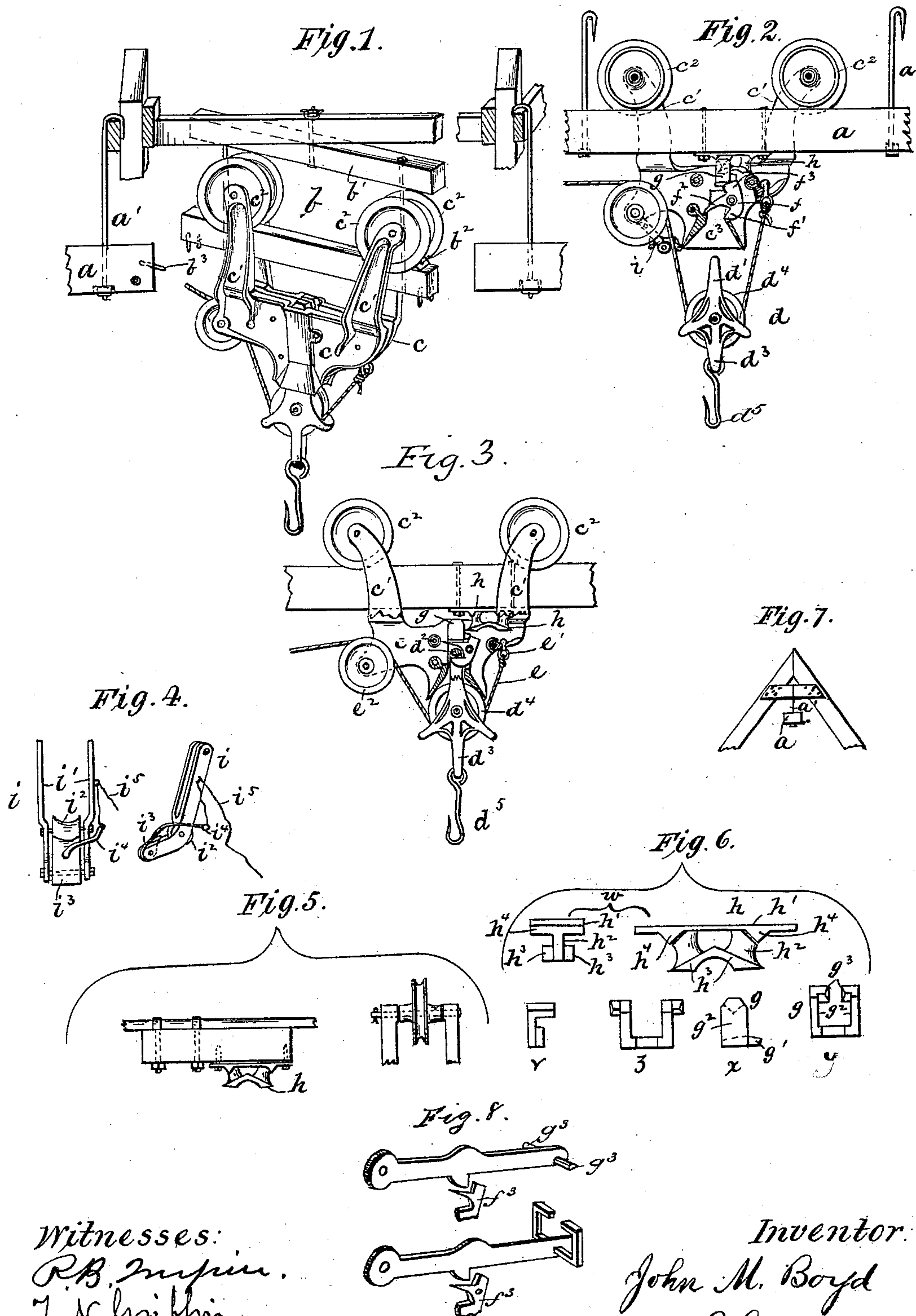


(No Model.)

J. M. BOYD.  
HAY ELEVATOR AND CARRIER.

No. 300,687.

