(No Model.)

2 Sheets—Sheet 1.

J. MILLS.

DUST COLLECTOR.

No. 258,099. Patented May 16, 1882.

Fig. 1.

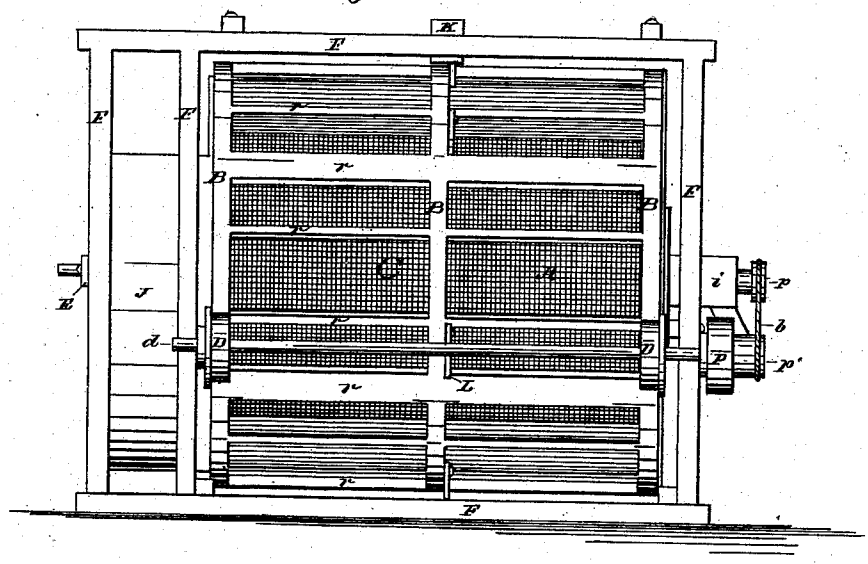
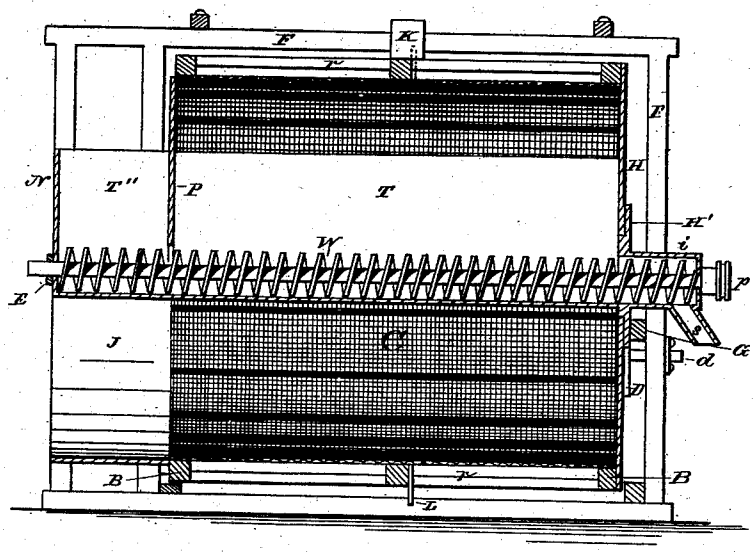


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

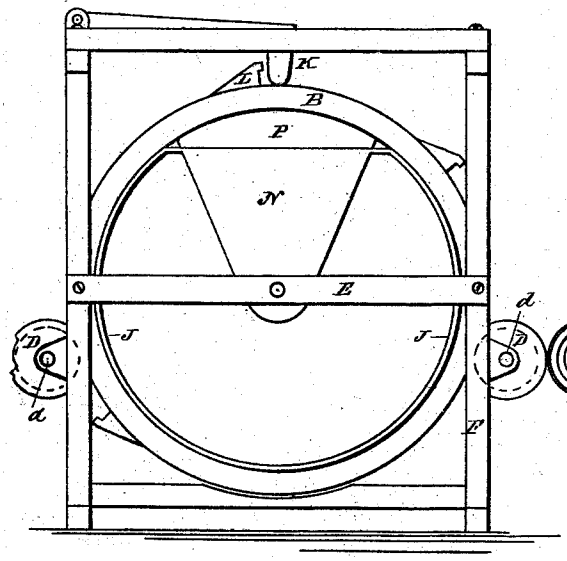


Fig. 4.

