H. H. MAY.

Grain-Separator.

No. 212,031. Patented Feb. 4, 1879.

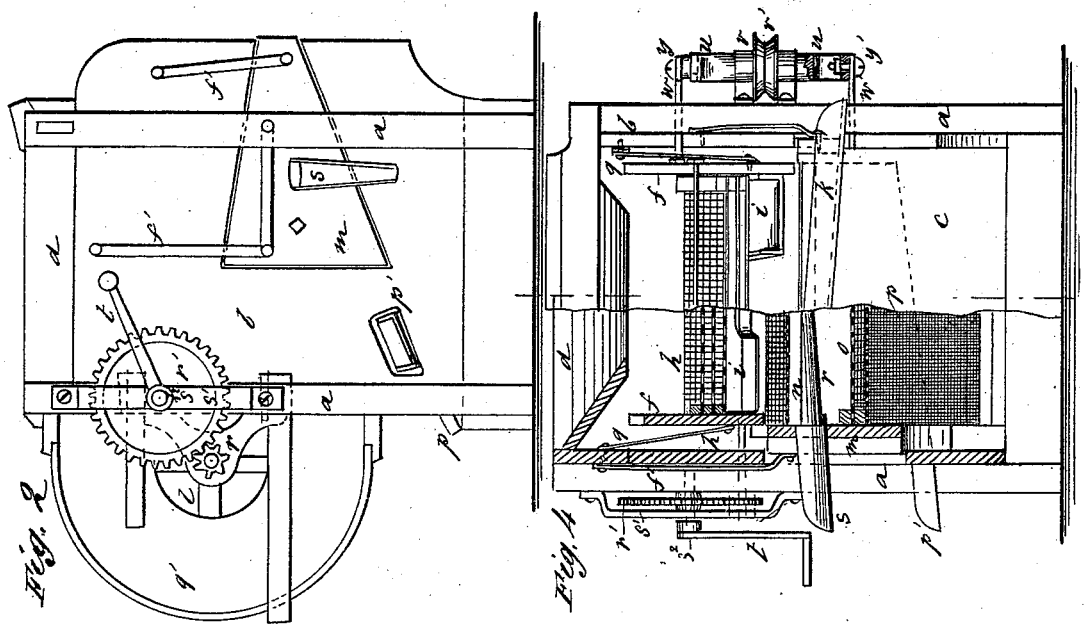

Fig. 2

Fig. 4

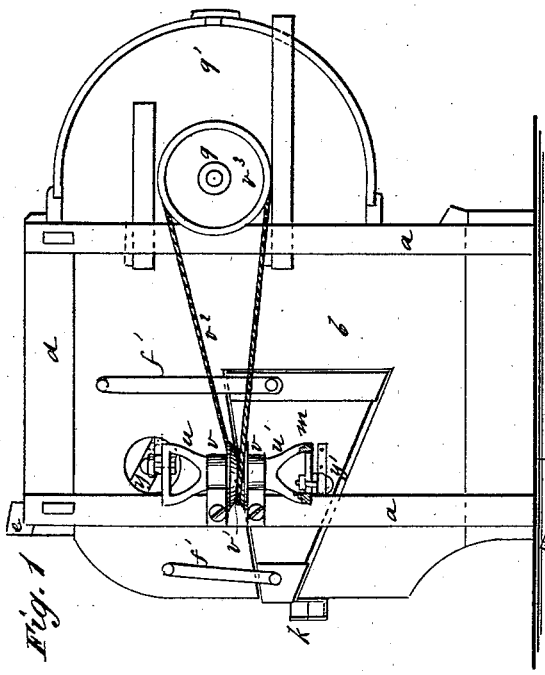

Fig. 1

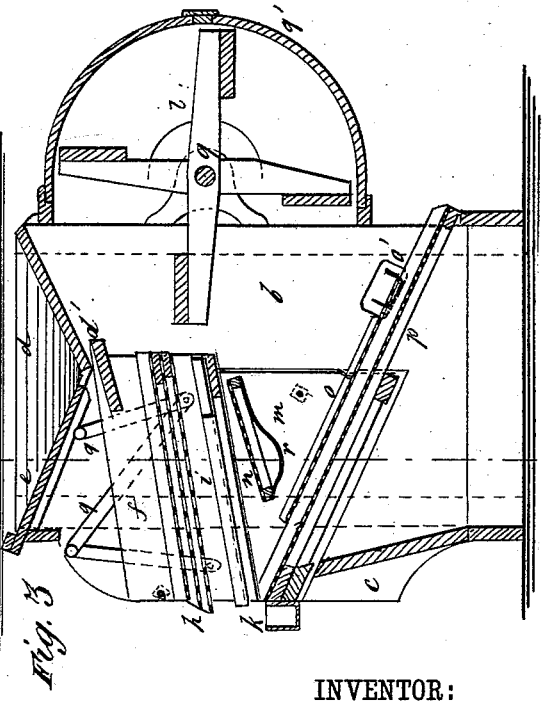

Fig. 3

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HENRY H. MAY, OF NEW ALBIN, IOWA.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **212,031**, dated February 4, 1879; application filed September 17, 1878.

To all whom it may concern:

Be it known that I, HENRY H. MAY, of New Albin, in the county of Allamakee and State of Iowa, have invented a new and Improved Cockle and Grain Separator, of which the following is a specification:

The object of my invention is to furnish an apparatus for separating oats, cockle, chaff, &c., from wheat, and to deliver them each separately; also, to clean seed-wheat, for removal of the shrunken and broken grains.

In the drawings, Figure 1 is an elevation of the apparatus at one side, showing the mechanism for shaking the screens. Fig. 2 is an elevation at the side opposite to Fig. 1. Fig. 3 is a vertical longitudinal section, and Fig. 4 is an elevation of the front, of the apparatus, partly in section.

Similar letters of reference indicate corresponding parts.

a a is the supporting frame-work of the machine. This is provided with sides *b* and front board, *c*, to form a rectangular box for the screens. *d* is a hopper at the top of the frame *a*, and *e* is a slide in the hopper *d*, for regulating the quantity of grain passing from the hopper. *d'* is a board for spreading the grain as it runs from the hopper. *f* is a frame, hung inside of the main frame *a* by links *g* from the sides *b*, so that it may be vibrated, as hereinafter described.

