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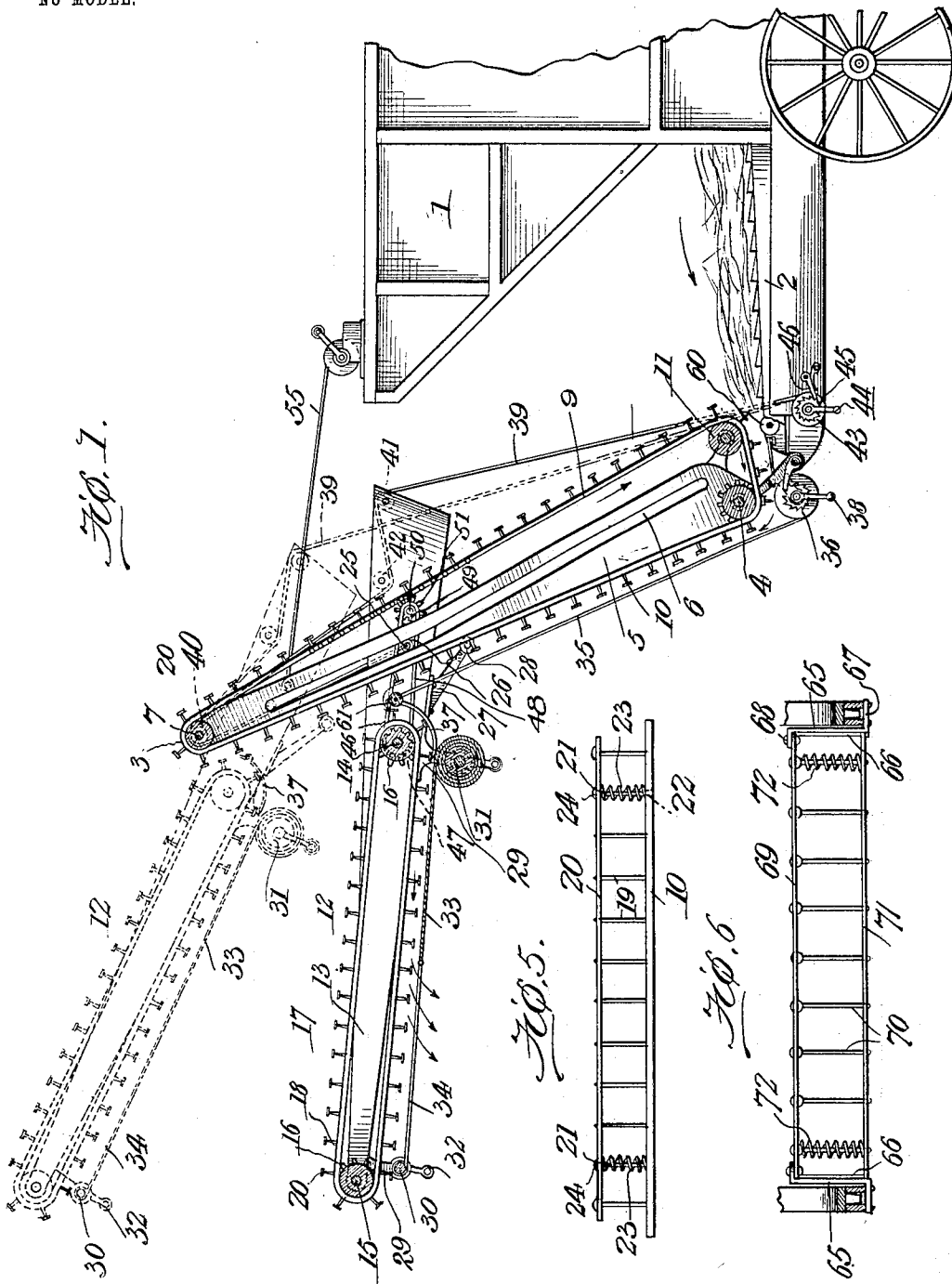
PATENTED MAY 3, 1904.

