

(No Model.)

2 Sheets—Sheet 1.

J. J. NEFF.
HAY STACKER OR RICKER.

No. 597,586.

Patented Jan. 18, 1898.

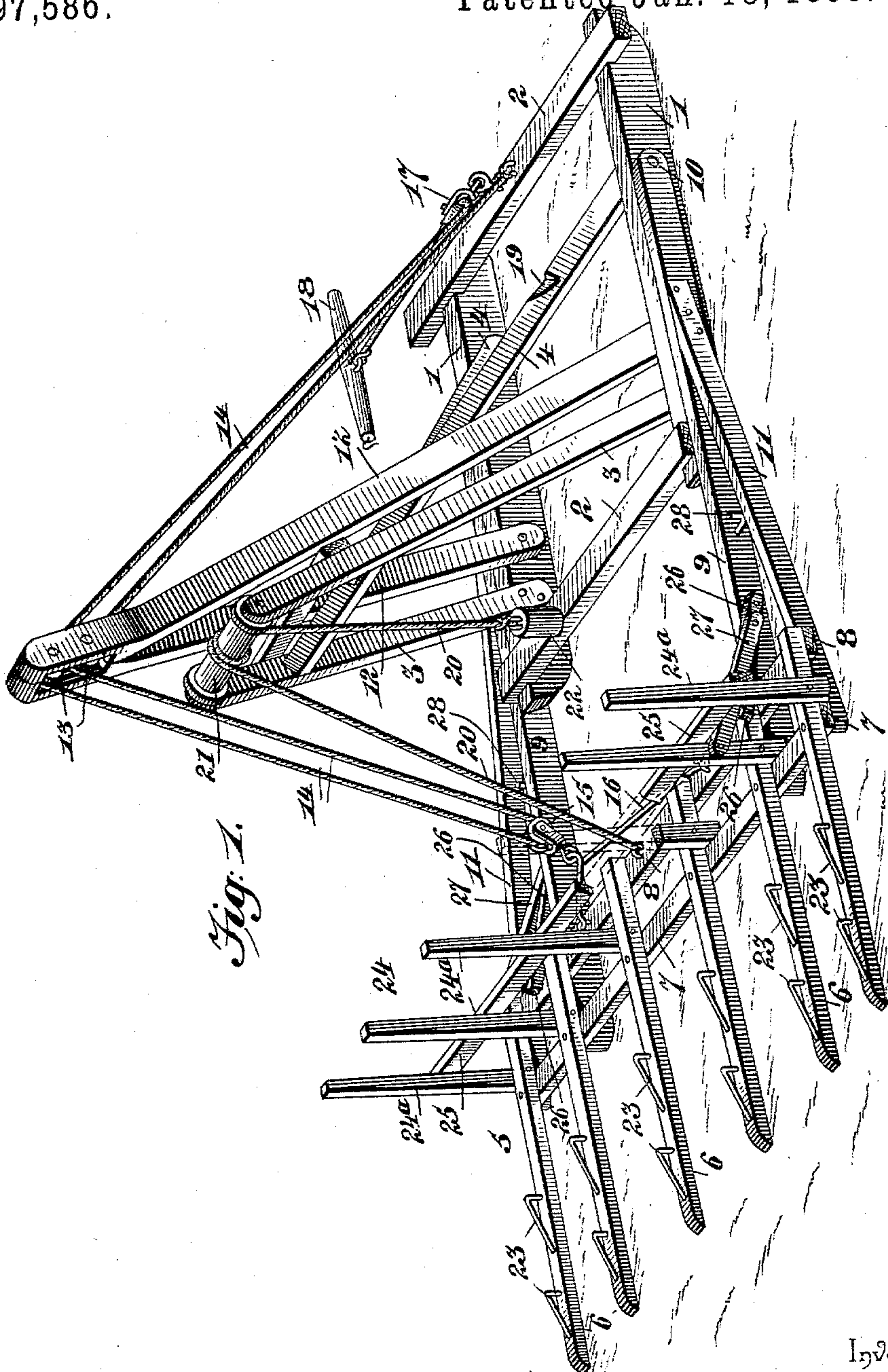


Fig. 1.

