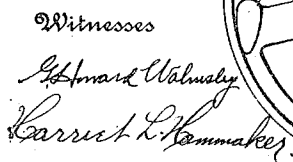


HAY CARRIER,

Patented Dec. 26, 1911.

1,012,692.

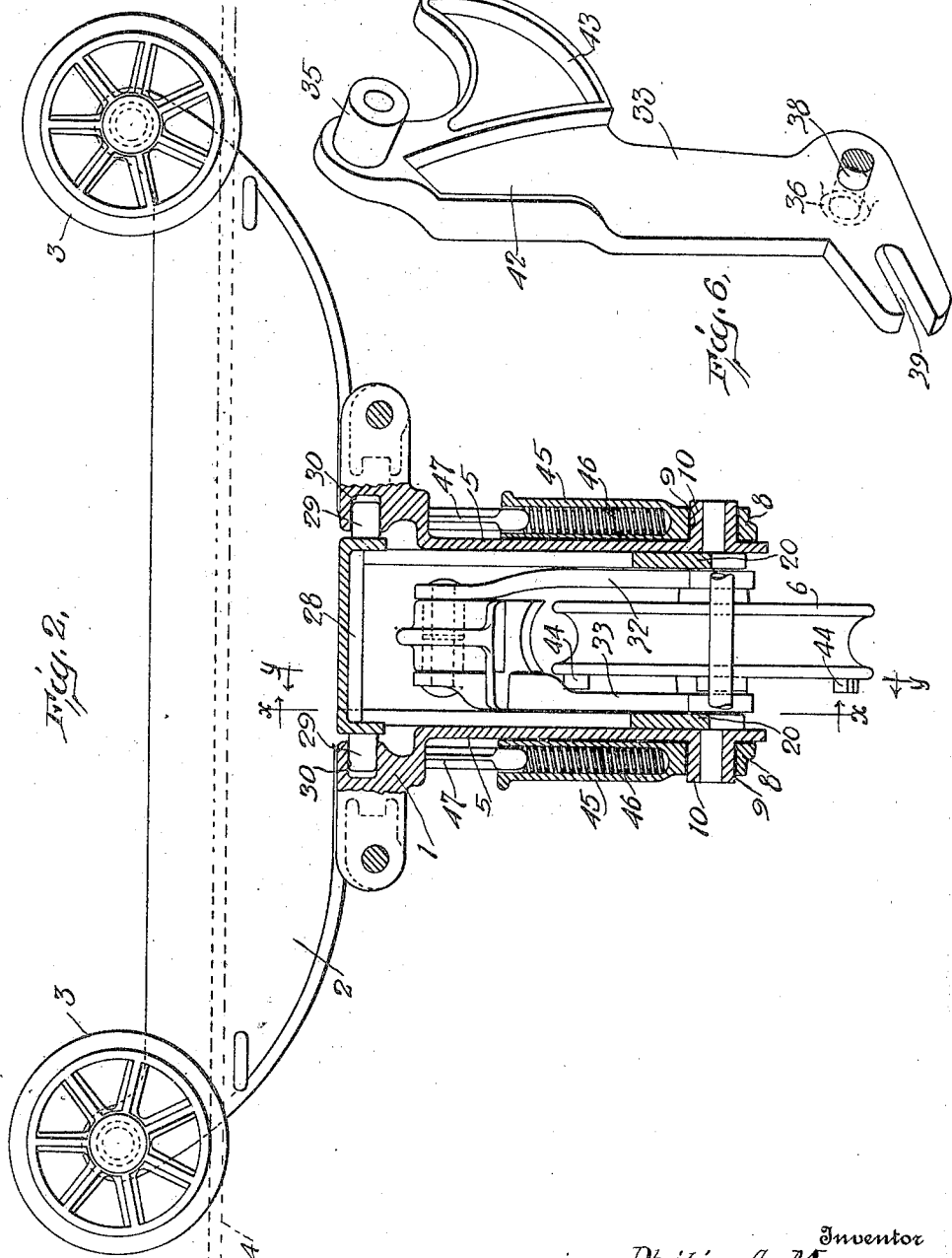


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APPLICATION FILED APR. 27, 1911.

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4 SHEETS—SHEET 2.

1,012,692.



