(No Model.)

G. RUNDLE.

Hay Elevator and Carrier.

No. 232,548. Patented Sept. 21, 1880.

Fig. 1.

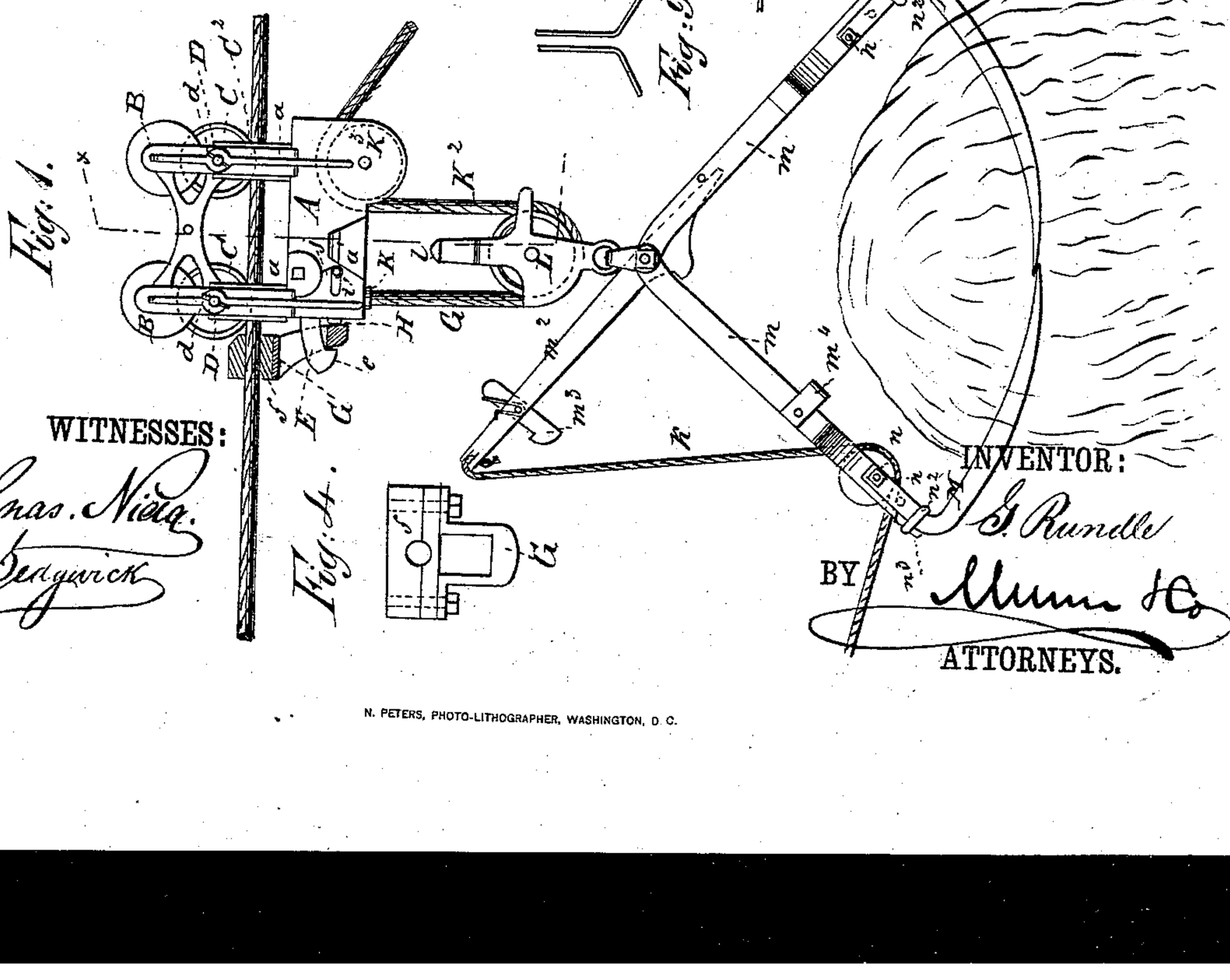

Fig. 2.

