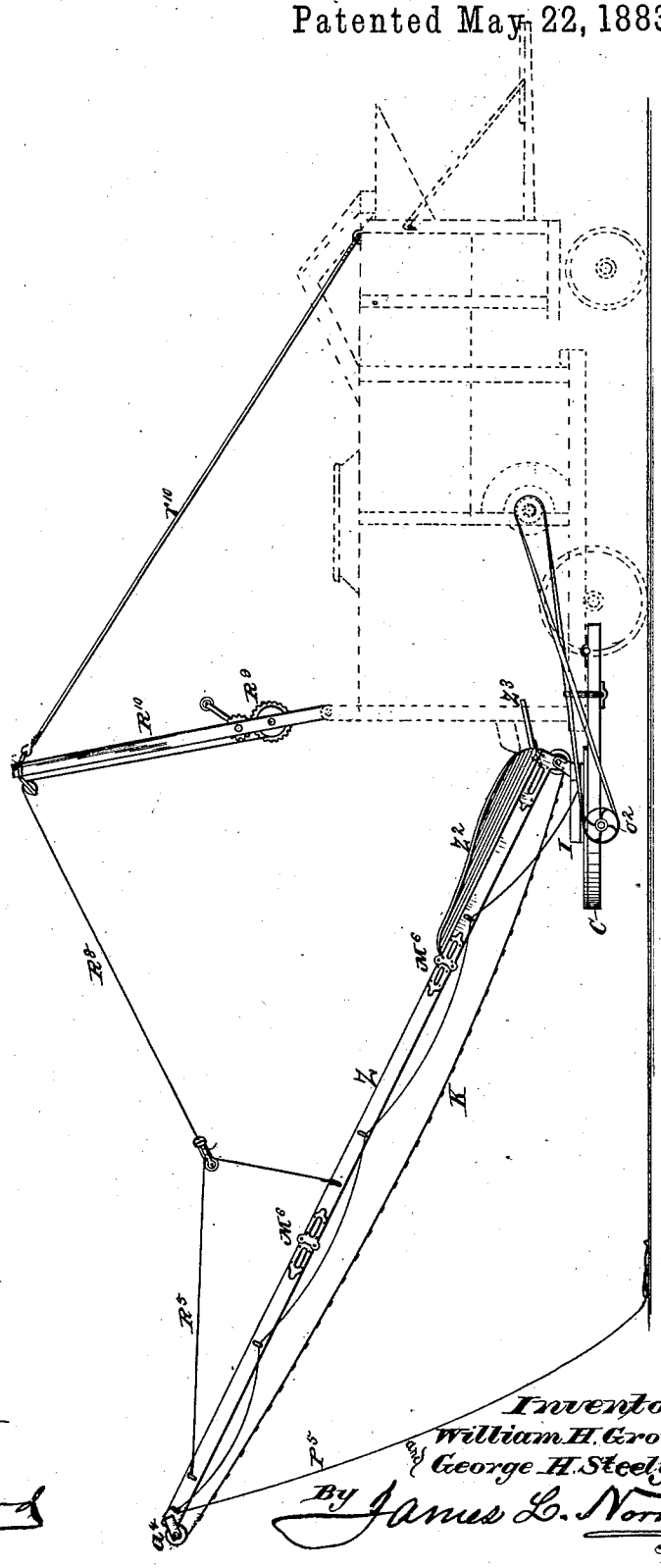
(No Model.) 4 Sheets—Sheet 1.

W. H. GROVE & G. H. STEELY.

STRAW STACKER.

No. 278,131. Patented May 22, 1883.

Fig. 1.



Witnesses,
Robt Everett
J. A. Rutherford

Inventors.
William H. Grove.
and George H. Steely.
By James L. Norris.
Atty.

N. PETERS. Photo-Lithographer, Washington, D. C.

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STRAW STACKER.