G. W. CULP.
STRAW STACKER.

APPLICATION FILED MAY 25, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
E. J. Stewart
Wm. Bagger

George W. Culp Inventor
by C. A. Snow & Co. Attorneys

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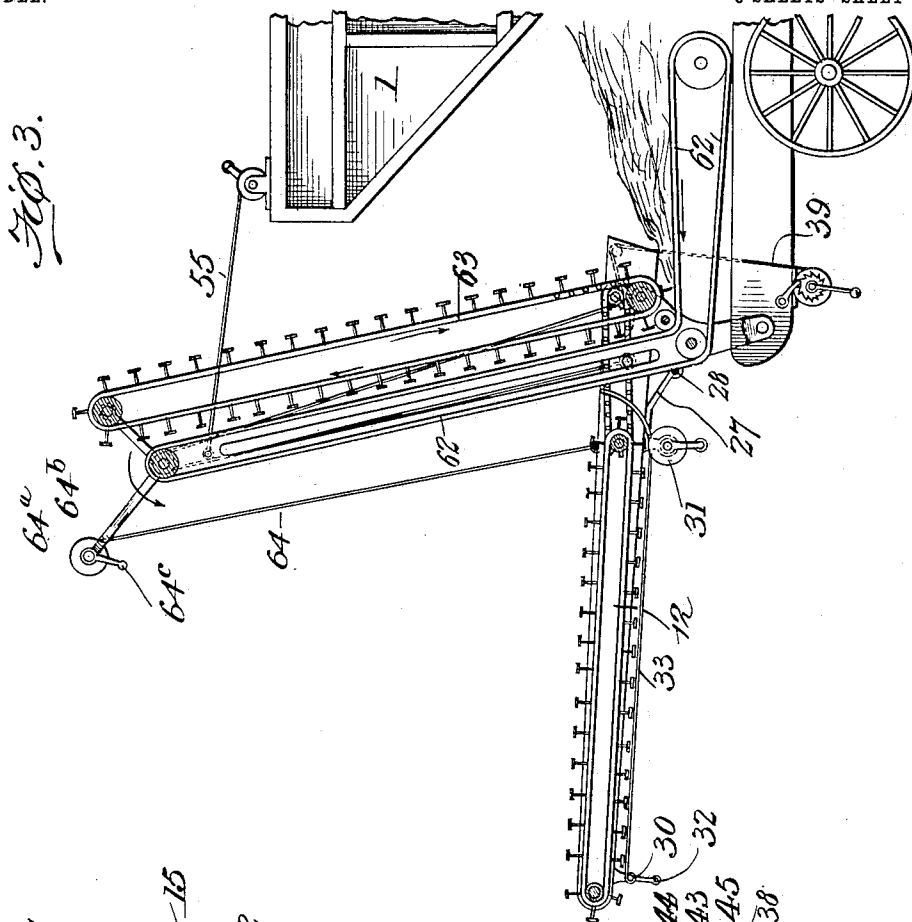
