

(No Model.)

S. W. KIMBLE.  
DUST COLLECTOR.

No. 458,147.

Patented Aug. 18, 1891.

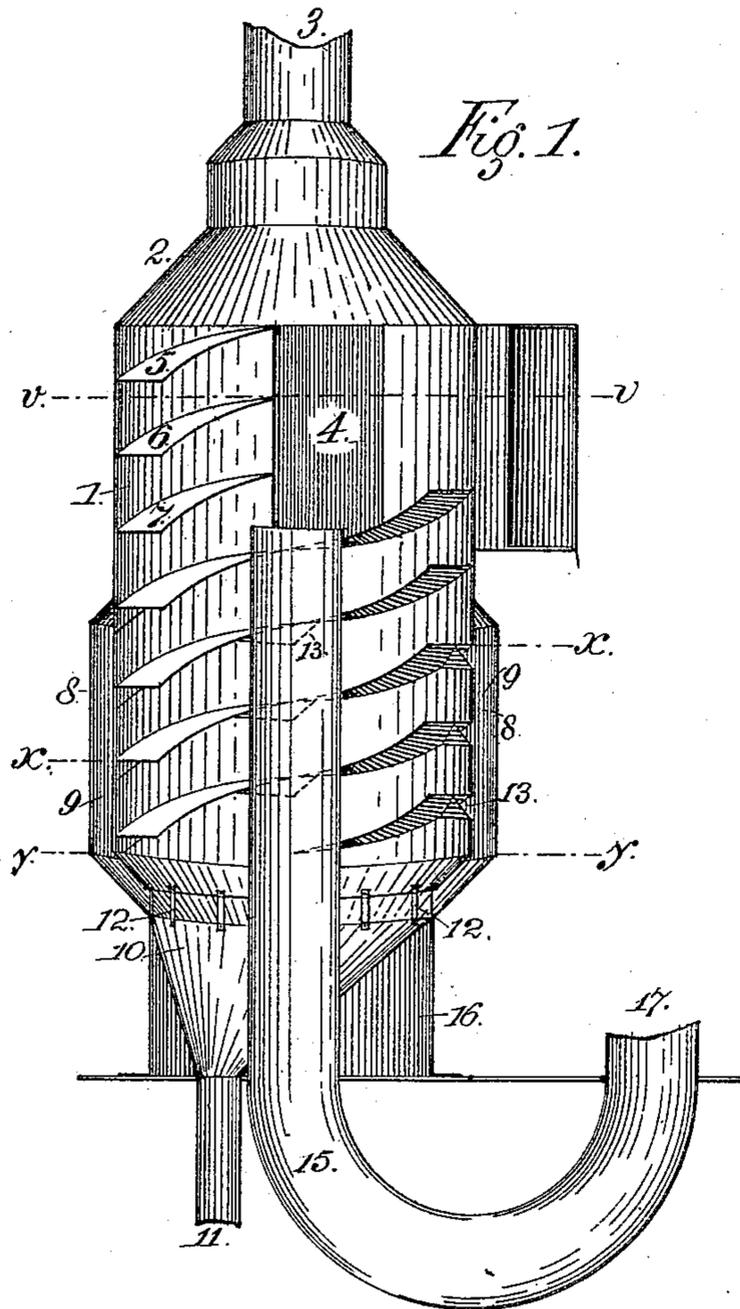


Fig. 1.

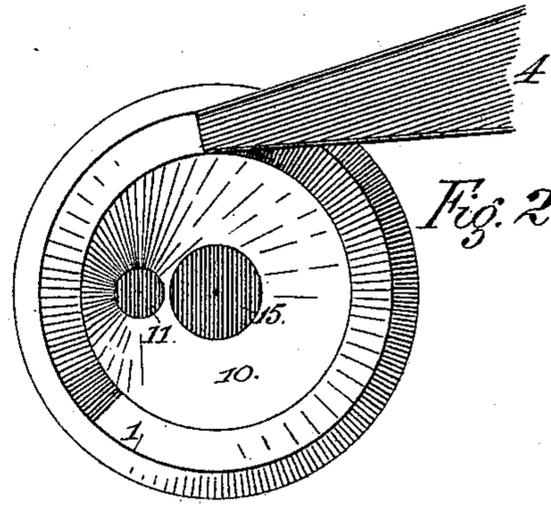


Fig. 2.

