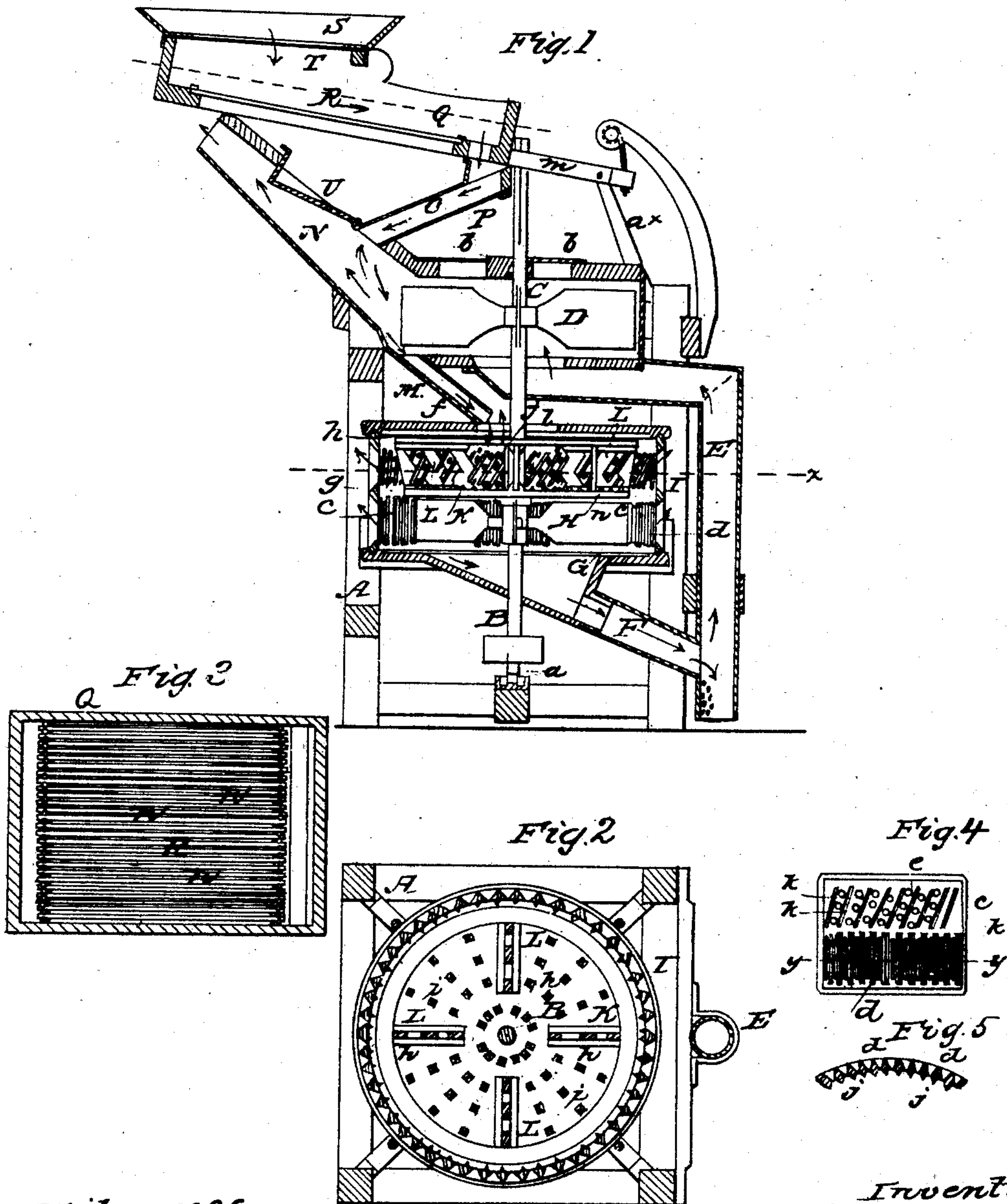


W. CROTZER.

Smut Mill.

No. 30,704.

Patented Nov. 20, 1860.



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# UNITED STATES PATENT OFFICE.

WILLIAM CROTZER, OF SPRUCE CREEK, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND  
SAMUEL BEAMER, OF SAME PLACE.

## GRAIN-CLEANING MACHINE.

Specification of Letters Patent No. 30,704, dated November 20, 1860.

