H. A. BARNARD.
Grain-Separators.

No. 207,236. Patented Aug. 20, 1878.

Fig. 1.

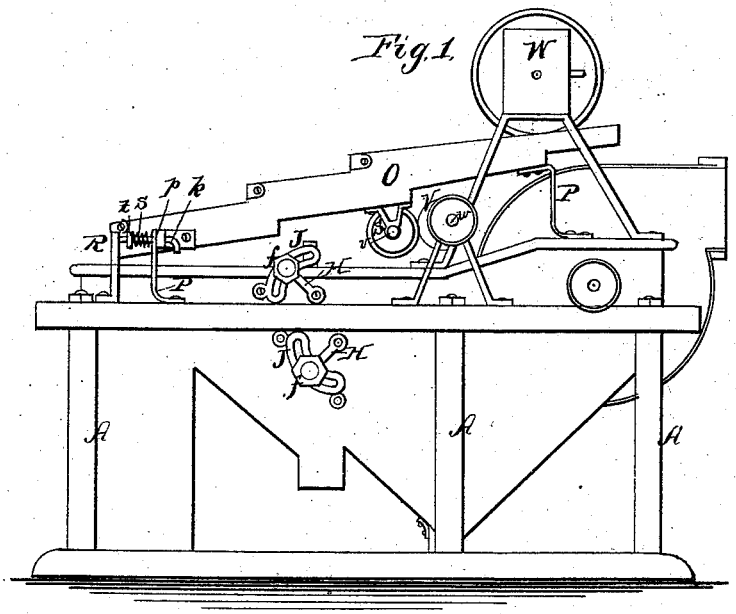


Fig. 2.

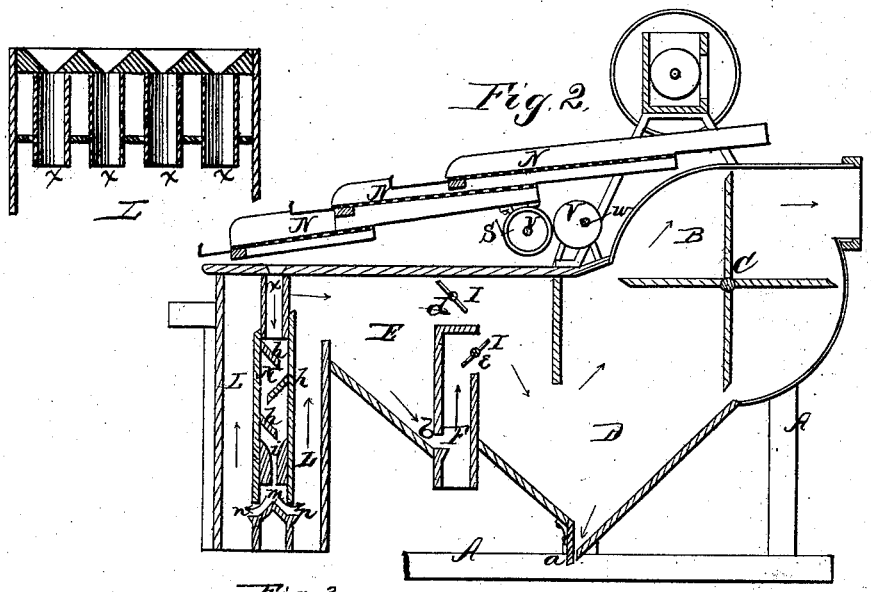


Fig. 3.

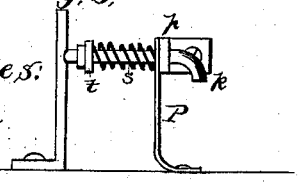
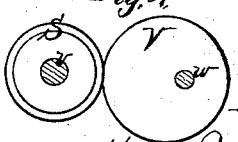


Fig. 4.



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UNITED STATES PATENT OFFICE.

HEMAN A. BARNARD, OF MOLINE, ILLINOIS.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **207,236**, dated August 20, 1878; application filed May 29, 1878.

To all whom it may concern:

Be it known that I, HEMAN A. BARNARD, of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Grain-Separators; 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 part of this specification.

The nature of my invention consists in the construction and arrangement of a grain-separator, having for its object to grade the grain into first and second quality, and to thoroughly clean both qualities or grades without wasting any grain among the screenings or offal, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a side elevation of my improved separator. Fig. 2 is a longitudinal vertical section of the same. Figs. 3 and 4 are detailed views of parts thereof.

A represents the frame of the machine, at one end of which is the fan-chamber B, with revolving fan C therein. The inner portion of the fan-case B opens into a screenings-chamber, D, which terminates at a point where it is provided with a hinged valve, *a*, as shown.

