(No Model.)

3 Sheets—Sheet 1.

W. BUTLER.

STRAW STACKER.

No. 342,064. Patented May 18, 1886.

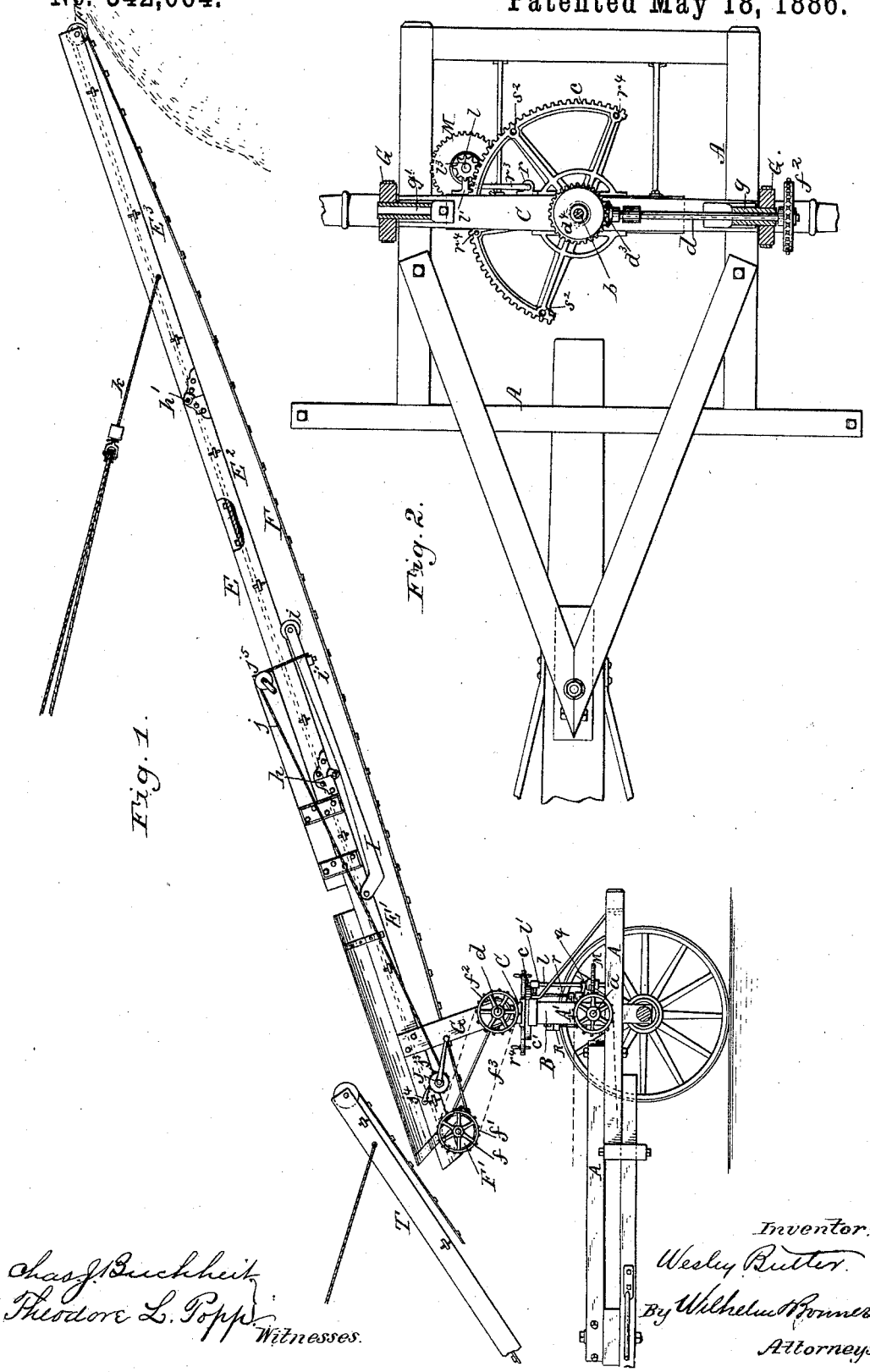

Fig. 1.