Patented June 17, 1884.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN M. BOYD, OF CHESTER, WISCONSIN.

## HAY ELEVATOR AND CARRIER.

SPECIFICATION forming part of Letters Patent No. 300,687, dated June 17, 1884.

Application filed October 25, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN M. BOYD, a citizen of the United States, residing at Chester, in the county of Dodge and State of Wisconsin, (P. O. Waupun, Fond du Lac county, Wisconsin,) have invented certain new and useful Improvements in Hay Elevators and Carriers; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention has relation to improvements in hay elevators and carriers; and it consists in the peculiar construction of the several parts, and in the combination and arrangement of the same, as will be hereinafter fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the carrier and the turn-table. Fig. 2 is a side view of the carrier on the track, and having one of its side plates broken away to show the position of the interior parts. Fig. 3 is a view substantially like Fig. 2, with the parts in different relative positions. Fig. 4 shows in detail the device employed to hold the load at any desired point below the carrier. Fig. 5 shows in detail the manner of using my invention on a rod or rope for stacking in the field, &c. Fig. 6 shows in detail the stop and the catch-block, with modifications of each; and Fig. 7 is a view on a reduced scale, showing the manner of supporting the rail in the ridge of a barn; and Fig. 8 shows an automatic lever to be used as a substitute for the catch-block, when desired.

$a$  is the rail supported by hangers  $a'$ , which are secured to the rail midway between its sides, and extend up and are made fast to the ridge or roof of the barn or other suitable support.

$b$  is a turn-table constructed by cutting out a section of the rail long enough to support the carrier, and having the hangers connected thereto extended up and made fast to a bar,  $b'$ , which is pivoted centrally to a beam or other

construction, as shown. I provide this turn-table with blocks  $b^2$ , so that the carrier will not roll therefrom, and the ends of the turn-table and of the rails between which it is supported are provided with hooks  $b^3$ , so that the turn-table may be held firmly as a part of the rail proper, when so desired. This construction is useful when it is desired to reverse the carrier, and also where it is desired to carry the load off into an L or a mow of the barn. This is accomplished by arranging a rail leading into the L with its end terminating at a point within the arc described by the end of the turn-table in its revolution, all of which will be readily understood on reference to the drawings.

$c c$  are the side plates of the carrier, from the opposite ends of each of which are projected the hangers  $c'$ , which extend above the rail  $a$ , and have journaled to them the wheels  $c^2$ , which run on the rail on opposite sides of the hangers  $a'$ . The wheels  $c^2$  are removable, their journals being held in place by keys, so that said wheels may be removed and substituted for by two grooved pulleys having long hubs, as shown in Fig. 5, for running on a rod or rope track.

$d$  is the trip having the upper arm,  $d'$ , constructed with the cross-bar  $d^2$ , arranged to be caught by the grapple-hook hereinafter described, and the lower arm,  $d^3$ , is provided with hook  $d^5$ , to which a horse hay-fork may be secured, and the trip is provided with the pulley  $d^4$ . This trip is supported and raised and lowered by the rope  $e$ , one end of which is secured to swivel  $e'$ , which is connected to the carrier by ball-and-socket joint, as shown, and the rope extends down under the pulley  $d^4$  and then up over the pulley  $e^2$ , which is journaled in the side plates,  $c$ , and then is carried through a sheave at the end of the track and down to the ground, where a horse may be hitched. The carrier is provided in its lower side with an opening,  $c^3$ , into which the arm  $d'$  of the trip projects when elevated in the operation of the device, as will be described, and in its upper end it is provided with a recess immediately over the opening  $c^3$ , and in this recess the catch-block hereinafter described is moved up and down in the operation of the device.



$f$  is a grapple pivoted between the plates  $c$  above and slightly to one side of the opening  $c^3$ , and is provided with the lower hook,  $f^1$ , the arm  $f^2$ , and the upper portion,  $f^3$ .

