No. 734,761. PATENTED JULY 28, 1903.

B. F. SMITH.

GRAIN SEPARATOR AND GRADER.

APPLICATION FILED JUNE 3, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

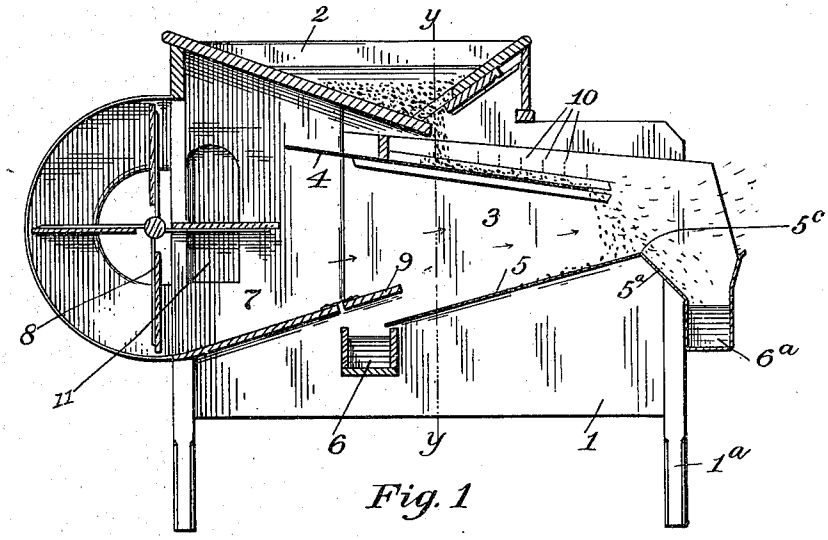


Fig. 1

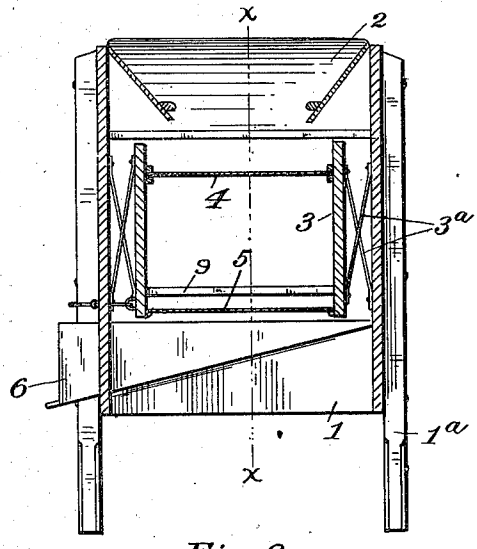


Fig. 2

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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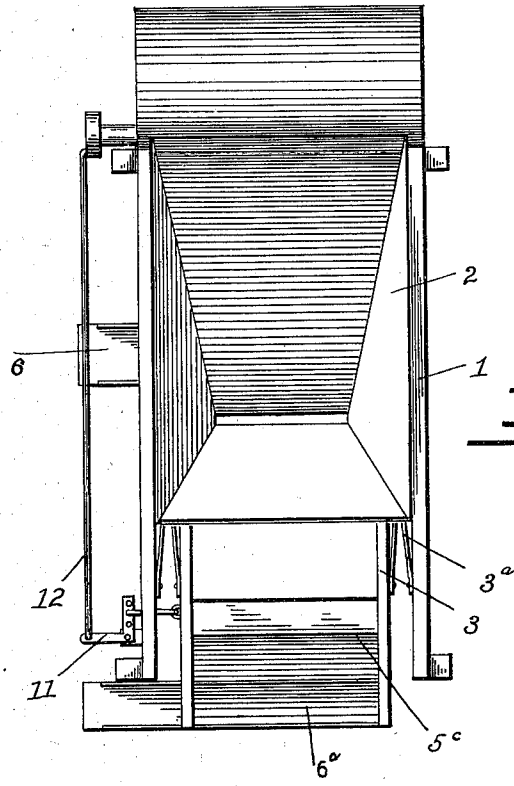


Fig. 3.

WITNESSES:

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No. 734,761. Patented July 28, 1903.

UNITED STATES PATENT OFFICE.

BENJAMIN F. SMITH, OF THURSTON, OHIO, ASSIGNOR OF ONE-HALF TO WILLIAM G. SMITH, OF COLUMBUS, OHIO.

GRAIN SEPARATOR AND GRADER.

SPECIFICATION forming part of Letters Patent No. 734,761, dated July 28, 1903.

