

(No Model.)

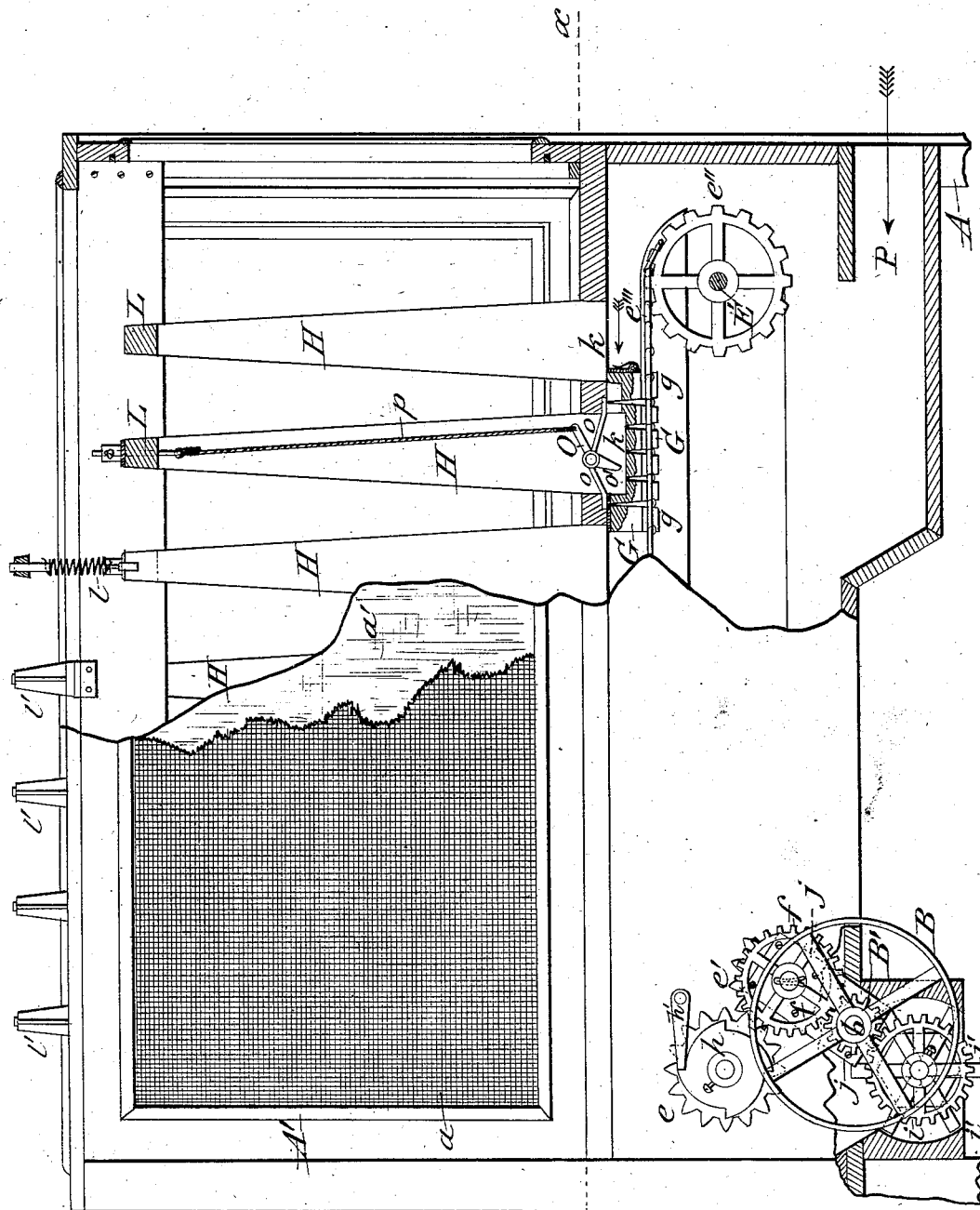
3 Sheets—Sheet 1.

A. H. KIRK.

MACHINE FOR COLLECTING DUST.

No. 259,873.

Patented June 20, 1882.



Attest:

H. H. Schott

H. A. Daniels

Fig. 1.

Inventor:

Alva H. Kirk
By A. Crawford
attly.

(No Model.)

