

J. A. WOODWARD.

Smut Mill.

No. 18,484.

Patented Oct. 20, 1857.

Fig. 1

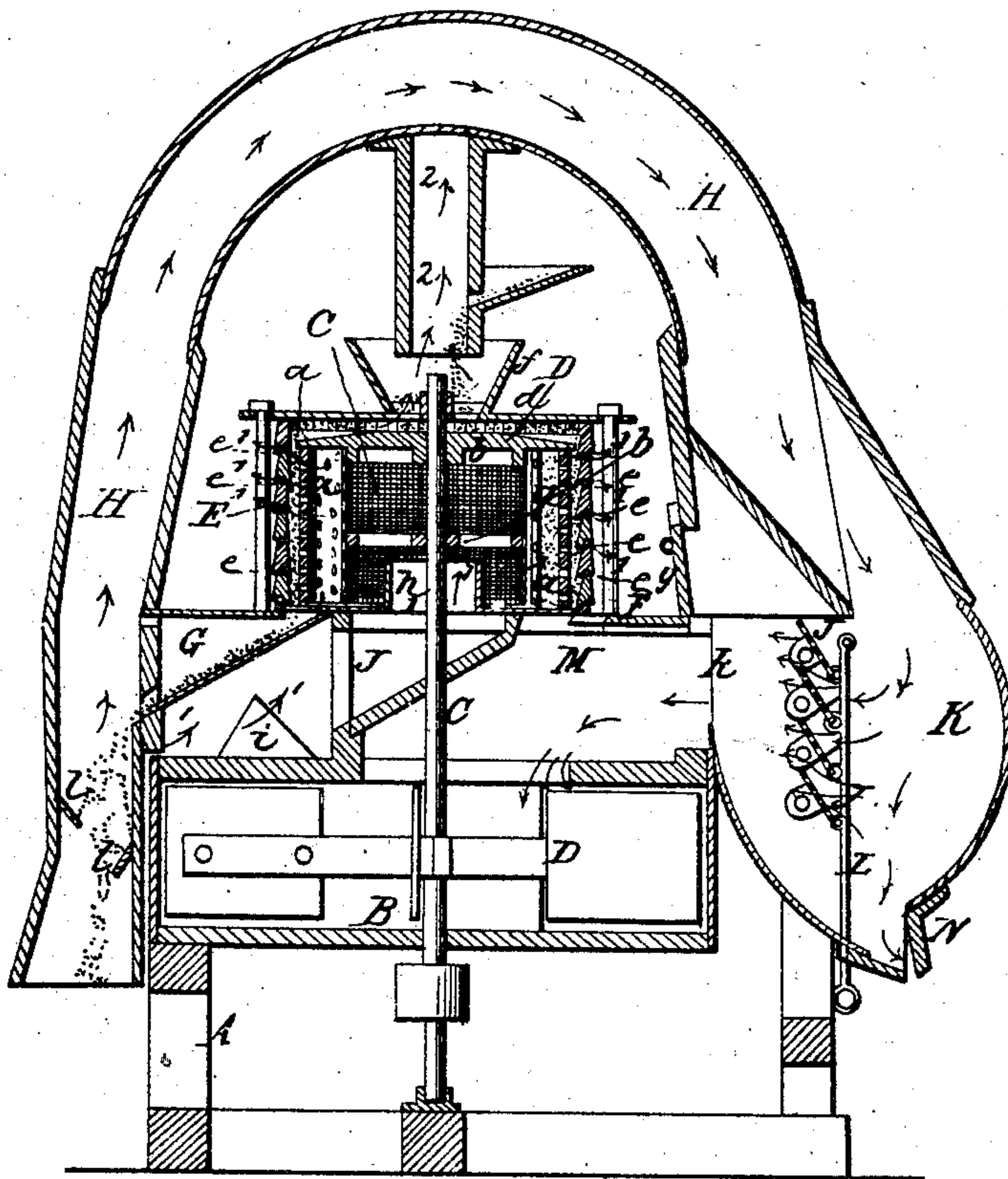


Fig. 2.

