

W. E. TURNER.
Grain-Separators.

No. 141,676.

Patented August 12, 1873.

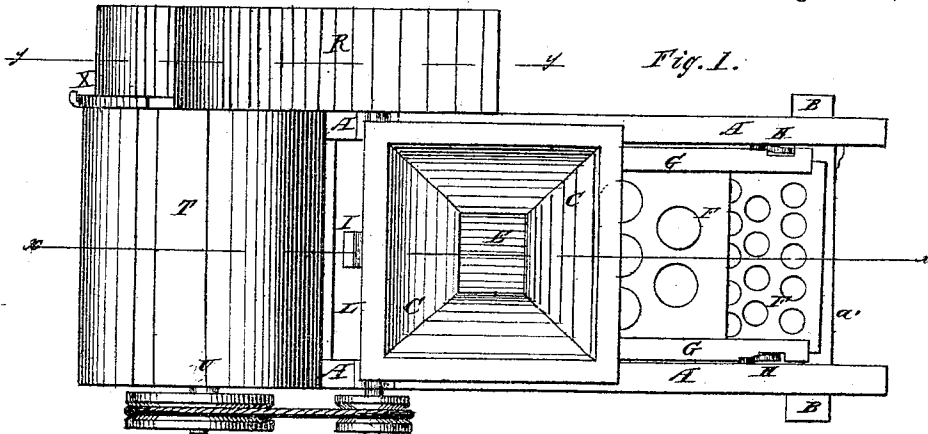


Fig. 1.

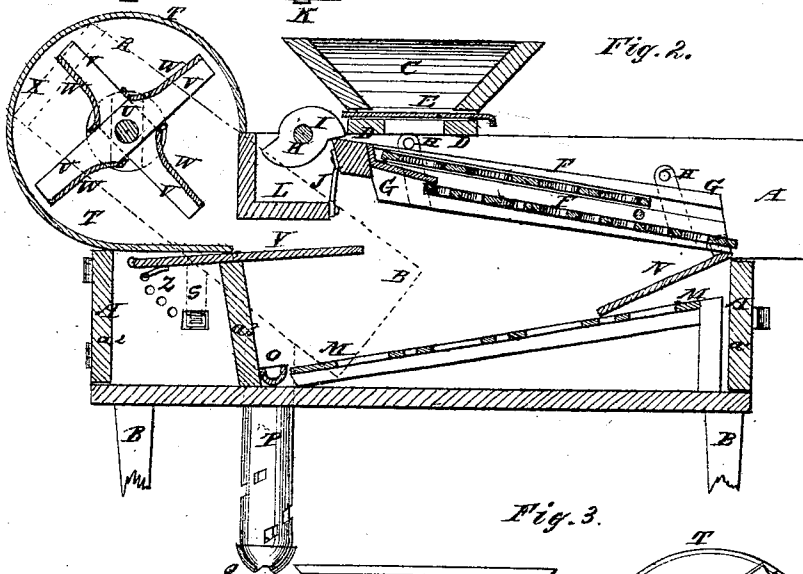


Fig. 2.

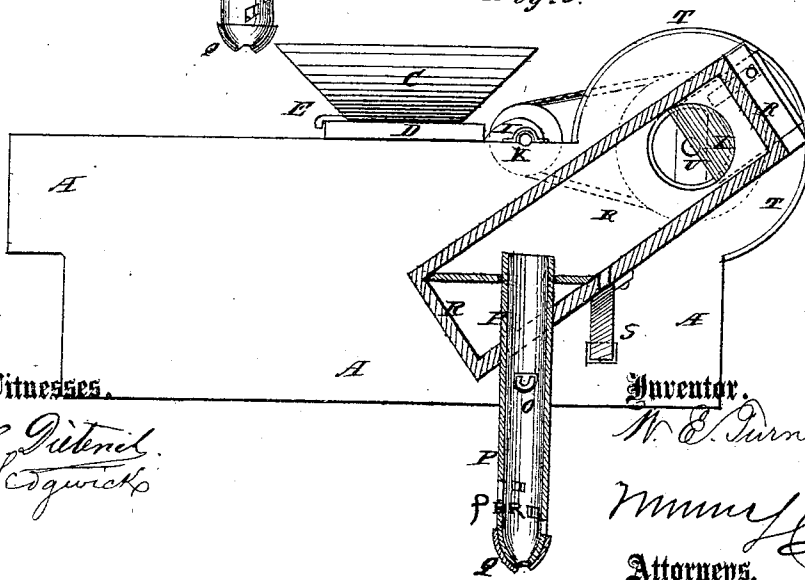


Fig. 3.

Witnesses.

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WILL E. TURNER, OF NEOSHO FALLS, KANSAS.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. 141,676, dated August 12, 1873; application filed March 15, 1873.

To all whom it may concern:

Be it known that I, WILL E. TURNER, of Neosho Falls, in the county of Woodson and State of Kansas, have invented a new and useful Improvement in Grain-Separator, of which the following is a specification:

Figure 1 is a top view of my improved grain-separator. Fig. 2 is a detail vertical longitudinal section of the same taken through the line *x x*, Fig. 1. Fig. 3 is a detail section of the same taken through the line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The invention consists in the improvement of grain-separators, as hereinafter described and pointed out in the claim.

