

(No Model.)

2 Sheets—Sheet 1.

L. O. STEVENS.
DUST COLLECTOR.

No. 534,486.

Patented Feb. 19, 1895.

Fig. 1.

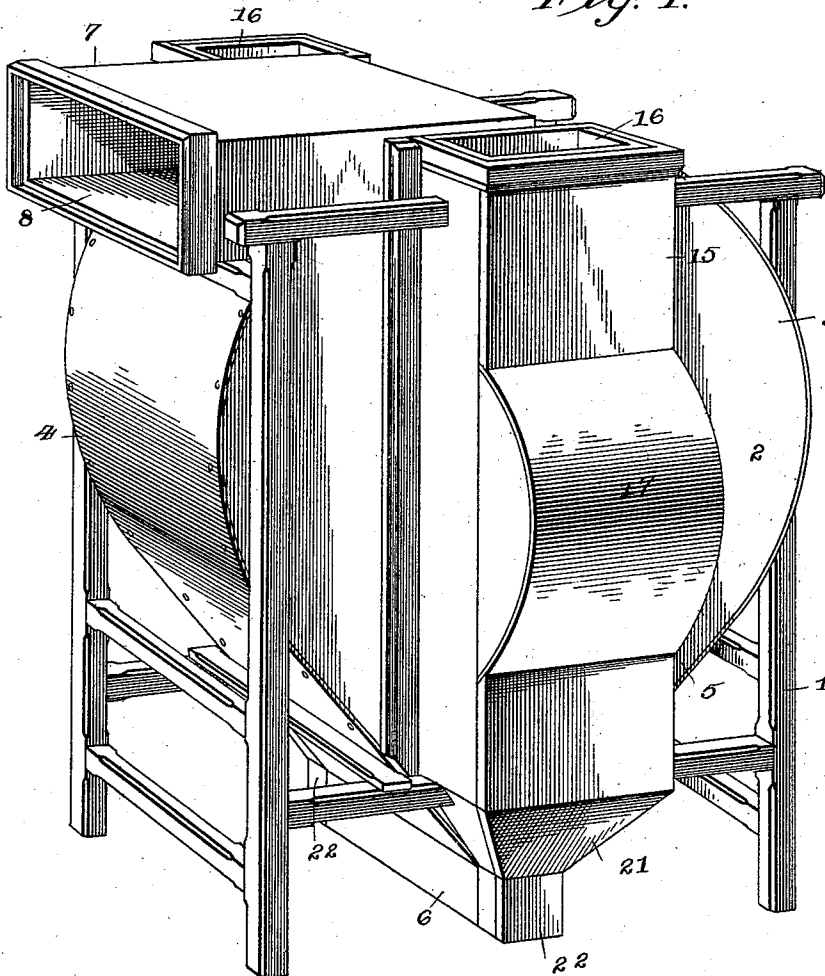
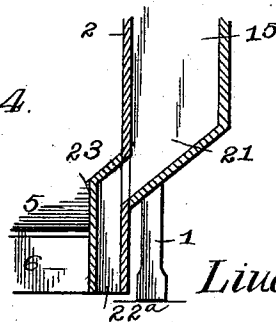


Fig. 4.



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By his Attorneys,

C. A. Snow & Co.

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2 Sheets—Sheet 2.

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Fig. 3.