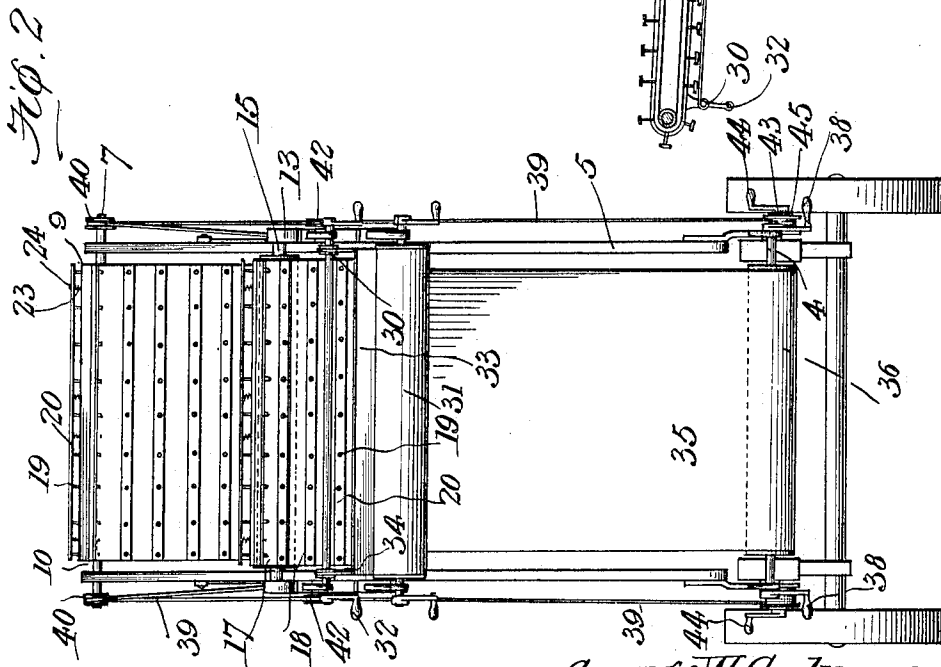
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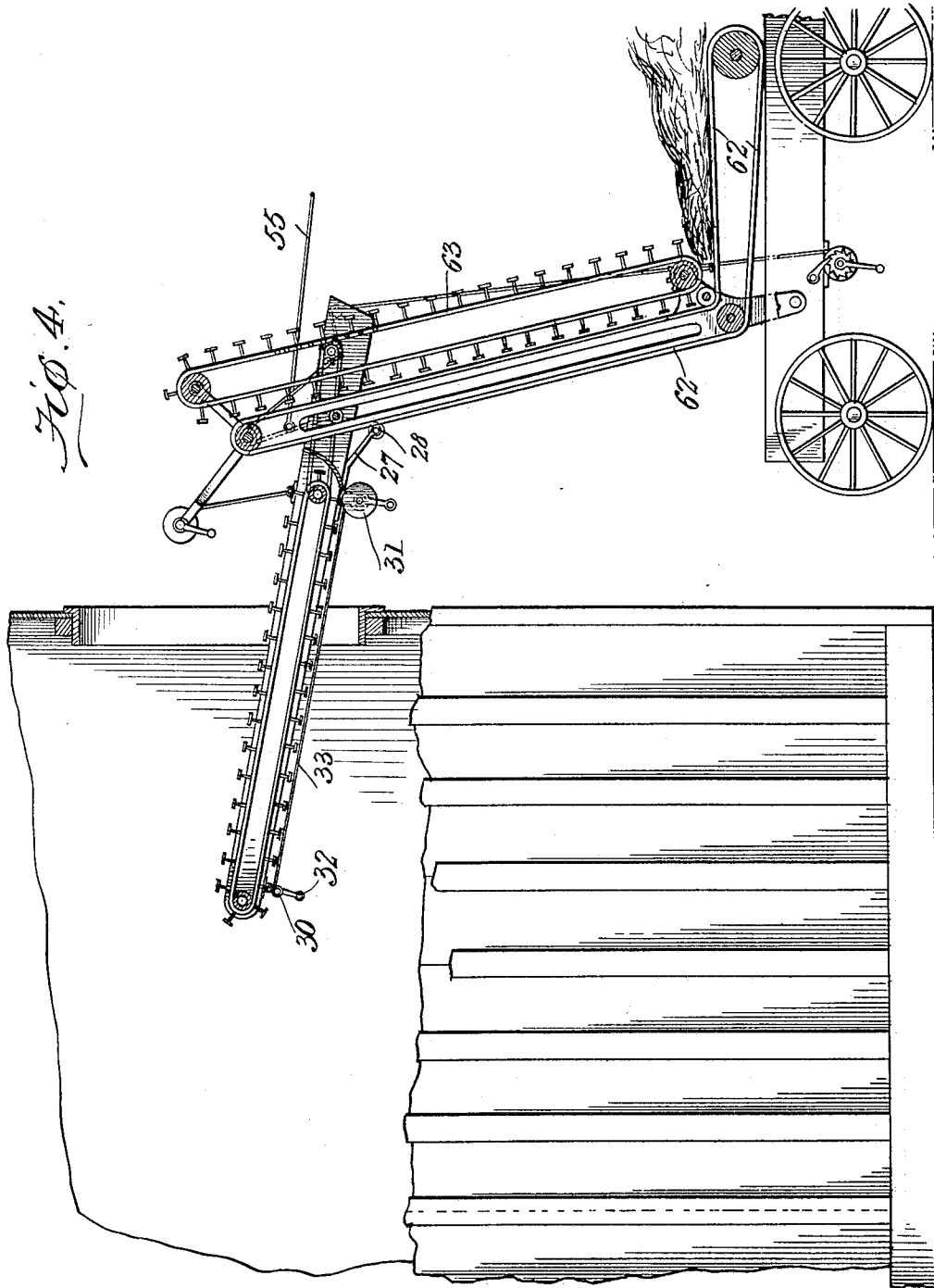
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UNITED STATES PATENT OFFICE.