The frame *f* carries the first or oat screen, *h*, and the screen-guard *i*, for taking out chaff and smut. The screen *h* consists of three sheets of perforated metal, arranged at an inclination, one above the other, a short distance apart. The perforations of these screens are of a size to permit the passage of the wheat and smaller grains, but retain the oats, and the perforations of the three sheets are not in line vertically, so that if the oats should pass through the upper perforated sheets they will be stopped by the under ones. The oats fall from the end of the screen *h* into a spout, *k*, across the front of the machine, upon the second vibrating frame, *m*.

The screen-guard *i* consists of a metal plate having the center portion cut out from the lower end to near the upper end and the edges bent up, so that the plate forms a spout at each side of the apparatus. The screen-guard *i* is placed in the upper frame above the oat-screens, and with the upper edge near enough to the lower end of the feed-board to catch the light stuff, straws, chaff, cheat, &c., as they fall from the feed-board and are blown farther than the wheat or other grain, which is heavier. The object is to remove the light stuff from the heavier grain before it reaches the screens, so that they shall not be liable to be choked up, and so as to leave the oat-screens free to work upon and separate the oats. The central portion of the guard *i* is cut out, so that the screens may be visible to the operator and allow him to notice whether the feed is too fast or otherwise.

m is the second shaking frame, below the frame *f*, hung by links *f'* at the outside of the apparatus. The frame *m* carries the cockle-screen *n*, seed-wheat screen *o*, and main wheat-screen *p*.