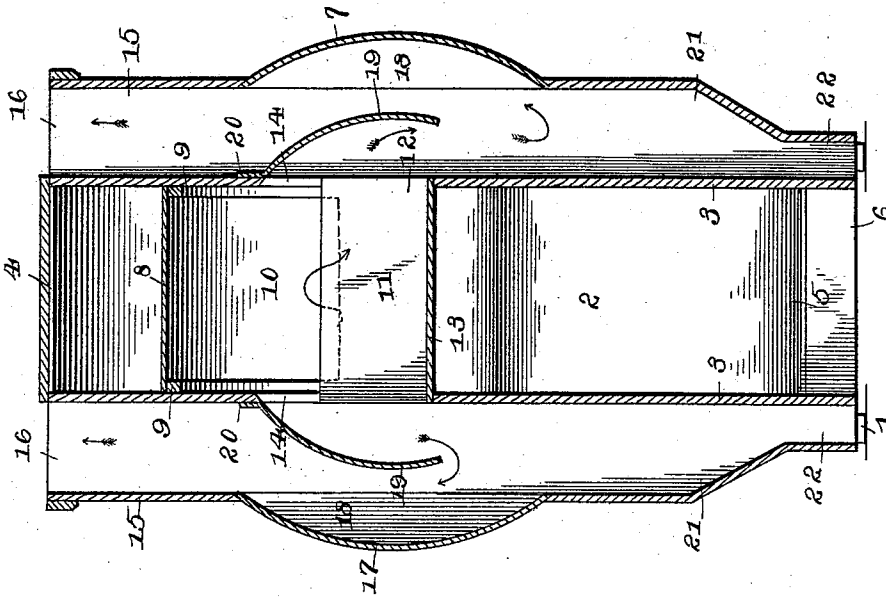
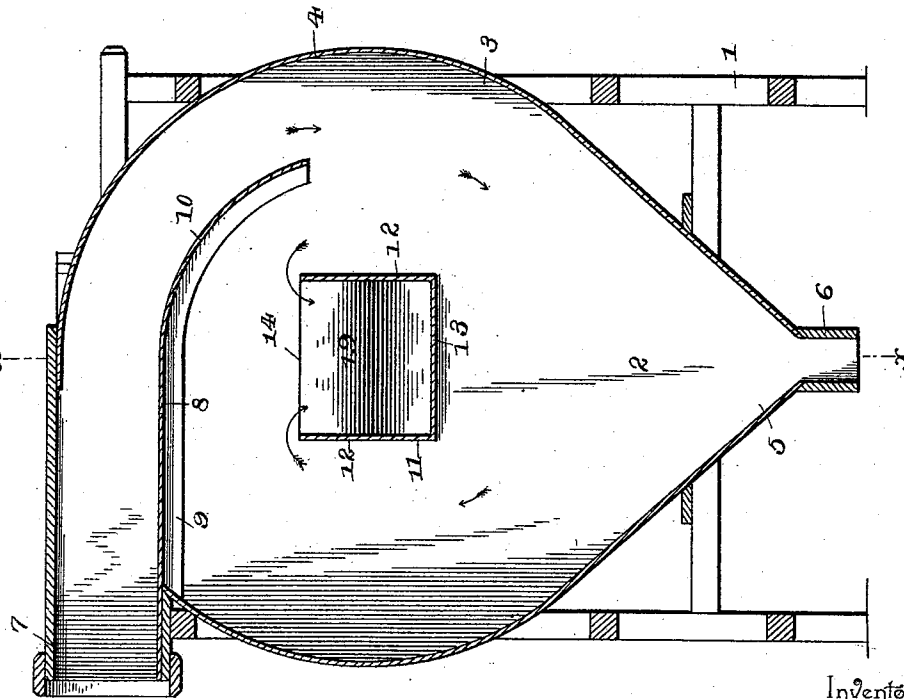


Fig. 2.



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UNITED STATES PATENT OFFICE.

LIUEIOUS O. STEVENS, OF PEORIA, ILLINOIS, ASSIGNOR OF ONE-HALF TO
FREDERICK E. LEONARD, OF SAME PLACE.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 534,486, dated February 19, 1895.

Application filed May 26, 1894. Serial No. 512,551. (No model.)

To all whom it may concern:

Be it known that I, LIUEIOUS O. STEVENS, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented a new and useful Dust-Collector, of which the following is a specification.

This invention relates to dust collectors; and it has for its object to effect certain improvements in dust collectors of that character that are employed for collecting the dust from grist mills, elevator machines, planing mills, and the like.

To this end the main and primary object of the present invention is to provide an improved dust collector with certain novel features of construction, whereby the same shall be rendered more efficient to insure an effective separation of the dust, by securing two separate and distinct separations, whereby the light dust that ordinarily escapes with the air back into the room again is caught and separated from the air before it finally issues from the machine into the room.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of a dust collector constructed in accordance with this invention. Fig. 2 is a central vertical longitudinal sectional view thereof. Fig. 3 is a vertical transverse sectional view on the line $x-x$ of Fig. 2. Fig. 4 is an enlarged detail sectional view showing a modified arrangement of the discharge spout for the lower ends of the vertical side dust flues.

