E. M. BIRDSALL.

Grain Thrasher, Separator and Cleaner.

No. 110,542. Patented Dec. 27, 1870.

Fig. 1

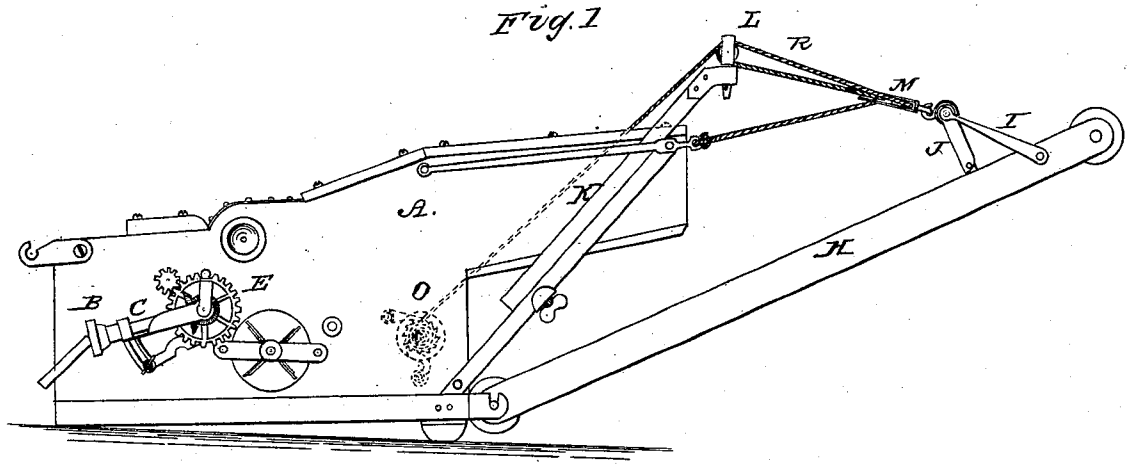
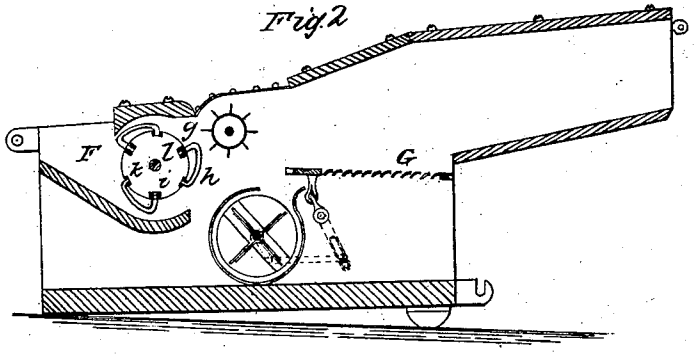


Fig. 2



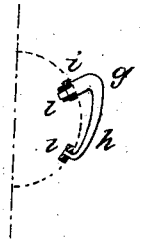


Fig. 3

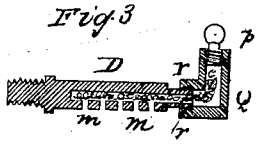
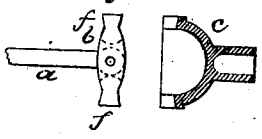
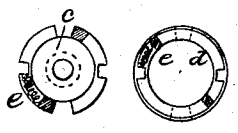


Fig. 4-5



6. and 7



Witnesses

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EDGAR M. BIRDSALL, OF PENN YAN, NEW YORK.

Letters Patent No. 110,542, dated December 27, 1870.

IMPROVEMENT IN GRAIN-THRASHERS, SEPARATORS, AND CLEANERS.

The Schedule referred to in these Letters Patent and making part of the same.

I, EDGAR M. BIRDSALL, of Penn Yan, in the county of Yates and State of New York, have invented certain Improvements in Grain-Thrasher, Separator, and Cleaner, of which the following is a specification.

The nature and object of my invention consist in making a coupling that will transmit power from the horse-power to the thrasher, that is safe to use and easily taken apart and put together; and making the horizontal spindle that supports the wheel that drives the cylinder hollow, for the purpose of perfectly lubricating it; also, making the cylinder-teeth of steel, and have them fastened to one bar of the cylinder, and supported by another bar; also, making and sustaining the straw-carrier with ropes and pulleys, so that it may be raised or lowered at will, and held at any angle.

Figure 1 is a side elevation.

Figure 2, a longitudinal vertical section.

Figure 3 is a section of a spindle.

Figures 4, 5, 6, and 7 are sections of the coupling.

The letters of reference refer to the same parts in each figure.

A is the frame-work of the machine. It may be made in any ordinary manner that will receive and sustain the various parts that are required to do the work intended. It may be made so as to be transported, and used on a carriage similar to an ordinary wagon.

