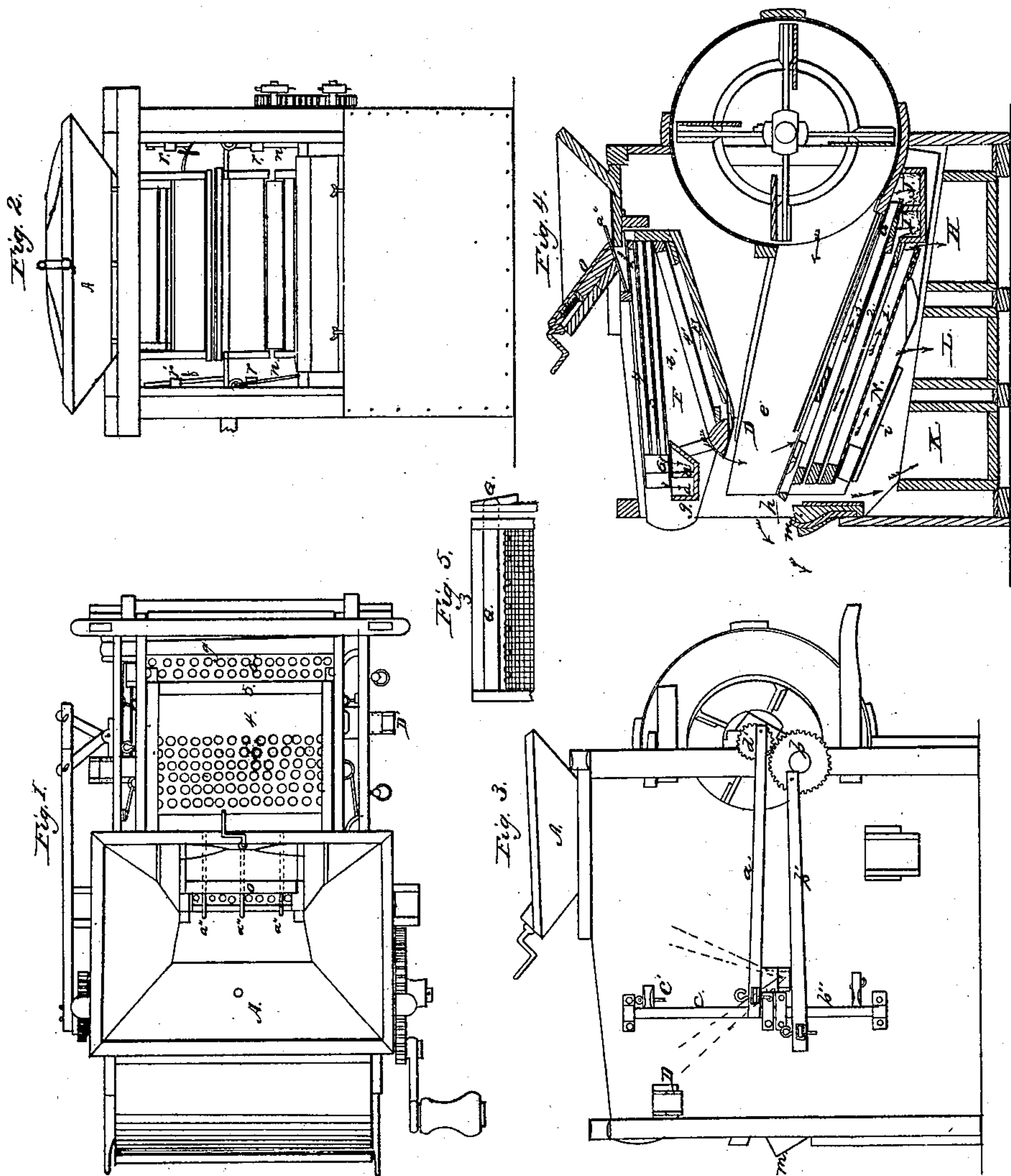


A. HIGLEY.
GRAIN SEPARATOR.

No. 43,026.

Patented June 7, 1864.



Witnesses.

