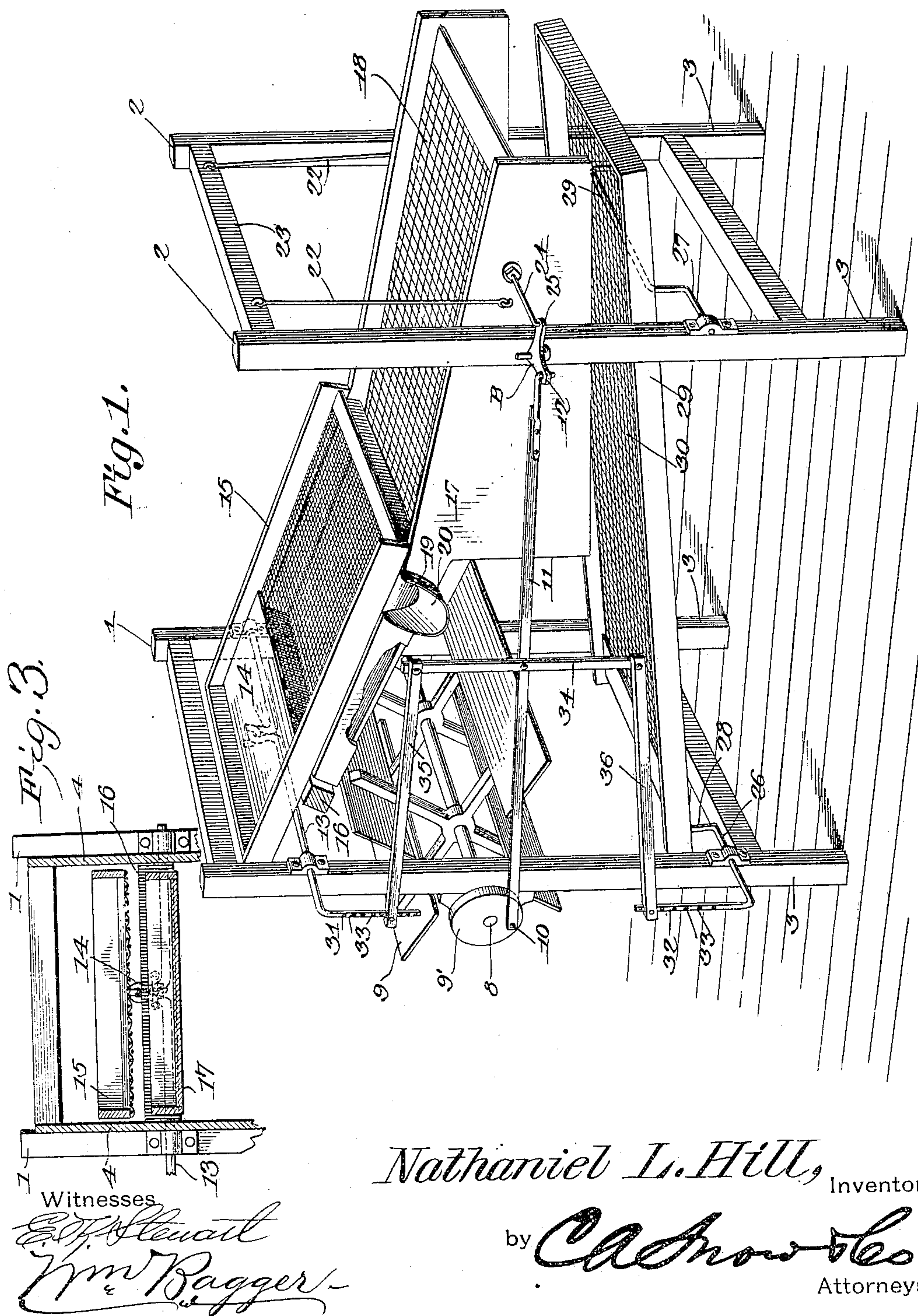


PATENTED JULY 10, 1906.

APPLICATION FILED JULY 25, 1905.

2 SHEETS—SHEET 1.



*Nathaniel L. Hill,* Inventor.

