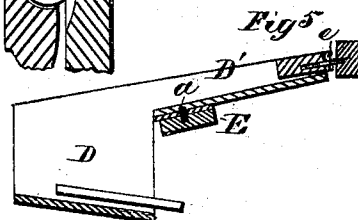
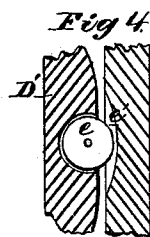
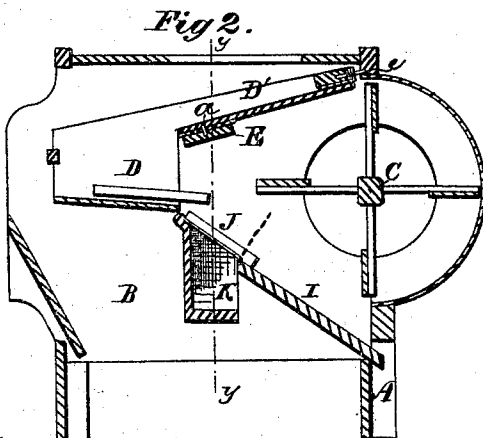
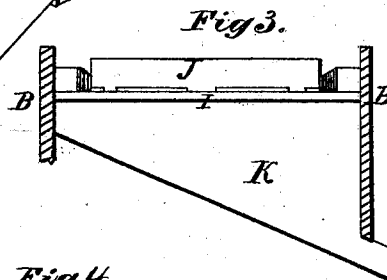
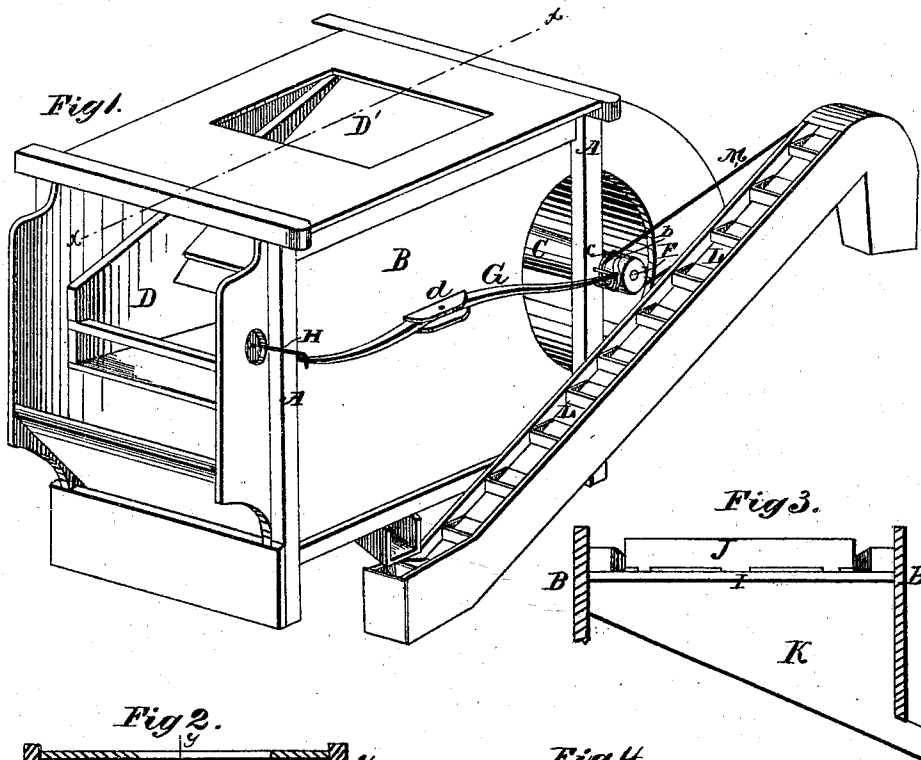


E. LOMBARD.

Reciprocating Winnowers.

No. 144,116.

Patented Oct. 28, 1873.



Witnesses;
H. C. Clark.
Fred. K. Swett.

Inventor.
E. Lombard.
By Dyer, Beadle & Co.

Atty.

UNITED STATES PATENT OFFICE.

