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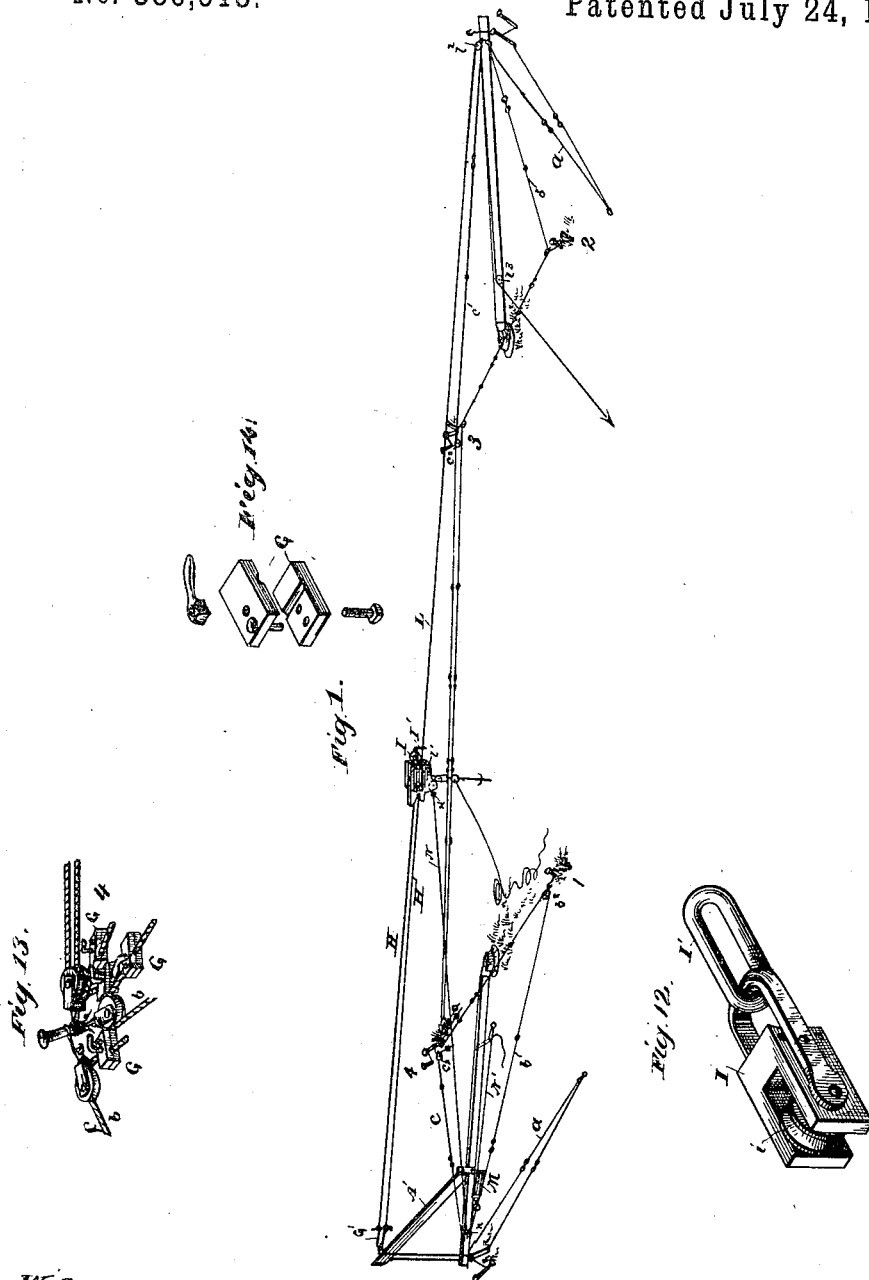
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M. A. YEAKLEY.

HAY STACKER.

No. 386,518.

Patented July 24, 1888.



Witnesses,  
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Inventor,  
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(No Model.)

