2 Sheets—Sheet 1.

E. HOWARD.

Smut Machine.

No. 3,301. Patented Oct. 12, 1843.

Fig. 1.

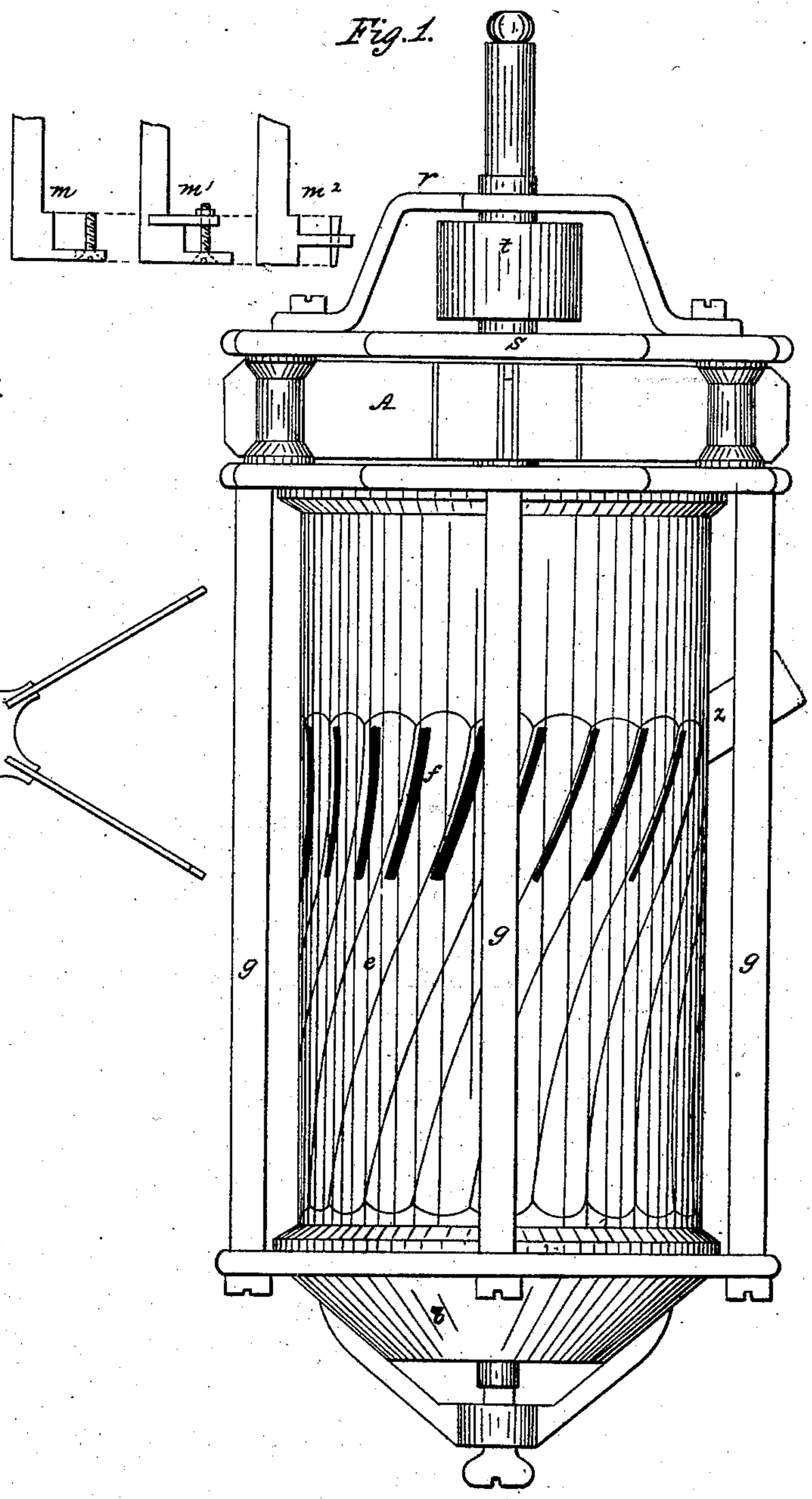
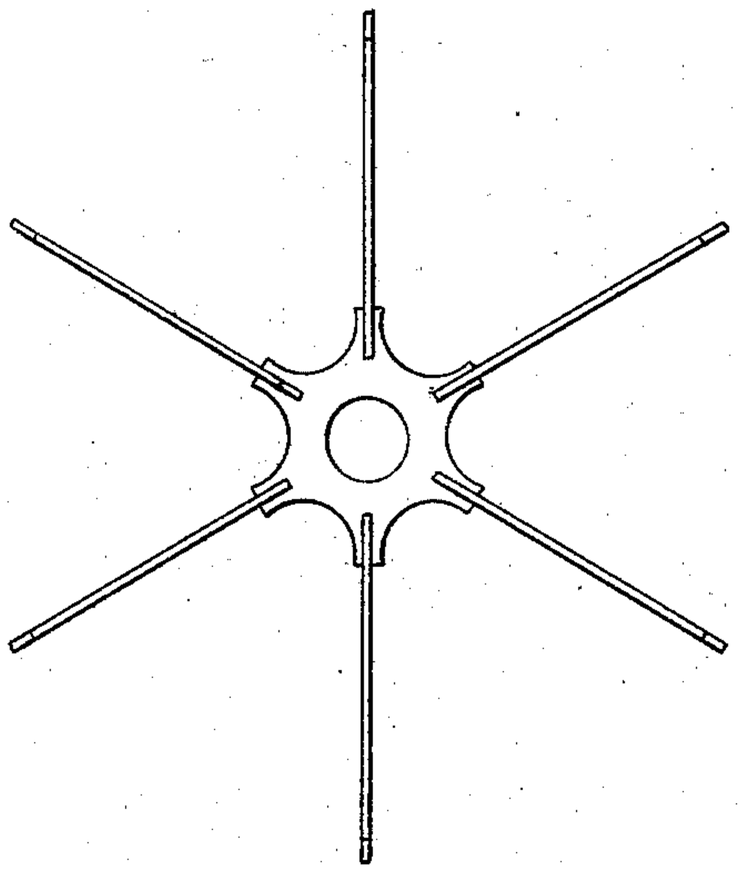


