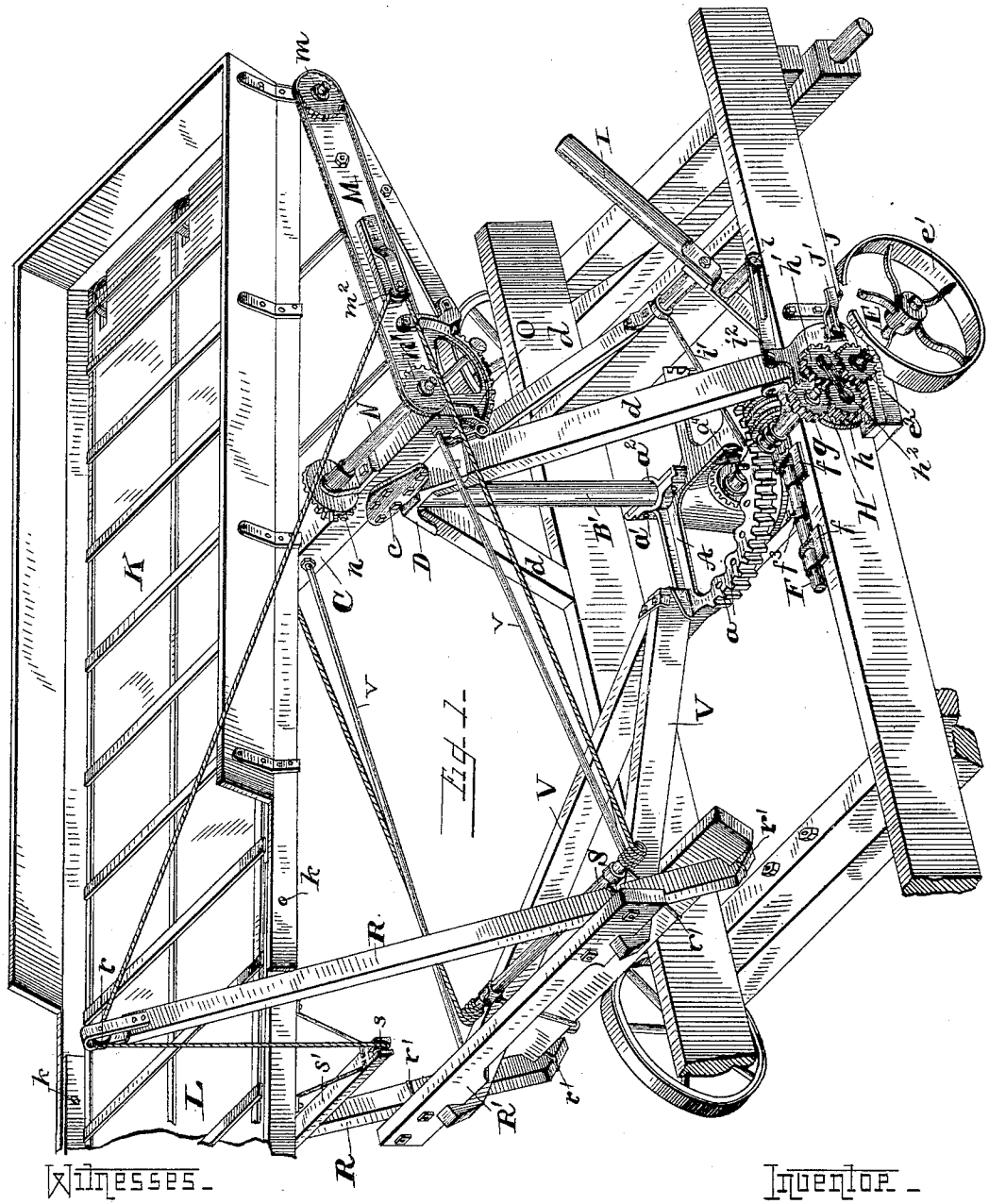
(No Model.) 3 Sheets—Sheet 1.

W. W. DINGEE.

STRAW STACKER.

No. 399,504. Patented Mar. 12, 1889.



Witnesses.

G. A. Tauberschmidt.

L. B. Whitaker

Inventor.

