2 Sheets—Sheet 1.

L. MORGAN.

Grain-Separators.

No. 208,257. Patented Sept. 24, 1878.

Fig. 1.

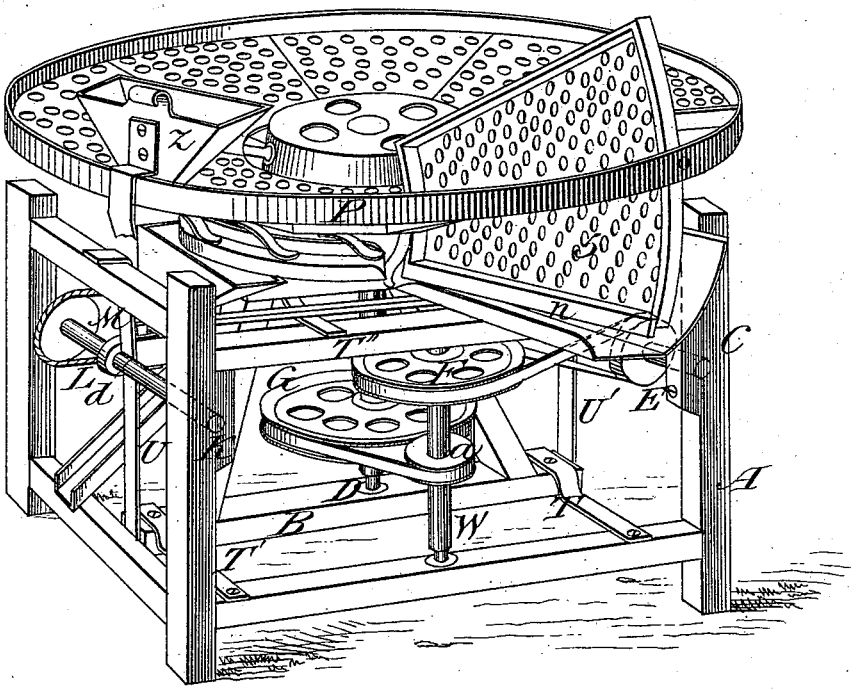
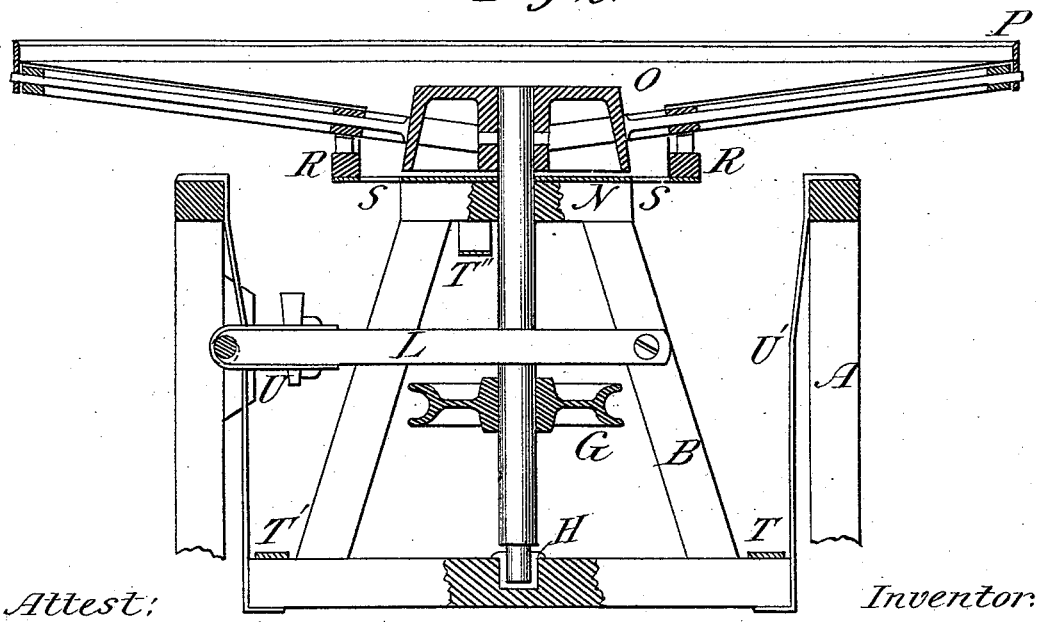


Fig. 2.



Attest:
J. Otto Ehbets.
Irving T. Ford.

Inventor:
Lyman Morgan
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2 Sheets—Sheet 2.

