

M. BURR.
Grain Separator.

No. 37,148.

Patented Dec. 16, 1862.

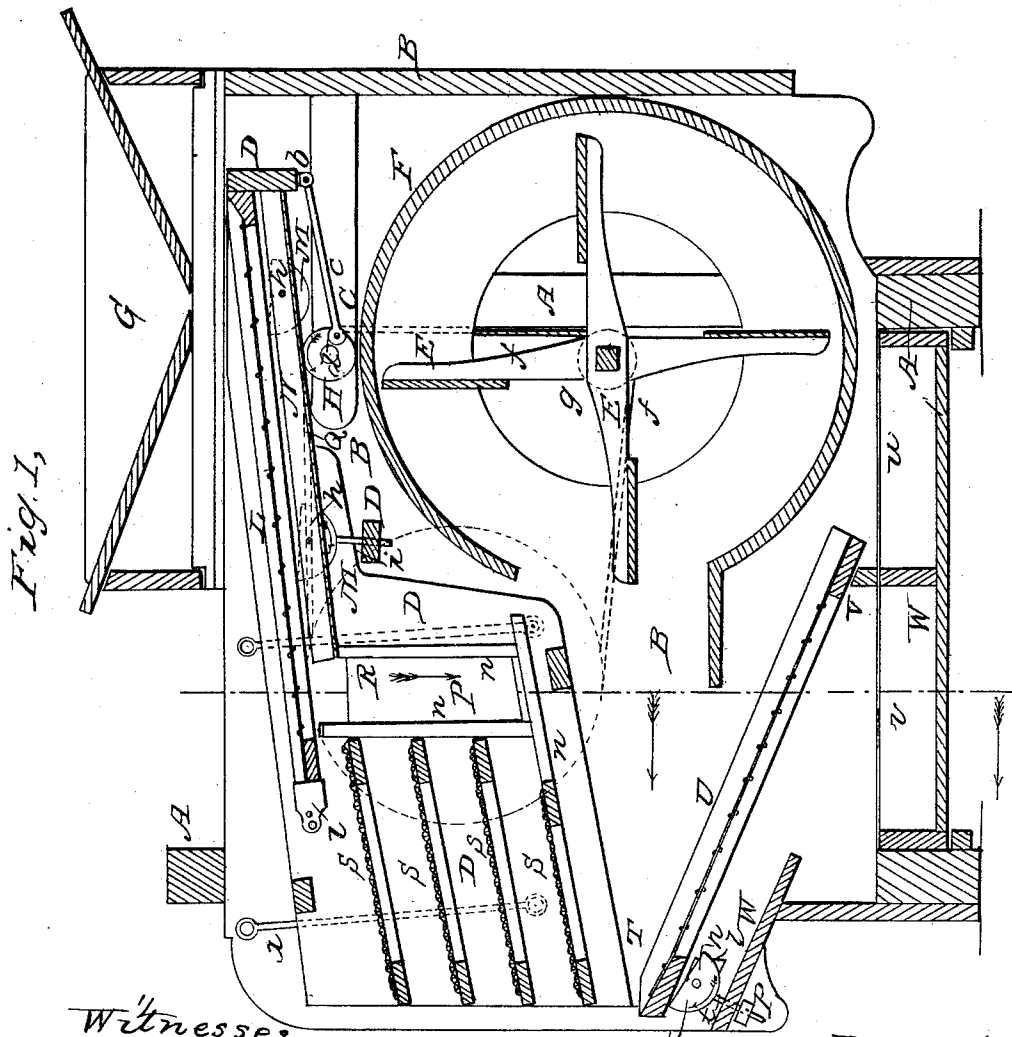


Fig. 1,

Witnesses
R. Fillagood
D. C. Johnson

Inventor
Murrie Burr
 by *J. A. Mason & Co Attys*

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Fig. 2,

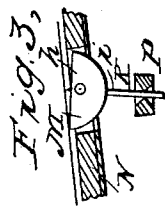
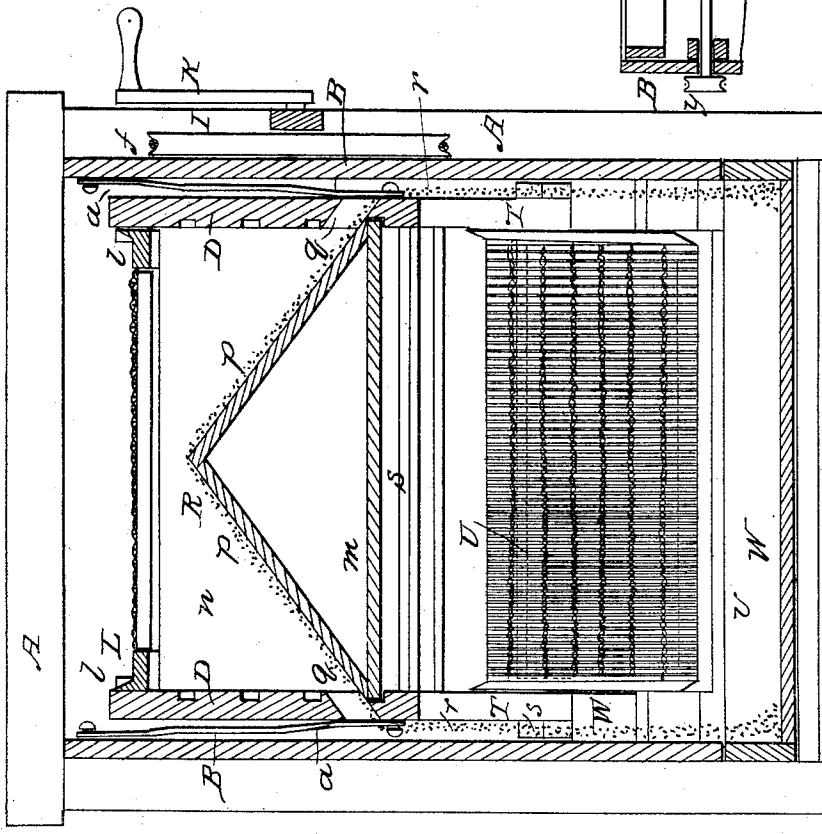
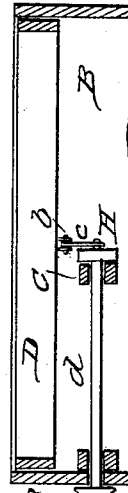


Fig. 4,



Witnesses:
 R. F. Gooden
 D. C. Johnson

Inventor
 M. Burr.
 by J. Fraser & Co. Atty.

UNITED STATES PATENT OFFICE.

MURRIN BURR, OF PLYMOUTH, MICHIGAN.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **37,148**, dated December 16, 1862.

To all whom it may concern:

Be it known that I, MURRIN BURR, of Plymouth, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Fanning-Mills and Grain-Separators; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a central longitudinal vertical section of my improved fanning-mill; Fig. 2, a transverse vertical section of the same in the plane indicated by the red line, Fig. 1; Fig. 3, a view of one of the segments and its connecting parts for imparting a vertical motion to the screens, shown detached; Fig. 4, a contracted view exhibiting more particularly the central position of the crank for operating the shoe.

Like letters designate corresponding parts in all the figures.

In general construction my improved fanning-mill resembles others of its class, A representing the frame, B B the walls and end, D the shoe, E the fan, F the fan-case, and G the hopper. The shoe D is hung to the sides of the mill by pendent rods *a a* on its sides, as represented, in such a manner that a longitudinal reciprocating motion may be imparted to it. The shoe extends nearly the whole length of the mill, (its forward end being narrow vertically,) and to its front cross-piece, about midway transversely, as represented in Fig. 4, is jointed, in any convenient manner, as at *b*, the end of a pitman, *c*, that extends backward over the fan, and is similarly jointed at its opposite end to a crank, H, sustained by a bearing, C, and of suitable size to give the desired length of stroke or vibration to the shoe by its revolutions. The shaft *d* of this crank extends outward horizontally through the side of the mill, having thereon a pulley, *y*, of suitable size, over which, and a corresponding pulley, *g*, on the end of the fan-shaft, passes