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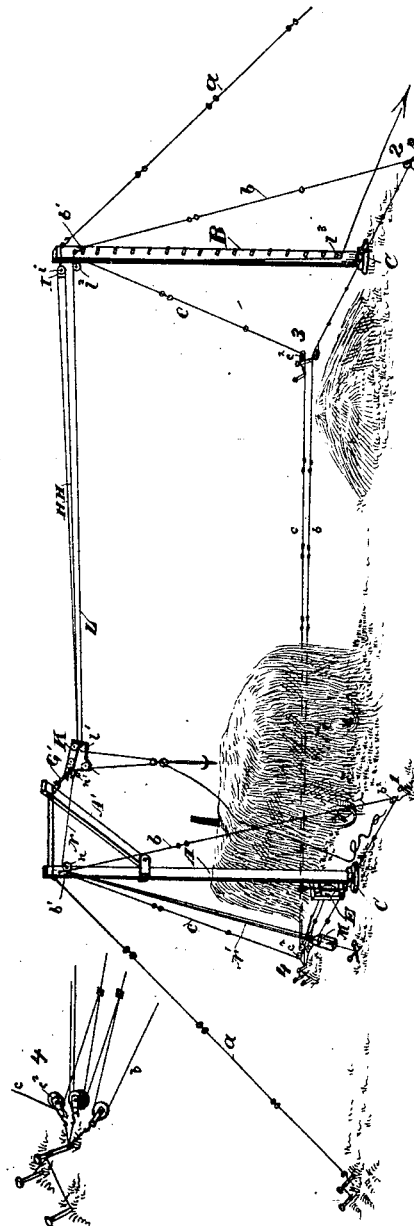
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Fig. 2.



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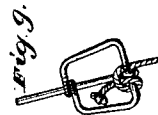
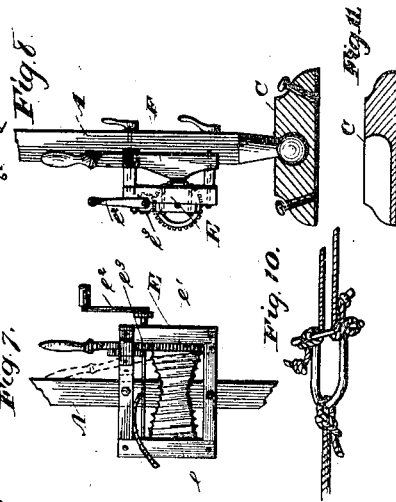
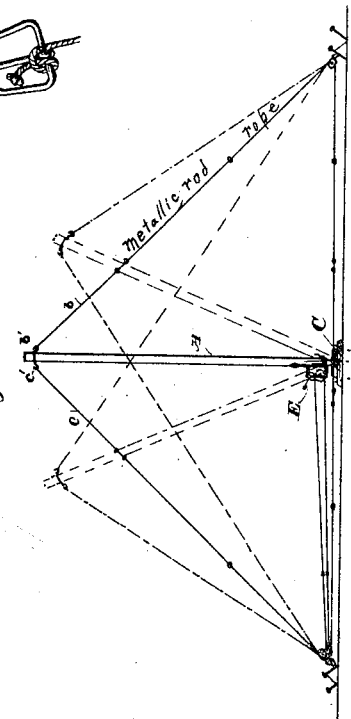


Fig. 6.



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(No Model.)