GEORGE W. CULP, OF LYNDON, ILLINOIS.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 758,739, dated May 3, 1904.

Application filed May 25, 1903. Serial No. 158,687. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. CULP, a citizen of the United States, residing at Lyndon, in the county of Whiteside and State of Illinois, have invented a new and useful Straw-Stacker, of which the following is a specification.

This invention relates to straw-stackers for threshing-machines and grain-separators, and for conveying straw into barns, &c.; and it has for its object to provide a device of this class by means of which the straw may be delivered at various points within the reach or capacity of the device and which may be readily adjusted so as to accomplish such delivery in a simple and effective manner and without the necessity of pitching the straw for the purpose of properly building the stack.

With these ends in view the invention may be said to consist in the improved construction and arrangement of two elements constituting the straw-stacker, one of which elements may be hingedly connected with the machine to which the device is applied and the other of said elements being adjustably connected with the first member in such a manner as to enable it to be projected approximately horizontally therefrom at various elevations and also to be raised to an approximately vertical position at the extreme upper end of its adjustment, thereby coöperating with the first member to form a stacking device of considerable height, whereby a stack of corresponding height may be built and topped off.

My invention further consists in the improved construction and arrangement of parts whereby a device of the class described shall be produced which will possess superior advantages in point of simplicity, durability, and general efficiency, all as will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation showing my improved straw-stacker attached to the tail end of a threshing-machine in position for operation. Fig. 2 is a rear view of the same. Fig. 3 is a sectional elevation illustrating a modification of my invention. Fig. 4 is a side view showing said modification whereby this device is applied

to a barn. Fig. 5 is a detail view of one of the carrier-slats. Fig. 6 is a detail view showing a modification in the construction of the carrier-slats.

Corresponding parts in the several figures are indicated by similar numerals of reference.

1 designates the rear or tail end of a threshing-machine and separator of ordinary construction, and 2 is the extreme rear end of the straw-carrier by means of which the straw is discharged from the machine.

Suitably connected with the frame or casing of the machine, preferably by means of a shaft 4, upon which it is hingedly mounted, is a frame 5, composed of suitably-spaced side pieces provided with longitudinal slots extending throughout the length of said side pieces and designated 6. Said side pieces are provided at their upper ends with bearings for a shaft 7, and the latter and the shaft 4 are provided with sprocket-wheels 3 for the passage of chains 9, which are connected by slats 10, thereby constituting an endless carrier. The side pieces 5 are also provided at their lower inner corners with guide-wheels 11 for the endless chains 9.

12 designates an auxiliary frame composed of suitably-spaced side pieces 13, having bearings at some distance from their inner ends for a shaft 14. An additional shaft 15 is journaled between the outer ends of the frame-bars 13, and said shafts 14 and 15 are provided with sprocket-wheels 16 for the endless carrier-chains 17, which, in connection with the slats 18, constitute an endless carrier. The slats 10 and 18 of the respective carriers are provided with outwardly-extending fingers 19, upon which are mounted the doffer-bars 20, which are provided with perforations to engage said fingers. Said doffer-bars are also provided with inwardly-extending bolts 21, which extend through perforations 22 in the slats 10 and 18, respectively, and in which they have a sliding movement which is normally in an outward direction, owing to springs 23, which are coiled upon the said bolts between the slats and the doffer-bars. Disengagement of the latter is prevented by the heads 24 of the bolts 21, as will be readily understood.

The frame 12 is connected pivotally with the frame 5 by means of pins 25, carrying rollers 26, which operate in the longitudinal slots 6. The sides of the frame 12 are also provided
 5 with brackets 27, having rollers 28, which normally bear against the lower edges of the sides of frame 5, thereby sustaining the frame 12 normally in an approximately horizontal position.