E is a suction-chamber, and F a separating-trunk. *b* is a passage from the bottom of the chamber E into the trunk F. *d* is a passage above the trunk F from the chamber E to the chamber D. *e* is a passage from near the top of the trunk F into the chamber D. In the passages *d* and *e* are valves I I, for regulating the suction, said valves being adjusted from the outside of the machine by means of levers H H, held to curved guides or racks J J by set-screws *f f* or other suitable means.

In front of the chamber E are two separating-trunks, L L, which are separated by means of a passage, M. This passage is provided on opposite sides with alternating inclined cant-boards *h h*, below which is a narrow passage, *i*. Directly below the passage *i* is a dividing peak or cone, *m*, with passages *n n* at the sides, leading into the trunks L L.

Above the frame A is a series of sieves, N N, arranged in a frame, O, which frame is supported at both ends by spring-arms P. At the front end, on each side of the frame O, is an ear, *p*, through which passes a rod, *k*, said rod being secured in a standard, R, on the main frame A. Surrounding the rod *k* is a spiral spring, *s*, the tension of which is regulated by a nut, *t*, on the rod, and all arranged, as shown, to throw the sieve-frame O rearward.

Under the frame O, in suitable hangers attached thereto, is placed a shaft, *v*, and on the same are secured pulleys S S, which are acted upon by means of eccentrics V V on a shaft, *w*, having suitable bearings on the main frame. As the shaft *w* rotates, the eccentrics V move the sieves forward, and the springs *s* throw them rearward again.

Over the upper rear end of the sieves is a conveyer, W, of any ordinary construction, into which the grain is received and deposited on the sieves N. These sieves remove the coarse matter, such as weeds, sticks, straws, oats, &c., which are discharged through suitable side spouts, while the grain is discharged into feeding-tubes *x*, and drop into the chamber M between the double separating-trunks L L, and passes over the cant-boards *h*, which spread the grain into the narrow passage *i*, when it falls on the dividing peak or cone *m*. This divides the grain into equal parts, one-half falling into each trunk L and discharging at the bottom thereof.

There being two distinct separating-trunks, L L, a single narrow passage into the chamber M would not answer; and hence I have provided the series of feed-tubes *x x*, to allow the draft from the outer separating-trunk to pass between them and carry the screenings into the chamber E. The screenings and light or second quality of grain required to be separated are drawn by the air-suction into the chamber E, from whence it flows into the separating-trunk F, where all the light and worthless screenings are drawn out by the air-suction, the heavy part or second quality of grain being discharged at the bottom of said trunk F. The light worthless screenings are drawn into the large chamber D, where they settle

and fall out through the valve *a*, the dust going to the fan.

It will be seen that by my construction of the parts, as above described, the grain, as it passes down through the seed-chamber M, is, by the cant-boards *h*, so distributed as to reach the passage *i* in a steady stream or sheet; and this passage *i* being vertical, narrow, and elongated, the grain is discharged uniformly in a vertical stream upon the peak *m*, and by the same evenly divided, so that one-half passes into each of the air or separating trunks L L. These trunks are entirely open at the bottom, so that the air can be drawn in and the grain discharged freely.

By the use of the two separating-trunks L L, one on each side of the seed-chamber M, I obtain double the amount of separating-surface in a machine of a given size.

The first quality of grain is discharged at the bottom of the trunks L L, while the second quality is discharged at the bottom of the trunk F, and the screenings are discharged from the bottom of the chamber D. The screenings and second quality of grain, which pass into the chamber E, are thus subjected to another current of air in the separating-trunk F, to be recleaned, and the second quality of grain and screenings entirely separated.

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

1. In a grain-separator, a shaft, *v*, running in bearings connected to the shaker-frame O, and provided with friction-pulleys S S, in combination with the eccentrics V and the springs *s*, substantially as and for the purposes herein set forth.

2. The two open-bottomed air-trunks L L, in combination with the central seed-chamber M, substantially as and for the purposes set forth.

3. The combination of the two air-trunks L L, with upward draft through the same, and the central seed-chamber M, having a single outlet near the bottom, on each side, into the air-trunks, as set forth.

4. A series of feed-tubes, *x x*, in combination with the seed-chamber M and the two separating-trunks L L, substantially as and for the purposes herein set forth.

5. The seed-chamber M, provided at or near its lower end with the narrow vertical elongated passage *i*, in combination with the peak *m* below said passage, and the outlets *n n*, substantially as and for the purposes herein set forth.

6. The combination of the two open-bottomed air or separating trunks L L with a central seed-chamber, M, and the screenings-chamber E, substantially as herein set forth.

7. The screenings-chamber E, in combination with the open-bottomed trunk F, for the purpose of recleaning the screenings, as set forth.

8. The trunk F, located between and in combination with the screenings-chambers E and D, substantially as and for the purposes herein set forth.

9. The combination of the passage M, double open-bottomed trunks L L, chamber E, separating-trunk F, and screenings-chamber D, substantially as and for the purposes herein set forth.

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

H. A. BARNARD.

Witnesses:
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