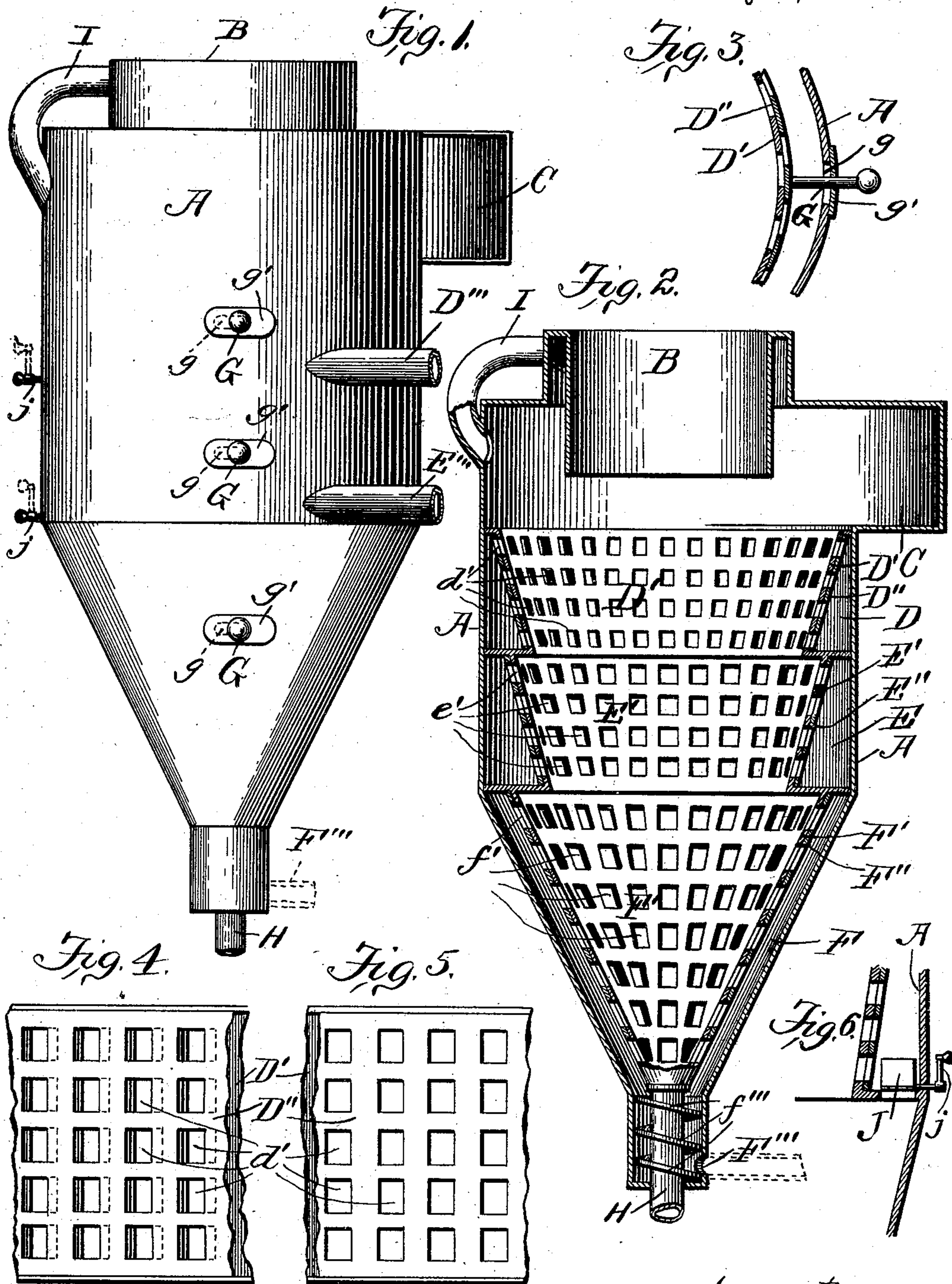


(No Model.)

