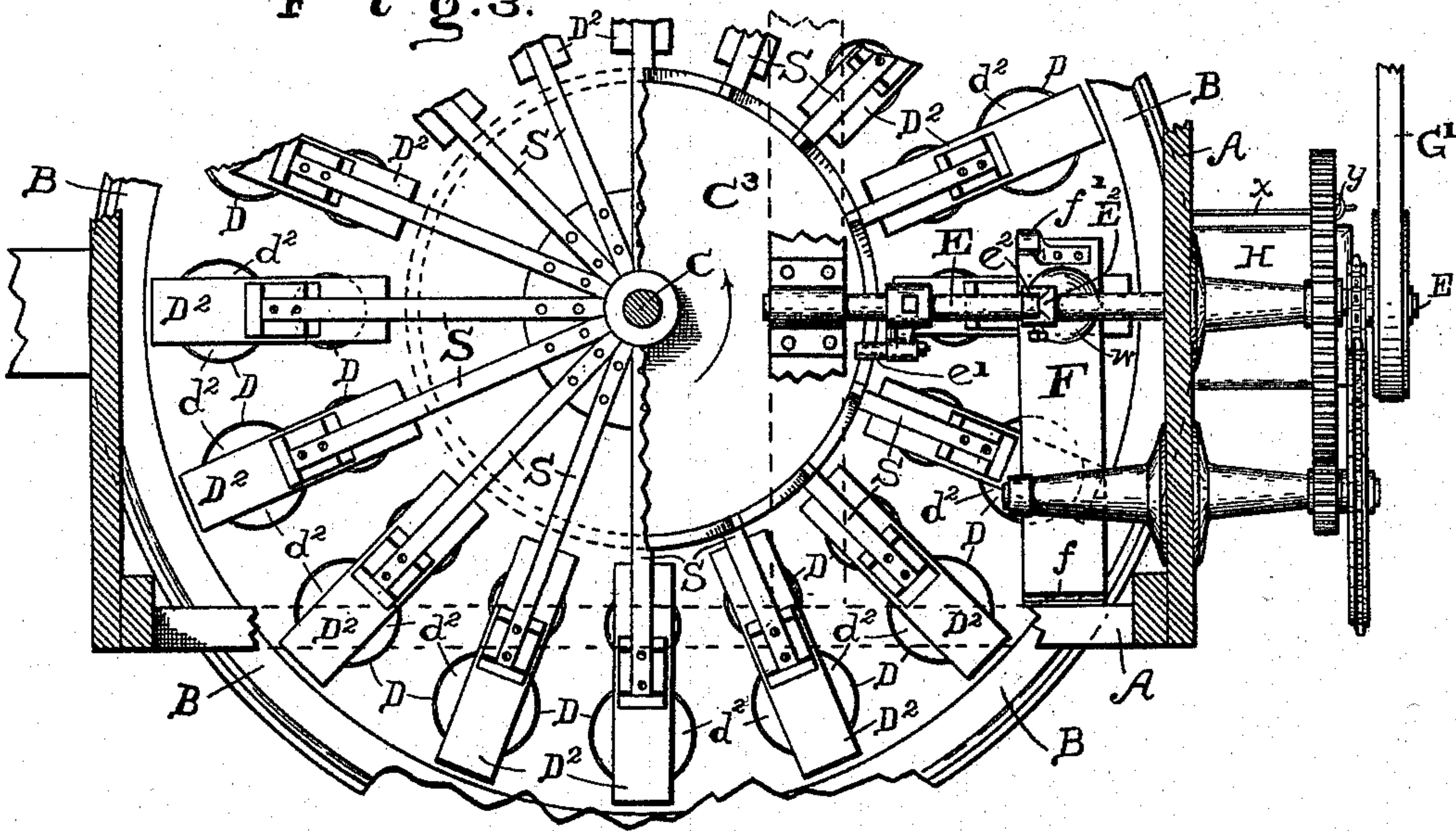
