

K. SCHWAB.
Smut-Mills.

No. 147,798.

Patented Feb. 24, 1874.

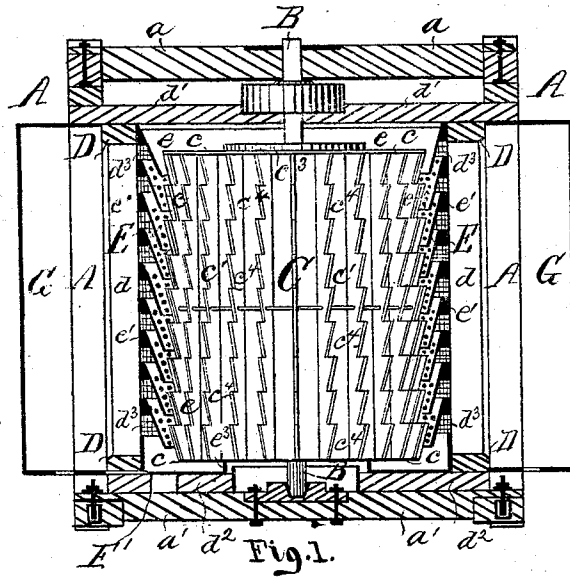


Fig. 1.

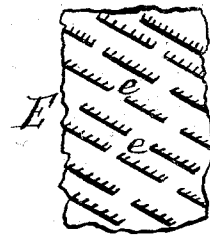


Fig. 4.

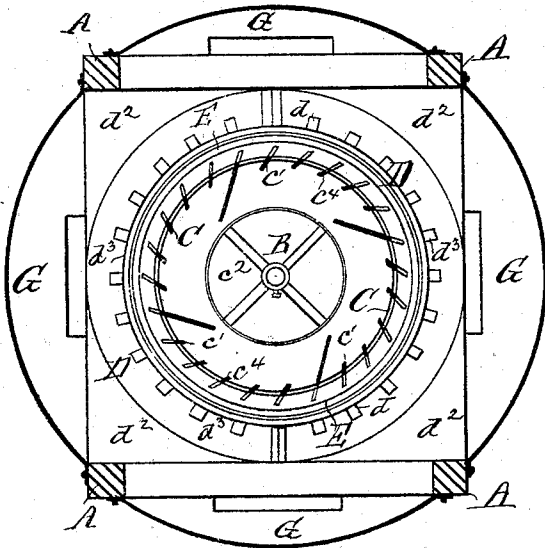


Fig. 2.

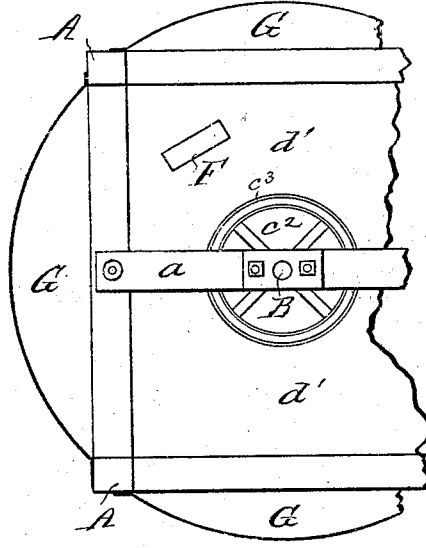


Fig. 3.

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UNITED STATES PATENT OFFICE.

KILIAN SCHWAB, OF LEBANON, ILLINOIS.

IMPROVEMENT IN SMUT-MILLS.

Specification forming part of Letters Patent No. 147,798, dated February 24, 1874; application filed December 8, 1873.

To all whom it may concern:

Be it known that I, KILIAN SCHWAB, of Lebanon, St. Clair county, State of Illinois, have invented an Improved Smut-Mill, of which the following is a specification:

This invention pertains to smut-mills for the purpose of cleansing grain from its smut, impurities, and the like; and the constructive nature thereof consists, first, in the combination of a fan-cylinder with a stationary smutter, the fan-cylinder operating so as to force the grain in its passage to be retained against the smutters; secondly, in the peculiarly-constructed smutter, consisting of separate punched metal sheets, inclinely positioned and secured, and arranged in cylindrical form, to act as the "smutter" for the grain; thirdly, in the combination, with smutter aforesaid, of a stationary sieve-like cylinder, through which the impurities from grain pass; fourthly, in the combined arrangement of the revolving fan-cylinder, and stationary parts, such as smutter, sieve-cylinder, and outer casing, with relation to each other, all of which will hereinafter more fully appear.

Of the drawings, Figure 1 is a sectional elevation; Fig. 2, a sectional top plan; Fig. 3, a top plan with part broken away; Fig. 4, a detail of perforated cylinder.