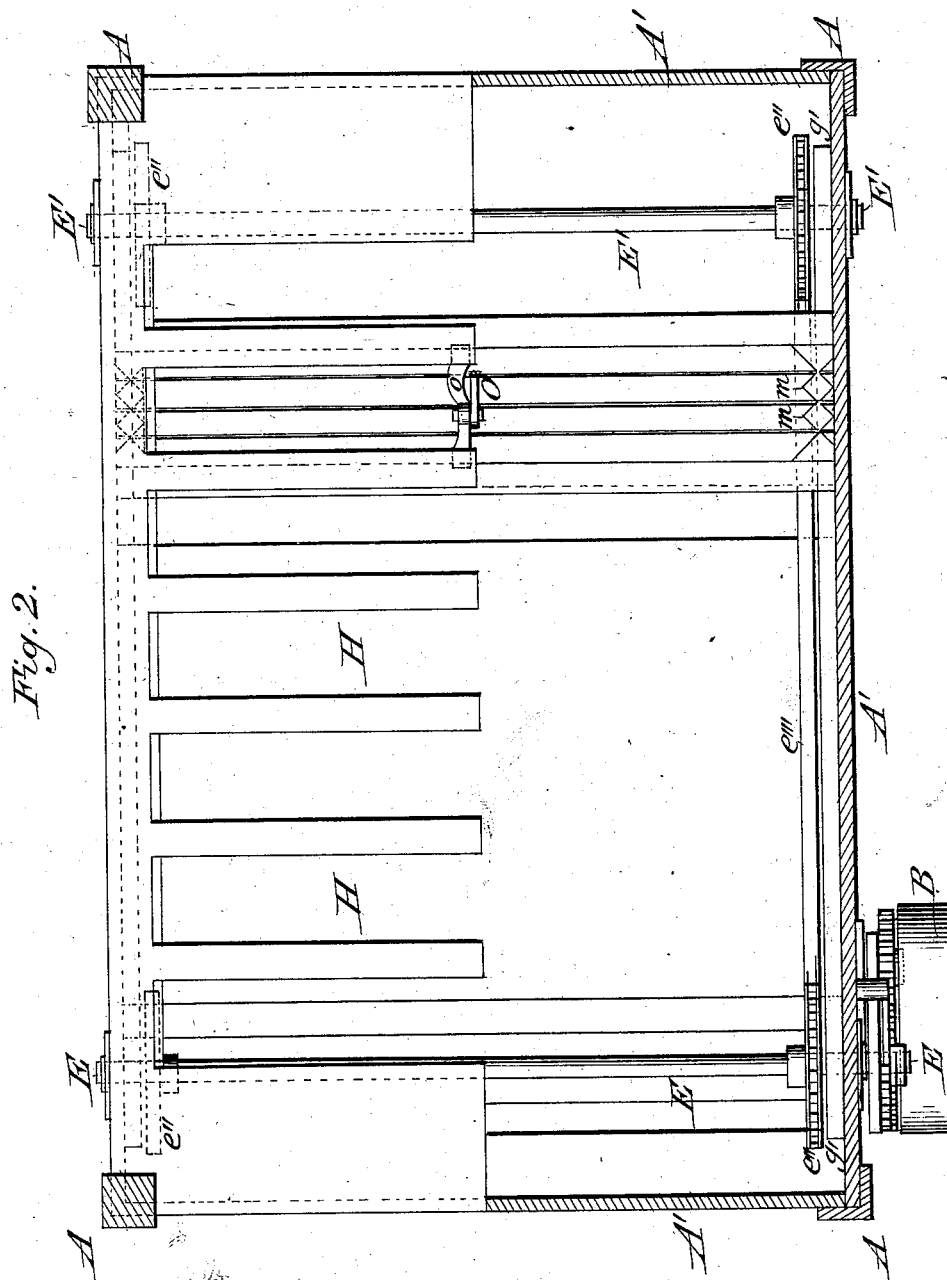
3 Sheets—Sheet 2.

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Fig. 3.