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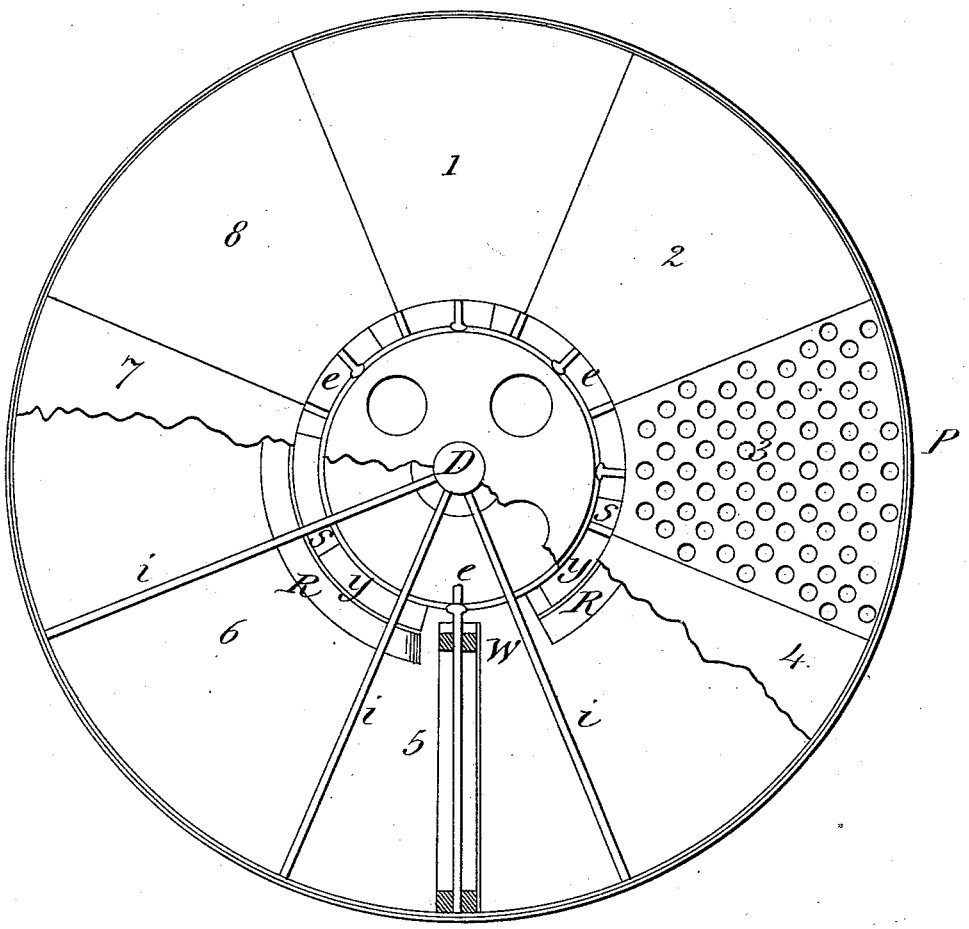

Fig. 3.

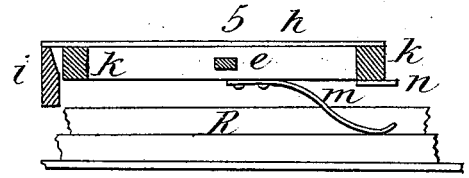

Fig. 4.

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By E. H. Bottum

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UNITED STATES PATENT OFFICE.

LYMAN MORGAN, OF PORT WASHINGTON, WISCONSIN.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **208,257**, dated September 24, 1878; application filed July 16, 1878.

To all whom it may concern:

Be it known that I, LYMAN MORGAN, of Port Washington, in the county of Ozaukee and State of Wisconsin, have invented certain new and useful Improvements in Cockle-Separators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of machines for cleaning wheat from cockle-seed and other impurities which employ a surface caused to move while the uncleaned grain is projected upon it, and which surface is filled with small pockets or indentations for the reception of the cockle and other impurities, but made so small that the grain itself cannot find lodgment in them.

My improved separator makes use of a large conically-depressed revolving disk, upon which the grain is thrown, set in a frame and provided with proper means for being shaken horizontally, and also arranged to be tilted by separate sections to dislodge the impurities caught in the cavities, which device of a horizontal disk is arranged to be moved under the wheat falling upon it. An arrangement to shake the table, so as to separate out the impurities, and an arrangement for tilting it by sections, so as to dislodge the impurities caught in the cavities, constitute my invention.

In the accompanying drawings like letters refer to corresponding parts throughout.

Figure 1 is a perspective view of the whole machine. Fig. 2 is a vertical section of the same through the center. Fig. 3 is a view of the top of the machine, and Fig. 4 shows the construction and arrangement of the separate sections.

