(No Model.)

J. STERNBERG.

GRAIN AND MINERAL SEPARATOR.

No. 258,495. Patented May 23, 1882.

Fig. 1.

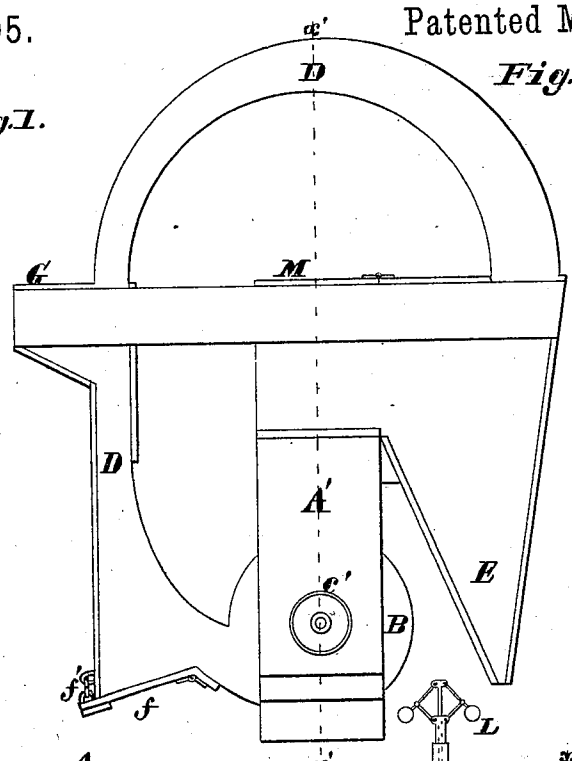


Fig. 4.

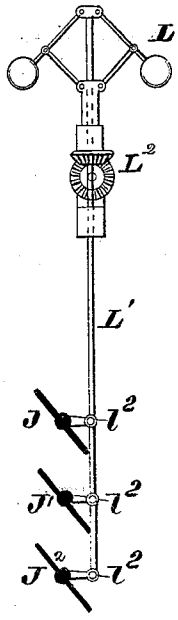


Fig. 2.

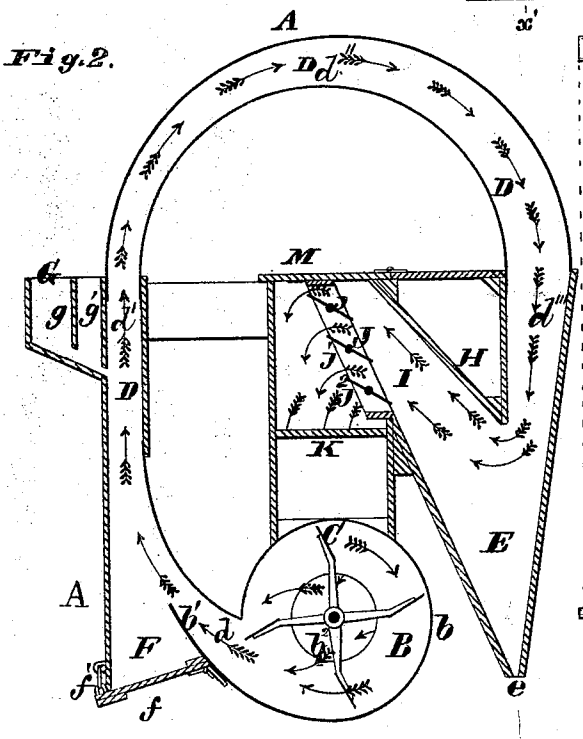
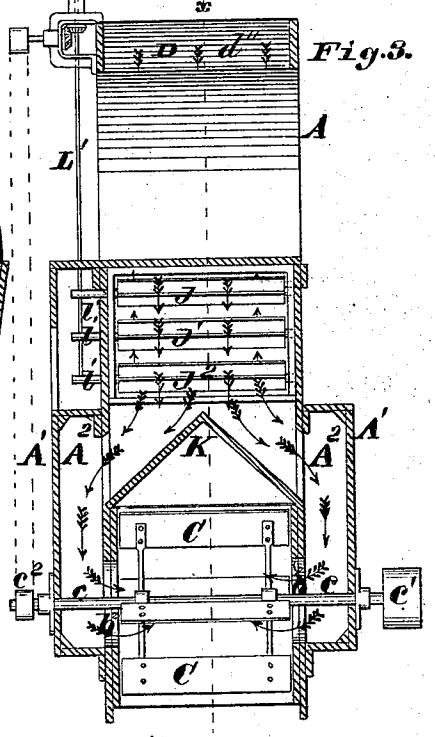


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAY STERNBERG, OF BOULDER, COLORADO.

GRAIN AND MINERAL SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 258,495, dated May 23, 1882.

Application filed April 2, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAY STERNBERG, of Boulder, in the county of Boulder and State of Colorado, have invented a certain new and useful Improvement in Grain and Mineral Separators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a machine in which a continuous air-current is created by means of a fan.

