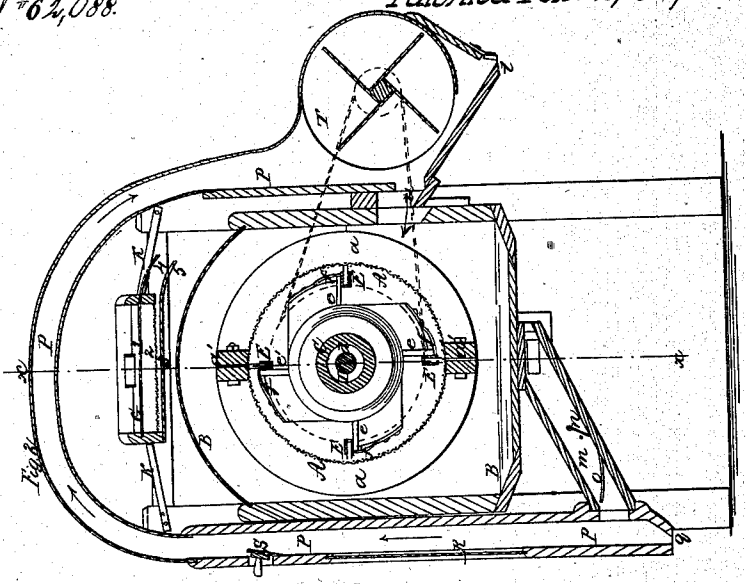
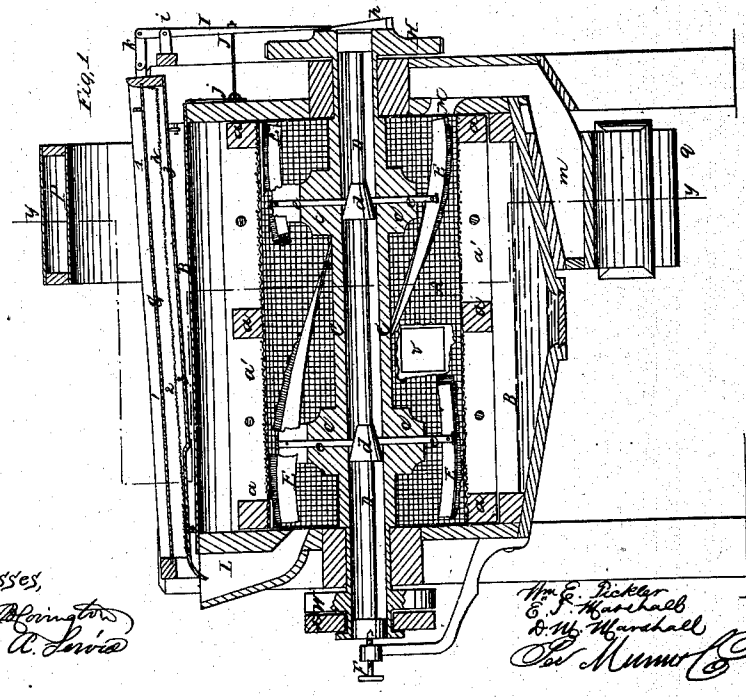
W. E. Tickler & E. T. & D. M. Marshall.

Smut Mill.

No. 62,088. Patented Feb. 12, 1867.





Witnesses,
H. C. Covington
Jas. A. Lewis

Inventor,
Wm. E. Tickler
E. T. Marshall
D. M. Marshall
per Munn & Co Attorneys

United States Patent Office.

WILLIAM E. TICKLER, EZRA T. MARSHALL, AND DANIEL M. MARSHALL, OF PIERCETON, INDIANA.

Letters Patent No. 62,088, *dated February* 12, 1867.

IMPROVEMENT IN SMUT MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, WILLIAM E. TICKLER, EZRA T. MARSHALL, and DANIEL M. MARSHALL, of Pierceton, Kosciusko county, and State of Indiana, have invented a new and improved Smut Machine; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 in the drawing is a vertical longitudinal section of our invention, taken in the line *x x*, fig. 2; and

Figure 2 is a cross-section, taken in the line *y y*.

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

This invention relates to certain new and useful improvements in smut machines, whereby the work of cleaning grain is executed in an efficacious and rapid manner, as hereinafter explained.

