

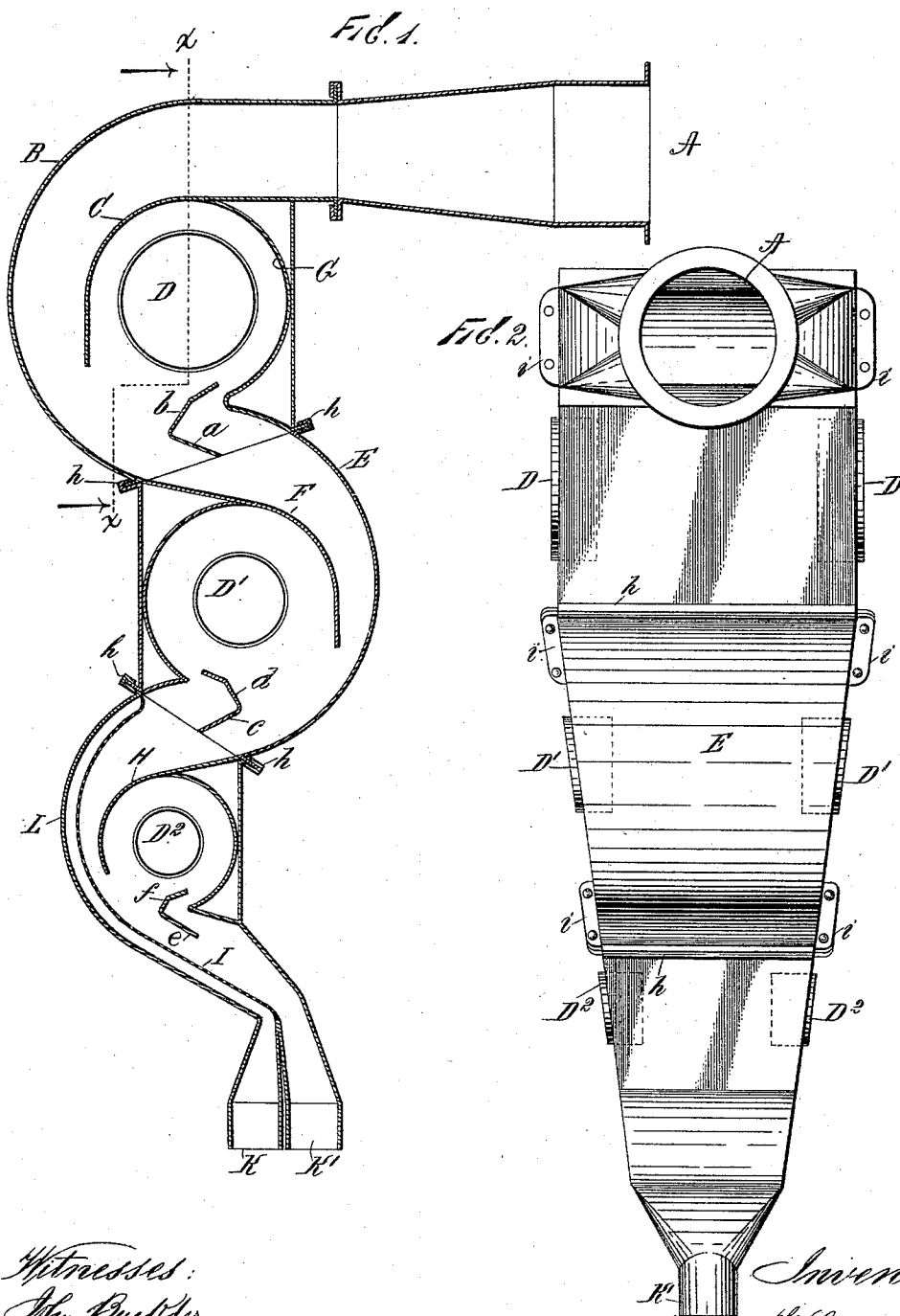
(No Model.)