A represents the casing of the separator, which is supported by and attached to legs or a frame-work, B. C is the hopper, which rests upon and is secured detachably and adjustably by dowel-pins to the board D that rests upon and is secured to the upper edges of the side parts of the casing A. The feed is regulated by a plate, E, which slides upon the board D in a recess in the bottom of the hopper C. From the hopper C the grain falls upon the screens F of the shoe G, where it is exposed to the blast from the fans. The shoe G is supported by four bars or hangers, H, one being placed near each corner, and which are pivoted to the sides of the said shoe G and to the sides of the casing A. The hangers H have several holes formed in them to receive the pivots, so that either end of the shoe may be raised or lowered, as the circumstances of the case may require. The shoe G is shaken by the cams I and spring J. The shoe G is pushed back by the cams I attached to the shaft K, and which bear against the forward end of the said shoe G, and is drawn forward by the spring J connected with the forward end of the said shoe G and with the edge of the board L that forms the upper side of the throat of the fan-chamber. The shaft K revolves in bearings attached to the upper edges of the side parts of the casing A, and is driven from the fan-shaft by a belt and pulleys, or other suitable gearing. From the screens F the grain falls upon the inclined plate M, which rests upon cleats attached to the side parts of the casing A. The plate M has numerous

long and narrow slots formed in it, so that the cockle and other small seeds may pass through them while the grain slides down the said plate. N is a plate, which is hinged at its upper edge to the shoe G, and its lower edge rests upon the slotted plate M. The plate N is designed to prevent the blast from escaping at the rear end of the shoe G without passing through the screens F, and also to prevent any space from being left open at the rear end of the machine by the movement of the shoe G. The cockle and other fine seeds can be removed from the chamber beneath the inclined slotted plate M through a door, *a'*, in the rear end of the machine. From the lower edge of the plate M the grain slides into the inclined spout O, which passes out through the side of the casing A and enters the side of the vertical tube or hollow cylinder P, through which the air is drawn to supply the fans. The lower end of the tube P is closed with a convex or funnel-shaped cap, Q, having a hole through its center of about one-sixth the diameter of the said tube P, through which the grain escapes, and through which a column of air rises vertically. In the lower part of the hollow cylinder P are formed a number of vertical or horizontal slots, arranged spirally, as shown in Figs. 2 and 3. The air entering through these spirally-arranged slots impinges upon the column of air ascending vertically through the hollow cylinder P, and gives it a spiral movement as it ascends through the falling grain, so that it may separate from the grain and carry up any dust, smut, light seeds, or other light impurities that may enter the said cylinder with the grain. The grain is thus exposed to a blast of air for the first time as it falls through the screens F, for the second time as it slides down the inclined slotted plate M, and for the third time as it falls through the hollow cylinder P. The spiral column of air escapes from the upper end of the hollow cylinder P into the box R, where the light impurities settle, and from which they escape through the spout S into the chamber beneath the fan-chamber, whence they may be removed through the door *a''* in the forward end of the machine. The form of the box R is immaterial, provided it be such that the light impurities brought up through the

hollow cylinder P cannot pass back into said hollow cylinder, but will escape through the spout S. The upper part of the box R has an opening formed in its side, which corresponds with an opening in the side of the fan-chamber T, through which the air is drawn to the said fan-chamber T. U is the fan-shaft, to which are attached the arms V, the forward sides of which are slightly concaved to receive the fans W, which are also slightly concaved, and their inner edges project so as to rest upon and be secured to the rear side of the inner parts of the adjacent arms V, thus forming a slight flange upon the inner edges of the said fans W. This construction keeps the air before the fans from blowing inward around their inner edges, and tends to force the air outward toward the concave shell of the fan-chamber, making the blast stronger and more steady. The entrance of air from the box R into the fan-chamber T is regulated by a slide, X, which may be slid in and out to regulate the size of the opening, as shown in Fig. 3. Y is a plate, which is placed beneath the lower part of the shell of the fan-chamber T, passes through a slot or long notch in the partition a^3 that separates the chamber beneath the fan-chamber from the shoe-chamber, and projects to serve as the lower part of the throat of the fan-chamber. By this construction, by varying the inclination of the plate Y, the blast may

be directed more or less fully against the screens F, as the circumstances of the case may require. The plate Y is secured in any position into which it may be adjusted by a hook, Z, pivoted to the said plate Y, and which hooks into one or another of a series of holes formed in the side of the casing A, as shown in Fig. 2.

The separator may be made of various sizes to adapt it for farm use, or for mills, or for elevators, in which latter cases it should be furnished with the necessary spouts, carriers, &c., for handling the grain.

When the separator is made large the lower end of the hollow cylinder P may be provided with a short inner tube made with a funnel-shaped lower end or foot, and having spiral flanges around its outer side to give a spiral movement to the entering air.

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

The hollow cylinder P, having spirally-arranged slots in the lower part, combined with spout O, to produce a whirling blast, in the manner and for the purpose described.

WILL E. TURNER.

Witnesses:

T. W. LORD,
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