J. T. EWAN.

Grain-Separator.

No. 206,711. Patented Aug. 6, 1878.

Fig: 1.

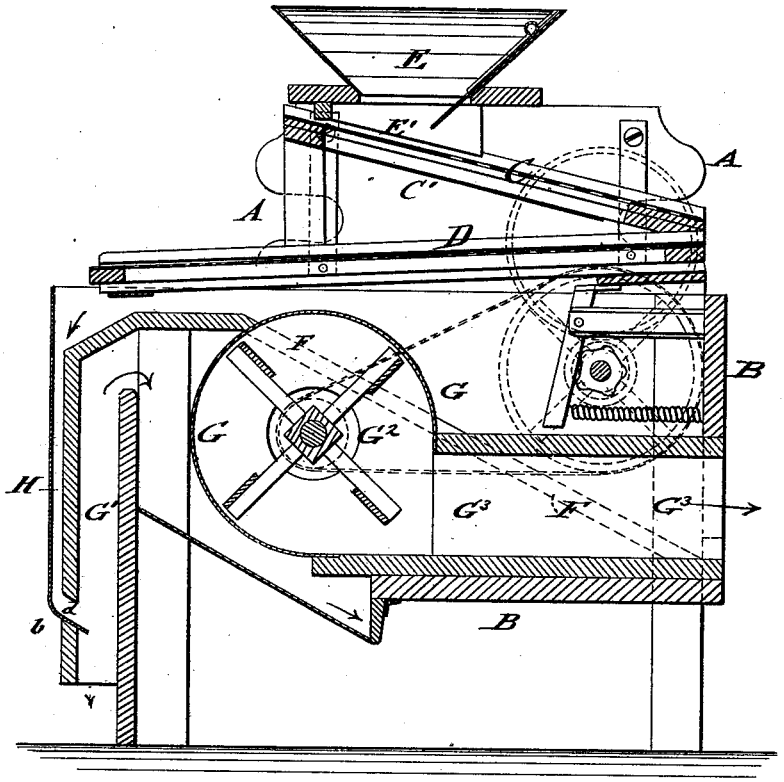
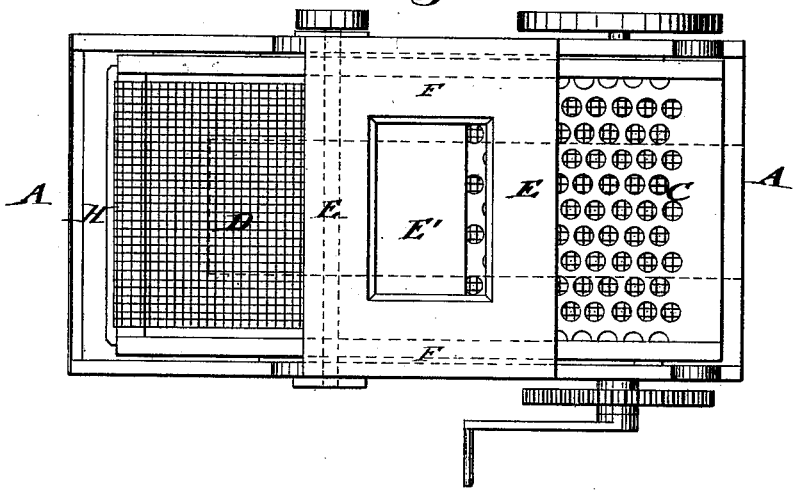


Fig: 2.



WITNESSES:

Achilles Schehl.

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UNITED STATES PATENT OFFICE.

JOHN T. EWAN, OF BETHALTO, ILLINOIS.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **206,711**, dated August 6, 1878; application filed April 29, 1878.

To all whom it may concern:

Be it known that I, JOHN THOMAS EWAN, of Bethalto, in the county of Madison and State of Illinois, have invented a new and Improved Grain-Cleaner, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical longitudinal section of my improved grain-cleaner, and Fig. 2 a plan view of the same.

Similar letters of reference indicate corresponding parts.

This invention has reference to a grain-cleaner of improved construction, in which, in place of the blowing-fan, a suction-fan is used, and thereby a superior separation of the dust and other impurities from the grain obtained; and the invention consists of inclined shaking-sieves, with a top hopper having a false bottom or conducting-board, supported on the lower part of the machine, that is provided with a central suction-fan, conducting side boards, and a grain-conducting leg that opens into a suction-trunk, so as to remove the dust and light impurities.

