F. KERLIN.

DUST COLLECTOR.

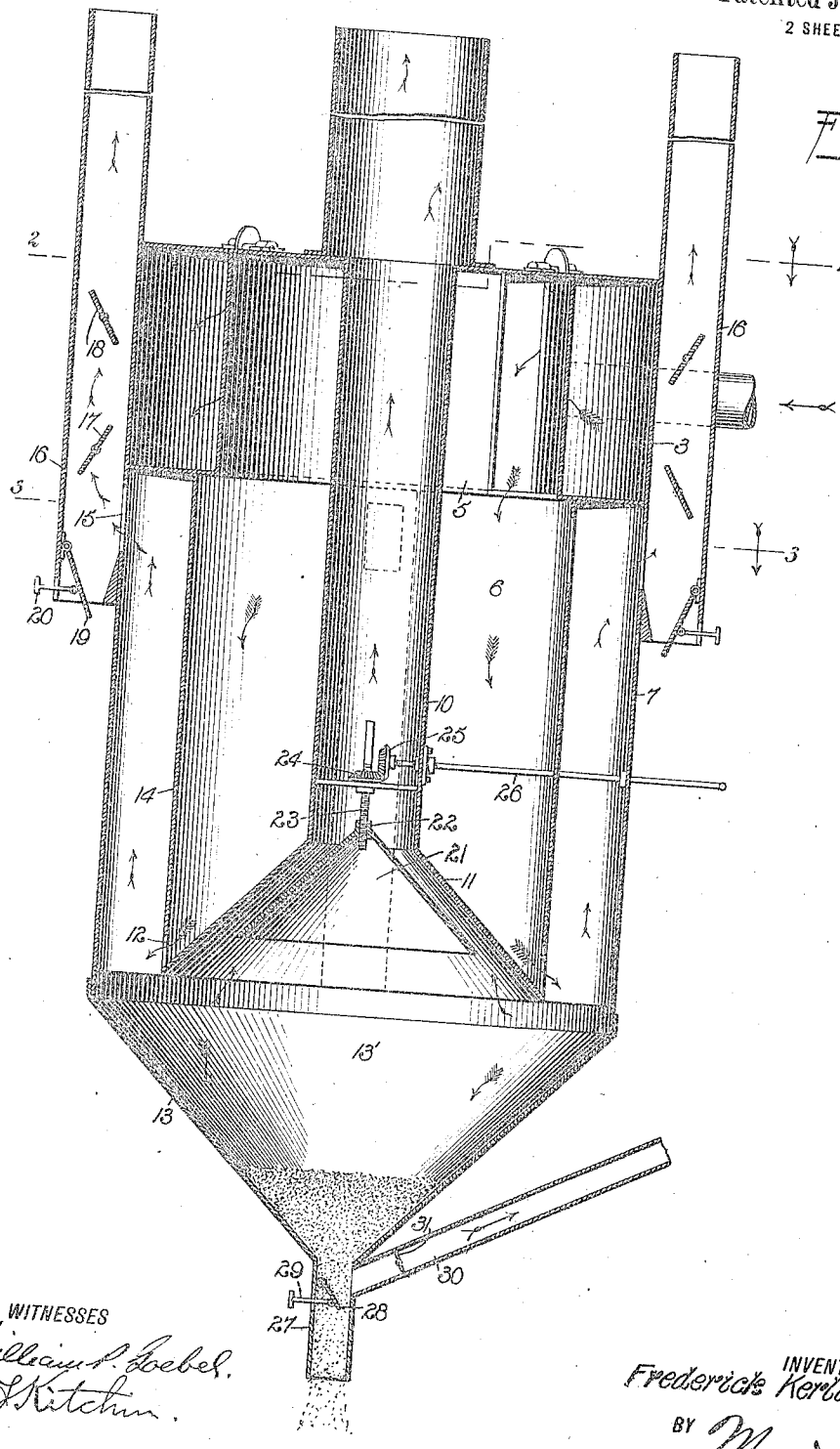
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1,233,246.

