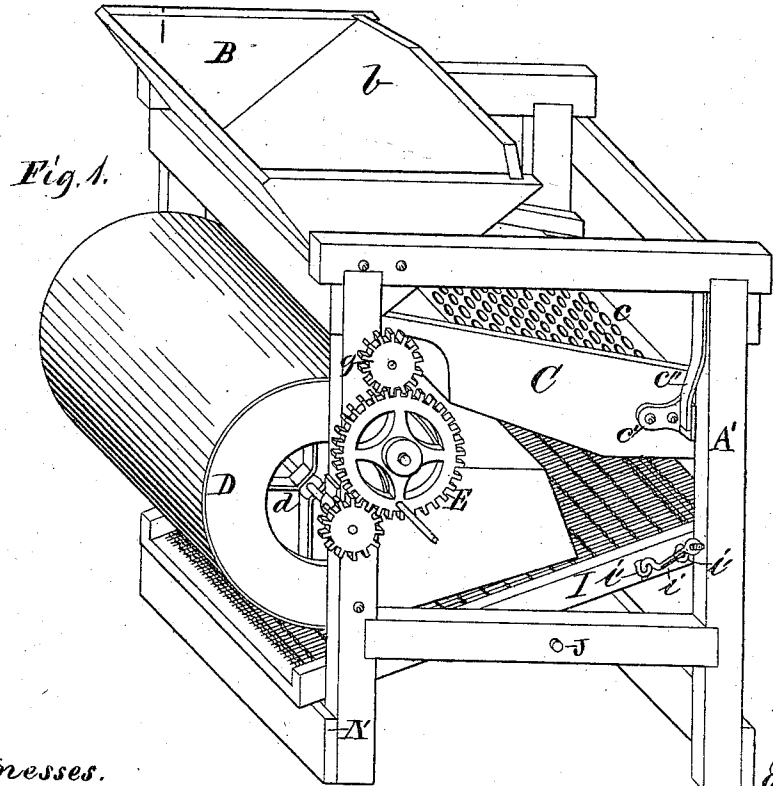
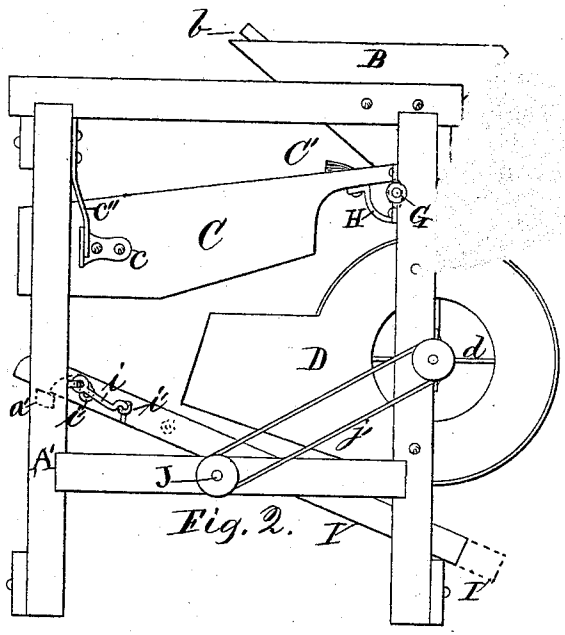
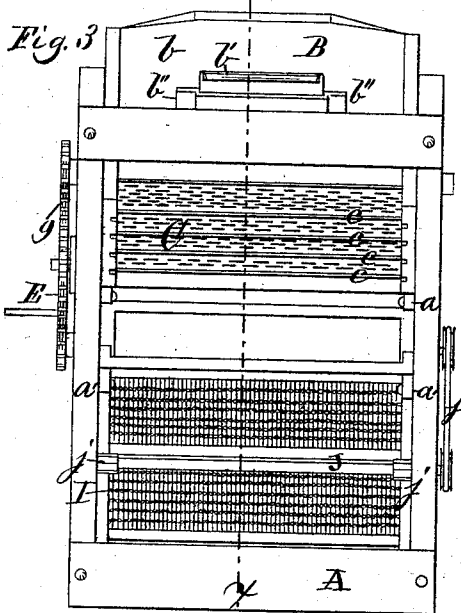


E. H. OSBORN.  
Grain-Separators.

No. 149,785.

