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Patented Aug. 5, 1902

T. CASCADEN, JR.

HAY STACKER.

(Application filed May 29, 1902.)

(No Model.)

2 Sheets—Sheet 1.

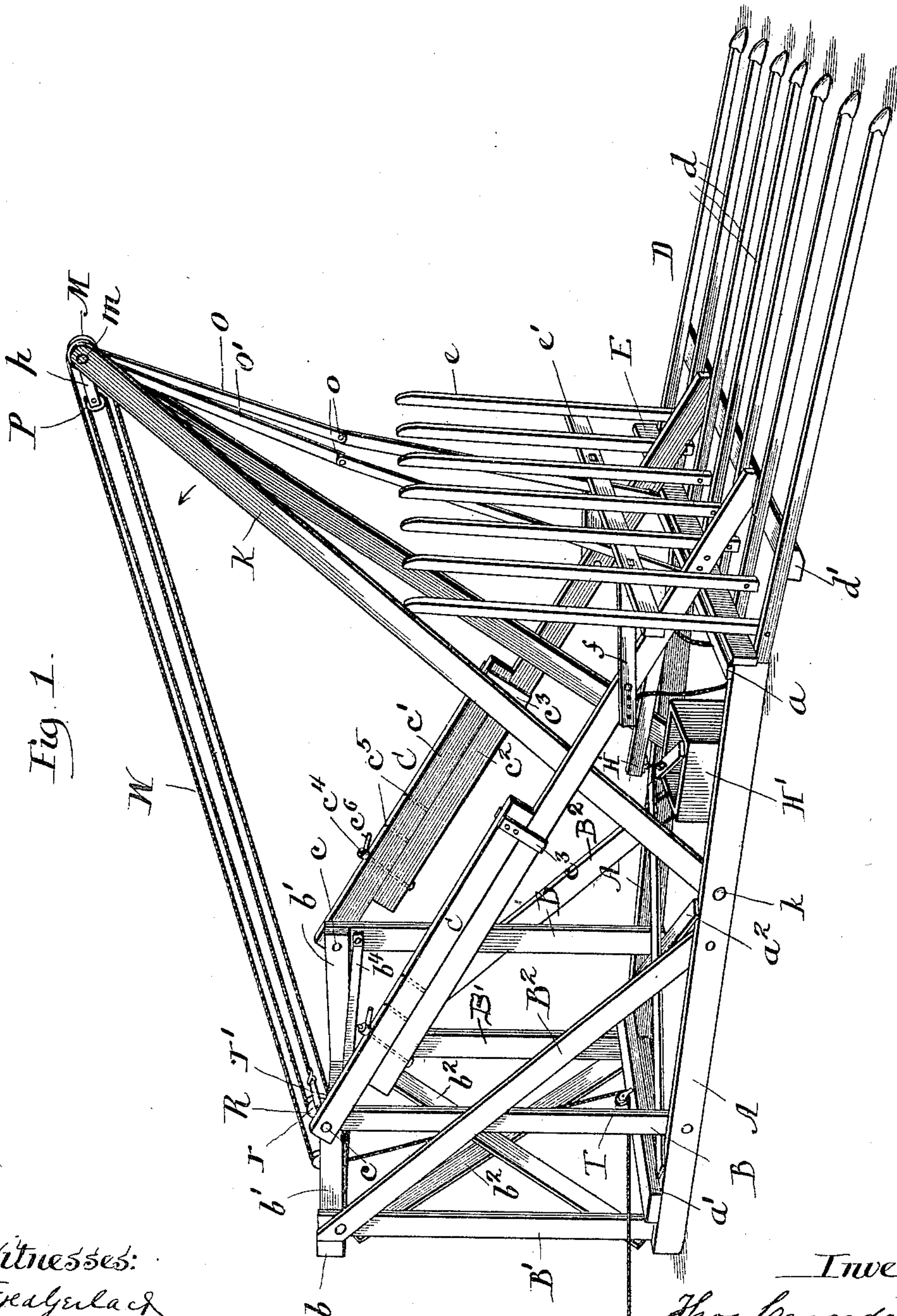


Fig. 1.