The cockle-screen *n* consists of a perforated sheet of metal attached to side bars, and held in the frame *m* in an inclined position beneath the upper part of the screen *h*. The perforations in *n* are of a size to allow cockle to pass but retain wheat, and the wheat runs off the cockle-screen upon the seed-wheat screen *o*. The cockle-seeds pass through the perforations in *n* and fall upon an apron, *r*, attached to the under side of the cockle-screen, which apron is inclined across the machine, so that the cockle will run to one side and be discharged by the side spout, *s*. (See Figs. 2 and 4.)

The screen *n* is to be fitted removably in the frame *m*, to allow of its removal and the substitution of a finer screen for cleaning grass-seed. The seed-wheat screen *o* is fitted in the frame *m* to allow of its removal when not required for use. The wheat falls from the screen *n* upon *o*, which is inclined in the opposite direction to *h* and *n*. The screen *o* permits the broken and shrunken wheat to pass through, but retains the sound grains, which are caught in a spout, *o'*, on the slanting lower edge of *o*, and discharged by a spout, *p'*, at one side of the apparatus. The damaged wheat falls upon the main wheat-screen, *p*, which is inclined in the same direction as *o*, and discharges at the back of the machine.

In cleaning grain for market, the screen *o* is not necessary. The wheat, in that case, will

fall from the cockle-screen *n* directly upon the main screen *p* and be discharged at the rear, while the dust and particles of dirt not removed by the blast from the blower will fall through the screen *p*.

The blower *l* is upon a shaft, *q*, fitted in bearing at the back of the separator, and the blower-case *q'* is attached to the main frame *a* of the machine. The blower is revolved by a spur-wheel, *r*, on shaft *q*, meshing with a gear, *r'*, on a shaft, *s*, which is supported in bearings *s'* on the frame *a*.

The shaft *s* may have a crank-handle, *t*, as shown, or a pulley for connecting with power.

The devices for shaking the frames *f* and *m* are shown in Fig. 1. *u w'* are stirrup-formed cranks upon the opposite ends of a short vertical shaft, which is held in bearings *v* on the frame *a*, and v^1 is a small pulley keyed upon the shaft. *w* is a rod connected to the frame *f*, and to the adjustable crank-pin *y*, which is set back and forth in a slot extending across the axial line of the shaft. *w'* is a rod for the frame *m*, connected to the crank-pin *y'*. v^2 is a belt from the pulley v^1 to a large pulley, v^3, on the shaft *q* of the blower.

It will be seen that the oats are first separated from the wheat and delivered, so that they are in condition for feeding horses without further cleaning; and as the wheat passes over the different screens it is separated from the cockle and other refuse, and finally delivered in good condition.

I do not limit myself to the described form of screens, as screens suitable for doing the same work may be substituted in their place.

By virtue of the peculiar form of the slotted stirrups or double cranks which are formed on the opposite ends of the shaft of the pulley v^1, the "throw" or distance of reciprocation of the two shoes can be independently regulated by simply shifting the crank-pin *y*. They can also be made at will to move in the same or in opposite directions, as desired.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In grain-separators, the combination, with the blower *l* and vertical rotary shaft, provided at opposite ends with the slotted stirrups, of the two independently-moving screen-frames *f m*, adjustably connected to said stirrups, the frame *f* provided with the screens *h* and guard *i*, and the latter with oppositely-inclined screens *n* and *o p*, the screen *o* having spout *o'*, as shown and described.

2. The vertical rotary shaft *u*, provided with a stirrup at each end, slotted, and having a crank-pin adjustable in each of said slots with respect to the axis of shaft, as and for the purpose specified.

3. The vertical shaft having cranks *u w'* and pulley v^1, the rod *w*, connected with an adjustable crank-pin, *y*, the rod *w'*, connected with an adjustable crank-pin, *y'*, and the pulley v^3, connected by belt with pulley v^1, in combination with the frames *f m*, as and for the purpose specified.

HENRY H. MAY.

Witnesses:
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