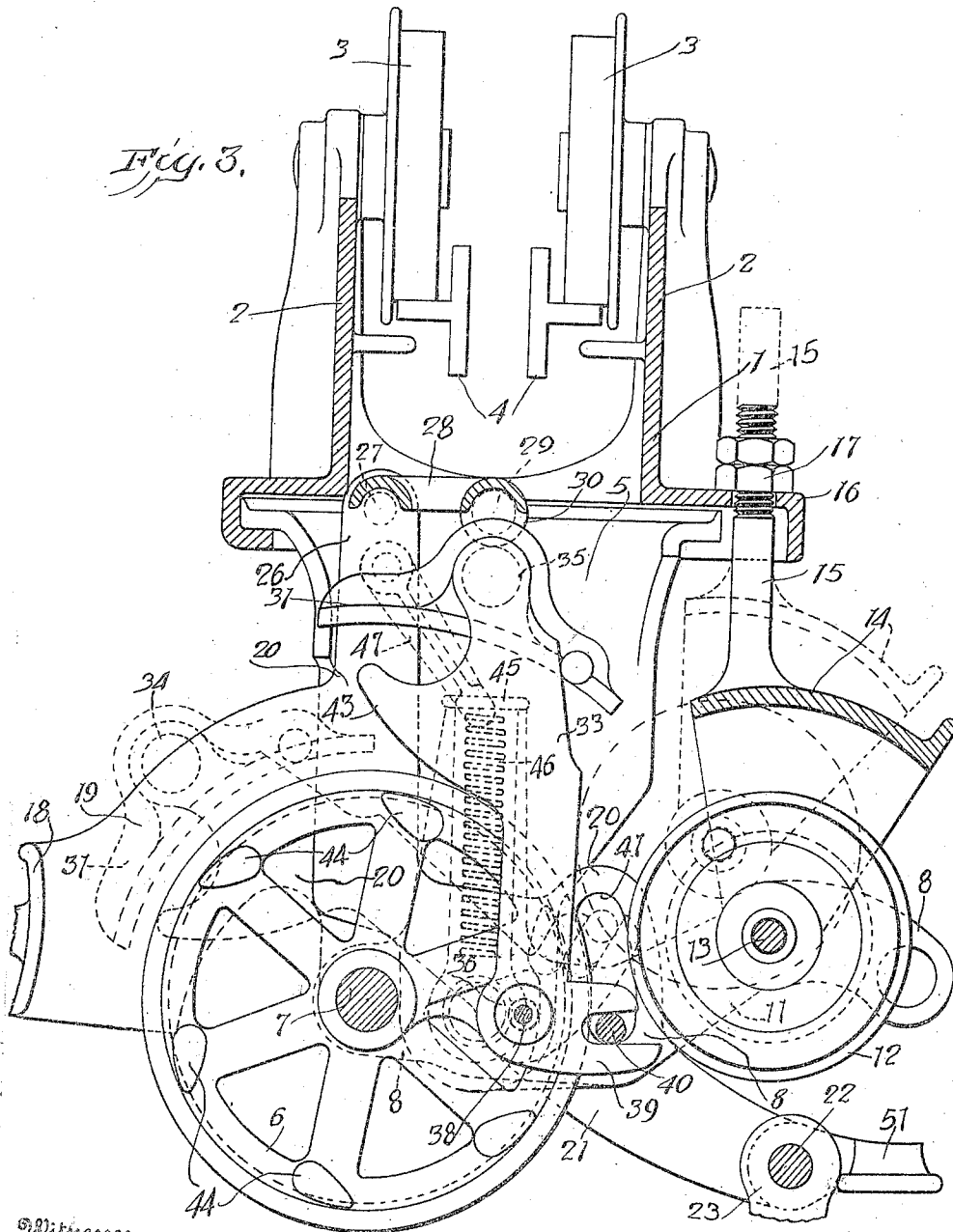
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1,012,692.

Patented Dec. 26 1911.