William W. Dingee

By his attys.

Whittaker & Prevost

(No Model.) 3 Sheets—Sheet 2.

W. W. DINGEE.

STRAW STACKER.

No. 399,504. Patented Mar. 12, 1889.

Fig. 2.

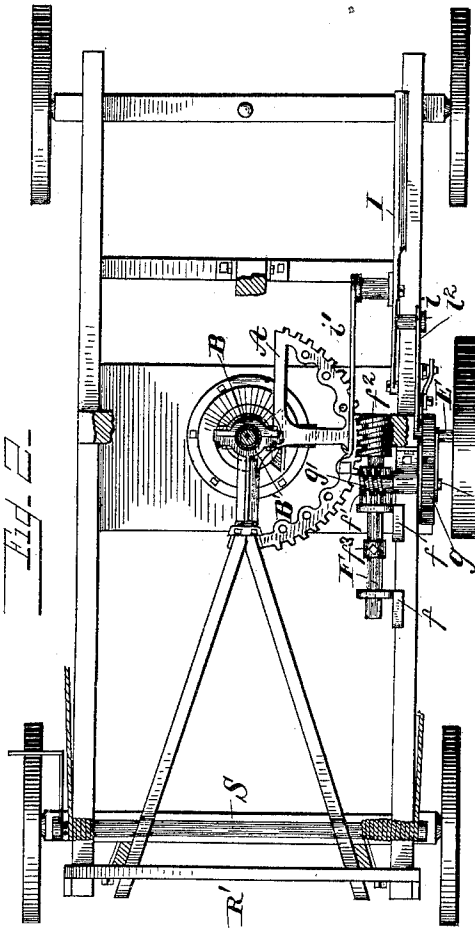


Fig. 8.

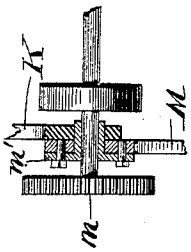


Fig. 7.

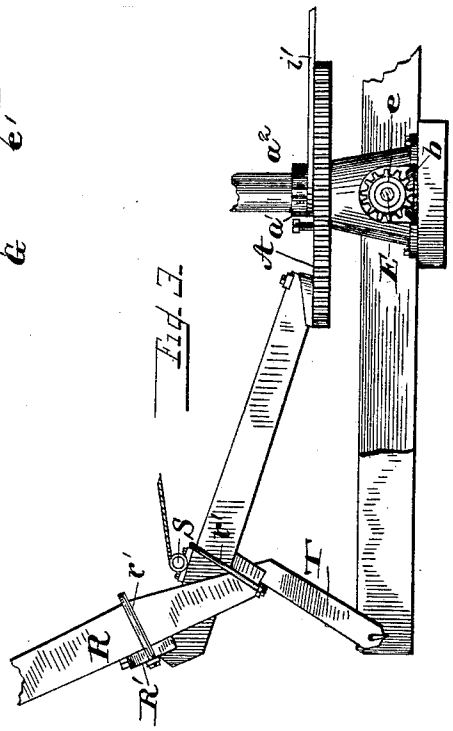
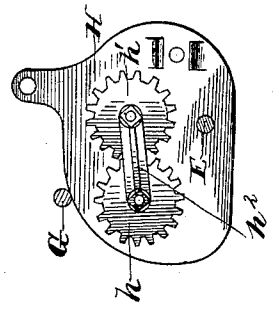


Fig. 11.



Witnesses

G. A. Tauberschmidt

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(No Model.) 3 Sheets—Sheet 3.

W. W. DINGEE.

STRAW STACKER.

No. 399,504. Patented Mar. 12, 1889.

Fig. 9.

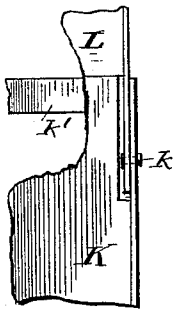


Fig. 10.