by *Cashmore*  
Attorneys

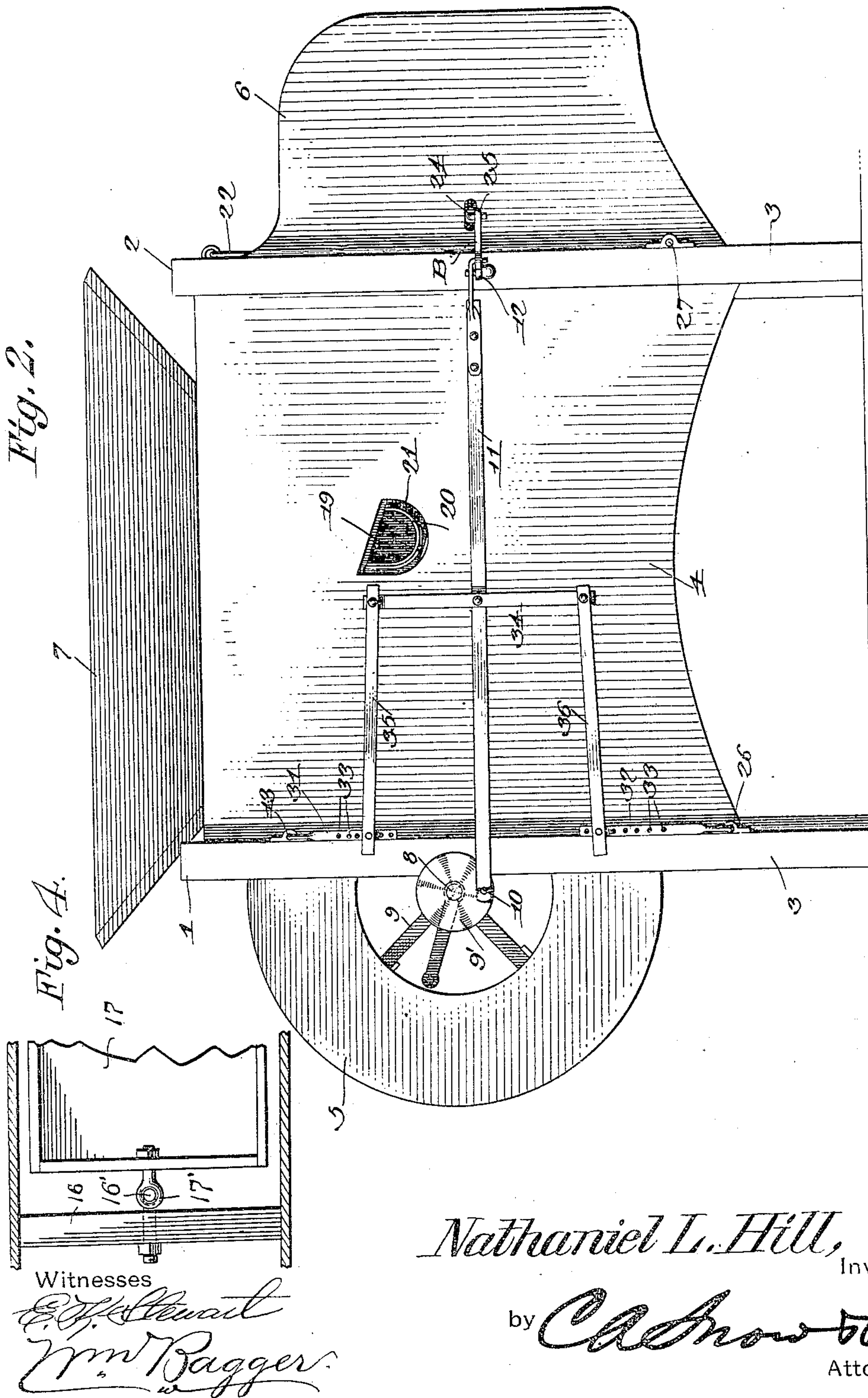
No. 825,390.

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GRAIN GRADER.

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# UNITED STATES PATENT OFFICE.

NATHANIEL L. HILL, OF ROCHESTER MILLS, PENNSYLVANIA.

## GRAIN-GRADER.

No. 825,390.

Specification of Letters Patent.

Patented July 10, 1906.

Application filed July 25, 1905. Serial No. 271,238.

*To all whom it may concern:*

Be it known that I, NATHANIEL L. HILL, a citizen of the United States, residing at Rochester Mills, in the county of Indiana and State of Pennsylvania, have invented a new and useful Grain-Grader, of which the following is a specification.

This invention relates to devices for cleaning, purifying, and grading grain; and it has for its object to simplify and improve the construction and operation of this class of devices.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that the right is reserved to any changes, alterations, and modifications to which recourse may be had within the scope of the invention and without departing from the spirit or sacrificing the efficiency of the same.

In said drawings, Figure 1 is a perspective view of a machine constructed in accordance with the principles of the invention, the entire casing having been removed for the purpose of exposing the interior construction. Fig. 2 is a side elevation showing the machine complete. Fig. 3 is a transverse sectional detail view. Fig. 4 is a detail plan view.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

In the construction of this improved machine four uprights or corner-posts are usually employed, the front posts being designated 1 1 and the rear posts 2 2. These posts are suitably spaced apart and connected with each other and are extended downwardly to form the legs 3. The casing 4, which is of the ordinary construction in this class of machines, includes a fan-casing 5 and tail-boards 6. A feed-hopper 7 has also been shown as being supported upon the casing.