4 SHEETS-S ET 3.



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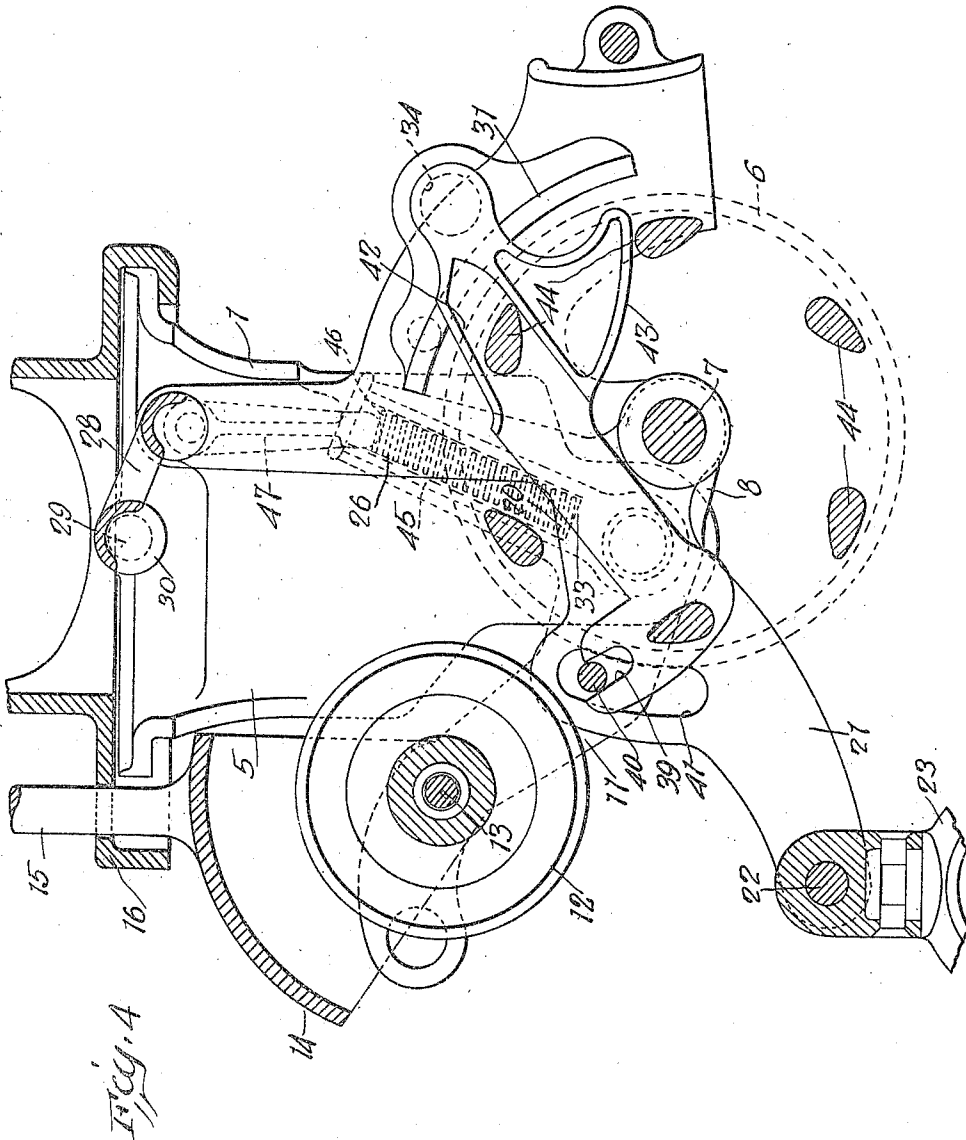
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1,012,692.

Patented Dec. 26, 1911

4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

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HAY-CARRIER.

1,012,692.

Specification of Letters Patent.

Patented Dec. 26, 1911.

Application filed April 27, 1911. Serial No. 623,786.

*To all whom it may concern:*

Be it known that I, PHILIP A. MYERS, a citizen of the United States, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Hay-Carriers, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to hay carriers and the object of the invention is to provide a carrier having means to automatically lock the hoisting rope, to hold the load against downward movement, when the tension on the hoisting rope is relieved, as when the team stops and backs.

To this end it is a further object to provide guides or sheaves about which the hoisting rope passes, which have bodily movement relatively to the supporting frame and which are so connected with the rope lock that when one of said sheaves is subjected to a stronger pull than the other, the rope lock will be moved into its operative position, and, when the last-mentioned sheave is subjected to a pull greater than that to which the first-mentioned sheave is subjected, the rope lock will be moved into its inoperative position.

30 It is also an object of the invention to provide means for retaining the rope lock in either its operative or inoperative position until positive force has been applied thereto.

35 It is a further object of the invention to provide a hay carrier in which the hoisting rope will serve not only to hoist the load but also to control the operation of the rope lock, and in which the lateral movement is imparted to the carrier, to carry the load into the mow, by means other than the hoisting rope.