B is the coupling that connects the machine to the horse-power that drives it, and it is made of the parts represented by figs. 4, 5, 6, and 7.

a, fig. 4, is the arbor that extends from the power to the coupling.

b is a cross-piece fitted on the end of the arbor, and held by a pin to it; each end is made round and conical as represented in the figure. These round parts fit into recesses in the rim of the part *c*, as shown in figs. 5 and 6.

c is the main part of the coupling. It is securely fastened to an arbor, and is made to receive the cross-piece *b*, and has notches in the rim that will allow the band *d* to be put on it. There are also two places for springs to be laid within its edge.

d is a band that surrounds the whole and keeps them together. It is made so as to be put on the part *c* after the part *b* is in place, and then turned so as to allow the springs *e e* to be put in their places. It is then together, and may be readily taken apart by turning the band against the springs until the opening in the band comes over the round ends of the cross-piece *b*. The cross-piece may be readily removed and replaced.

C is an arbor that has on it a bevel-wheel at one end, and the coupling at the other, as represented in fig. 1.

D is a spindle on which the arbor of the wheel E is placed and turns upon. It is fastened to the iron frame-work that supports the gearing, and is represented in fig. 3. It is made hollow, to receive oil into it, and has a series of holes, *m*, in the under side, to allow oil to pass out and lubricate it on the outside. Cotton may be put into it to hold the oil and prevent it escaping faster than it is needed.

The outer end is provided with a hollow elbow, Q, that is screwed on and serves to hold the parts together. The elbow has a cover or stopper, to prevent oil escaping out of it.

F is the cylinder; a section of it is shown in fig. 2. It is made with arbor and heads in the ordinary manner, except the periphery of the heads are notched to receive more bars of iron to hold the teeth. The bar that receives the main part of the tooth should be larger than the other that supports the brace of the tooth. The teeth of the cylinder are made to pass through the largest bars, and are provided with a nut to hold them to the bar. They then extend out from the bar the required length, and a brace extends from the outer end back to the next bar, and the end of the brace enters into the bar, so that the tooth cannot be bent backward when made of iron that can be bent easily, or of steel that may be hardened and not bear bending any. The teeth can be made of cast steel, of any size and form, and from any pattern preferred. One form of the tooth is represented in fig. 2.

G is the sieve; any number of them may be used. It is made of sheet metal by cutting through it in form of the segment of a circle, and then, bending downward the part cut loose, so that the part bent downward will guide the wind from the fan upward through the sieve. These holes are made any distance apart that is required, and of any size, so that the grain will pass down through them, and sufficient air pass up through to blow chaff off the sieve. The sieve is shaken backward and forward by a rocking-shaft that has a projection on the upper part. The projection extends upward between jaws that are fastened to the frame of the sieve, as represented in fig. 2. The sieve may be taken out and put in by disconnecting the arm of the rocking-shaft and, turning until the projection comes out of the jaws, the sieve may be drawn out or put in at pleasure. The sieve is actuated by means of an arm that is attached to the rocking-shaft, which has a connection to a crank on the fan-shaft, as shown by the dotted lines in fig. 2.

H is the straw-carrier. It may be constructed in any ordinary manner, and actuated by any convenient part of the machine. The lower end is supported by the machine with a loose or turning joint that will allow the other end to be raised or lowered at will,

whether the machine is running or not. The outer end is supported by means of spring braces I and folding-strut J at each side, as shown in fig. 1. These may be folded close to the sides of the carrier for transportation. They hold a cross-piece that extends from one side to the other of the carrier. This cross-piece has a hook or clasp about the middle, to which a pulley-block is attached, so that the support for the carrier acts upon the middle of it.

K is a support for one of the pulley-blocks L. There is one at each side of the machine. They may be moved up or down at will, and held by means of the screw, as shown in fig. 1.

A rope is attached to an eye, as shown in the figure, and then put through the pulley-block M, then through one of the pulleys L, then back through pulley M again, then through the other pulley L, then to a winding spool that is attached to the side of the machine, as shown by dotted line at O in fig. 1. The spool may be attached to either side of the machine.

By winding up the rope the carrier may be raised at will, whether the machine is running or not.

The other parts of the machine are of ordinary construction, and need no further description.

I claim as my invention—

1. The combination and arrangement of the tumbling-rod *a*, cross-piece *b* having coupling-jaws *f*, with clutch *c* provided with springs *e e*, and band *d*, all constructed and operated as shown and described, for the purpose set forth.

2. The combination of the bars *i k* in the cylinder F with the cast-steel teeth provided with the shank *g*, nut *l*, and brace *h*, all constructed and arranged as herein shown and described, for the purpose set forth.

3. The combination of the hollow spindle D, provided with the openings *m*, with the hollow crank Q having thread *r* and stop *p*, all constructed and arranged as shown and described, for the purpose set forth.

4. In the combination with the thrasher A, herein shown, the carrier H, supports K, windlass O, pulleys L, L, and M, and pivoted brace I, struts J, and ropes R, when said parts are constructed and arranged as and for the purpose set forth.

EDGAR M. BIRDSALL.

Witnesses:

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