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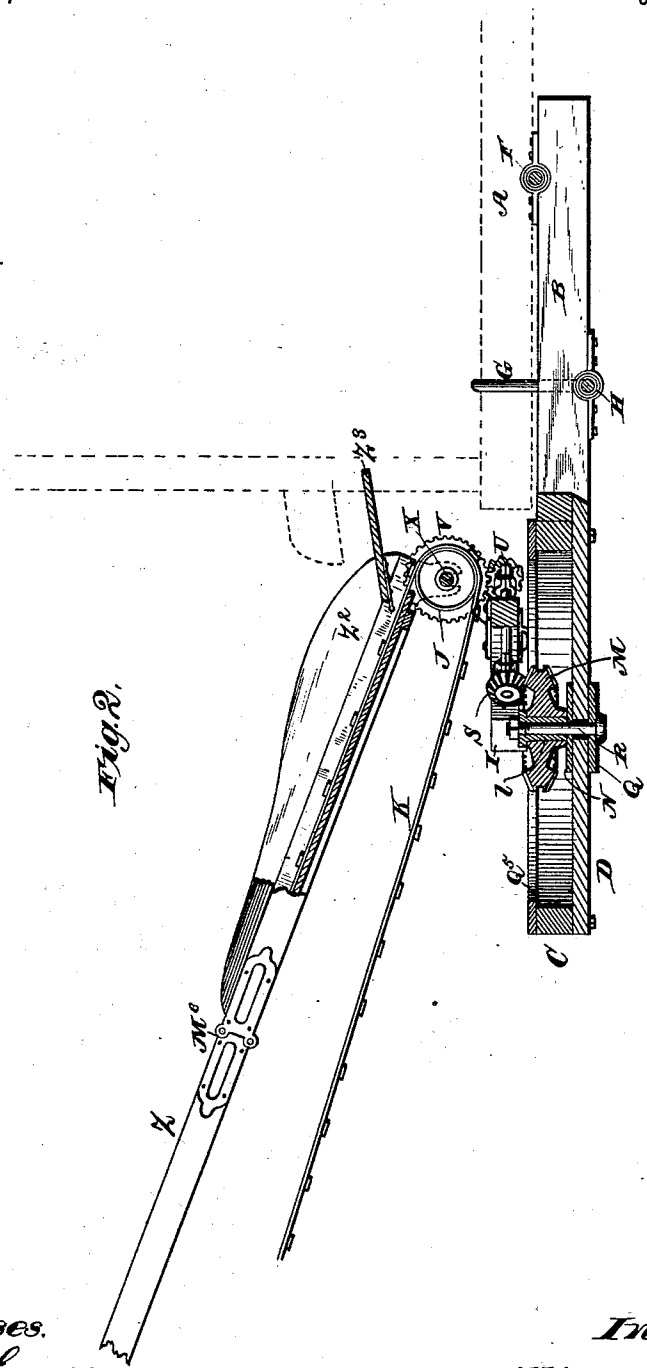


Fig. 2.

Witnesses.
Robert Everett,
J. A. Rutherford

Inventors.
William H. Grove,
and George H. Steely.
By James L. Norris.
Atty.

N. PETERS. Photo-Lithographer. Washington, D. C.

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W. H. GROVE & G. H. STEELY.

STRAW STACKER.

No. 278,131. Patented May 22, 1883.

Fig. 3.