In the accompanying drawings, Figure 1 is a perspective view of a hay carrier embodying my invention, showing the same in operative position upon the track; Fig. 2 is a vertical, sectional view taken longitudinally to the track; Fig. 3 is a vertical, sectional view, taken on the line *x x* of Fig. 2 and looking in the direction of the arrows; Fig. 4 is a vertical, sectional view, taken on the line *y y* of Fig. 2 and looking in the direction of the arrows; Fig. 5 is a detail view of the supporting lever for the two sheaves and the means for retaining the

sheaves in their adjusted positions; Fig. 6 is a detail view of one of the arms carrying the shoe of the rope lock.

In these drawings, I have illustrated one embodiment of my invention and have shown the same as comprising a main frame 1 having an upper portion 2 consisting of two members spaced apart and carrying rollers 3 adapted to engage a track 4, which may be supported in the usual manner. The frame 1 also comprises two depending plates or webs 5 arranged parallel one to the other and rigidly secured to but preferably formed separate from the upper frame members. The plates 5 are arranged near the center of and transversely to the frame members 2 which extend longitudinally to the track. These plates or webs 5 constitute the supporting members upon which the several parts of the controlling mechanism of the carrier are mounted.

A main guide or sheave 6 is carried by the supporting plates 5 and has both a rotary movement and a bodily movement relatively to the supporting frame. In the construction here shown the sheave 6 is rotatably mounted on a shaft 7, which, in turn, is journaled in the rear ends of two levers 8 arranged on the outer sides of the respective frame members 5 and pivotally mounted thereon between their ends. Preferably each lever is provided with a bearing aperture 9 which receives a trunnion 10 projecting outward from the corresponding frame member 5. Those arms of the levers extending in the rear of the pivotal center thereof and in which the shaft 7 of the sheave 6 is journaled are of less length than the forward arms of these levers, as is clearly shown in Fig. 5. The forward arms of the levers 8, which are indicated by the reference numeral 11, have their extreme forward ends turned upwardly to support a second guide or sheave 12 which is mounted between the forward ends of the two levers 8 on a shaft 13 mounted in said arms. It is apparent, therefore, that the main sheave 6 and the auxiliary sheave 12 are mounted on opposite sides of the axis of the two levers 8 which constitute a supporting device for these sheaves. Consequently, when one sheave moves downward the other must move upward.

A rope guard, preferably U-shaped in cross section and indicated by the reference numeral 14, extends about the upper por-

tion of the smaller or auxiliary sheave 12 and preferably has its arms mounted on the shaft 13 between the opposite ends of the hub of the sheave 12 and the respective arms 11 of the levers 8. This rope guard has an upwardly extending pin or projection 15 which passes through an apertured lug 16 carried by and preferably projecting forwardly from the main frame of the carrier.

A suitable stop, such as a nut 17, is secured to the pin 15 and serves to limit the downward movement of the auxiliary sheave 12, and, consequently, the upward movement of the main sheave 6. By adjusting the stop or nut 17 on the pin the amount of this movement can be regulated. A rope guard 18 extends about the rearward portion of the main sheave 6 and is preferably carried by arms 19 extending rearwardly and downwardly from bell crank levers 20 mounted on the shaft 7 of the sheave 6 between the ends of the hub of that sheave and the corresponding frame members 5. Each of the bell crank levers 20 has one arm extending forwardly and downwardly, as indicated at 21, to a point some distance in front of the frame members 5. The forward ends of these arms 21 are connected one to the other by a transverse bolt 22 upon which is mounted a coupling or ring 23. The hoisting rope, which is indicated at 24, has one end secured to the ring 23 carried by the forwardly extending arms of the bell crank levers 20. This rope is then carried through the pulley blocks 25 to which the hay sling, or fork, is connected, thence upward over the sheave 6, then forward over the sheave 12 and downward about suitable guides to the team or other source of power. The other arms of the bell crank lever, indicated at 26, extend upwardly in substantially vertical positions and have their upper ends apertured to receive trunnions 27 carried by a frame 28 which is provided at its forward end with other trunnions 29 journaled in bearings 30 on opposite sides of the main frame.