Fig. 6.



Witnesses:
William H. Cutter
Jay Handy

Inventor:
Edward Howard

2 Sheets—Sheet 2.

E. HOWARD.

Smut Machine.

No. 3,301.

Patented Oct. 12, 1843.

Fig. 4.

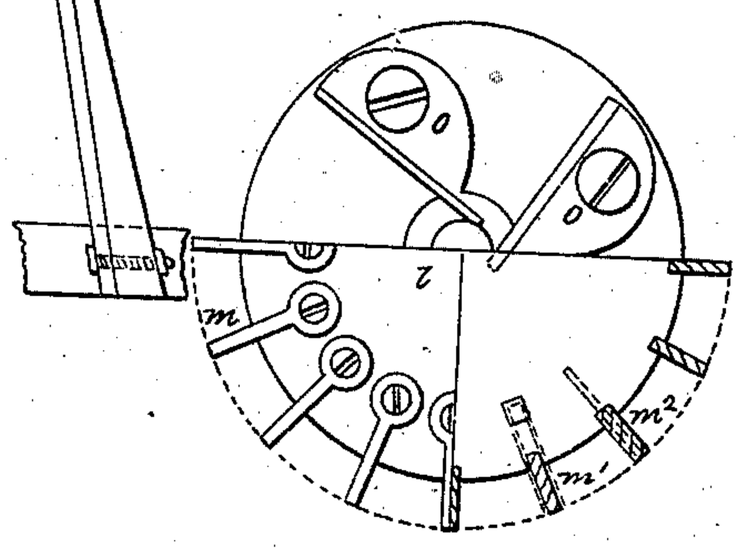


Fig. 2.

