

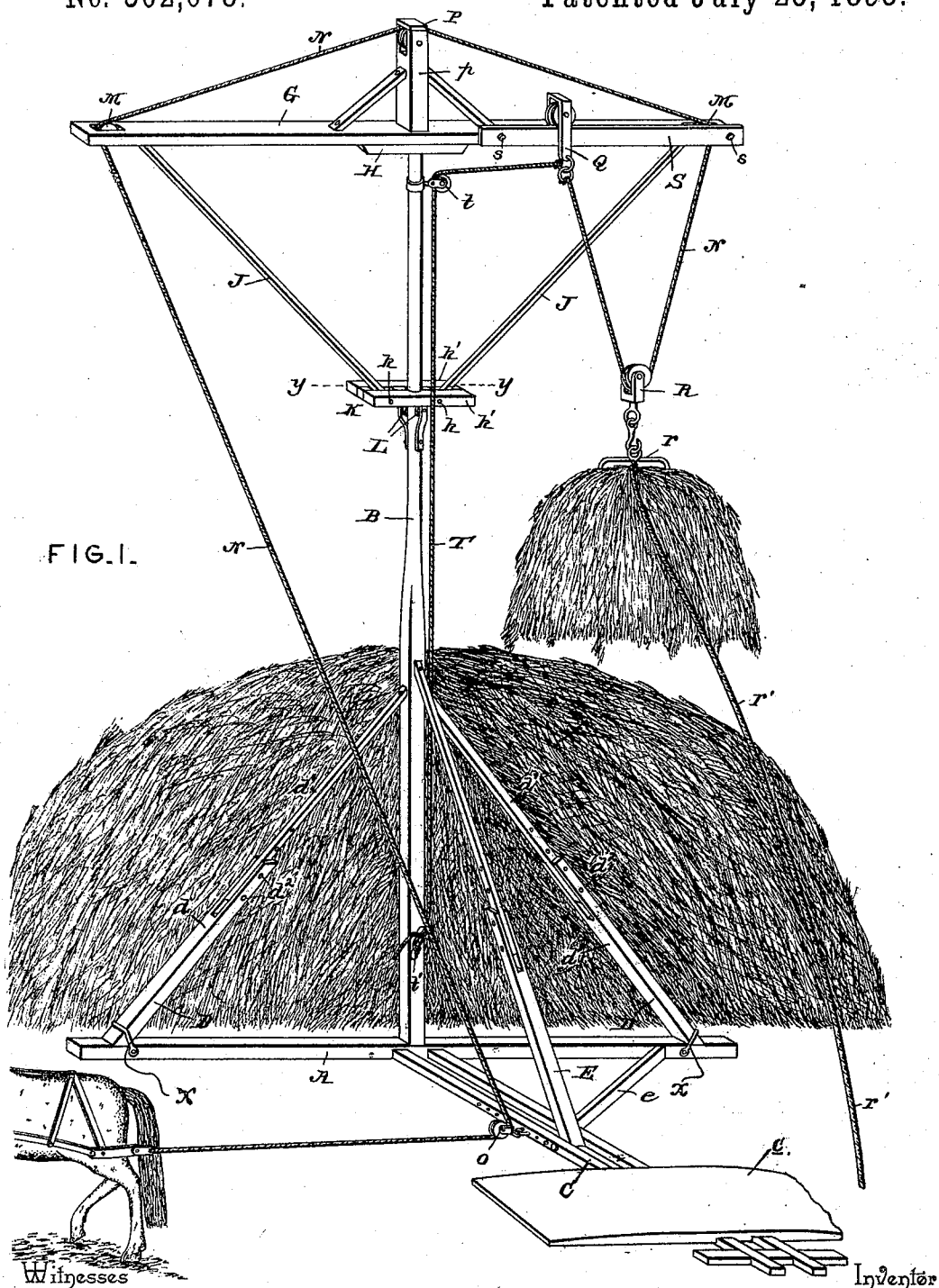
(No Model.)

2 Sheets—Sheet 1.

J. F. HUTCHINSON.
HAY DERRICK.

No. 502,078.

Patented July 25, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

JACOB F. HUTCHINSON, OF BASALT, IDAHO.

HAY-DERRICK.

SPECIFICATION forming part of Letters Patent No. 502,078, dated July 25, 1893.

Application filed January 16, 1893. Serial No. 458,498. (No model.)

To all whom it may concern:

Be it known that I, JACOB F. HUTCHINSON, a citizen of the United States, residing at Basalt, in the county of Bingham and State of Idaho, have invented a new and useful Hay-Derrick, of which the following is a specification.

