

No. 696,505.

Patented Apr. 1, 1902.

H. O. SPARKS.  
HAY DERRICK.

(Application filed Apr. 5, 1901.)

(No Model.)

2 Sheets—Sheet 1.

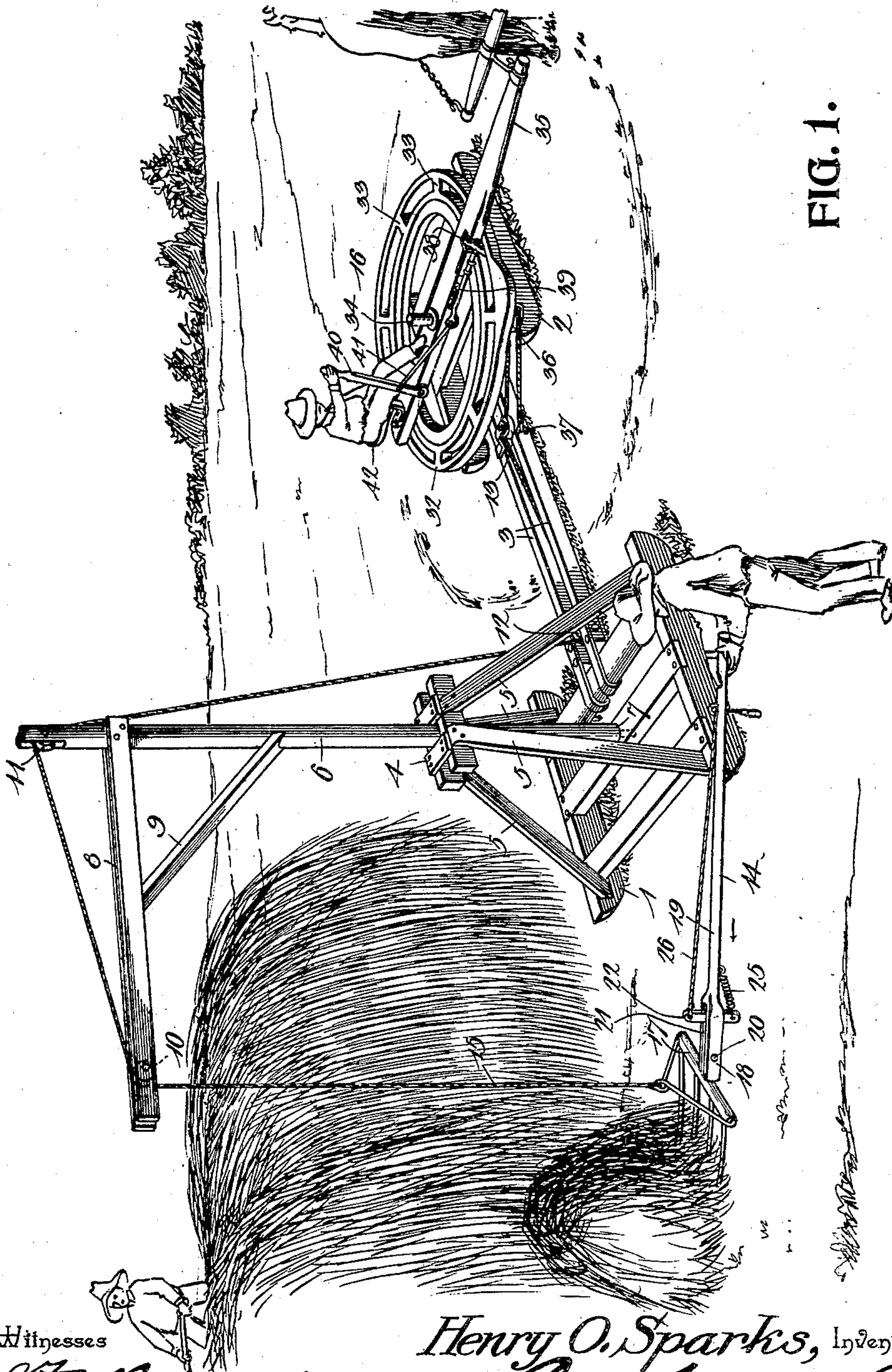


FIG. 1.

Witnesses  
*J. Frank Reuberwell,*  
*J. W. Garner*

*Henry O. Sparks, Inventor.*  
*by C. A. Snow & Co.*  
Attorneys

No. 696,505.

Patented Apr. 1, 1902.

H. O. SPARKS.  
HAY DERRICK.

(Application filed Apr. 5, 1901.)

(No Model.)