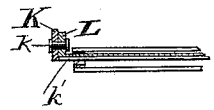
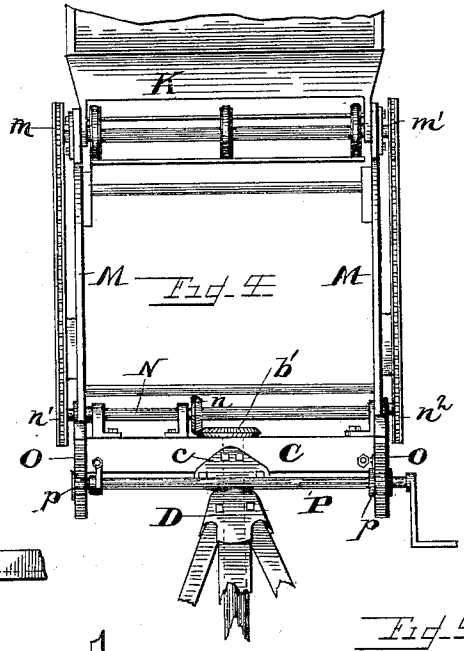


Fig. 4.



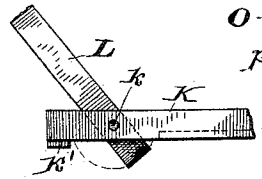
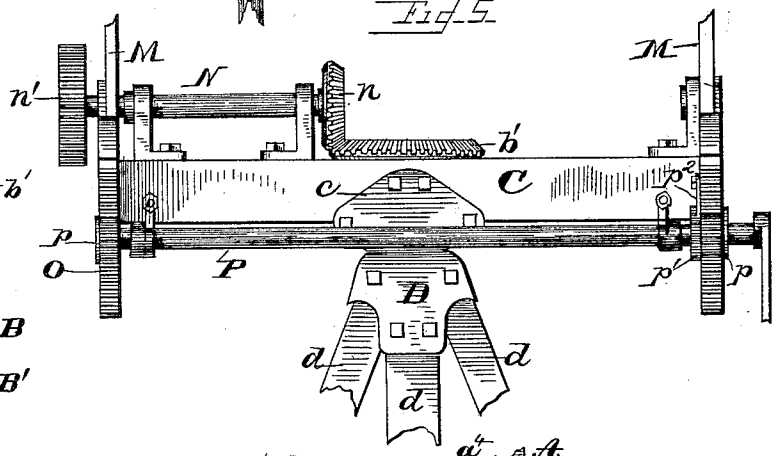


Fig. 12.

Fig. 5.



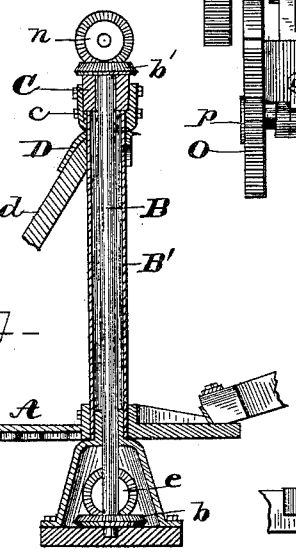
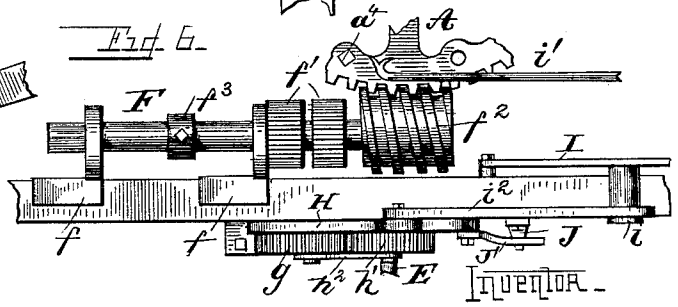


Fig. 7.

Fig. 6.



Witnesses.

G. A. Tauberschmidt.

L. B. Whitaker

Inventor.

William W. Dingee
By his attys.
Whitaker & Prevost

UNITED STATES PATENT OFFICE.

WILLIAM W. DINGEE, OF RACINE, WISCONSIN, ASSIGNOR TO THE J. I. CASE THRESHING MACHINE COMPANY, OF SAME PLACE.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 399,504, dated March 12, 1889.