*To all whom it may concern:*

Be it known that I, WILLIAM CROTZER, of Spruce Creek, in the county of Huntingdon and State of Pennsylvania, have invented a new and Improved Grain-Cleaning Machine; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical central section of my invention. Fig. 2, a horizontal section of ditto, taken in the line *x, x*, Fig. 1. Fig. 3, a detached view of one of the screens of ditto. Fig. 4, an inner side view of one of the sections of the scouring device. Fig. 5, a horizontal section of ditto taken in the line *y, y*, Fig. 4.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to grain cleaning machines of that class which are designed to separate smut and other impurities from the grain, and consists in a novel construction and arrangement of screens, fans, blast-spout and a scouring device, as hereinafter described, whereby the desired work is thoroughly performed.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents a framing which may be constructed in any proper way to support the working parts of the machine and B, is a shaft which is placed vertically and centrally in the framing A, the lower end of the shaft being stepped at *a*, as shown in Fig. 1.

On the upper part of the framing A there is placed a fan box C, which contains a revolving fan D, of ordinary construction, said fan being secured on the shaft B, the top of the fan box is provided with two slides *b, b*, and its lower part communicates with a spout E, which extends downward and communicates with a spout F leading from a fan box G, which contains a fan H, said fan being also placed on the shaft B.

The fan box G, is at the lower part of a cylinder I, which is formed of cast metal segments *c*, having vertical and inclined oblong perforations *d, e*, as shown in Figs. 1 and 5.

On the shaft B, there are secured two horizontal disks J, K, which divide the cylinder I, into three compartments *f, g*, and G, the latter being the fan box previously alluded to, and *g*, being the beater compartment which is directly over the fan box as shown in Fig. 1.

Between the two disks J, K, beaters L, are secured. These beaters are of zig-zag form as shown clearly in Fig. 1, and they are secured between the two disks J, K, by cleets or ledges *b*, or other suitable means.

The upper surface of the lower disk K, is provided with pointed knobs *i*, and the spaces between the perforations *d, e*, of the cylinder have vertical projecting ridges *j*, and knobs *k*, between them respectively as shown more particularly in Fig. 5.

The top plate of the cylinder I, has an opening *l*, in it to which a spout M, from an inclined box N, leads, the box N, communicates with the fan box C, as shown in Fig. 1. With the inclined box N, an inclined box O, communicates, said box O, having a screen P, for its bottom and the upper part of box O, communicates with the depressed end of a shoe Q, which has a shake motion given it by a spring *a, x*, and the revolution of the shaft B, the upper part of which is flattened or made of eccentric form to act against a projecting bar *m*, which extends from shoe Q. The bottom of the shoe Q, is a screen R, which is formed of parallel rods *n*, fitted longitudinally in the shoe at a suitable distance apart as shown clearly in Fig. 3. On the upper part of the shoe Q, there is placed a hopper S, which has a screen T, for a bottom.

The operation is as follows: The shaft B, is rotated by any convenient power, and the grain to be cleaned is placed in the hopper S, the grain passing through the screen T, and the coarse foreign substances passing off said screen at one side. The grain falls on the screen R of the shoe Q, and the smaller foreign substances that could not pass through T, pass through R, and are discharged at one side of the tops of the boxes N, O. The grain then passes into the box O, and down over screw P, into box N, impurities passing through P. The grain passes from N, through spout M, into cylinder I, and in passing through N, is subjected to a blast from fan D. The grain passes



down through the cylinder I, and is subjected to a beating and scouring process by the beaters L, and the projectors *j*, *k*, at the inner sides of the segments *c* the dust and pulverized smut being blown through the perforations *d*, *e*, by the fan H. The grain then passes down through the box G, and spout F, into spout E, and is subjected to a suction blast which takes from it all remaining impurities just previous to its discharge from E. By this arrangement it will be seen that the grain is thoroughly screened before it enters the scouring device, and is also separated from foreign substances larger than the grain as well as a considerable portion of loose light foreign substances the fan D, effecting the latter result. The scouring device therefore has no extra work to perform, but simply scours the grain loosening and breaking the adhering smut which is blown through the perforations of the cylinder I.

The screen R, being formed of the rods *u*, cannot choke or clog as the ordinary screens. The draft in the box N, and spout E, may

be regulated by adjusting the slides *b*, *b*, and a damper U, in box N.

Having thus described my invention what I claim as new and desire to secure by Letters Patent; is:

1. The arrangement of the hopper S, shoe Q, boxes O, N, and fan box C, as shown, the hopper, shoe and box O, being provided respectively with the screens T, R, P, as described, all constructed and operating as and for the purpose set forth.

2. The scouring device formed of the cylinder I, perforated as shown and having the projections and knobs *j*, *k*, at its inner side and the rotating disks J, R, provided with the beaters L, and the fan H, on the shaft B, in combination with the boxes N, O, shoe Q, and the spout E, the latter communicating with the fan boxes C, G, and all arranged for joint operation as and for the purpose set forth.

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Witnesses:

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