D. R. JONES.

DUST COLLECTOR.

APPLICATION FILED APR. 14, 1917.

1,231,371. Patented June 26, 1917.

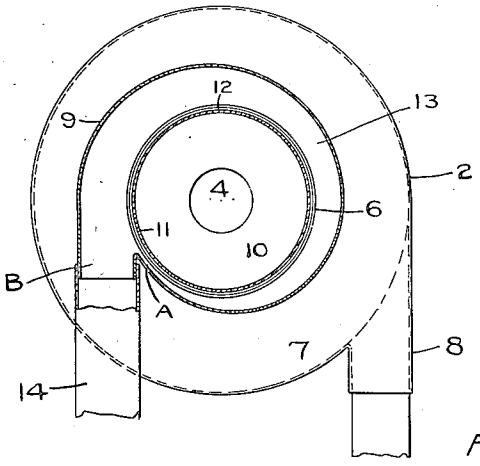


FIG.-2

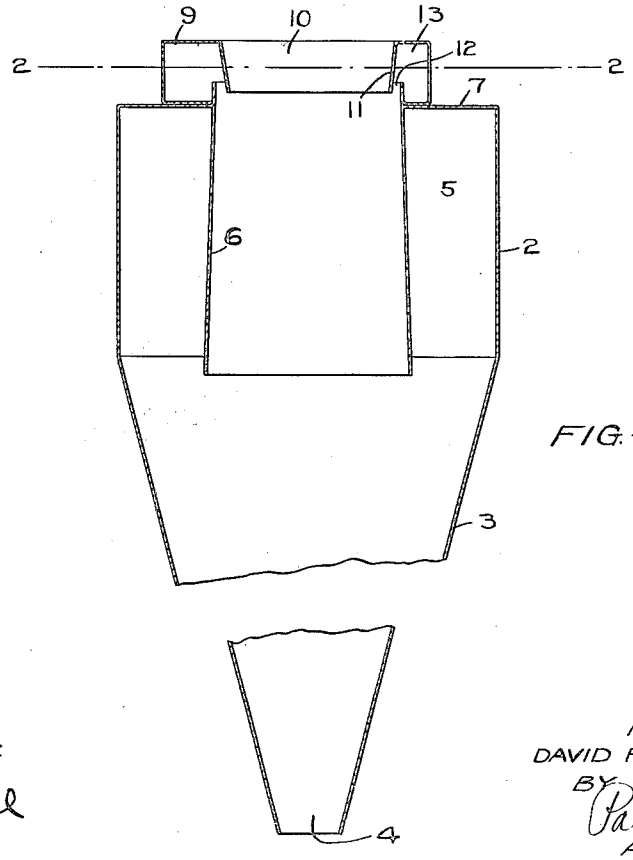


FIG.-1

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UNITED STATES PATENT OFFICE.

DAVID R. JONES, OF RED WING, MINNESOTA.

DUST-COLLECTOR.

1,231,371. Specification of Letters Patent. Patented June 26, 1917.

Application filed April 14, 1917. Serial No. 162,014.

To all whom it may concern:

Be it known that I, DAVID R. JONES, a citizen of the United States, resident of Red Wing, county of Goodhue, State of Minnesota, have invented certain new and useful Improvements in Dust-Collectors, of which the following is a specification.

The object of my invention is to provide a dust collector of the centrifugal type having an attachment by means of which a second separation of the dust from the air may be effected.

A further and particular object is to provide a secondary collector of such construction that the separation may be effected more quickly and efficiently than in collectors of this kind as ordinarily made.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification.

Figure 1 is a vertical sectional view through a dust collector embodying my invention.

Fig. 2 is a horizontal sectional view on line 2—2 of Fig. 1.

In the drawings, 2 represents the upper cylindrical portion of the dust collector and 3 the lower conical portion having an exit opening 4 for the dust. Within the cylindrical portion 2 is a circulating and precipitating chamber 5 and depending within this chamber is a sleeve 6 having an open lower end within the upper portion of the cone-shaped part 3 and an open upper end which projects above the top 7 of the member 2. This sleeve is preferably concentric with the cylindrical member and flares slightly from the top to the bottom for the purpose of gradually contracting the air currents within a smaller space and causing the particles of dust to adhere to and follow the inner surface of the sleeve to the upper end thereof. An intake trunk 8 is provided in the side wall of the member 2, extending from the top to the bottom thereof, and tangentially arranged with respect thereto. A trunk 9 is mounted on the top of the member 2 and has an opening therein to receive the upper end of the sleeve 6 and said trunk 9 has an opening 10 encircled by a depending flange 11 which extends into the open upper end of the sleeve 6 and is spaced therefrom by a narrow gap or passage 12. This flange 11 I prefer to flare from the lower to the upper end thereof so that the air currents may expand and release any dust particles before the air passes out at the top of the collector. The opening 10 is eccentric with respect to the trunk 9 to provide an air circulating passage 13 encircling the gap 12 and this passage gradually increases in cross sectional area from the point marked A (Fig. 2) to the point B, where the suction pipe 14 is connected to the passage 13. The effect of providing this passage with a variation in its cross sectional area is to insure a substantially equal degree of suction at all points of the gap 12. If the passage 13 had the same cross sectional area from end to end, there would evidently be a stronger suction near the inlet to the pipe 14 than near the opposite end of the passage. To equalize this variation, I decrease the cross sectional area of the passage to such an extent that the suction at a point remote from the pipe 14 will be substantially the same as near this pipe.

In the operation of the dust collector, the air currents will throw the heavier particles by centrifugal force out against the walls of the cylinder, while the lighter particles with the air will enter the open lower end of the sleeve 6 and rise to the exit opening 10. During this upward movement the rotation of the air currents will cause the dust carried thereby to hug the inner surface of the sleeve 6 and follow the walls thereof to the narrow gap or opening 12, through which the fine particles of dust will pass into the trunk 13. The pipe 14 will be connected to some suitable source of suction for receiving the fine particles of dust, or they may be carried around again to the intake opening of the main portion of the collector if preferred. After leaving the sleeve 6 the air, relieved by the dust particles, will flow outwardly through the opening 10.

I claim as my invention:

1. A dust collector comprising a cylindrical member having a peripheral intake and sleeve depending centrally within said member and projecting through the top of the same and having open ends, an air trunk encircling the projecting end of said sleeve and eccentric with respect thereto, and having a flange depending therein and separated therefrom by a narrow annular gap, said trunk having an exit passage and decreasing in cross sectional area from the

entrance to said exit passage around the circumference of said sleeve, whereby there will be a substantially uniform degree of suction at all points of said gap.

2. A dust collector comprising a cylindrical member having a peripheral intake and sleeve depending centrally within said member and projecting through the top of the same and having open ends, an air trunk encircling the projecting end of said sleeve and eccentric with respect thereto, and having a flange depending therein and separated therefrom by a narrow annular gap, said trunk having an exit passage and decreasing in cross sectional area from the entrance to said exit passage around the circumference of said sleeve, whereby there will be a substantially uniform degree of suction at all points of said gap, and said sleeve and flange being flared in opposite directions, for the purpose specified.

In witness whereof, I have hereunto set my hand this 9th day of April, 1917.

DAVID R. JONES.