A rope lock is provided to grip the hoisting rope and lock the load against downward movement whenever the tension on the hoisting rope is relieved. To this end suitable connections are arranged between the two sheaves 6 and 12 and the rope lock, whereby, when the downward pull on the sheave 12 is greater than the pull on the sheave 6, as when the team is hoisting the load, the rope lock will be moved into and maintained in its inoperative position. As soon as the team stops and permits the hoisting rope to slack off, to even a very slight extent, the downward pull on the rear sheave 6 will exceed that on the forward sheave 12 and will cause the rope lock to grip the hoisting rope and lock the load against downward movement. In the present construction the rope lock comprises a shoe 31

arranged to move toward and away from the periphery of the main sheave 6 and to cooperate with the periphery of the sheave to grip the rope and lock the same. Preferably, this shoe is carried by two bell crank levers 32 and 33 arranged on opposite sides of the sheave. These levers are pivotally mounted on the respective bell crank levers 20 at points forward of the axes of those levers. The shoe may be connected to the levers and the levers mounted on the supporting levers in any suitable manner. As here shown this shoe is provided with a hollow bearing lug 34 adapted to receive inwardly extending trunnions 35 carried by the levers 32 and 33. Each lever is also provided with a trunnion 36 adapted to enter a bearing aperture 37 in the respective bell crank lever 20. Preferably, these trunnions are secured in their bearings by means of pins 38 extending through the trunnion and through washers arranged on the opposite sides of the levers 20. Each bell crank lever, 32 and 33, has its forward arm of less length than its upwardly extending arm and also has its forward arm bifurcated, as indicated at 39. These bifurcated arms engage a transverse bolt 40 which extends through slots 41 in the respective bell crank levers 20 and is supported at its ends in the forward arms of the outer levers 8. One of the levers carrying the shoe 31, here shown as the arm 33, is provided in its upper end with a longitudinal groove 42 formed by providing the inner face of the lever 33 with inwardly extending flanges. This lever is also provided with a rearwardly extending projection or arm 43 having its lower edge curved. The sheave 6 is provided on the side adjacent to the lever 33 with laterally extending projections or lugs 44 having their upper and lower surfaces converging rearwardly.

When the rope lock is in its inoperative position the arm 33 will occupy such a position relatively to the sheave that the lower edge of the bottom flange of the groove 42 and the arm 43 will be out of the path of the projections on the sheave and the sheave will be free to rotate in either direction. If the tension on the hoisting rope is relieved the weight of the load instantly exerts a downward pull on the sheave 6. This pull is transmitted through the shaft 7 to the levers 20 and tends to move these levers bodily downward. The downward movement of the sheave is also transmitted to the bell crank levers 8 and tends to rock these levers about their axes and elevate the forward ends thereof. The combined movements of the levers 20 and 8 cause the levers 32 and 33 to move about their axes a distance sufficient to move the open forward end of the groove 42 into a position to receive one of the lugs on the sheave. The weight of the load not only moves the sheave bodily

downward but also rotates the same rearward. Consequently, the lug which enters the groove in the lever 33 will engage the lower edge thereof and tend to move the lever rearwardly and downwardly until the shoe is brought into engagement with the hoisting rope, and, when the shoe is in engagement with the rope, the pull of the load on the sheave will cause the shoe to exert a continuous pressure on the rope, thus retaining the same against movement. Further, the engagement of the lug with the lower wall of the groove locks the sheave against rearward rotation and thus causes the sheave to constitute a fixed locking member, which cooperates with the shoe. When a load has been dumped or it is desired to continue the elevation of the load a forward pull on the hoisting rope will tend to move the auxiliary sheave 12 downward and thus rock the levers 8 about their axes and also elevate the levers 20. This movement of the levers 8 and 20 rocks the levers 32 and 33 about their axes and moves the shoe of the rope lock out of engagement with the rope. The forward movement of the hoisting rope will also rotate the sheave 6 in a forward direction, causing the adjacent lug to engage the under side of the curved arm 43 and force the lever 33 upward to complete the movement of the rope lock into its inoperative position.

It is desirable that some means should be provided to hold the rope locking device either in its operative or its inoperative position until force has been applied thereto to shift its position. In the present instance this is accomplished by providing each lever 8 with an upwardly extending arm 45 which is hollow and contains a coiled spring 46. The upper end of the hollow arm 45 is open and the lower end of a finger 47 extends into said hollow arm and engages the upper end of the spring therein. The finger 47 is pivotally mounted on the side member of the main frame at a point which lies between the lines of the arm 45 when the latter is in its foremost and rearmost positions, that is, when the locking device is in its inoperative or operative position. Consequently, the pressure of the spring against the end of the finger 47 will be greatest midway between the extremes of the movement of the arm 45, and, when the arm is on either side of its central position, the pressure of the spring on the finger 47 will tend to retain the finger in that position and hold the rope lock either in engagement with the rope or out of engagement therewith, as the case may be, until positive force has been applied thereto.

