L. B. BALL

Smut Mill.

No. 11,923. Patented Nov 14, 1854.

Fig. 1.

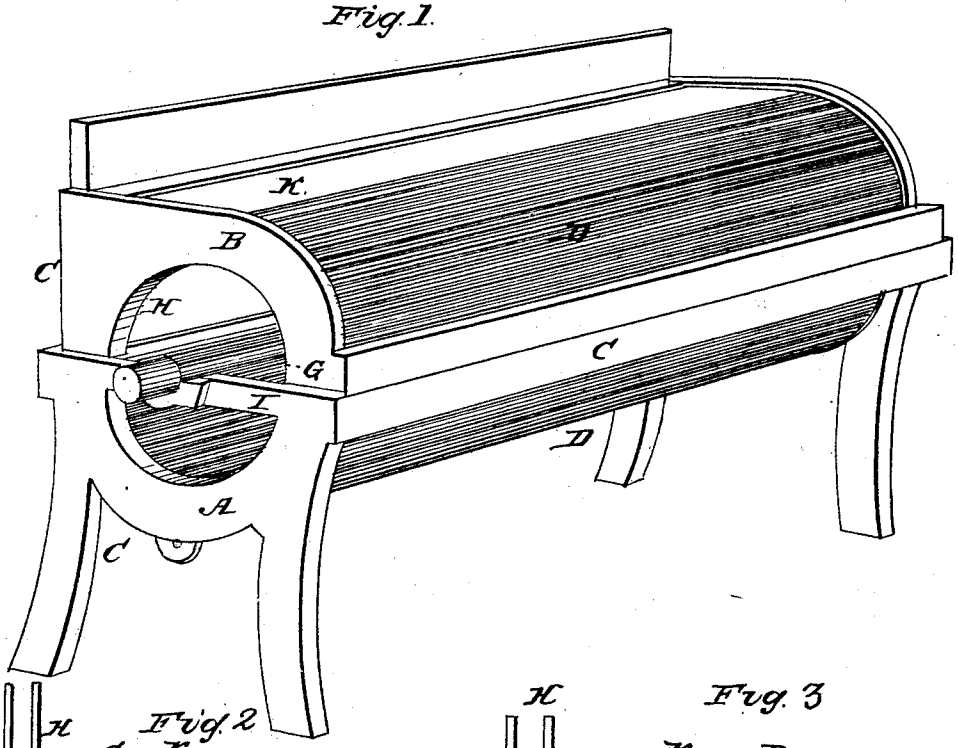


Fig. 2

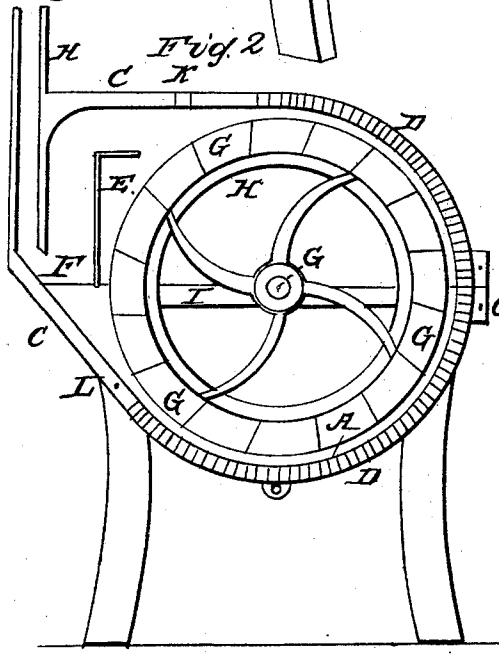
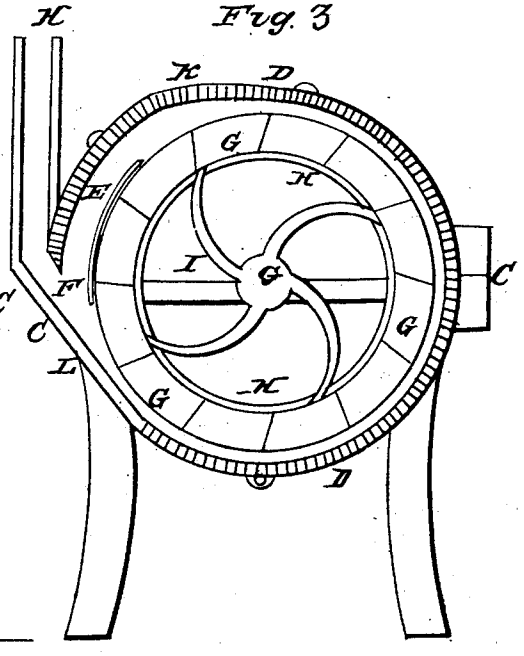


Fig. 3



N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

LEVI B. BALL, OF PUTNAM, OHIO.