Application filed July 14, 1888. Serial No. 279,923. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. DINGEE, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Straw-Stackers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to portable stackers; and it consists in improved means for raising and lowering the stacker and imparting an oscillating movement to the discharge end of the same.

I have illustrated one form in which I have contemplated embodying my invention in the following drawings, and said invention is fully disclosed in the following specification and claims.

In the drawings, Figure 1 is a perspective view of my improved stacker with a portion of the carrier broken away. Fig. 2 is a plan view of the mechanism with the carrier removed. Fig. 3 is a view of a portion of the rigid brace-frame and vertical shaft. Figs. 4 and 5 are views of the apparatus imparting motion to the carrier-apron. Fig. 6 is a plan view of the apparatus for imparting a reciprocating motion to the carrier. Fig. 7 is a sectional view of the carrier-actuating devices. Fig. 8 is a view showing one of the bearings for the carrier-apron-actuating shaft. Figs. 9 and 10 are partial views illustrating the means connecting the parts of the folding carrier. Fig. 11 is a view of one of the devices employed to impart reciprocating motion to the carrier. Fig. 12 is a partial view showing the parts of the carrier at an angle to each other.

Upon some convenient part of the frame which supports the stacker, preferably near the center, is mounted a gear-segment, A, which is provided with gear-teeth on its periphery. I prefer to provide the frame with a hollow cone-shaped box having a projecting flange or collar on its upper face, and mount the segment A above said box in such a manner that it will rotate freely. This segment is provided with a clamp composed of two parts, a' and a^2, which are so formed as to provide a circular or polygonal aperture for the reception of one end of the vertical hollow shaft or sleeve B′. One of these parts, a', is secured to the segment A in any preferred manner, preferably by being cast integral therewith, and the other part, a^2, is secured thereto by means of bolts or screws, or in any other preferred way. By tightening these bolts or screws the segment A and the sleeve or hollow shaft B′ may be firmly united. A vertical shaft, B, extends through this flange or collar and the sleeve or shaft B′, and is journaled in bearings provided on the frame within the cone-shaped box and in the center of the cross-bar C of the carrier-frame. This cross-bar is supported upon a frame above the main frame of the stacker, which is composed in this instance of three standards, *d*, united at the top by a casting, D, suitably connected to the same. The hollow sleeve B′ surrounds the shaft B and extends upward through the casting D. This sleeve is rigidly attached to segment A, as before described, and may extend entirely through the hub of the segment, and engages the flange or collar upon which it turns, and said sleeve is also rigidly attached to the cross-bar C by means of a suitable casting, *c*, or any other preferred means. The carrier is mounted upon the segment A and cross-bar C, and a movement of the segment A effects a similar movement of the carrier.

The shaft B is provided at its lower end with a bevel-gear, *b*, and a similar gear, *b′*, is rigidly attached to its upper end above the cross-bar C, and motion is imparted to shaft B by means of a bevel-gear, *e*, on a counter-shaft, E, which is suitably mounted upon the main frame and provided on its outer end with a band-wheel, *e′*. The gear *e* engages the gear *b* within the conical box before mentioned, which serves to protect said gears.

A shaft, F, is movably mounted in bearings *f f*, attached to some convenient portion of the frame, and is provided with pinions *f′* and a worm, f^2, adapted to engage the teeth of the segment A. A counter-shaft, G, is mounted upon some part of the frame, having one end provided with a pinion, *g*. Below the shaft G, and preferably upon the outside

of the frame of the stacker, is a plate, H, which may be of any desired shape, and is pivoted to the frame, preferably at the point where shaft E passes through it. This plate is provided with two studs or journals attached thereto in any desired manner, and provided with pinions h and h', engaging each other, the ends of said studs being preferably connected by means of a plate, h^2, or other strengthening device.

When the plate H is in its normal position, as shown in Fig. 1, the pinions h and h' are engaged by pinion g and a gear, e^3, on the driving-shaft E, respectively. By giving the plate H a slight movement upon its pivot, so as to lower pinion h out of engagement with pinion g, the gear h' will revolve about the gear e^3 and engage with the pinion g, thus imparting a reverse motion to pinion g. The worm g' on shaft G will impart motion to the shaft F, which will actuate the segment A through the worm f^2, and by moving the plate H in one direction or another the motion of the pinion g and the segment A may be reversed at will.