5  $g$  is a catch-block working up and down in the recess formed in the top of the carrier, and its lower end is rested either on the portion  $f^3$  or the arm  $f^2$  when the grapple is in its different positions, as will be described. The construction of this block  $g$  is shown in detail in Fig. 6, in which figure  $x$  and  $y$  are respectively side and edge views of the block  $g$ . The said block is constructed with the lug  $g^1$ , projected laterally from its base, and with the uprights  $g^2$ .  
10  $g^3$  are lugs projected toward each other from the uprights  $g^2$  near the tops of the latter.

At  $z$ , Fig. 6, I show a modification of the catch-block, as will be hereinafter described.

When desired, a catching-lever, (shown in Fig. 8,) provided with a notch or lug on the under side to engage with the extension  $f^3$  of grapple  $f$ , may be used instead of the sliding catch  $g$ . When this lever is used, I prefer to make it of a single bar and provide on its ends the laterally-extended lugs or pins,  $g^3$ , which project outwardly on opposite sides of the bar. I then make the stop in two parts, as shown in drawings. The lever passes between the said parts, and the pins or lugs are engaged by inclines, and the lever lifted in substantially the same manner as the catching-block having the inwardly-projected lugs is lifted; or the end of said lever may be turned up and provided with inwardly-projecting lugs or pins, the same as catch-block, and work with the same stop.

This device is well adapted to be used as a fire-escape. A rod or suitable way is rigged to the side of the building, and the carrier is placed thereon and will travel from end to end by drawing upon the draft-rope in the same manner as it is made to travel on the ways when used in elevating and carrying hay or other materials.

15  $h$  is the stop, which is shown in detail side and edge views at  $w$ . It is constructed with the top plate,  $h^1$ , which is secured on the under side of the rail.

$h^2$  is a central bar depending from the plate  $h^1$ . From the side of the lower end of this bar are projected the lugs  $h^3$ , which are inclined on their upper faces, meeting in the center and inclined downward toward the opposite ends of the stop.

20  $h^4$   $h^4$  are lugs projected down from the plate  $h^1$  above the ends of the inclined lugs  $h^3$ . The bar  $h^2$  is made of a width about equal to the space between the lugs  $g^3$  on catch-blocks  $g$ , and these lugs are engaged, and the catch-block is raised by the inclined lugs  $h^3$  in the operation of the device, as will be described.

At  $V$ , Fig. 6, I show a modification of the stop, in which the inclined lugs  $h^3$  and the upper lugs,  $h^4$ , are extended laterally from a side plate. It will be understood that two of these stops are employed—one on either side of the

track of the carrier—that when this stop is used the catch-block is constructed as shown at  $y$ , with the lugs  $g^3$  projected out and arranged to engage the inclined faces of the lower lugs. These stops  $h$ , it will be seen, are exactly the same at each end, and they will operate the same when the carrier comes from one direction as from another. In practice I secure several of these stops along the rail at points where it is desired to raise the loads, said loads being dropped at any desired point by means of the trip-rope attached to the fork, which may be secured on hook  $d^5$ , as before described.

80 It is frequently advantageous and desirable to carry the load along a considerable distance below the carriage, especially when the point into which the hay or other article is being packed is considerably lower than the rail on which the carrier runs, as it saves the labor of drawing the load all the way up to the carrier, and in order to do this I employ the catch  $i$ , composed of the side bars,  $i^1$ , the anti-friction roller  $i^2$  and the pawl  $i^3$  and its lever  $i^4$ . The upper ends of the bars  $i$  are pivoted or otherwise secured to the carrier-plate  $c$  on or near the axle of pulley  $e^2$ , and they extend down a short distance in front of the rope  $e$ , and are then bent across on either side to the opposite side of the rope. The roller  $i^2$  is journaled in front of the rope, and serves as a bearing therefor. I prefer to use this roller, though it will be understood any other bearing would answer the purpose, though not so well. The pawl  $i^3$  is pivoted between the lower ends of bars  $i^1$  on the opposite sides of the rope from the bearing  $i^2$ , the rope passing between the bearings  $i^2$  and the pawl  $i^3$ . The lever  $i^4$  has one end made fast to the pawl  $i^3$ , and its opposite end is made fast to a cord,  $i^5$ , which extends up through an eye fixed to the side of one of the bars  $i^1$ , and thence down to within reach of the operator. Thus it will be seen that when drawing the trip and pulley with the load up toward the carriers the rope  $e$  will pass freely up through between the bearings  $i^2$  and the pawl  $i^3$ , but that the rope  $e$  cannot pass down between the said pawl and bearing unless the pawl is raised by drawing on the cord  $i^5$ , thus freeing the point of the pawl from the rope, in which it will embed itself as the rope passes down unless it is freed, as described. I have only shown this catch in Figs. 2 and 4. I regard it as particularly advantageous for use in the field and in warehouses, &c.; also when the carrier is used as a fire-escape by running it on a track suspended at the top and front of a row of buildings.