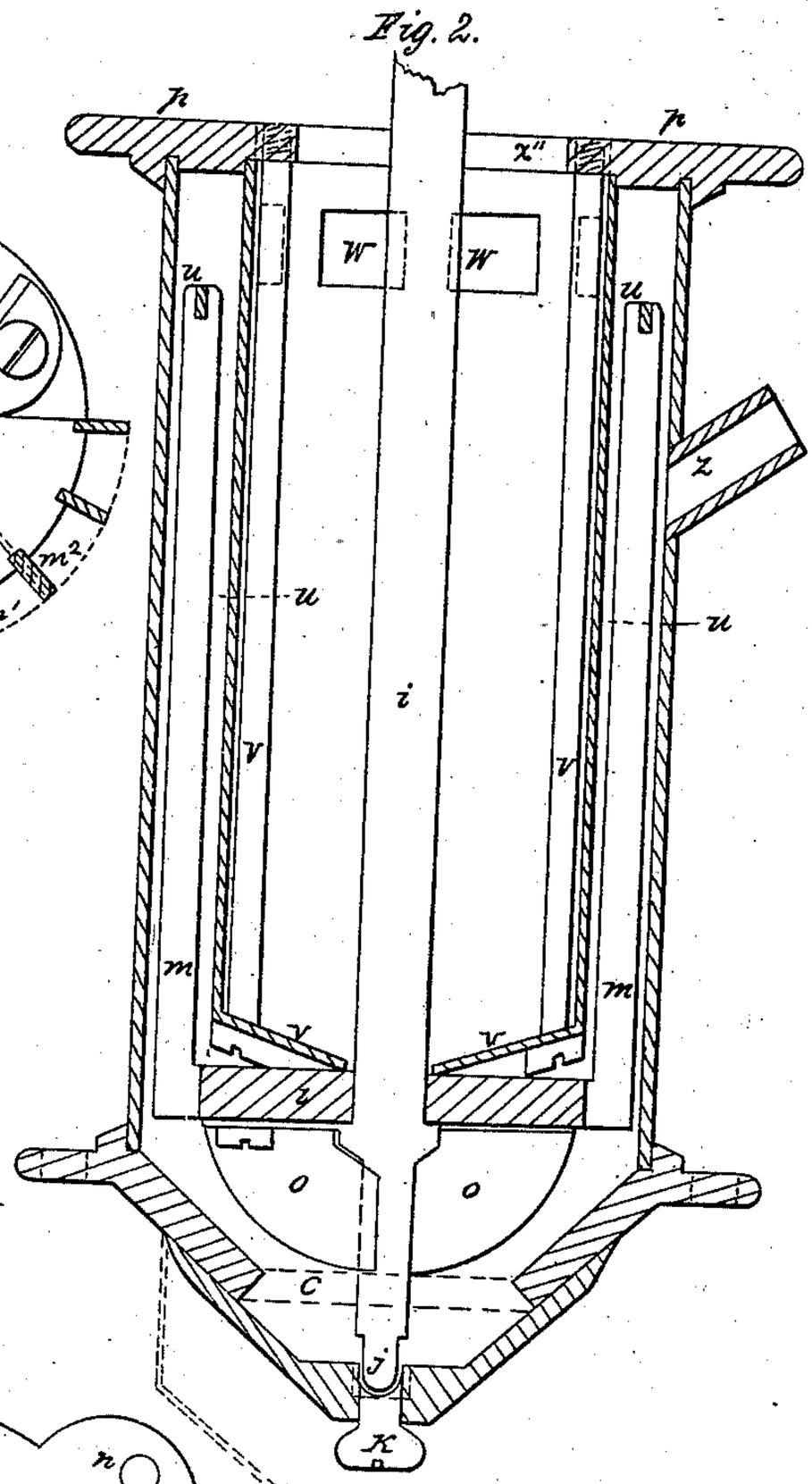


Fig. 8.

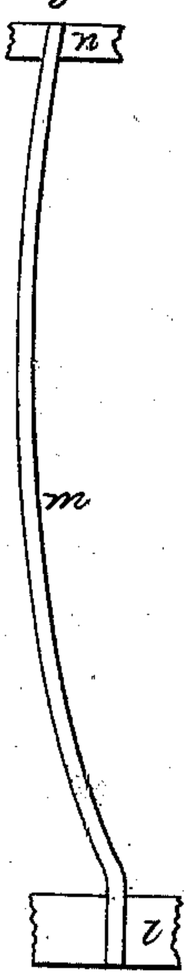


Fig. 7.