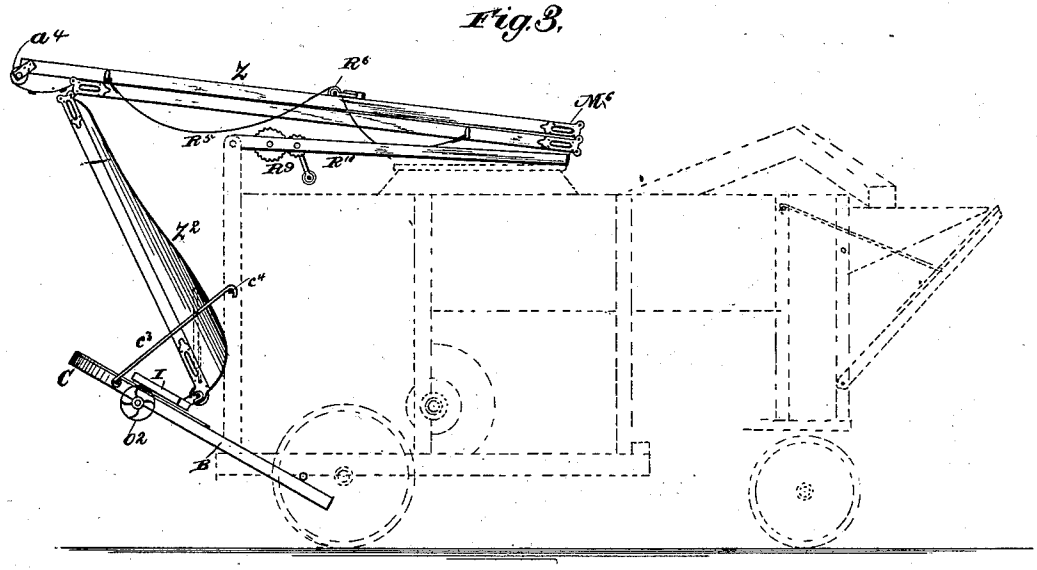


Fig. 4.

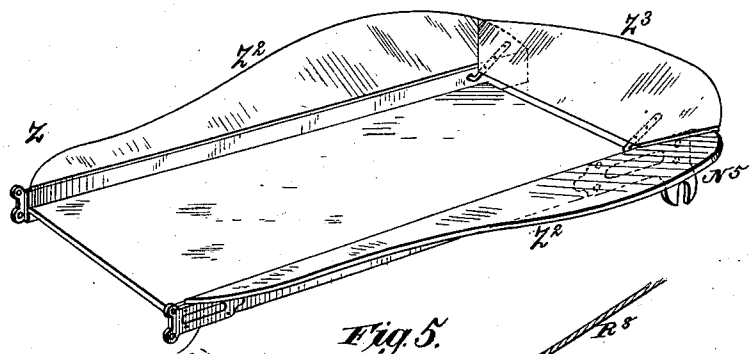
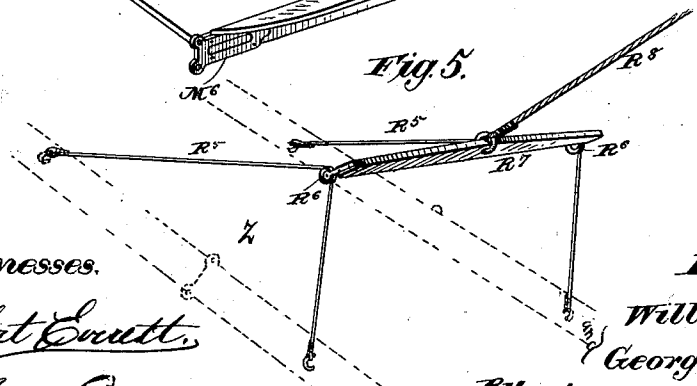


Fig. 5.



Witnesses.

Robert Everett.

J. A. Rutherford

Inventors.

William H. Grove.

George H. Steely.

By James L. Norris.

Atty.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 4 Sheets—Sheet 4.

W. H. GROVE & G. H. STEELY.

STRAW STACKER.

No. 278,131. Patented May 22, 1883.

Fig. 6.