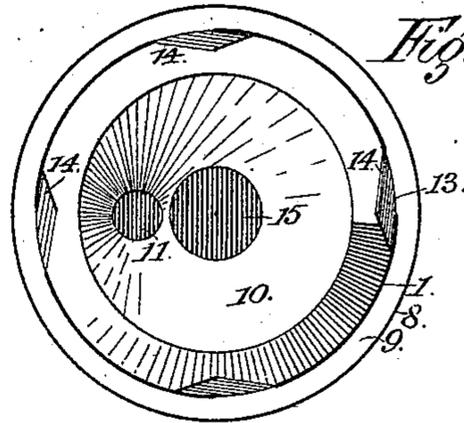


Fig. 3.

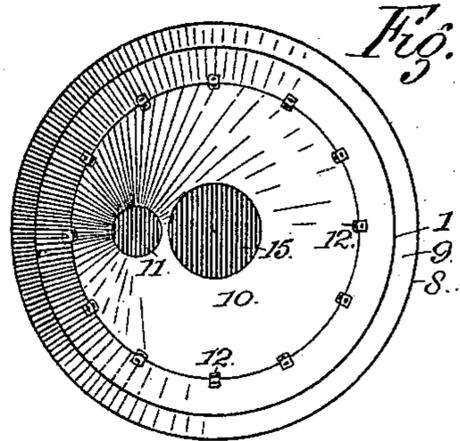


Fig. 4.

WITNESSES:

*W. J. P. P. P.*  
*L. F. Wilber*

*Smith W. Kimble*  
INVENTOR

BY *A. J. O'Brien*  
his ATTORNEY

# UNITED STATES PATENT OFFICE.

SMITH W. KIMBLE, OF DENVER, COLORADO, ASSIGNOR TO THE RAILROAD MICA LUBRICANT COMPANY, OF SAME PLACE.

## DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 458,147, dated August 18, 1891.

Application filed September 4, 1889. Serial No. 323,007. (No model.)

*To all whom it may concern:*

Be it known that I, SMITH W. KIMBLE, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, 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 figures of reference marked thereon, which form a part of this specification.

My invention relates to an improved and novel construction of dust-collectors; and its objects are to furnish an apparatus or device for collecting and delivering dust or comminuted materials, or even partially-reduced materials, of simple, compact, and economical construction, having no moving parts to become worn or damaged, hence of great durability, adapted to collect the particles and atoms resulting from the operations of many classes of machines or to collect and conduct to a desired point the products of grinding, crushing, or comminuting apparatus; to which ends it consists in the features, construction, and combinations, more particularly herein-after described and claimed.

In the drawings is illustrated an embodiment of the invention, Figure 1 of such drawings being a vertical central section of my improved collector; Fig. 2, a transverse section thereof on line *vv*, Fig. 1; Fig. 3, a transverse section on line *xx*, Fig. 1, and Fig. 4 a transverse section on line *yy*, Fig. 1.

In the figures the reference-numeral 1 indicates a cylindrical shell forming the body of the separator, the shell having a tapering top 2, centrally ending in a pipe 3, which may lead to any convenient point for the discharge of air or of a portion of the air forced into the collector. Into the upper portion of the shell opens a tangential inlet-pipe 4, rectangular in form at its discharge end, as shown, but which throughout its length may be of any desired contour. Such pipe leads to the chamber from the machine, point, or place from which the dust or fragments are to be collected and withdrawn, these opera-

tions being aided by a fan or blast apparatus interposed in the course of the pipe and acting as an exhaust to the machine, point, or place, and as a blower to the collector. As the construction of such fans or blast apparatuses is well known and their operation well understood and the form thereof in this connection well understood one is not herein shown. By this inlet-pipe 4 the material is delivered to the collecting-chamber 1. This chamber has a plural number of internally-projecting spiral flanges, three of which are herein shown and numbered 5, 6, and 7, respectively, such flanges projecting to such distance only as leaves a free clear space through the center of chamber 1. Around the lower part of the chamber is secured a concentric shell 8, so that a passage-way or exterior chamber 9 is formed around the main chamber 1, the passage-way or chamber 9 ending in a funnel-shaped passage 10, from which leads a discharge-spout 11. The concentric shell is secured to the collecting-chamber 1 by soldering, riveting, or in any suitable manner at its top and near its base by the spacing and securing bolts 12.