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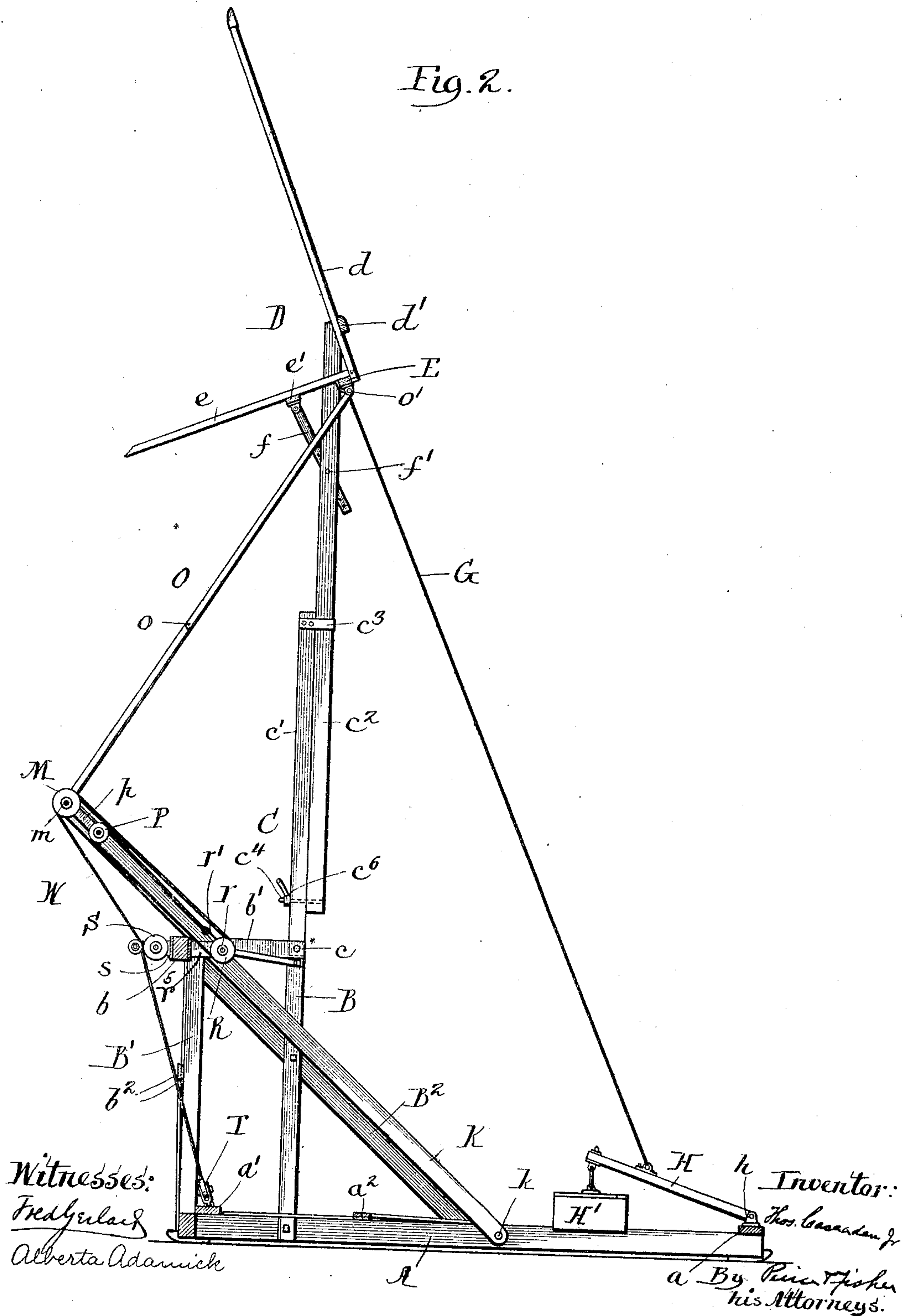
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Fig. 2.



UNITED STATES PATENT OFFICE.

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HAY-STACKER.

SPECIFICATION forming part of Letters Patent No. 706,299, dated August 5, 1902.

Application filed May 29, 1902. Serial No. 109,420. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CASCADEN, Jr., a citizen of the United States, and a resident of Waterloo, in the county of Blackhawk, State of Iowa, have invented certain new and useful Improvements in Hay - Stackers, of which the following is a full, clear, and exact description.

This invention has for its object to provide a simple, effective, and durable construction of hay-stacker whereby an easier and more uniform lifting of the load in the stacking operation may be effected.