Referring to the accompanying drawings, 1 designates a supporting frame consisting of suitably connected horizontal and upright frame pieces, and said supporting frame is adapted to support in an upright position therein the circular collector casing 2. The circular collector casing 2, consists of the opposite parallel vertical sides 3, and a metallic casing rim 4, secured to and connecting the edges of said sides to complete the casing, and the joints or connections between the

sides and rim of the casing are air and dust-tight in order that the proper separations of the dust from the air within the casing may not be interfered with.

The circular collector casing 2, is contracted below its center into the contracted or tapered dust pocket 5, into which the heavy dust carried into the casing together with the air, settles, and from which the dust escapes through the main bottom discharge spout 6, extended below the bottom point or apex of the said contracted or tapered dust pocket that opens thereinto. At the top the said collector casing 2, is provided with the off-standing inlet neck 7, that is adapted to be connected with a suitable exhaust fan, not shown, in a similar manner to other machines to provide for relieving a room from dust, and for directing a current of air, laden with such dust, into the circular collector casing, and extending inwardly within the top of the collector casing from the bottom of the inlet neck 7, is the top guide plate 8, that guides the dust-laden air to the proper point of discharge into the casing. The said top guide plate 8, is supported in position within the upper end of the circular casing 2, on the supporting cleats 9, secured to the opposite sides of the casing, and at its inner end the said guide plate is curved downwardly as at 10, to conform with the curvature of the casing rim at that point, and by reason of this disposition and shape of the top guide plate, the dust laden air is carried to a point where it is discharged within the casing at one side of the periphery thereof.

The dust laden air that is directed into the top and one side of the collector casing is necessarily given a circular or rotary circulation by reason of the curvature of the inner end of the guide plate 8, and the casing rim 4, and is caused to pass transversely across the interior of the casing, to the opposite side from that where it enters, above the contracted dust pocket 5, and by reason of this circulation, most of the dust, including the heavier portions, is separated from the air current and settles into the pocket 5, out of which pocket it runs into the bottom discharge spout 6, and is directed into a suitable receptacle, or to any other point of discharge. The air cur-

rents which are relieved of most of the dust carried thereby, ascend within the circular collector casing and pass over the opposite top sides of the open escape box 11, into such box.

5 The open escape box 11, is arranged at an intermediate point within the casing 2, between the top and bottom thereof, opposite the inner terminal of the plate 8 and comprises the opposite imperforate side walls 12, and the imperforate bottom plate 13, from the
10 opposite side edges of which are extended the side walls 12, said box being preferably made of a single piece of sheet metal. By reason of its specific construction, the intermediately
15 arranged escape box 11, is open at the top so as to freely communicate with the upper part or portion of the circular collector casing in order that the air currents carrying light dust may escape thereinto over the upper edges of
20 the side walls 12, and the opposite ends of said intermediate escape box 11, are open, and are fitted into the oppositely located side escape openings 14, that are cut in the opposite vertical sides 3, of the collector casing at an intermediate point.

25 The side escape openings 14, in which are fitted the opposite open ends of the escape box 11, open directly into the opposite vertical side dust flues 15. The opposite vertical
30 side dust flues 15, are suitably secured to the opposite vertical sides 3, of the collector casing and extending up to the top of the casing terminate at their upper ends in the air discharge openings 16, through which the air
35 passes back into the room or into the open air after having been completely relieved of the dust carried therewith into the casing. The said opposite vertical side dust flues 15, are provided at an intermediate point directly
40 opposite the openings 14, communicating therewith, with the outwardly bowed or bulged portions 17, that form off-standing air pockets 18, that provide sufficient space for the free escape of the air that is deflected
45 downwardly from the openings 14, into the flues 15, by means of the downwardly curved deflector plates 19. The downwardly curved deflector plates 19, are arranged within the side dust flues 16, concentric with the bowed
50 or bulged portion 17, and are secured at their upper edges as at 20, to the opposite sides of the casing 2, directly above the top of the openings 14, and being of the same width as the width of the flues 15, in one direction,
55 serve to deflect the air and light dust carried therewith downwardly into the flues 15.