Fig. 2.

Witnesses.
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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

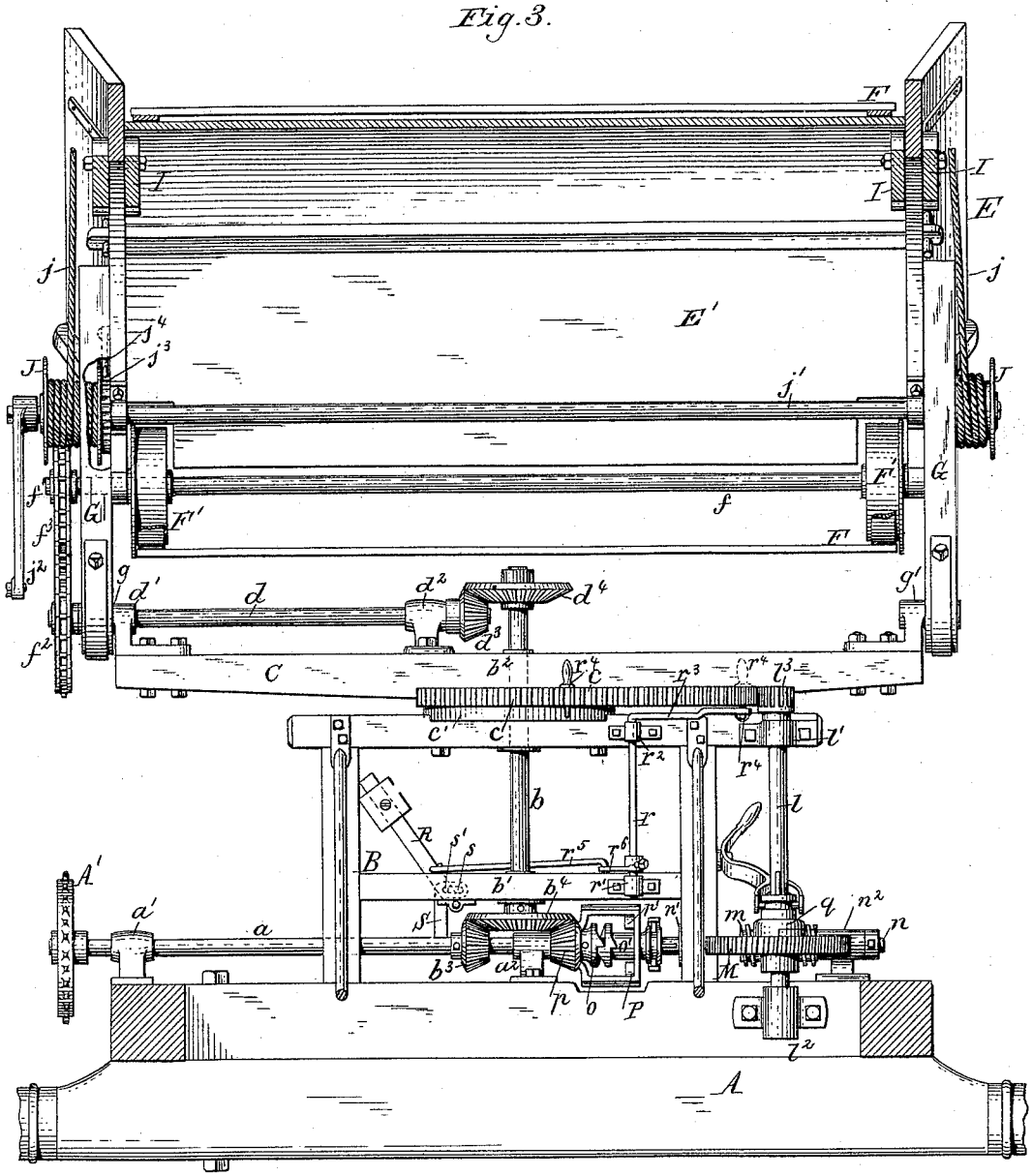


Fig. 4.