10 Suitably journaled to the under side of the frame 12 in straps or brackets 29, depending from the sides of said frame, are a pair of rollers 30 and 31, the roller 30 at the outer end being provided with a crank 32, by means
 15 of which it may be rotated in its bearings.

33 designates a flexible sheet, which may be of textile material, of sheet metal, or of other suitable material, which is attached by one of its ends to the roller 31 and the outer corners
 20 of which are connected with the roller 30 by means of flexible connecting elements 34, attached to the front or outer corners of the sheet 33 and also to the said roller 30 and which are of such a length as to permit the
 25 said sheet to be entirely wound upon the roller 31. This sheet constitutes what I term a "movable bottom," and the object of this is to regulate the point of discharge of the straw coming from the machine, as will be
 30 presently more fully described. It is obvious that by manipulating the crank 32 so as to wind the flexible connections 34 upon the roller 30 the movable bottom may be extended the entire distance between the rollers
 35 30 and 31. A movable bottom consisting of a flexible sheet 35 is likewise provided for the endless carrying device, of which 5 constitutes the frame; but in this case the flexible element constituting the movable bottom is attached to and capable of being wound upon a
 40 roller 36, mounted in suitable bearings at the lower end of the frame 5, the upper or outer end of said flexible member being suitably connected with the vertically-adjustable frame
 45 12, which constitutes the movable element of my improved straw-stacker. The said frame 12 may be provided between the brackets 27 with a curved shield 37, to the edge of which the upper edge of the flexible element 35 may
 50 be suitably attached, so as to guide the straw which is elevated by the endless carrier supported by the frame 5 into engagement with the endless carrier supported by the frame 12. The roller 36, upon which the flexible
 55 sheet 35 is wound, may be provided with a crank 38 for winding the said sheet.

The pins 25, whereby the frame 12 is pivotally connected with the frame 5, serve as points of attachment for flexible connecting
 60 elements, such as ropes or chains 39, which are guided over pulleys 40 at the upper end of the frame 5, where they may be journaled loosely upon the shaft 7. The inner ends of the side pieces 13 of the frame 12 are provided
 65 at their extreme rear corners with

guide-pulleys 41 and at a short distance from the latter or between the latter and the pivotal pins 25 with additional guide-pulleys 42. The flexible connecting means 39 after passing over the pulleys 40 are guided under the
 70 pulleys 42 and over the pulleys 41, and thence downwardly to a suitably-disposed winding-drum 43, provided at one end with a crank 44 and also with a ratchet and click 45 46 to prevent unwinding of the hoisting-ropes. It
 75 will be seen that by winding the latter upon the drum 43 the frame 12 will be elevated upon the frame 5, maintaining, however, an approximately horizontal position until it reaches the extreme upper limit of the slots 6. Continued winding of the ropes or flexible
 80 elements 39 upon the drum 43 will then result in the elevation of the outer end of the frame 12 to an approximately vertical position, as will be readily understood, thereby enabling
 85 the material conveyed by the carriers to be discharged at a considerable elevation. It is obvious that when the frame 12 is being raised the movable bottom 35 will be unwound from the drum or roller 36. When, on the other
 90 hand, the frame 12 is lowered, the movable bottom will be wound upon the said roller.

The shaft 14, which supports the sprockets 16 at the inner end of the frame 12, carries an additional pair of sprockets 47, which are
 95 connected by a chain 48 with a pair of sprockets 49 upon a shaft journaled between the side pieces of the frame 5. Said shaft, which is designated 50, is provided with an additional pair of sprockets 51, in operative en-
 100 gagement with the chains 9, carrying the slats 10 and constituting the endless carrier of the frame 5. It will be seen that by this arrangement motion is communicated from the chains 9 to the chains 17. Initial motion
 105 is conveyed to the carrier having the chains 9 from the operative parts of the threshing-machine in any suitable manner, the direction of rotation, however, being such that the outer or rear lead of the carrier having the
 110 chain 9 shall travel in an upward direction, which, as will be seen, will result in an outward movement of the lower leads of the carrier-chains 17 of the approximately horizontal carrier.
 115