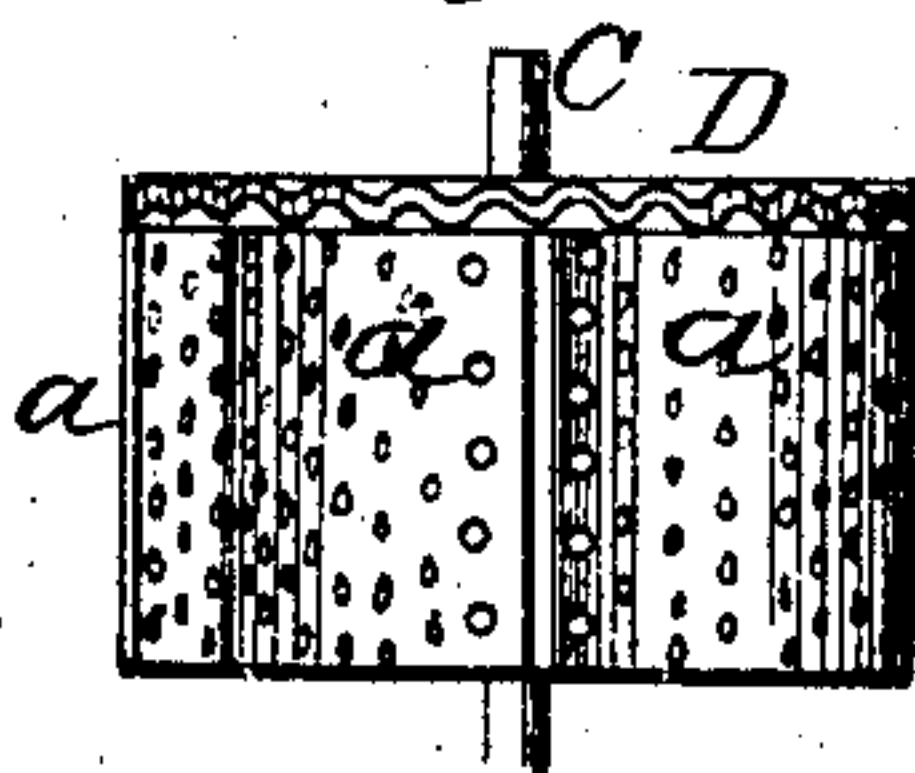
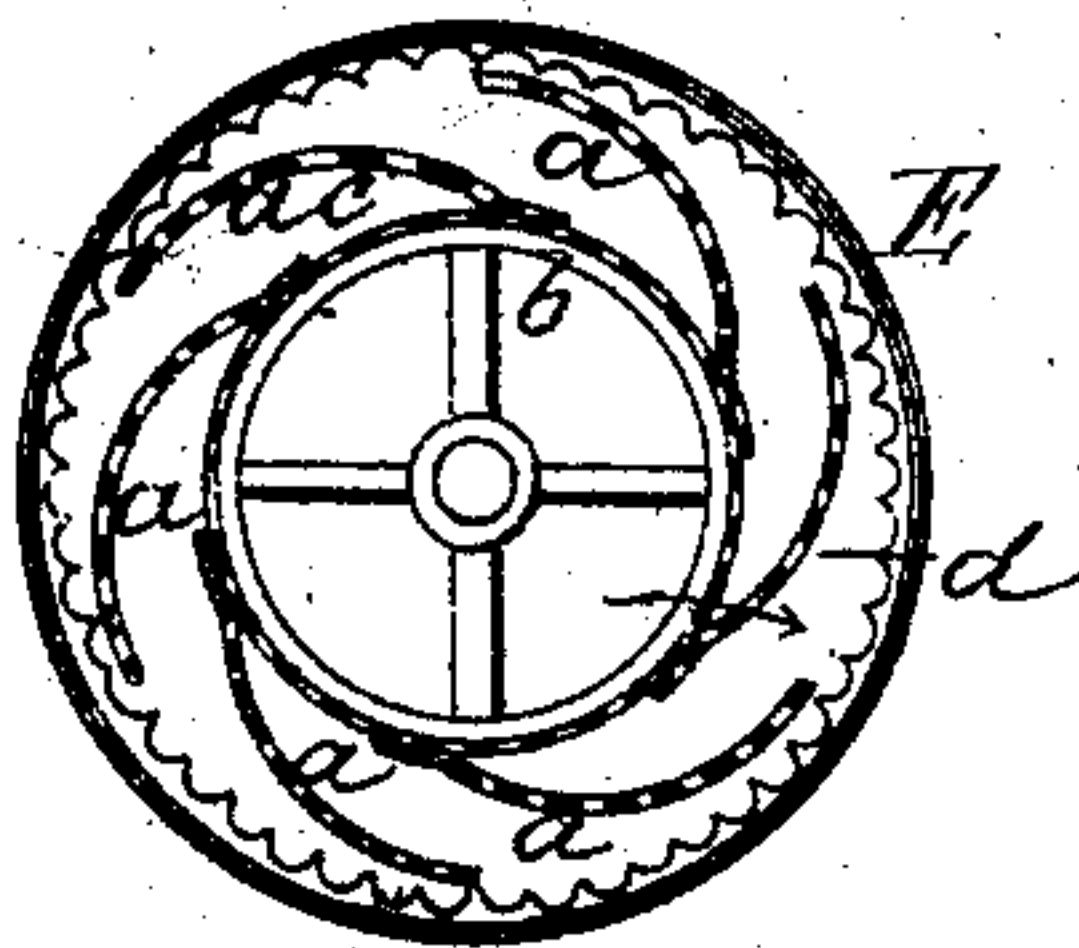