The invention consists in the features of improvement hereinafter described, illustrated in the accompanying drawings, and more particularly pointed out in the claims at the end of this specification.

Figure 1 is a perspective view of a hay-stacker embodying my invention. Fig. 2 is a view in vertical longitudinal section, the fork or carrier being shown in elevated position.

The base of the stacker comprises the usual side bars or runners A, that are connected at their front and rear ends by cross-bars a and a' and are preferably braced by diagonal bars a^2 , extending between the rear portions of the runners. At the rear ends of the runners A rises a vertical frame consisting of vertical front and rear posts B and B'. The lower ends of the posts B and B' are firmly bolted to the runners A, and the upper ends of the posts B' are united by a cross-bar b , and the tops of the posts B are united to the adjacent posts B' by the short bars b' . Diagonal brace-rods b^4 (one only being shown) may connect the front posts of the vertical frame to the back bar b . Preferably diagonal brace-bars b^2 extend from the top of each of the posts B' to the bottoms of the opposite posts B, and diagonal brace-bars B² extend from the tops of the posts B' downwardly and forwardly to the runners A, these diagonal bars B² being securely fastened to the posts B and B' and to the runners A. The posts B and B', preferably connected as above described, form a rigid frame or support, to the upper forward sides of which the swinging carrier-arms C are pivotally connected, as at c . As shown, the carrier-arms C are formed of adjustable

sections c' and c^2 , that are united by loops c^3 and adjusting-bolts c^4 . The sections c^2 pass through the loops c^3 , secured to the forward end of the companion section c' , and each of the sections c' is formed with a series of holes c^5 , (shown by dotted lines,) adapted to receive the adjusting-bolt c^4 . The lower end of each of the bolts c^4 is headed, and its upper end is fitted with a threaded handle c^6 , whereby the sections c' and c^2 of the arms C may be rigidly held in position.

To the forward end of the swinging arms C is connected the fork or carrier D, that may be of usual construction. As shown, the fork D comprises the longitudinal teeth d , that are rigidly secured together by the transverse bar d' and by the bar E, and the upright teeth e , that are rigidly connected together by the transverse bar e' . The lower ends of the teeth e are pivotally connected to the inner ends of the teeth d in order to permit the inclination of the teeth e to be varied as desired. To the cross-bar e' , at the back of the teeth e , are connected rearwardly-extending bars f , that have a series of holes in their rear ends and are adjustably attached by a bolt f' to the swinging side arms C. To the bar E are attached the forward ends of two retracting-ropes G, the opposite ends of which ropes are connected to a weight-bar H, that is pivoted, as at h , to a transverse bar a , fixed to the forward ends of the runners A. The rear end of the weight-bar H has a weight-box H' hung thereon, this box being provided with suitable weights to return the fork D and its swinging carrier-arms to normal position.

To the runners A are pivotally connected, as at k , the lower ends of a V-shaped swinging mast or derrick K, the upper ends of this mast or derrick being secured together, with a pulley M between them. On the axle m of the pulley M are pivotally hung the upper ends of the connections O and O', whereby the upper end of the mast or derrick K is united to the stacker-fork or carrier D. Preferably the connections O and O' consist of upper and lower metal bars that are pivoted together, as at o , the lower ends of the bars being secured, as at o' , to the back bar E, that is fixed to the adjacent carrier-teeth d . From the axle m of the pulley M are hung

arms p , through the free ends of which passes the axle of a pulley P. At the top of the vertical frame and preferably carried by a bracket r^5 or other suitable support attached to the cross-bar b is a pulley R, to the axle of which pulley is connected a yoke r' . At the rear of the top of the vertical frame projects a bracket s , in which is mounted a pulley S, and at the base of the main frame, upon the cross-bar a' , is suitably journaled a pulley T. The lifting rope or cable W (the free end of which will be attached to the draft-team) passes around the pulley T, thence up and around the pulley S, thence forwardly and around the pulley M at the top of the mast K, thence rearwardly and around the pulley R at the top of the vertical frame, thence forwardly and around the pulley P at the top of the mast K, and thence to the yoke r' , to which the end of the rope or cable W is fastened.