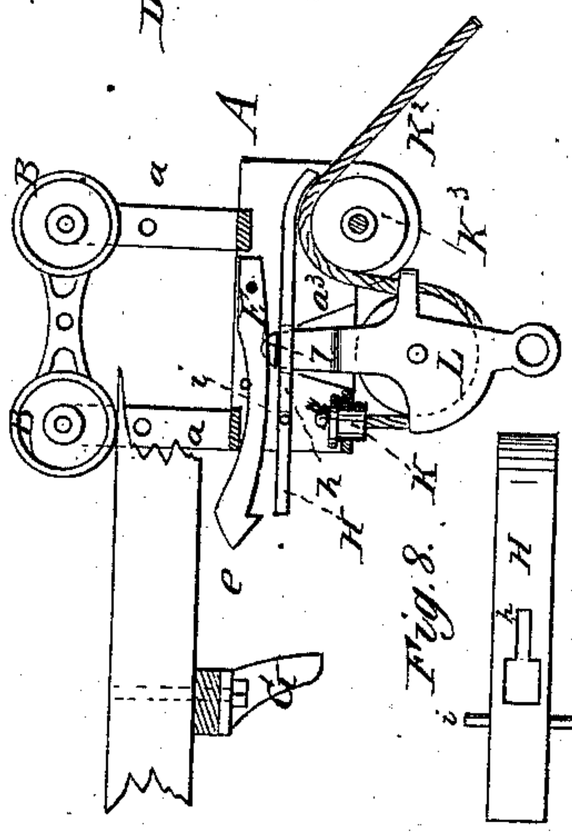

Fig. 3.

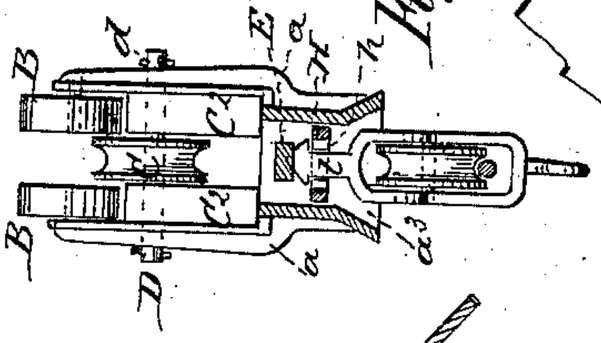

Fig. 4.

Fig. 5.