I may provide a stop, J, on a convenient portion of the frame, adapted to be engaged by a projection, J', secured to the plate H, for limiting the downward movement of said plate. In order to effect this oscillating movement automatically, and to limit the movement of the segment in one direction before reversing, I provide a lever, I, one end of which is pivoted to the main frame, while the other is heavily weighted. This lever is provided with a stud, i, which is connected by means of a link, i^2, to the upper part of the plate H, and a rod, i', is suitably attached, as shown, to the lever I, having its free end provided with a projection adapted to engage studs on the segment A. I preferably provide the segment A with a series of apertures, a, at each end of its toothed portion, one aperture of each series being provided with a pin or stud, a^4. When the segment has rotated in one direction a certain distance, the stud a^4 will engage the projection on rod i' and force the lever I to swing toward its pivot. When the lever I has been moved past a perpendicular position, the weighted end of the lever will tend to fall, and thereby actuate the plate H and hold it in position until the mechanism is again reversed.

By placing the studs a^4 in different apertures the distance which the segment and carrier will rotate in one direction before reversing their movement may be regulated. I prefer to provide the link i^2 with a slot engaging the stud i, so that as the lever I is moved into a perpendicular position the stud will move easily in the slot. When the lever has passed the perpendicular, its upper weighted end will fall and the stud i, striking against the end of the slot, will actuate the plate H, as before described.

I may prefer to mount the shaft F so that it will be capable of longitudinal movement in its bearings, and to provide the shaft with a collar, f^3, secured thereto by means of a set-screw or other preferred means for limiting the movement of the shaft in one direction. The gear f' will limit the movement in the opposite direction, and the collar f^3 may be set at different points to regulate the longitudinal movement of the shaft. By this means, when the lever I has been thrown over and the direction of shaft G reversed, the first revolutions of the worm f^2 will move the shaft F longitudinally in its bearings and permit the segment A and the carrier to remain stationary. When the shaft F has moved sufficiently to allow the collar f^3 or pinions f' to engage one of the bearings, the shaft will be held from further longitudinal movement and the segment and carrier will be rotated by the worm. As the shaft F is moved, the worm g' will engage the gears f' successively; or I may employ one wide gear, if preferred, so that motion will be imparted to shaft F continuously. By allowing the shaft F a slight longitudinal movement the segment and carrier are given a period of rest at the end of their movement in either direction before reversing. If it is desired, the collar f^3 may be released and the shaft F allowed to move longitudinally until the worm f^2 is out of engagement with segment A, when the carrier may be moved by hand to any position desired.

The carrier is constructed in the usual or any preferred manner, and preferably consists of two parts, K and L, which are connected together in any desired way. I prefer to construct the part L slightly narrower than the part K, and secure the parts together by means of bolts or pivots k k, which pass through the sides of the carrier, as shown in Fig. 10. The part K is also provided on the under side with a cross-piece, k', at some distance beyond the point of pivoting, which forms a support for the part L of the carrier when in its operative position. These pivots or bolts enable the part L to be folded within part K for convenience in transporting and when not in use. The front end of the part K of the carrier is connected to the cross-bar C of the carrier-frame by a sector-frame consisting of standards M, which are pivotally secured to said cross-bar and also to the carrier.

A shaft, N, is supported upon the cross-bar C, and has its inner extremity provided with a bevel-gear, n, to engage the gear b' on shaft B. The outer extremity is provided with a sprocket-wheel, n'. The front end of the carrier K is provided with a shaft over which the endless apron travels, and its outer extremity is provided with a sprocket-wheel, m, which receives motion from a similar wheel, n', on shaft N. In order that these sprocket-wheels may be maintained the same distance apart in all positions of the carrier, it is desirable that the points at which the standards M are pivoted to the cross-bar and to the carrier should coincide with the shafts of said wheels.

To this end I provide the said standards with bearings m', through which the shafts of the sprocket-wheels may pass. Each of these bearings is provided with a flange by which it is attached to the standard, and it preferably extends a short distance past the inside face of the standard, and forms a pivot to engage the carrier, as shown in Fig. 8. By this means the shafts are relieved of strain in raising and lowering the carrier and supporting it in position.