Referring to the drawing, A represents the upper section, and B the lower section, of my improved grain-cleaner. The upper section, A, is supported on the lower section and connected thereto by suitable fastening devices. It contains a perforated metallic sieve, C, and a wire screen, D, which are arranged at opposite inclination to each other, the first receiving its supply of grain from a top hopper, E, which is provided with the usual feed-regulating board and with a false bottom, E′, that serves for the purpose of taking off the weight of the grain from the shoe or sieve, and controls, in connection with the slide, the regulating of the feed. The false bottom is arranged loosely on the sieve, so as to be taken out or replaced as required, it being of advantage when the grain is comparatively clean, but can be removed when it is very trashy. The false bottom conducts the grain onto the perforated sieve C, which removes the straws, sticks, oats, corn, and other large impurities.

The advantage of the metallic perforated sieve is that these larger impurities pass easily over the smooth surface of the same without being caught, as is the case with wire screens, which are frequently choked by these coarse impurities. The grain passes through the perforations of the sieve and falls directly on an inclined conducting-board, C′, below the same, and from the board to the head of the screen D. This screen is designed to remove the cockle-seed, weed-seed, cracked grain, and all other small substances, the screen being made of coarser or finer wire-gauze, according to the purpose to which it may be applied.

The dirt removed by the screen falls directly into the lower part, B, of the machine onto inclined conducting-boards F, which are arranged at both sides of the central fan-casing G of the lower part, and is finally passed out through front openings on both sides of the exhaust-pipe of the fan-casing G. The grain passes over the lower part of the screen D into a narrow vertical leg, H, and is conducted by an inclined board and opening, *a*, at the lower part of the same, into the suction-leg G^1 of the fan, the inclined conducting-board of the leg H being about five or six inches above the lower end of the suction-leg. The fan G^2 exerts a strong current of air in upward direction in the suction-leg, so as to separate the lighter impurities, and also the light and imperfect grains of wheat or other substances, from the grain, and they being carried over the lateral partition-wall of the suction-leg into the dirt-chamber back of the fan-casing, and then over the inclined bottom of the dirt-chamber and a hinged valve at the lower end of the same to the outside, whenever a sufficient quantity of dirt has accumulated. The heavy or clean grain drops out at the lower end of the suction-leg, and is taken up by a suitable receptacle.

The suction-fan casing G draws in the air through central openings at both sides, the casing and interior of the machine being made perfectly tight, so that there is no possibility to admit the air except by the suction-leg. The exhaust from the fan passes out through an exit-trunk, G^3, at the front end of the machine.

The sieve and screen of the upper part, A, of the machine are reciprocated by any suitable reciprocating mechanism, the one shown in the drawing consisting of a fulcrumed and spring-acted lever, that is operated by a cam

with undulating or wave-like cogs. The cam acts upon the lower part of the lever, while the upper part is connected, by a leather strap or otherwise, to the shoe of the sieves. The shaft of the cam is operated by a crank gear-wheel and pinion, and motion transmitted from the same to the fan-shaft by belt-and-pulley connection. The shoe of the sieves is hung by pivot-straps in the customary manner in grain-cleaners.

The machine, being made in two parts, can be easily moved about, as the parts of the apparatus may be separated for transportation, the connecting parts and reciprocating lever being then detached from the upper section.

The current of the fan may be made stronger or weaker, according to the speed given to the same, according to the grain exposed for cleaning. The main advantage of the suction-fan consists, however, in the uniform distribution of air through every part of the suction-leg, by which the perfect separation of the light impurities from the grain in all parts of the leg is secured.

The superiority of the suction-fan over the blow-fan consists in the more uniform action of the former as compared to the irregular action of the latter, which receives the air at the ends of the drum, so that the ends of the fans catch the air first and throw it out along the sides of the machine, while the center receives scarcely any air at all, the result being an uneven current of air and an unequal cleaning by the stronger current at the sides and the weaker current in the center. Any increase of speed increases these inequalities, so that a larger amount of good wheat or seed passes up with the dust, and is thereby totally lost. This is overcome in my machine by the use of the suction-fan, and also by the use of the metallic sieve and wire screen, which first remove the coarser impurities, while the fan removes finally the lighter impurities.

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

The combination, with the sieve C and screen D, arranged above the fan, of the inclined conducting-boards F F, arranged on either side of the fan, the leg H, having inclined board *b* and opening *a*, the suction-leg G^1, and the suction-fan G^2, all arranged substantially as and for the purpose specified.

JOHN THOMAS EWAN.

Witnesses:
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JOHN H. HICKERSON.