

W. M. ARNALL.
Grain Separator and Cleaner.

No. 55,800.

Patented June 26, 1866.

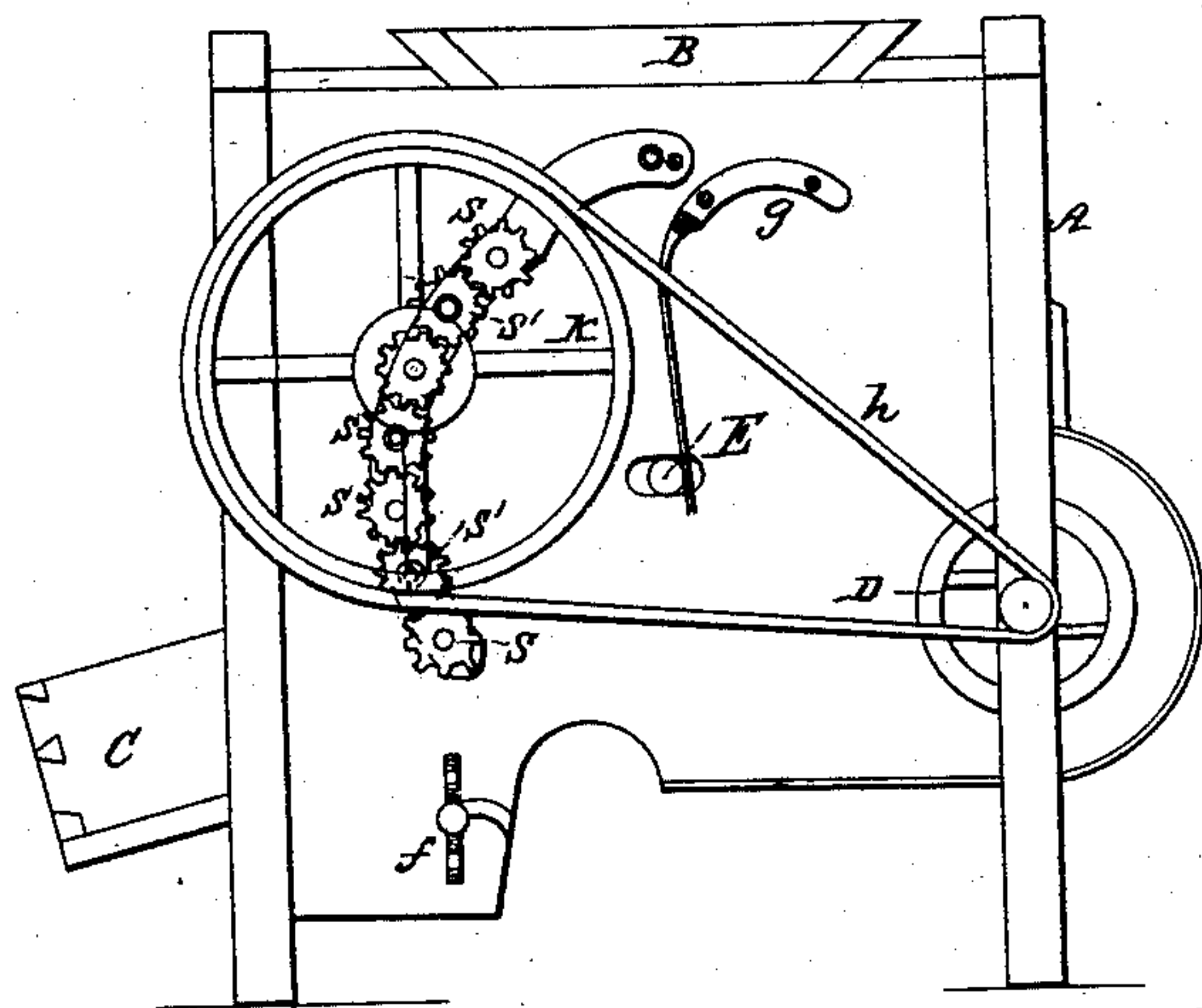


Fig. 3.