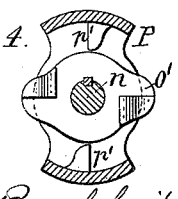
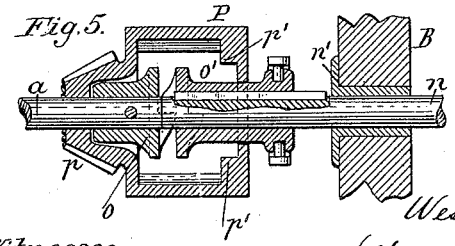


Fig. 5.



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(No Model.) 3 Sheets—Sheet 3.

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STRAW STACKER.

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Fig. 6.

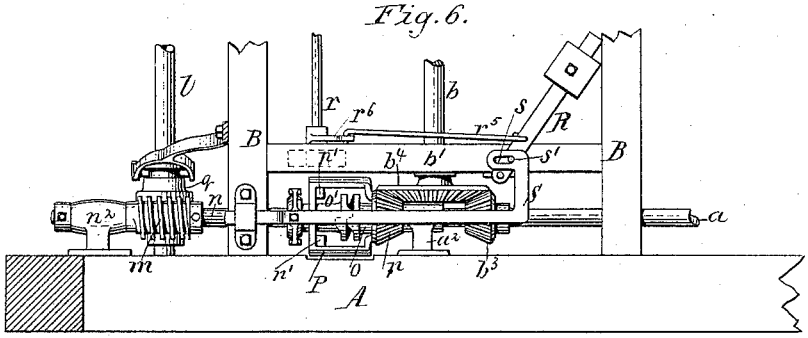


Fig. 7.

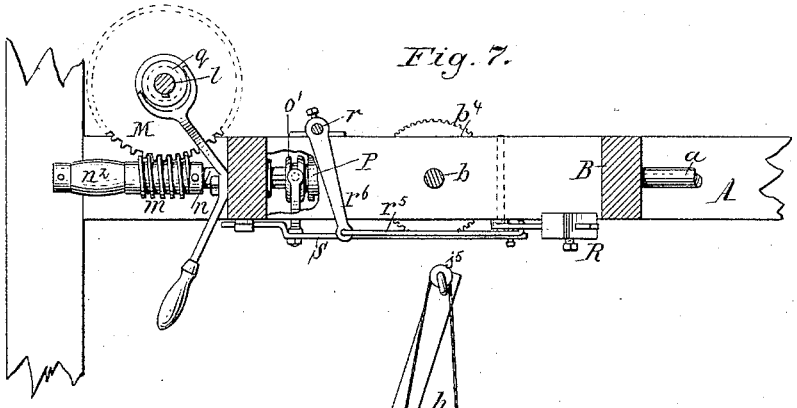
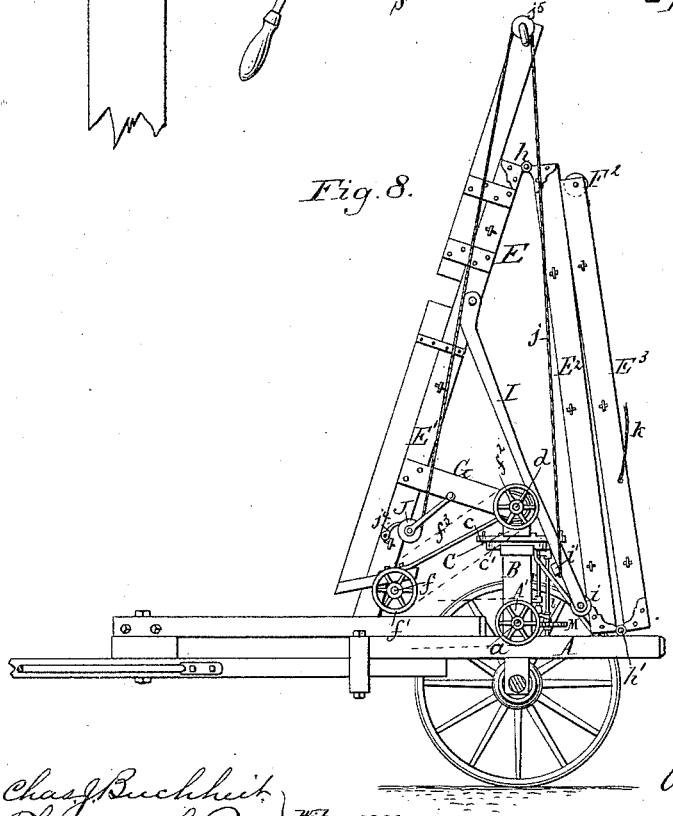


Fig. 8.