This invention relates to hay derricks; and it has for its object to provide certain improvements in that class of derricks, which are particularly employed for elevating hay from a wagon and swinging the same onto the stack, but the derrick can of course be employed for loading and unloading purposes, generally, as ordinary derricks.

To this end the invention primarily contemplates an improved construction of derrick which can be arranged alongside of the stack, and close up to the same, and held in such position without the use of guy ropes, or of braces on that side next to the stack, and improved devices used in connection therewith whereby the hay can be automatically swung onto the stack, and in a proper position thereon according to its width.

With these and other objects in view which readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts, hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of a hay derrick arranged in operative position. Fig. 2 is an enlarged longitudinal sectional view of the swinging derrick arm or beam and the upper end of the derrick mast or pole. Fig. 3 is a detail sectional view on the line $x-x$ of Fig. 1. Fig. 4 is a detail sectional view on the line $y-y$ of Fig. 1. Fig. 5 is a detail sectional view of one of the side braces and its connection with the base or sill.

Referring to the accompanying drawings, A represents the derrick base sill in which is secured the lower end of the stationary derrick mast or pole B, which is of a suitable height so as to accommodate the derrick for use in connection with the highest stacks.

Secured at their inner ends to one side of the base sill A, on opposite sides of the mast or pole B, are the extended ground timbers C. The extended ground timbers C, are prefer-

ably diverged from their connection to the base or sill, and are connected at a suitable distance therefrom, preferably by a platform c, on which the rear or front wheels of the wagon to be unloaded stand, so that the base or sill and the mast or pole arising therefrom are held firm and stationary during the operation of unloading and stacking the hay. Opposite sectional side braces D, are loosely connected at their upper ends to the mast or pole B, and at their outer lower ends to the sill A, near its ends, by the removable slip clevises or clips x , which provide a firm though removable connection with the said sill. The said sectional braces D, comprise the opposite members d and d' , the members d , being bifurcated to receive the other members d' , and both members of which are adjustably connected together on the adjustment bolts d^2 , engaging perforations d^3 , in both members. A front brace E, similar in construction to the braces D, and similarly adjustable, is attached to the front side of the mast or pole B, and is connected at its lower outer end to the diverging ground timbers C, which latter are also braced by an auxiliary lateral brace e , connected to one of the ground timbers and to the base or sill A.

It will be seen, by reason of the adjustable braces for the derrick mast or pole, and the sill and ground timbers, that the stationary part of the derrick can be readily adjusted to unlevel and uneven ground, so that the derrick can be firmly braced in any position it may be placed.

Secured in and projecting above the extreme upper end of the mast or pole B, is the pointed pivot stud or pin F, which forms a pivotal support for the swinging horizontal derrick arm or beam G. The horizontal derrick arm or beam G, has bolted to the under side thereof at its center the recessed block H. The recessed block H, is bolted to the beam or arm G, on the bolts h , and clamps in position to the beam or arm the metallic bearing plate I. The metallic bearing plate I, is provided with a bearing socket i , which is aligned with the perforation i' , in the clamping block H, and said perforation receives the projecting pivot or stud pin F, the pointed end of which finds a bearing in the socket of the bearing plate. By reason of the pivotal con-

nection of the swinging derrick arm or beam to the mast or pole, the said beam or arm is free to swing to any side of the said mast or pole, and owing to the fact that such arm or beam extends equal distances from both sides of its point of pivot, the said beam or arm is evenly balanced so that there is no undue friction on the pivot.

Braces J, are connected to the beam or arm G, near its opposite ends and lead therefrom to the sectional brace collar K, to which the lower ends of the braces are attached on the bolts *k*, which also connect the opposite sections *k'*, of said collar, which loosely embraces the derrick mast or pole. The said collar K, turns freely with the derrick beam, and being connected therewith by the braces J, always holds the same at right angles to the mast or pole, thereby always centering the pivot for said beam, and thus avoiding undue friction, while at the same time providing means for strengthening and bracing the swinging beam or arm. In order to brace the turning collar on the mast or pole, suitable supporting rollers L, may be attached to the mast or pole directly under said collar, as illustrated in full lines in Fig. 1, this construction also forming an auxiliary pivotal support for the swinging frame, comprising the derrick beam or arm and its connected braces.

Arranged in opposite ends of the swinging beam or arm G, are the opposite guide pulleys M, over which passes the hoisting rope N, one end of which passes to the ground pulley O, adjustably attached to one of the ground timbers C, and is connected with the draft animal usually employed in machines of this character. The portion of the hoisting rope N, between the opposite ends of the derrick beam or arm is elevated by the intermediate pulley P. The intermediate pulley P, is journaled in the upper end of the braced standard *p*, secured to and braced from the center top portion of the beam or arm G, and not only serves to elevate the rope above the beam or arm, but also serves to relieve the latter from a portion of the strain which would otherwise be entirely at its ends.