O. PORBECK.  
DUST COLLECTOR.

No. 603,285.

Patented May 3, 1898.



Witnesses:  
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Ralph L. Lusk.

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# UNITED STATES PATENT OFFICE.

OTTO PORBECK, OF ST. LOUIS, MISSOURI.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 603,285, dated May 3, 1898.

Application filed September 27, 1897. Serial No. 653,174. (No model.)

*To all whom it may concern:*

Be it known that I, OTTO PORBECK, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Dust-Collectors, of which the following is a full, clear, and exact description, 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, forming part of this specification, in which—

Figure 1 is a side elevational view of my improved dust-collector. Fig. 2 is a vertical sectional view through the same. Fig. 3 is a detail sectional view showing the manner of adjusting the perforations of the separating-chamber. Fig. 4 is a view showing an adjustment of the perforations. Fig. 5 is a view showing the perforations opened to their full extent. Fig. 6 is a view illustrating one of the dampers or valves for opening and closing communication between the collecting-chambers.

This invention relates to a new and useful improvement in dust-collectors, the object being to produce a machine wherein the dust may be separated into different grades or degrees of fineness and conducted from the machine into suitable receptacles or bins.

With the foregoing object in view the invention consists in providing a dust-collector with a series of individual collecting-chambers, each of which is provided with a perforated separating-chamber whose perforations are adjustable, which adjustment may be effected through a suitable operating device from the outside of the machine, the perforations of the one separating-chamber being preferably adjusted to a different size from those of the other chambers. Other features of invention reside in the construction, arrangement, and combination of parts, all as will hereinafter be described, and afterward pointed out in the claims.

In the drawings, A indicates the outer casing, at the upper portion of which is formed an air-outlet B.

C indicates the feed-inlet, preferably tangential, as shown, through which the material is forced into the machine under pressure

of an air-blast and caused to whirl or move rapidly round and round in the interior of the machine until it passes therefrom.

D, E, and F indicate individual collecting-chambers, within which are concentrically arranged perforated separating-chambers D', E', and F', respectively.

Separating-chambers D', E', and F' are preferably conical in shape and communicate with each other, the walls thereof being perforated, as indicated at d', e', and f', while about the walls are sleeves D'', E'', and F'', formed with perforations adapted to register with the perforations in the walls of the separating-chambers. These sleeves are adapted to be moved about the walls of the separating-chambers when it is desired to adjust the size of the perforations—that is, when the perforations of the sleeve and wall register the openings are open to their full extent—while should it be desired to diminish the size of the openings it is only necessary to slide the sleeve around the wall of the chamber until the openings are of the desired area. A continued movement of the sleeve will close the perforations. Thus it will be seen that the perforations may be adjusted to any desired size.

To operate the sleeves from the exterior of the machine, I provide pins or handles G, which work in slots g in the walls of casing A. To prevent the escape of dust through slots g, I prefer to mount plates g' on pins or handles G, which plates close the slots at all times, as shown.

D''' indicates the outlet through which the dust is conducted from collecting-chamber D, E''' the outlet from collecting-chamber E, and F''' the outlet from collecting-chamber F. These outlets are adapted to be connected with suitable means for conducting the separated dust into suitable bins or receptacles, the heavy material from which the dust is separated being discharged through an outlet H from the bottom of chamber F'.

f''' indicates a spiral way leading from collecting-chamber F to outlet F''', the object of said spiral way being to prevent dust from packing against the tube H and blocking the outlet F'''.

I indicates a dust-pipe which is adapted to



lead any light dust which might rise into the space about the outlet B downwardly, where it commingles with the incoming volume of whirling material, the tendency of which is to carry it downward therewith.

J indicates valves or dampers, (more clearly shown in Fig. 6,) which valves or dampers are adapted to control communication between the several collecting-chambers. These valves are normally closed; but should it be desired to use the machine as a single collecting-chamber—that is, separate the dust into one grade only—the valves J may be opened and the dust will be carried downwardly therethrough into the chamber F, from whence it is discharged with the separated dust from separating-chamber F'. Suitable handles *j* may be employed, as shown, to operate the valves or dampers.