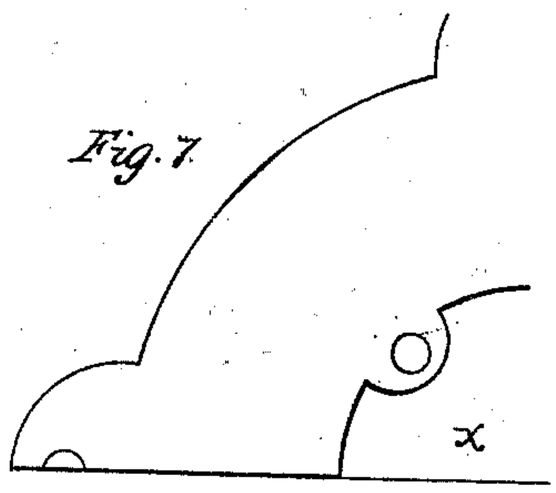


Fig. 3.

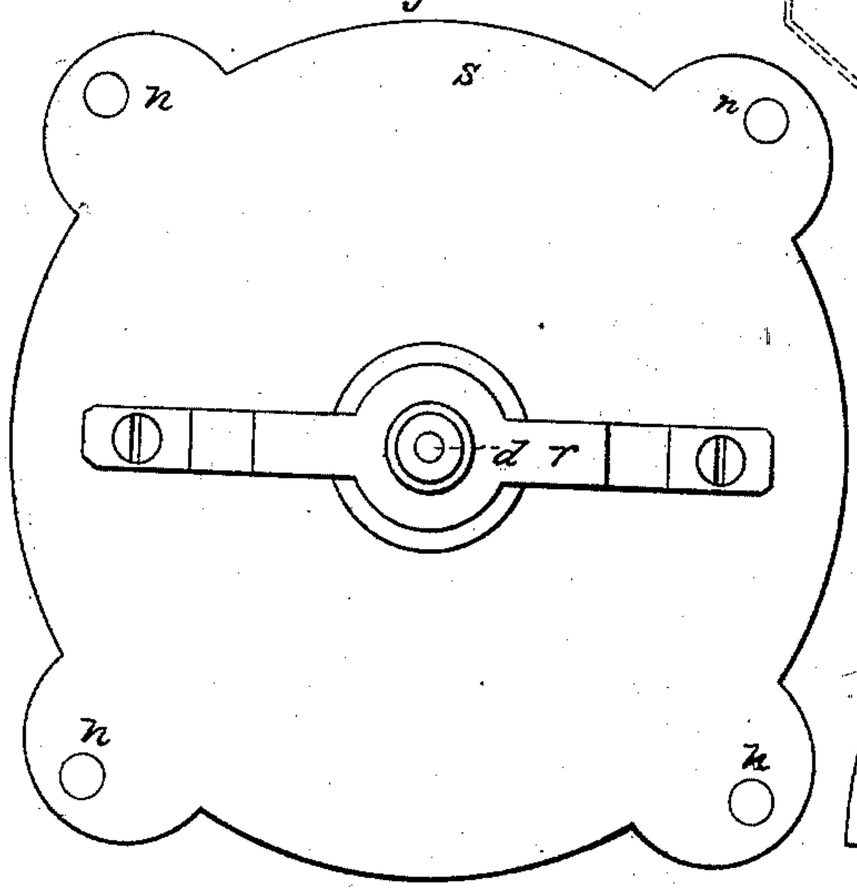
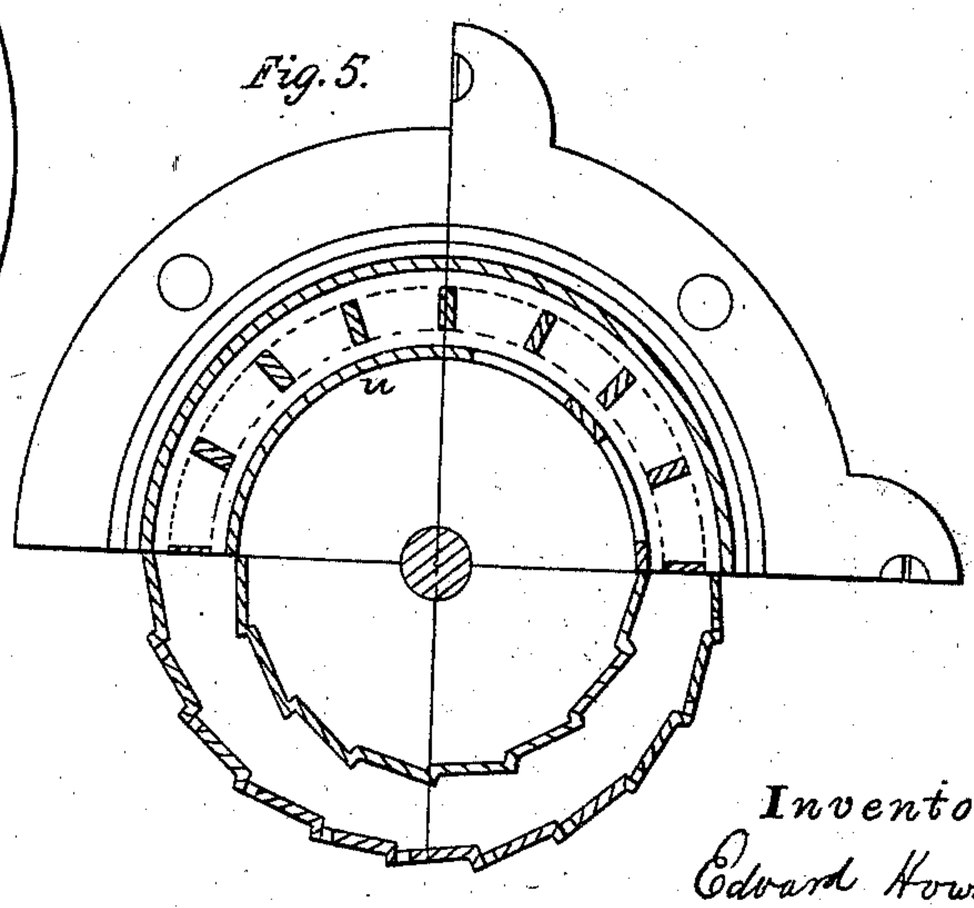