a band, *f*, communicating with a driving-wheel, I, actuated by a winch, *k*, in the usual manner. When the crank H is operated, a longitudinal reciprocating motion is imparted to the shoe. The power being applied centrally transversely, the action is equable and easy, a direct forward-and-backward movement being given on the line of motion without intermediate or

connecting parts. This is a great advantage over ordinary longitudinally-vibrating shoes, which receive the power producing their reciprocations at the side, and thus are irregular in action and hard to operate, the power being applied outside the central line of motion. The device for imparting motion in such shoes is also comparatively complex and costly, while mine is very simple and cheap. By using the inclosed crank, the parts are all situated away from danger and occupy no extra space. By the use of this arrangement, also, the whole operating parts of the mill are driven by one band simply passing directly around two pulleys and a driving-wheel.

In the forward part of the shoe, under the hopper G, at a proper position, is situated an inclined screen, L, resting at its opposite sides on the corners of segments M M, or their equivalents, of suitable size for the purpose designed, and situated at such distance apart as will suitably support the screen in its proper place. Two of these segments are usually used on each side, but a greater number may be employed, if desirable. The segments are pivoted at *h* in bars N N, fastened, respectively, to the sides of the shoe under the edges of the screen, and to their undersides are secured shanks or stems *i i*, extending downward a sufficient distance, and resting in sockets *k k*, Fig. 3, of rigid cross-pieces P P, secured to the sides of the mill. The screen L is held from sliding backward by stops *l l*, or in any convenient manner. The position of the segments is such that when the shoe hangs exactly pendent on the rods *a a*, their upper corners, on which the screen rests, are exactly parallel with the upper surface of the bars N N, and consequently the said screen rests in its lowest position; but when the shoe is thrown forward or backward to its farthest extent, the segments are turned on their pivots by their shanks *i i*, being retained by the cross-pieces P P, and consequently one corner thereof raised, together with the screen.

