(No Model.)

S. BOTTOMLEY.

AUTOMATIC STRAW STACKER.

No. 265,376. Patented Oct. 3, 1882.

fig. 1.

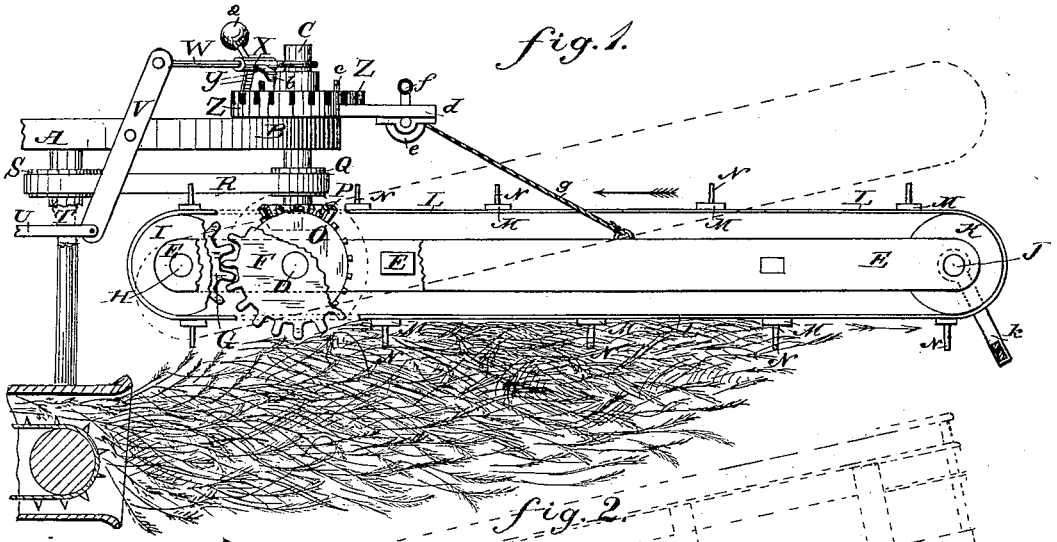


fig. 2.

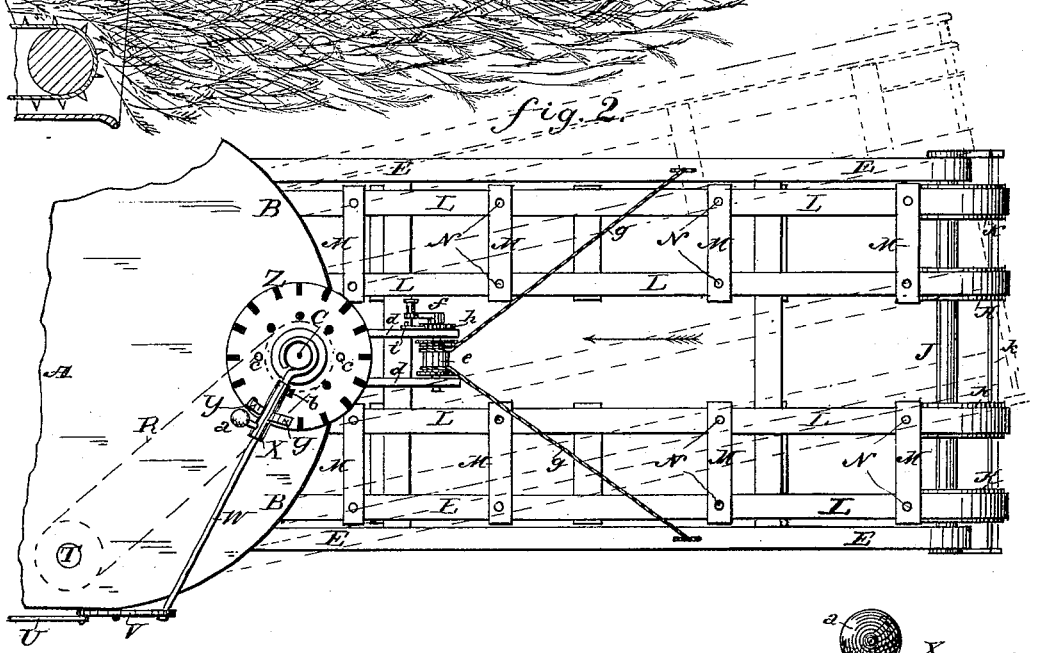


fig. 3.