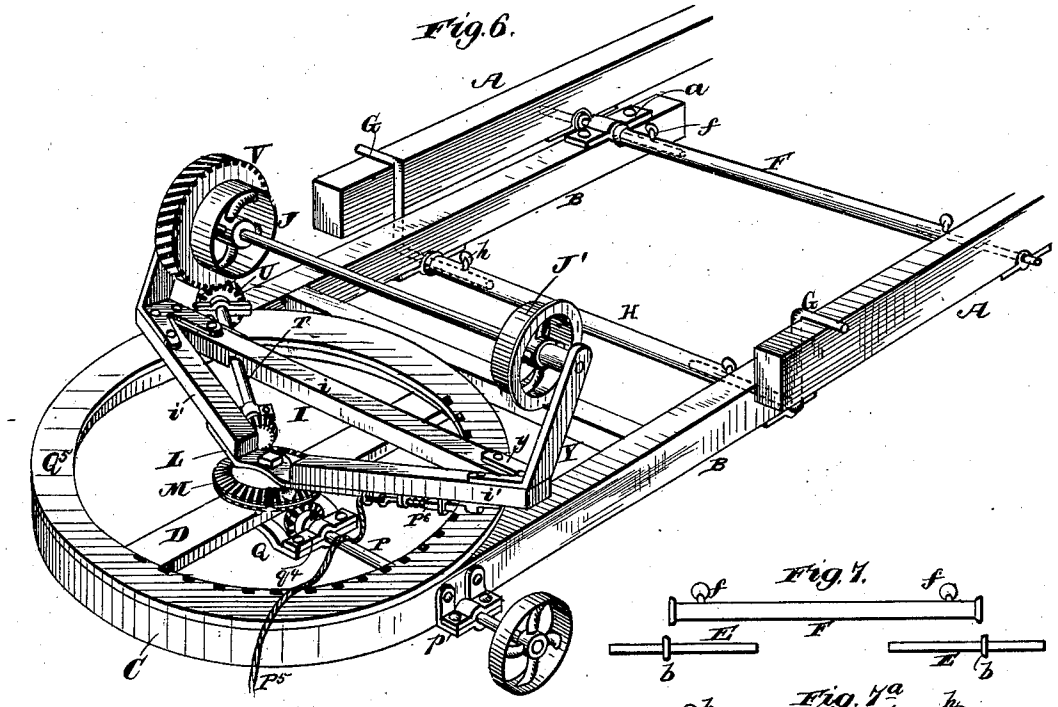


Fig. 7.

Fig. 7a.

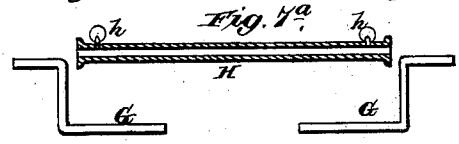


Fig. 8.

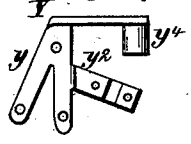
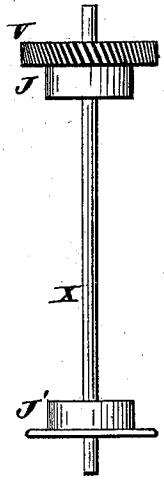


Fig. 10



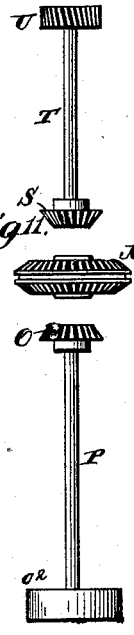
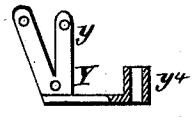


Fig. 11.

Fig. 9.



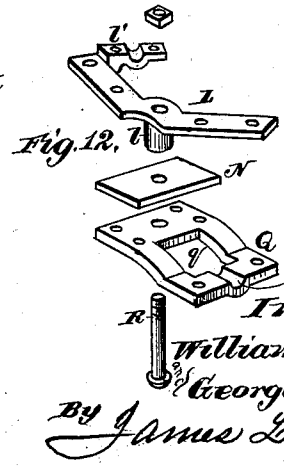


Fig. 12.

Witnesses.

Robert Everett.

J. A. Rutherford

Inventors.

William H. Grove.

George H. Steely.

By James L. Norris, Atty

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM H. GROVE AND GEORGE H. STEELY, OF CIRCLEVILLE, OHIO, ASSIGNORS OF ONE-THIRD TO J. M. TIMMONS, T. J. TIMMONS, AND WILLIAM SCOTT, OF SAME PLACE.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 278,131, dated May 22, 1883.

Application filed April 12, 1883. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. GROVE and GEORGE H. STEELY, citizens of the United States, residing at Circleville, in the county of Pickaway and State of Ohio, have invented new and useful Improvements in Straw-Stackers, of which the following is a specification.

The present invention relates to the class of machines commonly termed "stackers," which are adapted for delivering straw from a thrashing-machine or grain-separator onto a stack, wagon, or other place of deposit.

The object of the invention is to furnish a simple and effective machine which can be applied to different-sized grain-separators or thrashing-machines, and can be adjusted relatively to the latter in vertical and horizontal planes for conveying straw to various points of the stack, or so as to form one continuous stack or rick, provision being also made for packing or folding the stacker upon the thrashing-machine and supporting it thereon.

