

E. DAVIS.  
Grain-Separators.

No. 153,757.

Patented Aug. 4, 1874.

Fig. 1.

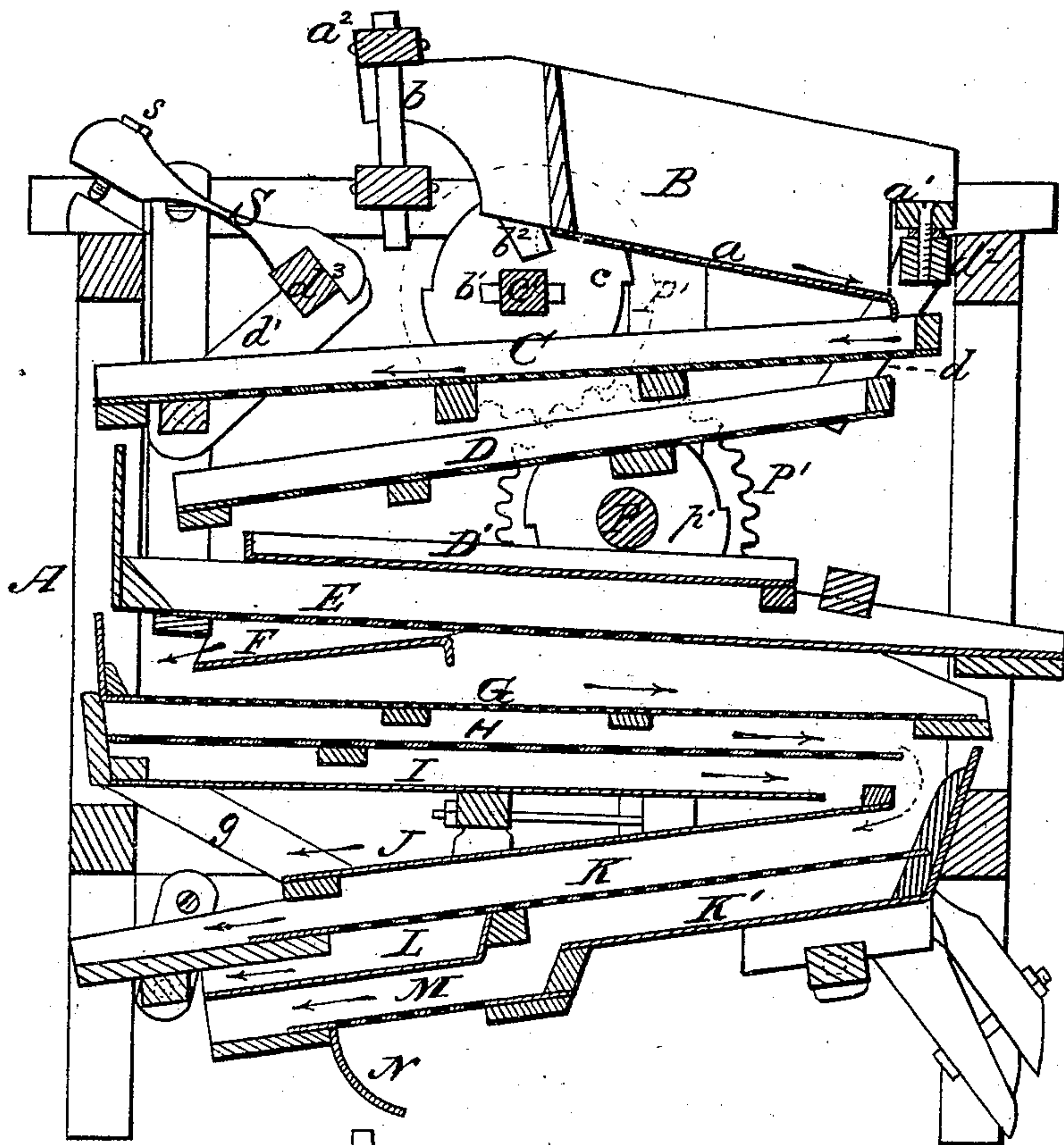
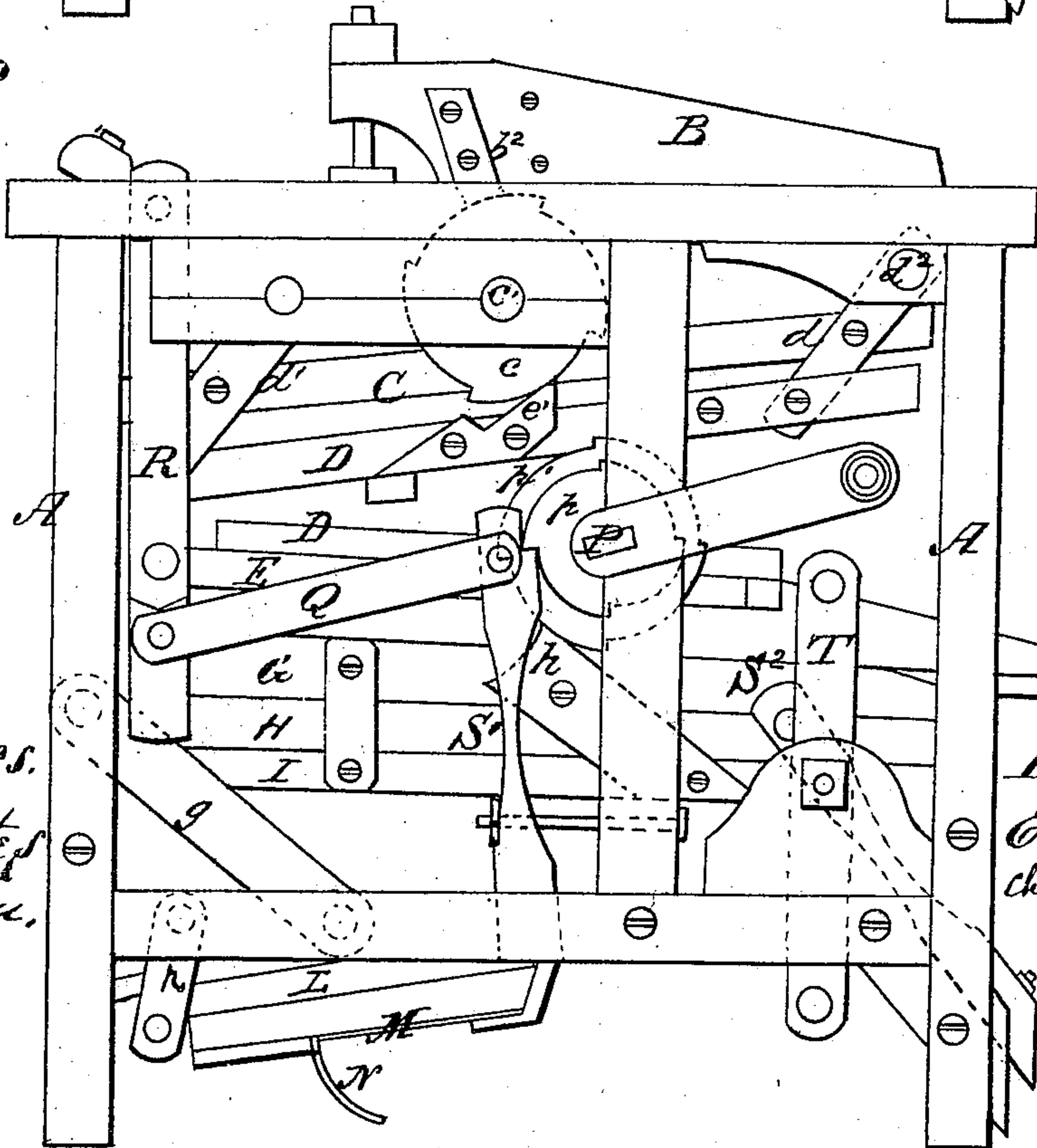


