(No Model.)

C. E. MERRILL.

DUST COLLECTOR.

No. 371,851. Patented Oct. 18, 1887.

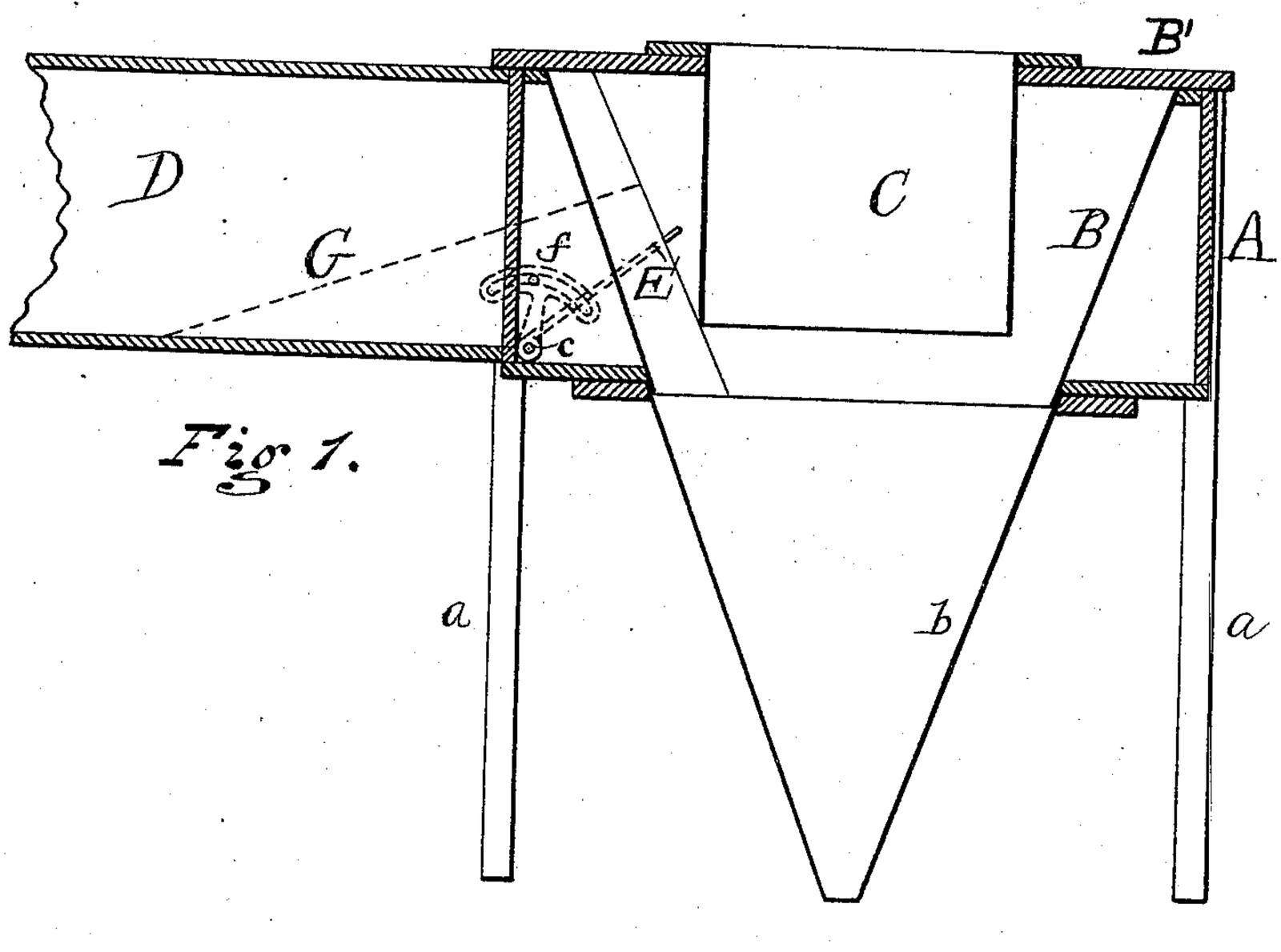
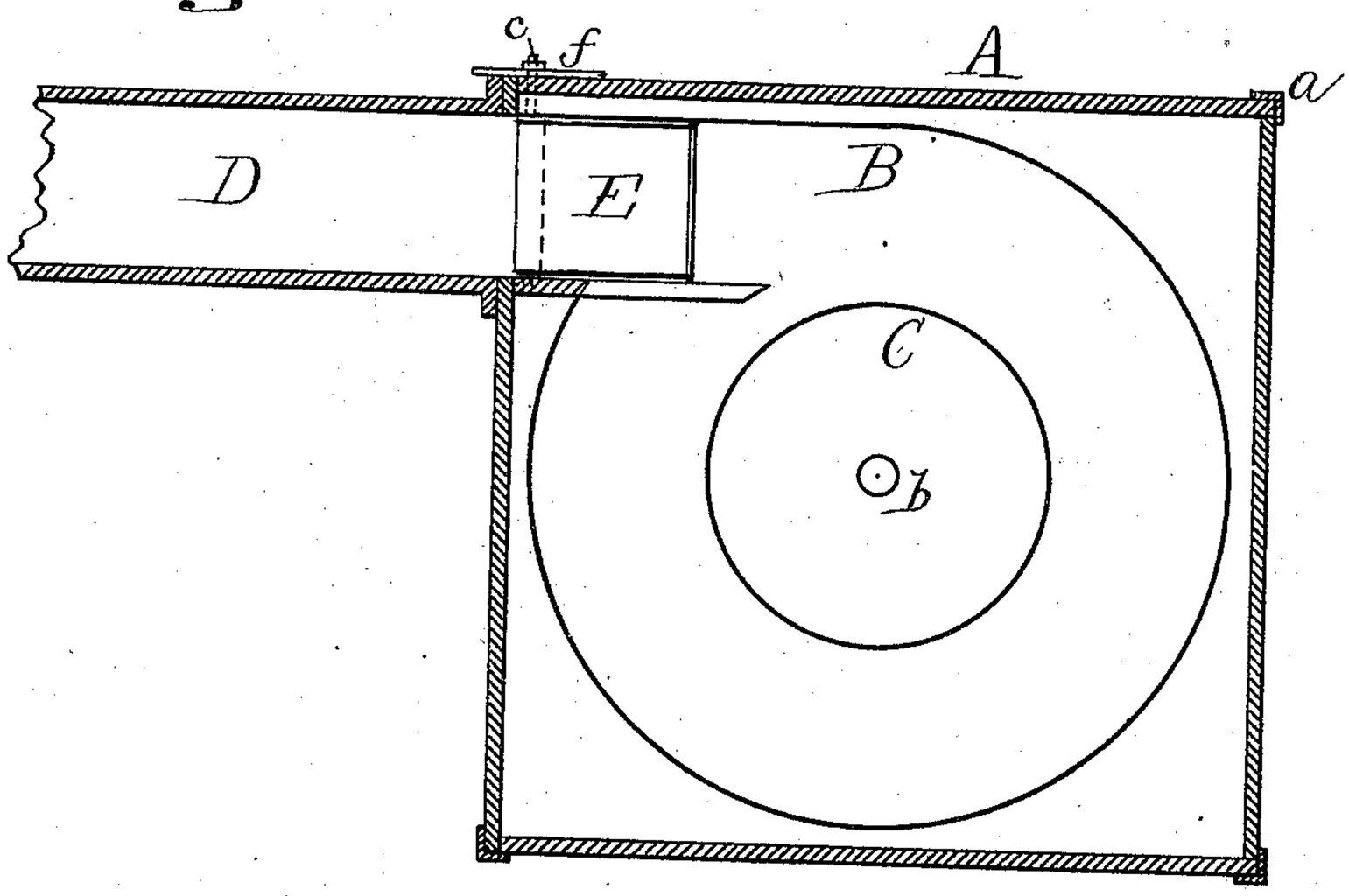


