

(No Model.)

2 Sheets—Sheet 1.

L. V. RATHBUN.  
DUST COLLECTOR.

No. 449,946.

Patented Apr. 7, 1891.

Fig. 2.

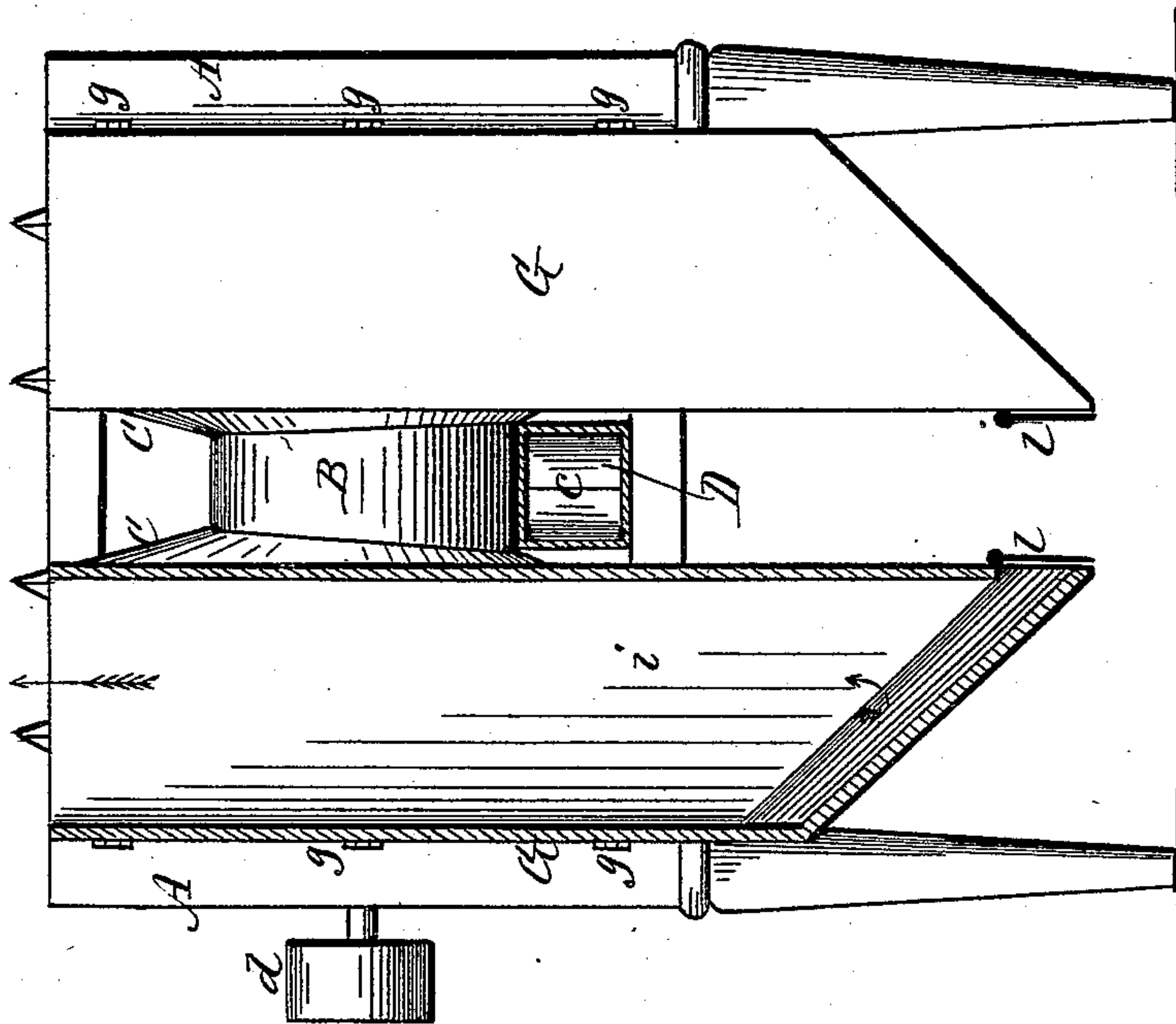
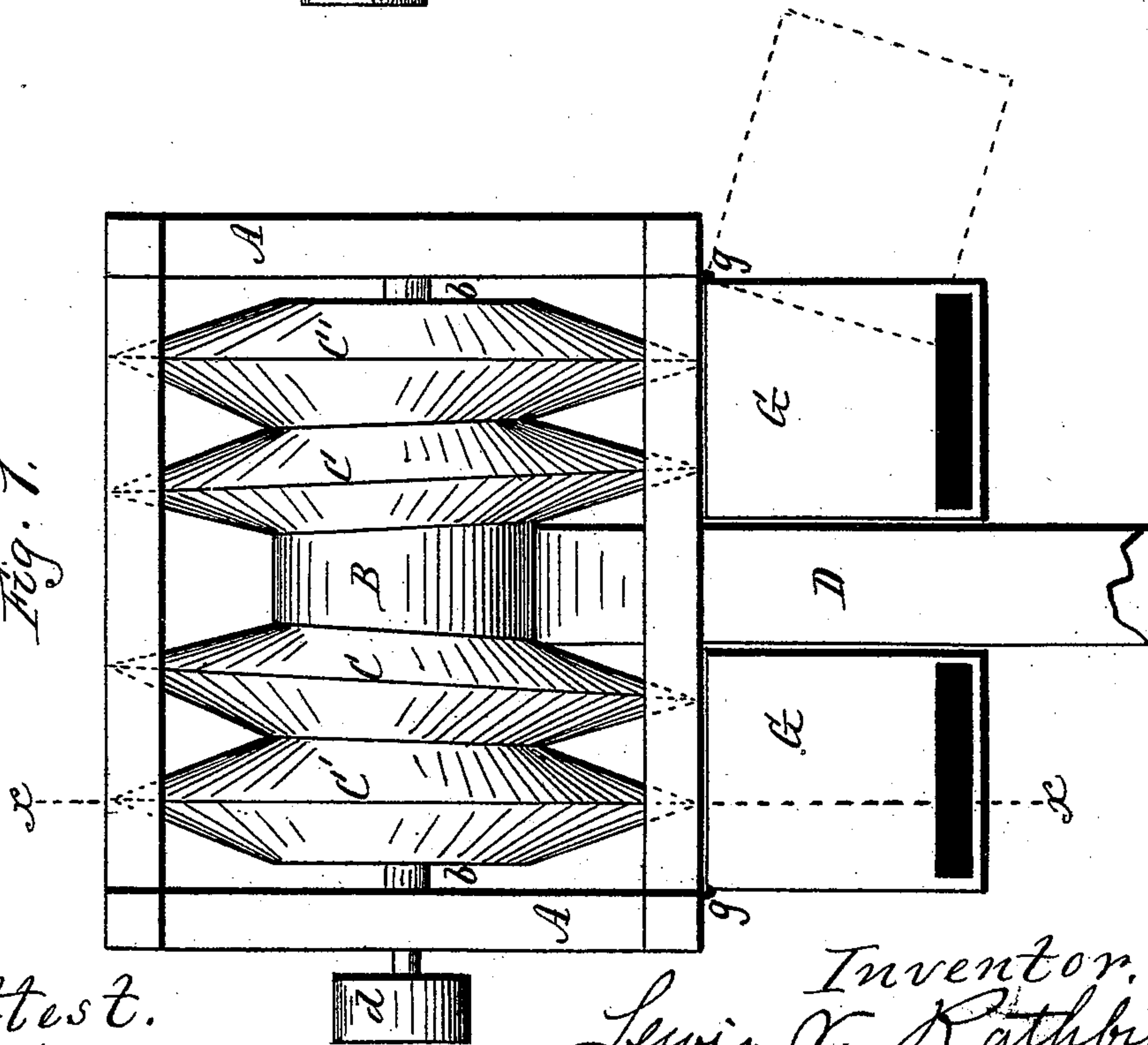