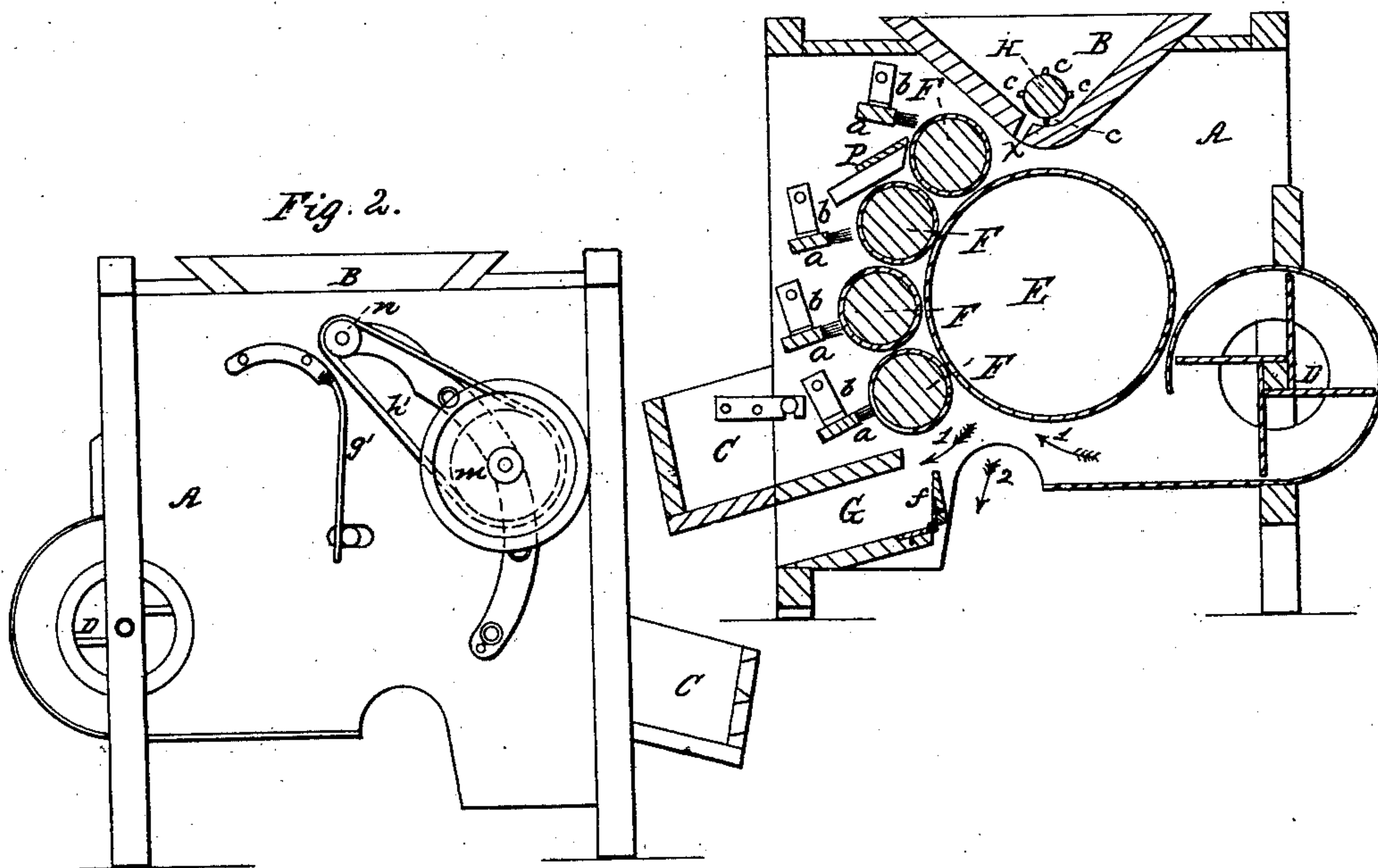


Fig. 2.

Witnesses:
S. H. La Forge
Charles Alexander

Inventor:
Wm M. Arnall
per
Alexander & Masan
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM M. ARNALL, OF SPERRYVILLE, VIRGINIA, ASSIGNOR TO HIMSELF
AND W. H. BROWNELL, OF NEW YORK CITY.

IMPROVED GRAIN SEPARATOR AND CLEANER.

Specification forming part of Letters Patent No. 55,800, dated June 26, 1866.