Fig. 2.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **153,757**, dated August 4, 1874; application filed May 29, 1874.

*To all whom it may concern:*

Be it known that I, EVAN DAVIS, of Almond, in the county of Allegany and State of New York, have invented a new and valuable Improvement in Grain-Separators; 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, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a sectional view of my grain-separator; and Fig. 2 is a side view of the same.

This invention has relation to machines for separating cockle, chess, oats, and other foreign matters from wheat; and it consists in a novel mode of hanging the screens, and giving to them a shaking motion, whereby the meshes are prevented from becoming clogged either with the grain or with the foreign matters mixed with it. It also consists in a novel arrangement of screens, whose meshes or perforations differ in size with cockle-screens and conveying-boards.

In the annexed drawings, A designates a rectangular frame, which is adapted to contain and support the separating devices. On top of this frame A is the hopper or feeder B, consisting of an inclined bottom, *a*, applied to two side boards and a back board. The lower ends of the side boards are attached to the ends of a vibrating bridge-tree, *a*<sup>1</sup>, and the upper ends of these boards are connected to a cross-bar, *a*<sup>2</sup>, which is pivoted to the upper ends of two laterally-vibrating arms, *b*, which are pivoted to a cross-bar on top of frame A. The feeder thus hung receives a lateral vibrating motion from tappets *b*<sup>1</sup> on the inner sides of two cams, *c c*, which are keyed on a horizontal shaft, *c'*, having its end bearings in the sides of frame A above a screen, C. The tappets *b*<sup>1</sup> strike against arms *b*<sup>2</sup>, which are secured to the side boards at the upper end of the feeder. By these means the feeder receives a lateral vibratory motion, and the upper portion of it is moved fastest, thereby evenly spreading the grain, &c., as it descends over the bottom *a*. The screen C, which is inclined in an opposite direction to the bottom of the feeder B, and which receives the ma-