The light dust that is deflected downwardly, together with the air, by the deflectors 19, settles down into the bottom of said flues, while
60 the air, now entirely freed from dust, escapes up and out through the upper ends of the flues 15, without carrying any dust therewith. The dust that is separated from the air in the flues 15, settles into the bottom contracted dust pockets 21, which serve to collect the dust and direct the same into the lower flue discharge spouts 22.

The flue discharge spouts 22, may be arranged on the outside of the main bottom discharge spout 6, of the pocket 5, as illustrated in some of the figures of the drawings, while as illustrated in Fig. 4, of the drawings, the lower ends of the dust pockets 21, may open directly into the main discharge spout 6, and communicate with the spouts 22^a, that
75 are arranged within the spouts 6, at opposite sides thereof, and are separated from the opening of said main discharge spout by the vertical spout plates 23, arranged within the spouts 6 to form one of the walls of the
80 spouts 22^a.

By reason of the construction herein described, it will be obvious that the dust collector will thoroughly eliminate the dust from the air before it is discharged again out of
85 the machine, owing to the two distinct and separate separations effected, and it will be understood that changes in the form, proportion and the minor details of construction, may be resorted to without departing from
90 the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a dust collector, the circular casing having a bottom dust pocket and side escape openings at an intermediate point, an open escape box fitted at its open ends in said side openings, and side dust flues arranged at opposite sides of the casing, open at the top, and provided with bottom dust pockets, substantially as set forth.

2. In a dust collector, the circular separator casing having a bottom dust pocket, an upper inlet opening, and intermediate side escape openings, a transverse open escape box fitted at its open ends in said side openings, a curved guide plate arranged within the top of the casing and leading inwardly from the inlet opening, concentric with the casing rim to a point opposite said escape box, and side dust flues arranged over the side escape openings and provided with bottom dust pockets, substantially as set forth.

3. In a dust collector, a circular collector casing provided with a tapered or contracted dust pocket at the bottom, a discharge spout leading from said dust pocket, an upper inlet neck, and intermediate side escape openings, a top guide plate extending inwardly within the casing from the bottom of the inlet neck and provided with a curved inner end concentric with the adjacent periphery of the casing, and opposite vertical side dust flues arranged at opposite sides of the casing over said side escape openings, open at the top or upper end, and provided at the bottom with contracted dust pockets and flue discharge spouts leading from said dust pockets, substantially as set forth.

4. In a dust collector, the collector casing having a bottom dust discharge, an upper inlet opening, and intermediate side escape

openings, side dust flues arranged at opposite sides of the casing over said escape openings and open at their upper ends, and downwardly disposed deflectors arranged within
5 said dust flues opposite said side escape openings, substantially as set forth.

5. In a dust collector, a circular collector casing provided with a bottom dust discharge opening, an upper inlet neck, and intermediate side escape openings, side dust flues arranged at opposite sides of the casing over
10 said escape openings and provided at an intermediate point with outwardly bulged portions, and downwardly curved deflector plates
15 arranged within said side dust flues and secured at their upper ends to the opposite sides of the casing above said side escape openings, substantially as set forth.

6. In a dust collector, a circular collector casing provided with a bottom dust discharge,
20 an upper inlet neck and intermediate side es-

cape openings, side dust flues arranged at opposite sides of the casing over said escape openings, an intermediate escape box arranged transversely within the collector casing and fitted at its open ends in said side escape openings and open at the top to communicate with the interior of said collector casing, and the downwardly disposed deflector plates arranged within the dust flues opposite
25 the side escape openings and secured at their upper ends to the sides of the casing above said escape openings, substantially as set forth.

In testimony that I claim the foregoing as
35 my own I have hereto affixed my signature in the presence of two witnesses.

LIUEIOUS O. STEVENS.

Witnesses:

J. A. WHITE,
G. G. GEIGER.