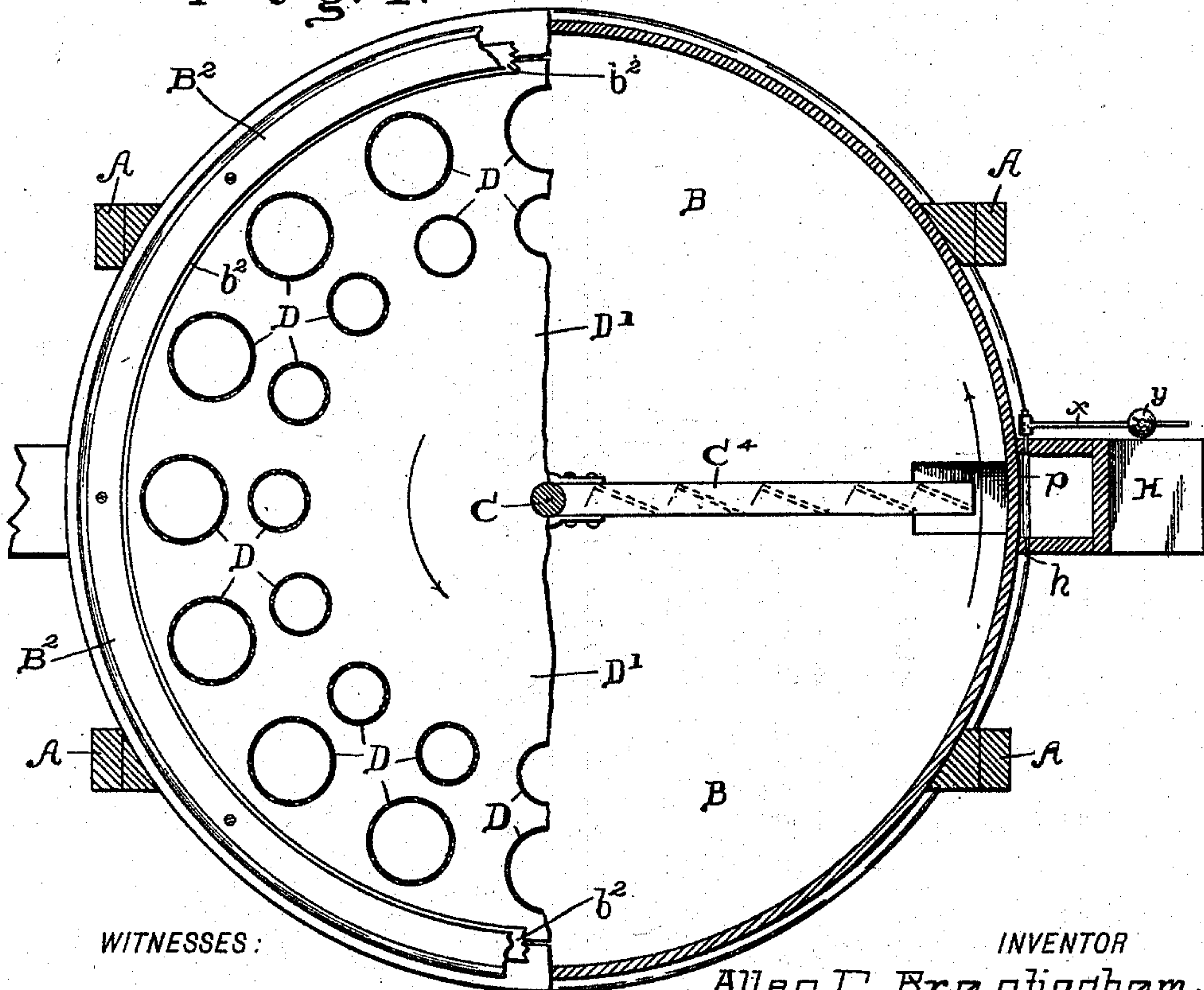