Fig 1.

Fig 2.



Witnesses.
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UNITED STATES PATENT OFFICE.

CLARENCE E. MERRILL, OF MUSKEGON, MICHIGAN.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 371,851, dated October 18, 1887.

Application filed October 18, 1886. Serial No. 216,550. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE E. MERRILL, a citizen of the United States, residing at Muskegon, in the county of Muskegon and State of Michigan, have invented certain new and useful Improvements in Dust-Collectors; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in dust-collectors, and more particularly to that class of dust-collectors wherein the dust-laden air is driven into the machine in a horizontal current, although the invention may be applied to machines of all descriptions which have for their object the purification of the air which comes from the middlings purifier, grain-separator, or other machine or mill which discharges dust-laden air.

The object of the invention is to overcome the difficulty existing in machines now in common use of thoroughly separating the dust from the air; and it consists in the construction, combination, and arrangement of parts, substantially as will be hereinafter described and claimed.

In the annexed drawings, illustrating my invention, Figure 1 is a sectional side elevation of a dust-collector with my invention applied thereto. Fig. 2 is a sectional top plan view of the same.

Like letters denote like parts in both figures.

The annexed drawings represent my invention as applied to one form of dust-collecting machine, although it is obvious that it may be applied to many other different forms.

In the form depicted on the drawings, A represents the body of the machine supported on the posts or legs *a a*. The upper portion of an inverted hollow cone, B, is secured to the interior of the box A, into which cone the dust-laden air is carried from the mill through the air spout or trunk D, which is attached to the body or frame A. Further, the upper portion of the cone is provided with an annular cover, B′. (See Fig. 1.)

b denotes the lower portion of the cone B, which is suitably constructed to afford a passage-way for the exit of the dust after it has been separated from the air.

C indicates a cylindrical tube, which enters the upper portion of the cone through its cover B′ and extends downward through the same a proper distance, as shown, and through which the purified air escapes. The principle of the machine thus constructed is evidently that the air shall be forced through the spout D and then caused to assume a rotating or gyrating motion within the cone, the result of which motion will be that the dust will be discharged below and the purified air will escape above through cylinder C.

The other parts of the mechanism, whereby the dust is put in motion, &c., are not here shown, it not being thought necessary to illustrate them for the purpose of explaining my improvement.

In using a dust-collecting machine constructed substantially in the manner described it is found that a certain quantity of dust escapes with the air, owing to the fact that the cylinder C is located with its lower open end higher than the bottom wall of the spout D or the bottom side of the box or frame A. Consequently the horizontally-traveling current of air has free escape through this open passage and up the tube C before the separation of the dust and air takes place. My invention is therefore intended to obviate this difficulty by interposing in the path of the swiftly-moving air-current a deflecting-plate, which shall guide the whole mass of air and dust upward in an oblique line and against the upper portion of the cone, thereby enabling the rotary motion which separates the dust and air to be communicated to the dust-laden air before it has a chance to escape up the cylinder C. By reason of the fact that the dust is heavier than the air it will adhere in its passage downward to the surface of the cone, the air itself freely escaping up the tube C and the dust being finally discharged at the base *b*. In order to accomplish this deflection of the air-current, I provide a valve consisting of the inclined wall or plate E, which is located within the pipe D or the box A, the object being to locate it in the air-current. This plate may be made of wood or metal, and is pivoted movably in the frame by pins *c*. To the outer end

of one of the valve-pins is fastened the segmental arm *f*, which is provided with a curved slot, through which passes a bolt, which is used for the purpose of securely fastening the valve E in any desired position. Other modes of fastening the valve-plate may be employed. The plate E is made to fit snugly between the perpendicular walls of the spout D. It is also made to fit tight along the bottom edge of said spout, a piece of rubber or other packing-material (not shown) being placed in front of the valve-plate and secured to the bottom wall of said spout D. This will tend to exclude all air from passing between the valve-plate and the bottom of the spout. I do not limit myself to the placing of this valve inside of the box; but it can be placed inside that portion of the pipe D outside of box A and accomplish the same result; or a solid piece can be built inside of the pipe or pipe and box, as shown by dotted lines at G, Fig. 1, which solid piece would answer in some degree the same purpose, the only object of the plate being to deflect the air at any desired angle. I prefer the adjustable valve-plate, so as to regulate the quantity and force of air passing from the pipe into the machine.

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

The combination, in a dust-collector, of an inverted hollow cone having an annular cover, a suitable supporting-frame, and a cylindrical open-ended tube entering said cone through its cover, a horizontal tangential air-inlet spout to admit the air to the inverted cone at its upper part, and an adjustable upwardly-deflecting valve located in the air-inlet, so as to direct the air into the cone at a point above the mouth of the cylindrical tube, substantially as described.

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

CLARENCE E. MERRILL.

Witnesses:
ROBERT WEIR,
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