The hoisting rope 24, which serves not only to elevate the load but also to control the operation of the rope lock, is not used to move the carrier laterally to convey the load into

the mow. This is preferably accomplished by separate means. In the present instance a rope 48 is connected to each side of the main frame, which is here shown as provided with apertured lugs 49 to receive these ropes. These ropes extend about suitable guides and thence downward to the team so that a pull on either rope 48 will move the carrier along the track toward the respective side of the mow. Although the rope lock may be readily controlled by the hoisting rope a separate trip rope may be provided for releasing the lock if this is desired, and, in the present drawings, I have shown such a rope 50, connected to the forward end of one of the levers 8 and extending through a guide 51 carried by the forward end of the corresponding lever 20.

The operation of the device will be understood from the foregoing description of the several parts thereof and it will be apparent that the hoisting rope will be automatically locked against downward movement whenever the tension thereon is relieved and that the locking and releasing of the hoisting rope may be controlled by the hoisting rope itself.

While I have shown and described one embodiment of my invention it will be understood that this form is chosen for the purpose of illustration only and I, therefore, wish it to be understood that I do not desire to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a hay carrier, the combination, with a supporting frame, and a sheave rotatably mounted in said frame and having movement bodily relatively thereto, of a rope lock and an operative connection between said rope lock and said sheave, on which said rope lock is mounted.

2. In a hay carrier, the combination, with a frame, a sheave, and a shaft for said sheave, said shaft having movement bodily relatively to said frame, of a rope lock, and an operative connection between said rope lock and said shaft, on which said rope lock is mounted, whereby the bodily movement of said shaft will actuate said rope lock.

3. In a hay carrier, the combination, with a supporting frame, and a sheave rotatably mounted on said frame and having movement bodily relatively thereto, of a rope lock, connecting devices between said sheave and said rope lock to cause the bodily movement of said sheave to impart movement to said rope lock and to cause the rotary movement of said sheave to impart further movement to said rope lock.

4. In a hay carrier, the combination, with

a supporting frame, a plurality of sheaves mounted on said frame and movable bodily relatively thereto, and a hoisting rope adapted to engage said sheaves, of a rope lock, and connections between said rope lock and said sheaves, on which said rope lock is mounted.

5 5. In a hay carrier, the combination, with a frame, two sheaves mounted on said frame and movable bodily relatively thereto, and a hoisting rope engaging both of said sheaves, and connected with a load on one side of said carrier and with a source of power on the other side of said carrier, of a rope lock, and an operative connection between said rope lock and said sheaves, whereby one of said sheaves will be moved bodily by the load to move said rope lock toward its operative position and the other of said sheaves will be moved bodily by the power applied thereto to move said rope lock toward its inoperative position.

6. In a hay carrier, the combination, with a supporting frame, two sheaves mounted on said frame and movable bodily relatively thereto and a connection between said sheaves, whereby, when one is moved in one direction, the other will be moved in the opposite direction, of a rope lock, and a connection between said rope lock and said sheaves to cause the movement of said sheaves to actuate said rope lock.

7. In a hay carrier, the combination, with a supporting frame, a pair of levers pivotally mounted on said frame on a common axis, and sheaves mounted on said levers on the opposite sides of the axis thereof, of a rope lock, and a connection between one of said levers and said rope lock.

8. In a hay carrier, the combination, with a supporting frame, a pair of levers pivotally mounted on said frame on a common axis, and sheaves mounted on said levers on the opposite sides of the axis thereof, of a lever pivotally mounted on said frame, a rope-gripping member carried by said lever, and means controlled by the movement of the first-mentioned levers for actuating said last-mentioned lever.

9. In a hay carrier, the combination, with a supporting frame, a pair of levers pivotally mounted on said frame on a common axis, and sheaves mounted on said levers on the opposite sides of the axis thereof, of a second pair of levers pivotally supported on said frame, and a rope gripping member carried thereby, said last-mentioned levers having forwardly extending members operatively connected with the first-mentioned levers.

10. In a hay carrier, the combination, with a frame, a pair of levers pivotally mounted on said frame on a common axis, sheaves carried by said levers on opposite sides of the axis thereof, and a second pair

of levers pivotally mounted on said frame and connected with one of said sheaves, of a rope lock, a lever pivotally mounted on said frame and connected with said rope lock, a connection between the last-mentioned lever and the second pair of levers, and other connections between said lever and the first-mentioned pair of levers.

