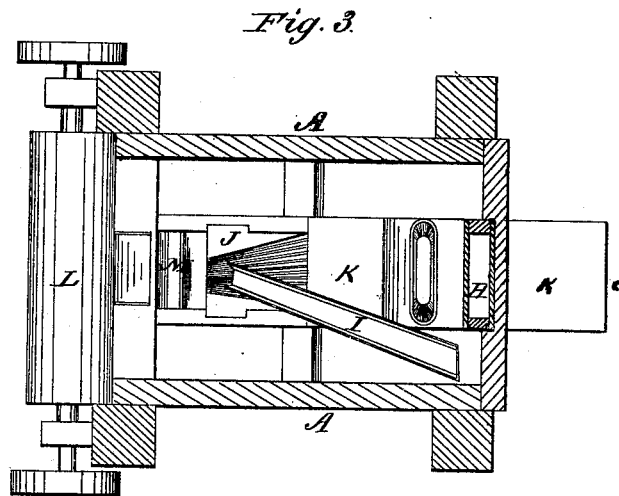
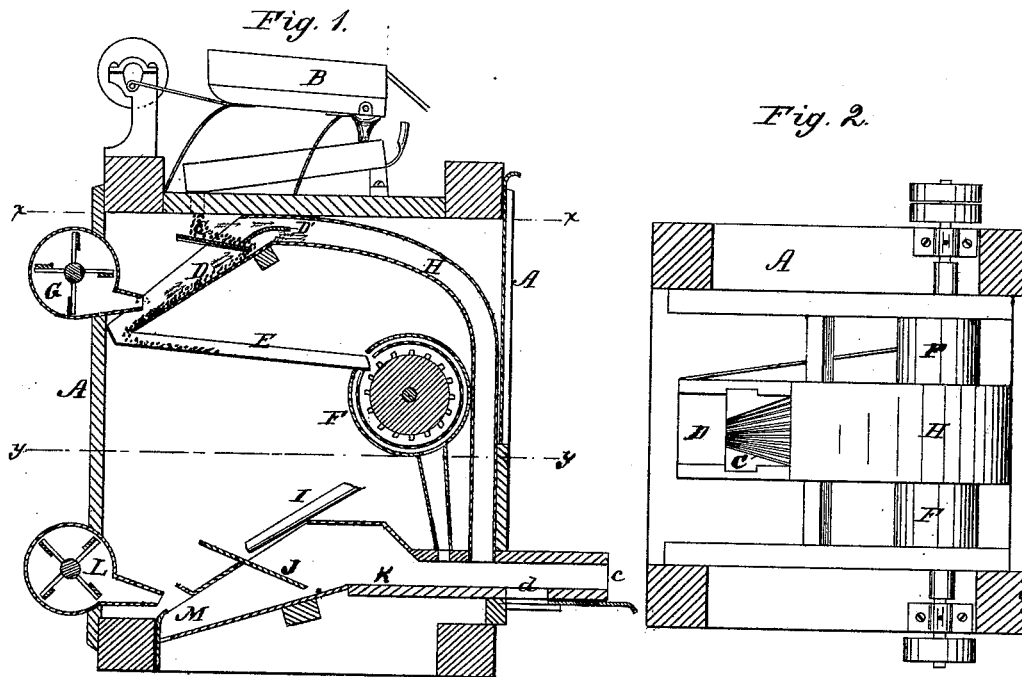


C. H. BRAZEAL.  
Smut-Machine.

No. 219,904.

Patented Sept. 23, 1879.



WITNESSES:

*W. W. Hollingsworth*  
*Amos W. Hart*

INVENTOR:

*C. H. Brazeal*  
BY *New & Co*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

CHARLES H. BRAZEAL, OF TYE RIVER DEPOT, VIRGINIA, ASSIGNOR TO  
HIMSELF AND ROBERT A. EWING, OF SAME PLACE.

## IMPROVEMENT IN SMUT-MACHINES.

Specification forming part of Letters Patent No. **219,904**, dated September 23, 1879; application filed  
July 8, 1879.

### *To all whom it may concern:*

Be it known that I, CHARLES H. BRAZEAL, of Tye River Depot, in the county of Nelson and State of Virginia, have invented a new and Improved Smut-Machine; and I do hereby declare that the following is a full, clear, and exact description of the same.

