(No Model.)

A. W. BANISTER.

APPARATUS FOR SEPARATING DUST, SHAVINGS, &c., FROM AIR.

No. 600,300. Patented Mar. 8, 1898.

Fig. 1.

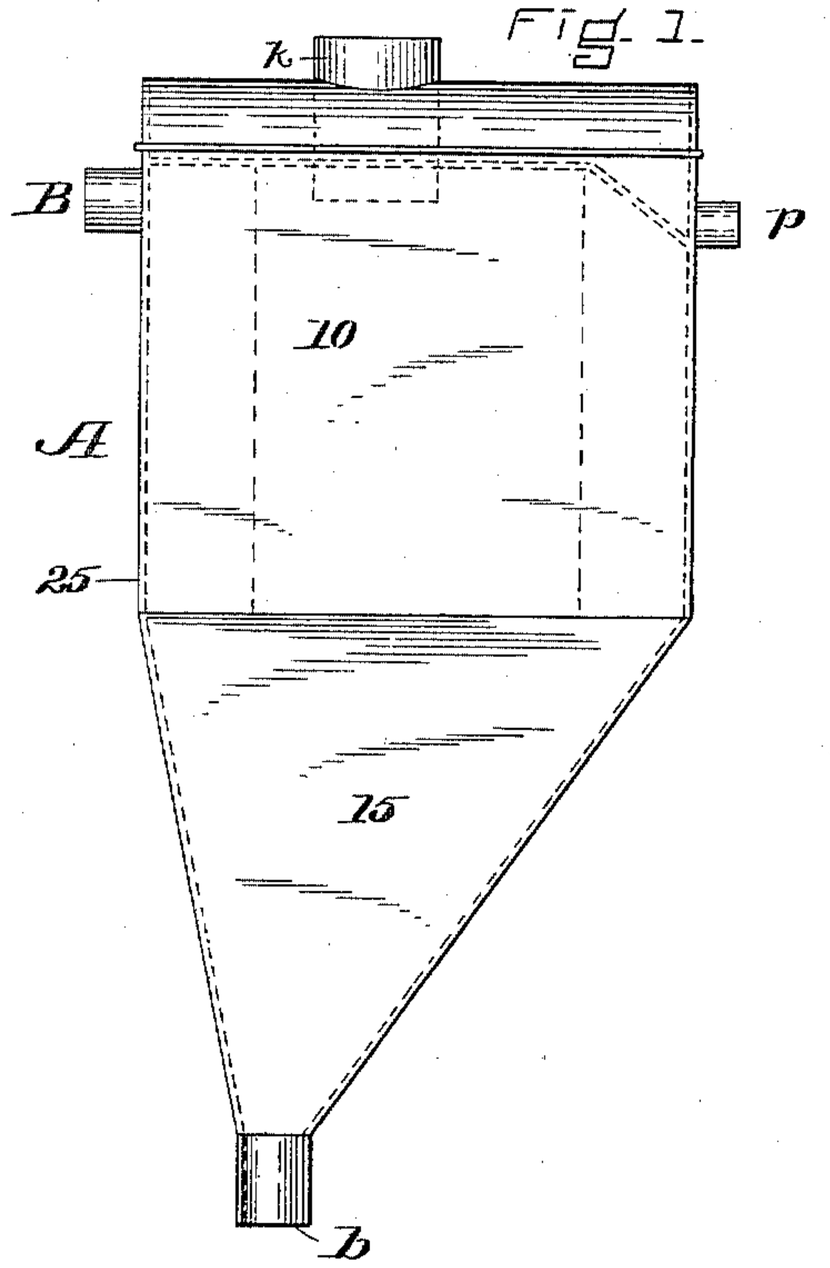


Fig. 2.