11. In a hay carrier, the combination, with a frame comprising a pair of depending supporting plates spaced apart and arranged substantially parallel, a lever pivotally mounted between its ends on the outer face of each of said plates, two sheaves arranged between said levers and mounted thereon on opposite sides of the axis thereof, and a pair of levers arranged between said plates, adjacent to the inner sides thereof and connected with one of said sheaves, of a second pair of levers arranged between said plates and between the levers of the first-mentioned pair, a rope lock carried by said second pair of levers, and operative connections between said second pair of levers, the first-mentioned pair of levers and the levers on the outer sides of said plates.

12. In a hay carrier, the combination, with a main frame comprising a pair of substantially parallel plates spaced one from the other, of a pair of levers pivotally mounted on the outer sides of the respective plates, a main sheave supported by the ends of said levers on one side of the pivotal centers thereof, an auxiliary sheave mounted on said levers on the other side of the pivotal centers thereof, a second pair of levers arranged within and adjacent to the respective plates, the levers of the second pair being pivotally mounted on an axis coincident with the axis of said main sheave, a third pair of levers arranged within the second pair of levers and pivotally mounted on the respective levers of said second pair, a rope-clamping member carried by the levers of said third pair, and an operative connection between said third pair of levers and said first pair of levers.

13. In a hay carrier, the combination, with a supporting frame, and a sheave rotatably mounted thereon and movable bodily relatively thereto, said sheave having a laterally extending projection, of a rope lock, a lever connected with said rope lock and having a laterally extending part, and a connection between said lever and said sheave whereby the bodily movement of said sheave will move the laterally extending part of said lever into the path of the projection on said sheave and the rotation of said sheave will impart further movement to said lever.

14. In a hay carrier, the combination, with a main frame, a sheave rotatably mounted therein and movable bodily relatively thereto, and a projection carried by

said sheave on one side thereof, of a lever pivotally supported on said frame and having a laterally extending portion adapted to be moved into the path of the projection on  
 5 said sheave, a rope lock connected with said lever, and an operative connection between said lever and said sheave.

15. In a hay carrier, the combination, with a supporting frame, a sheave rotatably  
 10 mounted thereon and movable bodily relatively thereto, said sheave having laterally extending projections, of a rope lock, a lever connected with said rope lock and having a laterally extending part adapted to be  
 15 moved into the path of one of said projections, a curved finger carried by said lever and adapted to be moved into the path of one of said projections, and a connection between said sheave and said lever to actuate  
 20 the latter to move said laterally extending part into position to be engaged by one of the projections on said sheave when the latter is rotated in one direction and into a position to cause said finger to be engaged  
 25 by another of the projections on said sheave when the latter is rotated in the other direction.

16. In a hay carrier, the combination, with a frame comprising depending members,  
 30 of a pair of levers pivotally mounted on the respective frame members on a common axis, sheaves supported by said levers on opposite sides of said common axis, a rope lock, and a connection between said  
 35 rope lock and said levers, whereby the movement of said levers about said axis will actuate said rope lock.

17. In a hay carrier, the combination, with a supporting frame comprising two  
 40 depending members, of a pair of levers pivotally mounted on the respective frame members on a common axis, a pair of sheaves supported by said levers on opposite sides of said common axis, a rope lock, a connection between said levers and said rope  
 45 lock, and means for normally preventing the movement of said lever about said common axis.

18. In a hay carrier, the combination, with a supporting frame comprising two  
 50 depending members, of a pair of levers pivotally mounted on the respective frame members on a common axis, a pair of sheaves supported by said levers on opposite sides of said common axis, a rope lock, a connection between said levers and said rope  
 55 lock, an arm carried by said lever, a spring mounted on said arm, and a finger pivotally supported on said frame and adapted to engage said spring.

19. In a hay carrier, the combination, with a supporting frame comprising two  
 60 depending members, of a pair of levers pivotally mounted on the respective frame members on a common axis, a pair of sheaves

supported by said levers on opposite sides of said common axis, a rope lock, a connection between said levers and said rope lock, a pin connected with said levers and extending through a fixed part of said frame, and a stop carried by said pin to limit the movement of said levers. 70

20. In a hay carrier, the combination, with a supporting frame, and a sheave rotatably mounted thereon and movable bodily  
 75 relatively thereto, said sheave having laterally extending projections, of a rope-gripping member arranged adjacent to said sheave, a lever connected with said gripping member and having a laterally extending  
 80 part, and a connection between said lever and said sheave, whereby the bodily movement of said sheave will cause the laterally extending part of said lever to be engaged by said projection to lock said sheave against  
 85 rotation in one direction.

