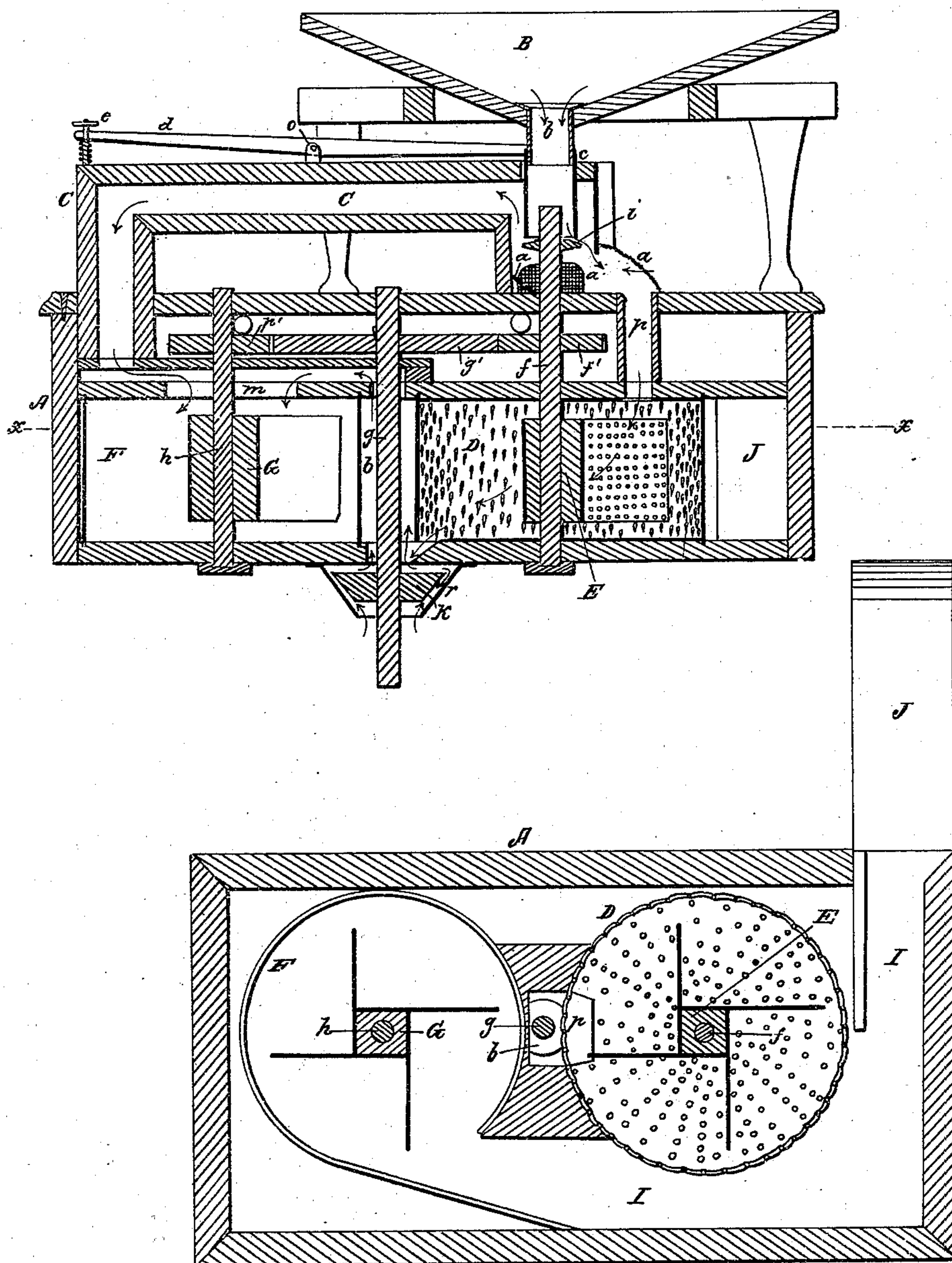


A. & G. SMITH.

Smut Machine.

No. 57,001.

Patented Aug. 7. 1866.



Witnesses:  
James Lee  
P. J. Dodge.

Inventor:  
A. & G. Smith.  
By W. C. Dodge.  
Attorney.



# UNITED STATES PATENT OFFICE.

A. SMITH AND G. SMITH, OF FLINT, INDIANA.

## IMPROVEMENT IN SMUT-MACHINES.

Specification forming part of Letters Patent No. 57,001, dated August 7, 1866; antedated August 2, 1866.

*To all whom it may concern:*

Be it known that we, A. SMITH and G. SMITH, of Flint, in the county of Steuben and State of Indiana, have invented certain new and useful Improvements in Smut-Machines; and we hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon—

Figure 1 being a longitudinal vertical section through the center; Fig. 2, a horizontal section taken on the line *x x* of Fig. 1.