Patented July 10, 1917.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

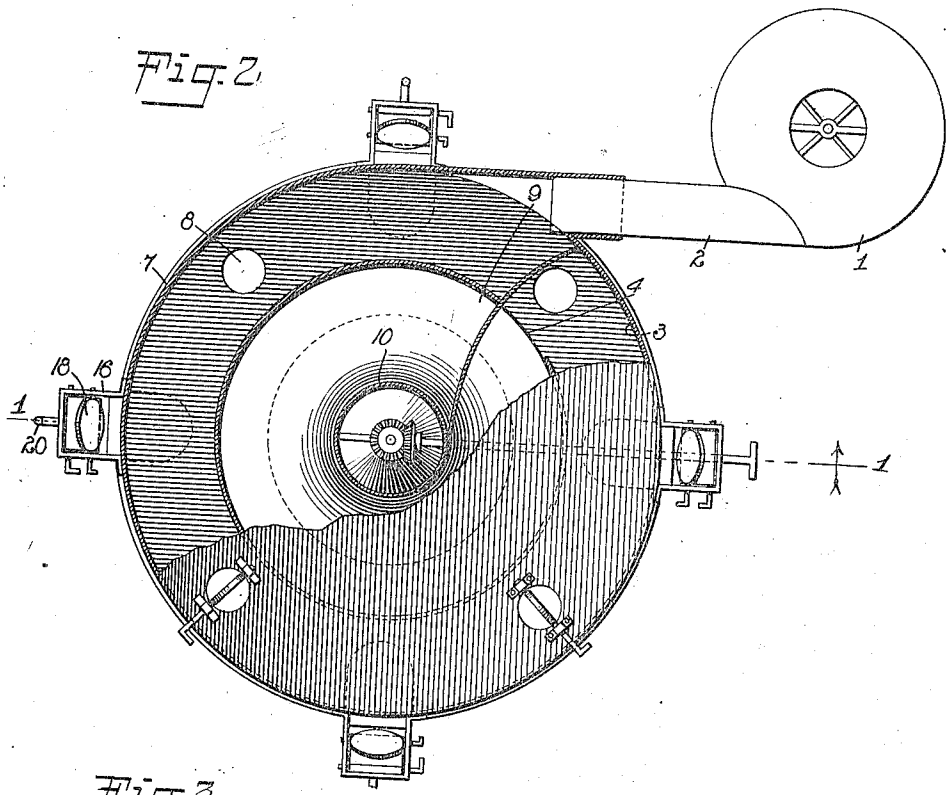
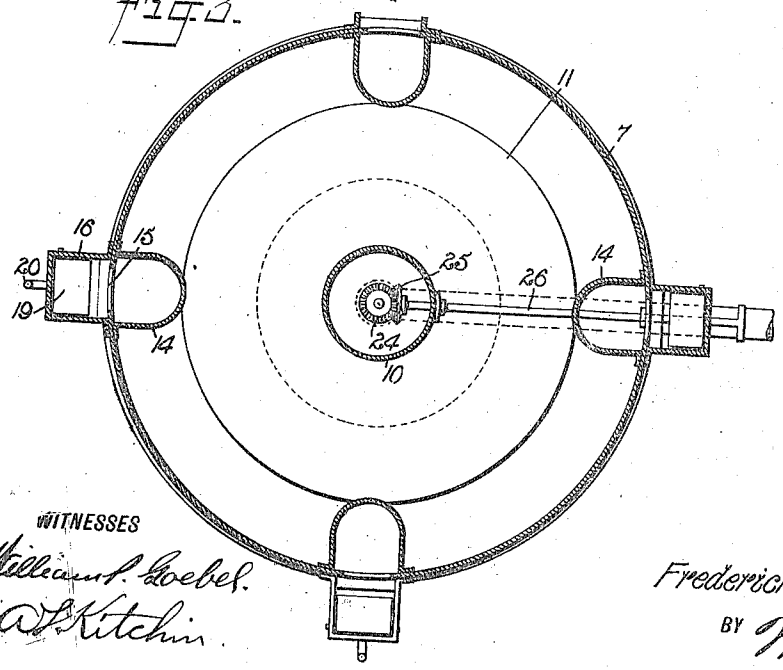


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK KERLIN, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO EARL B. EWEN, OF ALLOWAY, NEW JERSEY.