21. In a hay carrier, the combination, with a supporting frame, and a sheave rotatably mounted thereon and movable bodily  
 90 relatively thereto, of a rope-gripping member arranged adjacent to said sheave, and means actuated by the bodily movement of said sheave to lock the same against rotation and to move said rope-gripping member toward the same. 95

22. In a hay carrier, the combination, with a supporting frame, and a sheave rotatably mounted thereon and movable bodily  
 100 relatively thereto, of a rope-gripping member, a lever connected with said rope-gripping member, an operative connection between said lever and said sheave, whereby the bodily movement of said sheave will cause said rope-gripping member to engage the rope, and means for locking said sheave  
 105 against rotary movement in one direction.

23. In a hay carrier, a frame, a supporting device pivotally mounted between its ends on said frame, sheaves carried by said supporting device on opposite sides of its  
 110 pivotal center, a rope lock, and a connection between said rope lock and said supporting device to cause the movement of said supporting device about its axis to actuate said rope lock. 11

24. In a hay carrier, a frame, a supporting device pivotally mounted between its ends on said frame, sheaves carried by said supporting device on opposite sides of its  
 115 pivotal center, a rope lock, and a connection between said rope lock and said supporting device to cause the movement of said supporting device about its axis to actuate said rope lock, and a device tending to hold said rope lock against movement, thereby retaining the same either in engagement with the rope or out of engagement therewith until  
 120 positive force is applied thereto.

25. In a hay carrier, a frame, a supporting device pivotally mounted between its 13

ends on said frame, sheaves carried by said supporting device on opposite sides of its pivotal center, a rope lock, a connection between said rope lock and said supporting device to cause the movement of said supporting device about its axis to actuate said rope lock, a hollow arm rigidly secured to said supporting device, a spring mounted in said hollow arm, a finger pivotally mounted on said frame between the two limits of movement of the outer end of said arm and having its end extending into said hollow arm and engaging the spring therein, whereby said spring will resist the movement of said supporting device about its pivotal center and will retain said rope lock either in engagement with the rope or out of engagement therewith, as the case may be, until positive force is applied thereto.

26. In a hay carrier, a supporting frame, a sheave mounted on said frame and having bodily movement relatively thereto, a rope lock, and a device tending to hold said rope lock in either its operative or its inoperative position, as the case may be, until positive force is applied thereto.

27. In a hay carrier, a supporting frame, a sheave mounted on said frame and having movement bodily relatively thereto, a rope lock, an operative connection between said rope lock and said sheave, and a device tending to hold said rope lock against movement, thereby retaining the same either in engagement with the rope or out of engagement therewith, as the case may be, until positive force is applied thereto.

28. In a hay carrier, a frame, a supporting device pivotally mounted between its ends on said frame, sheaves carried by said supporting device on opposite sides of its pivotal center, a rope lock, a connection between said rope lock and said supporting device to cause the movement of said supporting device about its axis to actuate said rope lock, and an adjustable stop to limit the movement of said supporting device about its axis.

29. In a hay carrier, a frame, a supporting device pivotally mounted between its

ends on said frame, sheaves carried by said supporting device on opposite sides of its pivotal center, a rope lock, a connection between said rope lock and said supporting device to cause the movement of said supporting device about its axis to actuate said rope lock, a pin carried by said supporting device and extending through a fixed part in said frame, and an adjustable stop mounted on said pin to limit the movement of said supporting device about its axis.

30. In a hay carrier, the combination, with a supporting frame, a sheave rotatably mounted in said frame and having movement bodily relatively thereto, and a hoisting rope engaging said sheave and connected with a load on one side of said carrier and with a source of power on the other side of said carrier, of a rope lock and an operative connection between said rope lock and said sheave.

31. In a hay carrier, the combination, with a frame, a sheave, a shaft for said sheave, said shaft having movement bodily relatively to said frame, and a hoisting rope engaging said sheave and connected with a load on one side of said carrier and with a source of power on the other side of said carrier, of a rope lock and an operative connection between said rope lock and said shaft, whereby the bodily movement of said shaft will actuate said rope lock.

32. In a hay carrier, the combination, with a supporting frame, a plurality of sheaves mounted on said frame and movable bodily relatively thereto, and a hoisting rope adapted to engage said sheaves and connected with a load on one side of said carrier and with a source of power on the other side of said carrier, of a rope lock, and connections between said rope lock and said sheaves.

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

PHILIP A. MYERS.

Witnesses:

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B. M. TUBBS.