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2,371,583

CINDER COLLECTOR

Original Filed March 28, 1941

Fig. 1.

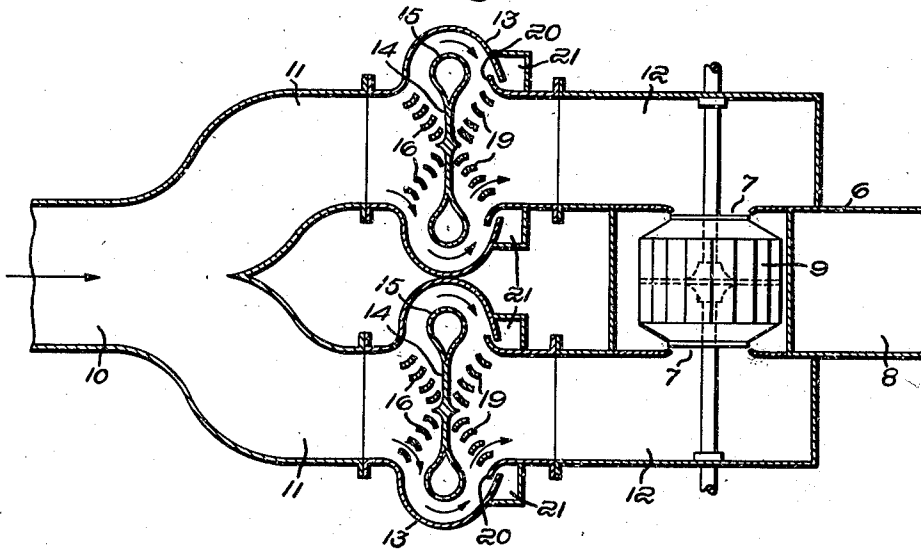
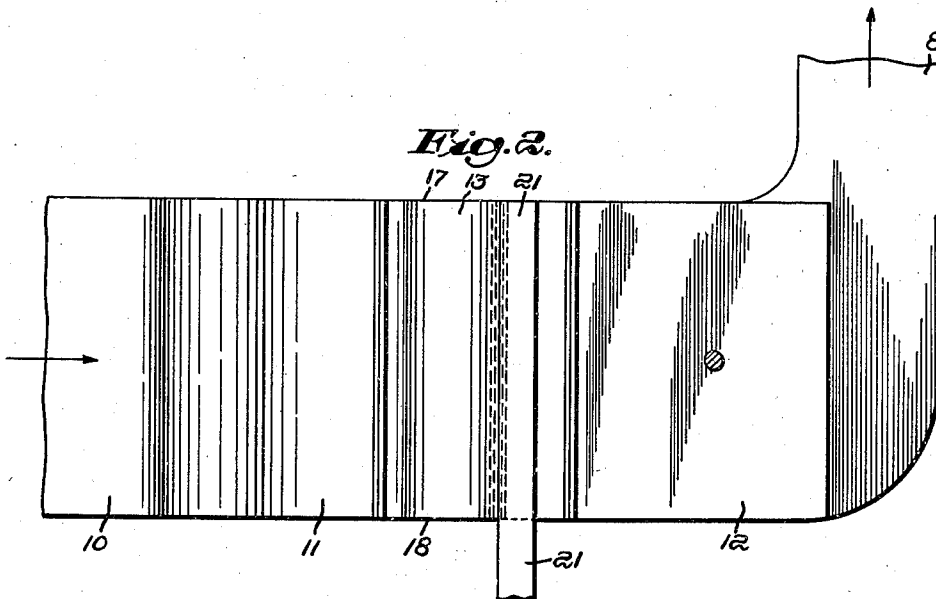


Fig. 2.



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UNITED STATES PATENT OFFICE

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CINDER COLLECTOR

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Original application March 28, 1941, Serial No. 385,699. Divided and this application January 1, 1943, Serial No. 471,044

1 Claim. (Cl. 183—79)

This invention relates to separators for removing solid particles from gases and relates more particularly to primary separators and concentrators for connection to the inlets of induced draft fans for removing cinders therefrom.

This application is a division of my copending application, Serial No. 385,699, filed March 28, 1941.