To all whom it may concern:

Be it known that I, WM. M. ARNALL, of Sperryville, in the county of Rappahannock and State of Virginia, have invented certain new and useful Improvements in Machines for Separating Smut, Cockle, Garlic, &c., from Grain; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

In the annexed drawings, making part of this specification, A represents the frame of the machine, which is constructed in shape and size very similar to the ordinary fanning-mill frame. At one end of this frame is a drum or case, in which is properly secured an ordinary grain-fan, D.

E represents a large cylinder, which is centrally located within the frame A, lying cross-wise of said frame, and provided at its ends with journals, which have their bearings in the sides of the frame in oblong openings *g' g*. Springs secured to the sides of the frame press against the ends of these journals for the purpose of making the cylinder E press or bear against the rollers F F, as will be hereinafter set forth.

F F represent four rollers, which lie cross-wise of the frame A, with their journals resting in the bearings in the sides of the frame. The bearings of the rollers F are in the arc of a circle to correspond with the periphery of the cylinder E, so that when the cylinder is pressed against the rollers F its periphery will touch each of said rollers.

The cylinder E has a hard or solid periphery, while the peripheries of the rollers are soft or pliable, being made of felt or cloth or leather, or any similar material.

S S S represent small gear-wheels upon the ends of the rollers F F, which gear into the idle-wheels S' S' S', so that the rollers all have motion in the same direction.

K represents a drum-wheel secured upon the end of one of the rollers outside of its gear-wheel, and around which a belt passes to a small drum upon the end of the fan-shaft. At the other end of this roller above spoken of is a drum, M, around which a belt passes, said

belt also passing a drum upon a shaft, H, which will be hereinafter described.

a a represent a series of long brushes, which are hung across the frame and inside of it in such a manner that they can be adjusted to or from the peripheries of the rollers F. This adjustment is effected by hanging the brushes at their ends to metallic straps, which said straps are pivoted to the sides of the frame, as seen at *b b*.

C represents a box, placed at the back of the machine to catch the cockle, &c., as it falls from the rollers.

G represents a throat, through which most of the air-draft from the fan passes. To the inner and lower side of this throat is hinged a gage-board, *f*, which is stationed at any desired angle by means of a set-screw.

B represents the hopper of the machine, and H represents a toothed cylinder, which lies longitudinally of and near the bottom of said hopper. The hopper is provided with a narrow opening at its bottom, through which the grain passes to the rollers below.

In using this machine the grain to be cleaned is placed in the hopper B, and the machine is set in motion. The cylinder H, revolving with its teeth, serves to distribute equally or evenly the grain in the opening in the bottom of the hopper, so that it will be properly distributed upon or between the peripheries of the rollers and cylinder E. The grain, after falling from the hopper, first passes between the upper roller and the cylinder E. The surface of the one being hard and the other yielding, and the grain being smooth and the cockle being bearded, the cockle, by the pressure of the cylinder derived from springs *g g'*, adheres to the roller, and is separated from the wheat and carried around until it reaches the brush of this roller. It is there removed from the roller by the brush, and, falling upon the dividing-board P, passes back into the box C. The wheat now passes between the next roller and the cylinder, and then the next and the next, the last roller serving to remove any cockle or smut which the preceding ones had left behind, the brushes to each roller removing the cockle, &c., as the rollers revolve, on the opposite side from which it was received. Af-

ter the grain has passed the last roller it is subjected to the blast which comes from the fan, the course of which is indicated by arrows 1 1. The grain then falls out at the bottom of the machine in the direction of arrow 2.

The gage *f* is intended to separate the garlic which passes through and falls from the lower roller, and the separation is effected in this way: The wheat being heavier than the garlic, the gage *f* is set just close enough to the falling wheat that it will not be caught or blown upon said gage by the blast. The garlic, being lighter than the wheat, is blown a little farther, and, catching upon the gage, is carried out at the throat *G*.

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

1. The arrangement of the cylinder *E*, the rollers *F F F* in the arc of a circle described by a radius from cylinder *E*, together with the adjustable brushes *a a a* and dividing-board *P*, substantially as and for the purpose herein set forth.

2. The throat *G*, with its gage-board *f*, rollers *F*, cylinder *E*, and fan *D*, arranged and used as and for the purpose specified.

In witness that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

WM. M. ARNALL.

Witnesses:

C. M. ALEXANDER,
J. M. MASON.