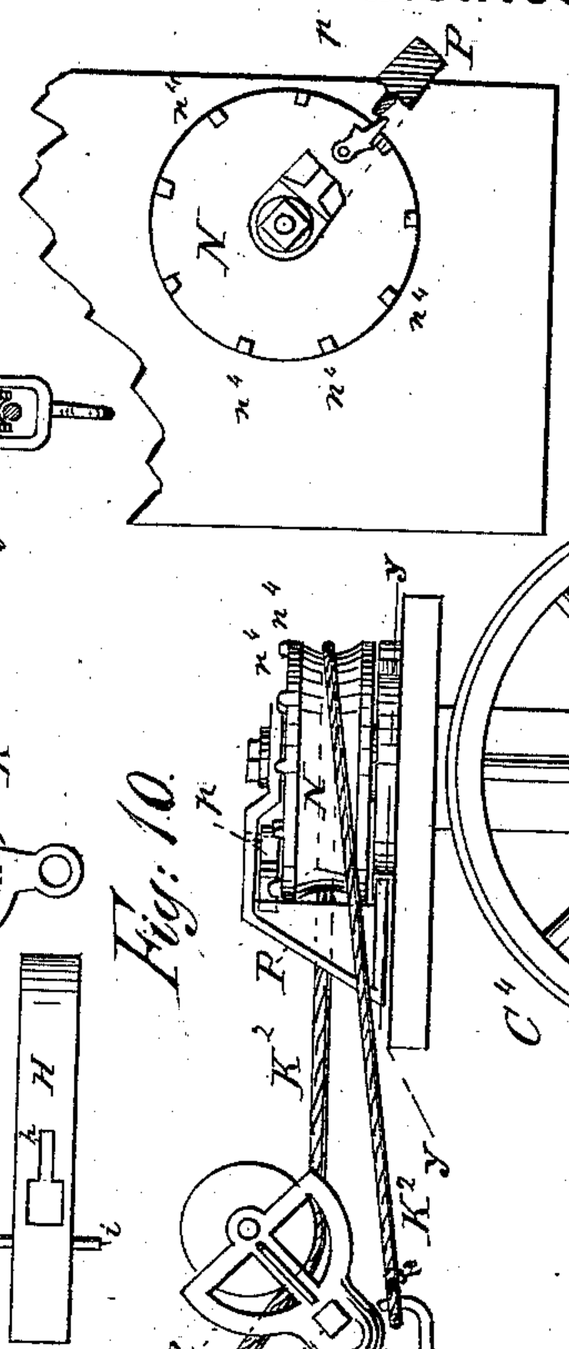

Fig. 6.

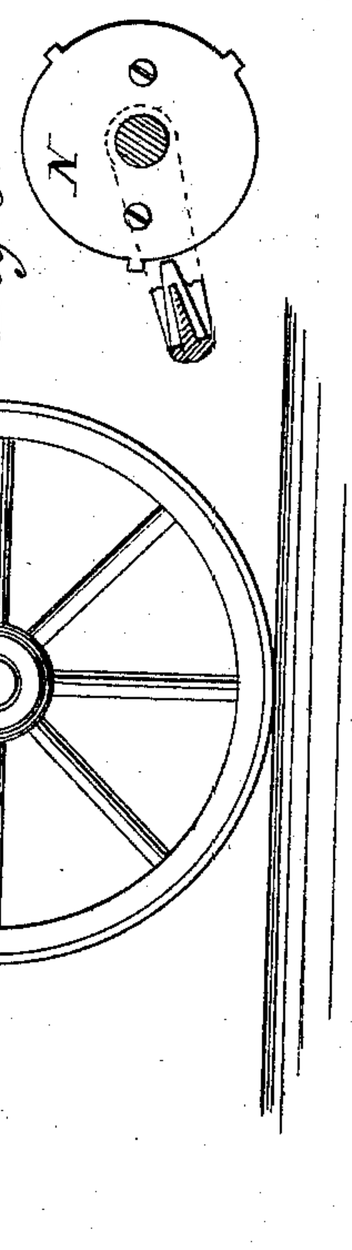

Fig. 7.

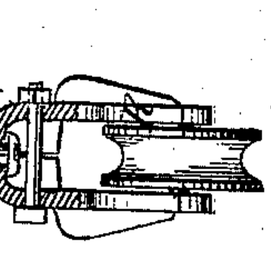

Fig. 8.

Fig. 9.

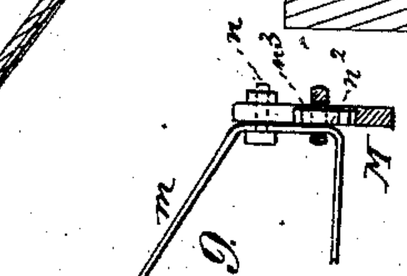

Fig. 10.

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UNITED STATES PATENT OFFICE.

GEORGE RUNDLE, OF PALMYRA, WISCONSIN.

HAY ELEVATOR AND CARRIER.

SPECIFICATION forming part of Letters Patent No. 232,548, dated September 21, 1880.

Application filed March 11, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE RUNDLE, of Palmyra, in the county of Jefferson and State of Wisconsin, have invented a new and useful Improvement in Hay Elevators and Carriers, of which the following is a specification.