terial at its upper end, is pivoted by its side bars to four inclined hangers, *d d*<sup>1</sup>. The hangers *d* are pivoted to a rigidly-fixed bar, *d*<sup>2</sup>, and the hangers *d*<sup>1</sup> are secured rigidly to an oscillating bar, *d*<sup>3</sup>, which has its end bearings in the frame A. The bar *d*<sup>3</sup> has a spring, S, secured to it at the middle of its length, which spring bears, by means of an adjusting-screw, *s*, on one of the top cross-rails of frame A, as shown in Fig. 1. All larger matter than wheat will pass off the lower edge of the screen C, while the wheat and other substances will pass through this screen and fall on a cockle-screen, D, arranged below it. The screen D, which is made up of long meshes or slots, is pivoted to the hangers *d*, and connected, by cranks *e*, to the lower ends of the hangers *d*<sup>1</sup>. This screen D is provided with tappets *e'*, which are held in contact with the cams *c* by means of the spring S, so that when the shaft *c'* receives rotation from the main shaft P, through the medium of spur-wheels P' P', the cams *c* will give an upward tossing and jarring motion to the two screens, C D, which will prevent them clogging. The screen D discharges chess and small cockle upon an imperforate board, D', which conveys them out of the machine, while the wheat passes off at the lower end of screen D, and falls upon the upper end of a screen, E, through which all the wheat passes, and falls upon a screen, G. The meshes of the screen G are just large enough to let cockle pass through it. The inclined blank or conveyer F, which is applied to the upper portion of the screen E, will carry back and deliver upon the upper end of the screen G a large amount of wheat and cockle, thereby more thoroughly treating the material which passes through the upper part of screen E. The largest wheat—that is, the wheat which is too large to pass through the screen G—will be discharged directly out of the machine from its lower end. Beneath the screen G is a long mesh cockle-screen, H, which separates from the grain remaining in the machine the chess and cockle, which fall first upon a conveyer, I, and then upon a conveyer, J, and are thus conducted out of the machine. The good grain, with some impurities, will fall from the lower end of the cockle-screen H upon the upper end of a screen, K,



thence upon a blank-conveyer, K', and will finally be discharged from the machine through a short screen, M, and over a chute, N. The oats, &c., remaining with the grain after it leaves screen H will be carried off by means of the blank-conveyer L and the screen M. On each end of the main shaft P are two cams, *p p'*, the smallest of which acts on a strong tappet-spring, S<sup>1</sup>, which is rigidly secured to the frame A. This spring S<sup>1</sup> is connected, by a rod, Q, to the lower end of a swinging arm, R, which is pivoted to the upper end of frame A. The arms R have pivoted to them the upper end of the frame of screen E, the lower end of which frame is pivoted to vibrating arms T, thus allowing the screen E to receive endwise rocking motion. The screens G H and conveyer-board I are connected together, and their upper ends are pivoted to vibrating arms *g*, and their lower ends are pivoted to the free ends of strong springs S<sup>2</sup>, which are rigidly secured to the sides of the frame A, and made adjustable by means of bolts and nuts. Tappets *h* are secured to the sides of the screens last referred to, which are struck by the cams *p'* on shaft P, thus giving a rocking and jarring motion to these screens. The screens K M and conveyer-boards J, *k'*, and L are all connected together and pivoted to the arms T and *r*, thereby receiving a rocking and jarring motion from the cams *p'*.

It will be seen from the above description that I arrange grain-sieves and cockle-screens in series, each series being actuated by cams and a spring, so as to receive the required motion and jar. I take the large wheat out

of the machine after passing the screens C, D, and E, and then treat the smaller wheat remaining so as to separate foreign matters from it by subjecting it to the screens which are below the screen G.

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

1. The feeder B, having the lower ends of the side boards attached to a vibrating bridge-tree, *a*<sup>1</sup>, and the upper ends of said boards connected to a cross-bar, *a*<sup>2</sup>, and receiving a lateral vibrating motion from tappets *b*<sup>1</sup>, substantially in the manner described.

2. The screen C inclined in an opposite direction to the bottom of the feeder B, and pivoted to the hangers *d d*<sup>1</sup>, and the screen D connected to the hangers *d d*<sup>1</sup>, and provided with tappets *e'*, held in contact with cams *c* by means of a spring, all combined substantially as described.

3. The screens E, G, H, and K, having the conveyer-boards D', F, I, and J, operated by the cams *p p'*, springs S<sup>1</sup>, rod Q, arms R and T, and tappets *h*, substantially as described.

4. The combination of the screen K and its conveyer-board L with the conveyer-board K' and its depressed screen M, arranged and operating as shown and described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

EVAN DAVIS.

Witnesses:

GEORGE E. UPHAM,  
ROBERT EVERETT.