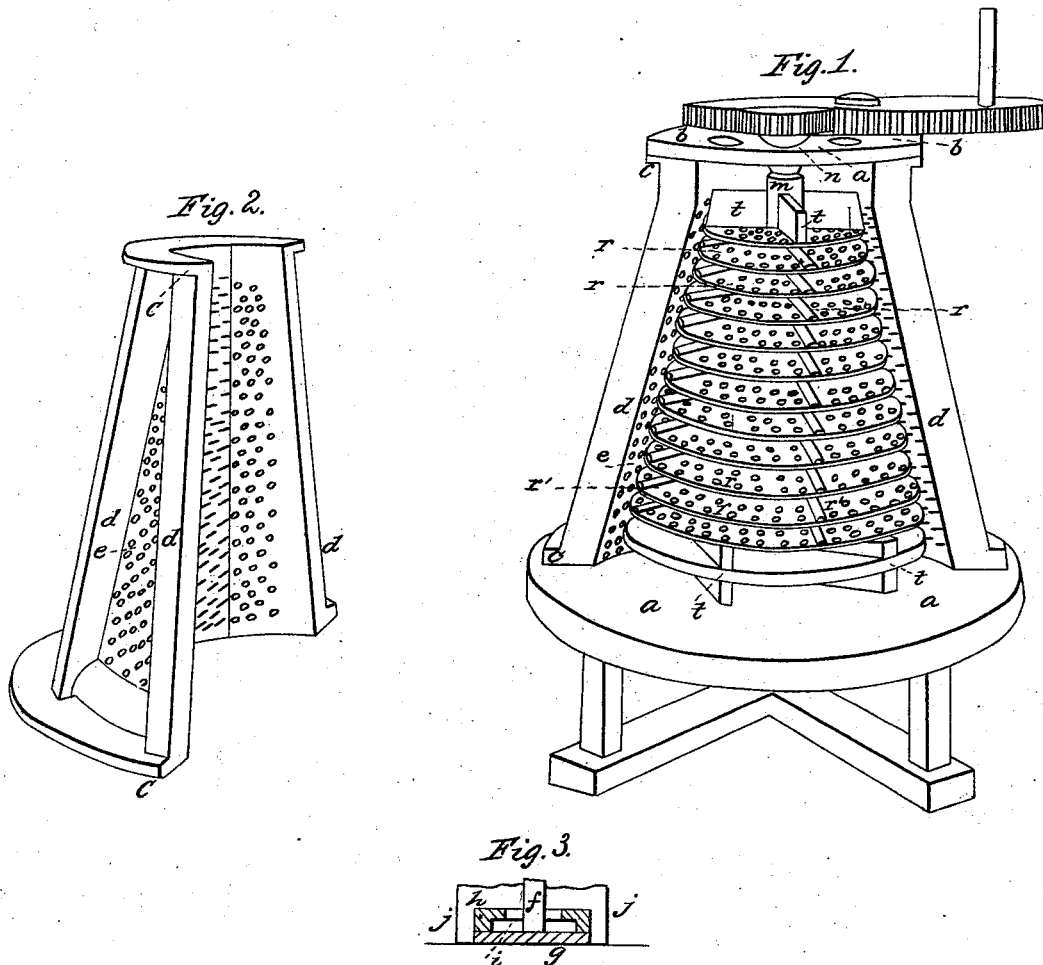


B. M. SMITH.

Smut Machine.

No. 375.

Patented Sept. 8, 1837.



UNITED STATES PATENT OFFICE.

BENJAMIN M. SMITH, OF ROCHESTER, NEW YORK.

MACHINE FOR SEPARATING SMUT FROM WHEAT AND FOR CLEANING ALL KINDS OF SMALL GRAIN.

Specification of Letters Patent No. 375, dated August 1, 1837.

To all whom it may concern:

Be it known that I, BENJAMIN M. SMITH, of the city of Rochester, in the county of Monroe and State of New York, have invented a new and Improved Machine for Separating Smut from Wheat, and for Cleaning All Kinds of Small Grain; and I do hereby declare that the following is a full and exact description thereof.

