(No Model.)

F. PRINZ.

DUST COLLECTOR FOR FLOUR MILLS.

No. 272,473. Patented Feb. 20, 1883.

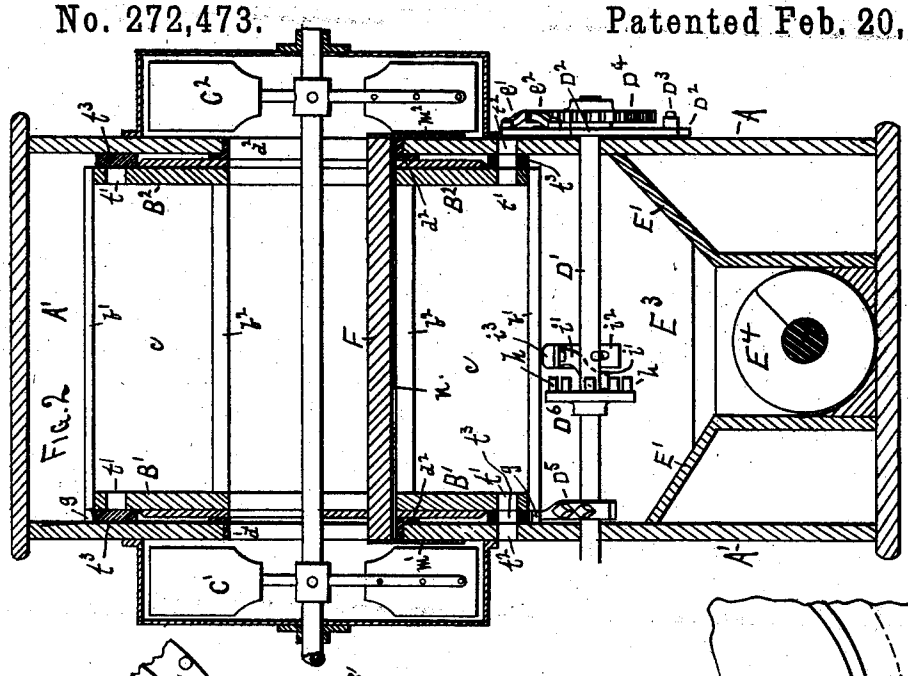


Fig. 2

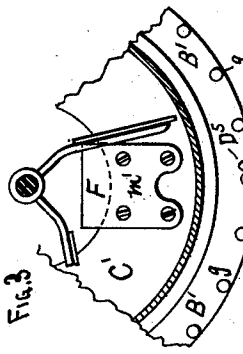


Fig. 3

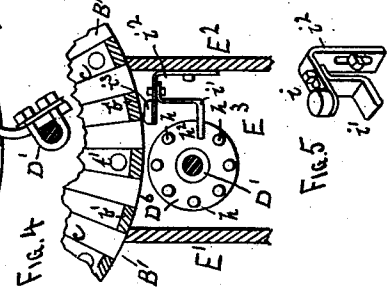


Fig. 4

Fig. 5

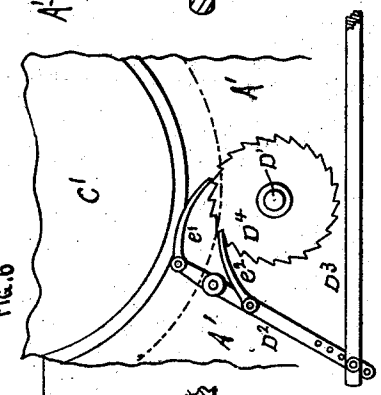


Fig. 6

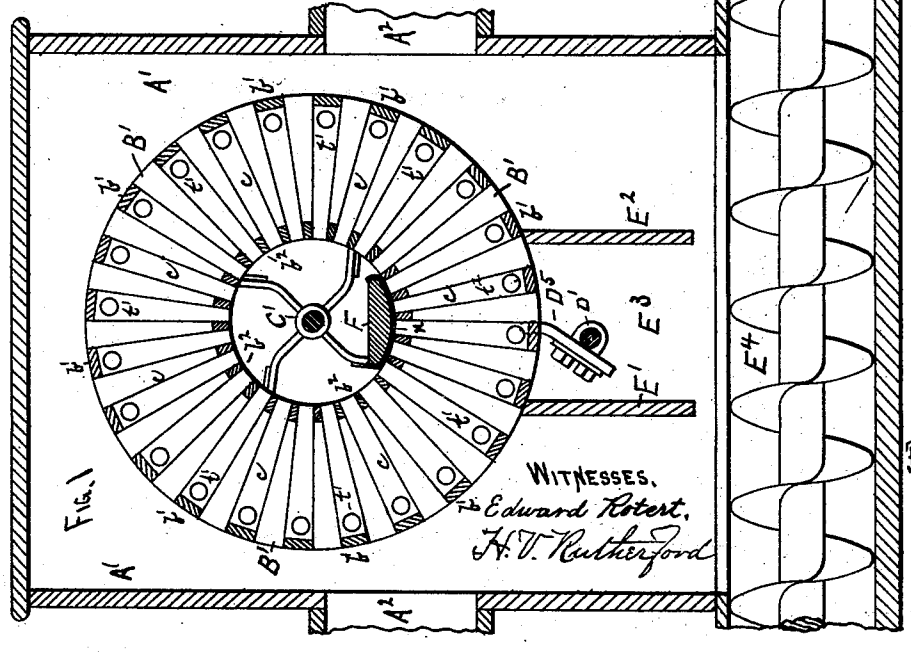


Fig. 1

WITNESSES.
Edward Robert.
H. V. Rutherford

Faustin Prinz
INVENTOR, BY
Louis Fesser & Co
Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FAUSTIN PRINZ, OF DUNDAS, MINNESOTA.

DUST-COLLECTOR FOR FLOUR-MILLS.

SPECIFICATION forming part of Letters Patent No. 272,473, dated February 20, 1883.

Application filed July 7, 1881. (No model.)

To all whom it may concern:

Be it known that I, FAUSTIN PRINZ, a subject of the Emperor of Germany, and a resident of Dundas, in the county of Rice and State of Minnesota, have invented certain new and useful Improvements in Dust-Collectors for Flour-Mills, &c., of which the following is a specification.

This invention relates to the apparatus used in flour-mills, &c., for removing the dust from the air, especially that passing through middlings-purifiers and similar machines; and it consists in a cloth-covered frame or balloon, through which the air is caused to pass, and adapted to be revolved, and provided with mechanism for shutting off the air from a portion of the cloth, and knocking or shaping such shut-off portion to remove the adhering dust therefrom, as hereinafter set forth.

The invention further consists in a system of perforations and shut-off rings, &c., whereby a "back-draft" of air through the shut-off section of the cloth is obtained to assist in removing the dust from the cloth, as hereinafter set forth.

I accomplish these results by the use of the mechanism illustrated by the accompanying drawings, in which—

Figure 1 is a cross-sectional view, and Fig. 2 is a longitudinal sectional view. Fig. 3 is an end view of a portion of one end outside, showing the manner of revolving the balloon. Fig. 4 is a detached detail view of a portion of the balloon and shut-off devices, illustrating the manner of operating the knocking mechanism; Fig. 5, a detached perspective view of knocker; Fig. 6, a detached view of a portion of the outside of the casing and fan-case, illustrating the manner of revolving the balloon-operating shaft.

This device may be applied to any style of middlings-purifier or similar machine, or arranged separately therefrom, and large enough to receive the air from several machines, and consists in an outer casing or frame, A′, through which the air from the purifiers, &c., is caused to pass, either by adjustable valves or through ports A^2.