A is the frame-work of the machine, usually constructed of wood, and consisting of four upright posts, placed at the corners of a rectangle, and connected by four horizontal girts near the bottom and a like number near their top. Within the frame A the triangular vibrating frame B, which consists of a horizontal base and two side pieces inclined toward the center, is suspended by means of two iron straps, U U′, fastened at their upper ends to two opposite side girts, and at their lower ends to the opposite ends of the base of triangular frame B.

Frame B is stayed in a vertical position by means of two parallel iron bars, T and T′, which are pivoted to its base, and a parallel side girt, in the manner shown in Fig. 1, and by a similar stay at its top T″. This method of staying permits the free vibration of frame B endwise. N is a block, securely fastened to the top of the side pieces of frame B. D is a strong vertical shaft, stepped in the base of B and journaled in N, as shown in Fig. 2, and provided with pulley G. C is a shaft, journaled at its opposite ends in two of the posts of the main frame, and provided with pulley E and suitable means for its connection with the driving power. W is an upright shaft, journaled in two side girts, as shown in Fig. 1, and provided with pulleys *a* and F. A belt connects pulleys E and F, and another belt *a* and G, and motion is thus communicated from C to D. K is a shaft, having a crank or eccentric in its center *d*, provided with a pulley, M. K is journaled in two posts of the main frame, and is on the opposite side from and parallel with C. K is driven through a belt connecting pulley M and a pulley on C. (Not shown.)

The crank *d*, through pitman L, pivoted to frame B, gives frame B and shaft D a horizontal shake motion.

Fig. 3 is the place for the reception of the wheat. It consists of a frame-work formed of circular rim P and the hub O, which are connected by radial arms *i i i*. I usually construct it with eight radial arms. Between each pair of arms is pivoted, by means of shaft *e*, pivoted in rim P, and hub O, one of the segments 1 2 3 4 5 6 7 8, in such a manner that when left free they will swing into the vertical position shown by 5. The upper face of the segments is covered with zinc, with small, nearly hemispherical, cavities punched therein, as shown at 3, which are just of a size not to contain a kernel of wheat, but holding cockle-seed and other impurities of less size than a kernel of wheat. Between the hub O and the inner end of the segments there is left a space of two or three inches breadth.

Upon N is placed a strong circular plate, S, formed with perforations at intervals Y Y and strongly attached to N. Upon the upper side of its outer rim is an annular cam, R. (Shown in section in Fig. 2 and in Fig. 4.) It is cut away at W, for the purpose hereinafter shown.

Fig. 4 represents one of these segments in vertical section. Each is formed of a frame, *k k*, shaped as shown in Fig. 3, covered at the top with the indented zinc *h*, which projects over on one side and rests upon arm *i*, as shown in Fig. 4.

n is a weight, which serves to overbalance the segments and swing them into a perpendicular position when left free. At the inner end of each segment, on the lower side of the frame, is attached a flat spring, *m*, the lower end of which rests and travels upon R and maintains the segments in the position shown at 1 2 3 in Fig. 3 until the spring arrives at W, when, by the depression in cam R, the weighted segment is allowed to tilt into a vertical position. By further movement it is restored to its former position.

My improved separator operates as follows: The wheat is allowed to pass into hopper Z and drop upon the conically-depressed table, whence the wheat rolls off toward and down through the center into a suitable receptacle or spout beneath. The cockle and other impurities are caught and retained in the cavities in the zinc.

Motion by any suitable means is given to shaft C and thence to shaft D, which slowly revolves the wheat-table, while at the same time the shaft K, connected with C by means of pitman L and crank *d*, vigorously shakes the table. This shaking facilitates the separation. As each segment in the revolution of the table reaches the point W, Fig. 3, it tilts into a vertical position and empties the impurities held in the cavities into a receptacle properly placed beneath, the wheat having all run off that part of the table when the segment reaches that position. The farther revolution of the table rights the segment, the next one is tilted, and so on, a constant stream of cleaned wheat and an intermittent stream of cockle or other impurities being delivered.

I claim as my invention—

1. In a cockle-separator, a table set horizontally and arranged to be shaken and horizontally revolved at the same time, substantially as and for the purposes set forth.

2. A horizontally-placed concave or conical table, constructed in sections, each formed with cavities, and arranged to tilt separately for emptying the impurities, substantially as and for the purposes set forth.

3. The combination of the table formed in sections, as described, shaft D, and cam R, substantially as and for the purposes set forth.

4. A segment, 5, with zinc covering, provided with pivoted rod *e*, spring *m*, and weight *n*, substantially as and for the purposes described.

5. The combination of frame A, vibrating frame B, and revolving table, substantially as and for the purposes set forth.

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

LYMAN MORGAN.

Witnesses:

E. H. BOTTUM,

IRVING T. FORD.