

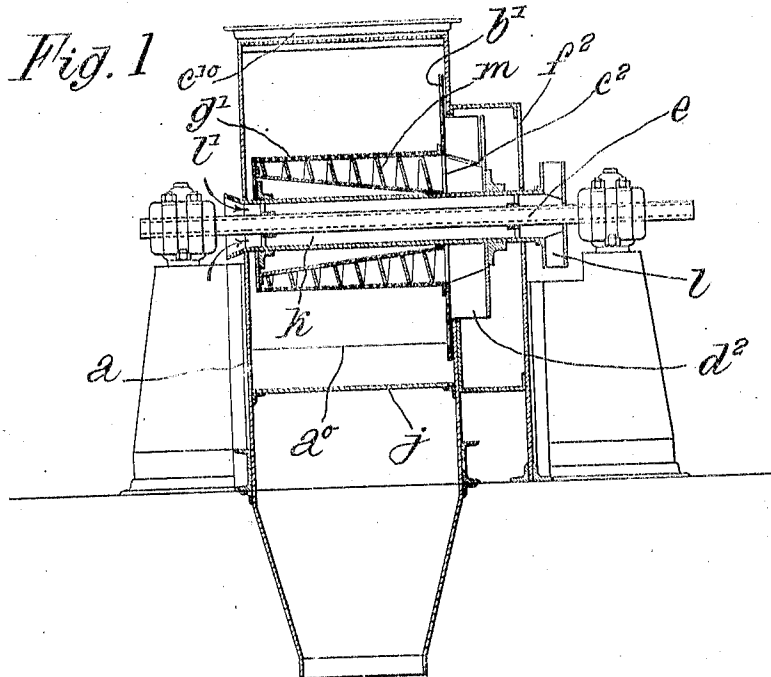
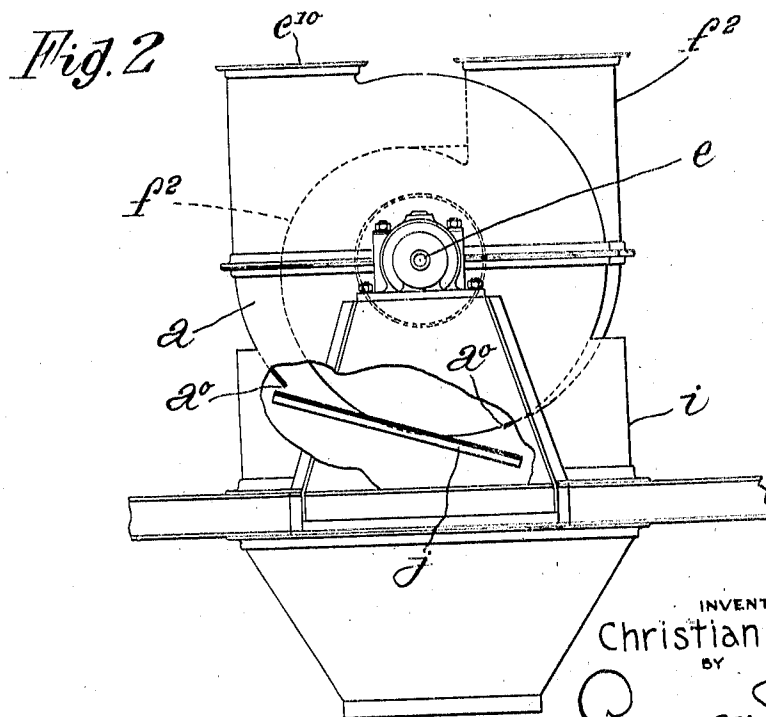
Feb. 28, 1933.

C. COUPARD

1,899,794

DUST SEPARATOR

Filed May 15, 1931



INVENTOR
Christian Coupard
BY

Q. May
ATTORNEY

UNITED STATES PATENT OFFICE

CHRISTIAN COUPARD, OF PARIS, FRANCE

DUST SEPARATOR

Application filed May 15, 1931, Serial No. 537,716, and in Belgium May 17, 1930.

The present invention relates to separators of the rotary type and, more particularly, to those of the type used for separating dust from air or other gases.

One of its objects is to provide apparatus of this kind comprising a perforated rotatable drum which is traversed by the fluid to be treated, moving towards the axis of said drum, and means to convey the fluid to the discharge end of the drum, consisting of rotatable means such as a spiral guide, mounted in the interior of said drum.