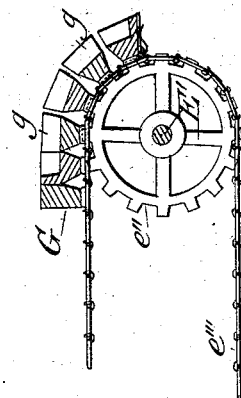
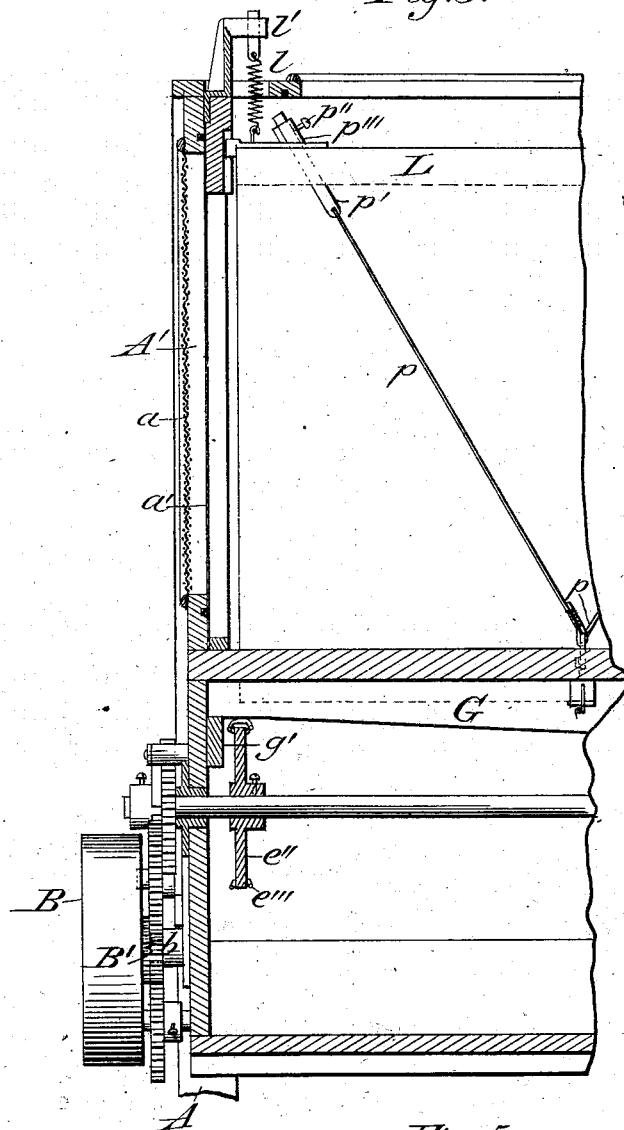


Fig. 4.

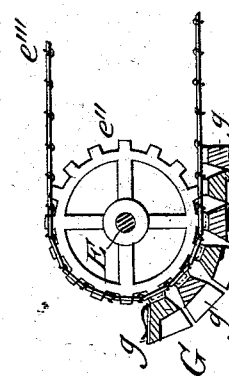
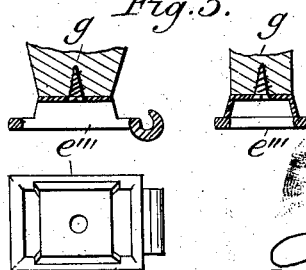


Fig. 5.



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UNITED STATES PATENT OFFICE.

ALVA H. KIRK, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO KIRK & FENDER, OF SAME PLACE.

MACHINE FOR COLLECTING DUST.

SPECIFICATION forming part of Letters Patent No. 259,873, dated June 20, 1882.

Application filed February 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALVA H. KIRK, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Machines for Collecting Dust; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

The object of this invention is to improve machines for catching dust in flouring-mills, and especially the invention described in my application filed in the United States Patent Office January 31, 1882; and it consists in the change in the construction of some of the actuating parts shown in that application, and in means applied to the machine to insure safety against explosions.

In the drawings, Figure 1 represents a side view of the machine with a portion of the casing removed to show the interior. Fig. 2 is a view on line *x x*, Fig. 1, partly in plan and partly in section. Fig. 3 is a half transverse sectional view of same. Fig. 4 is a broken side view, in part section, of the dust-boxes, their relative situation upon the endless chain, and their operating devices. Fig. 5 represents enlarged parts of the dust-boxes, the sprocket-chain, and the method of securing the parts of the dust-boxes to the links of the chain.

A represents the supporting-frame of the machine.

A' represents a frame attached to the supporting-frame A, and takes the place of the ordinary casing of the machine, and has fine wire-gauze *a* entirely covering its outer face, while its inner face is covered with fine cloth *a'*. The purpose of the wire-gauze is to prevent the fine comminuted particles of starch that may be floating in the air from communicating fire to the dust inside the machine, thus avoiding explosions, while the cloth inside of frame A' prevents any dust inside the machine from passing out through or in contact with the gauze *a*, making it comparatively safe from explosions,

even if the fine floating dust outside the machine should become ignited. This protection may only be applied to the door or side that is opened to see the inside of the machine and its operation.

B is the driving-pulley on the axle *b*, that is fast to or cast upon plates *j j*, which are fast to the side of the machine.

Pinion B' may be cast upon pulley B. This pinion gears with two toothed wheels, *i* and *f*, causing both to continually revolve with the pulley B. Wheel *f* has a segmental gear, *e'*, cast on its side, which revolves with the wheel *f*. Wheel *i* gives revolution to wings *i'*, which form an automatic discharge for the dust from the dust-box into a still-air chamber below.

E E' are transverse shafts, which have bearings in the sides of the machine and reach across the width of the same, and have securely attached thereto at each end, within the case, sprocket or star wheels *e'' e'' e'' e''*, over which go endless chain belts *e'''*.