The invention consists in the construction and combination of parts, which will be more fully described hereinafter, and then set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a stacker applied to a thrasher, the parts being in position for work. Fig. 2 is a longitudinal section taken through the lower portion of the stacker and its supporting-frame carrying the driving mechanism. Fig. 3 is a side elevation, showing the stacker in a folded state supported on the thrashing-machine. Fig. 4 is a perspective view of the receiving-hopper or inner end section of the stacker. Fig. 5 is a detail view of the self-adjusting device for supporting the outer end of the stacker. Fig. 6 is a perspective view, showing the devices for supporting the stacker at the inner end thereof and imparting motion to the conveyer-belt. Figs. 7 and 7ª are detail views of the adjustable devices for connecting the supporting-frame of the stacker with the thrasher. Figs. 8 and 9 are detail views of the two brackets constituting bearings for the driving-pulleys of the conveyer-belt. Fig. 10. is a top view of said driving-pulleys and their shaft. Fig. 11 represents the gearing for imparting motion to the driving-pulleys. Fig. 12 is a detail view of the various plates arranged at the center of the supporting-frame of the stacker.

A thrashing-machine is shown in dotted lines in Figs. 1 and 3, and in Fig. 5 we have designated the base-sills of the thrasher-frame by the letters A. The stacking devices are mounted on these base-sills, and secured thereto by devices which can be adjusted so as to adapt a stacker to thrashing-machines varying in width between the base-sills or bottom of the frame of the thrasher.

The frame which carries the stacking devices proper consists of two side beams, B, a rear circular platform or open rim, C, and a central bottom bridge or beam, D. These parts are shown more fully in Fig. 6, which also indicates the mode of attaching the stacker-supporting frame to the thrasher-frame.

At or near the rear ends of the side beams, D, are located bearing-plates *a*, which receive spindles or rods E, having each a collar, *b*, that bears against the inner side of the thrasher-frame A. The spindles are entered into holes in said frame A, and are fitted into the bearing-plates *a* and into a tube, F, spanning the space between the beams B. This tube has set-screws *f*, which bear upon the spindles, extending into the ends of the tube, so as to lock the spindles to the latter.

It will be manifest that the spindles can be shifted in their bearings and in the tube, so as to cause more or less thereof to extend beyond the side beams, B, thus adapting the latter to be held and properly braced between thrasher-beams or base-sills of a greater width than the supporting-frame of the stacker.

The spindles E constitute pivots upon which the beams B and all parts carried thereby can move or turn, it being understood, however, that this movement can only take place in a direction above the plane or position indicated in Figs. 1 and 5, as will be seen from Fig. 3.

In rear of the spindles or pivots E are located stops or supports G for limiting the downward movement of the beams B. These stops are made in the form of angle-rods, as is shown fully in Fig. 6, and they are fitted in a

tube, H, having set-screws *h*, which tube is arranged and used in the same manner as the tube F.

It will be seen that the vertical portions of the angle-rods bear against the inner sides of the sills of the thrasher-frame, and that the horizontal arms extending outwardly from the top of said vertical portions rest upon the tops of the aforesaid sills. In this manner the spindles having collars and the angle-rods just described serve as means for connecting the stacker-frame to the thrasher in such a manner that said frame is firmly braced and prevented from spreading or moving laterally.

The carrier-rim C constitutes a platform or track, on which travels a sweep or rotary frame, I, which carries the driving or guide pulleys J for the conveyer-apron K. This sweep or frame consists of a transverse bar, *i*, and two bars, *i'*, extending obliquely or converging together from the ends of said bar *i*, where they carry a block or wheel that runs on the rim C and takes the weight of the frame from off the bolt and plate L. The inner adjoining ends of the bolts *i'* are secured to an angular metallic plate, L, which has a central downwardly-projecting sleeve or hollow bearing, *l*, and an upper half bearing or projection *l'*.