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John J. Neff

Witnesses

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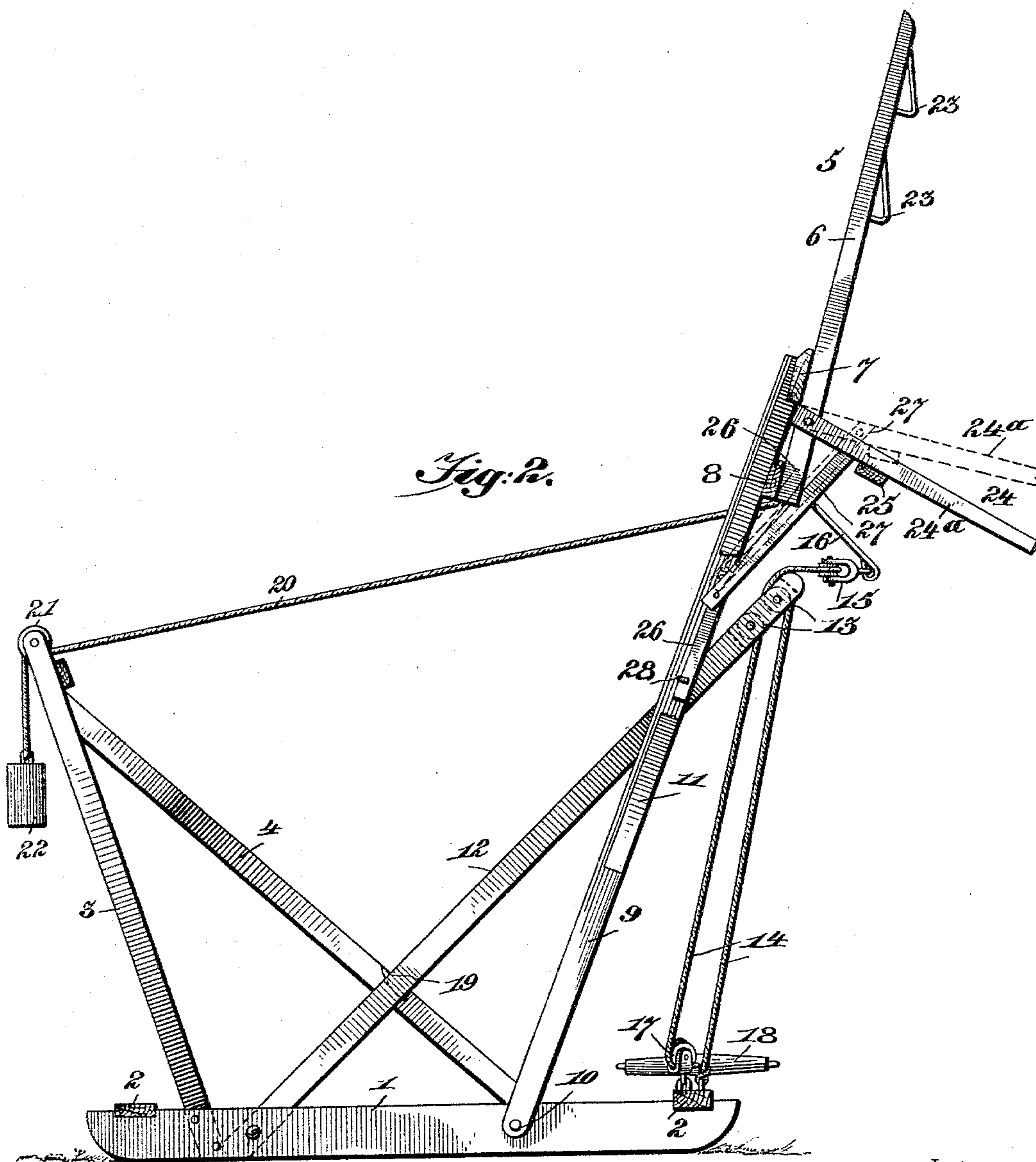
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Inventor

John J. Neff

Witnesses

Wm. C. Dietrich By *his* Attorneys,

W. E. Doyle

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UNITED STATES PATENT OFFICE.

JOHN J. NEFF, OF BOLTON, MISSOURI.

HAY STACKER OR RICKER.

SPECIFICATION forming part of Letters Patent No. 597,586, dated January 18, 1898.

