2 Sheets—Sheet 1

A. WISSLER & B. H. SNAVELY.

GRAIN-SEPARATORS.

No. 178,257. Patented June 6, 1876.

Sheet 1.

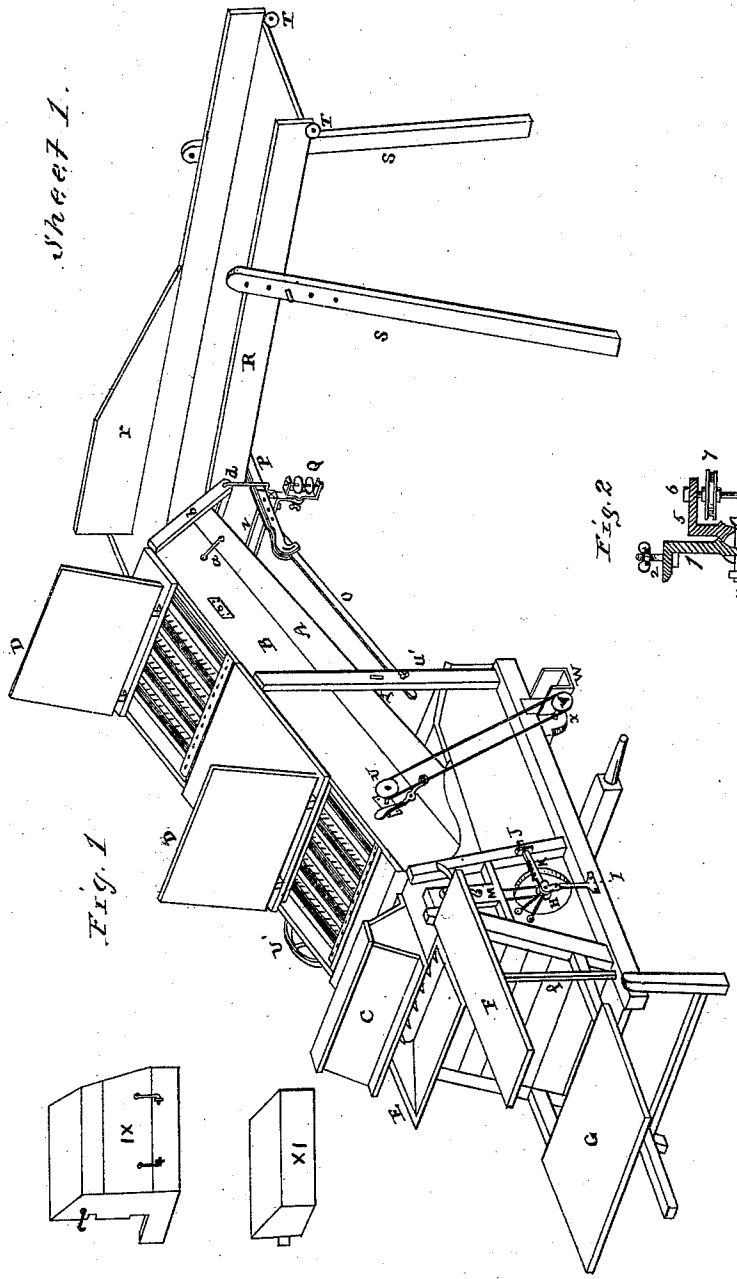


Fig. 1

Fig. 2

Witnesses

W. B. Niles

Jacob Stauffer

Inventors

Aaron Wissler

Benjamin H. Snavely

2 Sheets—Sheet 2.

A. WISSLER & B. H. SNAVELY.

GRAIN-SEPARATORS.

No. 178,257. Patented June 6, 1876.

Sheet 2.

Fig. 3.

