No. 734,627. PATENTED JULY 28, 1903.

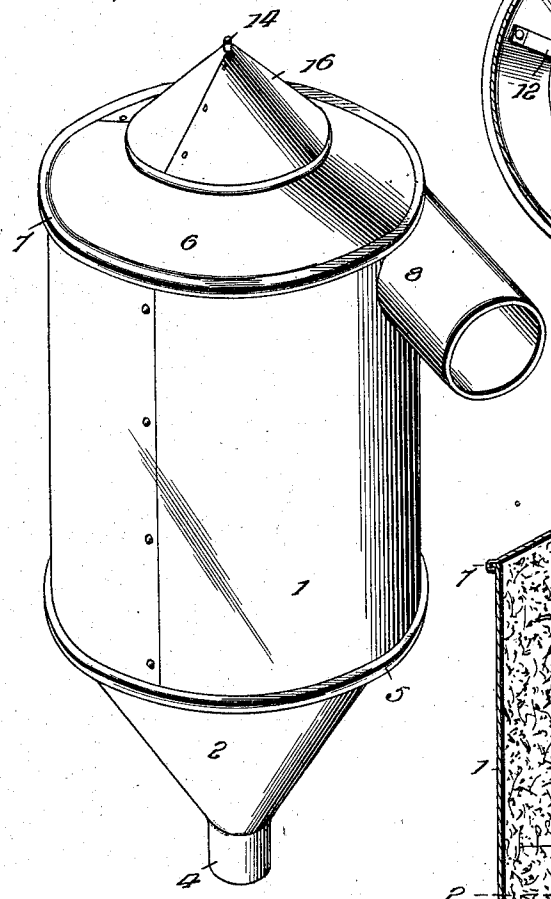
R. W. SOUTHERLAND.

DUST COLLECTOR.

APPLICATION FILED FEB. 5, 1903.

NO MODEL.

FIG. 1.



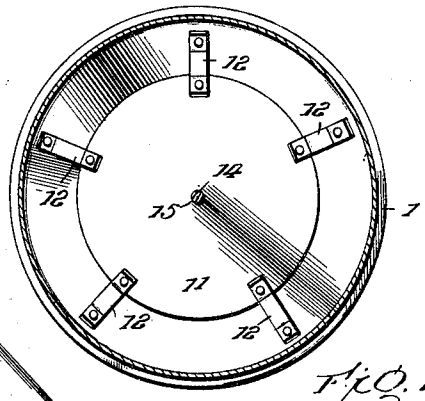
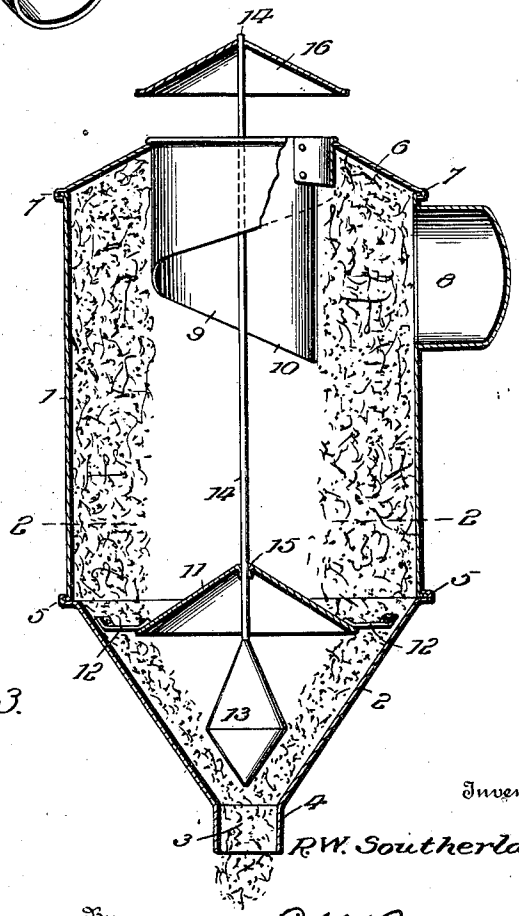


FIG. 2.

FIG. 3.



Witnesses

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No. 734,627. Patented July 28, 1903.

UNITED STATES PATENT OFFICE.

ROBERT W. SOUTHERLAND, OF MOBILE, ALABAMA.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 734,627, dated July 28, 1903.

Application filed February 5, 1903. Serial No. 141,970. (No model.)

To all whom it may concern:

Be it known that I, ROBERT W. SOUTHERLAND, a citizen of the United States of America, and a resident of Mobile, in the county of Mobile and State of Alabama, have invented certain new and useful Improvements in Dust-Collectors, of which the following is a specification.

This invention relates to certain new and useful improvements in dust-collectors; and it has for its objects, among others, to provide a simple, cheap, yet durable, and efficient device applicable to dust-collectors now in use to greatly improve the operativeness and effectiveness thereof.

The primary object in view is to provide such a device with an automatic damper or cut-off, so constructed as to automatically cut off the draft where both the shavings and dust leave the casing or separator, the same to be opened by the force of air in the separator from the fan. The damper or regulator not only cuts off the communication between the air-outlet at the top but also the inlet for sparks of fire at the lower end of the collector. The valve or closure for the lower end of the casing or separator and the damper or closure for the upper end are connected so as to operate simultaneously, and within the separator or casing I provide a shield and for the lower closure which serves to take the pressure of the air from the latter, so as not to retard its operation, and also serving as a guide for the stem of the plunger until after the cover has received sufficient air at the top to raise the plunger off its seat and allow the discharge of the shavings and dust.