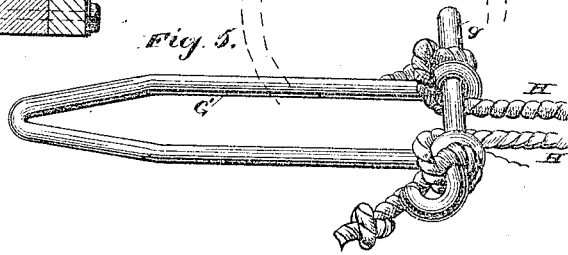
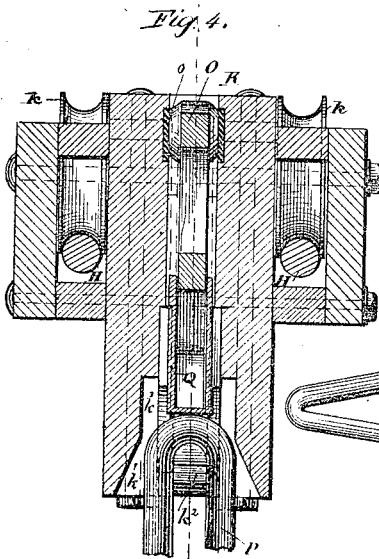
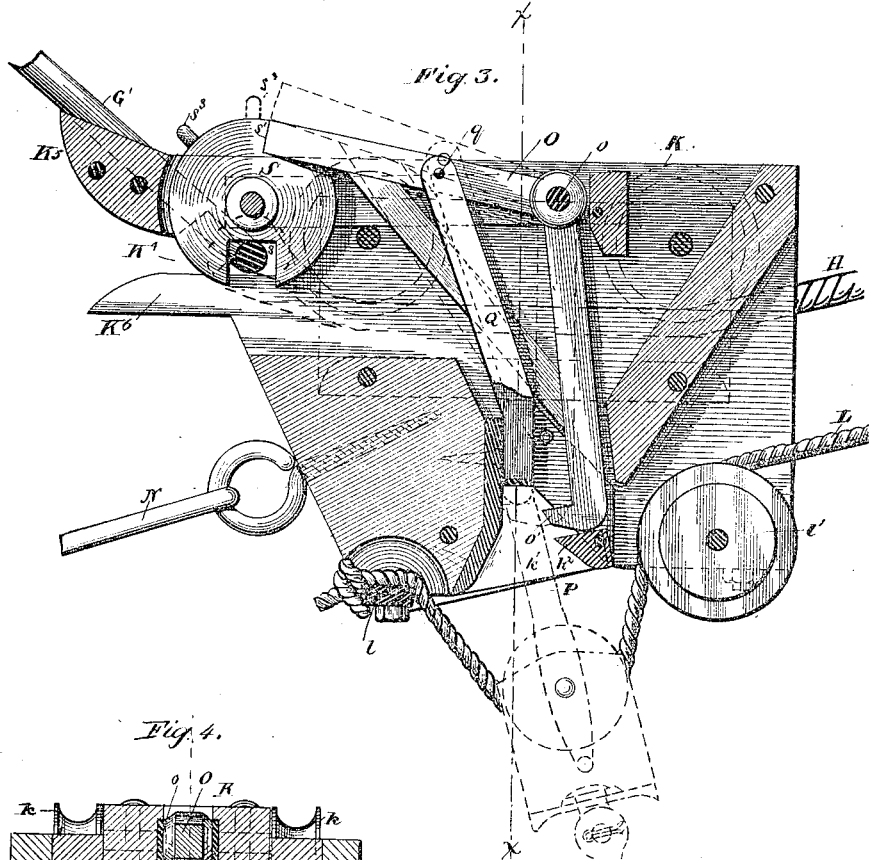
3 Sheets--Sheet 3.

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## HAY STACKER.

No. 386,518.

Patented July 24. 1888.



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# UNITED STATES PATENT OFFICE.

MELVIN A. YEAKLEY, OF LITCHFIELD, OHIO.

## HAY-STACKER.

SPECIFICATION forming part of Letters Patent No. 386,518, dated July 24, 1888.

Application filed February 15, 1888. Serial No. 264,057. (No model.)

*To all whom it may concern:*

Be it known that I, MELVIN A. YEAKLEY, a citizen of the United States, residing at Litchfield, in the county of Medina and State of Ohio, have invented certain new and useful Improvements in Hay-Stackers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to improvements in hay-stackers; and the object of the invention is to provide an apparatus which will take the hay directly from the wagon and deliver it where desired upon a stack without the usual hand labor.

To this end the invention consists in a stacking device constructed as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective of the device on a greatly-reduced scale, showing the position of the parts before being raised for work. Fig. 2 is a perspective of the device after raising and in readiness for work. Fig. 3 is a central longitudinal section of the carrier. Fig. 4 is a transverse section of the carrier on line *x x*, Fig. 3. Fig. 5 is a yoke which engages the carrier and holds it while the hay-hook is being loaded. Fig. 6 in full lines is an end elevation of a portion of the apparatus in vertical position and in dotted lines in inclined position to either side, according as the load is to be carried to one side or the other of the stack. Fig. 7 is a side elevation, and Fig. 8 an end elevation, of a windlass for operating the ropes which give the inclinations shown in Fig. 6. Figs. 9, 10, and 11 are details, hereinafter fully explained. Fig. 12 is a view of the pulley-block which supports the carrier-cables at the right of the apparatus, as here shown, and connected to upper staple or bolt on the right-hand post in Fig. 2, or seen in miniature on the end of the carrier-block in Fig. 1. Fig. 13 shows the cables or ropes with their pulleys and clamps, that are grouped in the extreme left-hand corner of Fig. 1, and through which the inclinations of the device are effected. Fig. 14 shows the details of a temporary clamp for the cords *b c*.