Fig. 4.



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# UNITED STATES PATENT OFFICE.

ALLEN C. BRANTINGHAM, OF TOLEDO, OHIO, ASSIGNOR TO THE NORDYKE & MARMON COMPANY, OF INDIANAPOLIS, INDIANA.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 527,935, dated October 23, 1894.

Application filed November 14, 1893. Serial No. 490,875. (No model.)

*To all whom it may concern:*

Be it known that I, ALLEN C. BRANTINGHAM, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Dust-Collectors, of which the following is a specification.

The object of this invention is to purify dust laden air, and collect and deposit the dust in proper receptacles, while the purified air is permitted to escape, such machines being most commonly used in flouring mills and such like places.

A machine embodying my said invention will be first fully described and the novel features thereof then pointed out in the claims.

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 side elevation of a machine embodying my said invention, portions being broken away to show the mechanism more clearly; Fig. 2, a central sectional view of the same; Fig. 3, a partial top or plan view, and Fig. 4, a horizontal sectional view looking downwardly from the dotted line 4 4 in Fig. 2.

In said drawings the portions marked A represent the frame-work of the machine; B, the chamber for the dust laden air; C, a central shaft carrying the structure embodying the tubes and their attachments; D, said tubes; E, a shaft whereby the tubes and shaking mechanism are operated; F, a shaking or jarring hammer; G, the driving shaft, which is also a conveyer shaft, as will be presently described, and H a receptacle for receiving the dust from the tubes as they are claimed.

The frame-work A is of a suitable construction for the purpose, and is adapted to support and carry the mechanism.

The chamber B is situated at the lower end of the frame-work, is substantially air-tight except where the dust collecting tubes communicate therewith, and is adapted to receive the current of dust laden air which is to be purified, this being usually driven thereinto by a fan, which, however, forms no part of this present invention, and is not shown, and will not be particularly described herein. As shown most plainly in Figs. 2 and 4, a revolving head D' upon the shaft C forms the greater portion of the upper side of this cham-

ber B. In order to maintain a proper air-tight relation between these parts, a ring B<sup>2</sup> is provided which overlaps the joint, and under this ring is secured a strip of felt or some similar material b<sup>2</sup> as a packing for the joint.

The shaft C is mounted centrally and extends in a vertical direction from the top to the bottom of the machine, and is mounted in appropriate bearings c at the ends. It carries flanged hubs C' and C<sup>2</sup> near the lower and upper ends, to which the tube heads are connected, and a gear wheel C<sup>3</sup> by which it is driven. It also has sweeps C<sup>4</sup> which act upon the floor of the chamber, and drive any dust deposited thereon around into a hopper at one side, as will be presently described.

The tubes D are cloth tubes secured in corresponding openings in the head D' upon the hub C' near the lower end, and to small heads d upon arms D<sup>2</sup> carried by spring arms S attached to the hub C<sup>2</sup> near the upper end. These tubes are of cloth, preferably of cotton cloth rather finely woven, so that while air will pass through them they will hold and prevent the escape of the dust, which is thus collected on their inner surfaces. The blast of dust laden air which enters the chamber B and passes thence into these tubes, keeps them distended to their full size so long as they are in communication with the chamber. Once, at least, in each revolution, however, these tubes are cut off from this chamber and communicate with another receptacle, as B', in which there is no artificial air pressure. The tubes will then generally collapse, changing their shape, and causing the dust which had previously adhered to their interior surfaces to fall off and be precipitated into said receptacle, this being aided by jarring, as will be presently described. By this means, also, an absolute uniformity of pressure within the chamber and tubes is secured, as one section is always being cleaned of its dust while all the others are receiving dust, and the average deposit of dust and consequent uniformity of pressure is thus maintained, as will be readily understood, for, as the section which passes from communication with the receptacle B' into communication with the chamber B is substantially freed from dust, the next one, of course, has a slight deposit, and the next has a little heavier deposit, and so on, until the last one is



reached, which, just before it passes over the receptacle where it is to be cleaned, has the heaviest deposit, and this condition of things is maintained uniformly at all times, the machine being in continual operation, and the average deposit of dust in the tubes being at all times practically the same.

The shaft E is provided with an arm E' having a cog or tooth  $e'$  which engages with the teeth of the cog wheel  $C^3$  on the shaft C, and thus the structure carried by said shaft C is revolved a distance equal to that between the cogs of said wheel  $C^3$  at each revolution of the shaft E, said cogs being a distance apart equal to the distance between the centers of the arms carrying the tubes, at a corresponding distance from the shaft C. The shaft E has also a hub  $E^2$  secured thereon having two arms  $e^2$  which are adapted to engage with and operate the hammer, and said hammer is thus caused to strike two blows upon each section of tubes as it passes under it. The shaft E is driven by gearing and a belt  $E^3$  from the shaft G, as shown, and as will be readily understood, or otherwise, as may be desired.