10 The exterior case, or shell, of my machine, as shown in Figures 1 and 2, in the accompanying drawing, is in the form of a frustrum or a cone; this, and other parts of it, may be made either of wood, or of iron, or in part of both, which latter manner of constructing it I have found to be the best. Fig. 2, represents a portion of exterior case removed, for the purpose of exhibiting the manner of forming the interior, both of that part, and of the revolving plates shown in Fig. 1. The bottom of the machine *a, a*, and its top, *b, b*, Fig. 1, are made flat; they may be of wood, and strengthened by cast-iron rims. The exterior shell, forming the sides, extends from the bottom to the top *c, c*, and is usually made with a cast-iron rim at each end, by which it is attached to the portions *a, a*, and *b, b*, forming the top and bottom. The interior of the conical sides is lined with sheet-iron, affixed to strips of wood, *d, d*, which extend from the bottom to the top. The part marked *e, e*, of this sheet-iron is punched from the outside with the numerous small holes, forming a grater-like surface on the interior; the part so punched is not covered on the outside, but is left open to allow of the free escape of the pulverized smut, or other dust. The part marked *n, n*, is thickly set with metallic teeth, or points, driven into wood, through holes punched in the sheet-iron. There are, consequently, alternate sections of the open grater-like portions, and of those covered with points, these latter sections are usually formed of wood on the exterior, to hold the points. In the drawing, four such alternate sections are represented, but the number may vary, and I usually employ eight.

50 A shaft, *m*, which may be driven by any suitable gearing which will cause it to revolve with great velocity, runs in bearings in the top and bottom, *a, b*; and upon this shaft I put disks, or circular plates, of sheet-

iron, *r, r*, increasing in diameter from the top to the bottom, so as to reach within the distance of from half an inch to an inch more, or less, of the exterior case, according to the size of the machine. In the drawing I have shown eleven such plates, but I sometimes employ double that number. These are punched full of holes, so that their upper surfaces shall also be grater-like. To strengthen these, I use arms of cast-iron, shown at *r', r'*, Fig. 1; these I usually make in the form of a cross, the arms extending to the periphery of the plates, both above and below, and embracing the plate between them. The center part of these crosses are perforated, and form hubs which fit into the shaft, not only sustaining the plates, but keeping them at a proper distance apart, which may be from an inch and a half to three inches, according to the size of the machine. These disks may be made entirely of wood, in which case their upper surfaces must be thickly set with iron points, to perform the same office with the grater-like disks of iron.

At the upper end of the shaft, I place a disk, or plate, *s*, which may be denominated the feed plate; and upon this there are wings or vanes, *t, t*, which operate as fans, serving the more effectually to distribute and clean the grain as it passes through the machine. The grain is fed through a hole, *u*, in the top of the machine, and there are one, two, or more, perforations through the top *b, b*, to admit wind to the fan; these holes I usually surmount by short tubes to prevent the accidental escape of grain. Wings, or vanes, similar to those on the upper are also placed upon a lower disk *t*, which, by the current of wind generated by it, completes the operation. The grain is allowed to escape through a suitable opening or openings, in the bottom, *a, a*, of the machine.

The step of the shaft *m*, I construct in a peculiar manner, which is shown in Fig. 3, where *f* is the lower end of the shaft *m*; and *g*, a piece of hard metal upon which it rests; upon this, there is another piece of metal, *h*, kept in its place by suitable pins, or other contrivances; through this upper piece the shaft passes, and around its lower end there is an excavation *i*, to receive oil, which passes into it through small holes

drilled through the upper plate. An oil cup
/, /, surrounds this step, and may have a
cover on it to keep out dust &c. A step so
constructed being, as I believe, new, and
5 being applicable to various machines, I claim
it, as described, not merely as combined with
the other parts of this machine, but also as
applicable to others, constructed for other
purposes. In operating this machine, the
10 shaft, with its disks, is to receive a rapid
motion, and the grain is made to fall upon
the upper disk, by which it is thrown forcibly
against the interior of the shell, and by
that reflected back upon the revolving
15 disks, which backward and forward motion
is repeated throughout its descent, the
points tearing and reducing the smut to
powder, and the open grater assisting, with
the action of the upper surfaces of the disks,
20 completely to scour the grain, the dust

from which escapes through the open
graters.

What I claim as my invention, is—

The constructing of a machine for clean-
ing wheat, or other grain, having a shaft 25
with revolving disks, the upper surfaces of
which are made rough by metallic points,
punching, or otherwise, which disks are sur-
rounded by a case, the interior of which is
also made rough by punching, and the in- 30
terior of metallic points, in alternate sec-
tions; the whole being constructed, and op-
erating, substantially in the manner herein
set forth. I also claim the vanes as com-
bined in this machine, and the particular 35
manner of forming the step.

BENJAMIN M. SMITH.

Witnesses:

THOS. P. JONES,
J. GUITEAU.