Fast upon shaft E is a toothed wheel, *e*, that revolves with shaft E, and is located outside of the case, the teeth of which gear with the partially-toothed or segmental wheel *e'*, and as this wheel *e'* has but one-quarter of its circumference toothed, it will revolve wheel *e* but a quarter-revolution, when said wheel *e* will rest, while the wheels *f* and *e'* continue to revolve, and in doing so the teeth of wheel *e'* will again engage with the teeth on wheel *e* and give it another quarter-revolution and an intermitting motion to wheel *e*, shaft E, chain *e'''*, and to the dust-box.

Upon the outside of wheel *e* is cast a ratchet-wheel, *h*, which, in connection with its pawl *h'*, will hold the wheel *e* from a backward movement after the teeth *e'* have passed out of gear with the teeth on wheel *e*, and so that wheel *e* will be in position to gear with the teeth *e'* when wheel *f* brings them to the proper point for action again. This wheel *e*, through shaft E, gives an intermitting horizontal motion to the endless chain belt *e'''*, to which the dust-box is attached.

G is the dust-box, formed in sections, which are firmly attached to the links of the endless-chain belt *e'''*, and intermittingly travels in one direction with it. The bottom of box G is

made of staves or pieces *g*, beveled in such manner that the pieces will pass around the wheels *e''* on chains *e'''* easily, and when off the wheels, or in a straight line and on guide-ways *g'*, will be dust-tight on the bottom and ends. Two of these dust-boxes are employed and attached to the chain in such manner that when one advances to turn over the sprocket-wheels at one end of the machine the other will be rising over the sprocket-wheels at the other end. These boxes are made to be dust-tight in the raceway in which they travel.

H H are a series of dust-catching bags or corrugations of cloth, open at their bottom ends, *k*, the cloth of which is attached to frames in the usual way, and their tops or narrow parts are attached to cap-pieces L near the top of the machine, which pieces are suspended at each end within the machine by coiled springs *l*, attached to brackets *l'*, so as to allow the cap-pieces to be pulled down a certain distance, and when the force that does so ceases the springs will with a quick motion return the cap-pieces and dust-bags to their original positions.

O is a bell-crank lever, pivoted at or near its center to bracket or support *o*. At the outer end of the upper arm of crank-lever, O, are holes to attach cords or wires *p* to, which cords or wires extend upward diagonally and are attached to adjustable eyebolts *p'*, which go through cap-pieces L and are adjusted on the tops by holding-screws *p''* in sleeves *p'''*. The trip or lower arm, *o'*, of the bell-crank lever O projects downward at an inclination, so that when the front side of the dust-box G, in its forward movement, strikes it, the trip *o'* will be raised, causing a depression of the upper arm, to which the cords are attached, and as it turns down the cords force the cap-pieces L and the bags down against the force of the springs, and as the dust-box moves on, and the trip leaves the front side of the dust-box, and the box stops its motion, the springs *l* are free to resume their normal position and bring the bags back with a quick jerk, shaking all the adhering dust off. At this particular time the dust-box, being still and under the mouth

of the bag, receives the dust so shaken off, and by the time this happens the wheel *f*, with its broken gear *e'*, is in gear with wheel *e* and revolves the wheel *e* on shaft E one quarter-revolution, causing the endless chain belt *e''*, with the dust-box G, to travel the distance from the mouth of one dust-bag or corrugation to the next, to be operated upon and cleared of its dust that has been forced therein through the usual way into chamber P, underneath the dust-catching bags H. The dust-box G may be caused to travel slow in one direction under the dust-catching bags, without intermitting, if desired, by only the change of gear.

The device as above constructed and operated can be used within the case of a mid-
dlings-purifier, thus saving the entire frame and casing when so used.

Having thus described my invention, what I desire to claim, and secure by Letters Patent, is—

1. In a machine for collecting dust, the combination of the frame A, the frame A', having the wire-gauze *a* on its outside and the cloth *a'* upon the inside, with devices inclosed within for catching and separating dust from the air, substantially as described.

2. In a machine for collecting dust, the dust-box G and means for causing it to travel intermittently underneath the dust-collecting cloth, in combination with the pivoted lever O, having trip-arm *o'*, cords *p*, and the compressible dust-arresting bags H, constructed to operate substantially as described.

3. The combination, in a machine for separating dust from the air, of frames covered with gauze upon the outside and cloth on the inside, a dust-catching box having an intermittent movement and mechanism for giving such motion, compressible dust-catching bags, and mechanism for causing the compression, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ALVA H. KIRK.

Witnesses:

J. GUILFORD,

WILLIAM W. MARR.