

(No Model.)

J. S. ASH.
GRAIN CLEANER.

No. 385,036.

Patented June 26, 1888.

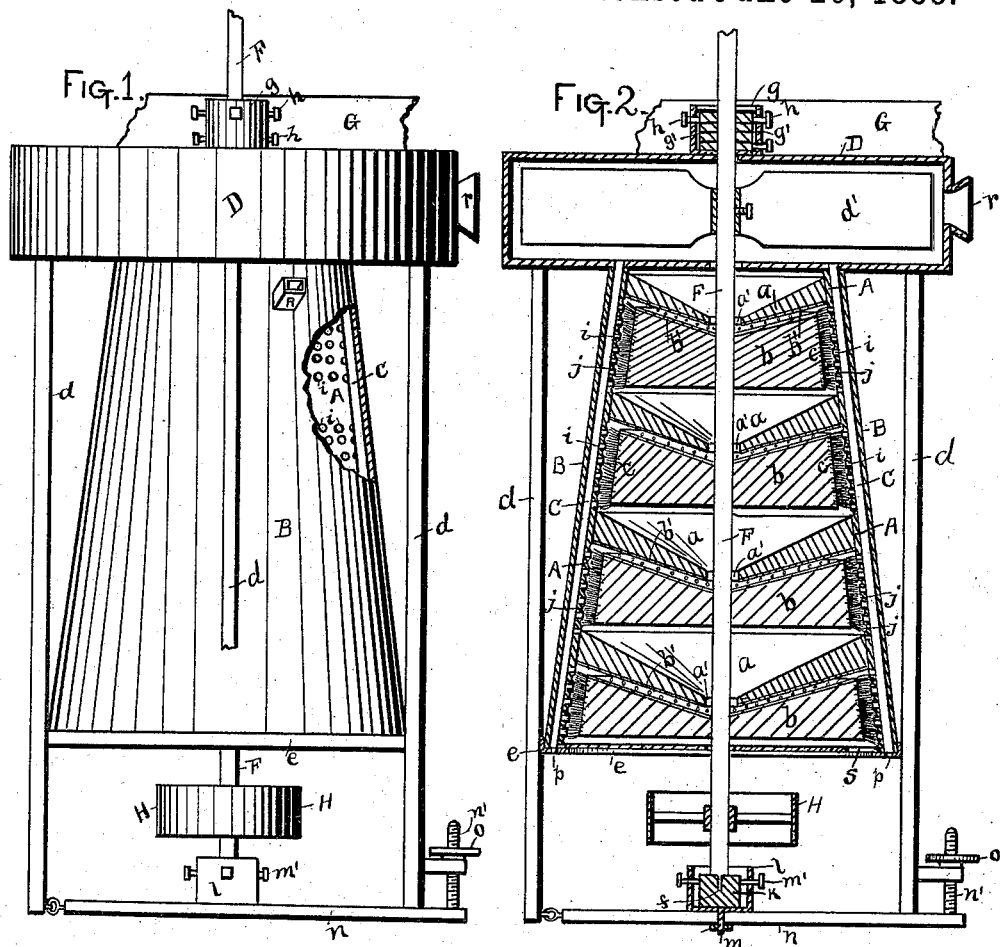


FIG. 3.

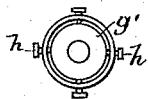


FIG. 4.

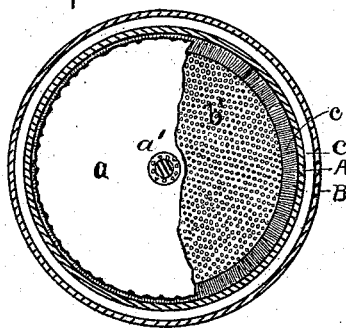


FIG. 6.

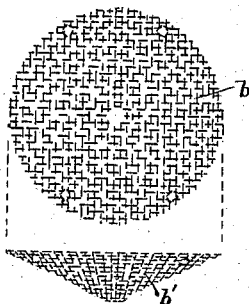
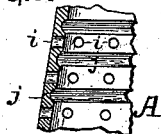


FIG. 5.



WITNESSES.

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UNITED STATES PATENT OFFICE.

JOSEPH S. ASH, OF CANAL WINCHESTER, OHIO, ASSIGNOR OF ONE-HALF
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GRAIN-CLEANER.

SPECIFICATION forming part of Letters Patent No. 385,036, dated June 26, 1888.

Application filed February 24, 1887. Serial No. 228,679. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH S. ASH, a citizen of the United States, residing at Canal Winchester, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Grain-Cleaners, of which the following is a specification.

My invention relates more particularly to the improvement in machines for cleaning and scouring grain; and the objects of my invention are, first, to produce a simple and effective machine of this class by means of which wheat or other grain is cleaned by both rubbing and brushing the same between or against suitable surfaces; second, to provide for the escape of the dust or dirt from the machine. These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of my machine, showing the shell of the outer case, partly broken away. Fig. 2 is a vertical section taken through the center of the machine. Fig. 3 is a plan view of the upper shaft-bearing; and Fig. 4 is a horizontal section of the shaft and case, showing one of the stationary concave disks, partly broken away. Fig. 5 is a vertical section of a portion of the inner case of the apparatus, showing the corrugations or grooves in the inner surface thereof. Fig. 6 represents in top view and in side view the removable rubbing-surface of one of the disks.

Similar letters refer to similar parts throughout the several views.

A represents an inner conical case or shell, which is surrounded a short distance from its outer periphery with a similarly-shaped outer case or shell, B. The space between these conical cases forms a circular conical chamber, C, which communicates at its upper end with a fan-box, D, of the usual shape, supported above said cases on suitable supporting posts or frame-work, *d*.

