

J. L. BOOTH.
Smut Machine.

No. 13,937.

Patented Dec. 18, 1855.

Fig. 1.

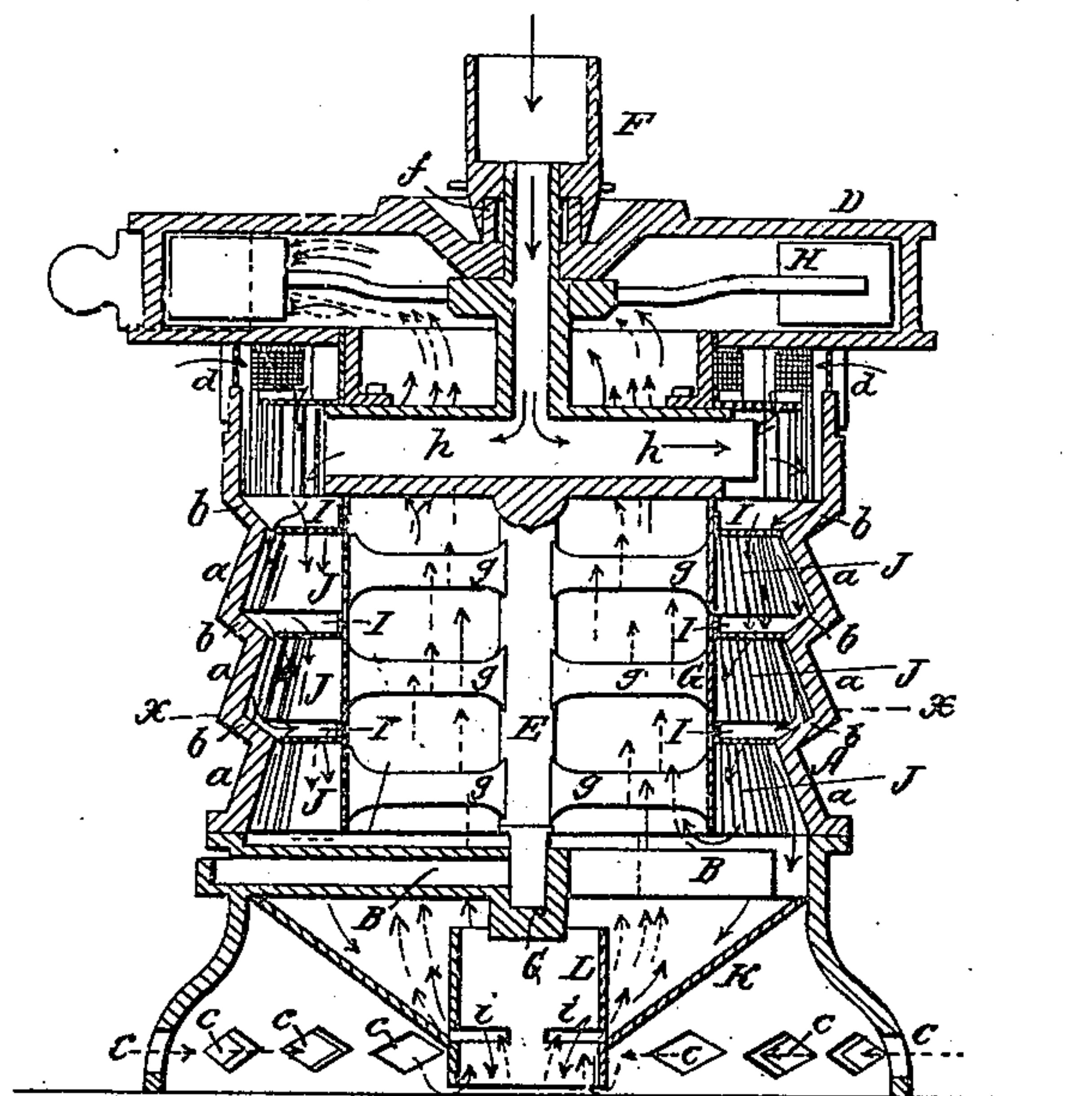
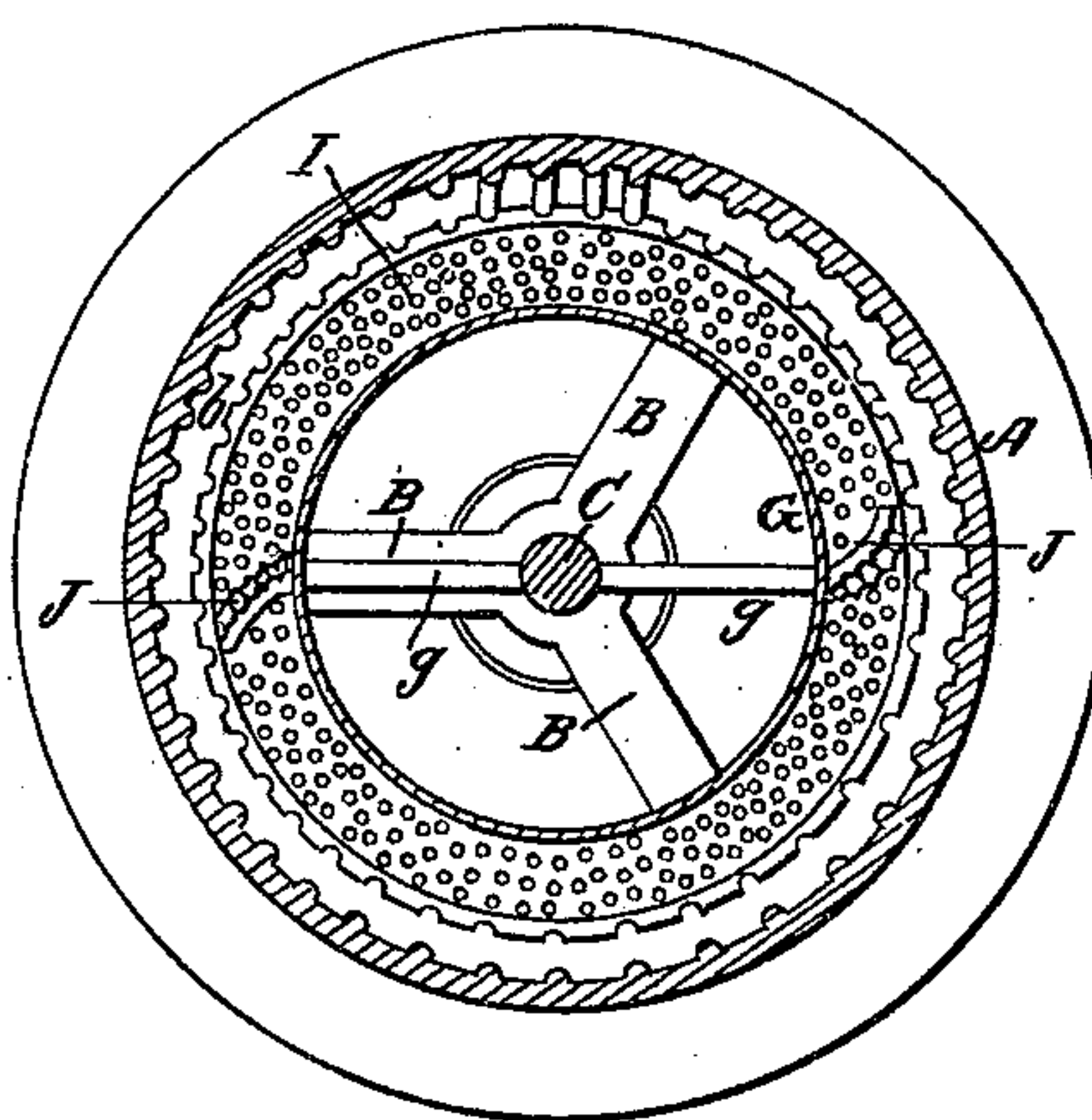


