W. W. INGRAHAM.

GRAIN-SEPARATOR.

No. 180,428. Patented Aug. 1, 1876.

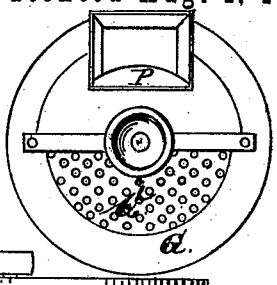

Fig. 4.

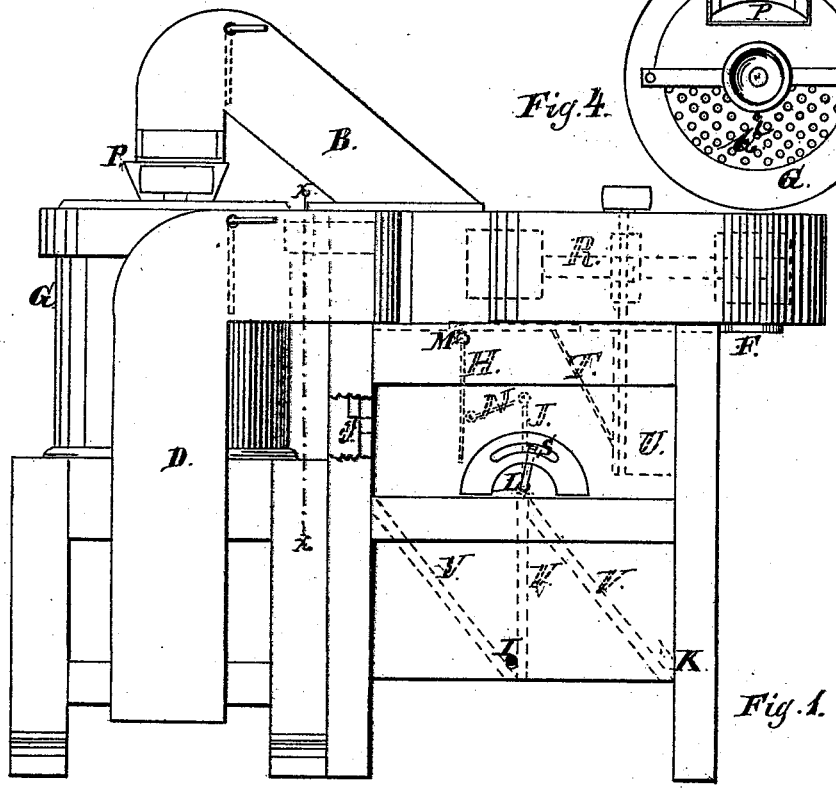

Fig. 1.

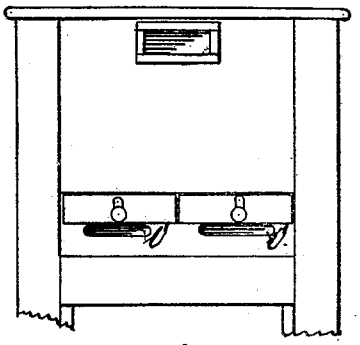

Fig. 5.

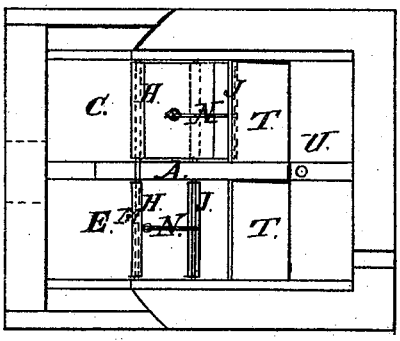

Fig. 2.

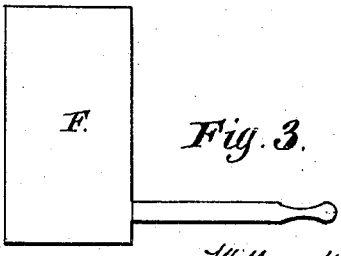

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM W. INGRAHAM, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO EDWARD BEARD, OF SAME PLACE.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **180,428**, dated August 1, 1876; application filed February 3, 1875.

To all whom it may concern:

Be it known that I, WILLIAM W. INGRAHAM, of Chicago, county of Cook, State of Illinois, have invented an Improved Grain-Separator, of which the following is a specification, reference being had to the accompanying drawings, which form a part hereof.