B′ B^2 are two circular heads, with open circular centers, and connected to each other by two rows of ribs, b' b^2, around the outer and inner peripheries of the heads, as shown, and around which ribs the cloth *c* is wound back and forth.

Around the edges of the central openings in the heads B′ B^2 are L-shaped rings d' d^2, fitting through circular openings through the sides of the casing A′ and between the casing and heads of the balloon, so as to form bearings upon which the balloon B′ B^2 b' b^2 *c* may be revolved, and to prevent the air from passing into the open space which would otherwise exist between the casing and heads of the reel or balloon, as hereinafter shown.

Outside of the casings A′, covering the central openings into the balloon, suction-fans C′ C^2 are arranged, by which the air may be drawn from the casing through the cloth *c*.

Beneath the balloon a shaft, D′, is mounted, and adapted to be revolved by a system of dogs, c' c^2, and levers D^2 D^3, acting upon a ratchet-wheel, D^4, the lever D^3 being vibrated, in any suitable manner, by the mechanism of the purifier or other machine near the balloon. Near one end of this shaft D′ an arm, D^5, is secured, and adapted to act upon a row of pins, *g*, upon one end of the balloon, to revolve the balloon the distance of one of the pins at every revolution of the shaft.

Beneath the balloon are two upright plates or partitions, E′ E^2, connecting the lower part of the balloon and the bottom of the casing A′ together, and forming a compartment, E^3, and upon the shaft D′, near the center of this compartment, is a disk, D^6, provided with pins *h*, adapted to act upon an arm, *i*′, attached to a spring-knocker, i^2, so that when the pins *h* force the knocker down and then release it its recoil will cause the hammer i^3 to strike one of the ribs b' a sharp blow, to shake the dust loose from the cloth *c*.

Running through the open interior of the balloon is a convex plate, F, attached at either end by thin plates m' m^2 to the casing A′ inside the fan-casings, and covered on its lower side with felt, rubber, or other suitable flexi-

ble material, n, and beneath which the ribs b^2 run when the balloon is revolved, the felt packing forming an air-tight joint between the plate and ribs to prevent the air passing through the sections of cloth c that happen to be beneath the plate. By this means an air "shut-off" is formed for all the cloth c between the partitions E′ E² and shut-off plate F, (in the drawings showing three complete sections of the cloth,) so that all the cloth above the compartment E³ is removed from the influence of the air to permit the dust to fall into the compartment E³.

