

Thrashing Machine.

No. 4,655.

Patented July 24, 1846.

Fig. 1.

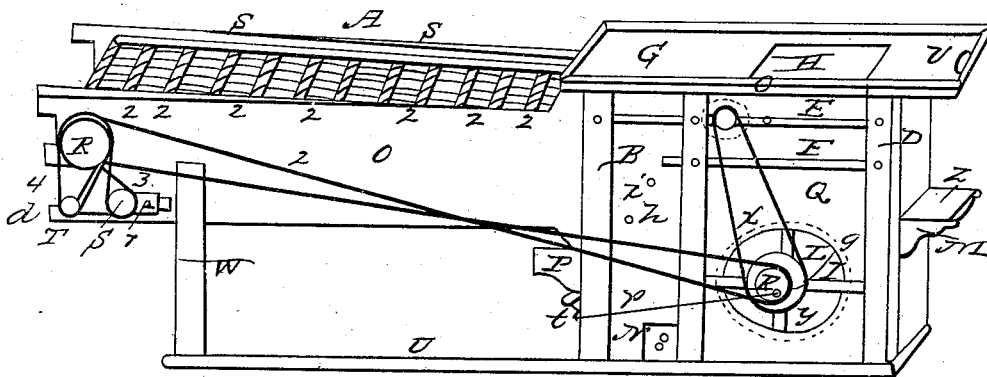


Fig. 2,

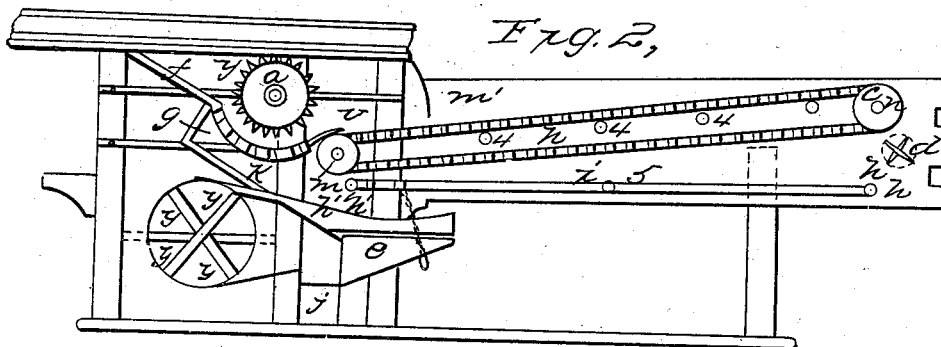


Fig. 3,

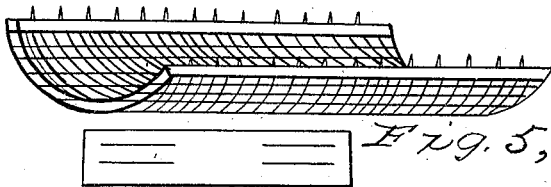


Fig. 4.

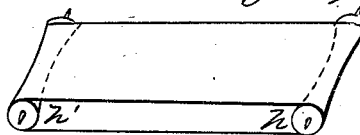


Fig. 5,

UNITED STATES PATENT OFFICE.

ELIZUR L. BOOTH, OF CANANDAIGUA, NEW YORK.

THRESHING-MACHINE.

Specification of Letters Patent No. 4,655, dated July 24, 1846.

To all whom it may concern:

Be it known that I, ELIZUR L. BOOTH, of Canandaigua, in the county of Ontario and State of New York, have invented a new and useful Machine for Separating Grain from Straw and Chaff, and which I call "Booth's Improved Portable Grain Separator and Cleaner;" and I do declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is an angular or perspective view. Fig. 2, an internal view as if the boards on one side were taken off.

This machine, which is about four feet high and nearly as long, exclusive of that part in which the screen revolves, has three upright posts of 3 by 3½ inches, marked (B, C, D,) and which are framed into sills (U,) which are covered with a flooring. The same posts are framed into the table (G,) at the top. (Q, Q,) are boards inclosing the machine. (E and F) are girts secured to the inside of the posts by iron bolts, the girt E, extending 2½ inches forward of the post (C).

The cylinder (marked (a) in the internal view) and shown in Fig. 1, in dotted lines should be fourteen inches in diameter and placed upon the same shaft as pulley J, having upon the other end of the same shaft a pulley to which the moving power is applied by means of a bond. Immediately beneath the cylinder is a separating concave, see Fig. 3, (marked *k*, in Fig. 2) formed with six bars of wood, 1½ inches diameter bolted at the ends to iron bars bent to the proper shape, the spaces between them (the wooden bars) being 1½ inches, intersected with iron wires of size No. 15. Space between wires ½ of an inch—the wooden bars are cut across with a saw deep enough to receive the wires, after the wires are arranged, iron bars 1½ by ½ inch are bolted to the upper side of the wooden bars to secure the wires in their places—the two outer iron bars last described are supplied with teeth, This separating concave is suspended to girts E and F and extend over the screen. An aperture L a foot and a half in diameter is for the admission of air. N, is an end of the grain box. Above the edge of the table O, is side boards to prevent the grain from falling.

P, is an end of the fanning mill shoe.

x is the drum inclosing the fan, shown in dotted lines and is two feet diameter, within which is the fan (*y*).

M is a bracket on which is a foot board (*z*), on this board the operator stands, his body being in the hole V, in the table G.

W, is a post supporting the outer end of the side boards Q.