My invention relates to that class of grain-separators which makes a separation by drawing the light grain with the foul material into a separating-chamber, where the light grain is graded and separated from the foul matter.

My invention consists in admitting air directly into this separating-chamber, to regulate the separations therein produced; and it also consists in the pivoted valves and mechanisms for operating them, which control the circuitous direction of the grain through this separating-chamber.

In the accompanying drawings, Figure 1 represents a side elevation of my machine. Fig. 2, the top of the separating-chambers thereof, having the fan-chamber removed. Fig. 3 is a detached plan view of the slide F; Fig. 4, a top view of the cylinder G; and Fig. 5 shows a side elevation taken at the line *x x* in Fig. 1, made particularly to show the air-openings O.

A is a partition, which divides the separating part of my machine into two distinct divisions or chambers. The grain which is drawn over through the suction-pipe B passes into, and is separated in, the division or chamber C, and is there separated as hereinafter described. The grain which is drawn over in the suction-pipe D passes into, and is separated in, the chamber E, as hereinafter described.

This invention relates in no way to the construction of the scouring apparatus G, here shown, and the grain, so far as this invention is concerned, may pass through any process of cleaning between its passing the suction-pipe B and the suction-pipe D. The grain is fed into the scouring or cleaning apparatus G at P on the side of the mouth of the suction-pipe B; and Q is a perforated plate on the top of the cylinder G for the admission of air for furnishing a blast, which is drawn through the grain as it passes into the machine. This blast of air is drawn over through the suction-pipe B, and carries what light grain and other material that it takes from the grain as it is drawn through it down into the chamber C. As the grain passes out of the machine it passes through the lower end of the suction-pipe D, and another blast of air is drawn up through the grain, taking from it another separation, which is drawn over through said pipe D, and is delivered into the chamber E.

Both of the above-described blasts are induced by the action of the suction-fan R, and the mechanisms used to control the air-currents and separate the grain and light material that is drawn over into the chambers C and E are precisely alike in each chamber. In each chamber there are hung two movable deflectors, H and J. The deflector J is rigidly attached to the crank-shaft L, and the deflector H is attached to a loose rod, M, and the two deflectors are connected together by connecting-rods N. These deflectors are both moved by turning the shaft L, by means of the crank S, which projects through a circular slot in the side of the machine. O are air-holes, covered by slides, for the admission of a blast of air directly into the chambers C and E, to assist in controlling the separation which takes place in said chambers. The heavy portion of the grain that is drawn into the chamber C and E falls directly down, and passes out through the side of the machine at openings I, there being an opening I on each side of the machine. The light grain and the dust, &c., is drawn under the deflector H and between it and the deflector J, up over said deflector against the stationary inclined partition T. This partition, extending down below the top of the deflector J, turns the material downward, when another separation takes place, and the grain that remains passes down and out in the openings K in the rear of the machine, while the dust and light foul material is drawn up through the space U behind the partition T into the suction-fan drum, and is thrown out with the blast from the fan R. The grade of the grain that is taken out at the openings I, from the first separation in the chambers C and E, is controlled by turning the crank S, and thereby regulating the

inclination of the deflectors H and J, and the separations are also regulated by letting in more or less air through the openings O. V are partitions forming conveyers for the grain to conduct it out of the machine.

The openings O are also so arranged that the new current of air, passing into the chambers through them, strikes the main current, coming down behind the deflector H nearly at right angles to its course, thus producing additional agitation and a better separation of the material that is brought into the chambers than if the main current of air passed directly through without interruption and agitation.

By admitting air directly into the separating-chambers C and E through the opening O, I am enabled to control the air-blast through these separating-chambers, and have a greater or less draft independently of the draft in the suction-spouts B and D.

I claim—

1. The combination of a grain-separating chamber, provided with openings O at one end, a suction-fan arranged at the other end of said chamber, and a suction-pipe, B, entering the chamber at a point between the fan and the openings, substantially as and for the purpose set forth.

2. The combination of the valve H, pivoted at its upper edge, the valve J, pivoted at its lower edge, connected together by the rod N, and the crank-shaft L, by which they are adjusted, as and for the purposes specified.

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Witnesses:
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