From the foregoing description of the parts the operation of my improved stacker will be seen to be as follows: When the load of hay to be stacked has been deposited onto the teeth d of the stacker-fork, the draft-team attached to the rope or cable will be started. The mast K will then be swung rearwardly, as indicated by the arrow, Fig. 1, and as the mast thus swings rearwardly the connections O O' impart a vertical lift to the swinging arms C and fork D. The mast K will continue to be swung rearwardly until it strikes the back bar b at the top of the vertical frame, and at such time the swinging arms C will assume an approximately vertical position, as seen in Fig. 2 of the drawings. As the mast K in its rearward movement approaches the cross-bar B at the top of the vertical frame and as the swinging arms C approach the vertical position (shown by Fig. 2) the ropes G, that are attached to the fork D, will lift the weight-bar H and the weight-box H'. Hence as soon as the hay is discharged from the fork D and the lifting-cable W is slackened the weight-box H' will start the fork in forward and downward direction, and after it is thus started the weight of the fork and of the swinging arms will cause these parts to return to the normal position (seen in Fig. 1) as fast as the slack of the lifting rope or cable W will permit. By varying the points of attachment of the adjustable bars f to the swinging arms C more or less inclination may be given to the teeth e of the stacker-fork. By extending the sections c' and c^2 of the swinging arms C it is manifest that the height to which the fork D will be raised can be varied as desired according to the height of the stack to be built.

One advantage of my improved stacker is that the pull of the draft-team is substantially uniform throughout the swing of the stacker-fork, since as the stacker-arms approach their vertical position the swinging mast K, through which the power is transmitted, assumes a position at substantially

right angles to the pull of the rope, and consequently the leverage of the stacker frame or fork is most effectively exerted until the point is reached where the hay is delivered. By locating the point at which the swinging arms C are hinged at a distance back and above the point of delivery or normal position of the fork D a much more effective leverage is given to the mast K than would be possible if the rear ends of the swinging arms C were pivoted directly to the runners A. By providing a vertical frame at the rear of the runners A and by employing the downwardly and forwardly extending brace-bars B² an exceedingly strong and durable structure is secured, the brace-bars B² serving not only to strengthen the vertical frame, but especially to resist the forward and backward strains which the frame is subjected during the stacking operation.

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

1. A hay-stacker comprising the combination with the base-bars or runners, of a vertical frame at the rear of said base-bars or runners, swinging arms pivoted to the top of said vertical frame and provided at their forward ends with a fork or carrier, a mast pivoted between said arms, connections uniting the upper end of said mast to said fork or carrier, a pulley at the base of said vertical frame, pulleys at the top of said vertical frame and said mast and a lifting rope or cable passing around said pulleys.

2. A hay-stacker comprising the combination with the base-bars or runners, of a vertical frame at the rear of said base-bars or runners, said frame consisting of posts extending upwardly from each of said base-bars or runners and connected together at their tops, swinging arms pivoted at their rear ends to the top of said vertical frame and provided at their forward ends with a fork or carrier, a mast pivoted between said swinging arms and in front of said vertical frame, said mast being arranged to swing rearwardly between the forward posts of said vertical frame, connections between the top of said mast and said fork or carrier, pulleys located at the top of said mast and of said vertical frame and a lifting-rope extending between said pulleys and leading to the base of said vertical frame.

3. A hay-stacker comprising the combination with a base, of a vertical frame at the rear of said base, said vertical frame being provided with forwardly and downwardly extending brace-bars connecting the vertical frame with the base, swinging arms pivoted at their rear ends to the top of said vertical frame and provided at their forward ends with a fork or carrier, a mast pivoted between said swinging arms, connections between the top of said mast and said fork or carrier and a lifting rope or cable and pulleys located upon the top of said mast and said vertical frame.

4. A hay-stacker comprising the combination with the base-bars or runners, of a vertical frame at the rear of said base-bars or runners, said frame consisting of posts extending upwardly from each of said base-bars or runners and connected together at their tops, forwardly and downwardly extending brace-bars connecting the rear upper portion of said vertical frame with the central portion of said base-bars or runners, a mast having its lower end pivoted adjacent the central portion of said base-bars or runners, swinging arms having their rear ends pivotally connected to the top of said vertical frame and having their forward ends provided with a fork or carrier, connections between the top of said mast and said fork or carrier, pulleys at the top of said mast and said vertical frame, a pulley at the base of said vertical frame and a lifting rope or cable extending around said pulleys.

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Witnesses:

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