Other objects will appear in the course of the detailed description now to be given with reference to the accompanying drawing, in which:

Fig. 1 is an axial section through one embodiment of the invention.

Fig. 2 is an elevation of the structure illustrated in Fig. 1 with certain parts removed.

Referring to Figs. 1 and 2 of the drawing, there is shown an assembly composed of the following elements: a casing *a* having at least partially the form of a body of revolution; a shaft *e* traversing casing *a* and provided with means (not shown) for being rotated, an inlet conduit *c*¹⁰ through which the dust laden gas enters into said casing; a separating member *g*¹ constituted by a lattice or perforated drum or by a cloth or similar filter, mounted in such a manner, in said casing, that it could be rotated with the shaft *e*; a discharge conduit *f*² of volute form communicating with one end of said drum, via opening *c*² formed in a plate *b*¹ mounted to rotate with the drum and adapted to prevent the dust laden gas coming from *c*¹⁰ from passing directly into discharge conduit *f*²; a ventilator *d*² mounted in said discharge conduit and composed of a plurality of inclined vanes rigidly supported by shaft *e* and adapted to create a suction in the opening *c*² so that the gas is forced through the drum and delivered through said opening *c*² into volute *f*²; means to convey the gas in the interior of the drum in such a manner that the flow of said gas through the perforations of the drum will be properly distributed, said means being composed of a rotary conveyor such as a screw *m* mounted in the interior of the drum; and a hopper *i*

adapted to receive the separated dust discharged through an opening *a*⁰, a plate *j* being preferably interposed to give to the dust particles a proper direction.

Said assembly may be completed, in the special case where hot laden gases are to be treated, by a sleeve *k* mounted on, and concentrically with, shaft *e*, a cooling fluid such as air or water being drawn therethrough by a ventilator *l*. In such a case, elements *g*¹ and *d*² are mounted on sleeve *k* instead of being connected directly to shaft *e*.

From the foregoing description it will at once be seen that, in operation, the dust laden gas entering at *c*¹⁰, traverses the drum *g*¹ and is discharged through the opening *c*² into the volute *f*². The dust particles deposit on the surface of said drum, and are thrown back toward the periphery of the casing, being then collected into the hopper *i*.

The screw *m* permits of obtaining a proper distribution of the gas in the interior of the drum and, moreover, prevents the latter from warping under the effect of the small amount of dust which might penetrate into the drum, said dust being removed by said screw.

Instead of being fixed on the shaft *e* or the sleeve *k*, the screw *m* could be rotated at a speed different from that of said shaft.

From the foregoing description, it will at once be seen that the dust laden gas moves centripetally with relation to the dust separating structures, while the purified air moves centrifugally. Dust separators of this type are found to operate very much more efficiently than those in which circulation takes place in the direction opposite to that just indicated.

What I claim is:—

1. An apparatus of the class described comprising a shaft, a filtering element mounted in spaced relation to said shaft, means for guiding a dust laden gas against the external periphery of said filtering element, a discharge conduit, a ventilator mounted on said shaft and operative to draw gases from the interior of said filtering element toward said discharge conduit, and a rotatable conveyor mounted in the interior of said filtering element.

2. A structure as defined in claim 1 in combination with a sleeve mounted in spaced relation to said shaft, and means for circulating a cooling fluid in the space between
5 said sleeve and said shaft.

3. An apparatus of the class described comprising a shaft, a filtering element mounted in spaced relation to said shaft, means for guiding a dust laden gas against the external
10 periphery of said filtering element, a discharge conduit, a ventilator mounted on said shaft and operative to draw the gas from the interior of said filtering element toward said
15 discharge conduit, a sleeve mounted in spaced relation to said shaft in the interior of the filtering element, means for circulating a cooling fluid in the space between said sleeve and said shaft and a rotatable conveyor
20 mounted in the space between said sleeve and said filtering element.

4. An apparatus of the class described, comprising a shaft, a perforated drum mounted in spaced relation to said shaft, a casing enclosing said shaft and said drum
25 and having an inlet port for the entering of the dust laden gas, a ventilator mounted in a discharge conduit disposed at one end of the said drum and adapted to draw the gas from the interior of the drum, separating
30 means adapted to rotate with said drum and to prevent dust laden gas from passing directly into said discharge conduit, and a rotatable screw mounted in the interior of said drum and adapted to convey the purified gas
35 toward the discharge conduit.

In testimony whereof I affix my signature.
CHRISTIAN COUPARD.

40

45

50

55

60

65