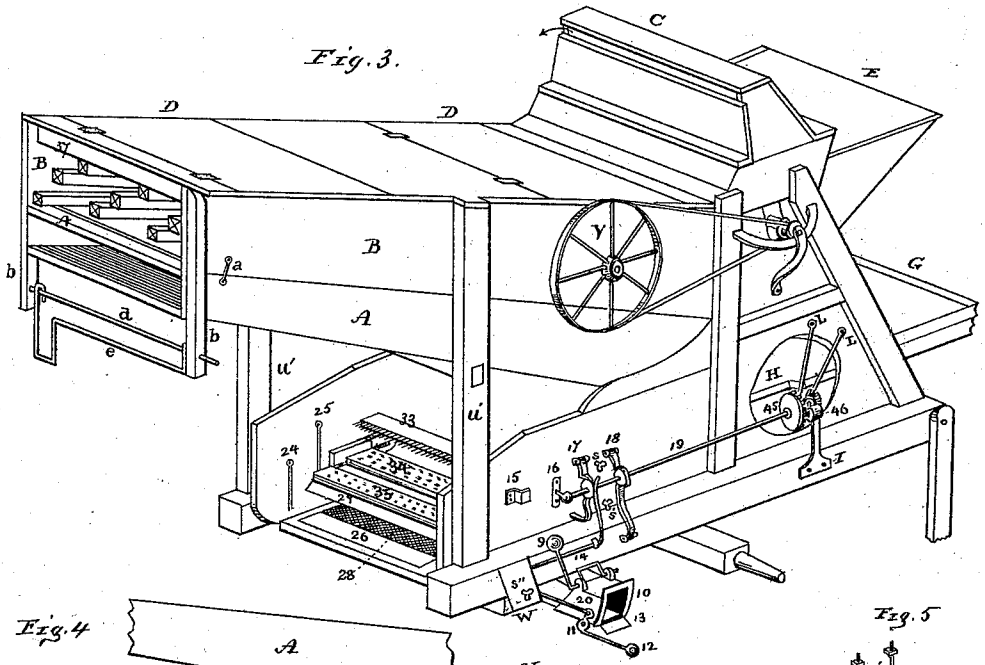


Fig. 4

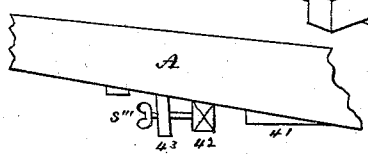


Fig. 5

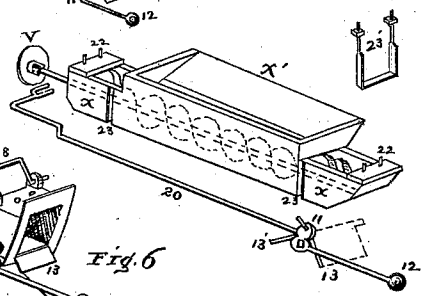
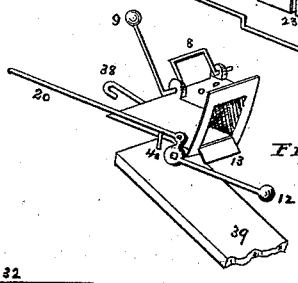


Fig. 6



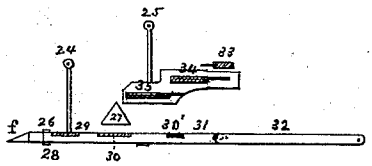
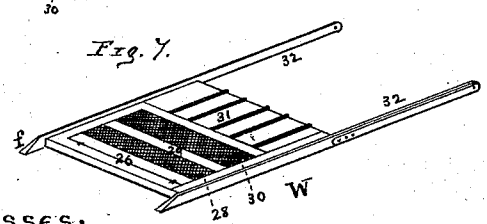


Fig. 7.



WITNESSES.

W. B. Miles

Jacob Stauffer

INVENTOR.

Aaron Wissler

Benjamin H. Snavely

UNITED STATES PATENT OFFICE.

AARON WISSLER, OF BRUNERSVILLE, AND BENJAMIN H. SNAVELY, OF PENN TOWNSHIP, LANCASTER COUNTY, PENNSYLVANIA.

IMPROVEMENT IN GRAIN-SEPARATORS.

Specification forming part of Letters Patent No. **178,257**, dated June 6, 1876; application filed June 10, 1875.

To all whom it may concern:

Be it known that we, AARON WISSLER, of Brunersville, and BENJAMIN H. SNAVELY, of Penn township, both in the county of Lancaster and State of Pennsylvania, have jointly invented certain Improvements in a Combined Thrashing-Machine, Separator, and Straw-Carrier, of which the following is a specification:

Our invention relates to several detached improvements, acting, however, in conjunction in producing certain desirable results in a combined thrasher, separator, and straw-carrier, to perfect the joint action and make the machine as a whole more efficient, consisting of a cap over the spiked cylinder to prevent the annoyance of the dust to him that feeds the machine, to regulate the stroke or vibrations in the several parts by set-screws, to widen the steps in the shoe for adjustment to suit the weight of the grain; the manner of constructing the sieve in two or more segments, to prevent clogging; a universal-jointed pulley attachment, to adapt the strap to any position of the endless apron on the straw-carrier attached; the arrangement and construction of an automatic conveyer and bag-holder combined; all operated by the driving-belt in connection with the thrasher.