DUST-COLLECTOR.

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To all whom it may concern:

Be it known that I, FREDERICK KERLIN, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Dust-Collector, of which the following is a full, clear, and exact description.

This invention relates to dust collecting devices and has for an object the provision of an improved construction which does not require any power for operation but will collect and discharge at predetermined points dust forced therein.

Another object in view is to provide a dust collector with a plurality of passageways and collecting sections whereby the dust and air may freely enter and by the changing of direction separated so that the purified or clean air may be discharged out at one point and the dust out at another point.

A still further object in view is to provide a collector in which the force of the dust-laden air may be varied in order to retard the movement thereof sufficiently for causing a precipitation of the dust.

In the accompanying drawings:

Figure 1 is a longitudinal vertical section through a collector disclosing an embodiment of the invention, the same being taken approximately on line 1—1 of Fig. 2.

Fig. 2 is a section through Fig. 1 on line 2—2.

Fig. 3 is a section through Fig. 1 on line 3—3.

Referring to the accompanying drawings by numerals, 1 indicates a fan of any desired kind which is designed to draw in dust from any source and force the same through pipe 2 into the drum 3 of the collector. The intention is to use the collector in connection with flour mills, furnaces or with any other device desired. In flour mills and other places fans are already in use which drive the dust out of the way and to collectors of different kinds under some circumstances. The fan 1 is of the type just described and is utilized for drawing in the dust from the flour mill or elsewhere according to where the collector is arranged. The dust of different character collected is discharged into drum 3 in a horizontal direction and is caused to circulate around said drum for almost a complete revolution. It is finally discharged out the opening 4 into chamber 5 and from thence into chamber 6 of the casing 7. Drum 3 is provided with a plurality of apertures 8 in the bottom through which the heavy matter may fall directly into the chamber 6 while the lighter matter is carried around to the discharge opening 4. As shown particularly in Fig. 2, a wall 9 is provided which causes the air and dust to pass through the opening 4, said wall extending to the center of the casing 7 and preferably secured to the air tube 10 whereby the air and dust are caused to circulate somewhat in the chamber 5 and also in chamber 6.

The change of direction in this manner causes some of the dust to precipitate against the cone bottom 11 of the chamber 6 and then pass through the openings 12 to the cone bottom 13 of casing 7. The remaining dust and air also pass through openings 12 and strike against the cone bottom 13 so that the dust is precipitated. The remaining dust and air pass upwardly through a plurality of pipes 14 and eventually out opening 15 into the pipe 16. In changing the direction at opening 15 some of the dust is caused to precipitate and the remaining dust is caused to precipitate by striking the baffles 17 and 18 in pipe 16. A dust discharge damper 19 is provided in each of the pipes 16, said dampers being usually held open only sufficiently far to allow the dust to pass therethrough. The damper 19 may be held in any adjusted position by the handle 20, which in turn may be held by any desired kind of catch or may be provided with notches so as to overlap part of the pipe 16.

Only four pipes 14 are shown and four pipes 16 but it will be evident that a greater number or, if desired, a lesser number may be used without departing from the spirit of the invention. As is evident, part of the air and dust mixed therewith will enter the chamber 13′ and will attempt to move upwardly through the air pipe 10. The dust will be precipitated to the bottom of cone 13 while striking against the cone member 11 and also by reason of the cone-shaped valve member 21, which cone-shaped valve member is provided with a threaded end 22 for accommodating the threads of bar 23. A beveled gear 24 is connected with bar 23 so as to rotate the bar when the beveled gear is rotated by the driving gear 25, which driv-

ing gear is connected with a shaft 26 extending to a point exteriorly of the casing 7 and provided with means for operating by the hand. When it is found that dust is passing upwardly through the air pipe 10 bar 26 is rotated for closing to a greater or less extent the valve 21 until only air passes up this pipe.