ERASMUS LOMBARD, OF PLYMOUTH, MICHIGAN, ASSIGNOR TO HIMSELF
AND AUGUSTUS H. COLBY, OF SAME PLACE.

IMPROVEMENT IN RECIPROCATING WINNERS.

Specification forming part of Letters Patent No. **144,116**, dated October 28, 1873; application filed
April 8, 1873.

To all whom it may concern:

Be it known that I, ERASMUS LOMBARD, of Plymouth, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Grain-Separators; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, and being a part of this specification, in which—

Figure 1 is a perspective view. Fig. 2 is a longitudinal vertical section on the line *xx* in Fig. 1. Fig. 3 is a partial cross-section on the line *yy*, showing the valve and opening in the grain-board and the spout to the elevator. Fig. 4 is a sectional plan of the top girt, showing the segmental recess therein, wherein the friction-roller at the back of the shoe plays; and Fig. 5 is a longitudinal section of the shoe detached.

Like letters refer to like parts in the several figures.

The nature of this invention relates to an improvement in grain separating and cleaning machines, having for its object to produce a vibration in the shoe at or near its center, instead of shaking the front end only, as heretofore. The invention consists in the peculiar method of hanging or supporting the shoe so that it may oscillate on a central axis, as will be fully described hereinafter.

In the drawing, A represents the frame, B the casing, and C the fan-shaft, of a grain-separator of ordinary construction. D is the shoe, provided with the inclined stationary grain-board D' at the upper end, upon which the grain falls from the hopper. Instead of being suspended by straps and hangers, as heretofore, I support the shoe by resting it on a transverse girt, E, Figs. 2 and 5, extending across the casing, with a stud, *a*, rising from its middle and passing through an opening in the lower part of the grain-board D', thus pivoting the shoe on said stud. To vibrate the shoe I secure a cam-grooved cam-shaft, F, on the projecting end of the fan-shaft, with a zigzag or cam groove, *b*, cut in its periphery,

into which projects one end of a curved lever, G, pivoted at its middle in a channel-plate, *d*, bolted to the casing. A link, H, connects the other end of the lever to the side of the shoe, passing through a hole in the casing.

In the rotation of the fan-shaft the lever G will be vibrated by the action of the cam-groove, and through it the shoe on its pivot, shaking both ends of it, and thus insure a quick and uniform distribution of the grain falling from the hopper upon its grain-board.

Heretofore the shoe has been pivoted at the upper end and vibrated at the lower end; consequently the grain-board received but little vibration, constantly lessening as it approached the upper end, where the grain was received on it, thereby causing a fluctuating and unequal distribution to the screens.

To support and guide the upper end of the shoe in its oscillation, I pivot a horizontal friction-roller, *e*, Figs. 2, 4, and 5, at the center of the top cross-bar of the shoe-frame, from the edge of which it projects into a segmental recess, *e'*, in the face of the top end girt of the main frame of the machine. I is the grain-discharging board, upon which the clean grain falls from the screens, and over which it passes to an opening under the fan-case, and is discharged upon the floor. In the upper part of the board I is a transverse slot, closed by a hinged flap, J, arranged to open from the lower side of the slot, into which all the grain then passes, falling into a lateral spout, K, which discharges it at the side of the machine. L is an endless-belt elevator, whose leg or casing is removably attached to the side of the machine in such a manner that the grain discharged by the spout K is received in the shoe of said elevator, whose belt is driven by a cord, M, passing around a groove, *c*, in the cylinder at the end of the fan-shaft, and around the driving-pulley at the top of the leg, whence a spout, L', conveys the elevated grain into a bag or other receptacle, thereby saving the labor of shoveling it up from the floor.

When not required, the elevator may be

removed from the machine. The grain can then be discharged at the end or side of the mill, as the flap is opened or closed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a grain-separator, the arrangement of the shoe to vibrate on a central axis, substantially as shown and set forth.

2. The combination of the centrally-pivoted shoe D with the friction-roller *e*, arranged to roll in recess *e'*, and link H, lever G, and cam-grooved fan-shaft F, as described.

ERASMUS LOMBARD.

Witnesses:

H. F. EBERTS,
H. S. SPRAGUE.