A double-faced bevel-gear wheel, M, or a horizontally-arranged wheel having two sets of teeth, is arranged between the bridge D and the plate L, and receives the bearing *l* on the latter. The bevel-gear wheel turns in contact with a wear-plate, N, on the bridge D, and receives motion from a bevel-gear wheel, O, on the inner end of a shaft, P, having a pulley, o^2, at its outer end. This shaft has its bearings in a box, *p*, on one of the beams B, and in a centrally-located plate, Q, that is secured to the under side of the bridge D. Fig. 12 fully illustrates this plate, *q* indicating an opening made therein for the reception of the wheel O, and q^2 being a depression or half-box, which, in connection with a cap-plate, q^4, forms the bearing for the shaft P. A bolt, R, passes through the bridge D and the plates Q, N, and L, and forms the axis on which the sweep I turns. Motion is communicated by the upper teeth of the bevel-gear wheel M to a wheel, S, on the inner end of an obliquely-arranged shaft, T, having a wheel, U, with straight oblique teeth. This wheel meshes into a larger wheel, V, having corresponding teeth, and forming part of or arranged alongside one of the pulleys J for the conveyer-belt. Both this and the other pully, J', are secured to a shaft, X, which has its bearings in brackets Y, rising from the sweep I, at the ends thereof. These brackets have bottom flanges, *y*, for securing the same to the sweep-arms, and one of the brackets has a half bearing or lug, y^2, which, in connection with a cap-plate, constitutes the outer bearing for the oblique shaft T. Each bracket is furthermore provided with an inwardly-projecting tubular projection, y^4. Motion is, by means of a belt, transmitted from the fan or other shaft of the thrasher to the pulley on the shaft P, and by means of its bevel-wheel and the double-toothed bevel-wheel motion is communicated by the oblique shaft and its wheels to the shaft of the apron-pulleys.

The stacker proper, or the devices for conveying the straw from the thrashing-machine to the stack, may be described as follows: A series or any suitable number of sections constitute a trough or long box-shaped frame, Z, in which operates an endless conveyer-apron, K, having slats or spikes, and passing around the pulleys J and J', and around a pulley, a^4, at the outer end of the trough Z, and then by means of the apron is caused to travel through the trough. The inner section of the trough, or the one adjoining the thrashing-machine, has side extensions or wings, Z^2, and a movable or pivoted end board, Z^3. These parts constitute a receiving-hopper for the straw and chaff passing from the thrashing-machine, and the apron operating over the bottom of this hopper-section, passing into the bottom of the trough, between it and the lower edge of the end board, Z^3. The side wings and end board are curved or rounded, and made sufficiently wide at the points coming directly under or in proximity to the discharge-point of the thrashing-machine, so that said trough or hopper can be swung to and fro laterally or horizontally without incurring liability of any material failing to enter the trough or hopper.

The adjoining ends of each pair of trough-sections are provided with metallic plates M^6, having each two eyes, m^7, which register or come together with the eyes of an adjoining section in such a manner that a spindle or pin can be passed through either pair of eyes. These plates and spindles constitute hinge-joints, which will enable the trough or carrier to be folded one section upon the other, as is shown in Fig. 3. A locking-pin is passed through the eyes not turning on the pintles, so as to lock the sections in a hinged position. The lower or hopper section has forked projections or plates N^5 at the rear of its bottom, which fit on the cylindrical projections y^4 on the brackets Y in such a manner that the trough can rock or turn on said projections. The shaft of the apron-pulleys passes through these projections, which form an integral part of the brackets, and for this reason the movement of the stacker will not wear away or otherwise affect said shaft. The central axis-bolt and the sweep will enable the stacker to be moved or turned horizontally, so as to deliver the straw to different points of a stack, or to a new stack when one has been completed.

The adjustment of the stacker and its retention in the desired working position is effected by means of a rope, P^5, which extends from the outer end of the stacker through suitable guide-eyes or the various trough-sections, and is connected with a spring-actuated bolt, P^6, fitted in keepers on the under side of the sweep-frame *l* and *l'*. This bolt is projected by its

spring into a notched disk or plate, Q^2, secured to the rim or platform C, so as to firmly hold the stacker in a locked position.

When the stacker is to be adjusted horizontally the bolt is retracted by its cord and the stacker swung until it reaches its proper new position, whereupon the tension upon the cord is withdrawn, causing the spring to project the bolt into the notched disk or plate.