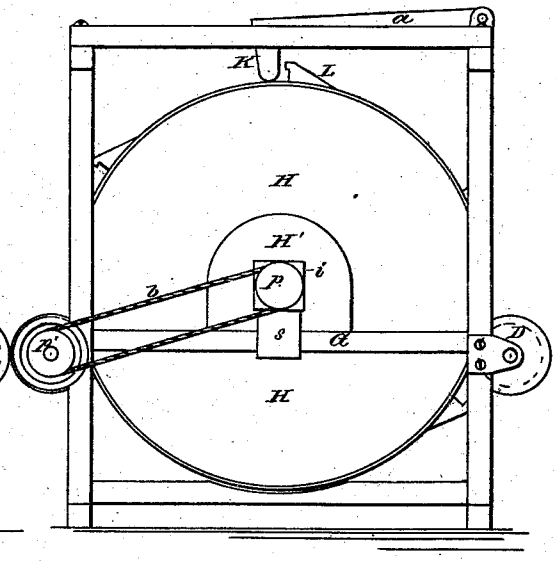
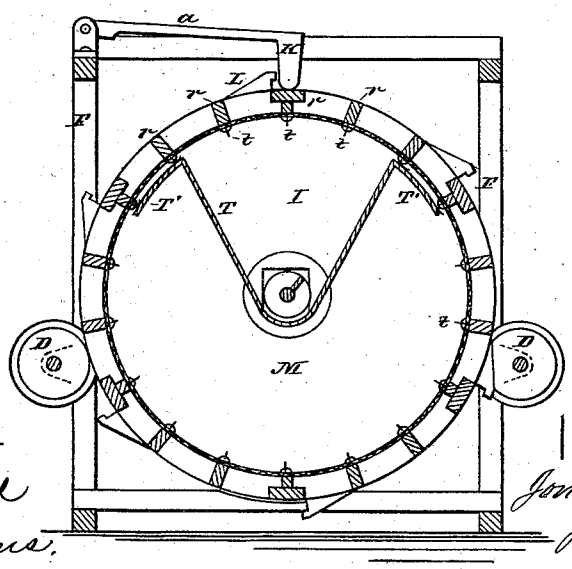


Fig. 5.



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UNITED STATES PATENT OFFICE.

JONATHAN MILLS, OF CHICAGO, ILLINOIS.

DUST-COLLECTOR.

SPECIFICATION forming part of Letters Patent No. 258,099, dated May 16, 1882.

Application filed April 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, JONATHAN MILLS, of Chicago, State of Illinois, have invented certain new and useful Improvements in Dust-Collectors; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to devices for collecting the dust from purifiers in flouring-mills; and it consists essentially in a revolving cloth-covered reel and a dead-air chamber within said reel exposed to an air-current from the purifier, whereby the dust borne by such current is deposited on said cloth as the air escapes through the same, and is carried in its further progress out of such air-current to said still-air space, where the dust is detached from the cloth and falls.

In the drawings, Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a longitudinal vertical section. Fig. 3 is a front end view, Fig. 4 is a rear end view, and Fig. 5 a central transverse vertical section, thereof.