The lower ends of the standards M of the sector-frame are provided with segments O O, having gear-teeth adapted to be engaged by pinions p on a shaft, P, which is suitably mounted in bearings on cross-bar C. One or both ends of said shaft are provided with ratchets p', adapted to be engaged by pawls p^2, attached to the segments O O. This construction enables the standards M to be raised or lowered and held in any desired position, thereby controlling the lower end of the carrier. Power may be applied to shaft P by means of a crank, as shown in Figs. 4 and 5, or in any other preferred manner.

The shaft N, which imparts motion to the endless apron, may extend entirely across the carrier and be provided with a sprocket-wheel, n^2, on the side opposite n', connected by means of a chain with a wheel, m', on the shaft which carries the wheel m^2, if desired, or the shaft may extend only from the center of the cross-bar to one side.

A rigid brace-frame supports the discharge end of the carrier at a point near the center of same. This frame consists of standards R R and V V, extending at an angle to each other and joined in any suitable manner. One end of this frame is rigidly attached to the segment A, and the frame is suitably braced by rods or braces v v, extending from the cross-bar C. Two nearly-vertical arms or standards, R R, extend from the upper part of this frame, and have their upper extremities provided with pulleys r r. The standards M may be provided with similar pulleys, m^2, forward of their pivots, and a drum or shaft, S, is suitably mounted on some part of the brace-frame and provided with any convenient actuating means.

A cord or chain is connected with the carrier at some point on each side of the part L, and these cords or chains pass over the pulleys r r, thence to the pulleys on standards M or cross-bar C, and thence back to the drum S. In the drawings the cord only is shown; but it is obvious that a chain might be employed for the same purpose. It will be seen that by revolving the drum S to wind or unwind the cord or chain the carrier may be raised and lowered at will. The arms or standards R are held in position by staples r', or similar devices, and may be removed from engagement with the rigid frame, if desired. When the carrier is folded for transportation, the arms R are preferably removed and the carrier allowed to rest upon the horizontal brace R'. When the carrier is in this position, I may employ braces T, mounted upon some part of the main frame, as shown in Fig. 3, to relieve the brace-frame from strain. When the carrier is in use, these braces drop down out of the path of the brace-frame. By means of this brace-frame the weight of the carrier is supported near the center and at one end of the same, and in raising the sector-frame the part L of the carrier, by its weight, assists materially and renders the operation of elevating that end of the carrier easy. I may provide the drum with suitable means for retaining it in any desired position. I may prefer to provide the part L of the carrier with a cross-bar, s', extending below the same and having its extremities provided with pulleys s s. The cord or chain may then be continuous from one side of the drum, through the pulleys s, r, and m^2, to the other side, and by this means the carrier may adjust itself with its side portions the same distance above the ground.

The operation of my improved stacker is as follows: The part L of the carrier is unfolded and the carrier elevated into the desired position by means of the drum or windlass S. The rear end of the carrier is also adjusted to receive the material by rotating the shaft P. Power is then applied to the band-wheel e' from any convenient source and motion imparted to the central shaft, B, and to the endless apron of the carrier. Motion will at the same time be given to the pinion g and to the shaft F and worm f^2, thereby causing the segment A and the carrier, to which it is attached by means of the sleeve B', to move with said sleeve as a center. When the carrier has moved a certain distance, the pin a^4 will engage the projection on rod i' and throw the lever I in a direction toward its pivot, thereby moving the plate H and reversing the direction of the shaft F, as before described. The first revolutions of the worm f^2 will move the shaft F longitudinally and permit the carrier to remain stationary until the longitudinal motion of said shaft is arrested, when the segment and carrier will be rotated in the opposite direction.

If desired, the collar f^3 on shaft F may be secured to said shaft at a point adjacent to the bearing f, which is engaged by gear f', when no lost motion will be allowed the segment and carrier upon reversing the motion of the worm f^2. As before stated, the worm f^2 may be entirely disengaged from the segment A, and the carrier oscillated by hand, or allowed to remain stationary, as desired.