Application filed June 8, 1897. Serial No. 639,397. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. NEFF, a citizen of the United States, residing at Bolton, in the county of Harrison and State of Missouri, have invented a new and useful Hay Stacker or Ricker, of which the following is a specification.

My invention relates to hay stacking or ricking apparatus adapted to receive hay from a rake and capable of being operated to elevate and deposit the hay in the act of forming a stack or rick; and the objects in view are to provide means for elevating the fork, whereby the load of an ordinary two-horse rake may be readily managed by a single horse, the same being accomplished by applying the strain of the elevating devices approximately in the direction of movement; to provide means for releasing the load of the fork in order to facilitate the deposit thereof upon the stack or to retain the load when the stack is of the proper height to be "topped out," whereby hay may be applied to the stack by means of a pitchfork, and to provide means for retaining a rake-load upon the fork by preventing the displacement thereof when the rake is withdrawn.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a stacker constructed in accordance with my invention. Fig. 2 is a side view showing the fork in its discharging position, the guard being shown depressed in full lines and in its normal or elevated position in dotted lines.

Similar numerals of reference indicate corresponding parts in both figures of the drawings.

The supporting-frame of the apparatus embodying my invention is preferably of portable construction and is illustrated as consisting of side beams 1, shaped terminally to form runners, and cross-bars 2, connecting the side beams. Erected on this supporting-frame is a standard 3, preferably inclined forwardly and provided with cross-braces 4, which are secured at their lower ends to the side beams 1 and at their upper ends, respec-

tively, to the sides of the standard 3, said braces being intersected at a point between their extremities. The elevating and stacking fork 5 comprises fingers 6, connected by parallel transverse bars 7 and 8 and having arms 9, which extend rearwardly parallel with the side beams 1 and are fulcrumed thereto, as shown at 10, side braces 11 being preferably employed to give lateral strength to the fork and extending from intermediate points in said arms 9 to the extremities of the transverse bars 7 and 8. Also mounted upon the supporting-frame is a swinging derrick 12, consisting of upwardly-convergent side bars, said derrick terminating above the upper end of the standard 3 and being provided with guiding devices, such as pulleys 13, to carry an elevating-cable 14, said cable being attached at one end to the rear cross-bar 2 of the supporting-frame, extending over one of the guide-pulleys of the derrick through a sheath or pulley-block 15, carried by a swinging bail 16 on the fork, thence over the other guide-pulley on the derrick and through a pulley-block 17 on the supporting-frame, whereby a draft-animal may be attached to the free end thereof, as by means of a singletree 18. The bail 16 is loosely mounted upon the rear bar 8 of the fork, whereby it is adapted to aline itself with the direction of strain of the elevating or operating cable, and it is obvious that by straining the cable, the upper end of the derrick being above and in front of the standard 3 and being approximately above the rear bar of the fork, the fork, with its load, will be elevated with the minimum effort or with the minimum expenditure of power.

It will be understood that in operation the derrick retains its forwardly-inclined position, which is limited by the standard 3, until the fork has been elevated to a point above or approximately in the plane of the upper end of the standard, when the contact of the pulley-block 15 with the derrick will cause the latter to swing rearwardly until its movement is checked by stops 19 on the braces 4. When the backward-swinging movement of the derrick is checked, the release of the operating-cable will allow the fork to swing in rear of the derrick in the act of discharging its load.

In order to partly counterbalance the weight of the fork and also serve to return the fork to its normal position after the discharge of the load which has been elevated thereby, I employ a return-cable 20, attached at one end to the rear bar of the fork, coiled around a drum 21, supported by the standard 3, and provided with a counterbalancing-weight 22. When the fork is in its discharging position, as shown in Fig. 2, the tendency of the terminally-weighted cable is to draw the fork forward until it reaches a position in which the fork proper is in front of its fulcrum 10, when the parts will be returned by gravity to their operative positions.