Fig. 5.



Witnesses:
William H. Cutter
Joy Handy

Inventor:
Edward Howard

UNITED STATES PATENT OFFICE.

EDWARD HOWARD, OF FREDONIA, NEW YORK.

SMUT-MACHINE.

Specification of Letters Patent No. 3,301, dated October 12, 1843.

To all whom it may concern:

Be it known that I, EDWARD HOWARD, of Fredonia, in the county of Chautauqua and State of New York, have invented a new and useful improved machine for cleaning wheat from smut and other impurities called "Howard's stationary center double-cylinder smut-machine;" and I do hereby declare that the following is a full and exact description of my said invention.

My said machine consists of three principal parts, to wit: First, the moving part, consisting of an upright shaft, eight or more beaters, supported by a revolving head attached to the said shaft below the center cylinder hereafter mentioned, which said beaters are connected with each other at the upper end by a horizontal rim or hoop, four small wings attached to the said revolving head on the under side thereof, six larger wings revolving above the middle head and the driving pulley attached to the shaft, between the yoke and upper head. Second, the stationary center, cylinder surrounding the said shaft though not attached to it, and made fast to the middle head hereafter mentioned by means of iron rods or bolts and screws. Third, the outer cylinder which is also stationary and containing the parts above described, exclusive of the large wings which are between the middle and upper head, which last mentioned head is connected with the middle head by means of posts and screws. The said machine together exhibits an upright cylindrical structure of iron (Figure 1) about three feet and a half high exclusive of fixtures above and below but may be made larger or smaller, the lower head of which (*b*) is made to receive and confine the ends of the cast iron plates which compose the outer cylinder within the circle of a raised flange (*a*) on the upper face of said head. The said head is sunk from the inner side of the cylinder to the depth of from three to six inches (*b*) with an open center of from eight to twelve inches in diameter (*vide* C, Fig. 2). This cylinder is of equal size the whole length and confined at the top in the same manner as at the bottom, the middle head (*d*) being flat, with a hole in the center of from nine to eleven inches in diameter, (see Fig. 1, which exhibits a quarter section of said head) with flanges upon the outer and inner sides (Fig. 2, P, P,) for the purpose of receiving and confining the upper ends of the outer and inner cylinders. The said outer cylinder is grooved or channeled (Figs. 1 and 5) inside and outside, for the purpose of adding strength without weight and to form edges on the inside to assist in beating and scouring the grain. (Fig. 5, represents a cross section of the machine.) The said grooves or channels run diagonally (Fig. 1, *e*,) from the bottom to within about eight inches of the top of said cylinder.