In the drawings, the shoe is represented as making its forward vibration, and with the segments partially turned in the act of raising the screen. The screen L thus has a vertical movement independent of the longitudinal vibration of the shoe, and occurring simultaneously with it. This is for the purpose of

agitating the screen, so that the foul seed shall readily escape therefrom through the meshes without passing backward with the grain over the screen, and also to prevent the screen from clogging, as it would otherwise do. In driving the mill at the ordinary speed, a rapid up-and-down motion of the screen is thus produced, which is very effective in securing the result desired.

In the shoe, at a suitable distance under the screen L, is situated an inclined bed or floor, Q, Fig. 1, covering the whole space transversely, but of a length somewhat less than that of the screen, about as represented in the drawings. This bed carries the foul seed backward that falls thereon, and throws it into a spout, R, situated transversely of the shoe. (Shown in elevation, Fig. 1.) This spout is composed of a base-piece, *m*, set at such an angle as for its ends to fit and slide in one set of the grooves—usually the lower one—of the shoe for receiving the ordinary sieves S S S, and of two vertical sides, *n n*, between which are situated two boards, *p p*, inclining from the center downward and outward in opposite directions, as shown most clearly in Fig. 2.

Through the sides of the shoe, in a position corresponding with that of the lower end of the inclined boards *p p*, are respectively made openings *q q*, Fig. 2, for the escape of the foul seed around the outside of the shoe, so that it shall not fall on the lower screen, as will be presently described. In order to allow the foul seed to escape outside the shoe, the latter does not quite fill the distance between the sides B B of the mill, but a space, *r*, of suitable size for the purpose, is left on either side, as represented in Fig. 2.

At the rear of the shoe, on either side, are prolongations T T, extending downward a suitable distance, having respectively at the lower ends, on the outside, blocks or enlargements *s s*, which just fill the space *r*, and thus, by resting against the sides of the mill, guide the shoe and keep it steady in its vibrations. Were it not for these, the shoe by not quite filling the space, would be irregular in action. On the inside of the prolongations T T are made ledges *t t*, Fig. 1, of sufficient size to support the upper end of the lower screen, U, of a width filling the distance between the sides of the shoe, and the lower end of which rests on a rigid cross-piece, V. To the ledges *t t* are respectively jointed segments M' M', similar to those connected with the upper screen, the shanks *i' i'* of which extend downward through retaining-pieces P' P', the whole operating in the same manner as that before described, by which means the upper end of the screen U has an independent vertical movement. This is for the purpose of giving sufficient agitation, so that the separation of any seed or fine extraneous matter that falls with the grain through the sieves S S thereon shall be sifted through, while the grain itself passes forward and over the lower end. Under the lower screen, U, slides a drawer, W, of

suitable size, occupying the whole space between the walls of the mill, and having two apartments, *u* and *v*, the former for the reception of the cleaned and perfect grain, and the latter for the foul seed. The apartment *v* corresponds in position with the double inclined spout R above, so that the contents therefrom shall fall directly down into it. An inclined board, *w*, also projects over its edge, so as to direct the seed falling through the lower screen into it.

The arrangement above described, of discharging and collecting the foul seed, is very essential. The violent agitation of the upper screen sifts most of it onto the inclined bed Q, whence it is discharged by the spout R through on the outside of the shoe to the space *r*, and into its proper receptacle *v*, without falling through the lower screen. The great advantage of this is apparent, for were it to fall directly on and through the said screen, a great portion would rebound into the receptacle *u* for the cleaned grain. The screen U, by occupying only the distance between the sides of the shoe, allows a free space at the sides for the seed to pass, and at the same time, by its upper end resting on the ledges *t t*, and being agitated by the segment M, insures a thorough sifting of all foreign matter that falls thereon. The blocks or enlargements *s s* in connection therewith keep the whole steadily in place during the vibrations of the shoe.

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

1. The arrangement of the horizontally-vibrating shoe D and the screen L, having an independent vertical reciprocating movement, for the purpose of agitating it sufficiently to discharge the foul seed, and to prevent it from choking, as herein set forth.

2. In combination with the screen L, the segments M M, or their equivalents, pivoted to the shoe, and having shanks *i i*, resting in sockets of retaining cross-pieces P P, for the purpose of giving a reciprocating vertical movement to the said screen with the horizontal vibrations of the shoe, substantially as herein specified.

3. The arrangement of the double-inclined spout R, spaces *r r*, between the shoe and walls of the mill and seed-receptacle *v*, so arranged as to discharge the foul seed around the lower screen, U, and collect it, substantially as herein described.

4. The arrangement of the screen U, ledges *t t*, segments M' M', or equivalents, and blocks *s s*, arranged in connection with the shoe D and walls B B of the mill, as herein specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

MURRIN BURR.

Witnesses:

J. T. JOHNSON,
GEO. A. STARKWEATHER.