2 Sheets—Sheet 1.

M. F. GALE & H. E. MEADON.
DUST COLLECTOR AND SEPARATOR.

No. 535,099.

Patented Mar. 5, 1895.



Witnesses:
Wm. Buckler,
L. H. Osgood,

Inventors:
Moses F. Gale and
Howard E. Meadon,
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Attorneys.

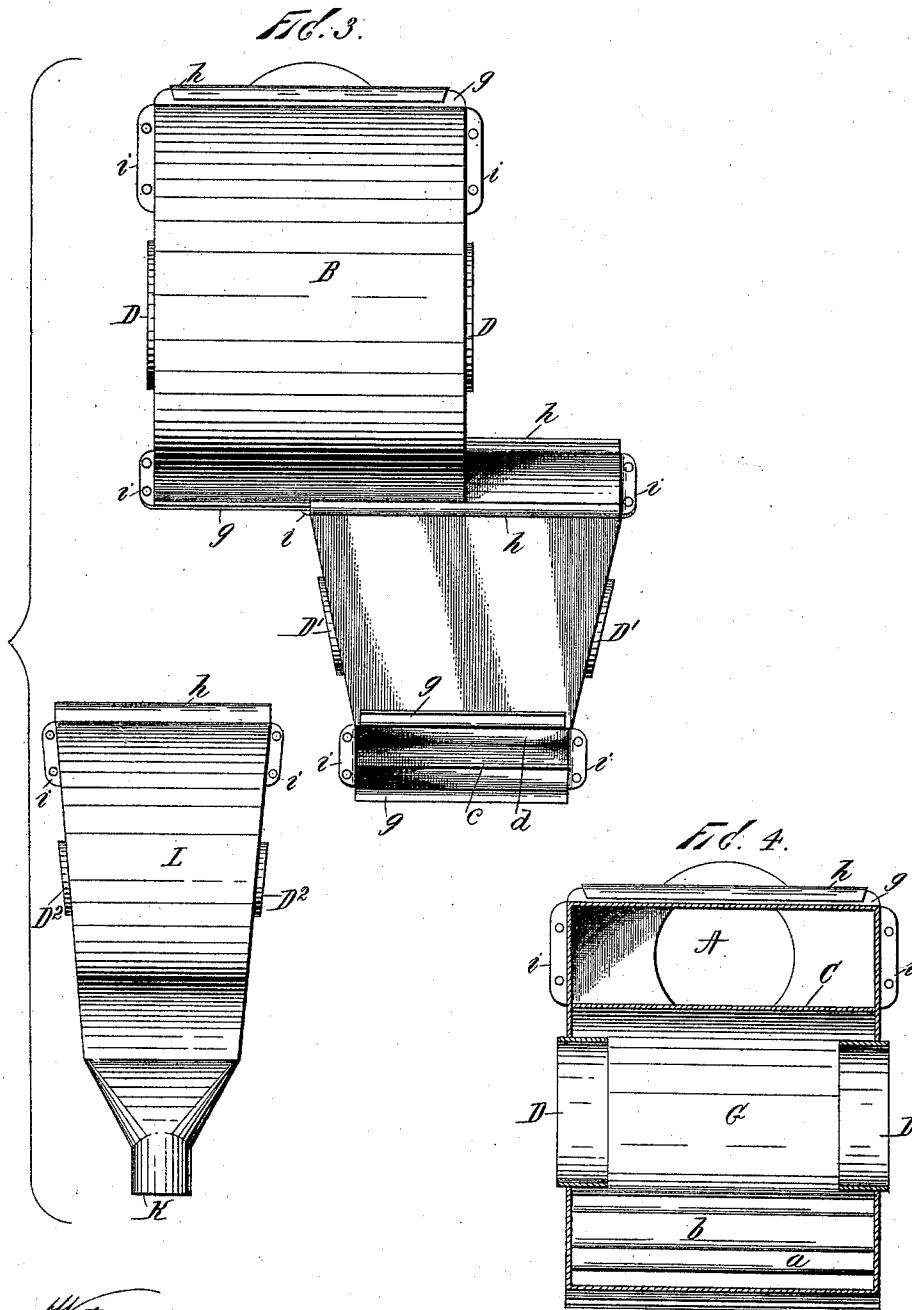
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John Buckler,
L. H. Osgood,

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Moses F. Gale and
Howard E. Meadon,
By North Osgood, Attorneys.