Fig. 1.



Attest.

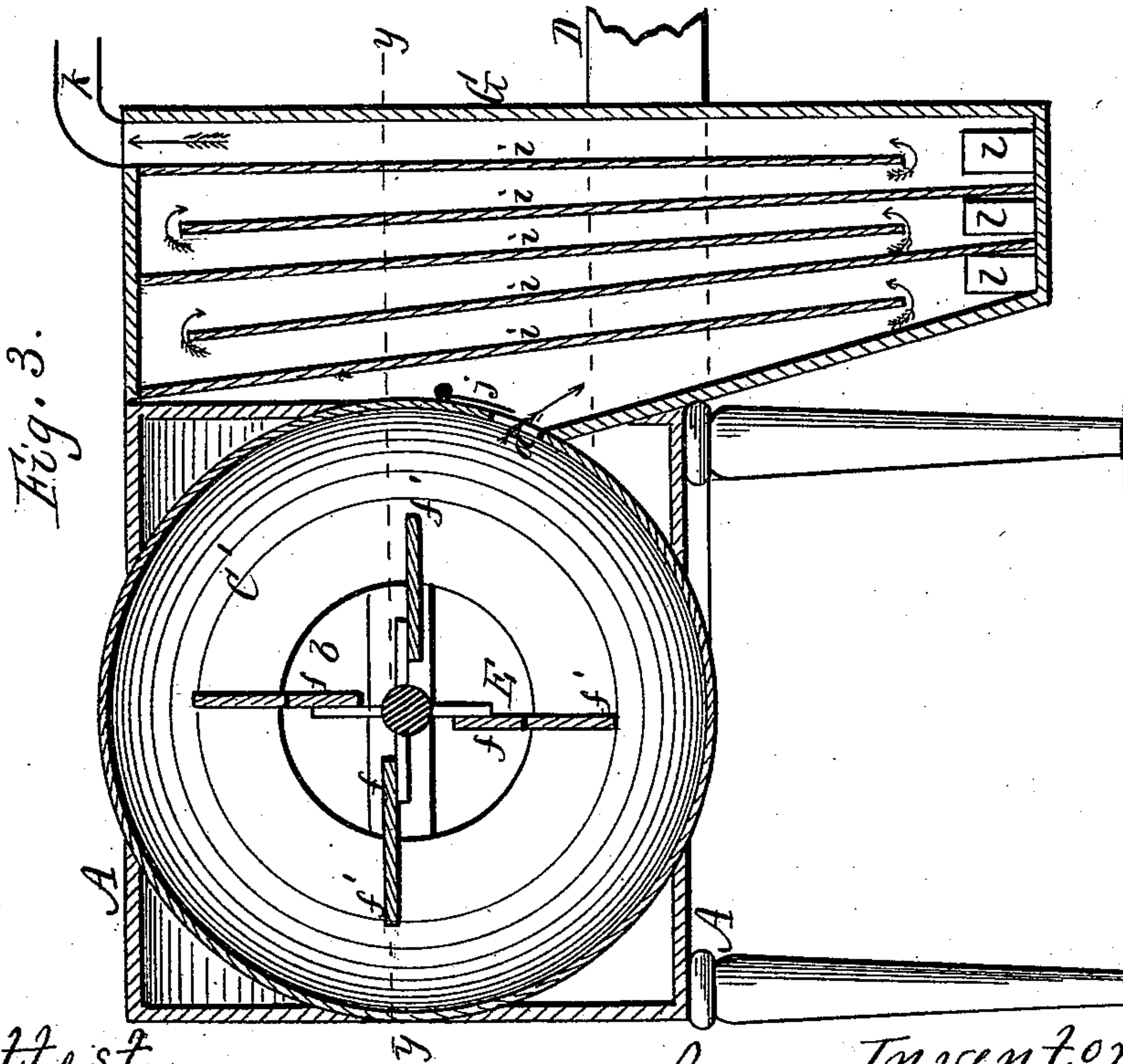
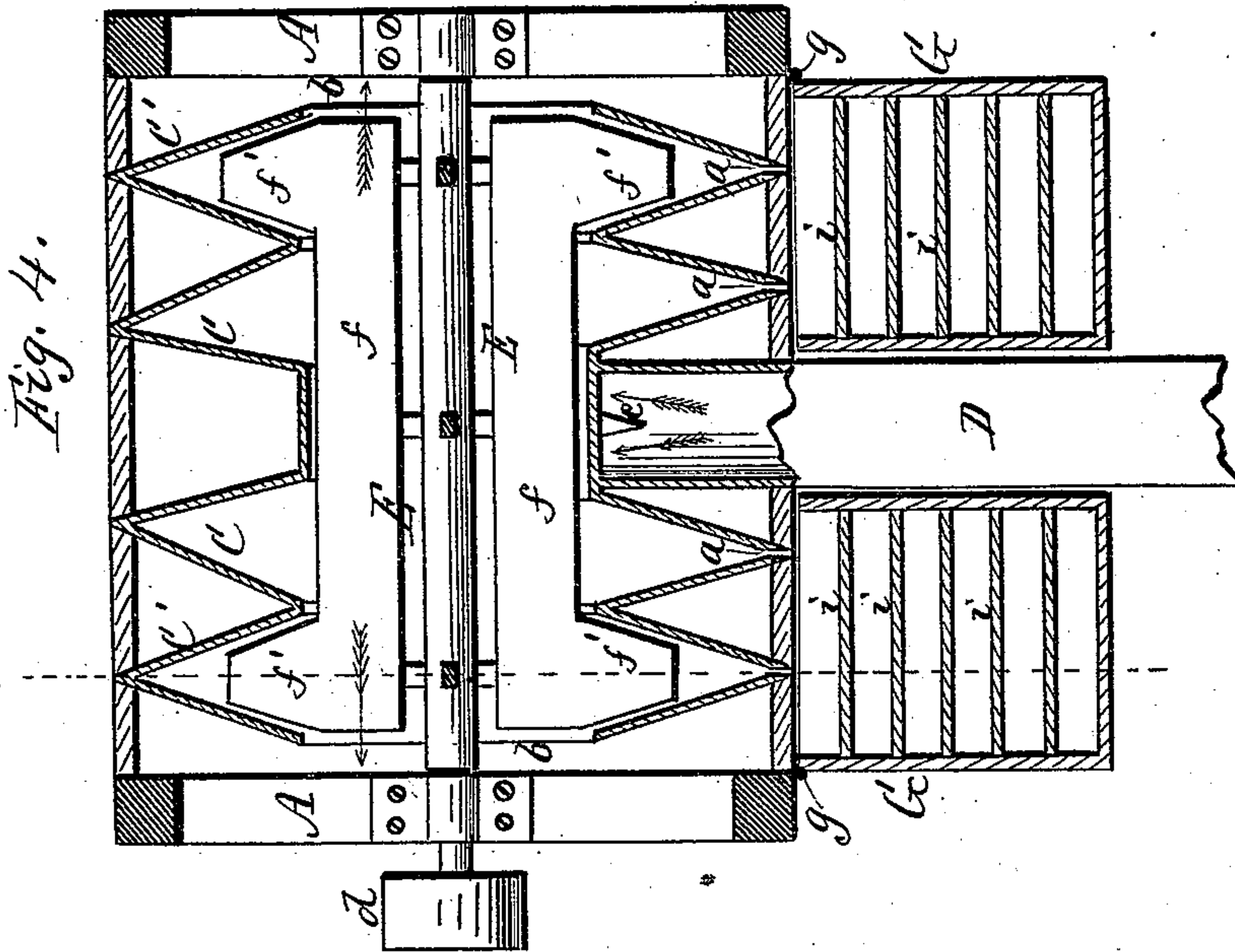
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*Atty.*