Fig. 3.



UNITED STATES PATENT OFFICE.

JOHN A. WOODWARD, OF BURLINGTON, IOWA.

SMUT-MACHINE.

Specification of Letters Patent No. 18,484, dated October 20, 1857.

To all whom it may concern:

Be it known that I, JOHN A. WOODWARD, of Burlington, in the county of Des Moines and State of Iowa, have invented a new and Improved Smut or 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 improvement. Fig. 2, is a detached view of the revolving beaters. Fig. 3, is a horizontal section of the beaters and cylinder within which they are placed.

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

My invention consists in the employment or use of a scouring device peculiarly constructed and placed relatively with blast passages as hereinafter described, whereby the grain may be thoroughly scoured and deprived of all dust, smut and other foreign substances.

My invention further consists in the employment or use of a series of adjustable screens so arranged in the principal blast spout and placed relatively with the fan that the escape of the offal, that is, chaff, light or imperfect grain, etc., may be regulated as desired and when of value discharged from the machine separately and free from dust, or, when worthless, allowed to pass into the fan box and be discharged therefrom with the dust and other impurities. To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, is a rectangular frame in which a fan box B is placed and C is a vertical shaft the lower end of which is stepped at the lower part of the frame A. The fan D is placed on the shaft C and a series of beaters (a) are also placed on the shaft, said beaters being of curved form and secured to two wheels or bosses (b), (b), which are secured upon the shaft C at a suitable distance apart. A wire screen (c) however is interposed between the beaters and wheels or bosses and the beaters therefore it may be said are attached to a cylindrical screen. The beaters are attached to the screen or bosses at one edge, the opposite edges projecting outward therefrom, the curves forming parts of circles, the chords of which are tangential with the screen (c) and wheels or

bosses (b) (b). The beaters are perforated with holes, which are punched or drilled so as to form projecting edges on their outward sides and perform in a measure the office of screens.