The outer end of the stacker is supported by a self adjusting or equalizing device, which consists of the two ropes or chains R^5, secured at their ends to the sides of the conveyer-trough. These ropes are preferably so arranged that their points of attachment come on opposite sides of the hinge-joints of a pair of trough-sections, so as to remove all injurious strain from said hinge-joints. The ropes R^5 pass through sheaves R^6, carried by an equalizer-bar, R^7, which is, by means of a centrally-attached rope, R^8, connected with a windlass, R^9, on a derrick, R^{10}, that is mounted on the top of the thrasher. This derrick is hinged at its bottom and braced by suitable guy or stay ropes, r^{10}, for sustaining it in a working position. When not in use the guys are released and the derrick folded down upon the top of the thrashing-machine, together with all the jointed trough-sections, except the hopper or lower section, the latter resting in an inclined position at the rear of the thrashing-machine, as is seen in Fig. 3. A hooked rod, c^3, carried by the frame which supports the stacking devices, engages with a suitable eye or other device, c^4, on the thrasher-frame, and serves to hold the stacker-frame in the elevated position indicated in Fig. 3. When in this position the end board of the hopper-section folds into the latter, so as to clear the end of the thrashing-machine. It will be understood that the derrick is used for adjusting the stacker vertically, and that the equalizing-bar and ropes will accommodate themselves to the different positions of the stacker and firmly support the latter at its upper or discharge end.

Having thus described our invention, what we claim is—

1. In a stacking attachment for thrashing-machines, the combination of the trough Z, made of jointed folding sections, the conveyer-apron K, operating in said trough, the sweep or rotating frame I, having said trough and its adjuncts pivoted or fulcrumed thereon for adjusting it in horizontal and vertical planes, and provided with a locking-bolt, P^6, the pivoted supporting-frame B C, having a notched plate, Q^5, adapted to engage with the bolt of the sweep-frame, and constituting a bearing-surface for the latter, and suitable means for suspending the outer end of the trough from the thrasher-frame, substantially as described.

2. The combination of the derrick, the windlass, its rope, the equalizing-bar having sheaves, and the pivoted conveyer-trough provided with ropes passing over said sheaves, with a thrashing-machine frame, and a supplementary frame secured thereto for supporting the stacking devices, substantially as described.

3. The combination of the stacker, the supporting-frame, extensible pivots and stops, a thrasher-frame with which the supporting-frame is connected, the conveyer devices, and means for imparting motion thereto, substantially as described.

4. The combination of the sleeve having set-screws, and the pintles or journals provided with a collar, with the stacker-supporting frame, substantially as described.

5. The combination of the angular extensible stop-pins or rods, and the sleeve having set-screws, with the thrasher-frame, the pivoted supporting-frame having extensible pivots, and the stacking devices mounted on said frame, substantially as described.

6. The combination of the plate L, having the tubular bottom projection, *l*, the inclined bars *i'*, the transverse bar *i*, the brackets Y, the pulleys J J', and shaft X, and obliquely-toothed wheel V, the double-toothed bevel-gear wheel M, the oblique shaft T, bevel-gear wheel S, and obliquely-toothed wheel U, with a driving-shaft, a supporting-frame, and the stacking-belt, substantially as described.

7. The combination of the plate L, having the tubular bottom projection, *l*, the inclined bars *i'*, the transverse bar *i*, the brackets Y, the pulleys J J', and shaft X, and obliquely-toothed wheel V, the double-toothed bevel-gear wheel M, the oblique shaft T, having bevel-gear wheel S, and obliquely-toothed wheel U, with a driving-shaft, a supporting-frame, and the stacking device, substantially as described.

8. In a straw-stacker, a rotary sweep or frame, a straight transverse shaft having two apron-pulleys, and a wheel provided with straight oblique teeth, and an obliquely-arranged shaft, also having a wheel with straight oblique teeth, in combination with a carrier-apron and a supporting or attaching frame, substantially as described.

9. In a straw-stracker, the combination of the conductor-trough having an inner hopper-section provided with side wings, Z^2, and pivoted end board, Z^3, with the pivoted supporting-frame B C, the carrier-apron, and suitable apron-driving mechanism, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

WILLIAM H. GROVE.
GEORGE H. STEELY.

Witnesses:
P. G. BOSTWICK,
B. H. BOSTWICK.