Commencing at the top of each groove or channel and extending about one third of the distance down the same is an aperture or opening (*f*,) about one eighth of an inch wide through which some part of the dust and smut may escape. The two heads are held together by four or more rods or bolts (*g*,) passing through their edges outside of flanges. Above the said middle head and about five inches therefrom is the upper head (S, the upper surface of which is exhibited in Fig. 3,) which is connected to the middle head by means of four iron bolts or posts (*q*,) passing through projections (N, Fig. 3). Through the center of this head (*d*,) passes the main shaft (*i*,) (see Fig. 2,) into the yoke (*r*, as seen in Fig. 1,) which is screwed to the said upper head, and which together with said head helps to support and steady the said moving part of the machine. The said moving part of the machine (see Fig. 2, which represents a longitudinal section of the machine to the middle head inclusive) consists of an upright shaft (*i*,) resting and turning in a steel box (*j*,) supported by a screen (*k*,) with which the shaft may be raised or lowered; attached to which shaft is the revolving head (*l*,) (Fig. 4, represents the lower surface of said head) to which the beaters are attached by bolts or screws (Fig. 4). The beaters (*m*,) are of wrought iron about one and one fourth inches wide and of such form and shape as is judged best and are secured at the top by an iron rim or hoop (*n*,). (See Fig. 8, which represents a beater with a section of the rim.) Under the head to which said beaters are attached are three or four small wings (O,) for the purpose of adding to the current of air upward. Also attached to the said shaft between the middle and upper heads are the wings (A, A,) (Fig. 6, represents a cross section of said wings,) six or more in number about four inches wide and extending outward far enough to sweep the whole

space inside of the posts (q, q, see Fig. 1). The shaft passes upward through the upper head (s,) above which is attached to it the driving pulley (t,) about eight inches in diameter upon which a board is placed to drive the machine above this pulley the end of the shaft is supported by the yoke (r,) the ends of which are bolted or screwed to the said upper head. The shaft with the beaters and wings is capable of making about six hundred revolutions per minute. Within the beaters and outer cylinder above described is the center cylinder (see Fig. 2, u). Fig. 5, represents a cross section of said cylinder) confined at the top by the flange (P, P,) on the middle head and fastened to said head by means of the iron rods (V, V,) which passes through the lower head of said cylinder and through ears or projections on the inside of said middle head. (Fig. 7 represents a quarter section of said middle head.) The body of said cylinder is of iron with grooves or channels corresponding to those on the outer cylinder (see Fig. 5,) and with eight or more apertures (Fig. 2, W, W,) between said grooves or channels and the top of the said cylinder each from three to four inches square to allow the smut and dirt to pass off through the center of the middle head as hereafter mentioned. The upper end of said center cylinder is entirely open as shown at X. (See Figs. 2, and 7.) But the lower end is secured by a head (Y, Y, see Fig. 2,) through which the main shaft passes. This head is to give strength and steadiness to said cylinder and to force the air between the two cylinders which might otherwise pass through the center.

The wheat is conveyed into the said machine by a hopper through a hole in the side of the outer cylinder (Z) below the top of the beaters here coming in contact with the beaters it is freed form dirt and smut the latter being pulverized and the clean wheat runs out through the open space in the lower head (C,) while a strong current of air produced by the swift revolution of the wings and beaters rushes up through the same open space and carries all the smut and dirt through the square apertures near the top of the center cyinder, (W, W,) thence through the middle head (X) where it is finally blown away by the wings (A, A.) But if thought proper the apertures or openings in the grooves or channels of the outer cylinder (f) may be closed and then by incasing the space between the middle and upper heads around the wings (A, A,) with sheet iron and placing a tube therein the smut and dirt may be blown away out of the mill.

What I claim as my invention and desire to secure by Letters Patent is—

The combination of the revolving frame or beaters with the inner and outer stationary cylinders constructed and operating as above set forth.

EDWARD HOWARD.

Witnesses:

BENJAMIN WOOLWORTH,

WILLIAM H. CUTTER.