This invention provides a primary collector and concentrator utilizing direction changing deflectors extending across the face of the gas stream in association with tangential skimmers for removing the solid particles.

A feature of the invention resides in splitting each gas stream for supply into the inlet of an induced draft fan, into two streams with deflectors and skimmers for each of the two streams. This provides a compact, efficient space saving collector, particularly suitable for connection into the duct work to the inlet of an induced draft fan.

An object of the invention is to provide a compact, efficient collector particularly suitable for connection to the inlet of an induced draft fan.

Another object of the invention is to reduce the size of primary concentrators.

The invention will now be described with reference to the drawing, of which:

Fig. 1 is a plan view in section of two primary concentrators embodying this invention connected in a horizontal duct to the inlets of a two inlet, induced draft fan, and

Fig. 2 is a side elevation of the fan and concentrators of Fig. 1.

The induced draft fan 6 has the two inlets 7 into the fan wheel 9. The horizontal duct 10 conveying the cinder laden flue gas to the fan is divided into two ducts 11. The two similar primary concentrators indicated generally by 13 are inserted between the ducts 11 and the fan inlet boxes 12, one serving to remove the cinders from the flue gas to one of the fan inlets and the other serving to remove the cinders from the flue gas to the other fan inlet.

The partitions 14 extend cross-wise the concentrators 13 causing the gas flow therein to be divided into two paths, one around each of the curved ends 15 of the partitions. In advance with respect to gas flow, of the partitions 14, the deflectors 16 are arranged in inverted V's and extend cross-wise, in plan, the faces of the gas streams entering the concentrators 13, and which extend, in elevation, from the tops 17 to the bottoms 18 of the concentrators.

On the down-stream side of the partition, the similar deflectors 19 are arranged in V's cross-wise the gas stream.

The skimming lips 20 extend into the gas streams on the down-stream side of the partitions 14 and extend from the tops 17 to the bottoms 18 of the concentrators, and form with the curved outer walls of the concentrators, tangential skimming channels which discharge into the cinder collecting passages 21 which extend below the concentrators for connection to a suitable cyclone type secondary collector.

In operation the gas entering each of the concentrators 13 is divided into two streams by the deflectors 16 and the partition 15, the deflectors being so shaped and placed as to cause the gas to flow in the curved passages between the rounded ends of the partitions and the curved side walls of the concentrators with minimum turbulence and friction. The cinders are thrown by centrifugal force into the outer peripheries of these paths, and are skimmed off by the skimmers 20 and deflected into the cinder collecting passages 21. The down-stream deflectors then straighten out the gas for non-turbulent flow into the fan inlet boxes 12. The gas entering the fan inlet is free of the cinders which would damage the fan blades if not removed. The gas from the fan wheel 9 passes through the connection 8 to the stack.

The concentrators of this invention are adapted for direct connection to the inlet boxes of induced draft fans and require a minimum of space while forming effective cinder separators.

While the invention has been described for association with induced draft fans handling flue gases containing cinders, other gases containing other small particles may, of course, be handled in other locations. The term "cinder" is intended to include small particles of any substance.

While an embodiment of the invention has been described for the purpose of illustration, it should be understood that the invention is not limited to the exact apparatus and arrangement of apparatus illustrated as modifications thereof may be suggested by those skilled in the art without departure from the essence of the invention.

What is claimed is:

In a dust collector adapted to be connected in a horizontally extending duct and having an inlet and an outlet aligned therewith and having substantially vertical, opposed, curved end walls between said inlet and outlet, and having substantially vertically extending skimmers form-

ing with said walls, tangential skimming channels for skimming off dust thrown by centrifugal force against said walls, said collector having substantially vertically extending dust disposal passages communicating with said channels, the combination of a substantially vertical partition extending crosswise said collector, said partition having curved end walls aligned with said first mentioned walls and spaced therefrom and forming therewith, curved, gas flow passages, a plurality of substantially vertical, curved, spaced de-

flectors arranged in an inverted V with respect to gas flow, between said partition and inlet with apex at the center of said partition, for deflecting the gas from said inlet in curved flow into said curved flow passages, and a second plurality of substantially vertical, curved, spaced deflectors arranged in a V with respect to gas flow, between said partition and outlet with apex at the center of said partition, for straightening out the gas flow to said outlet.

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