Smut is usually present in thrashed wheat in two forms—namely, it may adhere closely to the wheat-kernels or be loosely disseminated among them.

In order to remove the smut, the ordinary practice has been to subject the wheat to the action of the rubber alone. The result is that while the smut which adheres to the wheat-kernels is removed more or less perfectly, the loose grains of smut are exploded or broken up by the action of the teeth of the rapidly-revolving rubber, so that the quantity of fine smut mingled with the wheat is so great that the blast to which the wheat is subjected upon leaving the rubber is ineffective for its complete removal. Hence, some portion of the smut remains in the wheat, and finally appears in the flour produced from it, thus detracting from the whiteness and to a proportionate extent lessening the market value of the flour. To avoid this result, grain has been subjected to the action of a blast before passing to the rubber or smutter, and my invention is an improvement in that direction, the same consisting in a particular combination and arrangement of parts, as hereinafter described and claimed.

The machine I employ in carrying out my invention is shown in accompanying drawing, in which—

Figure 1 is a vertical central section of the machine; Figs. 2 and 3 are respectively horizontal sections on lines *xx* and *yy* of Fig. 1.

A indicates the rectangular frame or casing in which the working parts of the machine are arranged and inclosed, as hereinafter described. The wheat to be smutted is received from the shoe B, which may be of the usual construction, upon what I term a spreading-board or apron, C, and which is set at a slight inclination toward the rear side of the machine, and provided with a series of grooves radiating from a point near its upper edge. The wheat

follows these grooves and discharges over the lower edge of the apron in a broad thin sheet into the trough D, which conveys it to another trough, E, that conducts it to the rubber F.

The lower edge of the apron or spread board C is raised a short distance above the bottom of trough D, and through this space or opening the blast from the fan G is discharged into the downwardly-curved spout or tube H. Thus while falling from the apron the wheat is subjected to the free action of the blast, and the loose grains or particles of smut, being lighter than the kernels of wheat, are mostly removed. While the wheat is passing from the spread-board down the broad trough D it is further, or a second time, exposed to the action of the blast which removes what few loose grains of smut may have chanced to escape the blast in the first instance. The wheat hence enters the rubber freed from the loose smut it originally contained.

Immediately over the lower portion of spread-board C, and within the mouth of tube H, I arrange a plate, D, transversely, which subserves an important function—that is to say, aside from regulating the feed, by preventing the too rapid flow of grain over the spread-board C, it guides the blast from fan G into tube H and prevents its deflection in an upward direction. The blast creates an induced but strong current of air over the spread-board C, as shown by single arrows in Fig. 1, and thus the grain is winnowed and a portion of the loose particles of smut and dust or other light foreign particles are removed preliminary to the action of the blast proper by which the bulk of them is afterward eliminated.

The spiral arrangement of the teeth of the rotating beater conveys the wheat to the point where it discharges into the trough I, and is by it conveyed onto the grooved spread-apron J, which is inclined like the first apron, and similarly arranged in relation to a fan, L, and smut-tube K. The blast from the lower fan, L, clears the wheat of the smut which the action of the rubber has detached from the kernels, and the wheat being now free of that and other foreign matter, passes down the trough M and enters a hopper, bag, or other suitable receptacle. (Not shown.) On the other

hand the smut removed from the wheat by the action of the first blast, and that removed by the second blast, pass along the respective tubes H K, and discharge at a common point, *c*, outside the machine, while the screenings, waste, &c., carried along with the blasts, being of superior gravity, fall through the opening *d* in tube K and are received into any suitable receptacle.

The spread-boards and fans are particularly useful for cleaning and assorting seed-wheat, since by proper adjustment of the valves on the ends of the fan-cylinders, the blast can be regulated so as to weigh the wheat, so to speak—that is to say, so as to select out or remove all broken or light kernels.

What I claim is—

In a smut-machine the combination, with the blast-fan, the inclined trough D, and the spread-board C, of the smut-tube H, provided with the divider and blast-guide D' situated in its mouth, so that the blast passes up the trough and beneath the spread-board and divider, whereby an induced current of air is produced through the grain before it reaches the spread-board, and a blast through the same after it leaves the spread-board, as set forth.

The above specification of my invention signed by me this 4th day of June, 1879.

C. H. BRAZEAL.

Witnesses:

AMOS W. HART,  
SOLON C. KEMON.