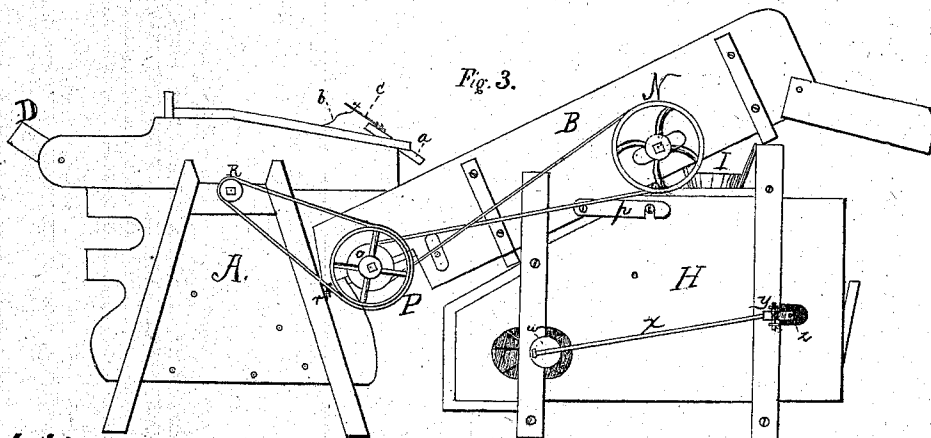
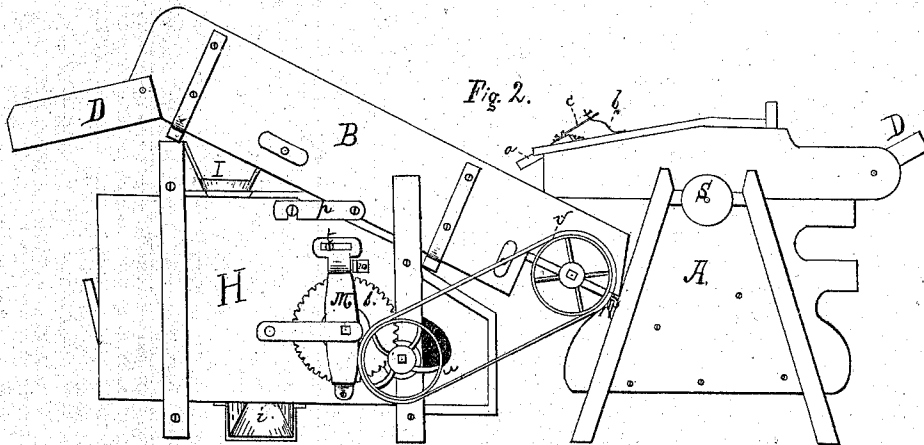
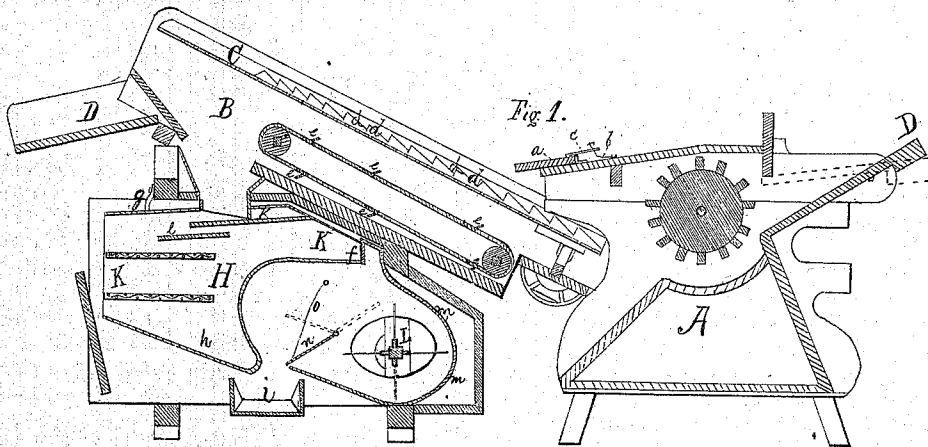


GEORGE W. HEIGES.

Improvement in Combined Thrashers, Grain-Separators, and Cleaners.

No. 115,201.

Patented May 23, 1871.



Witnesses:
Parker & Sweet, Jr.
W. B. Taylor

Inventor:
Geo. W. Heiges by
his Atty. Wiedersheim & Norris

UNITED STATES PATENT OFFICE.

GEORGE W. HEIGES, OF FRANKLINTOWN, PENNSYLVANIA.

IMPROVEMENT IN COMBINED THRASHERS, GRAIN SEPARATORS, AND CLEANERS.

Specification forming part of Letters Patent No. 115,201, dated May 23, 1871.

To all whom it may concern:

Be it known that I, GEORGE W. HEIGES, of Franklinton, in the county of York and State of Pennsylvania, have invented a new and useful Improvement in Grain Thrasher, Separator, and Cleaner; and I do hereby declare the following to be a clear and exact description thereof, sufficient to enable others skilled in the art to which my invention appertains to make and use the same, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a central vertical longitudinal section. Figs. 2 and 3 are side elevations.

My invention relates to an improved grain thrasher, separator, and cleaner; and consists of the combination of a thrasher, separator, and cleaner, wherein the three several parts may be detached and used separately or with other separators. It further consists of an improved gearing, whereby the whole machine, or the detached fanning-mill only, may be operated; or it may be thrown out of gear and the power applied elsewhere. It also consists of an improved elevator, which is used instead of the shaker for conveying the grain when separated to the fanning-mill. It also consists in a novel combination of the fanning-mill hopper and the screen-frame.