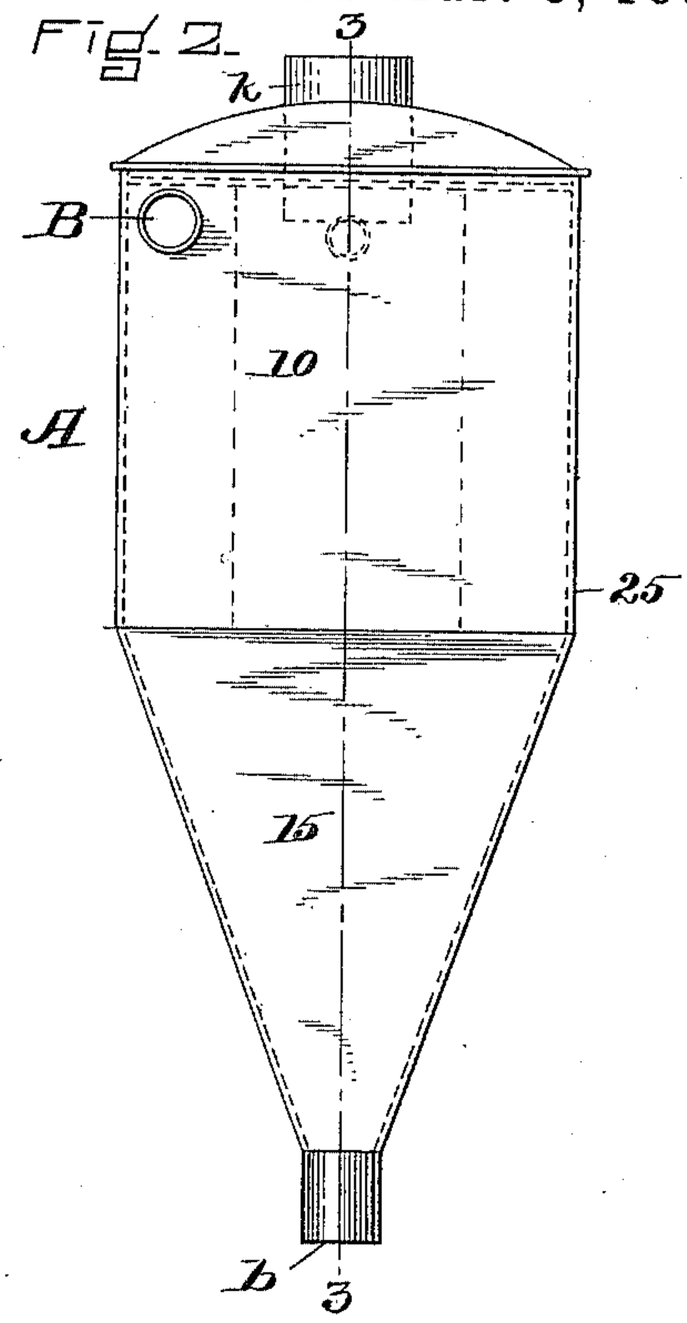
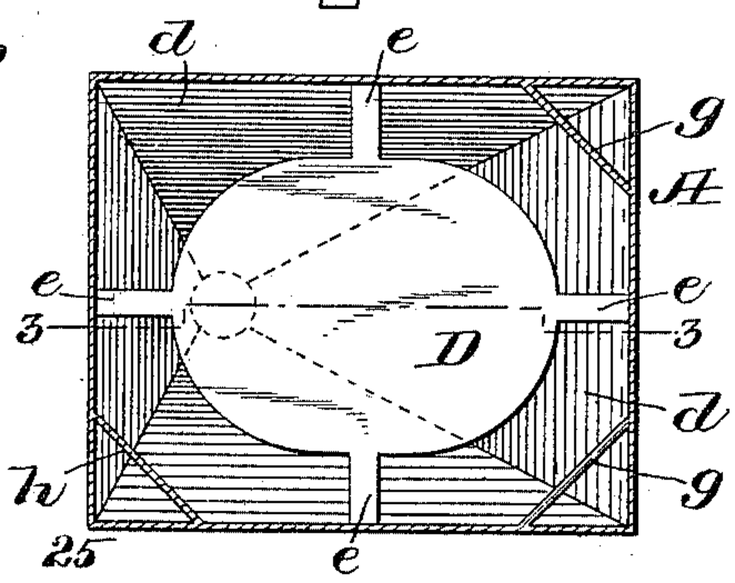


Fig. 3.

Fig. 4.



WITNESSES.
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UNITED STATES PATENT OFFICE.

ARTHUR W. BANISTER, OF BOSTON, MASSACHUSETTS.

APPARATUS FOR SEPARATING DUST, SHAVINGS, &c., FROM AIR.

SPECIFICATION forming part of Letters Patent No. 600,300, dated March 8, 1898.

Application filed August 13, 1897. Serial No. 648,154. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. BANISTER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Apparatus for Separating Dust, Shavings, &c., from Air, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a side elevation of my improved apparatus. Fig. 2 is an end elevation of the same. Fig. 3 is a central longitudinal vertical section of the same on the lines 3 3 of Figs. 2 and 4. Fig. 4 is a horizontal section of the same on the line 4 4 of Fig. 3.

My invention relates to an improvement on the apparatus for separating dust, shavings, &c., from air for which Letters Patent of the United States No. 543,796 were granted to me on the 30th day of July, 1895, and has for its object to still further simplify and improve the construction of apparatus of this character and secure better results than have hitherto been obtained.

To this end my invention consists in the novel features and combinations of parts hereinafter described and claimed.

In the said drawings, A represents the casing of the apparatus, the upper portion 10 of which is of substantially rectangular form, while the lower portion 15 is made in the form of an inverted quadrangular pyramid having its front side slightly inclined inward from the plane of the front side of the upper portion 10. At the bottom of the lower portion 15 of the casing is formed a discharge-opening *b* for the dust, shavings, &c., said opening being located at the front end of said portion 15 at the junction of its several sides.