Patented April 14, 1874.



Witnesses.  
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Fig. 6

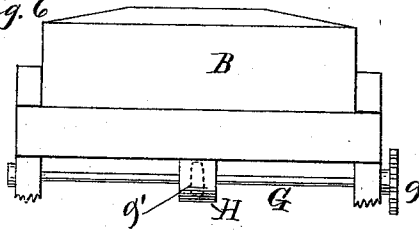


Fig. 5.  
line y y of  
figure 4.

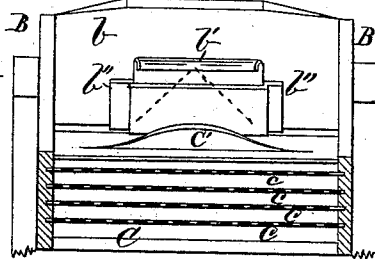
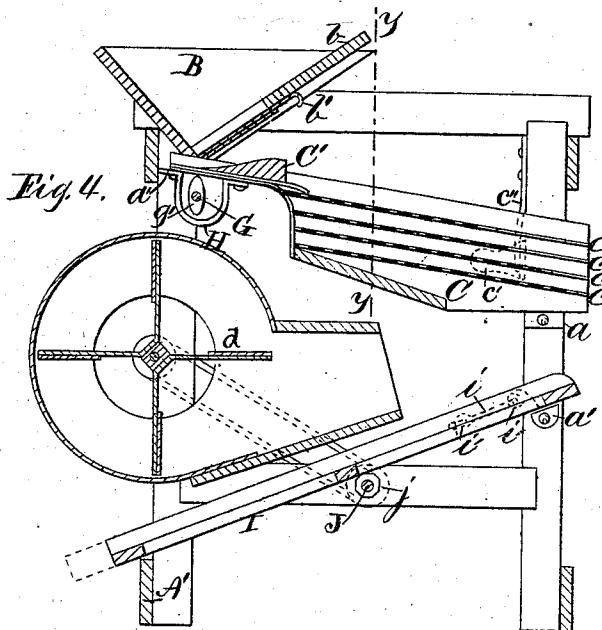


Fig. 7.



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# UNITED STATES PATENT OFFICE.

EGBERT H. OSBORN, OF QUINCY, ILLINOIS.

## IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **149,785**, dated April 14, 1874; application filed January 6, 1874.

*To all whom it may concern:*

Be it known that I, EGBERT H. OSBORN, of Quincy, in the county of Adams and State of Illinois, have invented certain new and useful Improvements in Grain Cleaners and Separators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a perspective view of a machine embodying my invention. Fig. 2 is an elevation of the distant side of Fig. 1; Fig. 3, an elevation of the right-hand end of Fig. 1. Fig. 4 is a vertical sectional view of the machine on the line *x x* of Fig. 3. Fig. 5 is an elevation of the feed side of the hopper, the distributor, and a section of the adjacent parts of the perforated plate-box. Fig. 6 is an elevation of the upper parts of the left-hand end of Fig. 1, and Fig. 7 is a detail view.

The nature of my invention relates to improvements in devices for cleaning and separating grain; and the invention consists, first, in the arrangement of devices for giving rapid percussive blows to the discharging-screen, and at the same time transmitting with each blow thereto a laterally-oscillating and vertically-reciprocating motion; and, second, in the general combination of the various parts, all as hereinafter fully described.

Referring to the parts by letters, letters A represent the frame-work. B is the hopper, the front side of which, *b*, is made to slide in suitable ledges in the sides adjacent to its ends. *b'* is a slide, covering an inverted V-shaped opening in the central part and bottom of the slide *b*, and operates through any suitable guides *b''*. C is a box, resting beneath and forward of the hopper B, and containing any desired number of removable perforated plates *c c c c*. Its end next the hopper is made of imperforated material, and having on its upper face an elevation, *C'*, as shown in the drawings. The forward end of the box C rests on the transverse framing-bar *a*, and its rear end on projecting lugs *a'*. *c' c'* are lugs projecting from the sides and forward end of the box C, and *c'' c''* are springs attached to the framing-posts A, and resting against the rear sides of the lugs *c' c'*. D is the fan-case; *d*,

