CHANDLER & REED.

Grain Winnower.

No. 3,852. Patented Dec. 7, 1844.

FIG. 1.

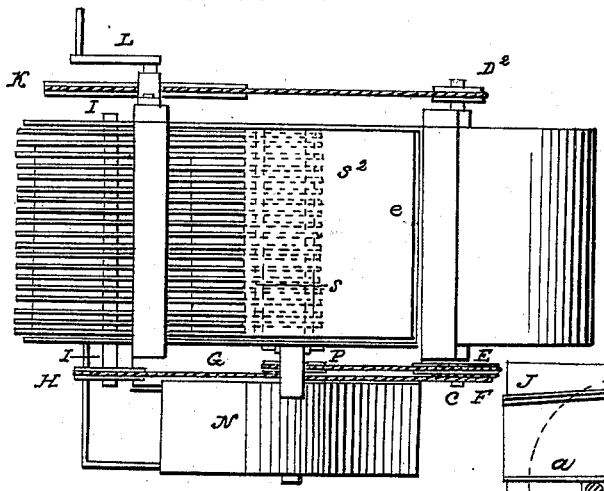


FIG. 3.

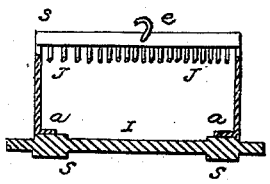


FIG. 4.

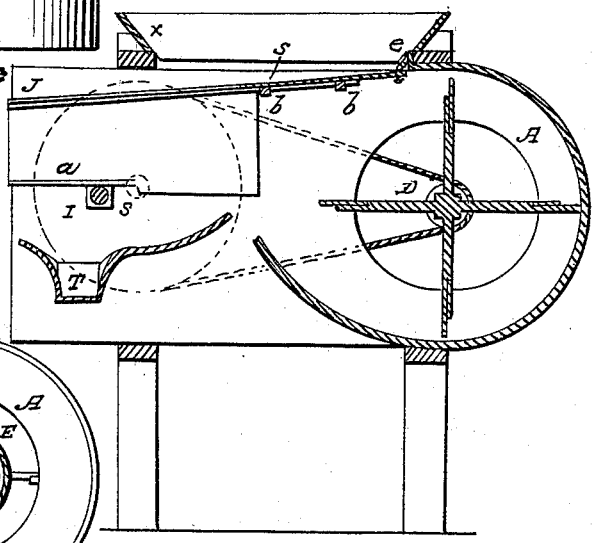
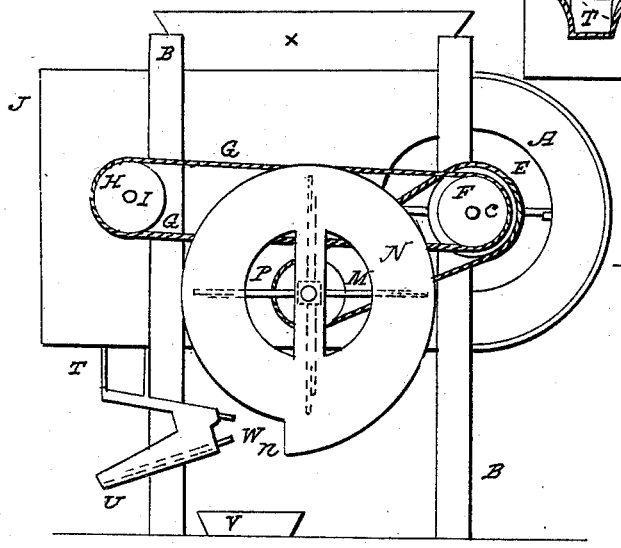


FIG. 2.



UNITED STATES PATENT OFFICE.

THOMAS A. CHANDLER, OF ROCKFORD, ILLINOIS, AND ASA D. REED, OF NILES, MICHIGAN.

WINNOWING-MACHINE.

Specification of Letters Patent No. 3,852, dated December 7, 1844.