Similar letters of reference indicate corresponding parts in the several figures.

A may represent the thrasher, which, except the hinged piece *a*, is of ordinary construction. The hinged plate or board *a* serves to regulate the quantity of straw fed on the separator, and is rendered adjustable by means of the strap *b* and bar *c*, the latter attached to *a* and the former to the top of the thrasher-frame, the strap passing through a slot in the bar, and held by a pin at any desired elevation of the plate *a*. A spring or other device may be substituted for the strap. B is the separating device, consisting of an inclined perforated shaker-bed, C, having the serrated strips *d d* for conveying the straw from the thrasher over the shaker, and throwing it out at the hinged trough D. The shaker is suspended from suitable arms at one end, and at the other is mounted on a crank-shaft. Underneath the shaker C are two endless belts, arranged over suitable pulleys, and have secured transversely to them at an angle a number of

scrapers or buckets, *e e*, which, as the pulleys are revolved, scrape up the grain from the floor E and drop it into the hopper I of the fanning-mill. H is the fanning-mill, composed of the hopper I, situated at the top of the mill, and in such relation to the discharge end of the separator as to receive the grain from the buckets *e e*. K K is the screen or sieve-frame, extending forward within the mill-frame, and vibrating on a pivot, *f*, secured in the mill-frame; it is suspended at its rear end by two or more spring or vibrating arms, *g g*, secured as shown, and is provided with a coarse and fine wire-screen, as is usual, which can be removed at pleasure, and a spout, *h*, for conveying the winnowed grain or seed to the discharge-spout *i*. A false bottom is formed to the hopper by a shelf or cross-piece, *k*, secured in the sieve-frame, and a second shelf, *l*, is placed a little lower underneath, and projecting beyond the shelf *k*; and by means of these two shelves the grain, as it falls through the hopper, has the force of its fall broken by the upper one, and, by means of the projecting lower one, is more evenly and regularly distributed over the screen, thus securing more perfect cleaning. L is the fan-wheel or blower, hung in suitable bearings and surrounded by a casing, *m*; and in front of the mouth of the blower a draft-regulating leaf, *n*, is hinged, which is operated by a cord, *o*, or other device; and when it is desired to cut off the supply of air from the screens the leaf is elevated in the manner shown by the dotted lines, so as to partially cover the mouth of the blower and direct the air upward, so that when it reaches the grain or seed its power is almost lost. This will be found necessary when the mill is used for winnowing or cleaning small seed, such as clover, &c., and also when the grain is rusted or light. The thrasher is secured to the separator by means of hooks and staples, *p*, and the separator is attached to the fanning-mill by hooks, *r*, on the separator, catching over lugs or pins on the mill.

In Fig. 2 is seen the operating mechanism attached to the mill. It consists of a crank-handle or universal joint attached to a shaft, on which a toothed driving-wheel, *s*, is secured in an adjustable bracket, M, which is pivoted to the mill-frame below, and its upper end slotted and held in or out of gear with the

pinion on the fan-shaft by a thumb or other screw, *t*, and a stop, by which arrangement the thrasher, separator, and fan mechanism may be stopped at the will of the operator without the necessity of stopping the horsepower or other prime mover. The wheel *s* engages with a pinion on the fan-wheel shaft, and a pulley, *u*, is fixed on the same shaft. A belt passes from this pulley to another pulley, *v*, on the crank-shaft of the separator, which gives a shaking motion to the bed *C*.

In Fig. 3 the opposite side of the machine is shown. The eccentric *w* is secured to the fan-wheel shaft; the pitman *x* extends from it to a bell-crank lever, *y*, which is secured to the mill-frame, and to its other arm a rod, *z*, is secured by one end, and its other is attached to the screen-frame, so that when motion is applied to the fan-wheel shaft, through the medium of the gearing described, the eccentric, pitman, bell-crank, and rod *z* give the required vibrating motion to the screen or sieve frame. A pulley, *N*, is secured to one of the shafts of the pulleys over which the belts of the scraping or grain-elevating mechanism is run; and the belt from said pulley may be crossed and extend over a smaller pulley, *O*, on the crank-shaft, so that the motion of said shaft is communicated by this system of pulleys to the grain-elevating mechanism underneath the shaker. The pulley *P* is also on the crank-shaft, and a belt passes from it over the pulley *R* on the thrasher-drum or cylinder-shaft, giving motion also to it; and thus from the gearing on the fanning-mill, through a system of pulleys, belts, shafts, rods, and levers, motion

is given to the three parts constituting the machine, first at the fanning-mill, then to the separator, and then to the thrasher, the several motions of course being nearly simultaneous.

The thrasher, as has been stated, may be detached and used by itself or in connection with any other separator and cleaner; so, also, may the separator and cleaner; and, when desired, the cleaner may be detached and worked by hand for cleaning clover or other small seed, and, if the gearing be detached or disengaged, power may be applied elsewhere, as at pulley *S*, on the thrasher-shaft.

The several parts of my machine are of such simple mechanism, and its operation so perfect, that its advantages over others in these respects are very great and readily commend its use.

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

The combined thrashing-machine, grain-separator, and fanning-mill herein described, when these several devices are constructed as set forth, and are made detachable, and arranged to be operated separately or together, as and for the purpose substantially as specified.

To the above specification I have signed my name this 10th day of February, A. D. 1871.

GEORGE W. HEIGES.

Witnesses:

CORNELIUS MURRAY,
WASHINGTON SMITH,