The front posts 1 1 are provided with bearings for a shaft 8, carrying the fan 9, said shaft being driven in any convenient manner, either manually or from some suitable source of power. One end of the shaft 8 carries a

disk 9', provided with a wrist-pin 10, which is connected by a pitman 11 with one arm 12 of a bell-crank lever B, which is fulcrumed upon one of the posts 2.

The posts 1 1 are provided with bearings for a rock-shaft 13, having an upwardly-extending crank portion 14, which pivotally supports the front end of the casing of the cleaning-screen 15. The latter is inclined in a downward and rearward direction and is slidably supported upon the casing 17 of the chaffing-screen 18, which latter is likewise inclined downwardly and rearwardly, although to a less degree than the inclination of the screen 15. The portion of the casing 17 which extends under the cleaning-screen 15 constitutes a box or casing to receive the cockle-seed and small grain which is separated through the screen 15, said box or casing being provided at its lower end with an outlet 19, having a spout 20, which extends through an opening 21 in the adjacent side of the casing.

The upper end of the screen-casing 17 is pivotally connected with the central portion of a cross-bar 16 in the casing, said cross-bar having a pin 16' engaging a loop or eye 17' upon the screen-casing. The lower end of the screen-casing 17 is suspended by means of links 22 from a cross-piece 23, which connects the upper ends of the posts 2 2. Said screen-casing is also connected by means of a link 24 with an arm 25 of the bell-crank lever B.

The posts 1 1 and 2 2 are provided with bearings for shafts 26 and 27, having upwardly-extending cranks 28 29, which serve to support a downwardly and forwardly inclined frame or casing 29, carrying the grading-screen 30.

The rock-shafts 13 and 26 are each provided with an arm, designated, respectively, 31 and 32, each of said arms being provided with perforations 33. The pitman 11 is provided with a cross-arm 34, the upper and lower ends of which are connected, respectively, by means of links 35 and 36 with the arms 31 and 32, so that when the machine is in operation oscillatory movement will be imparted to the said rock-shafts, and the screens 15 and 30 will thereby be moved or reciprocated longitudinally of the frame of the machine, the extent of the throw being capable of regulation by adjusting the connection of the links 35 and 36 with the arms 31 and 32. At the same time the pitman 11



oscillates the bell-crank lever B, thus communicating a laterally-vibratory movement to the casing of the chaffing-screen. At the same time by the rotation of the fan a blast is discharged against the bottom of the casing underneath the separating-screen 15, the blast being discharged upwardly through the meshes of the cleaning-screen 15 and the chaffing-screen 18 and also to some extent between the tail ends of said chaffing-screen and the grading-screen. It will thus be observed that of the material fed to the machine through the hopper a portion is separated through the screen 15 and caused to pass over the spout 20, which extends through the opening 21 in one side of the casing, the portion thus separated consisting principally of the small grain and cockle and other seeds. Of the material which passes over the separating-screen 15 and onto the chaffing-screen 18 the chaff and other light and worthless portions will be blown out at the tail end of the machine, while the grain will drop upon the grading-screen, where it is separated into two grades, one grade passing through the meshes of the screen and another grade being discharged over the front end of the screen, both grades being suitably caught and disposed of, as will be readily understood. As will be seen from the foregoing description, this improved device is simple in construction and easily operated, the results having been found in practice to be highly efficient for the purposes intended.

Having thus described the invention, what is claimed is—

1. In a machine of the class described, a frame, a cross-bar in said frame, a chaffing-screen having a pin supported in an eye upon

said cross-bar, links supporting the opposite end of said screen, a separating-screen having one end slidably supported upon the chaffing-screen, a rock-shaft having a crank supporting the opposite end of the separating-screen, and means for vibrating the link-supported end of the chaffing-screen.

2. In a machine of the class described, a separating-screen, a chaffing-screen slidably supporting the separating-screen and extended to form a receptacle beneath the latter, a crank-shaft supporting one end of the separating-screen, a fan-shaft disposed beneath the upper end of the separating-screen and having a crank, a bell-crank lever supported adjacent to the chaffing-screen, a link connecting the latter with an arm of the bell-crank lever, a pitman connecting the other end of the bell-crank lever with the crank upon the fan-shaft, a pair of crank-shafts, a grading-screen supported upon the same, an arm extending upwardly from the crank-shaft supporting the lower end of the grading-screen, an arm extending downwardly from the shaft supporting the upper end of the separating-screen, a cross-arm upon the pitman, and links connecting said cross-arm with the arms extending from the crank-shafts supporting the upper end of the separating-screen and the lower end of the grading-screen.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

NATHANIEL L. HILL.

Witnesses:

CHARLES ALLEN,  
WILLIAM BAUGHMAN.