My invention consists in certain novel details of construction, arrangement, and combination of a hay-fork, a carrier, and devices for raising and lowering the fork and its load and for operating the carrier, as hereinafter particularly described and set forth.

In the accompanying drawings, Figure 1 is a side view of the carrier and fork in position for use when a rope or cable track is employed. Fig. 2 is a detail sectional view, showing a portion of the apparatus, and also showing a wood track. Fig. 3 is a vertical section taken in the line *x x* of Fig. 1. Fig. 4 is a detail view of the track-latch. Fig. 5 is a top view, partly in section, of the pulley to be used on a cart or on a post. Fig. 6 is a section taken in the line *y y* of Fig. 10. Fig. 7 is a detail sectional view of my improved pulley-block. Fig. 8 is a plan view of the slotted slide-bar. Fig. 9 is a detail sectional view of a portion of the fork, as hereinafter referred to. Fig. 10 is a side view of the cart, the stationary pulley, and the post to which the rope is secured.

Similar letters of reference indicate corresponding parts.

The carrier employed in connection with this apparatus is adapted for use on tracks of various descriptions, as wood, rope, rod, or cable; and it may be used both indoors and out, as for loading in a barn or for stacking in the field.

It consists of a metal casting, A, from which extend upward two pairs of vertical arms, *a a*. In these two pairs of arms, near their upper ends, are journaled four smooth-faced rollers, B B B B, and between them, lower down, two grooved rollers, C C. The rollers B are permanent, but the rollers C are removable. The latter have their bearings on shafts D, which pass through the arms *a*, and are held in place by keys *d*. On either side of each grooved roller C is a block, C^2. These blocks hold the rollers in place on the shaft.

When the track is composed of a rope, rod, or cable the carrier is arranged, as shown in Fig. 1, so that the grooved wheels C engage with the track.

When the track is composed of a wooden or other flat-surfaced beam the carrier is arranged, as shown in Fig. 2, so that the smooth-faced wheels B engage with the track. In such case the grooved wheels C are detached, which is done by removing the keys *d* and withdrawing the shafts D, so as to allow the wheels C and blocks C^2 to be removed.

The carrier A is provided with means for holding it steadily in position on the track while the fork is securing the load to be elevated.

In Figs. 1, 2, and 3, E represents a latch, consisting of an elastic bar having its rear end fastened in a recess in the carrier A and its front end formed into a hook, *e*.

In Figs. 1, 2, and 4, G represents a loop or stirrup for the engagement of the latch E. When a rope, rod, or cable track is used the stirrup is attached to a block, *f*, (see Figs. 1 and 4,) having a hole for the passage of the rope. When a flat track is used (see Fig. 2) the stirrup is screwed or bolted directly to the track. The stirrup G is located at a point on the track directly over the load which is to be raised. When the carrier is run up to allow the fork to secure a load the latch E catches in the stirrup G and holds the carrier, as shown in Fig. 1, until released by the devices and in the manner now to be described.

In Figs. 1, 2, and 3, H represents a bar, which is arranged to slide longitudinally in the recess of the carrier A, beneath the latch E. In the bar H is a slot, *h*, the front portion of which is enlarged into a square hole. Two pins or studs, *i*, project laterally from the bar H and engage with springs *j*, which have a tendency to keep the bar H pushed forward or toward the stirrup G.

In the front portion of the carrier is a swivel-ring, K, to which is attached one end of the hoisting-rope K^2. This swivel-ring prevents the twisting or knotting of the rope. The rope passes through a block, L, and over a pulley, K^3, in the rear portion of the carrier A. The block L is provided with an upwardly-extending arm, the top of which is a head, *l*, of pyramidal form, and in the bottom of the carrier A is a cavity, a^3, of corresponding pyramidal

form, but larger. The fork is connected to the lower end of the block L.