The invention is designed especially for stacking hay, and is built of a size that will

enable both the wagon and the stack to be comprised within its ends, as well as of such elevation that the device can be operated to practically complete a stack of the usual height. For this purpose I employ end posts or poles, A B—say twenty-five feet high—placed about fifty feet apart. The space from corner to corner laterally when staked down is about fifty feet. These dimensions will serve as guides. They may be varied more or less as larger or smaller apparatus is desired. The poles A B are socketed to turn in shoes C, (shown in section, Figs. 8 and 11,) which are firmly staked to the ground, and have guy-ropes or link-chains *a b c* for steadying the poles in an upright position. The guys *a* preferably are made of long metal links, which may be folded for convenience in handling and packing, and which will not stretch when drawn taut. The guys *b c* are preferably part rope and part metal links, the rope being used where they pass over the pulleys. These latter are connected, respectively, on opposite sides of the posts A B, near their top, at *b' c'*, and pass over sheaves or pulleys *b'' c''* at the staked-down corners 1 2 3 4. The two guys or cords *b* meet at corner 4, and after passing over their respective pulleys are brought together and run onto one section of the windlass E, while the cords *c* run to the same corner, and, passing over their pulleys, are united and carried round the other section of the windlass.

The windlass E is preferably attached by a suitable frame to the post A, easily-removable bolts being employed for this purpose; but it may be staked in the ground, if desired. It is formed with grooves *e*, and its respective ends taper toward the center, so as to enable more cord to be taken up or paid out on one or the other of cords *b c*, as the posts A B are inclined to one side or the other. As here shown, the windlass has cogs *e'* at one end, which are engaged by cogs of a lever, F, which is pivoted on the frame and serves to lock the windlass in any desired position. A crank and pinion, *e'' c''*, are employed to turn the windlass in either direction; but a crank may be applied directly to the windlass and answer the same purpose, though it would not operate so easily. The cords *b* are attached to the windlass to be wound, say on one section or

half thereof, and the cords *c* to wind on the other half, and they are so arranged that when one set winds up the other unwinds. This constitutes the mechanism for inclining the posts from one side to the other, according as the hay needs to be delivered to one or the other side of the stack. In this operation I have found that when there is a swing of the tops of the poles—say ten feet to one side—there is more slack to be taken up than there is rope to be given out on the other, so the take-up rope will wind gradually on the increasing diameter of the windlass at one end, while the paying-out rope or cord will feed from a decreasing diameter on the other end. When the posts are upright, both ropes or cords are held on the same diameter of windlass—say midway of each end or section—and travel from that point, one toward the end and the other toward the center, according as the posts are inclined to right or left of a vertical position. This construction keeps the cords or guys always tight, so that the poles are firmly stayed laterally, whatever their position. Clamps *G* are shown on the cords *b c* at corner 4, Fig. 13, and in detail in Fig. 14, which are placed on these cords to hold them taut before the ends thereof are attached to the windlass. This occurs when the stacker is being set up. After the ends of these cords are secured to the windlass and stretched the clamps are removed, thus leaving the cord free to play over the pulleys.

The next feature of the invention is the carrying device for carrying the hay from the wagon to the stack.

It will be observed that the post *A* has an arm, *A'*, pivoted thereto at one end, while the upper end is held by a suitable link to the top of the post. To this arm is attached a yoke, *G'*. (Shown clearly in Fig. 5 and in section in Fig. 3.) In the ends of this yoke is a cross-pin, *g*, and to this pin are attached the ends of the carrying-cables *H*. These cables are preferably two in number and consist of rope or other flexible and yielding material. Iron rods would not serve the purpose, as no frame of the character here described could be staked down to prevent the rods from bending under the heavy load they would be required to carry.