W. B. Sumner
A. W. McClelland

Inventor

Aaron Higley

UNITED STATES PATENT OFFICE.

AARON HIGLEY, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 43,026, dated June 7, 1864.

To all whom it may concern:

Be it known that I, AARON HIGLER, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Grain-Separators; and I do hereby declare that the following is a full and complete description of the construction of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a top view. Fig. 2 is an end view. Fig. 3 is a side view. Fig. 4 is a longitudinal vertical section, and Fig. 5 is a detached part.

Like letters of reference denote like parts in the several views.

A represents a hopper of the usual form, through which the grain passes into the mill.

Nos. 1, 2, and 3 (shown in Fig. 4) represent screens arranged one above another, through which the grain passes and by which it is separated according to the quality and deposited in different drawers, hereinafter to be described. A shaking motion is given to these screens by means of the rock-shaft *b''*, connecting-rod *b'*, and wheel *b*, which gears into the wheel *d'* on the end of the fan-wheel shaft. The shaker N is suspended at the tail end by the rods *n n*, Fig. 2. The upper shoe, F, is suspended in like manner by rods *f*, and this shoe is provided with screens Nos. 4, 5, and 6, arranged one above the other, as seen in Figs. 1 and 4. To the upper screen, No. 4, I attach the fingers *a''*, which extend into the hopper to agitate the grain and cause it to pass over the screen.

The desired motion is given to the shoe F by means of the rock-shaft *c*, connecting-rod *d*, and crank-wheel *d'*, or pinion on the end of the fan-wheel shaft. An arm, *c'*, connects the rock-shaft *c* with the shoe F by means of a connecting-rod, giving a sidewise motion which is quick and short, equaling in number the revolutions of the fan-wheel.

To the end of the shoe F, I attach the trough *g*, which is inclined downward and through the side of the mill, by means of which sticks and coarse materials are carried out of the mill.

At *t* in Fig. 4 in the shoe F, and below the screen No. 5, is shown a sieve or screen which discharges upon the screen No. 6. Below the screens that communicate with the

spout D are inclined planes extending down on each side to the spout, as indicated by the dotted lines in Fig. 3.

e is a wind-trunk between the upper shoe, F, and lower shoe or shaker, N, conveying the wind from the fan-wheel through the falling grain.

To the outside end of the upper sieve, No. 3, in the shaker N is arranged a gage-slide, *h*, that can be moved or adjusted so as to take on more or less of the grain as it falls from the upper shoe.

An adjustable slide-deflector is shown at *m*, which conveys the heavier tailings into the drawer K.

The sieve No. 3 communicates with the spout J, and the sieve No. 2 communicates with the spout I. These troughs incline downward toward the spout, so that the grain which enters them runs down freely and out of the mill. The inclined table *i* communicates with the drawer L, and the sieve No. 1 communicates with the drawer H. The shoe N, being suspended from the sides of the mill by the rods *n*, which are longer than the rods *f*, which suspend the upper shoe, F, and the wheel *b* being larger than the pinion *d'*, the vibrations of the lower shoe are longer and slower than the upper one. The first quality of larger grain passes over the sieve No. 3 into the spout or trough J, and the second quality of smaller grain falls upon the finer sieve No. 2 and passes into the spout I.

In the end of the sieve No. 3 there is a slide, G, (shown in Fig. 5,) that can be removed when the grain in place of passing over the end of the sieve into the spout J will fall through the opening caused by the removal of the slide into the spout I, that the sieve No. 2 empties into, thus uniting the first and second qualities of grain in the spout I, the sieve No. 3 being a little coarser than the sieve No. 2.

The elastic stops *r* are for the purpose of easing the reaction or striking of the shoe against the sides of the mill.

The hopper A is provided with a gate, O, which is adjusted by a screw to admit more or less from the hopper into the mill. Fingers *a''* are attached to the upper screens, by the action of which the opening from the hopper into the mill is prevented from clogging, as hereinbefore indicated.

