F. MILES.

Grain Winnower.

No. 35,536. Patented June 10, 1862.

Fig.1.

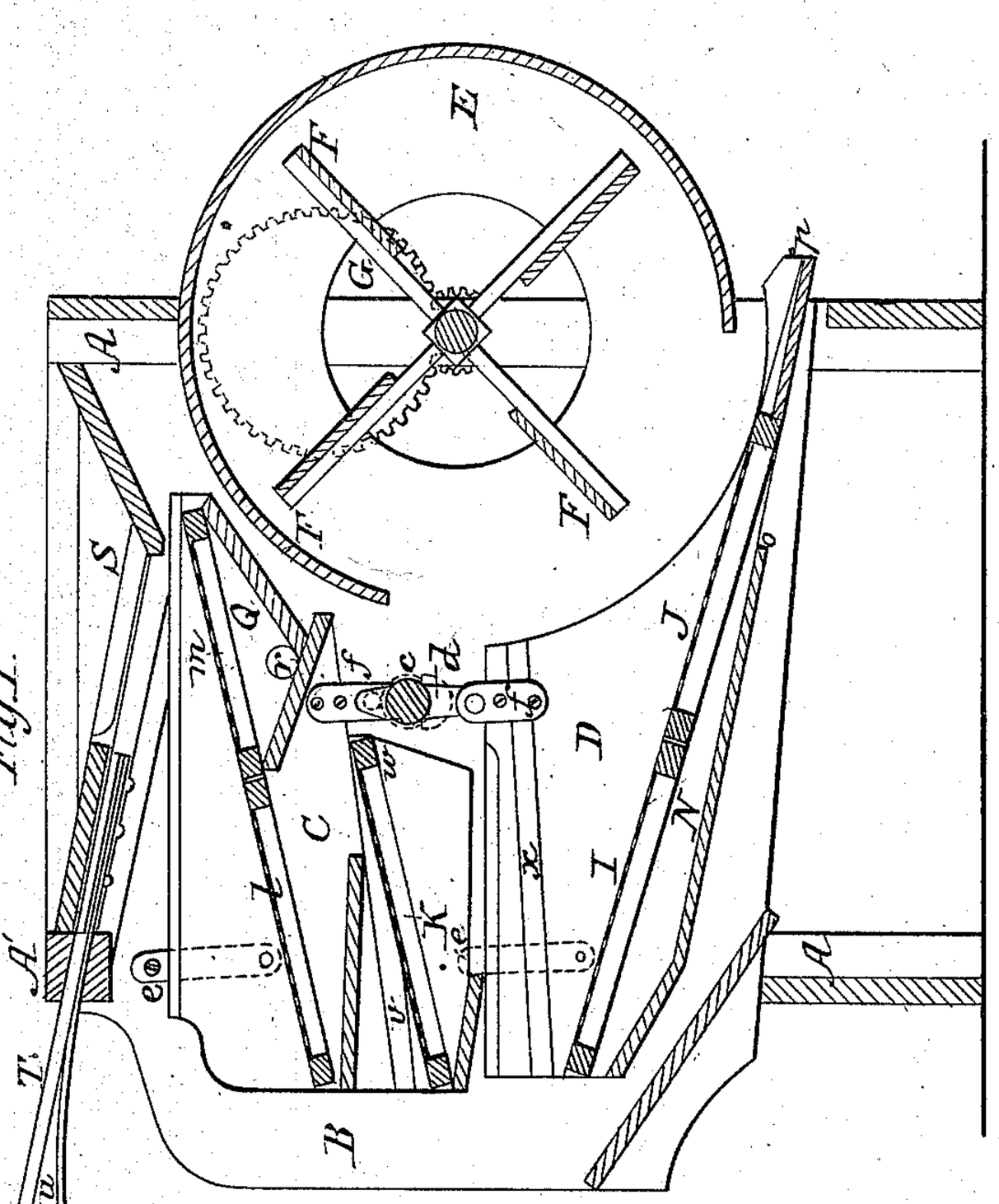


Fig.3.

