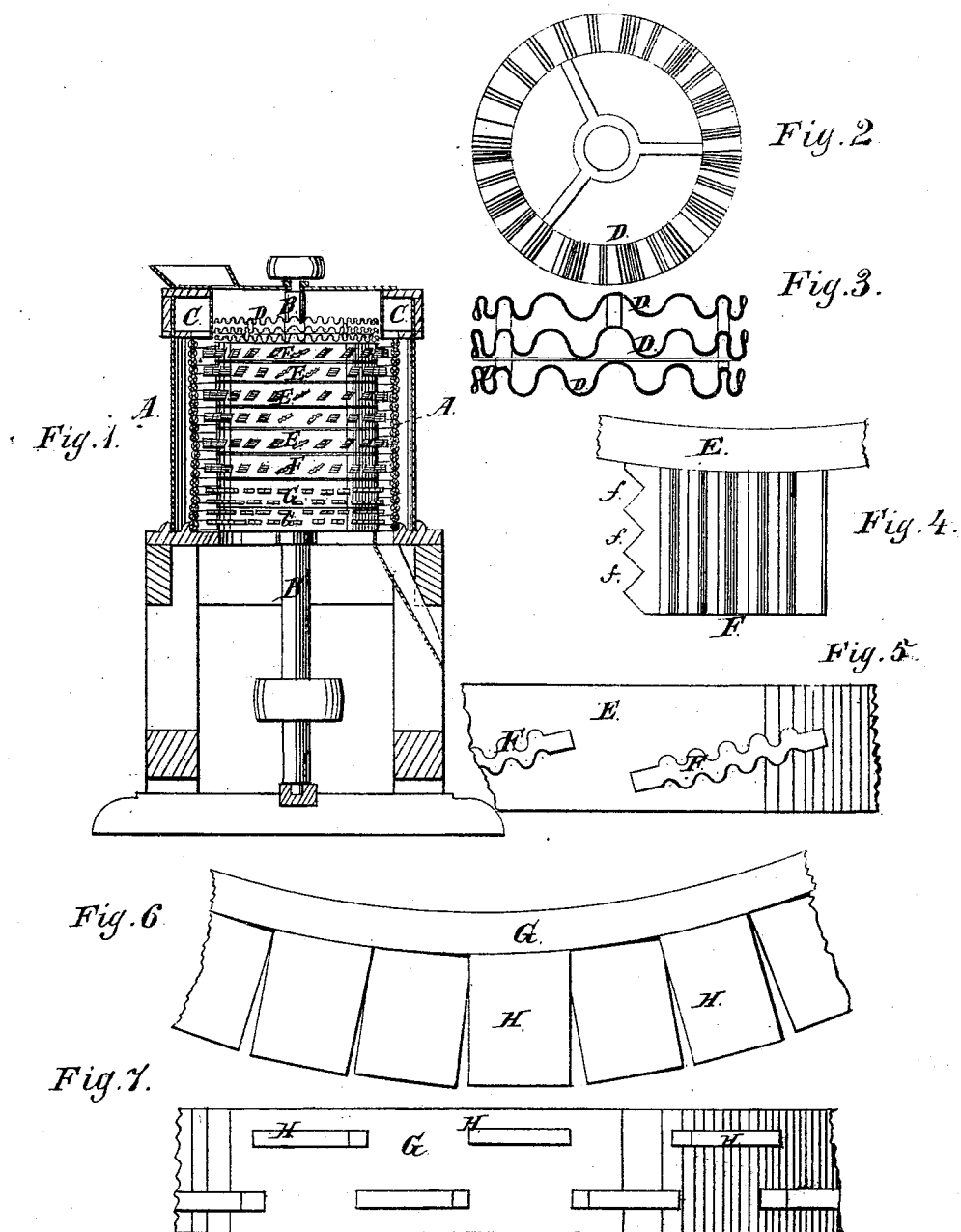


W. W. INGRAHAM.
GRAIN-CLEANER.

No. 179,198.

Patented June 27, 1876.



Witnesses:
L. A. Bunting
H. W. B. Bunting

Inventor:
William W. Ingraham
by Lewis & Leburn
attys.

UNITED STATES PATENT OFFICE.

WILLIAM W. INGRAHAM, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF HIS RIGHT TO EDWARD BEARD, OF SAME PLACE.

IMPROVEMENT IN GRAIN-CLEANERS.

Specification forming part of Letters Patent No. **179,198**, dated June 27, 1876; application filed February 3, 1875.