The disposition of the lower end of the carrier-frame 5 is such that the straw shall be delivered from the threshing-machine onto the lower end of the movable bottom 35, where
 120 it is engaged by the teeth of the slats 10, the outer ends of which will engage the inner side of the said movable bottom. The straw, being packed between the movable bottom and the endless carrier, will force the movable slats or doffer-bars 20 inwardly against
 125 the tension of the springs 23, and the straw will thus be carried upward between the movable bottom and the slats of the endless carrier. The frame 12, which has been previously adjusted at the desired elevation and
 130

in the desired position, is connected, as described, by means of the shield 37 with the upper edge of the movable bottom 35, the point of connection forming the point at which the straw is discharged from the approximately vertically-disposed carrier. The discharge is effected by the spring-actuated doffer-bars, which expel the straw upon the shield 37, where it is engaged by the teeth of the slats 18, and carried by the latter over the movable bottom 33, which has been previously adjusted so as to cause the straw to be discharged at any desired point. This point of discharge may be readily regulated by means of the crank 32 by a man stationed upon the stack, as will be readily understood. It will be seen that by this device the stacker may be adjusted so as to discharge the straw at any desired point within the limit of its capacity, thereby avoiding much labor of a disagreeable nature.

The stacker-frame 5 is stayed from the deck of the threshing-machine by means of a guy-rope 55.

At the points where the straw passes from the tail end of the machine to the vertically-disposed carrier-frame and where the straw passes from the latter to the approximately horizontal carrier-frame I prefer to arrange antifriction-rollers 60 and 61, which are extended across the entire width of the device and which serve to greatly facilitate the passage of the straw in the desired direction without danger of clogging or becoming wedged between the endless carriers and stationary parts of the device.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood. The general construction of the device is simple and inexpensive. Provision is made for the discharge of the straw at the exact spot where it is desired that it shall be delivered. Readjustment may be easily effected at any time, even while the threshing-machine to which my improved device is attached is in operation, and by carrying the straw through the ducts formed between the movable bottoms and the endless carriers the device will not be influenced by the wind, but will protect the straw from the wind during the entire length of its passage from the tail end of the threshing-machine to the point at which it is to be delivered.

It is obvious that various departures may be made from the exact form of construction herein exhibited, and one such modification has been illustrated in Fig. 3 of the drawings. By this modification the upright carrier is composed of two carrying elements 62 and 63, the former of which is extended horizontally beneath the lower end of the latter and into the casing of the threshing-machine, where it receives the straw discharged by the

straw-carrier, said straw being carried upwardly between the two endless carriers 62 and 63 and discharged over the latter into a flexible chute 64, which is suitably connected with the frame 12 of the horizontally-disposed carrier, which latter is provided with the movable bottom 33, already referred to and which is in all respects constructed as hereinbefore described. This chute 64 may be composed simply of an apron adapted to be wound upon a reel 64^a, which is supported between brackets 64^b at the upper end of the upright frame and the shaft of which has a crank 64^c, whereby the apron 64 may be wound upon the reel when the carrier-frame 12 is being elevated, the space between the apron 64 and the carrying element 62 constituting the chute.

In Fig. 4 of the drawings I have illustrated my improved device as applied to a barn structure for the purpose of lifting hay and straw into the same. When the device is thus used, it is obvious that the material which it is desired to elevate is simply deposited upon the horizontally-extending end of the upright carrier, which is to be suitably supported in any convenient manner, the straw or other material being elevated to the horizontally-disposed carrier, the movable floor of which may be set so that the material may be discharged at any desired point in the barn structure.

In Fig. 6 of the drawings I have illustrated a modification in the construction of the carrier-slats of my improved stacking device, which consists in providing a pair of arms 65, preferably constructed of malleable iron, said arms being provided with lateral inwardly-extending flanges 66 and with brackets 67 and 68 at their inner and outer ends. The brackets 67 are bolted, riveted, or otherwise suitably secured to the endless chains of the respective carriers, and to the brackets 68 at the inner ends are bolted slats 69. This inner slat 69 is provided with inwardly-extending fingers 70, which are firmly secured thereto and which serve as guides for a perforated movable slat 71, which moves upon said fingers and is guided between the flanges 66 of the arms 65. Springs 72 are coiled upon the fingers at the outer ends of the slats for the purpose of forcing the slat 71 normally in an inward direction. It is obvious that when the device is in operation the slat 71 will yield to the pressure of the straw, causing the latter to be gripped or engaged by the fingers 70 in practically the same manner as is the case with the carrier-slats hereinbefore described. When slats of the present construction are used, however, the strain upon the said slats will be considerably diminished.