Fig. 2.



UNITED STATES PATENT OFFICE.

J. L. BOOTH, OF CUYAHOGA FALLS, OHIO.

GRAIN-CLEANING MACHINE.

Specification of Letters Patent No. 13,937, dated December 18, 1855.

To all whom it may concern:

Be it known that I, JONATHAN L. BOOTH, of Cuyahoga Falls, in the county of Summit and State of Ohio, have invented a new and Improved Smut and 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 section of my improvement, the plane of section being through the center. Fig. 2, is a horizontal section of ditto, (*x*) (*x*) Fig. 1, showing the plane of section.

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

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

A, represents a cylindrical shell constructed of cast iron and of a suitable height and diameter. The side of the shell is formed or cast with a series of inclined projections (*a*) as clearly shown in Fig. 1. The inner sides of these projections are corrugated or are provided with teeth, and the inclined ledges (*b*) which connect the several inclined projections are smooth on their upper and inner sides. It will be seen that the inclined projections (*a*) and the ledges (*b*) give a zigzag form to the body of the shell. The lower end of the shell is of flaring or bell form and is provided with perforations or holes (*c*).

Directly below the zigzag body of the shell there are fitted three arms B, the inner ends of which are attached to a step C. The arms B, are hollow and communicate with the step. The outer ends of the arms project a short distance beyond the side of the shell.

D, represents a fan box which is fitted to the upper end of the shell A, directly underneath the fan box there are openings (*d*) covered with wire cloth, the openings (*d*) communicate with the interior of the shell, and an opening is made in the bottom of the fan box at its center.

E, is a shaft, the lower end of which is fitted in the step C. The upper end of the shaft passes through the upper side of the fan box and is fitted in a hollow hub F, the lower end of which is placed or fitted over a collar or annular flanch (*f*) attached to the upper side of the fan box at its center

and within a conical shaped concave, as clearly shown in Fig. 1. The hub F, is secured to the upper end of the shaft E, and of course rotates with it, the lower part of the hub working around the collar or flanch (*f*).

G, is a hollow cylinder which is attached by arms (*g*) (*h*) to the shaft E. The two uppermost arms (*h*) (*h*) are hollow and the upper end of the shaft E, is also hollow, the arms (*h*) communicating with it. A suitable space is allowed between the periphery of the cylinder G, and the inner side of the shell A, and the hollow arms (*h*) communicate with this space. The upper end of the cylinder is fitted within the aperture in the under side of the fan box D, so that the fan box is made to communicate directly with the interior of the cylinder.

H, is a fan which is hung on the upper part of the shaft E, and within the box D.

To the periphery of the cylinder G, there is attached a series of horizontal perforated rims or annular plates I, the number of rims or plates corresponding to the number of ledges (*b*) and the plates or rims being in line with the lower edges of the ledges, as clearly shown in Fig. 1.

To the periphery of the cylinder G, there are attached beaters J, two in each of the spaces between the rims or plates I, and at opposite points of the cylinder. These beaters are of curved spiral form a portion or all of them as occasion may require. The two uppermost beaters are attached to the ends of the hollow arms (*h*) (*h*).

To the lower end of the shell A, there is attached an inverted conical basin K, which has a short tube or pipe L, at its center which tube or pipe projects upward a short distance within the shell. The side of the tube or pipe L, has holes (*i*) made through it just above the lower end of the basin.

All the parts of the machine are constructed of cast iron, and the bearings of the shaft E, are kept perfectly lubricated the lower one by means of oil placed in the arms B, which serve as reservoirs for the step C, and the upper one by placing oil within the conical recess around the flanch (*f*).

Motion is given the shaft E, by means of a belt passing around the hollow hub F, and the grain to be cleansed passes through the upper part of the shaft E, and arms (*h*) (*h*) into the space between the cylinder

G, and shell A. The beaters J, throw the grain against the corrugated inclined projections (a) and ledges (b) which throw back the grain upon the perforated rims or plates I, which by the centrifugal force generated by their rotation throw the grain back again against the projections (a) and ledges (b). The grain consequently as it descends down the space between the cylinder and shell is subjected to a thorough scouring and the spiral form of the beaters J, retard the descent of the grain and prevent it from passing too quickly down between the cylinder and shell. The fan H, causes a current of air to pass through the wire cloth over the openings (d) and down through the space between the cylinder and shell and up through the interior of the cylinder into the fan box D, and the pulverized smut and dirt will follow the blast or current and be ejected from the fan box D. The cleansed grain will fall upon the basin K, and pass through the apertures or holes (i) and out through the tube or pipe L. At this point the grain will be subjected to another blast or current which passes into the lower part of the shell A, through the holes (c) into the lower part of the tube or pipe L, and up through the cylinder G, the tube or pipe L, causing this latter current or blast to pass upward in a column through the cylinder. The solid black arrows, see Fig. 1, show the direction of the grain. The solid red arrows show the direction of the

current of air that passes through the openings (d). The dotted red arrows show the direction of the current of air that passes through the apertures (c) at the lower part of the shell, and the dotted black arrows show the direction of the smut.

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

1. I claim, in combination with the fan box D, inclosing the fan H, and provided with the hollow shaft through which the grain is fed; the cylinder G, shell A, and conical basin K, arranged in the manner described for the purposes specified.

2. I claim the inverted conical basin K, with tube or pipe L, provided with apertures (i), attached in combination with the shell A, cylinder G, and fan box D, substantially as shown and described.

3. I claim feeding the grain into the space between the shell A, and cylinder G, by means of the hollow shaft E, and arms (h) (h) arranged as shown whereby the grain is evenly fed into said space without interrupting or obstructing the current or blast which passes up through the cylinder, and the machine also rendered compact and efficient.

JONATHAN L. BOOTH.

Witnesses:

S. H. WALES,
O. D. MUNN.