J. GERMAN, Jr. & S. R. PERKINS.

Smut Mill.

No. 20,420. Patented June 1, 1858.

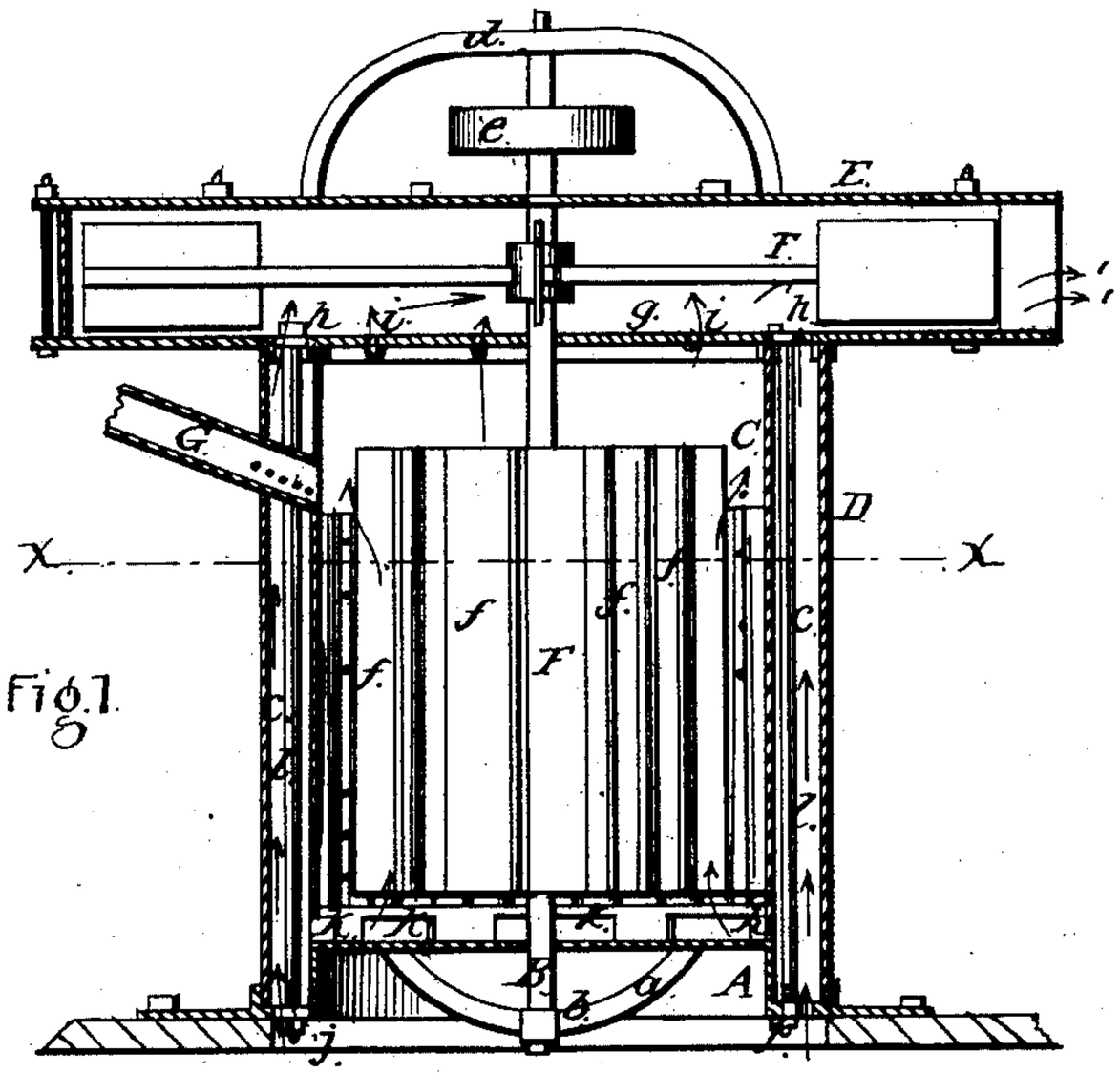
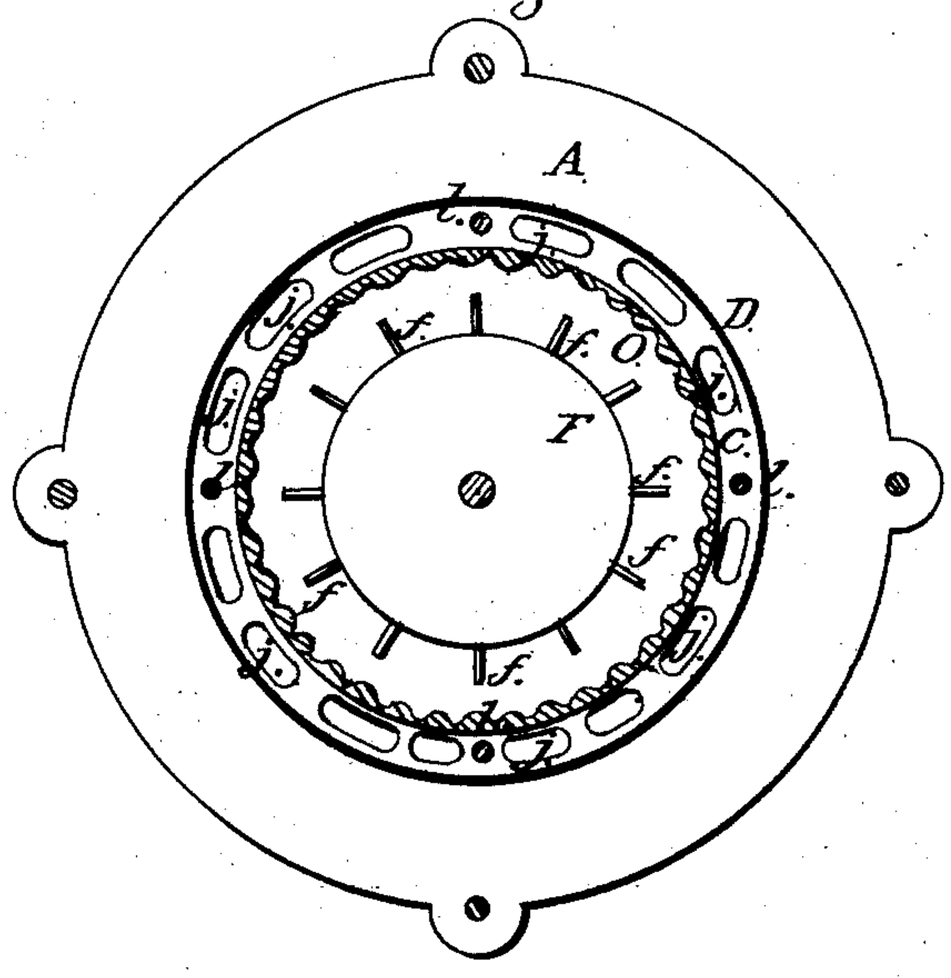