A is a strong, stout, and durable frame. At top and bottom the frame A has cross-supports a a' , in which the journals of the power-shaft B are fitted to turn. The shaft B supports the fan-cylinder C, so as to turn with same. The fan-cylinder C consists of top and bottom circular heads c (see Fig. 1) and the upright fan-blades c' . (See Figs. 1 and 2.) The top and bottom heads c have circular openings c^2 , (see Figs. 2 and 3,) to admit air through top and bottom of cylinder. The circular opening top of cylinder C has a rim projection, c^3 , Fig. 1, to prevent the grain which is fed top of said cylinder from falling into same, or through its said opening. The fan-blades c' are secured in diagonally and relatively apart, (see Figs. 1 and 2,) and have their outer edges formed with teeth c^4 , the object of thus positioning the fan-blades c' being to prevent the grain, during its passage through the mill, from being thrown or forced within fan-cylinder when same revolves, the teeth c^4 of fan-blades be-

ing to act with relation to the smutter, to create the Z-like passage for the grain to pass, and also to equally cause said grain to be retained against said smutter. The smutter and sieve-cylinder are combined in one, and are stationary. Hence I provide, surrounding the fan-cylinder C, a frame-cylinder, D. (See figures.) The frame-cylinder D consists of upright frames d , united to top and bottom closing heads d^1 d^2 . (See figures.) The heads d^1 d^2 have provision left to leave open the circular openings c^2 . To the inner side of framed cylinder D, I provide a wire-netted covering, forming the stationary sieve-like cylinder d^3 . (See Figs. 1 and 3.) Through the openings of said sieve-cylinder the dust and impure particles of grain are sifted. The smutter E consists of metal sheets e , so perforated as to present roughened edges, as indicated in Fig. 1. The sheets e , composing smutter, can also be of the modified construction, viz., as shown in Fig. 4, with punched diagonally-serrated edges. The peculiar arrangement and attachment of punched metal sheets e , to form the stationary smutter here designed, are such as to achieve, with relation to the fan-blades c' of the fan-cylinder, a Z-shaped passage for the grain. (See Fig. 1.) Hence I provide the frame-cylinder D with incline-shaped strips e' , Fig. 1, to which each series of punched sheets e is attached. Thus secured, the bottom edge of each metal sheet e is inclined inward. Further, each under punched sheet e is so attached and arranged, with relation to its upper one, that the bottom edge of the first-mentioned projects below the top edge of the bottom or last-mentioned sheet, and as indicated in Fig. 1, the object of thus alternately securing the punched sheets being to permit the grain, in its passage down the top sheet, to be turned under and back of the bottom edge of same, reach the top of sheet below, and thus follow the course through the winding or Z-shaped passage created between the alternate punched sheets and the serrated edges of the fan-blades c' . At bottom the smutter, or, properly said, the frame-cylinder bottom head d^2 , is lined with sheet-metal lining, leaving a circular rim, e^2 , to rise above the opening of said bottom head, (see Fig. 1,) to prevent the cleansed grain passing out of said opening. In fact,

the grain is fed to the machine through the slotted opening F at top; (see Fig. 3,) through the head d^1 is passed from over the head top of fan-cylinder C ; thence passed through the mill on the bottom head d^2 of frame-cylinder; thence is discharged out through the bottom slot or opening F' . (See Fig. 1.) It is the cylindrical smutter which, by means of its roughened edges, takes away from the grain its defective parts, and otherwise properly removes the smut and impurities. Also, it will be noticed that the fan-cylinder C is operated at same time with such speed as to produce a wind force sufficient to force and retain the grain in its passage against or to be passed over the smutter. I rely chiefly upon sufficient fan action to accomplish this object. The wind power is further utilized in forcing and otherwise causing the dust, impurities, and the like taken from grain to be passed through the sieve-like cylinder d^3 . To catch and receive the removed smut, dirt, and the like, I further provide a suitable cylindrical outer casing, G . The outer casing G surrounds the frame-cylinder D and its inner parts aforesaid, and can be made an entire cylinder, or, as here shown, (see Figs. 1, 2, and 3,) to consist of four sectional cylinder sides, with flanged edges, to be attached properly to the frame A of the machine. At bottom, the opposite sides of the outer casing G can have suitable openings for the discharge of its contents. For different qualities of grain to be cleansed, the shaft B can be supported adjustably, so as to be raised

or lowered, thus raising and lowering at same time its fan-cylinder C , and consequently enlarging or narrowing the passages for the grain, as required and deemed best.

What I claim is—

1. The stationary smutter E , having a series of inwardly-attached metal punched or perforated sheets, e , said sheets being so arranged that the bottom edge of the top sheets of each series shall partly project below the top edge of the next following series, as and for the purpose herein shown and described.

2. The combination of fan-cylinder C , consisting of top and bottom heads c , and fan-blades c^1 , having serrated edges c^2 , with stationary smutter E , consisting of perforated sheets e , substantially as herein shown and described.

3. The combination of a stationary smutter, E , having perforated sheets e , arranged as described, and sieve-cylinder d^3 , as and for the purpose set forth.

4. The combination of revolving fan-cylinder C , stationary smutter E , sieve-cylinder d^3 , frame-cylinder D , and outer casing G , all said parts being arranged and constructed, with relation to each other, as and for the purpose set forth.

In testimony of said invention I have hereunto set my hand in presence of witnesses.

KILIAN SCHWAB.

Witnesses:

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