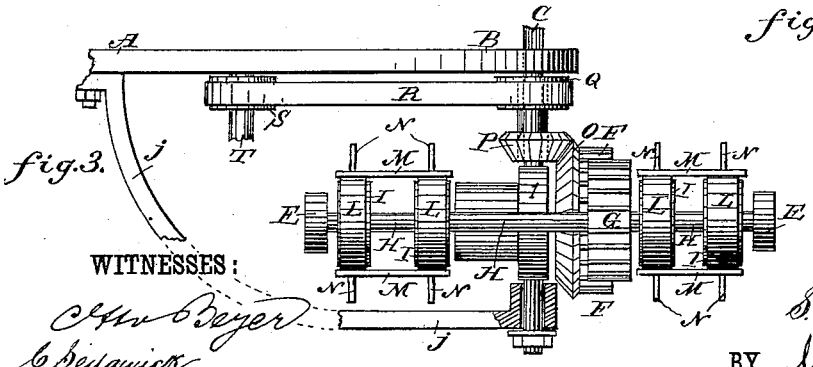


fig. 4.

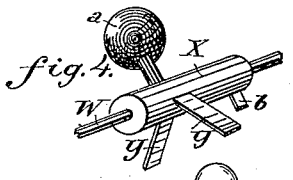
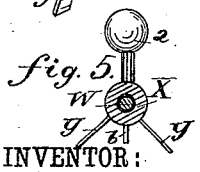


fig. 5.



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AUTOMATIC STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 265,376, dated October 3, 1882.

Application filed June 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, SETH BOTTOMLEY, of Nashville Centre, in the county of Martin and State of Minnesota, have invented a new and useful Improvement in Automatic Straw-Stackers, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which the same letters of reference indicate the same or corresponding parts in all the figures.

Figure 1 is a side elevation of my improved stacker, shown as attached to the extended top of a grain-separator and with parts broken away. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation of the same, showing the stacker swung around at right angles with the separator. Fig. 4 is a perspective view of the double pawl. Fig. 5 is a sectional end elevation of the same.

The object of this invention is to facilitate the stacking of straw as it comes from the separator, and thus economize labor.

The invention consists in an automatic straw-stacker constructed with an upright shaft journaled in an extension of a separator-top, and having hinged to its lower end a frame provided with pulleys carrying endless toothed belts. The upright swiveled shaft has a ratchet-wheel attached to it, and is operated by a double pawl placed upon a vibrating lever, and is reversed by pins attached adjustably to the said ratchet-wheel. The toothed belts of the stacker are driven by gear-wheels and pulleys and bands from the driving mechanism of the separator, as will be hereinafter fully described.

A represents the top of a grain-separator, which has an extension-plate, B, formed upon or attached to it.

In bearings in the rear part of the extension B is journaled an upright shaft, C, the lower part of which is widened, as shown at 1, Fig. 3, and has a hole formed through it to serve as a bearing for the shaft D. The shaft D revolves in bearings in the side bars of the stacker-frame E, and to it is attached a gear-wheel, F, the teeth of which mesh into the teeth of a gear-wheel, G, attached to the shaft H. The shaft H is placed parallel with the shaft D, and its journals revolve in bearings in the rear ends of the side bars of the stacker-frame E. By this construction the journaled shaft C is brought to such a distance from the rear end of the stacker that the said rear end, when the stacker is adjusted at right angles with the separator, will extend to the further side of the said separator, so as to remove all the discharged straw.

To the shaft H are attached four or more pulleys, I, and to a corresponding shaft, J, journaled to the outer ends of the side bars of the stacker-frame E, are attached four or more corresponding pulleys, K.

Around the pulleys I K pass four or more endless belts, L, the belts L upon each side of the central line of the stacker being connected by cross-bars M, which are provided with projecting pins or teeth N, to take hold of the straw and carry it forward.

With the gear-wheel F is rigidly connected a bevel-gear wheel, O, the teeth of which mesh into the teeth of a bevel-gear wheel, P. The gear-wheel P runs loose upon the swiveled shaft C, and with the said gear-wheel is rigidly connected a pulley, Q, around which passes a belt, R. The belt R also passes around a pulley, S, attached to the shaft T, which is journaled to the separator A, and is connected with and driven from the driving mechanism of the separator-by a belt and pulleys or other suitable mechanism, to cause the stacker-belt L M N to move continuously around the pulleys I K in the direction of the arrows to carry the straw, as hereinafter described.