In operation, presuming my improved dust-collector is being used to separate sawdust from shavings or chips in a planing-mill or other woodworking-mill, the combined mass of dust and shavings is forced into the machine under pressure of an air-blast through the tangential inlet-opening, which causes the material to whirl round and round in the chambers successively from chamber D' to chamber E' and then to chamber F'. During this whirling motion the different-sized particles of dust are forced through the perforations into the individual collecting-chambers D, E, and F, respectively. By making the perforations in the wall of chamber D' comparatively small and relatively increasing in size those of chambers E' and F', respectively, making those of chamber F' the largest, the finest particles of dust will pass into chamber D, while the larger particles will pass into chamber E and the largest into chamber F. Thus it will be seen that collected dust may be readily graded into different degrees of fineness and conducted into separate receptacles or bins, the shavings or chips being discharged from the bottom of the machine in a clean state and practically free from sawdust.

The shavings and sawdust from planing-mills and other woodworking-mills are generally sold and utilized for various purposes. The purchaser of shavings likes to have them free from sawdust, while the purchaser of sawdust often desires to have the same graded, depending upon the use, and to that end my machine can be used to great advantage.

I am also aware that my improved dust-collector may be employed to advantage in factories and other places where a dust-collector is used.

It is to be understood that I do not limit myself to the exact construction shown in the drawings, as I am aware that many minor changes in the construction, arrangement, and combination of the several parts of my machine may be made and substituted for those herein shown and described without in

the least departing from the nature and principle of the invention.

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

1. In a dust-collector, the combination with an outer cylindrical casing, of a series of conical walls arranged in said casing, said walls forming a connected series of separating-chambers, the walls of the different cones being formed with different-sized perforations, and walls or partitions extending from the converging ends of the upper cones, to the casing, forming individual collecting-chambers, substantially as described.

2. The combination with the outer casing of a dust-collector, of a series of individual collecting-chambers within said casing, a connected series of perforated separating-chambers superimposed one above the other and coöperating with said individual collecting-chambers respectively, and means for adjusting the size of the perforations of the separating-chambers.

3. The combination with the outer casing of a dust-collector, of a series of individual collecting-chambers therein, and a superimposed series of connected separating-chambers coöperating with said collecting-chambers, said separating-chambers comprising conical side walls, having perforations therein, sleeves surrounding said side walls and formed with perforations adapted to register with the perforations in the side walls, and means for moving said sleeves to change the size of the perforations; substantially as described.

4. In a dust-collector, the combination with the outer casing, of a series of individual collecting-chambers having separate outlets, a series of connected separating-chambers coöperating with said collecting-chambers, said separating-chambers having adjustable perforations, means for individually adjusting said perforations in the different separating-chambers, said means extending to the outside of the casing, an air-outlet, and a pipe leading from a point in proximity to the air-outlet to the interior of the casing at a point above the uppermost separating-chamber; substantially as described.

5. In a dust-collector, the combination with the outer casing, of a series of individual collecting-chambers having separate outlets, a series of connected separating-chambers coöperating with said individual collecting-chambers, said separating-chambers having adjustable perforations, means for individually adjusting said perforations in the different separating-chambers, said means extending to the outside of the casing, an air-inlet, and a spiral way leading from the lowermost of said collecting-chambers to the outlet of said chamber; substantially as described.

6. In a dust-collector, the combination with the outer casing, of a series of connected sep-

arating-chambers, a series of individual collecting-chambers, and means for controlling communication between the several collecting-chambers, whereby the machine may be  
5 used as a general, or individual, collecting-chambered machine; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 24th day of September, 1897.

OTTO PORBECK.

Witnesses:

G. A. PENNINGTON,  
HUGH K. WAGNER.