My invention is therefore organized and devised with reference to the use of a flexible cable that may sway more or less under a load and still work perfectly. At the opposite end the cables pass over a sleeve or pulley, *i*, in the block *I*, Fig. 12, attached by a link, *I'*, to a hook at the top of the pole *B*. In operation this pulley lies horizontal, so that the two tracks or parts of the cable will lie in the same horizontal plane their entire length.

*K* represents the hay-carrier. (Shown on a large scale in Figs. 3 and 4.) This carrier is designed to be automatic in much of its action. On either side of its main portion are secured two pulleys or sheaves, *k*, on which it travels over the cables *H*, the cables passing through

boxes which confine the sheaves and the cables as well. Having placed the carrier on the cables, it requires two forces to give it the desired operation—one to draw the carrier from over the wagon to a point over the stack, and the other to carry it back over the wagon as it has discharged its load. The forward movement is effected through a draft-rope, *L*, attached at *l* to the carrier, and, passing beneath a pulley connected with the fork and over a fixed pulley, *l'*, on the carrier, runs over pulleys *p p'* on post *B*, and thence out, to be drawn by horses, by which the fork-load of hay, usually from five to eight hundred weight, is conveyed from the wagon to the stack. The load then being discharged by an ordinary trip-rope, the draft-rope is released from the horses and the carrier is speedily returned to its position for loading by a counter-weight, *M*, connected by a cord, *N*, over a pulley, *n*, on standard *A*, with the rear of the carrier at *n'*. (See Fig. 3.) The weight *M* has a pulley in its end, around which the cord *N* passes, and a guide-rope, *N'*, extending from the top of post *A* to ground, guides the weight up and down. If the counter-weight is dispensed with, the trip-rope will serve to draw the carrier back over the wagon.

In the carrier is mechanism, first, for locking the fork when it is drawn up to the carrier and everything is ready to convey the load over the stack, and, second, to lock the carrier on the yoke *G'* while the fork is taking its load from the wagon. This mechanism is as follows: First, it will be observed, Fig. 3, that there is a bell-crank lever, *O*, pivoted at *o*, and provided with a hook or catch, *o'*, at its lower extremity. The hay-hook has a rigid link-shaped extension, *P*. (Shown in dotted lines, Fig. 3, and full lines, partly broken off, Fig. 4.) This link or loop, by reason of its position on the draft-rope with reference to the point of attachment *l* and the sheave *l'* on the carrier, is always centered, so as to enter the *A*-shaped recess *k'* in the bottom of carrier *K*. (See both Figs. 3 and 4.) A small bevel-edge pivoted guide-block, *k''*, may be inserted directly beneath the hooked end of lever *O*, so as to direct the loop *P* of the hay-hook to the center if it strikes beneath the said hooked end. Above the *A*-shaped recess *k'* is an open space extending up through the center of the carrier, in which is located a push-bar, *Q*, connected at *q* with the upper arm of the bell-crank lever *O* and extending down through the carrier within reach of loop or link *P*, when said loop is at the top of the *A*-shaped recess *k'*, as seen in Figs. 3 and 4. Above this recess, and corresponding somewhat to the size of the end or loop or link *P*, is an angular recess, *k''*, Fig. 4, into which the bar *Q* projects a short distance when down, and which forms a limit for the upward movement of said bar by means of loop *P*, when the same is forced upward by tension on the draft-rope. This upward movement throws catch *o'* on the lever *O* into engagement

with loop P and locks the hay-hook firmly to the carrier, ready to bear the load to its destination.