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UNITED STATES PATENT OFFICE.

WESLEY BUTLER, OF LITCHFIELD, ILLINOIS, ASSIGNOR OF ONE-HALF TO THE PITTS AGRICULTURAL WORKS, OF BUFFALO, NEW YORK.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 342,064, dated May 18, 1886.

Application filed September 1, 1885. Serial No. 175,935. (No model.)

To all whom it may concern:

Be it known that I, WESLEY BUTLER, of Litchfield, in the county of Montgomery and State of Illinois, have invented new and useful Improvements in Straw-Stackers, of which the following is a specification.

This invention relates to an improvement in that class of straw-stackers which are used in connection with thrashing-machines, and which consists of a traveling endless apron mounted in a folding frame, which is supported upon a suitable carriage and receives a slow oscillating movement about a vertical pivot, whereby the straw is distributed laterally over the stack.

The object of this invention is to improve the construction of the folding frame and of the mechanism whereby the folding frame is actuated; and my invention consists, to these ends, of the improvements which will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, consisting of three sheets, Figure 1 is a side elevation of my improved straw-stacker. Fig. 2 is a top plan view of the actuating mechanism of the folding frame on an enlarged scale. Fig. 3 is a vertical cross-section of said mechanism on an enlarged scale. Figs. 4 and 5 are sectional elevations of the clutch-coupling at right angles to each other. Fig. 6 is a rear elevation of the shipper mechanism. Fig. 7 is a top plan view of the same. Fig. 8 is a side elevation of the carrier-frame folded.

Like letters of reference refer to like parts in the several figures.

A represents the supporting-carriage, which may be of any suitable construction, and which may be either independent of or attached to the thrashing-machine.

a is the horizontal driving-shaft, journaled in bearings a' a^2, secured to said carriage, and receiving motion by a drive-chain running around a wheel, A', on the shaft *a*.

b is the vertical driving-shaft, which is supported in bearings b' b^2, secured to a vertical frame, B, mounted on the carriage A.

b^3 is a bevel-pinion secured to the shaft *a* near its inner end, and b^4 is a bevel-wheel secured to the lower end of the vertical shaft *b*, and meshing with the pinion b^3.

C is a horizontal cross-head arranged above the frame A, and turning on the upper portion of the vertical shaft *b* as a pivot.

c is a horizontal gear-segment secured to the under side of the cross-head C and turning on a fifth-wheel or circular support, *c'*, secured to the upper end of the frame B.

d is a horizontal shaft journaled in bearings d' d^2, secured to the cross-head C on one side of the vertical shaft *b*. The shaft *d* is provided at its inner end with a bevel-pinion, d^3, which meshes with a bevel-wheel, d^4, secured to the upper end of the vertical shaft *b*.

E represents the folding frame, and F the endless apron or straw-carrier mounted in the same, and running around driving-rollers F' and guide or head rollers F^2. The driving-rollers F' are secured to a horizontal shaft, *f*, which is journaled in the frame E near its lower or receiving end.

f' is a chain-wheel secured to the end of the shaft *f*, and f^2 is a similar wheel which is secured to the outer end of the shaft *d*, and communicates motion to the wheel *f'* and shaft *f* by a drive-chain, f^3.

G represents arms secured to the folding frame E near its lower end and extending downwardly therefrom toward the cross-head C. One of the arms G is journaled with its lower end on a sleeve, *g*, through which passes the horizontal shaft *d*, and the other arm is similarly journaled on a horizontal pivot, *g'*, secured to the opposite end of the cross-head C, in line with the shaft *d*, so that the folding frame can swing vertically on these journals.