The device is made entirely of metal and at the top is provided with a pitched breast, which serves to add strength at the point where most required, thus rendering it more rigid and capable of holding greater weight, and, in connection with the cover at the top, serves to prevent the rain ever falling into the collector and also as a guard or deflector for the sparks which frequently blow about such devices. It is to be understood that the collector is usually erected over the shavings-vault and over the furnace of the boiler where it is exposed to the weather.

The device is simple and compact, composed of but few parts, and those readily assembled and not likely to get out of order or become deranged.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be particularly pointed out in the appended claims.

The invention in its preferred form is clearly illustrated in the accompanying drawings, which, with the numerals of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a perspective view of my improvement. Fig. 2 is a horizontal section thereof on the line 2 2 of Fig. 3. Fig. 3 is a substantially central vertical section through the device with portions shown in elevation and a part broken away.

Like numerals of reference indicate like parts throughout the several views.

Referring now to the details of the drawings, 1 designates the casing of the separator, which may be of any suitable material, such as galvanized sheet-steel, and of the required capacity. It is provided at its lower end with the inverted truncated-cone portion 2, the lower end of which is provided with an outlet or discharge-opening 3 for the shavings or dust, which may or may not be provided with the collar or annular portion 4. The body portion 1 and the conical portion 2 may be joined together, as at 5, in any suitable manner.

6 is a pitched breast, the inclination of which may be varied as may be desired, and this is secured to the upper end of the body portion 1, as at 7, in any well-known manner.

8 is the inlet for the air and shavings or sawdust from the fan, (not shown,) it being noted that this inlet is disposed angularly with relation to the vertical axis of the separator-casing, so that the air and shavings as they are admitted therethrough from the fan into the interior of the casing are given a substantially circular motion or "whirl" within the upper part of the casing.

The pitched breast 6 has a central opening within which depends the tubular deflector 9, being supported at its upper end in any suitable manner and its lower end being upon an incline, as seen at 10, the longer portion thereof being adjacent or opposite to the inlet 8 for a purpose which will be apparent.

11 is a conical diaphragm supported within the cone-shaped portion 2, near the upper end thereof, by brackets or the like 12, extending above the lower end of the body portion 1 of the casing.

13 is a plunger or valve adapted when in its lowermost position to completely close the outlet-opening 3, finding a seat on the inclined walls of the conical portion 2, the valve or plunger being correspondingly tapered, as seen clearly in Fig. 3. This valve or plunger is carried by the valve-stem 14, which passes through an opening 15 in the apex of the diaphragm 11 and passes centrally through the deflector 9 and at its upper end carries the conical cover or damper 16, which is adapted to fit down over and snugly close the opening through the upper end of the deflector 9. The length of the valve-stem 14 and attachment of the plunger or valve 13 and the cover or valve 16 to said stem is such that when the valve or plunger 13 is removed from its seat at the lower end of the cone-shaped portion 2 the cover or valve 16 is lifted from the top of the casing, and when the valve 13 is seated, so as to completely close the exit 3, the valve or cover 16 securely closes the outlet at the top of the casing.

With the parts constructed and arranged substantially as above described the operation will be apparent and, briefly described, is as follows: The separator being connected up with the pipe leading from the fan, the force of the air entering the casing through the inlet 8 serves to force the valve or cover 16 off from its seat at the upper end of the casing, and simultaneously therewith the valve 13 is raised from its seat as the air and shavings enter the upper portion of the casing, are deflected by the deflector 9, and passing around the said deflector, the shavings and dust falling to the lower portion of the casing, while the air, ascending through the interior of the deflector, passes out at the top. The conical diaphragm 11 serves to deflect the falling shavings and sawdust toward the outer wall of the casing, where they pass down the inclined sides of the conical portion 2 and out through the discharge-opening 3. When the incoming air is not of sufficient force to raise the valve 16, it falls to its seat, and the valve 13 also becomes seated, so that not only is the outlet of the air shut off, but the possibility of ingress of sparks of fire to the interior of the casing is precluded.

From the above it will be seen that I have devised a simple and efficient novel form of dust-collector and automatic valve or damper therefor, and while the structural embodiment of the invention as herein disclosed is what I at present consider the preferable one it is evident that changes, variations, and modifications in detail may be made without departing from the spirit of the invention or sacrificing any of its advantages, and I therefore do not wish to be restricted to the details of construction herein disclosed, but reserve the right to make such changes, variations, and modifications as come properly within the scope of the protection prayed.

What is claimed as new is—

1. A dust-collector comprising a casing having a pitched breast, a deflector depending therefrom, automatically-actuated upper and lower closures, means connecting said closures and movable through said deflector and a conical diaphragm over the lower closure.

2. A dust-collector comprising a casing having a pitched breast and a cone-shaped lower portion with valve-seat, a deflector supported from the breast, an angularly-disposed inlet-pipe opposite said deflector, a closure for the upper end, a conical valve fitted to said valve-seat and connected with the upper closure, and a conical diaphragm over the lower closure and serving as a guide for the valve-stem.

Signed by me at Mobile, Alabama, this 2d day of February, 1903.

ROBERT W. SOUTHERLAND.

Witnesses:

CLARA V. TATUM,

EDWARD WEBER.