B is the inlet-opening, to which is to be secured a blast-pipe (not shown) leading from a fan-blower by which the air laden with shavings, dust, &c., produced by planing and other woodworking machines connected by a suction-pipe with said blower, is forced into the apparatus through said inlet B, which is located on one side of and opens into a longitudinal receiving-chamber C, as shown in Figs. 2 and 3. At the bottom of the chamber C and separating the same from the lower portion 15 of the casing is a flat horizontal plate or shield D, preferably of oval shape, as shown in Fig. 4, and of such size as to leave a space *d* all around between the edges of the same and the walls of the chamber C, said plate being supported in place by narrow strips or braces *e*, fastened thereto and to the walls of the casing. At the rear end of the chamber C, opposite to the inlet-opening B and forming a portion of the top of said chamber, is a downwardly-inclined deflector *f*, against which impinges the dust-laden air entering at B, said deflector creating a downward air-current by which the dust and lighter shavings are caused to pass down to and through the space *d* into the bottom of the casing, and at each corner of the rear end of the chamber C and extending from the top to the bottom of the same, as shown in Fig. 3, is a deflector *g*, and at the front corner 25 is a similar deflector *h*, said deflectors causing the dust, shavings, &c., to be carried around and close to the sides of the chamber C in such manner as to fall through the space *d* around the edges of the plate D into the portion 15 of the casing and thence pass to the discharge-outlet *b*.

The dust-laden air on entering the chamber C passes directly to the opposite end of the same into contact with the deflector *f*, the heavier particles of dust or other material suspended in the air, owing to the length of the chamber C and the consequent reduction of the force of the inward current as it approaches its rear end, falling by gravity, assisted by the force of the downward current created by the deflector *f*, to the bottom of the chamber without coming into contact with said deflector, being carried, as they fall, around the sides of the chamber C by impinging on the corner-deflectors *g* and passing through the space *d* into the lower portion 15 to the discharge-outlet *b*, while the lighter particles are carried downward by the deflector *f* and the force of the downward air-current created thereby and around the chamber C by the corner-deflectors *g h* to and through the said space *d* to the outlet *b*. The deflectors *g h* thus cause the shavings to be carried around the walls of the chamber C as they descend, leaving no rectangular corners at these points for the lodgment of the shavings,

and consequently avoiding the liability of the chamber becoming clogged or obstructed thereby.

I prefer to employ the plate D, as it forms a shield to intercept and prevent the shavings, &c., after passing into the lower portion of the casing from being again carried upward by the force of any upward suction or whirlwind which may be created in said lower portion of the casing; and said plate also serves to hold the dust and heavier particles in contact with the long sloping sides or walls of said lower portion down which they slide to the outlet *b*, the length of said sloping sides causing the air to become separated from the shavings, &c., before they arrive at said outlet.

The purified air is discharged into the atmosphere through an outlet-pipe *k*, which projects through the top of the casing A at about the center, its lower open end extending down within the chamber C, as shown in Fig. 3. Around the pipe *k* is an annular opening *m*, through which the fine dust which rises to the top of the chamber C passes into an upper chamber G at the top of the casing A, from which it is blown by the force of the air down an incline 30, formed by the upper surface of the deflector *f*, to an exit-pipe *p*, from which it is discharged into the atmosphere.

The inlet-opening B is located, as shown in Fig. 2, close to one of the side walls of the chamber C in order that the dust and shavings may pass across said chamber on one side of the air-outlet pipe *k* and thereby be prevented from entering the same on their passage to the deflectors, after which they are carried down, as previously described, below the level of the open end of said pipe, and consequently cannot enter the same.

By means of the upper and corner deflectors arranged, as described, within the chamber C, in connection with the shield D, I am enabled to produce a perfect separation of the air from the dust and other materials in a very simple and economical manner, thus rendering my apparatus of great value in woodworking establishments where shavings, sawdust, and other similar materials are to be conveyed from the machines by which they are produced to storage-bins or other locations.

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

A dust-separator comprising the casing A consisting in the upper rectangular portion 10 within which is the receiving-chamber C, the top chamber G and the lower downwardly-tapering chamber 15 terminating in a dust-outlet *b*, a horizontal plate D spaced from the inner walls of chamber C and separating it from the lower chamber 15, an inlet B in one of the upper corners of the front side of the chamber C, a plate or partition separating the chambers C G and having an enlarged opening *m* and a downwardly-inclined front edge forming a deflector across the upper front angle of chamber C and also forming a downward incline 30 within the chamber G, an outlet *p* from chamber G at the lower edge of said incline 30, an air-outlet tube *k* extending down through top of chamber G into the enlarged opening *m*, and vertical plates *g*, *g*, and *h*, crossing the angles formed by the two rear corners of chamber C and that front corner farthest from the opening B; said plates extending from the top to the bottom of said chamber C and forming deflectors, substantially as described.

Witness my hand this 9th day of August, A. D. 1897.

ARTHUR W. BANISTER.

In presence of—
P. E. TESCHEMACHER,
B. L. MARDEN.