The folding frame E is composed of three sections, E' E^2 E^3, joined together by hinges *h h'*. The lower section, E', carries the driving-rollers F' of the endless carrier, and is journaled on the cross-head C by the arms G, as described. The middle section, E^2, is hinged to the lower section, E', by hinges *h*, which are located on the lower sides of both sections, so that the middle section swings downwardly on the hinges *h* in folding the section. This middle section is raised to bring it in line with the lower section, in unfolding the frame, by arms I, which are pivoted at their lower ends to the lower section, E', and bear with their upper ends against the under side of the middle section, E^2. These arms are preferably

provided at their upper ends with grooved rollers *i*, which bear against the under sides of the side pieces of the middle section, E^2, and the upper ends of the two arms I on opposite sides of the frame E are connected by a cross-piece, *i'*, so that both arms move simultaneously. The arms I are raised by ropes *j*, which are attached to the upper ends of the arms, and which are wound upon the drums J of a windlass which is attached to the lower section, E'. The drums J are mounted upon a horizontal shaft, *j'*, which is provided with a hand-crank, j^2, and a ratchet and pawl, $j^3 j^4$. The upper portions of the side pieces of the lower section, E', project beyond the hinges *h*, and carry guide-rollers j^5, over which the ropes *j* run, near the upper ends of the arms I. The upper section, E^3, is hinged to the middle section, E^2, by hinges *h'*, which are located on the upper sides of these sections, so that the upper section swings downwardly, or is lowered in unfolding it. The upper section is held in place by a suitable stay-rope, *k*, when the apparatus is in use.

In lowering the upper end of the folding frame E, the middle section swings downwardly on the hinges *h*, and the upper section swings backwardly or away from the stack on the hinges *h'*, thereby keeping the discharge end of the carrier away from the stack.

l is a vertical shaft journaled in bearings *l'* l^2, attached to the frame B, and provided at its upper end with a pinion, l^3, which meshes with the gear-segment *c*.

M is a horizontal worm-wheel mounted on the shaft *l* near its lower end, and *m* is a worm which is secured to the shaft *n*. The latter is arranged in line with the horizontal driving-shaft *a*, with its inner end contiguous to the inner end of the shaft *a*, as represented in Fig. 5.

The shaft *n* is supported in bearings *n'* n^2.

o is a clutch, which is secured to the inner end of the shaft *a*, and *o'* is a sliding clutch, which is mounted on the inner end of the shaft *n* by means of a groove and feather, so that upon engaging the sliding clutch *o'* with the clutch *o*, as represented in Fig. 5, the rotation of the shaft *a* is directly transmitted to the shaft *n*.

p represents a bevel-pinion, which turns loosely upon the shaft *a* between the bearing a^2 and the clutch *o*, and which meshes with the bevel-wheel b^4.

P is an open clutch-frame formed on the rear side of the bevel-pinion *p*, and provided with teeth *p'*, with which the sliding clutch *o'* can be engaged, the latter being provided with two sets of teeth on opposite sides—one set for engaging with the clutch *o*, and the other for engaging with the teeth *p'*. Upon shifting the sliding clutch *o'* so as to engage it with the teeth *p'* the shaft *n* is disconnected from the shaft *a*, and motion is transmitted from the shaft *a* to the shaft *n* by the wheels b^3, b^4, and *p* in an opposite direction. The wheel M is connected with the shaft *l* by a clutch, *q*, so that upon raising and disconnecting the latter from the wheel M the cross-head C and the frame E and connecting parts can be turned by hand without moving the actuating mechanism.

The sliding clutch *o'* is shifted by the following mechanism: *r* is a vertical shaft journaled in bearings *r'* r^2, secured to the frame B, and provided at its upper end with a horizontal arm, r^3, which is arranged directly underneath the gear-segment *c*, so as to be moved alternately in opposite directions by pins or bolts r^4, attached to the gear-segment. R is a weighted lever pivoted to the frame B, and connected by a rod, r^5, with a horizontal arm, r^6, secured to the shaft *r* near its lower end. S is the sliding shipper-rod, connected at one end with the sliding clutch *o'*, and having its opposite upturned end provided with a slot, *s*, in which engages a pin, *s'*, projecting laterally from the lever R. The latter assumes an inclined position when at rest.