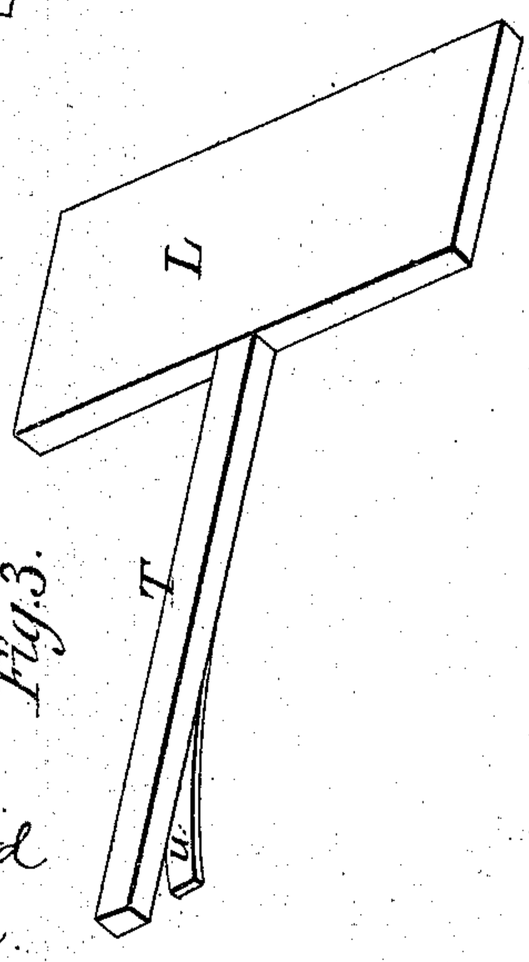
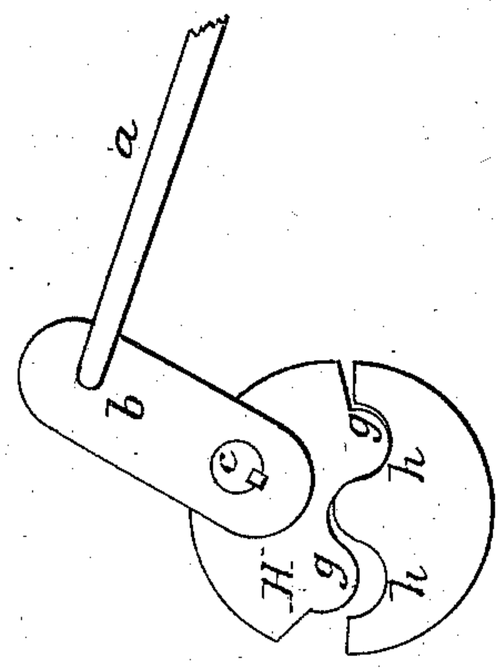


Fig.2.



Witnesses.

R. F. Osgood

D. C. Johnson.

Inventor:

Franklin Miles.

by J. Fraser & Co. Atty.

UNITED STATES PATENT OFFICE.

FRANKLIN MILES, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN FANNING-MILLS.

Specification forming part of Letters Patent No. **35,536,** dated June 10, 1862.

To all whom it may concern:

Be it known that I, FRANKLIN MILES, of Rochester, in the county of Monroe and State of New York, 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, in which—

Figure 1 is a vertical longitudinal section of my improved mill; Fig. 2, an enlarged detached view of the device for giving additional motion to the vibration of the shoes; Fig. 3, a perspective view of the feed-board detached.

Like letters designate corresponding parts in all the figures.

As represented in the drawings, my mill is similar in general construction to others of its class, A being the frame; B, the side; C, the upper, and D the lower, shoe; E, the drum, and F the fan or blower. The fan is driven by a pinion on its shaft, which gears with the cog-wheel G, to which a winch is applied for turning. (Not shown in the drawings.)