In the operation of this machine the wheat

or other grain passes from the hopper A into screens Nos. 4, 5, and 6, where large oats and all matters larger than wheat (when wheat is the grain operated upon) are screened out. The wheat, cockle, chess, grass-seed, &c., fall upon the screen 4', when the grass-seed passes through and falls upon the apron E in the bottom of the shoe F and is carried into the trough D and out of the spout D'. The grain and other seeds too large to pass through the screen 4' are carried over and precipitated over the gage *h*. At the same time all the tailings are blown out of the grain by the blast of wind passing through the wind-trunks, the heavy portion of the tailings being carried into the drawer K by means of the deflector *m*, which can be so set as to catch more or less, as desired. At the same time the adjustable gage *h* at the top end of the sieve 3 can be moved forward or backward, so as to catch more or less of the grain to be cleaned. The grain passes from the hopper through screens 4 and 5 and falls upon *t*, where the wheat falls through, and larger seeds—as oats—pass over and through the screen 6, and fall into and are discharged through the spout *a'*, while the sticks and short straws are received into and discharged through the spout *a*. The small oats or other small grain pass down through to the lower one and then to the spout *a'*, while the wheat falls upon the sieve 4' and is separated from the grass-seed, as before stated.

The same principle is employed in cleaning all kinds of grain and seed as in cleaning wheat, only the different kinds of grain or seed requiring different kinds of screens and sieves, the meshes of which must be according to the size of the grain or seed to be cleaned, the shoe F being the same and arranged so as to receive the different kinds of sieves and screens, or rather the different sieves and screens being made to fit the shoe, the action of all the parts being the same. In passing the trunk all the light stuff is blown away, and the tailings pass into the slide deflector, *m*, which may be so set as to catch more or less of the tailings, according to the condition of the grain to be cleansed, the tailings passing into the drawer K. The gage-slide *h* may be set out or in, so as to take in more or less grain as it falls from the sieve *t*, according to the condition of the grain. From the gage *h* the grain passes onto the screen No. 3, which in screening conveys the larger grain to the spout J, while the smaller and imperfect grain, with the cockle, passes through the screen No. 3 into the sieve No. 2, where it is again screened, and the wheat, which is of the sec-

ond quality, passes down over the sieve No. 2, and out of the spout I. The wheat that is screened through sieve No. 2 into screen No. 1 is of a third quality, and passes over the screen into drawer H, while the cockle is screened through and falls upon the inclined table *i*, and passes into the drawer L. The cockle and chop-stuff is screened through all of the sieves and passes into drawer L, while grass-seed and other of the same size, will pass out of the spout D'. If the screens and sieves are arranged in the shoe F for cleaning flax-seed, the yellow seed and "pull-down" seed, &c., would be discharged through the spout D'. The heavy tailings which are caught by the slide deflector, *m*, pass into the drawer K, and the light tailings are blown away.

When it is desired to have the first and second quality of wheat together, the slide G in the screen 3 is removed, and the wheat will pass out through the slide opening into the spout I.

The object of having a reduced motion to the lower screen with a longer stroke is that by a quick motion all the light seeds tend to rise to the top of the heavier grain or seed on the screen; but by reducing the motion, so that the grain will not lie still, all the small seeds and foul wheat will drop through the screen. In the upper shoe the object is to shake a quick and short stroke, so that all the larger and lighter seeds—such as oats, straw, &c.—will rise to the top to allow the grain to be screened through.

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

1. The adjustable deflector-gage *m*, in combination with the gage *h* and receiving-box K, substantially as and for the purpose set forth.

2. The arrangement and combination of the pinion *d'*, gear-wheel *b*, the connecting-rods *b'* and *d*, rock-shafts *b''* and *c*, for the purpose set forth.

3. The trough D, in combination with the screen 4' and apron E, arranged and operating as and for the purpose specified.

4. The slide G, screens 2 and 3, in combination with the spouts I and J, as for the purpose set forth.

5. The vibrating rake *a''*, when attached to either the upper or lower shoes, and used in combination with the separator, substantially as set forth.

AARON HIGLEY.

Witnesses:

W. H. BURRIDGE,
A. W. McCLELLAND.