125 In Fig. 5 I show the manner in which my stop may be supported on a rod or rope, and in the same figure I show a grooved pulley adapted to run on the rod or rope with the hangers  $c'$ , depending from the opposite sides thereof.

130 In the operation of my invention, when the parts are in the position shown in Fig. 2, it



will be seen the catch-block is rested down on the portion  $f^3$  of the grapple, and that it cannot escape from the stop  $h$  on account of the depending lugs  $h^4$ , which prevent its moving out from either end of the stop. Now, if the trip  $d$  is raised, the top of cross-bar  $d^2$  will strike arm  $f^2$  of the grapple and raise it and move the portion  $f^3$  out from under the catch-block  $g$ , and the latter will fall onto the arm  $f^2$ , and can thus slide out of the stop  $h$ . The hook  $f'$  in the meantime has passed under bar  $d^2$  and securely holds the trip with its load, which may be carried to any suitable point desired. Now, suppose the several parts are in the position shown in Fig. 3, and that the stop  $h$ , therein shown, is directly over the point where it is desired to drop the fork and raise the load. It will be seen that as the carrier approaches the stop the lugs  $g^3$  on the catch-block  $g$  will engage the inclined faces of the lugs  $h^3$  and the block will be raised, releasing the grapple which has before been held by the block resting down in front of the portion  $f^3$ , and the trip with the fork escapes, drawing the grapple into the position shown in Fig. 2, with the portion  $f^3$  under the catch-block  $g$ .

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

1. In a hay elevator and carrier, the combination, with the track, of a detached section or turn-table supported in a horizontal plane on pivotal bearings, and adapted to receive the carrier from either end, and to permit said carrier to be run entirely across it, substantially as described, and for the purposes specified.

2. In a hay elevator and carrier, the combination, substantially as described and shown, of the stop  $h$ , constructed with the upper lugs,  $h^4$ , and the lower inclined lugs,  $h^3$ , and the catch-block  $g$ , provided with the lugs  $g^3$ , and placed and sliding in a suitable recess in the body of the carrier, substantially as and for the purposes set forth.

3. The combination, in a hay-carrier, of the single track or way, having stop provided with lateral guides attached to the under side thereof, the catch supported on the carrier and provided with lateral lugs adapted to engage said guides, the grapple pivoted in the carrier, having a hook to engage the sheave-frame, and provided with an extension above its pivotal center, adapted to be engaged by the catch, and the sheave-frame and elevating-rope, substantially as set forth.

4. The combination, with the carrier and the elevating-rope, of the grapple or rope-clamp  $i$ , supported on the carrier, and hanging between the sheave-frame and the guide-pulley, and provided with means, substantially as described, whereby the draft-rope may be held or released, substantially as set forth.

5. In a hay elevator and carrier, the combination, with the carrier-frame, of the catch  $i$ , having the upper end of its bars hung upon

axle of the pulley  $e^2$ , or otherwise fixed to the frame, the roller  $i^2$ , journaled in the lower ends of said bars, and the pawl  $i^3$ , pivoted to the bars  $i^1$ , and arranged to grasp the rope passed between the trip  $d$  and the guide-pulley  $e^2$ , and provided with the lever  $i^4$ , connected to the operating-cord  $i^5$ , substantially as set forth.