To all whom it may concern:

Be it known that I, WILLIAM W. INGRAHAM, of Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Grain Smutters and Scourers, of which the following is a specification:

The first part of my invention relates to the construction of the scouring-cylinder, and consists in providing said cylinder with inclined beaters having a corrugated surface, the corrugations running in a direction radial to the cylinder. The cylinder is made to revolve in the direction which will give a lifting action to the said inclined beaters. The said beaters may be conveniently formed upon detachable rings, and the cylinder will thus be made of several rings. I have found that this form of scouring is very efficacious and durable.

The second part of my invention relates to the construction of the lower portion of the cylinder, and consists in providing said lower portion with rings, upon which are mounted short plain straight arms or polishers, to be more definitely hereinafter described, set alternately to break joints and wallow through the grain, to give it a finishing-polish.

The third part of my invention relates to the application to the upper part of the cylinder in the air-chamber of a series of corrugated rings, one above another, for breaking the mass of grain, to facilitate the circulation of air to remove the smut-balls, which are drawn off by the air-trunk without mingling with the grain below this point.

In the accompanying drawing, which forms a part of this specification, Figure 1 represents a vertical section of the cylinder-case, showing a side elevation of the entire cylinder composed of its several rings. Fig. 2 is a top view upon a larger scale of the corrugated rings in the air-chamber at the top of the cylinder. Fig. 3 is a side view of said rings. Fig. 4 is a full-size top view of one of the inclined corrugated beaters attached to a broken portion of its sustaining-ring. Fig. 5 is a side elevation of the same. Fig. 6 is a top view of a portion of one of the rings forming the lower part of the cylinder, showing the straight

arms or polishers. Fig. 7 is a side view of the same.

In the said drawing, A represents the outer casing or concave, represented in this example as being made of layers of wire-rope, in the manner set forth in my former patent, or it may be made in any of the well-known ways, and consists of any surface adapted to this purpose commonly used in smut-machines. The cylinder contained and adapted to revolve within the casing is made of a number of rings, placed one above another upon a central shaft, B. At the top, and within the influence of the annular air-chamber C, are placed the corrugated or crimped rings D, shown enlarged at Figs. 2 and 3. These rings move through the body of the grain as it enters the machine, break up the mass and lighten it, and serve to detach most of the smut-balls, which are drawn off through a trunk to a fan. (Not shown.) Below these rings D the main body of the cylinder, down nearly to the bottom, is made up of a series of rings, E, which are of such diameter as to nearly fill the concave. These rings E are fitted at the periphery with the inclined corrugated arms or beaters F, a full-size top view of one of which is shown at Fig. 4, and an edge view at Fig. 5, of the drawing. The rings E are so placed, as shown at Fig. 1, that the beaters F range spirally around the cylinder. I prefer to make the front or lower side of the beaters toothed or notched with the notches *f*. (Seen at Fig. 4.) Below the rings E are the rings G, fitted with the straight arms or polishers H, arranged in a double line upon each ring, as shown at Figs. 6 and 7, to produce a wallowing action in the grain.

The operation is as follows: The grain admitted at the top is stirred and loosened or enlivened by the crimped rings D, loosening the smut-balls and agitating the grain to allow of the cleaning effect of the air-current at this point. It then descends into the space between the outer casing or concave A and the periphery of the rings forming the cylinder, where it is acted upon by the inclined corrugated beaters F. These act to lift or detain the grain and cause it to pass more slowly,

subjecting it to a scouring contact with the corrugated surface of the beaters and to that of the concave A. It then descends among the straight arms or polishers H, which polish the grain and finish the process.

Having thus described my invention, I claim—

1. The combination, substantially as described, of an upright cylinder, provided with inclined corrugated beaters F, and a suitable casing, A, so that the beaters will lift and detain the grain as it passes down inside the casing, and the operation of the scourers will be gradually increased by the increasing weight of grain above.

2. The combination, with the cylinder for

scouring, of the rings G, provided with the straight arms or polishers H, constructed and arranged substantially as specified.

3. The combination of the rings E, provided with inclined corrugated beaters F, and rings G, provided with straight arms or polishers H, as and for the purposes specified.

4. The combination of the rings D, rings E, provided with corrugated inclined beaters F, and rings G, provided with straight arms or polishers H, arranged and operating substantially as specified.

WILLIAM W. INGRAHAM.

Witnesses:

HEINR. F. BRUNS,
LEWIS L. COBURN.