I desire it to be understood that I do not limit myself to the precise structural details herein shown and described, but reserve the right to any changes, alterations, and modifications which may be resorted to within the

scope of my invention and without departing from the spirit or sacrificing the utility of the same.

Having thus described my invention, I claim—

1. In a straw-stacker the combination with an approximately vertical frame, of an approximately horizontal frame pivotally and slidably connected with said vertical frame and vertically adjustable thereon, and endless carriers supported by the said vertical and horizontal frames.
2. The combination with a hingedly-mounted, approximately vertical frame, of a frame pivotally and slidably connected with said vertical frame and vertically adjustable thereon, and endless carriers supported by the said frames.
3. The combination of two frames, pivotally connected and one of said frames adjustable longitudinally with relation to the other, of endless carriers supported by the said frames.
4. The combination with a frame having longitudinally-slotted sides, of an auxiliary frame pivotally connected therewith by means engaging the slots in the sides thereof and thereby adjustable with relation thereto, and endless carriers supported by the said frames.
5. The combination of a frame, an endless carrier supported by said frame and an extensible flexible bottom sheet.
6. The combination of a hingedly-mounted approximately vertically disposed frame, a pivotally-mounted approximately horizontally disposed frame vertically adjustable upon said vertically-disposed frame, endless carriers supported upon said frames, a flexible sheet constituting a bottom for the carrier of the vertically-disposed frame, the upper edge of said sheet being connected with the vertically-adjustable frame, and a winding-roller at the lower end of the vertically-disposed frame for the said flexible sheet.
7. The combination with a frame having a flexible, adjustable bottom, and adjusting means for the same, of an endless carrier having toothed slats provided with spring-actuated doffer-bars.
8. The combination with a frame having a flexible, adjustable bottom and a drum upon which said bottom may be wound, of an endless carrier having toothed slats provided with spring-actuated doffer-bars.
9. The combination with a frame having a flexible, adjustable bottom, of winding and unwinding means for said flexible bottom, said means including drums upon which said flexible bottom and flexible means connected therewith may be rolled, and cranks for operating said drums.

10. The combination with a frame having longitudinal slots in the sides thereof, of an auxiliary frame having pivotal connecting means extending into said slots, suitably-disposed guide-pulleys, and flexible connecting means attached to the pivotal connecting means, and guided by the said pulleys to a winding-drum, whereby the said auxiliary frame may be vertically adjusted and tilted.

11. The combination with a frame having an endless carrier, of an auxiliary frame pivotally connected therewith and likewise having an endless carrier, said endless carriers including chains, toothed slats supported thereby and spring-actuated doffer-bars, an adjustable flexible bottom for the auxiliary frame, and an adjustable flexible bottom for the main frame, the bottom of said main frame having its ends connected respectively with the auxiliary frame and with a winding-roller, and means for effecting the adjustment of the auxiliary frame with relation to the main frame.

12. In a straw-stacker, the combination with a frame, of an endless carrier and a flexible extensible bottom supporting the straw operated upon by the carrier.

13. In a straw-stacker, the combination of a frame, an endless carrier, and an adjustable bottom supporting the material operated upon by the carrier.

14. In a straw-stacker, the combination of a frame, an endless carrier, and an adjustable flexible bottom supporting the material operated upon by the carrier.

15. In a straw-stacker, the combination of two frames, one of said frames pivotally connected with and longitudinally adjustable upon the other, brackets upon said adjustable frame having bearings upon the supporting-frame, a shield connecting said brackets, endless carriers supported by the said frames and having toothed slats provided with spring-actuated doffer-bars, a flexible bottom adjustably associated with the adjustable frame, and a flexible bottom connected with the shield of the adjustable frame and connected at its opposite end with a winding-roller at the lower end of the supporting-frame.

16. In a straw-stacker, the combination of a frame, an endless carrier, an adjustable bottom supporting the material operated upon by the carrier, and an antifriction-roller to guide said material to the carrier.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE W. CULP.

Witnesses:

SID. RILEY,
JESSE WILSER.