In case the counterbalancing-weight should be insufficient to return the fork after the discharge of its load to an upright position, from which it is adapted to swing by gravity to its normal or receding position, I have provided means whereby the fork may be started in its forward-swinging movement by the operating-cable. It will be seen that the derrick 12 is fulcrumed in front of the pivotal point of the fork, whereby as the parts swing rearwardly the fork proper rises above the upper end of the derrick to swing thereover, and this motion continues until, the fork occupying a rearwardly-inclined position, the rope-guide 15 of the fork is in rear of the rope-guides 13 of the derrick. Hence by drawing upon the operating-cable after the discharge of the load the fork may be swung forward a sufficient distance to give the terminally-weighted cable 20 sufficient power to carry the fork past a vertical position and thus allow it to be returned by gravity to its normal or horizontal position. It will be seen that it is my desire to so proportion and relatively mount the derrick and fork that when the parts are in their normal positions the rope-guides of the derrick will occupy a position approximately over the rope-guide of the fork, whereby the upward strain applied by the operating-cable upon the fork will be approximately in the direction of movement of the fork rope-guide until the fork has been elevated a sufficient distance to bring it approximately into contact with the derrick. From this point the derrick and fork swing together, the fork, however, being gradually carried above the plane of the rope-guides of the derrick until the parts reach the discharging position illustrated in Fig. 2, with the fork extending over the top of the derrick and with the guide-rope of the fork in rear of the rope-guides of the derrick.

The fingers of the fork are provided with triangular barbs or stops 23, designed to facilitate the depositing of hay upon the fingers and at the same time prevent the removal thereof when the rake is withdrawn, and mounted upon the fork near its rear bar 7 is a swinging or pivotal guard 24, also preferably consisting of fingers 24^a, connected by a cross-bar 25, the function of this guard being to prevent hay from being carried back

farther than the capacity of the rake will admit and also to prevent the fork-load from slipping backwardly from the fork during the elevation of the latter preparatory to depositing the load upon a stack or upon the point selected for a stack or rick. This guard is provided with operating devices, which in the construction illustrated consist of levers 26, fulcrumed upon the side arms 9 of the fork and connected by pitmen 27 with the guard, whereby when the levers are in their forwardly-adjusted positions (shown in Fig. 1 and in dotted lines in Fig. 2) the guard is arranged in a position approximately perpendicular to the plane of the fork, whereas when the levers are in their rearwardly-adjusted positions the guard is inclined rearwardly from the plane of the fork to facilitate the discharge of the load, as shown in full lines in Fig. 2. When the building of the stack has progressed to that point when it is desired to top out, it is preferable to leave the guard in the position indicated in dotted lines in Fig. 2, or in a position to hold the load, whereby the latter may be removed, as required by the stacker, by means of a pitchfork. The rear bar 8 of the fork limits the forward-swinging movement of the levers 26, and stops 28 are provided to limit the rearward-swinging movement of the same, and it is obvious that by disposing the levers slightly out of alinement with the pitmen 27 the guard will be held in its approximately perpendicular position until the fork has reached the discharging-point, when the weight of the load, bearing against the guard, will reverse the positions of the levers 26 and thus dispose the guard to discharge the load. Thus by utilizing the stops which are provided to limit the swinging movement of the levers 26 the guard may be locked permanently in its operative or approximately perpendicular position, said levers being in a position in contact with the stop formed by the rear bar 8 of the fork. Under ordinary circumstances, however, it is desirable to hold the guard in said normal or approximately perpendicular position until the fork reaches its elevated position overhanging the upper extremity of the derrick, when by reason of the weight of the load being thrown upon the guard the latter should be free to swing downwardly and thus discharge the load. To accomplish this, the levers 26 should be arranged either directly in alinement with the pitmen 27 or with their free ends slightly in rear thereof, whereby pressure applied to the guard will operate to swing the levers from the stop-bar 8 rather than toward the same, as when the parts are arranged in the position hereinbefore mentioned. Obviously the stop 28 limits the outward-swinging movement of the lever, and hence of the guard. I am enabled to secure the desired temporary holding of the guard by disposing the levers 26 in alinement with the pitmen or slightly rearward of such alinement by reason of the

proximity of the pivot of each pitman to the axis or fulcrum of the lever and also by reason of the fact that as the fork approaches the limit of its rearward or discharging movement it passes to a position in rear of a vertical plane and thus causes gravity to act upon the free end of the lever 26. The above is an important reason for mounting the fork to swing through an arc of greater than ninety degrees.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a stacker, the combination with a fork having pivotal side arms and adapted to swing through an arc of greater than ninety degrees, to incline rearwardly toward its upper end when elevated, of a swinging derrick pivoted in advance of the pivots of said side arms and of less width than the interval therebetween, and an operating-cable connected with the fork and traversing-guides on the derrick, substantially as specified.