Application filed June 3, 1901. Serial No. 62,943. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. SMITH, a citizen of the United States, residing at Thurston, in the county of Fairfield and State of Ohio, have invented certain new and useful Improvements in Grain Separators and Graders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide an improved machine for cleaning grain—that is, separating chaff, cockle, cheat, and other particles from the grain—and simultaneously grading the grain. This has been proposed before.

My invention resides in a simplified, cheapened, and more effective construction, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a central longitudinal vertical sectional view or a view taken on a plane indicated by the line *x x*, Fig. 2. Fig. 2 is a transverse vertical sectional view taken on a plane indicated by the line *y y*, Fig. 1. Fig. 3 is a top plan view illustrating also a means for agitating the wind-chest.

In the views, 1 designates the main casing or frame of the machine, which can be supported on appropriate legs 1^a.

2 is a hopper constructed in the upper portion of the casing or frame 1. The discharge from the hopper can be regulated by a slidable piece that enlarges or diminishes the opening therefrom.

3 is a wind-chest that is loosely supported by straps 3^a within the main casing 1. This wind-chest is arranged below the hopper and has in its upper end a longitudinally inclined and adjustable scatter-board 4, onto which the material to be treated falls from the hopper. The wind-chest also has a doubly and oppositely longitudinally inclined bottom 5 5^a, the portion 5 extending backward and discharging into an inclined spout 6 and the part 5^a extending forward and terminating in and discharging into a spout 6^a at the front of the machine.

At the rear end of the machine is located the fan-chamber 7 and a fan 8 therein.

The wind-chest can be agitated or shaken by any suitable and well-known means—for example, as illustrated in Fig. 3, a bell-crank lever 11, pivoted to the side of the stationary main casing and linked to the wind-chest, and a rod 12, eccentrically connected with the power-driven shaft of the fan and the bell-crank 11; but the means for shaking the wind-chest are not herein claimed as novel. Between the sides of the wind-chest and the sides of the main casing there can be provided a canvas or other flexible webbing to prevent the air-blast from passing between said parts.

A baffle-board 9 is secured in the wind-chest above the lower end of the inclined portion 5 of the bottom to prevent the air-blast from striking said inclined portion and preventing the free descent of the grain.

The wind-chest is provided with a scale, as shown at 10, to aid the operator in adjusting the scatter-board to properly grade the grain.

The operation of the machine is as follows: The mixture to be treated is fed, say, from a threshing-machine into the hopper 2. It falls thence upon the agitated scatter-board, where it is evenly spread out, and then over the lower edge of the board. In its descent the blast of air from the fan passes through the mixture, impelling the lighter parts—the chaff, cheat, &c.—out at the opening at the front of the machine. The heavier particles (the grain) fall upon the double incline 5 and 5^a and run in one direction or the other, according to the side on which they fall, to the spouts 6 and 6^a. Grains of inferior weight will be impelled by the blast forward beyond the apex 5^c of the double incline, while those of superior weight will fall inside of said apex. The grain is thus not only cleaned, but is graded into two sorts, the character of either sort being variable at will, either by regulating the speed of the fan or by adjusting the scatter-board; but it is preferable, to avoid complication of machinery, that the speed of the fan be constant. Hence grading is best effected by adjusting the scatter-board. If for any reason, however, the blast should not be constant, that can be regulated by opening more or less or closing a vent 11 in the fan-chamber.

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

1. In a machine for separating and grading grain, the combination with the main stationary casing and a fan therein, of an agitable wind-chest loosely hung in said casing, means for agitating said wind-chest, a grain-grading bottom fixed in said agitable wind-chest consisting of two longitudinally-inclined surfaces meeting in an apex, and an adjustable longitudinally-inclined scatter-board in said wind-chest adapted to receive the grain from the hopper, scatter the same and discharge it above said apex.

2. In a machine for separating and grading grain, the combination with the main stationary casing and a fan therein, of an agitable wind-chest loosely hung in said casing, means for agitating said wind-chest, a grain-grading bottom fixed in said agitable wind-chest consisting of two longitudinally-inclined surfaces meeting in an apex, a baffle-board to direct the air-blast from the rearwardly-inclined portion of the grading-surface, and an adjustable longitudinally-inclined scatter-board in said wind-chest adapted to receive the grain, scatter the same and discharge it above said apex and onto said grading-bottom.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN F. SMITH.

Witnesses:
GEORGE M. FINCKEL,
GEORGE W. ALFORD.