the fan, and E the main drive-wheel. G is a transverse shaft, having suitable bearings in the framing, and gearing by a pinion, *g*, with the drive-wheel E. Its situation is just below the rear part of the box C, and it is provided midway with a two-ended or double cam, *g'*. H is a bow projecting from the under side of the box C, and partly encircling the double cam *g'*. I is the discharging-screen, of the ordinary wire kind, with long meshes lying in the direction of the flow of grain over it. J is a transverse shaft, and provided with a cam, *j j*, on each end, where the sides of the screen-frame I rest upon it. The cams *j* are polygonal prisms of eight or more sides, and as many angles, and are arranged with their angles and sides alternating, the one prism to the other, as shown by dotted and full lines at Fig. 7. The shaft J is driven by a belt, *j'*, from the fan-shaft. The one end of the screen I rests loosely on the frame-piece A', and the other on lugs *a' a'*. It is inclined, as usual, toward its discharging end, and may be adjusted in its position longitudinally by means of the hooks *i i* being made to engage with eyes *i' i'* on its sides, as shown by dotted lines at Figs. 2 and 3.

The operation of my invention is as follows: The feed from the hopper may be controlled, as desired, by the slides *b* and *b'*, the slide *b'* being used for ordinary grain as it comes from the thrashing-machine, and the slide *b* for increasing and spreading the grain when it contains very much extraneous substances—such as straw, chaff, and other material. In feeding from the smaller central opening, covered by the slide *b'*, as shown by dotted lines at Fig. 5, the grain and extraneous material falling from the hopper onto the imperforated end of the box C will be divided and deflected to the right and left sufficiently by the distributor C' to cause it to fall in an even sheet on the rear end of the upper perforated plate *c*. The box of plates C receives motion from the cam *g'*, the ends of which come in contact with one side of the loop H, the motion of the cam carrying the box back, and permitting it to return, through the action of the springs *c'' c''*, rapidly, but steadily, and without such sudden motion as would cause the plates to pass from beneath the grain and refuse upon them. In

its forward motion the box is suddenly arrested by the lugs *c' c'* striking against the posts *A' A'*, thereby causing the grain to pass through the plates, and the refuse to move over them in the direction of the discharge by inertia. This last-described movement will greatly facilitate the passage of the grain through the plates *c*, and the larger refuse, such as sticks, straws, oats, barley, &c., over the ends thereof, where they are discharged for removal. The grain falling from the plates *c c c* to the wire screen *I* will be subjected to the fan-blast for further purification by the removal of the lighter particles still remaining therein, and it will be plainly seen that by regulating the position of said screen *I*, by means of the hooks *i i* and eyes *i' i'*, it may be made to receive a considerable portion of said lighter material, or to reject it nearly entirely by means of its upper end being so low as to allow its passage over the same.

The great superiority of long-meshed wire screens for separating the longer and narrower grains from the thicker kinds—such as oats from barley, rye from wheat, oats from wheat, &c.—are well understood; but their great liability to clog, by the wires springing apart and receiving and retaining grains, is, as well understood, to almost preclude their use.

It will be evident, however, that the very rapid blows given to the screen *I*, by the alternating striking of the corners of the polygonal prisms *j*, giving thereto a laterally-oscillating and vertically-reciprocating motion, together with the percussive action of the blow, will keep the meshes free on the same principle as slightly tapping upon it to free it when clogged; and, further, that it will give sufficient shaking motion to screen to cause the grain to flow freely over it to the discharge.

I claim—

1. In combination with the long-meshed screen *I*, the shaft *J*, having polygonal cams *j j*, of eight or more faces, arranged as described, so as to impart a rapid and laterally-oscillating motion to the screen, for the purpose specified.

2. The combination of the hopper *B*, slides *b b'*, plates *c*, screen *I*, shafts *G J*, and cams *j' j*, and fan *d*, operated in the manner and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

EGBERT H. OSBORN.

Witnesses:

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ROBT. F. SHINN.