By providing the disk D⁶ with a number of the pins, h, the knocker is made to act upon the ribs b' any desired number of times, while the balloon is held stationary between the actions of the arm D⁵. Thus a number of light blows are struck upon the ribs supporting the cloth during the time the blast is shut off from each compartment, which produces a much better result than if one heavy blow were struck, as in the latter case no more dust is shaken loose, while the injury to the frame-work and cloth is quite apparent.

The lower part of the compartment E³ will be hopper-shaped and opening into a conveyer or spout, E⁴, by which the dust may be carried from the machine.

Packings of rubber or other flexible material will be arranged between the casing A′ and L-shaped bearings d' d^2 to form air-tight joints to prevent the escape of the air at these points.

The balloon may be set in an upright position and the fan or fans placed at any point away from it, or the shut-off plate F secured in any other desired manner.

The collector may be set in the ordinary dust-room of a mill, and the air from the purifiers, &c., blown through it.

The revolving mechanism D⁵ g will be so constructed that the balloon will be revolved, each of its movements quickly, so that no delay occurs at these points.

One of the pins h, it will be observed, is wanting at the proper point h^2 in relation to the arm D⁵, so that the knocker will not be acted upon while the balloon is being revolved.

Through both of the heads B′ B², between every other section of the cloth c, perforations t' are made, and through the sides of the casing A, opposite the center of the compartment E³, similar perforations, t^2, are made, corresponding to the perforations t', while rings t^3 between the heads B′ B² and casing A′ act as stops to shut off the air and prevent its passing through the holes t', except as they pass by the holes t^2. By this means a stream of air from the outside is permitted to flow in between the sections of the cloth that are shut off from the suction by the plate F and partitions E′ E² to form a back-draft through the cloth, so that the adhering dust will be forced out of the cloth and the knockers assisted in their work.

I do not wish to confine myself to the particular form of mechanism shown for operating this collector, as I am aware that it may be operated in many ways.

In this application means are shown for striking or knocking the dust-collecting medium in the direction of the tension of the medium; but no claim is made thereto, as I prefer to claim the same in a separate application, as well as the same feature in connection with the cut-off plate, broadly, and I expressly reserve that right.

What I claim as new is—

1. The dust-collecting balloon consisting of the heads B′ B², ribs b' b^2, and cloth c, and provided with the L-shaped bearings d' d^2, in combination with the casing A′ and fans C′ C², substantially as set forth.

2. In a dust-collector, the combination with a revolving balloon and a case inclosing the same, of a ring or bearing interposed between the casing and heads of the balloon around openings in the heads, substantially as and for the purposes set forth.

3. The combination of the balloon B′ B² b' b^2 c, shut-off plate F, casing A′, fans C′ C², and partitions E′ E², substantially as set forth.

4. The balloon B′ B² b' b^2 c and casing A′, in combination with the shaft D′, arm D⁵, and pins g, substantially as set forth.

5. The balloon B′ B² b' b^2 c and casing A′, in combination with the shaft D′, disk D⁶, pins h, and knocker i' i^2 i^3, substantially as set forth.

6. In a dust-collector, the combination of a balloon with means for revolving the same and imparting a series of blows to the balloon between each partial revolution thereof while at rest, substantially as and for the purpose set forth.

7. The balloon B′ B² b' b^2 c, provided with the perforations t', in combination with the casing A′, having the perforations t^2, substantially as set forth.

8. In a dust-collector, a dust-collecting medium, in combination with means for inducing a current of dust-laden air against one side of the collecting medium, and means for admitting an induced current of air against the opposite side of the same medium, whereby the dust collected on the medium from the first air-current is detached therefrom by the second current, substantially as and for the purposes set forth.

9. In a dust-collector, the combination of a dust-collecting medium, a shut-off for isolating one portion of the medium from the other portion, and means for admitting an air-current to the isolated portion to form a back-draft to aid in clearing the isolated portion from dust, substantially as set forth.

10. In a dust-collector, the combination of a dust-collecting medium, a shut-off for isolating one portion of the medium from the other portion, means for jarring the isolated portion, and means for admitting an air-current to the

isolated and jarred portion to form a back-draft to aid in clearing the isolated portion from dust, substantially as set forth.

11. In a dust-collector, the combination of a dust-collecting balloon having a series of compartments, a shut-off for shutting off a portion of the balloon from the other portion, and means for imparting a series of blows to the shut-off portion while shut off, substantially as and for the purpose specified.

In testimony whereof I have set my hand in the presence of two subscribing witnesses.

FAUSTIN PRINZ.

Witnesses:
C. N. WOODWARD,
LOUIS FEESER.