The accompanying drawings, making a part of this specification, with the letters of reference marked thereon, indicate the nature of the construction and combination of the parts, in which—

Figure 1, Sheet 1, is a perspective view of the entire combination; Fig. 2, a sectional enlarged view of the double adjustable pulleys; Fig. 3, Sheet 2, the other side of the machine, to show the rear straw-carrier detached. Fig. 4 shows the action of the set-screw under the shaking bottom. Fig. 5 illustrates the conveyer with the bag-holder detached; Fig. 6, the bag-holder and appliances; Fig. 7, the steps, sieve, and detached portions.

The weighted-arm adjustment for the fan is substantially the same as in patent to B. H. Snavely, April 5, 1870, No. 101,530, party hereto.

We claim no special novelty as relates to the combination of a thrashing-machine, separator, and straw-carrier, as such are common, embracing the same general features as also used by us in our several patents, now jointly combined with certain improvements on the same, which we deem novel and useful, to which we shall confine our description in reference to the drawings.

First, the conical cap C, over the cylinder, for the purpose of arresting the dust caused by the revolution of the cylinder, so annoying and injurious to him who feeds the machine, and by which cap it is received and expelled backward, either onto the machine or among the straw, by connecting the open slot in the top of the cap with the same. Great difficulty has been experienced, under certain conditions, in adjusting the straw-carrier so as to convey the straw to one side, and yet operate the endless apron with the pulley on the machine at any desired angle. To overcome this difficulty we have devised a rod or jointed brace.

The rod O is bolted to the post *w'* of the machine at one end. The other is hinged to the slotted brace-arm P, which supports the carrier R, and is also held in or on the cross-rod *d* by a hooked hanger, *e*, Fig. 3. There are, besides, the ordinary adjustable legs S, to sustain the straw-carrier R and appliances of the endless apron and pulleys or rollers T. We employ a double pulley, 7, on a shaft, 6, in a bearing, 5, combining a concave and convex coupling, in combination with a hanger, 3, and headed binding nut and bolt 4, which latter has vertical play in the slot, and the rounded head admits the play of the ball-and-socket like connection referred to, besides the upper end 2, bent at right angles, and by which it is connected by a bolt and binding-screw to the under side of the arm P, on which it can also be turned and adjusted; and, as the jointed connection of P and O is also adjustable, by this arrangement the connection with the pulley on the machine and those to operate the endless apron can be nicely adjusted, under any angle or slope of ground, to operate with entire satisfaction.

Inasmuch as our fan is self-adjusting, and in many cases it is desirable to adjust the ex-

tent of the vibration in the shaking bottom, shoe, and sieves, we place adjusting-screws to each, as shown in Fig. 3—*s* between the rockers 17 and 18, above, extending to the shoe, and one below, *s'*, extending to the sieve, another, *s''*, to the tailing sieve or screen W, and one, *s'''*, under the shaker-box A, Fig. 4, in a bearing, 43, sets against a cross-piece, 42, and check-block 41, to limit the stroke. These several screws, however separated, all act in conjunction to the same end, and consequently co-operative, however adjusted, so that the machine performs its proper functions to produce the desired results.

The shoe and sieve arrangement are shown in place in Fig. 3 and detached in Fig. 7. The ordinary comb 33 and steps 34 and 35 of the shoe are supported on the vibrating hanger 25, on each side. These steps 34 and 35 are, however, made double. The upper slides move in grooves made in the side pieces, in which the step can be widened for cleaning heavy grain, or duly adjusted to the circumstances.