The hoisting end of the rope N, passes from one of the end pulleys M, to the rope adjusting traveler Q, to which the hoisting rope is attached, and the portion of the hoisting rope between such traveler and the adjacent end pulley M, at one end of the beam or arm, carries the fork pulley R, to which is attached the usual hay fork *r*, the trip rope *r'*, of which, is under the control of a person in the wagon.

The rope adjusting traveler Q, is arranged to be adjusted on the off-standing track S. The off-standing track S, is secured to one side of the beam or arm Q, on the bolts *s*, and is arranged between one end of such beam or arm and the mast or pole B, and said traveler Q, is adjusted to, and held in, any position by means of the traveler adjusting rope T. The traveler adjusting rope T, is connected at its upper end to the traveler Q, and, traveling

over a suitably arranged guide pulley *t*, on the mast or pole, is led to a stay or pin *t'*, on the mast or pole near its lower end, to which the rope can be fastened after adjusting the traveler in any position.

Now it will be readily seen, owing to the disposition of the ground timbers, C, on the side opposite to the stack, that the swinging derrick beam or arm will lie almost parallel therewith when the fork is taking its load from the wagon. After the fork has been filled, the draft animal is started and the hoisting rope N, drawn through the adjustable ground pulley O. The fork with its load now rises, and the derrick beam or arm necessarily at the same time swings around, so that the fork is brought over the stack, and when it reaches the proper point the same can be tripped in the usual manner, and then drawn back to the wagon by means of the trip rope, as usual. The swing of the fork, or the circle in which it moves, is regulated by means of adjusting the traveler Q, to and away from one end of the swinging derrick arm or beam, and holding the same in its adjusted position by means of the rope T.

The rapidity with which the swinging frame turns while the hay is being elevated, is regulated by the distance at which the pulley O, is attached to the ground timbers away from the base or sill, as will be readily apparent.

From the foregoing it is thought that the construction, operation, and many advantages of the herein described derrick will be apparent to those skilled in the art, and I will have it understood, that changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a derrick, the ground sill, ground timbers secured to and extended from one side only of the sill and having at a point near their outer ends a weight platform, a braced mast or pole arising from the ground sill at right angles thereto and adapted to lie close to the point of stack, a swinging frame pivotally supported on the upper end of the mast or pole, and having rope pulleys, and a hoisting rope arranged over said pulleys, substantially as set forth.

2. In a hay derrick, the combination of a stationary mast or pole having a pivot pin or stud at its upper end, adjustable braces, for said mast or pole, extended ground timbers carrying near their outer extremities a weight platform, a swinging frame having a removable bearing plate attached to its under side and resting on said pivot pin or stud, and a turning collar loosely embracing the mast or pole, and hoisting devices, substantially as set forth.

3. In a hay derrick, the combination of the ground sill, ground timbers secured to and

extended from one side of the sill, a weight platform arranged near the outer ends of said timbers, a stationary mast secured at its lower end to the sill, sectional adjustable braces 5 D loosely connected to the mast and removably to the sill near its ends and comprising separate members having their meeting ends adjustably connected, a similar sectional adjustable brace attached to one side of the 10 mast and to the ground timbers, a swinging frame balanced on the mast, and adjustable hoisting devices arranged on said swinging frame, substantially as set forth.

4. In a hay derrick, a stationary mast or 15 pole having a pivot pin or stud at its upper end, a horizontal swinging derrick arm, a recessed block removably clamped to the center under-side of said arm and having a central perforation, a metallic bearing plate fitting the recess of the block and clamped 20 thereby to the arm, said bearing plate having a socket adapted to receive the point of the pivot pin or stud which projects through the perforation in said block, a sectional brace 25 collar loosely embracing the mast or pole, braces connecting said collar and opposite

portions of the swinging derrick arm, roller supports for the collar, and adjustable rope devices arranged on the swinging arm, substantially as set forth.

5. The combination of a stationary mast or pole, a horizontal balance derrick arm pivotally supported on said mast or pole, a track removably bolted to one side of said arm, a 30 traveler moving on said track, means for adjusting said traveler, rope pulleys arranged in opposite ends of the swinging arm, an intermediate pulley supported above the center of said arm, an adjustably arranged ground 35 pulley, and the combined fork-hoisting and derrick arm-turning rope, arranged over the several pulleys and connected at one end to the adjustable traveler, substantially as set 40 forth.

In testimony that I claim the foregoing as 45 my own I have hereto affixed my signature in the presence of two witnesses.

JACOB F. HUTCHINSON.

Witnesses:

JAMES McTUCKER,
MARSHALL ORR.