The bases of the cases A B may be supported in any well-known way, but are preferably made to rest on the lower flange of a circular angle-iron, *e*, made to project from the inner sides of the supporting-frame *d*.

F represents the vertical operating-shaft, having its upper end bearing in a bearing-box, hereinafter described, preferably secured to an

upper cross-beam, G. This shaft F is made to pass vertically downward through the center of the fan-box D and inner case, A, beneath which or at any other suitable point said shaft is made to carry a belt-wheel, H, and thence extends into a lower bearing, hereinafter described.

Fixed on the shaft F within the fan-box, in any well-known manner, is a fan, *d'*, of any suitable and well-known construction.

Rigidly secured to the inner surface of the inner case, A, at equidistant points one from the other, are a series of concave conical disks, *a*, each of which is provided with a central perforation, *a'*, somewhat larger than the circumference of the shaft F, which passes there-through.

Keyed or otherwise rigidly secured to the shaft F at a point a short distance below each of the disks *a* is a conical concave disk, *b*, the outer periphery of which extends to within a short distance of the inner surface of the inner case, A. The under sides of the disks *a* and the upper sides of the disks *b* are provided with a thin removable perforated metallic plating, *b'*, which is preferably formed of fine wire-netting, which is first submitted to pressure and flattened until but small irregularly-shaped perforations remain between its meshes. Fixed on the peripheries of the disks *b* are short outwardly-projecting brushes *c*, said brushes being adapted to brush against the inner surface of the inner case, A, the latter being provided with a number of dust-perforations, *i*, communicating with the chamber C. The portions of the inner surface of the case A with which the brushes come in contact are provided with a number of circumferential grooves or corrugations, *j*, to prevent the grain from passing downwardly too rapidly.

The upper shaft-bearing, which is located above the fan-box, consists of a metallic box, *g*, through which the shaft passes, and within which are fitted loosely about the shaft four followers or adjusting-blocks, *g'*. Fitted in a screw-hole formed in the box *g* opposite each block *g'* is a set-screw, *h*, the inner end of each of which is adapted to bear against one of said blocks. The lower end of the shaft is provided with a downwardly-projecting cen-

tral pivot-point, *f*, which rests in a corresponding depression in the upper side of a bearing-block, *k*, loosely seated in a cup or box, *l*, the latter having a downwardly-projecting bolt, *m*. Made to pass through the wall of the cup *l* are two or more set-screws, *m'*, the inner ends of which bear against the block *k* at opposite points. The bolt *m* is secured by means of a nut or otherwise to the central portion of a transverse arm, *n*, having one end hinged to the frame-work and its remaining end provided with an upwardly-projecting screw, *n'*, with an operating hand-wheel, *o*, thereon. Formed in the lower flange of the circular angle-iron *e* is a number of air-holes, *p*, which open into the chamber C.

Motion having been communicated to the shaft by means of a belt carried by the wheel H, it will be seen that the wheat or other grain to be cleaned, entering the opening or hopper R, formed, as shown, in the upper part of the cases, and dropping onto the upper concave surface of the stationary disk *a*, is carried by force of gravity through the hole *a'*, about the shaft, onto the perforated plate of the revolving disk *b*, from whence it is carried by centrifugal force outward to the brushes *c*. During the passage of the grain between the disks *a* and *b* its contact with the roughened scouring-surfaces thereof formed by the perforated plates *d'* tends to separate the dust and dirt therefrom. The grain, having reached the brushes, passes downward along the inner surface of the case, being brushed during said passage, until it reaches the next stationary disk *a*, from whence it travels, as described above, until it reaches the bottom of the case, where it passes out through a suitable opening, *s*, formed therein. The dust or dirt separated from the grain passes out through the dust-perforations *i* into the chamber C, from whence it is carried upward into the fan-box D and out through an opening, *r*, by a current of air from the air-holes *p*, caused by the rapid revolution of the fan *d'*.

It will readily be seen that the grain being alternately submitted to the scouring and brushing or scouring process, and the dust and dirt separated therefrom, as above described,

will issue from the machine in a clean and whole some state.

When it is desired to adjust the shaft perpendicularly in order to bring the rubbing-surfaces nearer together, the shaft may be raised by elevating the arm *n*, which may be done in any well-known manner, but is preferably accomplished by turning the hand-wheel *o*, the screw-threads of which engage with the threads on the screw *n'*. This method of elevating the shaft tends to throw the shaft out of its original perpendicular position, which fault may be easily and readily remedied by turning the set-screws *h* and *m'* of the bearings *g* and *l* until the proper lateral adjustment is attained. The case A being conical, it will be seen that the elevation of the shaft and the brush disks will cause the brushes to be brought into closer contact with the inner surface of the case, thus by the elevation of the shaft adapting both the brushing and scouring surfaces to the size of grain to be cleaned.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a grain-cleaning machine, the combination of a series of revolving concave disks, *b*, having removable rubbing-surfaces on their upper sides and brushes on their peripheries, with the conical case A, having dust-perforations, and stationary concave disks between each pair of brush-covered concave disks, and having rubbing-surfaces on their under sides, substantially as and for the purposes specified.

2. The combination of a series of concave disks, *a*, having rubbing-surfaces on their under side, and a series of revolving concave disks, *b*, having rubbing-surfaces on their upper sides and brushes on their peripheries, with the outer conical case, B, having perforations *p* in the base thereof, and the inner conical perforated case, A, having horizontal corrugations *j* therein between the rows of perforations, substantially as and for the purpose described.

JOSEPH S. ASH.

Witnesses:

QUINTIN R. LANE,
WILLIAM H. LANE.