A represents a cylindric reel having circumferential ribs B B, to the inner faces of which is secured the cloth C. This cloth is coarsely-woven flannel or other suitable material having meshes adapted to allow the air to freely pass through it, but also calculated to arrest the dust. In the flannel the open meshes and numerous free fibers lying across the meshes admirably accomplish the end desired. The reel is supported in a frame, F, by means of external rollers, D, mounted on shafts *d*, which turn in bearings secured to the frame-uprights. One of the shafts *d* is provided with a pulley, P, by which the reel is driven. Within the reel is arranged a deep trough, T, supported at one end by the cross-bar E, attached to the uprights of the frame F, and at the other by the cross-bar G, similarly secured. The latter supporting-bar is connected with the trough T by an intermediate stationary disk or plate, H′, concentric with the center of motion of the reel, and the head H, which closes one end of the reel, rotates about said disk, as shown. The inclined sides T of the trough rise into proximity with the cylindric cloth C, thereby cutting off from the general interior of the reel a chamber, I, or, in other words, making two chambers, I and M, within the reel. At the open end of the reel is located a parti-cylindrical stationary housing, J, concentric with and close to the reel, and rising to connect with the upper edges of the outward extension, T″, of the trough. Said trough, extension has the head N, and desirably the partition P, which may preferably rise to the contiguous reel-rib B, practically closing the chamber I. At the bottom of the trough T is located the worm-conveyer, W, extending from the head N along the bottom of the trough and through the disk H′ to the end of the horizontal spout *i*. The worm is run by the band *b*, connecting the pulleys *p p′*, as shown in Fig. 1. The spout *s* leads in any desired direction and to any desired point from the trough-extension or horizontal spout *i*. The space between the disk H′ and the annular head H of the reel is closed sufficiently by a strip of lamb-skin with the wool on, applied as a packing to the joint; and generally the spaces between moving and stationary parts of the apparatus may be similarly closed effectively against the escape of dust; or any other form of packing may be used. Special provision is made to more effectively cut off the chamber I from the air-blast by means of the wings T′ of the trough T extending laterally a little more than the distance between the adjacent rails *r*, and providing the inner surface of the reel opposite the rails with longitudinal closing-strips *t*, some one of which will at all times close the spaces between the extensions T′ and the reel-cloth.

K is a knocker pivotally secured by the arm *a* to the frame F in position to strike on the rib B at the top of the reel, and L L are lifters fastened to the rib B to raise the knocker as the reel is turned beneath it. Preferably the lifters are placed to let the knocker K fall at the junction of the longitudinal rails *r* with the rib B, so that the jarring effect of the blow caused by the fall of the knocker will be carried by said rail from one rib to another. The rails *r* being in contact with and supporting

the cloth C, the effect of the blow of the knocker will be felt upon the cloth throughout the length of the rails.

In the operation of the machine the housing J will be connected to receive the air-current from the purifiers, which, with its burden of dust, will thus be directed into the interior of the chamber M of the reel A. The air will find escape through the meshes of the cloth C; but the dust will be arrested thereby, and form a body accumulated on its inner surface. As the reel is rotated that portion of the cloth thus exposed to the air-current and receiving the deposit of dust in the chamber M is gradually carried over the trough T and chamber I. Here it is jarred by the knocker K, and the dust adhering thereto is dislodged. This chamber being cut off from the air-current, the dust falls into the trough, and the unburdened cloth advances over the trough to be again exposed and to again accumulate a body of dust in the chamber M. I designate the chamber M a "blast-chamber," whether the air-current be forced through the same by the fan of the purifiers or drawn through it by a suction-fan. I designate the chamber I a "dead-air" or "still-air" chamber, and require only that the air therein be sufficiently quiet to permit the dust to fall or settle in the trough.

The worm W obviously serves to convey away the dust dropped into the trough as fast as it accumulates, and the end extension, T″, of the trough is a convenient and available receptacle for the sweepings of the mill.

While I prefer and have shown the traveling cloth attached to a rotating reel, I do not limit myself to such device for moving the cloth. It may be loosely supported on rollers, for example, and advanced from the blast-chamber to the still-air chamber by rotating one or more of the supporting-rollers; nor do I limit myself (except in the specific claim therefor) to the location of the dead-air chamber within the reel.

Having thus described my invention, I claim—

1. In combination with the still-air chamber and the moving cloth of a dust-collector, the conveyer W, substantially as and for the purposes set forth.

2. A rotating reel bearing a dust-cloth, in combination with a blast-chamber and a still-air chamber within said reel, as described.

3. In combination with a reel bearing a dust-cloth, a hopper arranged within the reel to separate the general interior thereof into two unconnected chambers, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my invention, I affix my signature in presence of two witnesses.

JONATHAN MILLS.

Witnesses:
M. E. DAYTON,
JESSE COX, Jr.