UNITED STATES PATENT OFFICE.

MOSES F. GALE AND HOWARD E. MEADON, OF BROOKLYN, NEW YORK.

DUST COLLECTOR AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 535,099, dated March 5, 1895.

Application filed December 8, 1894. Serial No. 531,175. (No model.)

To all whom it may concern:

Be it known that we, MOSES F. GALE and HOWARD E. MEADON, citizens of the United States, and residents of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Dust Collectors and Separators, of which the following is a specification.

Our invention relates to that class of devices employed for the purpose of collecting dust and other materials from a moving current of air and separating the collected matters from the air and sometimes dividing or grading the collected matters, which devices are commonly known as dust collectors and separators.

Among the objects of our invention is the production of a simple, cheap, compact and efficient machine which will automatically collect and deliver the dust or materials free from the air blast, and which will be capable of use in any position and under any power of blast sufficient to carry the materials into the machine. Subordinate objects are provisions for dividing or grading the collected materials, and for making the machine in detachable sections convenient for packing, to economize space in transportation and to facilitate building, locating and handling the apparatus, as well as to vary its capacity as occasion may require, and to render it noiseless in operation and safe against fire. To accomplish all of this and to secure other and further advantages in the matters of construction, operation and use, our improvements involve certain new and useful arrangements or combinations of parts and particular features of invention, as will be herein first fully described and then pointed out in the claims.

In the drawings, Figure 1 is a central vertical section of our improved machine represented as standing in an upright position, and Fig. 2 is an elevation of the same looking toward the inlet. Fig. 3 is a view in elevation the reverse of Fig. 2, showing the three parts of which the machine represented in Figs. 1 and 2 is composed, and indicating the manner in which the parts may be separated or united. Fig. 4 is a section and elevation upon planes through line $x-x$ of Fig. 1, looking in the direction of the arrows.

In all the figures, like letters of reference,

wherever they occur, indicate corresponding parts.

The machine is made up of a number of sections somewhat similar in construction or arrangement and these, when united, form a sinuous path for the material passing through the machine.

A is the inlet or nozzle into which the blast of air is directed, carrying with it the materials from which the air is to be separated before they are finally delivered. While this nozzle is shown in horizontal position and the main axis of the machine in vertical position, these positions may be varied at will or as may be required. From the inlet, the dust laden current is projected against a curved outer wall B and confined between it and a curved interior partition C until it reaches the edge of this partition where an opening is afforded for the escape of air to the other side of partition C, the dust, &c., hugging the curved wall B in a manner readily understood. The air which separates itself from the dust, at the extremity of partition C, finds its way to the interior of the section and passes out at the outlets D, D, on either side of that section.

In the first section and near the discharge end thereof, is a director represented at $a b$, of which the part a is located and arranged so as to slightly contract the sinuous path of materials and unseparated air on the way from the first section to the second, and of which the portion b is inclined away from wall B, leaving a channel behind it. The dust laden blast leaving the first section is turned by the outer wall E, of the second section in an opposite direction and is confined between this wall and an interior partition F, which gradually contracts the channel. When the blast leaves this channel, a portion of the air finds its way to the interior of the second section and out at the side openings $D' D'$, same as before described in referring to the first section. The current being contracted between the parts E and F, a portion of the air will naturally set back to find more ready release, and this portion impinges against the section b by which it is turned against a curved wall G, united more or less perfectly with the partition C. Particles of dust which follow with this back set of air,

hug the inner surfaces of parts C and G, or settle down through the opening between partition C, and director *a, b*, there to mingle with the main current passing that point, and thus practically no dust escapes through openings D. Leaving the second section, the dust-laden blast passes a director *c d*, operating in all respects same as that at *a b*, and enters the third section which is provided with a partition H, outlet openings D² D² and a director *e f* for the same purposes as the corresponding parts in previous sections.