Through the wall of chamber 1 and along the line of the spiral flanges 5 6 7 are formed apertures 13, opening into the space or passage-way 9, the flanges being also somewhat cut away thereat, deflectors or gills 14 being placed thereat to guide or throw the material into passage 9, whence it is conveyed by pipe 10 to any desired point. Upward through the center of chamber 1 and to a point near or about at its vertical center passes a pipe 15, whose outer end 17 may lead to a stack or chimney or any other point. The object of pipe 15 is to afford a means of escape for the surplus air collecting in the center of the chamber. It should be noted that the lower end of the chamber 9 terminates in an elliptical funnel-shaped chamber 10, from which the pipe 11 leads, the pipe 15 passing there-through and into the center of chamber 1. The chamber 1 is to be arranged vertically and is to be supported on a leg or any suitable supports, (herein typified by a frame or shell 16.)

In operating comminuted or reduced material is drawn from any point or machine con-

nected to the extension of pipe 4 and delivered into the chamber 1 and tangentially against its wall and upon the spiral flanges 5 6 7. Down such flanges the material immediately passes, centrifugal force keeping it on the flanges and against the wall of chamber 1 until it reaches the openings 13, where it is deflected and thrown into chamber 9, where it passes by pipe 11 to the desired discharge-point or desired receptacles, either of which may be a furnace, boxes, troughs or sacks, or a dump-heap. In the meantime the air forced with and carrying the material escapes by the tubes or pipe 3 and 15. As the material is thrown on the flanges and against the wall of the chamber, the air in the center of the latter is free or comparatively free from dust or comminuted or disintegrated material and is discharged in such condition from the chamber through the surplus-air pipes 3 and 15. If the comminuted or disintegrated material is of a combustible nature, the pipe 11 may lead to a furnace, where the same may be burned and utilized, or it may lead to suitable receiving and packing appliances.

Having thus described my invention, what I claim is—

1. The combination, in a dust-collector, of a cylindrical shell 1, provided with a tapering top 2, and a pipe 3 opening into said top, spiral flanges on the interior of said shell, a tangential inlet-pipe leading into the upper portion of shell 1 and adapted to discharge upon the spiral flanges, a second concentric shell or case upon the lower portion of shell 1 and supported at a distance therefrom, the inner shell 1 being provided with openings into said second shell, and a discharge-pipe secured to the bottom of shell 1, substantially as described.

2. In a dust-collector, the combination of a cylindrical shell having spiral flanges on its interior, a tangential inlet-pipe opening into the shell and adapted to discharge on the flanges, a second concentric shell or case around the lower portion of the cylindrical

shell, the latter having openings into such second shell, a discharge-pipe from the second shell, and an air-pipe leading from the interior of the chamber and through the base thereof, substantially as described.

3. The combination, in a dust-collector, of a cylindrical shell 1, having spiral flanges on the interior thereof, a tangential inlet-pipe leading into the upper portion of said shell and adapted to discharge upon the flanges, a surplus-air pipe 15, extending vertically through the center of shell 1, a second shell or case 8, supported at a distance from and concentrically to shell 1, shell 1 being provided with openings into shell 8, and a discharge-spout secured to the bottom of the shell, substantially as described.

4. In a dust-collector, a cylindrical shell 1, having spiral flanges on the interior thereof, a tangential inlet-pipe leading into the upper portion of shell 1, a second shell or case supported at a distance from and concentrically to shell 1, a tapering discharge-chamber 10, a pipe 11, leading from said chamber, and a central air-tube 15, substantially as described.

5. The combination, in a dust-collector, of a cylindrical shell 1, provided with a tapering top 2, and a pipe 3 opening into said top, a tangential inlet-pipe 4, leading into the upper portion thereof, spiral flanges on the interior of shell 1, a second shell or case 8, supported at a distance from and concentrically to shell 1, a chamber or a passage-way 9, formed by shell 8, a tapering discharge-chamber 10, a pipe 11, leading from chamber 10, spacing-bolts 12, connecting discharge 10 and base of cylinder 1, openings 13, leading into chamber 9, deflectors or gills 14, leading into chamber 10, and the central surplus-air pipe 15, substantially as described.

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

SMITH W. KIMBLE.

Witnesses:

L. F. WILBER,  
BRINTON GREGORY.