When the fork has secured its load the hoisting-rope K^2 is pulled so as to cause the pyramidal head *l* to enter the cavity a^3, which cavity guides it into the slot *h* of the bar H and forces back said bar until the head *l* has passed the square portion of the slot, whereupon the springs *j* force the bar H forward again, and the head *l* engages with the narrow portion of the slot and holds the load suspended, as represented in Fig. 2. Forcing back the bar H releases the head *l* of the block L, thereby allowing the grapple to descend for a fresh load. The latch E is released from the stirrup G, so as to leave the carrier free to travel on the track to the place of discharge by the head *l* of the block L coming in contact with said latch and elevating its forward end.

The fork shown herein consists of two pairs of tines, attached to arms *m*, each of which is made of flat bar metal bent to the proper shape. Each tine M has the end of its shank perforated, and the portion of the arm with which said shank engages has two perforations. The tine is secured to the arm by a screw-bolt, *n*, passing through a perforation, a sliding collar, n^2, surrounding the shank and the contiguous portion of the arm, and a wedge, n^3, inserted between the collar n^2 and the shank and arm. As shown in Fig. 1, the fork is at its smallest size. By removing the wedge n^3 and placing it at the opposite end of the collar the fork is made larger. By removing the bolt *n* and drawing out the shank until its perforation is opposite to the second perforation in the arm, and then placing the wedge in the first position, a third size of fork is obtained; and by again placing the wedge in the second position a fourth size is obtained.

The fork has a spring-latch, m^3, on the trip-lever m^2, for engagement with a catch, m^4, on the opposite arm, *m*, in order to hold the fork open when descending for a load. This latch may be readily released by hand.

The hoisting-rope K^2 may be operated in any suitable manner; but I prefer to use a device such as is represented in the drawings, consisting of a cart, C^4, carrying a vertical drum or pulley, N, provided with projections n^4 on its upper side for engagement with a reversible pawl, *p*, carried by a skeleton lever, P. The pulley N works loosely on a vertical pin projecting from the cart, and said pin also forms the fulcrum for the lever P. (See Figs. 10, 5, and 6.) The rope K^2 passes from the pulley K^3 to a stationary pulley on or near the floor or the ground, thence around the pulley N just described, and then the end of the rope is made fast, as shown in the drawings. By this means the travel of the team is reduced about one-half. When the fork and its load have reached the place of discharge the pulling of the trip-lever cord *k* to open the fork, discharge the load, and run back the carrier slackens the hoisting-rope K^2, so as to cause it to allow the carrier to run back freely. When the carrier reaches the first position the stirrup G strikes the end of the bar H and pushes it back, so as to bring the enlarged portion of the slot *h* immediately under the head *l* and allow the fork to drop, and at the same time the latch E engages with the stirrup G and holds the carrier, as before described.

For engaging the hoisting-rope near the floor or ground, I employ the pulley-block shown in Figs. 10 and 7. The block R is made of cast metal, divided transversely to the axis of the sheave or pulley, with a socket in the top for the head of a hook, ring, or screw, arranged to swivel.

The sheave is made of wood, attached rigidly to an iron shaft, which revolves with it, and thus prevents wearing of the wood. The parts are held in place by a screw-bolt, *s*, passing through the two halves of the block. By this construction of the block provision is made for the use of either a hook, ring, or screw.

The bar H has its rear end curved, as shown in Figs. 2 and 3. When in the position shown in Fig. 2 this bar presses on the rope K^2 above the pulley K^3 and helps to hold the load in suspension. When the bar is forced back by striking the stirrup G the rear end rises and allows the rope to run freely.

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

1. The carrier A, provided with the smooth-faced rollers B and removable grooved rollers C and blocks C^2, as shown and described, for the purpose specified.

2. The combination, with carrier A and track-stirrup G, of the elastic bar E, fastened at the rear in a recess of carrier, formed at front into a hook, *e*, and adapted to connect with said stirrup, as described.

3. The spring-actuated slide-bar H, having slot *h*, squared at front, and the studs *i*, in combination with the carrier A and latch E, as and for the purpose set forth.

GEORGE RUNDLE.

Witnesses:
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EDWIN PEARDON.