The path for the materials being gradually contracted as indicated, when they leave the machine they are practically free from air, which is necessary in many operations, as in storing and burning shavings or saw dust.

In many cases it is desirable to separate or grade the materials, and for this purpose we have shown a sieve or grating I located parallel with the outer wall L of the last section and nozzles K K' separated from each other. The finer particles pass through the sieve and out at nozzle K while the larger or coarser particles find exit at nozzle K'; but the sieve may be omitted and the materials, deprived of superfluous air, delivered as may be desired.

The number of sections may be increased to any desired extent following the same general principles of construction, but three will ordinarily be found sufficient.

The sections are made complete in themselves and so that they may be united when required for use. In the forms shown, one section is provided with a flat flange at bottom, as *g*, and the other, at top, with an overlapping flange *h* which will embrace the first, allowing the sections to be slipped together at the place where the machine is to be set up, as indicated in Fig. 3. After being properly adjusted one to the other the various sections may be bolted or otherwise secured through end flanges *i* suitably provided for the purpose.

By making the sections separately, economy in the manufacture and facility of placing is secured and the machine may be more compactly arranged for shipment with manifest advantages. The complete sections also afford facilities for enlarging, contracting and removing the machine for relocation, as will be observed. The abundant outlets for air and the peculiar arrangement and location of the outlet openings permit the machine to be operated noiselessly under any ordinary driving blast, and no matter how the wind may strike these openings it will only further facilitate the withdrawal of superfluous air from the dust, &c. The outlet openings being at the sides, the machine when in operation is well protected against the admission of sparks or fire which sometimes cause much

damage where light dust or mill refuse is being operated upon—and even if turned upon its side, if sparks do find entrance at any opening, instead of passing on with the interior current, they will drop through the opposite opening without danger of damage.

While the machine is primarily intended for use in connection with saw and planing mills to operate upon shavings and saw dust, manifestly it may be employed for separating air from any other materials or to grade or separate the materials as may be found desirable.

Having now fully described our invention, what we claim as new herein, and desire to secure by Letters Patent, is—

1. In an apparatus of the character herein set forth, the oppositely curved sections following one after the other and having air outlets on each side, the interior partitions gradually contracting the dust channels and affording escape for air at their extremities and the directors located near the discharge ends, contracting the path of the material and turning the back set of air as explained, the parts being combined and arranged, substantially as shown and described.

2. In an apparatus of the character herein set forth, the oppositely curved sections following one after the other and having air outlets on each side, the interior partitions as C, F, &c., and the directors, as *a b, c d*, &c., the partitions forming with the outer walls channels which are gradually contracted in area from inlet to outlet, the parts being combined and arranged substantially as shown and described.

3. In an apparatus of the character herein set forth, the combination with the final section provided with air outlets on each side and with the interior partition and director for back set of air, both gradually contracting the interior channels as explained, of the grating and the separate outlets, substantially as and for the purposes set forth.

4. The herein described apparatus composed of a number of similar, separable sections united one with the other, each section having air outlets on each side and interior partitions, and directors for back set of air forming with the walls dust channels gradually contracted from the first to the last section, the parts being combined and arranged substantially as shown and described.

Signed at New York, in the county of New York and State of New York, this 6th day of December, A. D. 1894.

MOSES F. GALE.
HOWARD E. MEADON.

Witnesses:

W. J. MORGAN,
WORTH OSGOOD.