It is of course evident that if too much air and dust are forced in by fan 1 for the particular sized collector the parts will not properly operate and some of the dust will escape through the air pipe 10 and some through the pipe 16. In a case of this kind the fan must have the speed thereof reduced or more than one collector connected thereto. As shown particularly in Fig. 1, the cone bottom 13 has a discharge pipe 27 for discharging the dust, said pipe 27 having a valve or damper 28 which may be maintained open or closed by a handle 29. Preferably the damper 28 is held partially closed so as to allow the dust to pass therethrough but not any air. It will of course be noted that the dust is not very closely packed and there is some air mixed therewith as the same enters the pipe 27, but this air is permitted to escape out the pipe 30 which is provided with a damper 31, said damper being usually slightly open. As shown in Fig. 2, a plurality of shutter dampers 32 are provided on top of drum 3, the same being adjusted as may be desired for allowing some of the air to escape at this point, or may be adjusted for maintaining the drum closed.

In operation, when it is desired to use the dust collector at any place, as for instance, in a flour mill, the usual exhaust fan in the mill is connected up to the pipe 2, as shown in Fig. 2, and as the fan collects the dust and forces it through pipe 2 so that part will pass through aperture 8 and part will pass through the opening 4 into chamber 5 and then into chamber 6. It will be observed that chamber 5 is larger than the opening 4 and, consequently, the pressure on the air will be suddenly reduced, whereby a precipitation of the dust will be made. The air passing from chamber 5 to chamber 6 will be further reduced under pressure, thus allowing a further precipitation. The precipitated dust will gravitate into the bottom 13 while the air and unprecipitated dust will pass either into the air pipe 10 or out the pipes 14, where the remaining dust is collected or caused to be precipitated. It is evident that the collected dust may be discharged directly downwardly from the collector or may be discharged into pipes which will guide the dust to a convenient discharge point.

What I claim is:

1. In a dust collector of the character described, a casing, a drum arranged at the upper part of said casing provided with an intake opening and a discharge opening discharging into said casing, said drum being formed with an annular passageway and a wall for directing the air and dust to said discharge opening, a collecting cone arranged at the bottom of said casing, a collecting cone arranged above the first mentioned cone, an air pipe extending from the second mentioned cone, and a valve member in said second mentioned cone for shutting off the dust while permitting the air to escape therethrough.

2. In a dust collector of the character described, a drum provided with an inner horizontal chamber having an inlet opening and an outlet opening, a wall arranged adjacent the outlet opening for directing the dust and air through the outlet opening to the interior of the drum, a casing arranged beneath said drum adapted to receive the air and dust from the interior of the drum, said casing forming a settling chamber, means arranged in the casing above the bottom for causing a precipitation of the dust, upwardly extending air passageways having openings adjacent the upper end, air pipes connected with said passageways, baffling members arranged in said air pipes, and a dust damper arranged adjacent the bottom of each of the air pipes.

3. In a dust collector of the character described, an entrance drum provided with a horizontal circular chamber having a discharge opening, a casing for receiving the discharge from said discharge opening, said casing having a tapering lower end and a discharge pipe, an air vent arranged in said discharge pipe, a hood arranged above said end for causing a precipitation of dust, a plurality of air and dust discharge openings arranged adjacent the walls of the casing, and a central discharge pipe arranged in said casing and projecting above the upper end thereof and through said hood, said last mentioned air discharge member being provided with a valve and means for moving said valve so as to regulate the opening of the discharge.

4. In a dust collector of the character described, a casing, means for directing air and dust into said casing at the top, said means causing the dust to travel in a substantially horizontal direction, an upwardly-facing cone member arranged adjacent the bottom of the casing, a downwardly-facing cone bottom forming the end of the casing, an air outlet pipe connected to the apex of said cone member, a valve for regulating the flow of air through said outlet, a plurality of outlet members extending from the downwardly facing cone bottom, air pipes in communication with said outlets, and baffling means for causing a precipitation of the dust.

5. In a dust collector of the character described, a casing, an inlet hood arranged at the top of the casing provided with a horizontally positioned passageway, said casing having openings in the bottom through which the heavy matter may fall, and relief dampers in the top, means arranged adjacent the bottom of the casing for causing the air passing downwardly thereto to change direction to precipitate the dust, and baffling members arranged adjacent the outlet of the air from said casing for causing the precipitation of the dust therein.

FREDERICK KERLIN.