The hammer F is hinged to the frame-work by a hinge  $f$ , and is positioned to strike upon that arm  $D^2$  supporting the heads of the tubes directly over the receptacle arranged to receive dust in cleaning the tubes. It has an upwardly projecting curved arm  $f'$ , with which arms,  $e^2$ , on the hub  $E^2$  are adapted to come in contact, and thus raise said hammer to a certain height, when said arm escapes and the hammer falls, striking upon and jarring the head  $D^2$  beneath it, a considerable vibration being permitted by the corresponding spring arm S. The hammer may have a weight  $w$ , which may be of any size desired, and which may be increased or diminished according to the work to be performed.

The shaft G serves as a driving shaft, and is usually driven by a belt  $G'$ . It is also a conveyer shaft, and a conveyer is situated inside the receptacle  $B'$ . This receptacle, as before stated, is to receive the dust from the tubes being cleaned, and is shut off from the chamber B by walls which extend up and come in contact with the under side of the head  $D'$ . The joints may be made tight by some flexible substance secured to one part and bearing upon the other, similarly as the joint is maintained between the head  $D'$  and the walls of the chamber B. The conveyer operates to draw the dust outwardly and send it down a chute  $b$  into the hopper H, whence it is conveyed as may be desired.

The hopper H communicates with both the chamber B and the receptacle  $B'$ , being divided by a swinging gate  $H'$ , which gate is, by any convenient means, held against the side of the hopper with sufficient force to resist the inner pressure of the air blast, but is so adjusted as to be overcome when the space behind it has received a considerable quantity of the dust, by the additional weight of said dust, which then escapes by forcing said

gate outwardly when it passes down the chute leading from the hopper. A convenient means is to mount this gate on a shaft  $h$  having an arm  $x$  and an adjustable weight  $y$ , while a piece of flexible fabric  $p$  secured to said gate and to the structure above closes the joint, as will be readily understood. The dust from inside the chamber is thrown into the upper end of the hopper H by the sweeps  $C^4$ , as before stated, they being positioned to drive said dust toward the periphery of the chamber in their movement, as shown in Figs. 2 and 4.

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

1. The combination, in a dust collector, of a chamber to receive the dust laden air, a series of cloth tubes communicating with said chamber and closed at the upper ends, spring arms to which said tubes are connected at the upper end, a shaft carrying the arms and also the head through which said tubes extend at the bottom, an inclosed receptacle, a hammer or agitator positioned above said receptacle and the tubes, and means whereby the same may be operated, whereby the dust in the tubes over said receptacle may be dislodged and precipitated thereinto.

2. The combination, in a dust collector, of the chamber B, the shaft C carrying hubs  $C'$  and  $C^2$  bearing, respectively, the head  $D'$  and the arms S, the tubes D suspended between said head and said arms, a receptacle  $B'$  partitioned off from the chamber B, and means whereby the tubes may be jarred or agitated when they pass over said receptacle, substantially as set forth.

3. The combination, in a dust collector, of a revolving structure embodying cloth tubes, the shaft E bearing the arm E' by which said structure is periodically revolved, and also bearing a hub  $E^2$  having arms  $e^2$  for raising the hammer, and said hammer F having an arm  $f'$  whereby it may be raised and allowed to fall jarring or agitating the device thereunder, substantially as set forth.

4. The combination, with the revolving structure of a dust collector embodying cloth tubes, of a wheel  $C^3$  having a number of cogs equal to the number of divisions of said dust collector, and a shaft E having an arm or cog adapted to engage with and operate said cogged wheel, whereby said cogged wheel and said structure are periodically moved forward a determinate distance and there allowed to remain while the appropriate section is being jarred or agitated and the dust precipitated, substantially as set forth.

In witness whereof I have hereunto set my hand and seal, at Toledo, Ohio, this 31st day of October, A. D. 1893.

ALLEN C. BRANTINGHAM. [L. s.]

Witnesses:

GEO. R. CRANE,

ROBT. C. WHITTLESEY.