The shaft (*i*) is that around which the rotary screen revolves, the return belt revolves around the shaft (*h*).

g, is a pulley upon the fan shaft, one foot three inches in diameter which receives the band (1,) from pulley (J) which is upon the cylinder shaft and is three inches in diameter. Upon the same fan shaft and outside of pulley *g*, is another pulley (K,) seven inches in diameter which carries band (2). Upon the outer screen shaft (marked *n*, in Fig. 2) is a treble pulley of different sizes for different bands, the middle or larger one, receiving band (2) which turns the whole, the smallest pulley being the inner one, carries the band (3) and the outer pulley carrying band 4.

(S,) is a pulley carried by band (3) and is on a shaft around which the return belt revolves.

(T) is a pulley upon a shaft of the smaller extra fan (*d*) (in dotted circle) [see also Fig. 2] and is carried by band (4).

(*p*) is the shake rod receiving a crank motion from a bolt 1½ in. from the center of pulley (K) and communicating the same motion by means of elbow (*t*,) to the shoe of the fanning mill (which is marked (*e*) in the Fig. 2) and is similar to the shoe of a common fanning mill, the sides being three feet ten inches long, seven inches wide at the center end and one foot six inches at the widest point; the open space in the shoe (shown in Fig. 2) is the groove to receive the sieve which is the ordinary fanning mill sieve.

(*f*,) as shown in Fig. 2, is the feed board or bottom of the hopper, being (H) in Fig. 1.

(*g*,) are boards placed in an angular position (see Fig. 2,) to conduct any grain that may fly in that direction into the shoe. (*l*,) in Fig. 2, is a dust board. (4, 4, 4, 4) are friction rollers under the screen (shown in Fig. 2).

(A) as shown in Fig. 1, is a revolving screen passing over shafts *m* and *n* in Fig. 2.

This screen is to conduct the straw from the cylinder and to separate that portion of the grain that remains with the straw after passing the separating concern. The screen is constructed with round rods of wood $\frac{3}{4}$ of an inch diameter being 2, 2, 2, &c., in Fig. 1, which are secured at the end, with straps of bridle leather 2 inches wide extending on each outer edge, the whole circuit of the screen. These straps have two parallel slits cut lengthwise of the same about two inches long which divides the straps into three equal parts as in Fig. 5 the spaces between the slits being two inches. The ends of the rods are inserted in the slits under the center, and over the outer portions of the straps thus divided; and thus the uneven surface is produced which gives the necessary jarring motion to the screen when in operation. These rods are intersected by iron wire size No. 15 the spaces between the wires being half an inch—the wires being cut the proper length which is about $5\frac{1}{2}$ inches one end is passed through the rod which should have been previously bored for that purpose—a half inch of the end of the wire is then bent in form of a staple and is then driven back into the rod the other end of the same wire being bent around the next rod forward of that which holds the staple end of the wire and so on, each wire thus bent around the rods, is passed over the rod and turned back on the underside and between the two next wires. The return belt marked (i) in Fig. 2, is placed immediately under the screen, revolving in an opposite direction around the shaft, *h*, *h*, made of painted canvas secured to leather straps on the outer edge, (the straps to be two inches wide) supported in the center by friction roller (5) Fig. 2, over which the belt passes. Both the return belt and screen are extended or tightened at pleasure by means of sliding boxes in which the outer shafts *h*, and *n*, in Fig. 2, revolve, these boxes are secured by thumb screws *r* in Fig. 1.

The return belt is kept spread by means of conical pulleys (*h'* *h'*) the bases of which being outward on the shafts *h*, *h*, in Fig. 2, over which the belt passes instead of using clumsy slats as in other machines. (See also Fig. 4). *s*, *s*, are beveled boards to cover the straps *m'* as shown in Fig. 2 is the edge of a suspended board to prevent the grain from being thrown too far forward and is suspended by straps.

The operation of my machine is as fol-

lows: Any adequate power applied to pulley (8) in Fig. 2, which is upon the shaft of the cylinder gives motion to the cylinder the opposite end of the same shaft on which is pulley (J,) carries belt (1) this belt gives motion to the fan *y*, *y*, and to pulley (K,) by means of the longer pulley *g*. The pulley K gives motion to band (2) which turns the treble pulleys before described, which carry the bands 3 and 4 which turn the pulleys S, and T, S being on the outer shaft of the return belt and T, upon the extra fan *d*, and at the same time carrying the shafts (*n*) and (*m*) with the pulleys *b* and *c* around which the screen revolves. The shoe receiving its motion as before described.

The operator standing within the hole V, upon the foot board M feeds through the hopper H the unthreshed grain as fast as one open bundle can succeed another, three-fourths of the threshed grain falling immediately upon the shoe of the fanning mill as it passes through the separating concave (*h*) the remainder being shaken from the straw by the jarring motion of the screen, falls upon the return belt and is thus returned to the sieve of the fanning mill the clean grain falling from the sieve upon the inclined bottom of the shoe slides into the grain box (*i*).

(NOTE.—Two grain boxes are provided, to be used alternately.)

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

1. The screen in its peculiar construction with rods, wires, and rough surface in the manner described, thereby securing the jarring motion and combining simplicity, durability, cheapness and efficiency in execution.
2. Keeping the return belt spread by means of conical pulleys instead of slats and giving it motion in the direction described, to return the grain back again to the fanning mill. I claim its peculiar construction and motion in combination with the open revolving screen and not otherwise.

3. Projecting the separating concave over the revolving screen in combination with the arrangement of the shoe.

4. I also claim the combination of the extra fan (*d*,) with the screen and return belt, and its position under the belt, to break the current of air produced by the screen and return belt and not otherwise.

ELIZUR L. BOOTH.

Witnesses:

J. BIGELOW,
S. A. PEUGH.