At the upper left-hand corner of the carrier is an open slot, K<sup>4</sup>, having flaring projections or arms K<sup>5</sup> K<sup>6</sup>, and between these arms is a disk, S, having the recesses s s' cut in its periphery. This mechanism, with the yoke G', serves to hold the carrier, while the hay-hook is taking its load. The locking position of the parts is clearly shown in Fig. 3. Then when the hook returns loaded, as before described, and swings lever O into position, as shown in dotted lines, Fig. 3, the disk S will be released from engagement with lever O and the carrier set free to travel to the stack. Then having gone to the stack and discharged its load, as before described, the horses are detached, the counter-weight runs the carrier back over the wagon, and the yoke is automatically engaged by the disk S. It will be observed that a wide flaring mouth is given to the carrier for the yoke G to enter, so that it will not fail to make the engagement with its locking-disk, even though the carrying-cables be very slack—for example, as seen in Fig. 2. A pin, s<sup>3</sup>, on the back of the disk S, limits the oscillation of the disk, striking in one position against the end of the upper arm of lever O and in the other against the carrier, as seen respectively in full and dotted lines, Fig. 3. It will be understood, of course, that these parts will be made on a large firm scale suited to the character of work they are to perform, and the push-bar Q, being made, say, of iron to give it weight and moving freely in its bearings, will draw the lever into engagement with the disk S and lock it as soon as the yoke G' carries the disk around to the full-line position seen in Fig. 3. When this occurs, we have at the same time and by the same movement of lever O the release of the hay-hook, which immediately descends to take its load. The foregoing operation is repeated when the hook returns loaded, and so on automatically until the wagon is unloaded.

In Fig. 1 the apparatus is shown down and all staked out ready to be raised. The windlass might be attached at first and the guys stretched therefrom; but I find it more convenient to stretch the guys by hand and hold them temporarily by the clamps, as seen in Figs. 13 and 14. If the posts are to be, say, twenty-five feet apart, the proper measurement is taken from the left hand post, and just so much cable is paid out as will bring the carrier to the right-hand pole when raised. When the apparatus is raised, as seen in Fig. 2, the cable-pulley block (shown in Fig. 12) rests against the head of the carrier, and the ends of the cable are fastened to the yoke G', as seen in Fig. 5, by a peculiar knot, which enables me to pull on the end of the rope and stretch it, while the knot is so formed that a pull on the cable will tighten it. A similar tie is shown in Fig. 9, which shows how I connect the rope with metal links in the guys.

A draft-rope being attached to the carrier, as seen in Fig. 3, and being the only rope then extending to top end of pole B, the horses attached to the end of said rope (indicated by the arrow, Fig. 3,) will raise the poles to a vertical position, pole B, being lightest in its equipments, will rise first and then pole A. This done, a man will ascend pole B, on the pegs or rounds provided for the purpose, and hook the link on the cable-head to the top of the post B, as shown connected in Fig. 2. The several guys, a b c, are then farther tightened and the apparatus is ready for operation.

It is obvious that the operation herein described might be reversed, and the hay taken from a stack and delivered upon a wagon, and the carrying-cables might be stretched between two fixed points, or one fixed and one movable point.

If the arm on post A is dispensed with, the yoke that engages the carrier should be set out from the said post about its present distance, so as to bring the carrier over the center of the wagon.

It should have been explained that when the disk S is released by the throwing up of the upper arm of lever O the disk is revolved to release the yoke G', and the disk turns under the said arm and serves to prevent the lower arm of the lever O from swinging back and releasing its load. This release cannot therefore occur until the right time—that is, when the carrier is drawn back by the counter-weight into engagement with the yoke, when said yoke, entering the flaring slot in the carrier, forcibly revolves the disk and causes the upper arm of the carrier to drop again into its recess in the disk, thus relocking the parts and releasing the draft-hook from the lower arm of the lever. When the parts are locked, as seen in Figs. 2 and 3, the weight of the carrier and its load is practically suspended from the yoke. I am thus enabled to operate with a comparatively slack rope, which is impossible in any other form of carrier with which I am acquainted.

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

1. In a hay-stacker, a set of poles, a cable for the hay-carrier between the poles, and guys by which the poles may be inclined to either side of a vertical position, whereby the hay may be unloaded at different points on a stack, substantially as set forth.

2. In a hay-stacker, a set of poles and a carrying-cable between the poles, in combination with flexible guys at the sides of the poles to incline the poles laterally, and a windlass to which the guys are connected, substantially as set forth.

3. In a hay-stacker, a set of poles and guys at the sides of the poles, with pulleys at the points where the guys are staked to the ground, and a windlass to take up and let out the guys when the poles are inclined laterally, substantially as set forth.

4. In a hay-stacker, a set of poles and flexible guys at the sides of the poles, with pulleys over which said guys travel, and a windlass tapering from its ends toward its center, to which said guys are attached and by which they are tightened and operated, substantially as set forth.