On the upper part of the upper wheel or boss (b), a horizontal scourer D is secured. This scourer is formed of a circular plate corrugated radially and is placed a short distance below the top plate (d) of a cylinder E which is formed of a series of cast metal rings (a') the inner surfaces of which are corrugated or grooved vertically as shown clearly in Fig. 3. The upper surface of each ring has small projections (e) formed on them, and the lower surface of each ring is grooved so that it may fit over the projections of the one immediately below it. The rings are thereby retained in proper position and spaces are allowed between the rings for the escape of dust as will be presently more particularly referred to. The rings are also of slightly taper form, transversely, that is, their sides are out of parallel, the top surfaces being narrower than the lower surfaces as shown clearly in Fig. 1. The cylinder E encompasses the beaters (a) as shown clearly in Figs. 1 and 3, and the cylinder rests upon a platform F on the top of the frame A. The lower part of the cylinder communicating with a spout G which leads into a blast spout H. The spout H is of curved form and extends around from one side of the frame A to the other, and a pendent spout I is attached to the spout H the spout I being directly over a hopper (f) which is at the center of the plate (d). The spout H is provided with a slide (g) at one side.

The lower part of the cylindrical screen (c) communicates by means of an opening (h) which is made through the bottom plate (h') of the cylinder E, with a passage J the lower part of which communicates directly with the external air, one of the orifices (i) being shown in Fig. 1.

One end of the blast spout H terminates in a chamber K, in which a series of screens (j) are placed one over the other. These screens are all pivoted at their ends to the sides of the chamber K, and they are connected by a rod L by operating which the screens may be moved or adjusted similar to the slats of a blind. The back part of this chamber communicates by means of an opening (k) with a passage M leading to the

fan box B. The lower end of the chamber K is provided with a door or flap N. The opposite side of the spout H is provided with inclined ledges or deflecting plates (l) the use of which will be presently shown.

The operation is as follows:—The grain to be cleaned passes into the lower part of the spout I and thence into the hopper (f) and down between the scouring plate D and top plate (d) of the cylinder E. The grain being scoured by the plate D and then passing down between the inner and corrugated side of the cylinder E and the beaters (a), it is still further scoured and acted upon until all the smut is broken and the dirt scoured from the grains. The shaft C is rotated by any proper means and the beaters (a) owing to their construction and arrangement perform the double function of beaters and a fan, and while breaking up and pulverizing the smut also blow the dust through the spaces between the rings (a*) of the cylinder E, see Fig. 1, in which the blue arrow (1) indicates the direction of the blast generated by the beaters (a). A blast is produced by the fan D in the spout H as indicated by the red arrows. This blast is also produced in the spout I, as indicated by the blue arrows (2) and the grain before passing into the scouring device is subjected to a blast which deprives it of its loose and light foreign substances, the grain after being scoured being subjected to a third blast in the lower part of one side of the spout H said blast being generated by the fan D. The grain is thrown from one side of the spout H to the other by the deflecting plates (l) so as to expose it as much as possible to the action of the last. The sound grain passes out of the lower end of spout H while the light grain, chess, &c., is carried by the blast around the spout H, the dust and fine offal passing through the screens (j) and through the passage M into the fan box B from which it is ejected by the action of the fan, the light grain, chess, &c., falling into the lower part of chamber L from

which it may pass through the flap or door N. The screens (j) being so adjusted by operating the rod L that the light grain cannot pass into the fan box. When however the light grain and inferior substances are not worth preserving the screens (j) are opened so that all may pass into the fan box.

I do not claim the curved spout H nor do I claim broadly and separately subjecting the grain to two or more separate blasts while passing through the machine, for this has been previously done, and curved blast spouts have been previously used; neither do I claim separately any of the parts described and forming a part of the scouring device; but,

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

1. The scouring device formed of the beater (a) attached to the cylindrical screen (c) in combination with the scouring plate D and cylinder E formed of a series of rings (a*) placed one over the other with spaces between them, when the device thus constructed is placed relatively with the blast passage J and F, substantially as described whereby the grain is thoroughly scoured and subjected to three blasts and thoroughly separated from the inferior grain and lighter foreign substances such as chess and the like.

2. I further claim the adjustable screens (j) placed in the chamber K and arranged relatively with the fan box B as shown, whereby the chess and lighter and inferior grain may when of sufficient value be discharged from the machine separately and in a clean state, or when worthless allowed to pass into the fan box to be ejected therefrom with the finer and lighter foreign substances.

JOHN A. WOODWARD.

Witnesses:

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