The rotation of the driving-shaft *a* is transmitted, by the vertical shaft *b*, horizontal shaft *d*, and the drive-chain f^3, to the driving-rollers F' in such manner as to cause the endless carrier F to move in the proper direction. The rotation of the shaft *a* is also transmitted to the shaft *n* alternately in opposite directions, whereby the shaft *l* and the segment *c* are alternately turned in opposite directions, thereby turning the carrier-frame E and connecting parts back and forth on the vertical shaft *b* as a pivot. The movement of the carrier-frame is automatically reversed by one of the pins r^4 striking against the arm r^3, thereby turning the shaft *r* in such manner as to cause it to draw the weighted lever R out of its position of rest. As soon as the lever R has passed beyond the vertical position in this movement its weight moves the shipper-bar S, and thereby shifts the sliding clutch *o'*.

The horizontal sweep of the frame E can be increased or reduced by adjusting the pins r^4 on the segment *c*, which latter is provided for the purpose with a series of openings, s^2, in which the pins can be inserted at greater or less distances apart, as may be desired.

T represents the straw-carrier of the thrashing-machine with which the stacker is used.

I claim as my invention—

1. In a straw-stacker, the combination, with the lower frame-section, E', and the middle section, E^2, hinged thereto, of the arms I, pivoted to the lower section and bearing against the middle section, and mechanism, substantially as described, whereby the arms I are turned on their pivots, substantially as set forth.

2. The combination, with the horizontal driving-shaft *a*, provided with a clutch, *o*, the vertical shaft *b*, and connecting gear-wheels, of the cross-head C, provided with the gear-segment *c*, the shaft *n*, provided with a sliding clutch, *o'*, the pinion *p*, provided with a clutch, P, the worm *m*, secured to the shaft *n*, and the vertical shaft *l*, provided with a worm-wheel,

M, and carrying a pinion, l^3, which gears with the segment *c*, substantially as set forth.

3. The combination, with the horizontal driving-shaft *a*, the driving-shaft *n*, the vertical shaft *b*, and the cross-head C, provided with the segment *c*, having pins r^4, of the sliding clutch connecting the shafts *a* and *n*, the vertical shaft *r*, provided with arms r^3 r^6, the weighted lever R, and the shipper-rod S, connecting said lever with the sliding clutch, substantially as set forth.

4. The combination, with the carrier-frame and the cross-head C, provided with a gear-segment, *c*, of the horizontal driving-shaft *a*, the shaft *n*, arranged in line with the driving-shaft, a vertical shaft, *l*, geared with the segment *c*, and with the horizontal shaft *n*, and mechanism, substantially as described, whereby the horizontal shaft *n* is alternately rotated from the shaft *a* in opposite directions, whereby the carrier-frame is swung back and forth horizontally, substantially as set forth.

5. The combination, with the carrier-frame and the cross-head C, provided with a gear-segment, *c*, of the horizontal driving-shaft *a*, the horizontal shaft *n*, arranged in line with the shaft *a* and geared with the same, a vertical shaft, *l*, geared with the segment *c*, and with the horizontal shaft *n*, a shifting clutch, whereby the shaft *n* is alternately rotated from the shaft *a* in opposite directions, and mechanism, substantially as described, whereby said clutch is automatically shifted, substantially as set forth.

6. In a straw-stacker, the combination, with the carrier-frame mounted on a vertical pivot and provided with a gear-segment, *c*, of the driving-shaft *a*, a shaft, *n*, geared with the driving-shaft and with said segment, a movable clutch connecting the shafts *a* and *n*, a shipper mechanism whereby the clutch is shifted, and adjustable stops attached to said segment, whereby the shipping mechanism is automatically moved, substantially as set forth.

Witness my hand this 15th day of July, 1885.

WESLEY BUTLER.

Witnesses:

C. F. GEYER,

OSCAR SCHAUB.