In front of the lower step 35 of the shoe, directly over the second section of sieve 30, there is a triangular dividing-board, 27, with its apex centrally on the top. This protects the meshes of the sieve, and likewise the rear shelf or vacant spaces, which are made to receive the broken heads or coarser impurities as they fall from the shoe or said dividing-board, and said impurities thus acquire a horizontal position before being shaken forward and properly dislodged. This prevents the continual clogging of the sieves, as happens when fragments are allowed to fall vertically into the meshes to such a degree as to make it necessary to stop the machine to clean the sieves, the necessity of which, by this arrangement, is effectually obviated. The sieve made with two or three sections and intervening blank spaces is set in a frame, *f*, connected with extended vibrating side pieces of strap-iron 32, attached behind, and the frame *f* suspended in front by hangers 24. The third segment is only employed to separate the heaviest grains for seed.

The vibrating is effected by eccentrics on a shaft, 19, revolved by a bevel-pinion, 45, supported on the bearing I for the self-adjusting fan-shaft, which is terminated by a bevel-pinion, 46. These eccentrics operate the rockers 17 and 18, connected, respectively, with the shoe and sieve.

There is an additional outside rocker and rod, 14, extending back to give motion to the tailing-screen W, as seen in Fig. 2, each made separately adjustable by set-screws aforesaid.

The cleaned grain, subjected to the blast of the fan over, under, and through between the sieve, shoe, and shelves, drops into the hopper *x'* of the conveyer *x*, which is provided with a shaft and wings in the usual form. Ours is also reversible. This shaft has a pulley, V, on a clutch operated by the forked end of a rod, 20, which rod has its other end connected to the drop-shaft or eccentric of the bag-holder and its valve 13, which shifts the lug out of or into gear with the pulley as it is thrown up or down on moving or replacing a bag to be filled.

The pulley V may be transferred from one side to the other of the shaft, as also the bag-holder.

Fig. 6 shows the construction of the bag-holder.

The upper cross-plate or top has two holes to set over the pins 22 on the conveyer. This plate has perforated ears or lugs for a bent rod, 8, weighted by its ball 9, which forms a clamp to hold the upper part or mouth of the bag. The valve 13 forms the clamp, with its weighted arm 12 for the lower side or mouth of the bag. The shaft or prolonged axis of the valve 13 has an eccentric bearing for the rod 20 to actuate the clutch on the pulley V. A board, 39, for supporting the bag is connected by a bolt, 40, to the under side of the holder. There is also a rod, 38, attached to the under side of said holder, with a hook to connect it with the conveyer.

The mouth of the bag being affixed by the clamp, the lower V-shaped valve clamps the bag with one wing, while the other forms a chute inside the bag.

When the bag is attached, the ball is thrown forward, and the chuck gears the pulley V with the shaft that operates the conveyer. When the bag is full, and the valves or clamps reversed, it can be removed while the conveyer is stopped until another bag is secured.

These are the several improvements on the machines built by us under our several patents—No. 101,530, April 5, 1870, to the said SNAVELY, and Patent No. 108,546, October, 1870, to AARON WISSLER, the other party hereto, as jointly made by us.

We also improved the rake-teeth and attachments of cleaners, to work the straw more effectually, and prevent tangling or clogging the teeth. We also apply a top cross-piece, 37, to prevent grains being driven out by the cylinder. These we simply mention.

We are aware that numerous devices are employed on various machines in use; but we do not know of any substantially like those we have described or specially claimed. Therefore,

What we claim as novel is—

1. In combination with the adjustable-jointed supporting-rod O P, the universal-jointed pulley-holder, consisting of the hanging bracket 1 on its pivot-bolt 2, and provided with a slotted socket-like base, 3, connecting and pivot bolt 4, made adjustable with the pulley-frame 5, all arranged and operating substantially as and for the purpose specified.

2. In combination with a shaking bottom, A, the adjusting-screw S''', affixed nut or female screw-block 43, and check-piece 41, operating against the cross-beam 42, in the manner and for the purpose set forth.

3. In combination with the clutch on the pulley V and conveyer-shaft, the connecting-

rod 20, valves 13, and weighted arm 12, the whole constructed and operated as herein specified.

4. The sieve, made in two or more sections, 28 and 29, with blank intervening space 29, in combination with the frame *f*, and rear shelf 31, operating in relation to the triangular cross-piece or dividing-ledge 27 and the shoe, in the manner and for the purpose herein mentioned.

AARON WISSLER.
BENJAMIN H. SNAVELY.

Witnesses:
WM. B. WILEY,
JACOB STAUFFER.