To all whom it may concern:

Be it known that we, THOMAS A. CHANDLER, of Rockford, Winnebago county, State of Illinois, and ASA D. REED, of Niles, Berrien county, Michigan State, have invented a new and useful Machine for Cleaning Grain, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a top view of the machine. Fig. 2 is a side elevation of ditto. Fig. 3 is a transverse section of the screen. Fig. 4, is a vertical longitudinal section of the machine.

The fan A and frame B supporting it are made similar to others in use. The axle C of the fan extends through and beyond the sides of the frame having on one of its ends a pulley D and on its opposite end two pulleys E F. A band G is passed around the pulley F and around a small grooved pulley H on a revolving axle I that shakes the shoes containing a series of parallel inclined elastic rods or wires J upon which and through which the grain and chaff and dirt are discharged and over which the straw is shaken, by the alternate vertical movement of the lower end of the shoes derived from the revolving shaft I containing square shoulders *s* upon which it rests; the straw is discharged at the lower end of the screen. The opposite end of said shaft I turns in the frame B. There is a larger grooved pulley K around which is passed a band leading around the small grooved pulley D on the axle of the main fan. The aforesaid pulley K is placed on a short revolving axle L, called the crank axle; on which there is fixed a crank by which the machine is operated. There is a secondary fan M for completing the operation of cleaning the grain placed within a circular case N fastened to the side of the frame B having a tangential outlet *n* made in the periphery of the lower or under part of said case for directing the blast of wind in the course required. This secondary fan is revolved by means of a small grooved pulley P on its axle around which is passed a band leading around the before named pulley E on the axle of the main fan.

The shoe S is suspended at one end by a link *l* to the upper edge of the main fan case, or to the frame, or in any suitable way. Its sides that rise and fall between the sides of the fan are turned inward at right angles where they rest on the aforesaid square shoulders of the transverse revolving shaft I as represented at *a* in Fig. 3. Its top *s* which extends from the upper edges half its length and upon which the grain and straw are first received from the hopper inclines at an angle of about ten degrees with a horizontal plane and is called the apron. From the lower edge of this inclined plane or apron S^2 the aforesaid parallel elastic wires J extend that form the screen. The lower and outer ends thereof are detached and loose from the shoe and there is no reticulated wire passed through between them as in the common fan screen, but they are caused to have a vertical elastic movement as the shoe is vibrated vertically for throwing the straw off at the lower end and for causing the grain &c., to pass through the spaces between them more freely. The upper ends which are under the apron are passed through perforations in two transverse parallel cleats *b* screwed to the under side of the apron. The hopper X which is made in the usual manner is arranged above the aforesaid apron. As the shaft I revolves the corners of the square shoulders thereon lift the shoes of the screen and being turned alternately let it fall again and in this manner the screen is vibrated vertically.

The grain and impurities among it are received from the elastic screen by an inclined trough T placed below the screen which conveys the grain &c., to the blast of the secondary fan M where the operation of cleaning the grain is completed, the grain and impurities descending over the lower edge of the trough or spout or conveyer until they meet the blast when the impurities, which are lighter than the grain, are blown beneath the said inclined conveyer into a second inclined conveyer U which inclines in a contrary direction from the one above described, while the grain continues to descend to a receiver V placed below being too heavy to be blown away by the blast which is graduated to suit the weight of the grain to be cleaned. As there are various kinds of grain to be cleaned containing impurities of different degrees of specific gravity it is necessary to have an inclined sliding gage board W placed upon the bottom of the secondary inclined conveyer and moved upward when the impurities are heavy in order to catch them as soon as acted on by the blast and

prevent them descending with the grain; and for this purpose the inclined gage board W is placed and arranged upon the second inclined conveyer, the last named conveyer being suspended to the lower end of the first named conveyer by hanging straps, or other means, having a space between them in which the said gage board moves.

What we claim as our invention and which we desire to secure by Letters Patent is—

The manner herein set forth of separating the grain from the straw and chaff by means of a screen constructed with parallel elastic wires fixed at one end and free to move at their other ends merely resting upon the frame of the screen, said screen vibrating up and down by which means the elastic movement of the wires opens the straw and thus gives full action to the blast.

THOS. A. CHANDLER.
ASA D. REED.

Witnesses:
WM. P. ELLIOT,
EDW. MAHER.