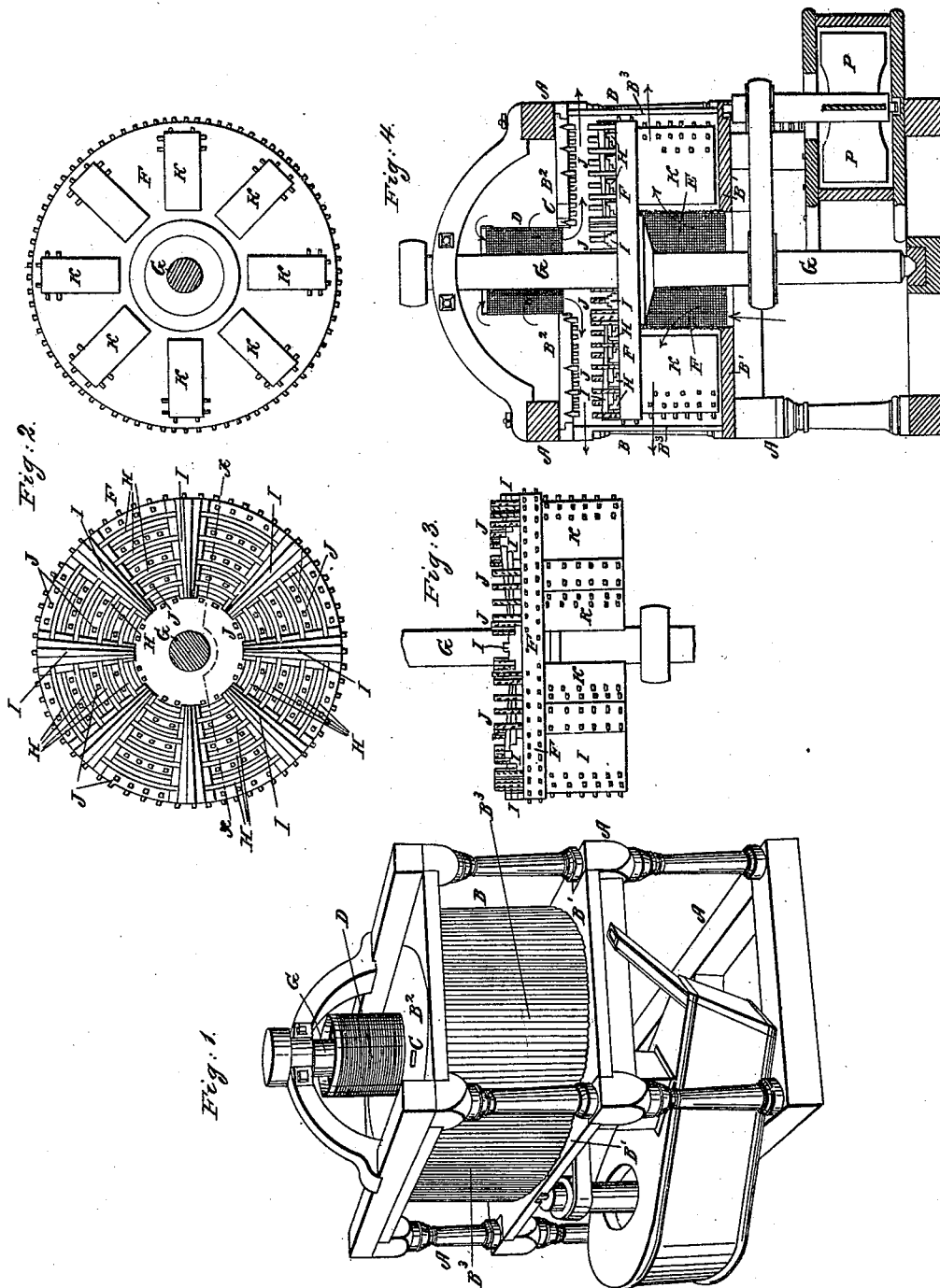


BROWN & BUELL.

Smut Machine.

No. 6,598.

Patented July 17, 1849.



# UNITED STATES PATENT OFFICE.

A. BUELL AND T. BROWN, OF LOWVILLE, NEW YORK.

## SMUT-MACHINE.

Specification of Letters Patent No. 6,598, dated July 17, 1849.

*To all whom it may concern:*

Be it known that we, ALBERT BUELL and THOMAS BROWN, of Lowville, in the county of Lewis and State of New York, have invented a new and useful Improvement in Smut-Machines, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine. Fig. 2 is a plan of the top and bottom of the revolving disk affixed to the vertical rotating shaft. Fig. 3 is a side elevation of ditto. Fig. 4 is a vertical section of the machine on the line *x x*, of Fig. 2.

The arrows show the direction of the currents of air when the machine is in operation.

Similar letters in the several figures refer to corresponding parts.

In order to make a good smut machine at least three important results must be produced: Firstly, a violent rubbing and beating of the grain so as to separate the smut without breaking or otherwise injuring the grain; secondly, a strong current of air horizontally and radially through the openings, or apertures, in the upright stationary cylinder for the purpose of carrying off the smut and dirt from the grain as soon as separated so as to prevent it from descending with the grain to the bottom of the cylinder where it might be carried around with the grain and again be made to adhere to the wheat; thirdly a simultaneous upward and downward central current united with horizontal radial currents through the machine. These results we accomplish in the most effectual manner by the following described combination and arrangement of parts.