Fig. 1.

Fig. 2.



UNITED STATES PATENT OFFICE.

JOHN GERMAN, JR., OF SOUTHFIELD, AND S. R. PERKINS, OF PONTIAC, MICHIGAN.

SMUT-MACHINE.

Specification of Letters Patent No. 20,420, dated June 1, 1858.

To all whom it may concern:

Be it known that we, JOHN GERMAN, Jr., of Southfield, in the county of Oakland and State of Michigan, and S. R. PERKINS, of Pontiac, in the county of Oakland and State of Michigan, have invented a new and Improved Smut-Mill; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a vertical central section of our improvement. Fig. 2 is a horizontal section of ditto taken in the line (*x*) (*x*), Fig. 1.

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

The object of this invention is to obtain by the simplest possible means or arrangement of parts a combination of a fan and beating device so as to operate conjointly in the most efficient manner in cleaning grain from smut, dirt and the like.

To enable those skilled in the art to fully understand and construct our invention we will proceed to describe it.

A represents a cylindrical hollow base the under side of which is open. Within the base A, a bridge tree (*a*) is placed having a step (*b*) at its center to receive the lower end of a vertical shaft B.

C is a hollow cylinder the lower end of which encompasses the base A and D is a hollow cylinder which encompasses the cylinder C, a suitable space (*c*) being allowed between them.

E is a fan box which is placed on the upper ends of the two cylinders C, D, and F, is the fan placed therein, said fan being on the shaft B which passes through the box E, and has its upper bearing in a cross bar (*d*) secured to the upper surface of the box. A driving pulley (*e*) is placed on the upper end of the shaft B.

On the shaft B and within the cylinder C a cylinder F, is placed. The cylinder F, is sufficiently smaller in diameter than the cylinder C to allow radial beaters (*f*) to be attached to its periphery, the ends of the beaters extending to within a suitable distance of the inner side of the cylinder C. The inner side of the cylinder C is corrugated or fluted vertically and a feed pipe G extends through the sides of the two cylinders near their upper ends as shown in Fig. 1.

The bottom plate (*g*) of the fan box E is perforated as shown at (*h*) (*i*) so that the space (*c*) between the two cylinders may communicate with the fan box and also the interior of the cylinder C. The lower part of the space (*c*) communicates with the external air by means of perforations (*j*) made in the base and the lower part of the cylinder C does not communicate directly with the external air but communicates by means of perforations (*k*) with the lower part of the space (*c*) a short distance above the perforations (*j*). The fan box E is secured on the cylinders C, D, by screw rods (*l*).

The cylinder C may be constructed of cast metal and the cylinder D and fan box E of sheet metal or metal plate.

The operation is as follows:—Motion is given the shaft B in any proper manner and a draft or blast of air passes up through the space (*c*) as indicated by the red arrows and a blast passes up through the cylinder C as indicated by the black arrows. The grain passes through the pipe G, into the cylinder C and is scoured by the rotation of the cylinder F, the beaters (*f*) and inner corrugated or fluted surface of the cylinder C, effectually breaking the smut balls and also scouring off the dirt which may adhere thereto, and the dirt and smut as it is pulverized and loosened by the scouring device is carried upward by the blast within said cylinder C into the fan box E from which it is ejected by the action of the fan as indicated by the arrow (1), see Fig. 1. In case however any smut or dirt should escape the action of the blast within the cylinder C, and pass down through the perforations (*k*) into the lower part of the space (*c*) the blast within said space will carry such portions upward within the fan box. It will thus be seen that the grain before leaving the machine, that is before passing out through the apertures (*j*), is subjected to two blasts generated by the same fan, and the escape of smut or dirt with the grain, which might probably occur in cases where the grain is very dirty or smutty, is consequently avoided because when the grain is subjected to the second blast in the lower part of the space

(*c*) there will be in any case but comparatively a small amount of dirt or smut pass into said space (*c*) and therefore it will be readily carried up by the blast.

We are aware that smut mills have been devised so as to subject the grain while passing through them to two or more blasts and we also are aware that rotating beaters and fluted cylinders have been used, but we are not aware that a fan has been used in connection with rotating beaters and cylinders so arranged as to form a simple, efficient and economical device, as herein described. We do not claim therefore separately and irrespective of their arrangement the parts herein described; but,

We do claim as new and desire to secure by Letters Patent,

The arrangement of an annular air space (*c*) between the cylinders C, D, with openings (*h*, *j*, *k*) as and for the purpose herein set forth.

JOHN GERMAN, JR.
S. R. PERKINS.

Witnesses:
HENRY S. BUEL,
ROBERT C. KYLE,
C. A. HOWARD.