J. W. MORRISON.
Grain-Separator.

No. 216,212. Patented June 3,.1879.

Fig.1

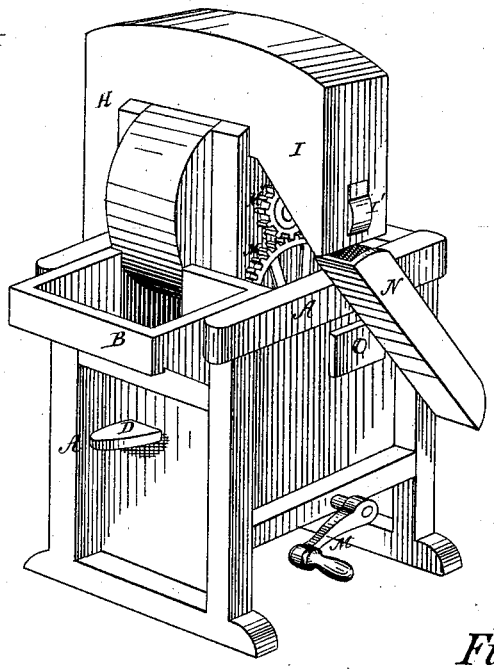


Fig 2

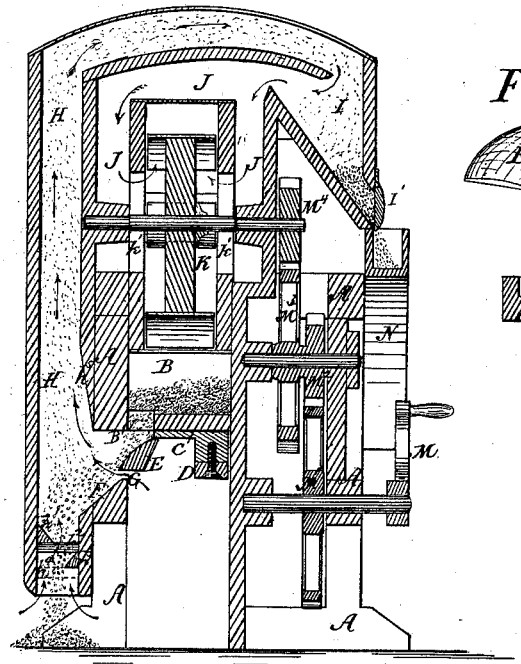
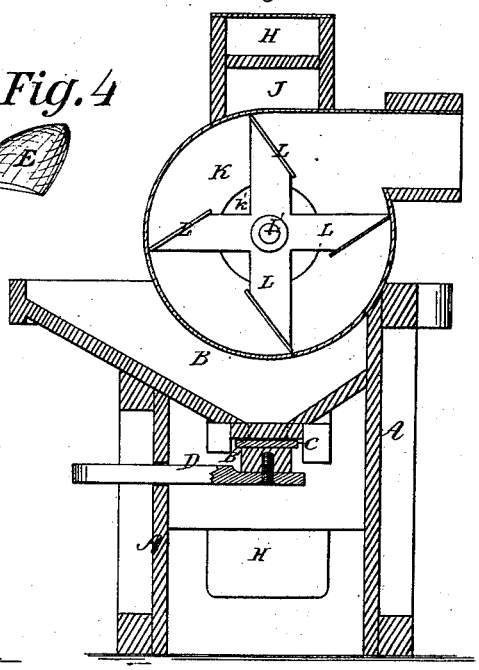


Fig.4

Fig.3



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JAMES W. MORRISON, OF CLINTON, ILLINOIS.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **216,212**, dated June 3, 1879; application filed February 24, 1879.

To all whom it may concern:

Be it known that I, JAMES W. MORRISON, of Clinton, in the county of De Witt and State of Illinois, have invented certain new and useful Improvements in Grain-Separators, of which the following is a specification.

My invention relates to that class of gravity grain-separators in which a vertical draft-tube is arranged upon one side of the machine and passes over a fan-chamber, with which it communicates, so that the wheat passing into the lower end of the draft-tube is subjected to the action of the draft, and the impurities thereby separated therefrom.