The object of my invention is to provide a device by which good material—such as wheat or other grain—can be removed from heavier refuse matter after the lighter refuse matter has already been removed from the grain in the ordinary manner in another separator. The heavy refuse matter that is removed consists principally of small stones, pieces of wire, nails, &c. The amount of such foreign matter now left in the grain after its first treatment causes great injury to the millstones if not removed, and is also injurious to the consumer.

In the drawings, Figure 1 is a side elevation of an apparatus embodying my improvement. Fig. 2 is a section taken on line *x x*, Fig. 3. Fig. 3 is an axial section at line *x' x'*, Fig. 1. Fig. 4 is an enlarged detail view of the valve-operating device.

A A' is the outside casing, the portion A' forming air-chambers A^2 at each end of the fan-chamber.

C is the fan in chamber B on shaft *c*, driven by pulley *c'* outside the casing. The fan-chamber B communicates with an air-shaft, D, whose upper part is arched, and which terminates in a chamber, E, at the rear of the fan, having grain-opening *e* at its lower extremity. The shaft D is constructed in the form of an inverted U or horseshoe, having upwardly-inclined portion *d*, vertical portion *d'*, arched portion *d''*, vertical portion *d'''*, and inclined portion I, and hoppers E and F. The current of air from the fan is directed upward into the air-shaft D by a projection, *b'*, of the casing *b* of the fan-chamber B. Between this projection *b'* and the outer casing, A, is a chamber or receptacle, F, into which the heavy refuse matter before mentioned falls by gravity, the grain, under the influence of the current of air, passing around through the shaft D to the receptacle E. The refuse matter is taken from the chamber F by opening the door or gate *f*, which is secured in its closed position by any suitable catch, *f'*.

G is the feed-hopper, which is secured to the case A, and provided with valves or gages *g g'*, working in the sides of the hopper, for limiting the amount of grain entering the machine.

The current of air passes from the fan upward through the shaft D, around to the chamber E, passing beneath the projection H, up through channel I, through which it is drawn by suction of the fan through the opening J, and down to the fan-chamber B, into which it enters through the openings b^2 between the fan-chamber and air-chambers A^2.

K is a deflector situated above the fan-chamber, for separating the current of air to the right and left in its downward passage from the opening J to the fan-chamber. Thus an equal amount of air will enter the opposite sides of the fan-chamber through the openings b^2.

The size of the opening J, and the consequent force of the air-current through the shaft D, is regulated by valves *j j' j²*, operated by means of a suitable governor, L, secured to the case A, whose vertically-moving stem L' is connected to the shafts *l* of the valves by means of arms *l'*. The governor is driven by pulley c^2 on the fan-shaft *c* by means of connecting device L^2. I do not claim anything as new in this manner of operating the valves, and instead of it may be used a simple lever applied by hand to one of the valve-shafts, said valves being connected together in any suitable manner, so that in closing or opening one of them the others will open or close in a like proportion.

By means of the valves *j j' j²* the amount of air entering the fan-chamber is increased or diminished, and consequently the blast and suction of air through the shaft D are regulated. To allow admittance to the valves *j j'*

j^2 and the parts beneath them the door M is raised.

The operation of the machine to separate the grain from the refuse matter is as follows: Steam or other power is applied to the fan C through means of pulley c' on the shaft of the fan, which causes a blast and suction through the shaft D, as described. The material is then admitted to the machine through hopper G, the amount entering the machine being regulated by the gages g g', as above explained. The current of air in the shaft D is just of sufficient force to carry the grain as it enters the shaft through the hopper, around to the chamber or receptacle E, from which it escapes through opening e. The objectionable matter—such as the articles above mentioned—being heavier than the grain, is not carried around to chamber E with the grain by the air-current, but falls by gravity into the receptacle F, from where it is removed, as before explained.

I am aware that it is old to create a continuous air-circuit through and by means of a fan which forms a combined blast and suction device. This, therefore, I do not claim broadly.

Having thus described my invention, the following is what I claim as new and desire to secure by Letters Patent:

1. In a separator, the combination of an air-shaft simulating a horseshoe, a chamber connecting the ends thereof, a fan located in said chamber, and a feed-hopper placed on one arm of said shaft and arranged to deliver the material in the face of the blast, the ends of the shaft forming hoppers for the reception of the separated material, as set forth.

2. In a separator, the combination of a fan located in a chamber at the bottom of the machine, an air-shaft, D, leading from and to the chamber, and having upwardly-inclined portions d I, vertical portions d' d''', arched portion d'', and hopper portions E F, and a feed-hopper, G, located on one side of the vertical portion d', as set forth.

3. The combination of fan C, chamber B, formed with inlet-openings b^2, shaft D, receptacles E F, provided with outlets e f, projection H, channel I, forming part of air-passage, opening J, deflector K, and air-chambers A^2, as set forth.

4. The combination of fan C, chamber B, provided with inlet-openings b^2, shaft D, receptacles F and E, provided with outlets f and e, projection H, channel I, forming part of air-passage, opening J, having valves j' j' j^2, deflector K, and air-chambers A^2, as set forth.

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Witnesses:
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