5. In a hay-stacker, two posts, one at each end of the stacker, and an elastic cable stretched between the poles, in combination with elastic guys to support the posts laterally, and a windlass over which the guys are run and by which they are operated to incline the poles laterally, substantially as set forth.

6. In a hay-stacker, a pair of posts and a cable stretched between the posts, in combination with guys on the posts to stretch said cable, elastic guys supporting the posts laterally, pulleys at the corners, over which said guys run, and a single windlass on which the lateral guys are wound, whereby both posts may be simultaneously inclined to either side, substantially as set forth.

7. In a hay-stacker, an elastic carrier cable, a block having a pulley around which the cable passes, and a link to hook on the pole, in combination with a cross-pin at the opposite extremity of the cable for engaging the carrier, substantially as set forth.

8. In a hay-stacker, an elastic cable and supports for the cable at its ends and connections for the cable with its supports consisting at one end of a pulley-block and at the other end of a yoke with a cross-piece for engaging and holding the carrier, substantially as set forth.

9. In a hay-stacker, a carrier provided with a substantially A-shaped recess in its bottom and an open slot with flaring projections at the end of the carrier near its top, in combination with a hay-hook link that enters the A-shaped recess, a yoke that enters the open slot, a disk to engage the yoke, and a pivoted lever to support the hay-hook link, substantially as set forth.

10. In a hay-stacker, a carrier provided with locking and releasing mechanism for the hay-hook supporting link, and the yoke to hold the carrier on the cable, consisting of a bell-crank lever having a catch on its lower extremity to engage the hay-hook link, and a push-bar for the lever, with a notched disk for engaging the yoke which is locked by the upper arm of the lever, substantially as set forth.

11. In a hay-stacker, a carrier provided with a recess in its bottom, a bell-crank lever having a catch on its lower extremity and pivoted to swing the catch into the said recess, a push-bar attached to the upper arm of the lever and extending down to said recess, and a hay-hook link, substantially as set forth.

12. In a hay-stacker, a carrier having a recess with a flaring mouth leading thereto at an upper corner in the carrier, in combination with a rotating locking disk set in said recess,

a yoke for holding the carrier, and a catch for the disk to prevent its rotation, substantially as set forth.

13. In a hay-stacker, a carrier having an open recess in its side near the top, a rotating disk set in said recess to engage the yoke which holds the carrier, said disk having recesses on its periphery to engage the yoke and the pivoted lever, and a stop to limit the rotation of the disk, substantially as set forth.

14. In a hay-stacker, a carrier having a recess in its bottom and a recess at one side near its top, in combination with a bell-crank lever having a catch on its lower arm, a push-bar extending from the lower recess to the upper arm of said lever, and a notched disk set in the upper recess adapted to be locked by the upper arm of the lever, substantially as set forth.

15. In a hay-stacker, an elastic cable having a cross-pin fixed thereto to hold the carrier, in combination with a carrier having a recess at one side near its top with flaring projections, a rotating locking device having a notch to engage said cross-bar in said recess, and a pivoted catch to hold the locking device, substantially as set forth.

16. In a hay-stacker, a carrier having a draft-rope attached at one side and passing over a pulley at the other side, with a hay-hook suspended between the point of attachment and the pulley, in combination with a bell-crank lever pivoted in the carrier and having a catch to engage a link on the hay-hook, a push-bar on said lever, and a locking device for the lever to hold the catch thereon in engagement with the hay-hook link, substantially as set forth.

17. In a hay-stacker, a pair of posts, and an elastic cable stretched between said posts and forming a double track, the ends of said cable being connected to a cross-piece in a yoke at one post, and passing around a horizontal pulley at the other, all in combination, substantially as set forth.

18. In a hay-stacker, a carrier having a bell-crank lever, a disk in the upper part of the carrier, and a yoke engaged by the disk, in combination with a counter-weight and cord by which the carrier is returned to be loaded, substantially as set forth.

19. In a hay-stacker, a carrier having pulleys at each side, a double-track cable on which said pulleys run, and a pulley-block having shoulders adapted to rest against the end of the carrier and provided with links to attach the block to one of the posts of the stacker, substantially as set forth.

In testimony whereof I hereby set my hand this 4th day of February, 1888.

MELVIN A. YEAKLEY.

Witnesses:

H. T. FISHER,  
IRENE COREY.