The material will be deposited upon the lower portion of part K of the carrier and will be elevated and discharged from the top of the carrier. The oscillating motion of the carrier will deposit the material in even layers. When not in use and for transportation, the stacker may be folded very compactly and will occupy little space.

I do not desire to be limited to my exact

constructions, as variations may be made therefrom without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. In a stacker, the combination, with a carrier and its main supporting-frame, of a pivoted cross-head, a sector-frame interposed between the cross-head and the carrier, a shaft mounted on the cross-head and provided with pinions engaging the sectors, and a brace, the ends of which are at all times the same distance apart, connected with the cross-head and adapted to move with the same, said brace supporting the carrier in rear of its connection with the sector-frame, substantially as described.

2. In a stacker, the combination, with the main supporting-frame, of a shaft mounted vertically therein, a cross-head mounted on said shaft, a rigid brace-frame connected with the lower end of said shaft, and a carrier having its forward end supported by the said cross-head and its rear end supported by the brace-frame, substantially as described.

3. In a stacker, the combination, with the main supporting-frame, of a shaft vertically mounted therein, a cross-head and gear-segment mounted on said shaft, a sector-frame pivoted on said cross-head, a rigid brace-frame rigidly connected with the gear-segment on the shaft, and a carrier having its forward end supported on the sector-frame and its rear end supported by the rigid brace-frame, substantially as described.

4. In a stacker, the combination, with the main frame, of a pivoted sector-frame, a shaft provided with pinions engaging the sectors, a rigid brace-frame having cord-guides, a shaft on said brace-frame, a carrier having its forward end pivoted to said sector-frame, and a cord or cords connected with the carrier passing through the guides of the brace-frame engaging the sector-frame forward of its pivots and connected to the shaft on the brace-frame, substantially as described.

5. In a stacker, the combination, with the main supporting-frame, of a shaft vertically mounted therein, a cross-head on the upper end of said shaft, a rigid brace-frame rigidly connected with the lower end of said shaft and provided with cord-guides, a shaft mounted on said rigid brace-frame, a carrier having its forward end connected with said cross-head, and a cord or cords connected with the carrier passing through the cord-guides and connected to the shaft on said rigid brace-frame, substantially as described.

6. In a stacker, the combination, with a swinging carrier and a gear-segment connected with the same, of a power-shaft provided with a pinion, a counter-shaft provided at one end with a pinion, gearing connecting the other end of the shaft with the said segment, and a support provided with two engaging-gears, one of which is always in gear with the power-shaft, the said support being adapted to be moved to bring either of its gears into engagement with the gear on the counter-shaft, substantially as described.

7. In a stacker, the combination, with a swinging carrier and a gear-segment connected therewith, of a shaft adapted to slide in its bearings and provided with a worm engaging said segment, a main shaft, and reversing-gearing connecting the same with the worm-shaft, substantially as described.

8. In a stacker, the combination, with a swinging carrier and a gear-segment connected therewith, of a shaft adapted to slide in its bearings and provided with a worm engaging said segment, an adjustable stop on said shaft, a main shaft, and reversible gearing connecting the said main shaft with said worm-shaft, substantially as described.

9. In a stacker, the combination, with a swinging carrier and a gear-segment connected therewith, of a main or power shaft provided with a pinion, a counter-shaft provided with a pinion at one end, and gearing connecting its opposite end with the said segment, and a pivoted plate having two engaging-gears mounted thereon, one of which is always in engagement with the pinion on the main shaft, said plate being adapted to be moved so as to bring first one and then the other of its gears into engagement with the pinion on the counter-shaft, substantially as described.

10. In a stacker, the combination, with a swinging carrier, of a gear-segment provided with pins or stops, reversible gearing for actuating said segment, a weighted lever for reversing said gearing, a link attached to said lever and having a projection lying in the path of the said pins or stops on said segment, a slotted link connected with the reversing-gearing, and a pin on said lever engaging the slot of said link, substantially as described.

11. A folding straw-carrier having a rear portion slightly narrower than the forward portion and pivoted to the latter forward of the rear end of the same, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WM. W. DINGEE.

Witnesses:

CHARLES H. LEE,

GEO. L. EDDY.