The object of my invention is to provide an improved means of feeding the material to the draft-tube from the hopper, and in subjecting it to the action of a supplemental air-draft to aid it in being fed and distributed across the draft-tube; and the improvement consists in arranging a double-convex distributing-board and a delivery-board below the discharge-opening of the hopper, the one overlapping the other, in connection with an air-port between the contiguous edges of the distributing and delivery boards, and the draft-tube communicating with both the distributing and delivery boards by a flaring mouth, forming an enlarged space in the draft-tube at this point, as will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a perspective view of my improved machine; Fig. 2, a vertical transverse section; Fig. 3, a vertical longitudinal section, and Fig. 4 a detail view.

The main frame and casing A supports the hopper B, provided at one side with a discharge-opening, B′, which is opened and closed by a slide-valve, C, operated by a hand-lever, D, extending through the casing to the front of the machine. A distributing-board, E, is placed below the discharge-opening, and is of oval cross-section, and flaring toward its lower edge.

The delivery-board F is arranged so that its upper edge will underlap the lower edge of the distributing-board, and placed a sufficient distance below it to leave an air-port, G, between them, so that an air-current may operate upon the material as it leaves the distributing-board.

The draft-tube H is provided with deflector-boards h^1, h^2, h^3, and h^4, one arranged upon each of its sides, to deflect the material in sheets across the central portion of the draft-tube in a downwardly zigzag course. The throat of the draft-tube, above the deflector-boards, has its inner side, h^5, made flaring toward the distributing and delivery boards E F, to enlarge the mouth of the tube and form but slight obstruction to the passage of the lighter materials to be drawn up the draft-tube with the air-current. The draft-tube extends vertically a suitable distance, and then passes over and across the machine, and communicates with a dust chamber or trunk, I, and also with a return air-chamber, J, which extends across and down to either side of the fan-chamber K, and communicates with its central openings, k' k'.

The fan-chamber K is arranged in the central lines of the frame directly above the grain bin or hopper, and has its discharge-opening toward the rear end of the machine. The fan L is secured to its shaft L′, which may be driven directly by a band-wheel from a driving-shaft, or, as in this instance, by a train of gear-wheels, M^1 M^2 M^3 M^4, driven by a hand-crank, M, to speed up the fan to the proper velocity.

The cheat and other impurities are delivered from the dust-trunk through a weighted self-operating valve, I′, to a discharge-spout, N, the valve serving to prevent the air from passing through the discharge-opening to the fan in a well-known manner. The cleaned wheat and the cheat are thus delivered upon opposite sides of the machine, and may be caught in suitable receptacles.

The material is fed to the draft-tube from the distributing-board, which is of paraboloidal shape, being convex both laterally and longitudinally, and made flaring toward its bottom and delivery edge, to more effectually distribute the grain in a thin sheet, which is then operated upon by the draft of air passing through the air-port directly below the distributing-board, which also serves to distribute the material and draw it in a thin sheet or spray across the draft-tube to expose the greatest possible surface to the action of the direct air-current of the draft-tube, while it is also operated upon by the auxiliary air-current from

the air-port G, which carries off a portion of the light impurities before the mass of grain reaches the direct upward current of the draft-tube.

The peculiar form of the distributing-board above described will throw off the grains of wheat as they fall upon it in divers directions, and effect their distribution much more effectually than if a flat surface were employed.

The deflector-boards below the point where the grain is delivered into the draft-tube, being arranged upon each of the four sides of the draft-tube, subject all portions of the material to the action of the full force of the draft by passing it to and fro across the center of the air-current.

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

The combination, in a grain-separator, of the hopper, the double-convex distributing-board, the delivery-board arranged below the same to form an air-port between their contiguous edges, and the draft-tube communicating with the grain-bin by the enlarged flaring space opposite the distributing and delivery boards in such manner that the material is projected in a sheet across the upward air-current of the enlarged portion of the draft-tube by the joint action of the parts hereinbefore described, for the purpose specified.

JAMES W. MORRISON.

Witnesses:
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