SMUT-MACHINE.

Specification of Letters Patent No. 11,923, dated November 14, 1854.

To all whom it may concern:

Be it known that I, LEVI B. BALL, of the town of Putnam, in the county of Muskingum and State of Ohio, have invented a new and useful Improvement in Smut-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view, Fig. 2, an end view, and Fig. 3 also an end view of a different form.

My invention consists in employing in the concaves of smut machines wood and iron slats or any other hard and soft substances arranged alternately in the manner and for the purposes to be presently described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation. I construct the heads of my concave of cast-iron plates, separating at the center of each head. With the lower half of said head-plates I connect the legs on which the machine stands, at the top of the same a cross-bar, I, on which the inner-cylinder or beater-shaft journals rest in a suitable box. On the inner side of the head-plates and at the verge are fillets, run around far enough apart to receive the ends of the strips of wrought-iron and wood which form the concave; on the same surface are also placed fillets for the reception of the intermediate plate, E, which extends the whole length of the machine and may be curved to correspond with the concave as shown in Fig. 3, or bent to an angle in the direction of its length as shown in Fig. 2.

The dimensions of the strips of iron and wood used in the concave may be varied according to the size of the machine. For a machine of medium size,—say, four or five feet in length and twenty inches in diameter,—I use strips of iron one inch wide and one eighth of an inch thick; the strips of wood are of the same width but one fourth thinner. But that part of the concave which is adjacent to the opening F in the side instead of being formed of the usual alternate strips of wood and iron, consists simply of boards lined on the inside with sheet iron,—these boards entering the fillets in the same manner as the strips and constituting about one-third of the concave. That part of the head-plates which is opposite the opening F is furnished with flanges to receive bars of wood. In the ends of the boards and bars are placed bolts which passing through the head-plates and being fastened, secure the frame-work of the machine in its proper position. The frame of the machine being thus set up, I proceed to complete the concave, of which the boards adjacent to the opening form about one third, with the strips of wood and iron, or with other hard and soft material alternately arranged. When the lower half of the concave is completed to the upper surface of the bar which is bolted to the lower half of each head plate, the strips composing it are held to their places by extending a strip on the surface of the bar and screwing it down. The strips composing the upper half of the concave are secured in the same manner.

The inner cylinder represented by G in the Figs. 2 and 3 is made in the usual manner, with cast-iron heads or arms and wrought-iron shafts. On the extremities of the arms are bolted bars, three inches wide, one fourth of an inch thick, more or less according to the size of the machine, these bars running parallel with the shaft: the number of bars will ordinarily be about twelve. But the arms on that end of the cylinder, which is toward the head of the machine, are placed each from one half to three fourths of an inch forward of the corresponding arm on the other end, in order to give the bars in revolving the effect of a spiral, in conveying the grain from one end of the machine to the other. This cylinder is to be made of such size that when placed in the concave, there shall be a space of one inch between it and the concave at the ends, and also, the same space between the circumference in which the bars of the inner cylinder revolve, and the concave:—or, the inner cylinder is to be two inches less in diameter than the concave, and there is to be one inch space at each end between it and the head-plates of the concave. The shaft of this inner cylinder extends beyond the head-plate of the concave sufficiently to afford space for the attachment of a screen and pulley. The screen consists of a frame similar to a small window frame over which is extended ordinary screen wire sufficiently fine to prevent the escape of the grain. The frame is sufficiently large to extend beyond the opening in the head of the concave

and sufficiently deep to throw the wire beyond the box in which the shaft revolves, and at the top and bottom is bolted to the head-plates. The wire is nicely fitted to the shaft, where the latter passes through it.

The grain is let in at the top of the concave at one end, as at K, (Fig. 2), and is discharged below the side opening at the other end of the machine, as at L. To the opening, F, which extends the entire length of the concave is attached a trunk, ascending perpendicularly six feet more or less, and then returning down again and connecting with a common suction fan. The strength of the draft of this fan is regulated by an opening in the trunk and slide-gate. Supposing all the parts of the machine complete and put together, let the inner cylinder be made to revolve at the rate of from 300 to 500 revolutions per minute,—and also the suction fan be put into operation. It is designed that by the revolution of the inner cylinder that the grain should be brought in rapid contact with the scouring surface of the concave, by means of which the impurities on the surface of the grain may be separated: while not only these impurities, but the smut and imperfect grain may be exposed to the strong current of air passing into the machine through the screens, and out of it through the trunk and suction fan—by means of which they will be carried away leaving the pure grain to pass out at its appropriate opening.

What I claim as my invention, and desire to secure by Letters Patent is—

The use or employment of wood and iron slats placed alternately, or of any other hard and soft substances arranged in an equivalent manner and producing a similar effect substantially as described and for the purposes specified.

LEVI B. BALL.

Attest:

CHAS. W. CHANDLER,
SAML. LARGE.