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# UNITED STATES PATENT OFFICE.

LEWIS V. RATHBUN, OF ROCHESTER, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MARY E. RATHBUN, OF SAME PLACE.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 449,946, dated April 7, 1891.

Application filed October 4, 1888. Serial No. 287,247. (No model.)

To all whom it may concern:

Be it known that I, LEWIS V. RATHBUN, of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Dust-Collectors; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this specification.

My improvement relates to that class of dust-collectors in which a hollow case having a series of angular convolutions is used, a fan being located in the case and a blast-spout being connected therewith, through which the dust-laden air is blown into the case, the dust being driven out through slots in the angles of the convolutions by the action of the fan.

The invention consists in the construction and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of the machine. Fig. 2 is a front elevation with one of the settling-trunks in vertical section. Fig. 3 is a vertical cross-section in line *x x* of Fig. 1. Fig. 4 is a horizontal section in line *y y* of Fig. 3.

A indicates the frame, which may be of any suitable construction. The case in which the dust is separated consists of a central cylindrical section B and a series of V-shaped convolutions or rings C C' of larger diameter. These are preferably located on opposite sides of the central section B. The case is stationary and the ends are open, as shown at *b b*. The first ring on each side of the center section B is arranged at an angle thereto, like a screw-thread, to give room for the entrance of the blast-tube between them; but the succeeding rings C' C' stand in a vertical plane, as shown. In the apex of each ring, on one side, is a narrow slot *a*, through which the dust is discharged, as hereinafter described.

D is a blast-tube extending from a fan-case and opening into the bottom of the central section B in such a position as to blow into the primary rings C C'. In order to distribute the blast in both directions, a dividing-block *c* is placed in the blast-tube at the point where it enters the case.

E is a horizontal fan extending from end to end of the case, said fan receiving rotary mo-

tion by means of a pulley *d* or by any suitable gearing. The fan consists of flat wings *f f*, which fill the whole cross area of the central part of the case, and angular extensions *f' f'*, which extend into the rings C' C', fitting closely to the sides thereof, but not extending quite to the apex, the ends being cut off square, as shown in Fig. 4.

G G are two vertical settling trunks or receptacles hinged at *g g* to the frame A in front of the machine, so as to be swung off sidewise, as indicated by the dotted lines at the right in Fig. 1. When they are so swung off, the slots *a a* of the case are exposed and the valves *j j*, which slide over the slots, can be adjusted by hand without trouble. The bottom of each trunk is inclined, forming a pocket, and has a discharge-opening covered by a swinging valve *l*, which opens automatically to allow escape of the accumulated dust.

*i i* are a series of upright partitions in the trunk alternately open at bottom and top, forming zigzag passages between them, the first one communicating with the slots *a a* that lead from the case and the last one communicating at the top with a tube *k* that leads back to the fan-case, by which means an exhaust is produced through the trunk.

The operation is as follows: The dust-laden air blown in through spout D is carried around in the rings C C' and gradually concentrated to the slots *a*, through which it passes into the trunks G and drops to the bottom, the air passing off through tube *k* comparatively clear of dust. The broad wings *f f* of the fan serve simply to force the central column of air out through the open ends *b b* of the case. This central column of air is practically free of dust, as the great body of dust, owing to its greater weight, is thrown by the centrifugal action into the angular rings C' C', where it circles round till it reaches the slots *a a* and then escapes; or if it is not all separated in one circuit it goes around again and again till the separation is complete. The dust in the angular rings is operated on specially by the extensions *f' f'* of the fan, which extensions fitting closely into the rings and occupying a contracted space force the dust out with great velocity into the angle.

I am aware that dust-collectors are known



in which a fan is located in the separating-case; but so far as I am aware the case has been a plain cylinder and the dust is driven out bodily through the whole perforated surface. The novelty in this part of my invention consists of a case having the V-shaped rings of larger diameter than the cylinder, whereby the dust is concentrated in close compass independent of the passage through the center of the case.

Having described my invention, I do not claim, simply and broadly, the combination of a perforated case and a fan located inside the same; neither do I claim a case having V-shaped convolutions or rings, such as are shown in my pending application filed June 4, 1888, Serial No. 275,928.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a dust-collector, the combination of an open-ended case provided with V-shaped convolutions or rings of greater diameter than the body of the case, said rings being slotted at the edges, and a fan located inside the case, as shown and described, and for the purpose specified.

2. In a dust-collector, the combination of an open-ended case provided with V-shaped rings of greater diameter than the body of the case, said rings being slotted at the edges, and a fan located in the case, provided with angular extensions which fit in the rings, as shown and described, and for the purpose specified.

3. In a dust-collector, the combination of an open-ended case provided with V-shaped rings of greater diameter than the body of the case and slotted at the edges, a fan located inside the case and a trunk outside the case for the reception of the dust that passes through the slots, said trunk covering and enclosing the slots, as herein shown and described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEWIS V. RATHBUN.

Witnesses:

R. F. OSGOOD,  
P. A. COSTICH.