With the driving mechanism of the separator is also connected a pitman, U, the end of which is hinged to the lower end of a lever, V. The lever V is pivoted at its middle part to the edge of the extension B of the separator-top, and to its upper end is pivoted the outer end of the lever W, the inner end of which has an eye formed in it to receive and ride upon the upper end of the journaled shaft C, the said shaft thus serving as a fulcrum for the said lever.

Upon the lever W is placed a sleeve, X, upon the lower side of which are formed two pawls, Y, projecting at such an angle with each other that when either of said pawls is in gear with the ratchet-wheel Z the other will be raised above the said ratchet-wheel. The ratchet-

wheel Z is placed upon and keyed or otherwise secured to the journaled shaft C, so as to carry the said shaft with it in its revolution.

To the upper side of the sleeve X, and midway between the pawls Y, is attached a weighted arm, *a*, of sufficient gravity to hold either of the pawls Y in gear with the ratchet-wheel Z.

To the under side of the inner part of the sleeve X is attached, or upon it is formed, a lip, *b*, which strikes successively against the upper ends of two pins, *c*, inserted in holes in the inner part of the ratchet-wheel Z, to change the pawl X Y, so that the said ratchet-wheel will be turned through a part of a revolution, first in one direction and then in the other direction successively, by a continuous vibration of the lever W. A circle of holes is formed in the ratchet-wheel Z to receive the pins *c*, so that the said pins can be placed farther apart or closer together, according as it is desired to have the ratchet-wheel Z vibrate through a longer or shorter arc.

To the forward edge of the ratchet-wheel Z are rigidly attached, or upon it are formed, two arms, *d*, to and between the outer ends of which is pivoted a drum, *e*.

To one of the journals of the drum *e* is attached a crank, *f*, by means of which the said drum is rotated.

To the drum *e* are attached and around it are wound the ends of two ropes or chains, *g*, the other ends of which are attached to the side bars of the stacker-frame E, so that the outer end of the stacker can be raised and lowered by turning the windlass *e f*.

To a journal of the drum *e* is attached a ratchet-wheel, *h*, with the teeth of which engages a pawl, *i*, pivoted to the arm *d*, so that the stacker will be supported in any position into which it may be adjusted. The vertical shaft C is strengthened against the pressure of the stacker by a brace, *j*, the outer end of which has an eye formed in it to receive the lower end of the shaft C, and its inner end is bolted to the under side of the top A or extension B of the separator.

To the outer ends of the side bars of the stacker-frame E is attached a cross-rod or bail, *k*, to push the straw off the teeth N as the said teeth pass up around the outer pulleys, K, to prevent the stacker from carrying straw back toward the separator.

With this construction, as the straw is discharged from the separator it falls in a heap beneath the inner end of the stacker until the top of the heap comes in contact with the stacker, when the teeth N of the endless belt L M will take hold of the straw on the top of the heap and carry it outward, so that it falls on the ground by the side of the heap already formed, thus forming a continuous sector-shaped heap with an inclined top formed by the raising in the arc of a vertical circle the outer end of the stacker, the sector-shaped stack being formed by the vibratory horizontal motion imparted to the stacker, together with the travel of the endless belt. The size of the stack depends upon the amount of horizontal vibration and the height to which the outer end of the stacker is adjusted.

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

1. An automatic straw-stacker constructed substantially as herein shown and described, and consisting of the hinged stacker-frame E, the pulleys I K, the toothed endless belts L, the journaled upright shaft C, the driving mechanism, the ratchet-wheel Z, the reversible double pawl X Y, and vibrating lever W, the adjustable trip-pins *c*, the windlass *e f*, and cords *g*, as set forth.

2. In an automatic straw-stacker, the combination, with the extended top B of a separator, the upright journaled shaft C, and the hinged frame E, pulleys I K, and toothed belts L N, of the ratchet-wheel Z, the double pawl X Y, and the vibrating lever W, substantially as herein shown and described, whereby the outer end of the stacker will be vibrated horizontally, as set forth.

3. In an automatic straw-stacker, the combination, with the ratchet-wheel Z and the reversible double pawl X Y, constructed with lip *b*, of the adjustable pins *c*, substantially as herein shown and described, whereby the double pawl will be reversed automatically and at fixed points to reverse the movement of the ratchet-wheel, as set forth.

4. In an automatic straw-stacker, the combination of the journaled upright shaft C, the hinged stacker-frame E, the pulleys I, the toothed belts L N, the gear-wheels G F O P, and the pulleys and belt Q S R, substantially as herein shown and described, whereby the vibrating stacker-belts can be driven from the driving mechanism of a separator, as set forth.

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Witnesses:
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ANDREW C. DUNN.