The nature of our invention consists in a novel combination of a scouring or smut apparatus, a blast-fan, and a series of air ducts or passages, so arranged that the dust and lighter refuse shall be separated from the grain prior to its entering the smutter, and the remaining refuse be afterward separated and conveyed by a separate channel to the fan, from whence it shall be united to that previously extracted, and both be expelled together from the mill.

To enable others skilled in the art to construct and use our invention, we will proceed to describe it.

A represents a rectangular box, which constitutes the body or casing of the machine. B represents a hopper located over the case at one end, as shown in Fig. 1, in which the grain is placed to be fed into the machine through the spout *b*. Directly underneath the hopper and within the case A is placed a smutter, D, consisting of a perforated sheet-metal case, circular in form, and having within it a fan, E, the wings or beaters of which are also of perforated sheet metal. This fan E is mounted on a vertical shaft, *f*, which extends up to near the bottom of the hopper, where it has secured to it a circular plate, *i*, as shown in Fig. 1.

Surrounding the spout *b*, at the bottom of the hopper, is another spout or tube, *c*, the lower end of which reaches nearly to the plate *i*. This tube *c* is secured to the end of a lever, *d*, which is pivoted at *o*, the opposite end being adjusted by the nut *e*, thus raising or lowering the sliding tube *c*, by which the feeding of the grain upon the plate *i* is graduated as desired.

A spout, C, is located above the case A, as shown in Fig. 1, the spout *b* entering this

spout from above near its right-hand end, the opposite end of said spout being connected with the fan-case F by the central opening, *m*, at the top of said case. Openings are made at *a* into the vertical portion of the spout C at its right end, surrounding the shaft *f* and just below the plate *i*, which openings *a* are covered with wire-gauze, which permits a free entrance of air, and at the same time excludes other objects, a smaller spout, *p*, extending from thence down into the smutter D, as shown in Fig. 1.

Midway between the shaft *h* of the fan G and the shaft *f* of the smut-fan E is placed a third vertical shaft, *g*, which extends through the bottom of the case A and forms the driving-shaft of the machine. Near the upper end of this shaft *g* is secured the gear-wheel *g'*, which gears on one side into a similar wheel, *f'*, on the shaft *f*, and on the opposite side into a similar wheel, *h'*, on the shaft *h*. By this arrangement motion is imparted to the fans E and G by the shaft *g*.

A disk, *k*, is mounted on the shaft *g* below the body of the case A, where it is surrounded by a conical spout or casing, *r*, as shown in Fig. 1. An opening, *n*, from the bottom of the smutter D, leads down into the casing *r*, said opening being just above the disk *k*.

These constitute the working parts of our apparatus. Its operation is as follows: Grain being placed in the hopper B, motion is imparted to the machine in any suitable manner. As the fan G revolves the air is drawn in through the openings *a*, and passes thence through the spout C down into the fan-case F, through the central opening, *m*, at the top of the same, from whence it is expelled through the passage I and out at the spout J. The grain, in passing down through the spout *b*, falls upon the rapidly-revolving plate *i*, which distributes it centrifugally within the vertical portion of the spout C. As it is thus spread and falls the incoming draft of air through the openings *a* encounters it and takes up all the dust, chaff, and other light matter and conveys it through spout C into the fan-case F, from whence it is expelled, as already stated.

The grain, after being thus cleaned by the current of air, passes down through the spout *p* into the smutter, where it is thoroughly scoured by the wings of the fan E, which drive

it against the perforated curb or case D with sufficient force to break the grains of smut, the pulverized smut and dust being driven through the perforations into the space surrounding the case D, from whence it is expelled through the spout J with the current from the fan G. The grain passes from smutter D through the opening *n* and falls upon the revolving disk *k*, where it is again distributed as before, and where it encounters another current of air, which is drawn by the fan G up through the opening *l*, thereby effectually cleaning the grain from all remaining dust and refuse matter. In this manner the grain is most effectually scoured and cleaned ready for grinding.

Having thus fully described our invention, what we claim is—

1. The spouts C and *p*, having the perforations or openings *a*, and revolving disk *i*, arranged as shown, in combination with the fan G, for the purpose of extracting the dust and other light refuse from the grain previous to the latter's entering the smutter, as set forth.

2. The shaft *g*, having the disk *k* attached thereto, and located so as to receive the grain as it falls from the smutter D, in combination with the duct or passage *l*, and fan G, all arranged and operating in the manner and for the purpose herein set forth.

A. SMITH.  
G. SMITH.

Witnesses:

R. R. RUSSELL,  
J. T. SMITH.