A is a cylinder of wire cloth, which is secured to wooden rings *a a* with longitudinal strips *a'*, and placed in the casing or chamber B. C is a hollow shaft running through the centre of the screening-cylinder A, and carries spirally-arranged brushes E E, which agitate the grain, and carry it through the cylinder, and also prevent the wire cloth of the cylinder from being choked. The hollow of the shaft C is occupied by a second shaft, D, which has conical or wedge-shaped collars *d d* fixed thereon; and these collars engage with the inner ends of the brush-standards *e e*, so that, by adjusting the shaft D longitudinally, by means of a set-screw, F, (fig. 1,) the cones *d d*, by acting upon the standards *e e*, force the brushes E E out against the inner surface of the cylinder A; or the cones are withdrawn, so that the springs *f f* (fig. 2) push the brushes in toward the centre of the cylinder; and by these means the adjustment of the brushes to the inner surface of the cylinder is readily controlled. G is a preliminary riddle, which is composed of a perforated plate, 1, wire screen, 2, and bottom plate, 3. This riddle is suspended by four links K, one at each corner, and receives a longitudinal vibratory movement by a cam-wheel, H *h*, and a lever, I, the said lever I being pivoted to a fixed point, *i*, and connecting with the riddle G by means of a link, *k*, and is actuated by cams *h* on the wheel H, which is fixed on the end of the shaft C. A flat spring, *j*, connects with the lever I by a rod, J, and returns the lever I to the face of the cam-wheel as each cam passes the lever, and thus gives the back stroke to the lever and riddle I G. T (fig. 2) is a blast-fan, which is driven by a belt from the wheel H, (fig. 1,) as indicated by dotted lines in fig. 2, and receives air by drawing it in at the opening *q* in the lower end of leg or pipe P, and discharges its air through the passage *u* into the machine. *t* is a valve, where some of the heavier screenings are discharged from the fan. R is a glass window for observing the effect of the blast; and S is a valve for regulating the same. *n* is a spreading valve or apron, which is pivoted in the spout *m;* and the grain, in passing under its swinging or lower edge, is spread evenly over the bottom of the spout *m*, and arrives at the blast entrance *q* in a stratum of uniform and regular depth. *o* are elastic wire fingers, which have their elevated ends raised from the spout *m* at an oblique angle, as shown; and they tend to separate straws or other light refuse above the grain, so that the grain has a lessened hold of the said refuse, and the blast is enabled to carry it off with more certainty up the pipe P and into the fan.

Its operation is as follows: The machine is driven by a band-wheel W, *x* being its twin loose pulley. The grain is allowed to fall into the riddle G at its highest end, and by the vibratory movement of the riddle is carried down to the lower end and discharged into the spout L, which shoots the grain into the wire cylinder A; and it is here greatly agitated and exposed to the blast, while being carried through the cylinder, by the spiral brushes E, to the opening or outlet M, where the grain falls into a chute, *m*, and runs down into the leg P, and from thence falls out of the machine through the opening *q*. The fan draws its supply of air in at the opening *q*, where the grain falls out of the machine; and the rapid flow of air inward carries off all of the dirt from the grain as it falls through the said opening *q*. The air current continues around in the pipe P until it reaches the fan, and then it is thrown into the body of the machine, and escapes through the smut spout *u*, fig. 1. A portion of the screenings is separated from the grain while it is passing through the riddle G, and before it enters the machine; and this screening or light stuff is thrown out of the riddle on one side of the machine by the spouts 4 and 5, (fig. 2.) The glass window R affords a ready means of observing the action of the blast, so that it may

be regulated by a valve, S, to the proper velocity, in the lower end of the leg, where the grain falls through the air current or blast.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The smut machine consisting of the cylinder B, hollow shaft C, brushes E, shaft D, cones *d*, standards *e*, riddle G, fan T, and pipe P, operating substantially as described for the purpose specified.

2. The spreading device, consisting of the pivoted valve *n*, elastic fingers *o*, arranged in the spout *m*, substantially as and for the purpose specified.

WILLIAM E. TICKLER,
EZRA T. MARSHALL,
DANIEL M. MARSHALL.

Witnesses:
M. J. LONG,
WOODSON S. MARSHALL.