Vibratory motion is imparted to the shoes containing the sieves by means of a connecting-rod, *a*, Fig. 2, between a crank in the end of the fan-shaft and the crank-arm *b* on the end of the shaft *c*, which extends through from side to side of the mill between the shoes C D, and is connected with each by means of a double crank, *d*, one arm of which extends upward and connects with an eye, *f*, on shoe C, and the other is connected in a like manner with shoe D below. The oscillations received by the shaft *c*, from its connection with the fan-shaft, vibrate the shoes alternately forward and back in a nearly horizontal line, they being hung by straps *e e*, pivoted to the sides or frame. To render this motion more effective, I combine with it a sudden vertical vibration or jar produced by the concussion of the peculiar bearings with which I provide the rock-shaft *c*. Instead of having it roll in the usual smooth boxes, I attach to it a metal bearing-piece, H, Fig. 2, which is provided with two semicircular projections, *g g*, on its lower edge, the positions of which are outside of a perpendicular line through the axis of the shaft. These projections rest in corresponding semi-circular recesses, *h h*, in another plate, I, which is permanently attached to the side of the machine. Thus the rock-shaft rests on the double bearings *g g*, and when in operation the motion consists not in partially revolving it, but in transferring its bearing alternately from one socket *h* to the other. This produces a sudden concussion of the shoe at each horizontal vibration, the effect of which is to jar the grain upon the sieves and free it from clogging with the chaff, or otherwise accumulating in the meshes thereof, and thereby greatly increases their efficiency. This additional and accelerated motion is obtained with little or no additional expense or loss of power, as the bearings *g g*, being smaller, produce less friction than the ordinary smooth bearing.

I form the inclined bottom screen of the lower shoe by using two sieves, I J, both of which are of a size corresponding with those employed in the two lower grooves, *v w*, of the upper shoe, and upper groove, *x*, of the lower shoe, so as to admit of substituting one for the other, and transposing their positions, when such a change is required, to adapt the machine to cleaning or separating different kinds of grain. This is a great convenience, as such changes are often necessary to render the operation perfect.

The sieves I J fit together closely, so that when those of small meshes are used the grain passes readily over the surface of both without interruption. An inclined board, N, is placed below them to receive any grain or other matter which may be allowed to pass through, by using coarse sieves in the place of I or J, and discharge it at *o*. That which is carried over the sieve I J is deposited at *p*.

The grass-seed is separated by the sieve *m* at the point where the grain is taken from the hopper onto the shoe in a receptacle, Q, when it may be discharged through the aperture *r*. This is an improvement in the arrangement, the advantages of which are that the grass-seed is separated at once after leaving the hopper S, before it has been exposed to any of the blast of fan, by which, from its lightness, some portions would be inevitably blown away and lost. The seed-box Q occupies a position where it is least in the way, and does not obstruct the blast; but, on the contrary, contri-

butes to direct and concentrate it on the falling grain at the rear part of the shoe.

To the sliding feed-board L, for regulating the size of the opening in the hopper, by which the grain and chaff descend upon the screen, I attach a guide stem or handle, T, which is provided with a long flat spring, *u*, lying longitudinally on its under side. Both the stem and spring pass through a mortise in the tranverse frame-piece A′, and the pressure of the spring is sufficient to hold the board in any position in which it is placed, while the stem T enables it to be adjusted with ease, as it insures the board working truly in its grooves, and when grasped by the hand for the purpose of moving it the spring is likewise compressed, and its pressure thus taken off. This is essential to the uniform working of the feed-board, for without it the vibration of the machine has a tendency to displace the board L from any given position.

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

1. Compounding the motion of the shoe or shoes, when shaken horizontally, by the addition of the abrupt vertical vibration or jar, by means of the double bearing H of the rock-shaft *c*, and the sockets *g g*, substantially as and for the purposes described.

2. The combination and arrangement of the grass-seed box Q, hopper S, sieve *m*, and fan F, substantially as and for the purposes described.

3. The feed-board L, provided with the guide-stem T, and spring *u*, when used in combination with the hopper for adjusting and holding the same, substantially as set forth.

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

FRANKLIN MILES.

Witnesses:
R. F. OSGOOD,
D. C. JOHNSON.