2. In a stacker, the combination with a supporting-frame, of a fork having side arms pivoted at their extremities to the supporting-frame and mounted to swing through an arc of greater than ninety degrees, a derrick pivotally mounted upon the supporting-frame in advance of the pivotal extremities of the side arms, and adapted to swing between said side arms, whereby when elevated the fork is adapted to overhang the extremity of the derrick and incline rearwardly, and whereby when in their normal positions the upper end of the derrick overhangs the fork, and an operating-cable connected with the fork and traversing-guides on the derrick, substantially as specified.

3. In a stacker, the combination, with a supporting-frame, of a fixed standard carried thereby, a fork having its arms fulcrumed upon the supporting-frame to swing upon opposite sides of said standard, whereby the fork is adapted to pass over the upper end of the standard, the pivotal points of said arm being in rear of the standard; a counterbalancing device including a terminally-weighted cable traversing a drum on the standard and connected with the fork, a pivotal derrick mounted upon the supporting-frame with its pivot-points in front of those of the fork, and in rear of the standard, and limited in its forward-swinging movement by said standard, stops for limiting the rearward movement of the derrick when the derrick and fork have reached rearwardly-inclined positions, said derrick and fork having rope-guides of which those on the fork are in rear of those on the derrick, when the said parts are rearwardly inclined, and an operating-ca-

ble traversing the guides on the derrick and fork, substantially as specified.

4. In a stacker, the combination with a supporting-frame, of a fork provided with a rope-guide and having its arms fulcrumed upon the frame, a swinging derrick provided at its free end with rope-guides, means for limiting the rearward-swinging movement of the derrick when the rope-guide of the fork is in rear thereof, and a looped operating-cable attached at one end to the supporting-frame, and adapted to be strained at the other end by an operating power, the sides of the cable traversing said rope-guides on the derrick, and the loop thereof extending through the rope-guide on the fork, substantially as specified.

5. In a stacker, the combination with a supporting-frame, of a fork pivotally mounted upon said frame, a swinging derrick pivoted upon the frame in front of the fork and having rope-guides, means for limiting the swinging movement of the derrick when the fork has reached a rearwardly and upwardly inclined position, a swinging bail loosely mounted upon the fork to extend in rear of the derrick rope-guides when the fork is elevated, a swinging pulley-block supported by the bail and adapted to fall in rear of the derrick when the fork is elevated, and an operating-cable attached at one end to the supporting-frame, extending through one guide on the derrick, through said pulley-block, back through the second guide on the derrick, and finally through the guide on the supporting-frame, contiguous to which power is adapted to be applied to strain the cable, substantially as specified.

6. In a stacker, the combination with a swinging fork and means for operating the same, of a guard pivotally mounted upon the fork for swinging movement perpendicular to the plane thereof, terminally-free operating-levers mounted at one end upon the fork, pitmen connecting intermediate points of the levers with the guard, and stops arranged in the paths of the levers for limiting the swinging movement thereof in opposite directions, substantially as specified.

7. In a stacker, the combination with a swinging fork and means for operating the same, of a guard mounted upon the fork for swinging movement perpendicular to the plane thereof, terminally-free levers mounted at one end upon the fork, pitmen connecting the levers at intermediate points with the guard, rear stops for limiting the swinging movement of the free ends of the levers in one direction, and a front stop arranged downward of positions in alinement with said pitmen, for limiting the movement of the levers in the opposite direction, whereby when the levers are in contact with said forward stop the guard is locked against swinging movement, substantially as specified.

8. In a stacker, the combination with a

swinging fork mounted for movement through an arc exceeding ninety degrees, and means for operating the same, of a guard mounted upon the fork for swinging movement perpendicular to the plane thereof, operating-levers 5 fulcrumed upon side arms of the fork and adapted to occupy forward and rearward positions approximately in alinement with said arms, pitmen connecting the levers at intermediate points with the guard, and having 10 their front ends elevated above the plane of

said side arms, and front and rear stops arranged in the paths of the levers, substantially as specified.

In testimony that I claim the foregoing as 15 my own I have hereto affixed my signature in the presence of two witnesses.

JOHN J. NEFF.

Witnesses:

B. P. SIGLER,

PHILIP MCCOLLUM.