R. B. ROBERTSON.
Grain-Separators.

No. 207,985. **Patented Sept. 10, 1878.**

FIG. 1.

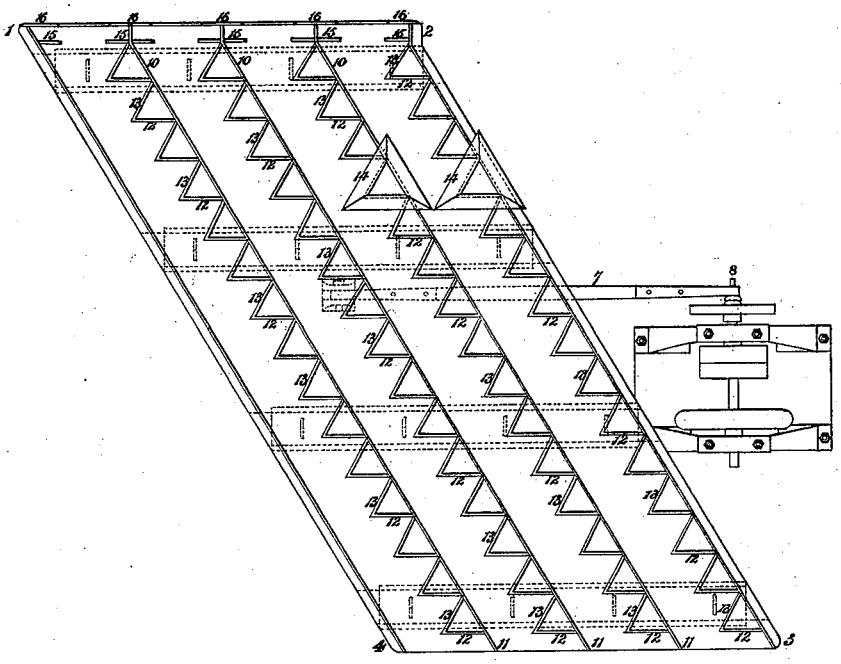


FIG. 3.

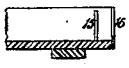


FIG. 4.

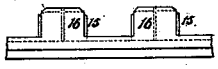
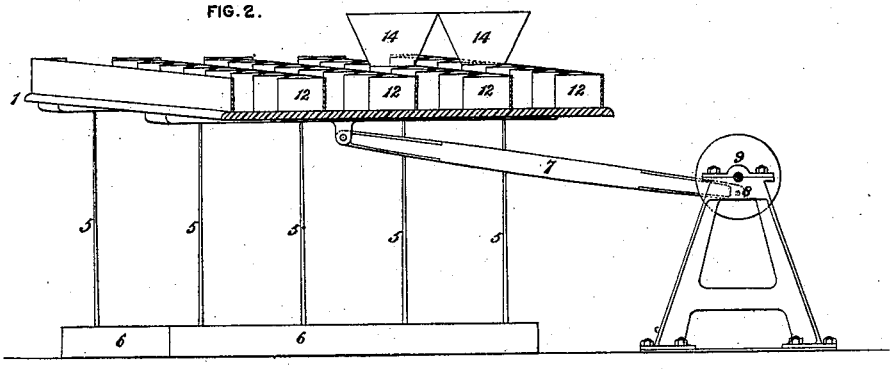


FIG. 2.



Witnesses.
Harry Smith
Henry Howson Jr.

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UNITED STATES PATENT OFFICE.

ROBERTSON B. ROBERTSON, OF GLASGOW, SCOTLAND.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **207,985**, dated September 10, 1878; application filed April 29, 1878.

To all whom it may concern:

Be it known that I, ROBERTSON BLAIR ROBERTSON, of Glasgow, in the county of Lanark, Scotland, have invented improved separating apparatus for crushed or partially-ground maize or other granular matter, of which the following is a full and particular specification.

My invention has for its object to effect a more complete separation than hitherto accomplished of the constituents of maize or Indian corn—that is, the embryo or germ and the perisperm—in order that these constituents may be applied in a more advantageous and satisfactory manner to the purposes for which each is best suited. My improved apparatus may also be advantageously used for separating entire grain or crushed grain, or granular matters of other kinds.

The improved separating apparatus is a slightly-inclined tray, fitted with vertical surfaces which are inclined to each other in plan, the tray having a horizontal jigging motion imparted to it, so as to cause the grain fragments to strike the vertical surfaces, whereby the desired separation is effected.

