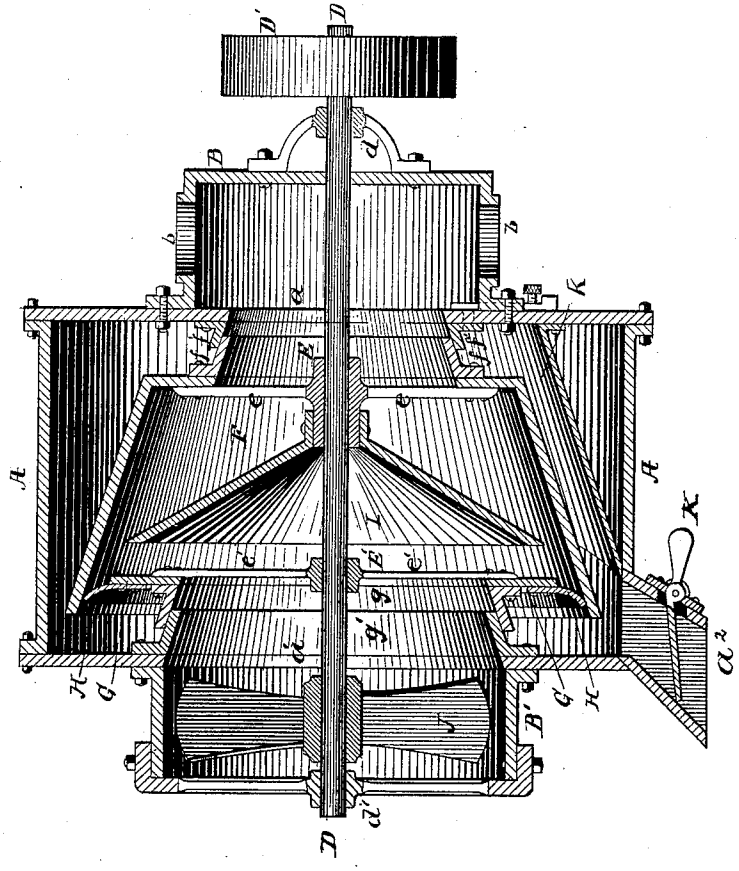
(No Model.)

R. R. WATTERS.

DUST COLLECTOR.

No. 451,543. Patented May 5, 1891.



Witnesses.
B. L. Lourie.
F. H. Stuart

Inventor.
Rama R. Watters,
By C. P. Humphrey
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

RAMA R. WATTERS, OF AKRON, OHIO.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 451,543, dated May 5, 1891.

Application filed June 23, 1888. Serial No. 278,011. (No model.)

To all whom it may concern:

Be it known that I, RAMA R. WATTERS, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a certain new and useful Dust-Collector, of which the following is a specification.

The object of my invention is to provide a dust-collector for separating particles of matter from the air in which they are suspended or by which they are carried.

My invention consists in the construction and arrangement of parts hereinafter fully described, and then specifically pointed out in the claims, reference being had to the accompanying drawing, forming a part of this specification.

The accompanying drawing shows a central section of a machine illustrating my invention, in which all parts, except as hereinafter stated, are circular and arranged concentrically about a common axis.

In the accompanying drawing, A is a hollow cylindrical case, having at either end openings $a\ a'$, the first to admit the particle-laden air and the second to permit its escape in a purified state, and a discharge-spout a^2, through which the separated and retained particles are delivered.

At each end of the case A are cylindrical hoods B B′, the first to receive the air that enters the machine and the second to constitute a case for a spiral fan or propeller to create a draft or current of air through the machine. The hood B is provided with side openings $b\ b$ to connect with tubes which convey the particle-laden air to the machine and the hood B′ with an end opening for the escape of the air.

Through the center of the case A and hoods B B′ is a shaft D, suitably journaled in bearings $d\ d'$ and provided with a pulley D′, by which it is turned. Mounted on said shaft D, inside of the case A, by means of a tight hub E, with radial arms e, is a hollow conical shell F, open at its larger end and having an opening in its smaller end, which opening and the opening a are united by conical flanges $f\ f'$, attached, respectively, to the shell F and case A, the smaller end of the former fitting and running in the larger end of the latter. Within the shell F and a slight distance from the plane of its larger end is an annular disk G, supported by radial arms e', projecting from a fixed hub E′. The opening in this disk is united with the opening a' by conical flanges $g\ g'$, the open end of the former, which is attached to the disk G, inclosing and running on the smaller end of the latter, which is attached to the case A. About the outer edge of the annular disk G and attached to it is a projecting rim H, which closes the annular space between it and the inside of the shell F, which rim is preferably of flexible material, as felt, leather, vulcanized rubber, or a continuous brush.

Inside the shell F and mounted on the hub E is a conical disk I, with its open end toward the open end of the shell F and having its outer edge near the adjacent surface of the shell F.

Mounted on the shaft D, inside of the hood B′, is a spiral fan or propeller J.

In operation the shaft D and connected parts are revolved at a high speed in the direction that will cause the fan J to drive the air out of the machine through the outer opening of the hood B′, whereby a suction is created through the machine. This motion also causes the outer edge of the rim H by centrifugal force, in addition to any natural tension, to press against the inner face of the shell F. The particle-laden air drawn by the fan J enters the hood B by the openings $b\ b$, and thence passes through the opening a into the shell F, against the inner periphery of which it is deflected by the conical disk I and upon which the particles of matter adhere by centrifugal force, while the air freed from such particles, being unable to pass the disk G and rim H, turns inward about the conical disk I and escapes through the opening a'. As the particles gather on the inner face of the shell F, they are driven by centrifugal force toward its larger end, sliding and riding over each other until arrested by the rim H, against which they accumulate, and by their weight overcome its resistance from time to time and escape into the case A and fall to the bottom, from which they are drawn off through a discharge-spout a^2. This spout a^2 is closed by an overbalanced valve K, which opens from time to time as the particles accumulate and closes when

the surplus weight is removed and the particles are directed to it by a sloping trough *k*.

I do not confine my invention to the exact construction, form, arrangement, or relative dimensions of the several parts shown, as the angles of the shell F and conical disk I, with the shaft D, may be changed, the hood B may be omitted, or the fan J placed therein and the hood B′ omitted, or the entire case A may be omitted and the ends of the shell F connected directly with inlet and outlet tubes, without departing from my invention, which

I claim to be—

1. In a dust-collector, the combination, with a hollow case, as A, having openings, as *a a′*, for the entrance and exit of air, respectively, and a shaft, as D, journaled through said case and openings and having mounted thereon a hollow conical shell, as F, open at each end, with its smaller end adjacent to the opening *a*, a conical disk, as I, inside of said shell, and an annular disk, as G, having a projecting rim, as H, located between the larger ends of the shell and conical disk, of conical rims, as *f f′*, which project from the smaller end of the shell F and opening *a*, the end of one inclosing the end of the other, and similar rims, as *g′ g*, which project from the opening *a′*, and annular disk G, with the end of one inclosing the end of the other, all constructed and arranged substantially as shown, and for the purpose specified.

2. In a dust-collector, the combination of the case A, having openings *a a′*, hoods B B′, shaft D, journaled centrally in said hoods and case, shell F, conical disk I, annular disk G, and rim H, rims *g g′* and *f f′*, and fan J, all constructed and arranged substantially as shown, and for the purpose specified.

In testimony that I claim the above I hereunto set my hand.

RAMA R. WATTERS.

In presence of—

C. P. HUMPHREY,

J. W. HUTTON.