6. The combination, with the frame  $c$  and the trip  $d^2$ , of the grapple  $f$ , having the hook  $f'$ , the arm  $f^2$ , and upper portion,  $f^3$ , and a catch-block sliding vertically and dropping in front of the portion  $f^3$ , and locking the grapple when the latter is engaged with the trip, substantially as and for the purposes set forth.

7. In a hay elevator and carrier provided with a catch, having laterally-projected lugs, the stop  $h$ , composed of the main piece  $h^2$  and the inclined guide-lugs  $h^4$   $h^3$ , projected out from opposite sides of said piece  $h^2$  at respectively the upper and lower sides thereof, and adapted to engage with the catch, substantially as and for the purposes specified.

8. In a hay-carrier, the combination, with a suitable grasping device for supporting the sheave-frame and a suitable way, of a stop attached to the way, said stop being formed with a downwardly-projecting center-piece provided with lateral extensions or lugs on each side, adapted to raise the catch when the carrier approaches from either end of track, and an automatic catch adapted to engage with said stop and pass the same when desired, substantially as set forth.

9. In combination with the carrier-frame, mechanism for supporting the sheave-frame, and a stop secured on the track or way, and provided with means whereby to raise the catch, a sliding catch supported by the carrier-frame and resting upon and being supported by the mechanism for supporting the sheave-frame when in contact with the stop, and arranged in position to drop in engagement with and lock said sheave-frame supporting mechanism when released from the stop, substantially as set forth.

10. The combination, with a hay elevator and carrier and a suitable track or way, of a stop secured to the under side of track, and provided with a lower inclined lug,  $h^3$ , and an upper stop-lug,  $h^4$ , and an automatic catch supported on the carrier, and adapted to be raised by the lower inclined lug and held in contact with the upper stop-lug of the stop, substantially as and for the purposes specified.

11. In a hay elevator and carrier adapted to run upon a single rail or way, the combination of the stop secured on the track or way, and provided with lower inclined lugs,  $h^3$ , and upper stop-lug,  $h^4$ , the grapple pivoted in the carrier and provided with an extension,  $f^3$ , above its pivot, and the automatic catch provided with lateral lugs arranged to engage the lugs of the stop, said catch being arranged and adapted to alternately engage with said lugs on stop or rest down in front of extension  $f^3$



and lock the grapple, substantially as described, and for the purposes specified.

12. In a hay elevator and carrier adapted to run upon a single track or way, the combination, with the carrier, and suitable means there-  
5 in for supporting the sheave-frame, of the stop secured on the under side of the track or way, and provided with lateral extensions or lugs, whereby to raise the catch, and suitably formed  
10 to permit said catch to pass it, as described, and an automatic catch adapted to alternately engage and lock the mechanism for supporting the sheave-frame as the carrier leaves the stop, and to be locked or held up against the  
15 stop by said mechanism when in contact with the stop, substantially as and for the purposes specified.

13. In a hay-carrier, the combination, with a stop secured on the track and provided with  
20 suitable lateral guides and suitable devices in the carrier for supporting the load, of the catch arranged in the carrier, and having its upper or outer end bifurcated, forming up-

wardly-projected arms on its opposite sides, and lugs projected or bent inward toward each  
25 other from the said arms, substantially as set forth.

14. The hay elevator and carrier substantially as described and shown, composed of the main frame provided with traveling wheels  
30 adapted to run upon a single track or way, and pulleys, the grapple arranged therein and formed with hook  $f'$ , arm  $f^2$ , and upward extension  $f^3$ , and catch  $g$ , arranged above the grapple, and adapted to drop down in front of  
35 extension  $f^3$  and lock said grapple, and provided with lateral lugs  $g^3$ , whereby it may be operated to engage and release the grapple, substantially as set forth.

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

JOHN M. BOYD.

Witnesses:

A. S. BOYD,  
W. H. TAYLOR.