The use for similar purposes of vertical angular striking surfaces is not new nor claimed by me; but my invention consists in constructing and combining or arranging such parts in the improved manner shown on the accompanying drawings, and hereinafter particularly described.

Figure 1 of the drawings is a plan, and Fig. 2 is a sectional elevation, of the separating apparatus. Figs. 3 and 4 are a vertical section and elevation of a portion of the upper end of the tray.

The tray 1 2 3 4 is of a rhomboidal form in plan, and is placed at a slight inclination to the horizontal, 1 2 being its higher end, and 3 4 its lower end. This tray is carried by tapered supports 5, firmly fixed in bearing-blocks 6 at their bottom ends, and made of suitable elastic wood capable of bending and springing with the horizontal jigging motion of the tray. This horizontal jigging or reciprocating motion is imparted to the tray in a direction parallel to its upper end, 1 2, and lower end, 3 4, by a connecting-rod, 7, jointed to a lug or staple on its under side, and actuated by a crank or eccentric pin, 8, on a revolving shaft, 9, driven in any convenient manner, the pin 8 being by preference adjustable to admit of the reciprocating stroke being lengthened or shortened if required.

The sides 1 4 2 3 of the tray are inclined in plan, so as while parallel to each other to make angles of, by preference, sixty degrees of the circle with the ends 1 2 and 3 4, and the upper surface of the tray is divided by vertical partitions 10 11, parallel to the sides 1 4 and 2 3, into as many compartments as may be convenient. A single compartment would answer, as separate quantities of materials are operated on in each compartment, but there is an obvious advantage in combining several compartments, as shown in the drawings.

Along one side of each compartment a series of vertical surfaces, 12 13, are formed, so as to be alternately parallel to the ends 1 2 and 3 4, and inclined, by preference, at sixty degrees of the circle thereto and to the sides 1 4 and 2 3, so as in plan to form a series of triangles. It is essential for the object in view that the number of these triangles, which are all alike, should in each compartment exceed nine, while it is in practice found best to have about fifteen of them, as shown in the drawing.

The materials to be operated on are fed into one of the triangles in each compartment—say, the fourth or fifth one from the upper end—and the lower side of this triangle, or that parallel to the ends 1 2 and 3 4, is made open, so that the materials may enter thence into the compartment. A small feed-hopper, 14, is fitted to each of the entering triangles; but in the drawings two of the compartments are represented as without their feed-hoppers, to show the more plainly the uninterrupted series of triangles.

The reciprocating or jigging motion of the tray causes the grain to strike against the various inclined surfaces, and a separation between the heavier and lighter particles is thereby gradually effected, the heavier particles being finally delivered at the lower end, 3 4, of each compartment, and the lighter particles at the higher end, 1 2, any convenient vessels or bags being placed to receive the materials in each case.

As three or four of the angles are interposed between the inlet and the outlet for the light particles, the escape of any heavy grain through the said outlet is effectually prevented, whereas in separators of this class as usually constructed the outlet for the light grain is close to the inlet for the mixed grain to be separated, and in consequence much heavy grain passes out with the light particles.

At the higher end, 1 2, of the tray the discharge of the materials is to some extent checked by lateral boards or plates 15 16, fixed parallel to the end, and a slightly-raised lip is also formed across the bottom of the opening or outlet from each compartment, which lip keeps back any heavy particles that may be accidentally carried thus far, and with the lateral pieces 15 16 insures a more perfect separating action.

The heavier and lighter particles of the crushed or partially-ground maize, which are very completely separated by my improved apparatus, are, respectively, the embryo or germ and the perisperm; and the former, when thus separated, may be more satisfactorily treated than heretofore for the obtainment of its oil, (ordinary oil-presses being used for that purpose,) while the latter may be converted into flour or starch in the ordinary way, and forms a comparatively larger yield than is obtained by the processes heretofore in use.

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

1. A grain-separator tray having one or more compartments, provided with a series of triangles along one side, a grain-inlet, and the outlets at opposite ends, three or more of said triangles being interposed between the said inlet and the outlet for the light particles of grain, all substantially as and for the purpose set forth.

2. In a grain-separator, the combination of a tray-compartment having a series of triangles, one of which has an opening at the bottom, with a removable hopper, substantially as described.

R. BLAIR ROBERTSON.

Witnesses:
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LOCK MOORE.