A is the frame of the machine made in the usual manner.

B is the upright stationary cylinder in which the grain is cleaned, composed of two circular heads B<sup>1</sup> B<sup>2</sup> and a circle of vertical parallel rods B<sup>3</sup> placed sufficiently far apart to form the required spaces for the passage of the smut and dirt; and otherwise made in the usual manner, except in having a circular section B<sup>2</sup> of the head to revolve when required in order to bring the feeding aperture C opposite any point of the compass, for the purpose of introducing the grain from any side of the machine, desired. And in having a reticulated or perforated curb

D around the central opening in the revolving portion of the head to prevent the grain passing into or out of said central opening and at the same time allowing a free and uninterrupted passage for air to the interior of the cylinder, the air passing through the sides as well as top or mouth of the curb; and a similarly constructed curb E around the central opening in the bottom B<sup>1</sup> of the cylinder to admit of a free and uninterrupted passage of the air upward to the interior of the cylinder, the air passing through the sides as well as the mouth of said curb and said curb preventing the grain working to the center of the cylinder. These perforated cylinder curbs are found to be superior to the imperforated curbs on account of their admitting the air to the cylinder more freely. G is a vertical shaft turned by pulley and band, or other means. F, is a circular disk affixed to and turning with said shaft. This disk contains the various projections for separating the smut from the grain—throwing it centrifugally against the inside of the case and centripetally toward the center creating the current of wind through the machine and driving the dirt out of it. H are segment ribs formed on the upper surface of the revolving disk—each segment rib having steps formed on it, one rising above another as their diameters increase, against which the grain is thrown by radial ribs or beaters I and by which it is rebounded toward the center and again thrown toward the periphery, by which operation the smut is beaten from the grain.

I are the radial beaters; these beaters are arranged at equal distances apart upon the upper surface of the disk and made tapering from the periphery toward the center, having their sides formed into steps of unequal height—the upper steps of each beater being higher next the center and gradually decreasing in height as they approach the periphery; and the second range of steps increasing in height as they approach the center. These radial beaters are cut by the segment ribs with which they are connected and all are combined with the disk. Concentric rows of bearded upright pins J for cutting the smut from the grain are inserted into the upper side of the disk between the beaters and ribs: and radial wings K are affixed to the under side of the disk for striking the grain and throwing it against the inside of the cylinder and also for forc-

ing the air from the cylinder and creating a partial vacuum therein which is instantly filled by the air rushing in through the lower curb. A partial vacuum is also  
 5 created in the cylinder above the disk by the centrifugal action of the radial beaters aforesaid which is supplied by the air passing through the mouth and sides of the perforated curbs.

10 The radial wings extend from the periphery of the disk back toward the center about two thirds its semi-diameter for the purpose of leaving a space at the center a little greater than that of the diameter of the curb  
 15 E which extends up into said space that the current of air through the bottom of the cylinder and through the perforator curb may be uninterrupted. These wings as well as the periphery of the disk are covered with  
 20 punched sheet iron filled with short nails—square cornered pins or nails are inserted into the under surface of the top of the cylinder in the usual manner against which the grain is thrown by the action of the radial  
 25 beaters and upright bearded pins for separating the smut from the grain.

The fan P for separating whatever dust or dirt may remain on the grain after passing through the smut machine is made in  
 30 the usual manner and arranged beneath the same and operated by band and pulley.

The object of making the top to revolve is for the purpose of bringing the feed opening below the feed spout wherever the feed spout  
 35 may be placed in the room in which the smut machine is placed, thus doing away with the necessity of paying any attention to the position of said opening in the first construction of the machine,—or position of the  
 40 spout.

The principal object effected by the use of the reticulated cylindrical curbs is to admit uninterrupted and free streams of air through their sides or peripheries at the  
 45 same time that columns of air are introduced through their ends to the interior of the stationary cylinder and while they also perform their legitimate offices of preventing

the grain passing through the central air openings into which the said curbs are  
 50 fitted—it being discovered that the air openings in the top and bottom of the cylinder when lined with perforated curbs or short cylindrical reticulated tubes will introduce a  
 55 much larger quantity of air than when made without them; and as a large quantity of air is required to be driven through the openings in the sides of the stationary cylinder in order to carry off the smut previously separated from the grain it becomes important  
 60 that the cylinder should be supplied with the requisite quantity of air which cannot be effected when the curbs are imperforated, or flat and perforated.

What we claim as our invention and desire to secure by Letters Patent, is—

1. The combination of the beaters I,—ribs H,—and teeth J, with the circular disk F, constructed, arranged, and operating in the  
 70 manner and for the purpose herein set forth.

2. We also claim the combination of the perforated or reticulated curbs let into and surrounding the central air holes of the top and bottom of the stationary cylinder, in combination with said stationary cylinder  
 75 made in the manner herein described—said reticulated curbs operating in the manner herein set forth by which free currents of air are produced through the central openings of the top and bottom of the cylinder to the  
 80 center thereof and thence radially from the cylinder through its sides carrying off the smut immediately on its being separated from the grain and before the smut can have time to descend and again become mixed  
 85 with it as herein described.

In testimony whereof we have hereunto signed our names before two subscribing witnesses this twenty second day of February 1849.

ALBERT BUELL.  
 THOMAS BROWN.

Witnesses:

SOLOMON PHELPS,  
 JOHN JAY KNOX.