2 Sheets—Sheet 2.

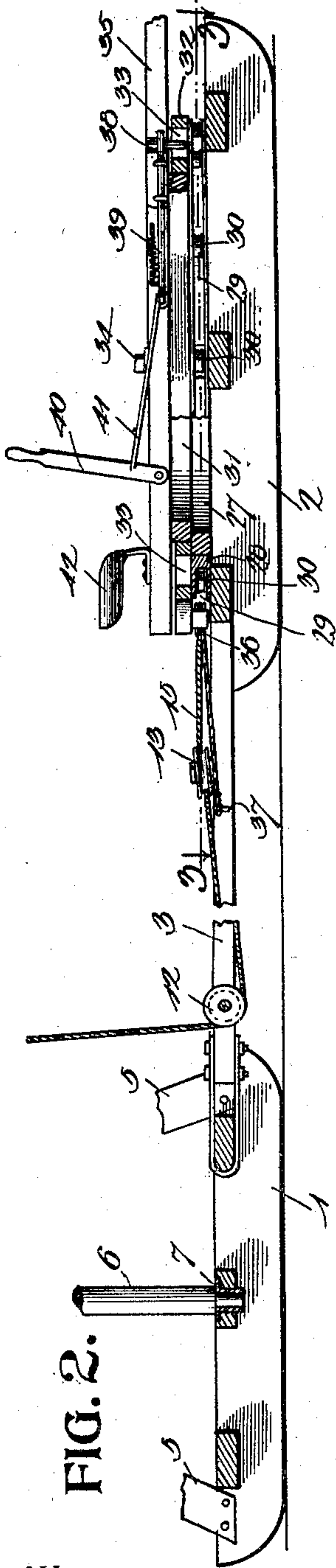


FIG. 2.

Witnesses

*J. Frank Leberwell.*  
*J. W. Garner*

FIG. 3.

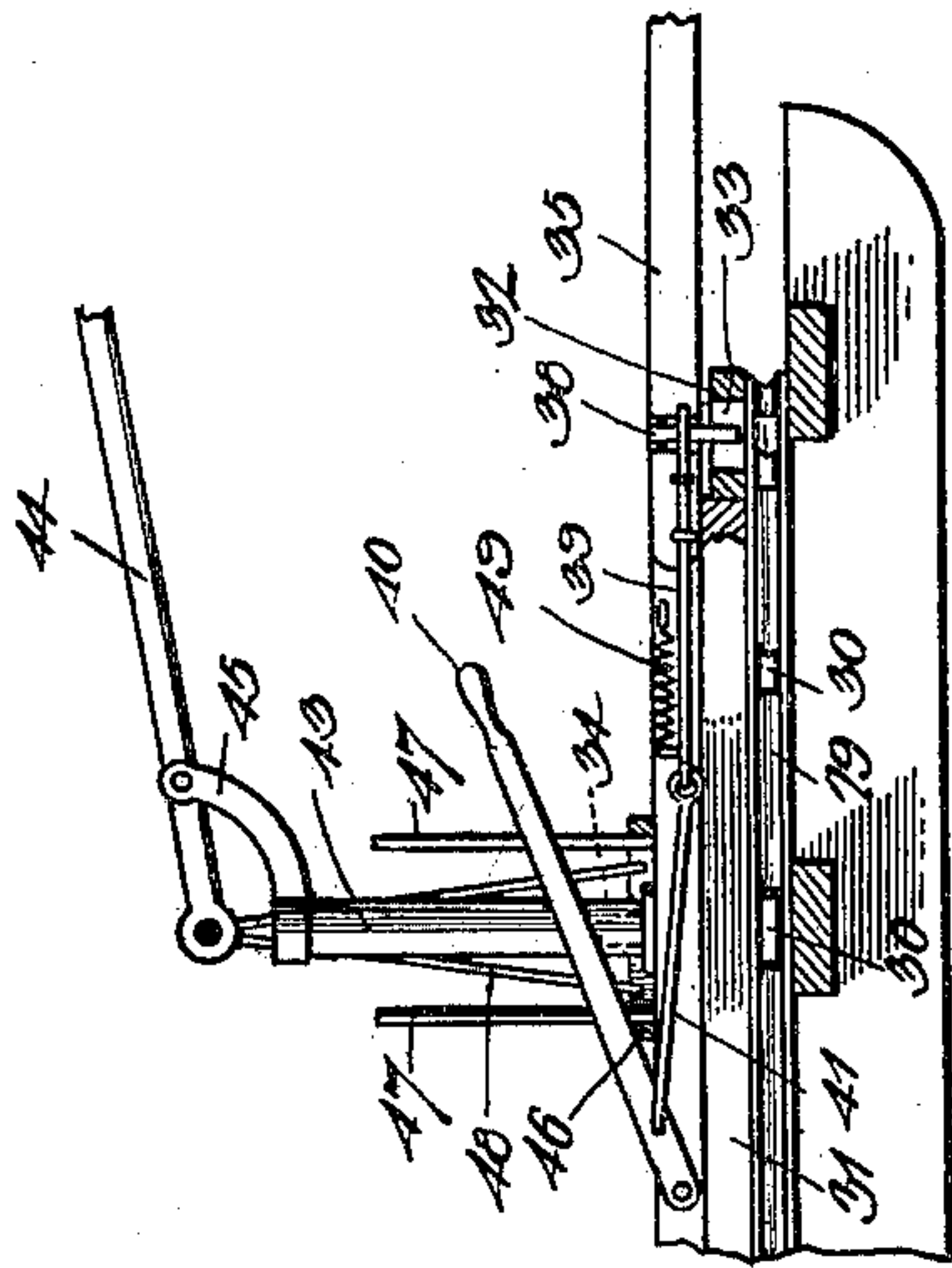
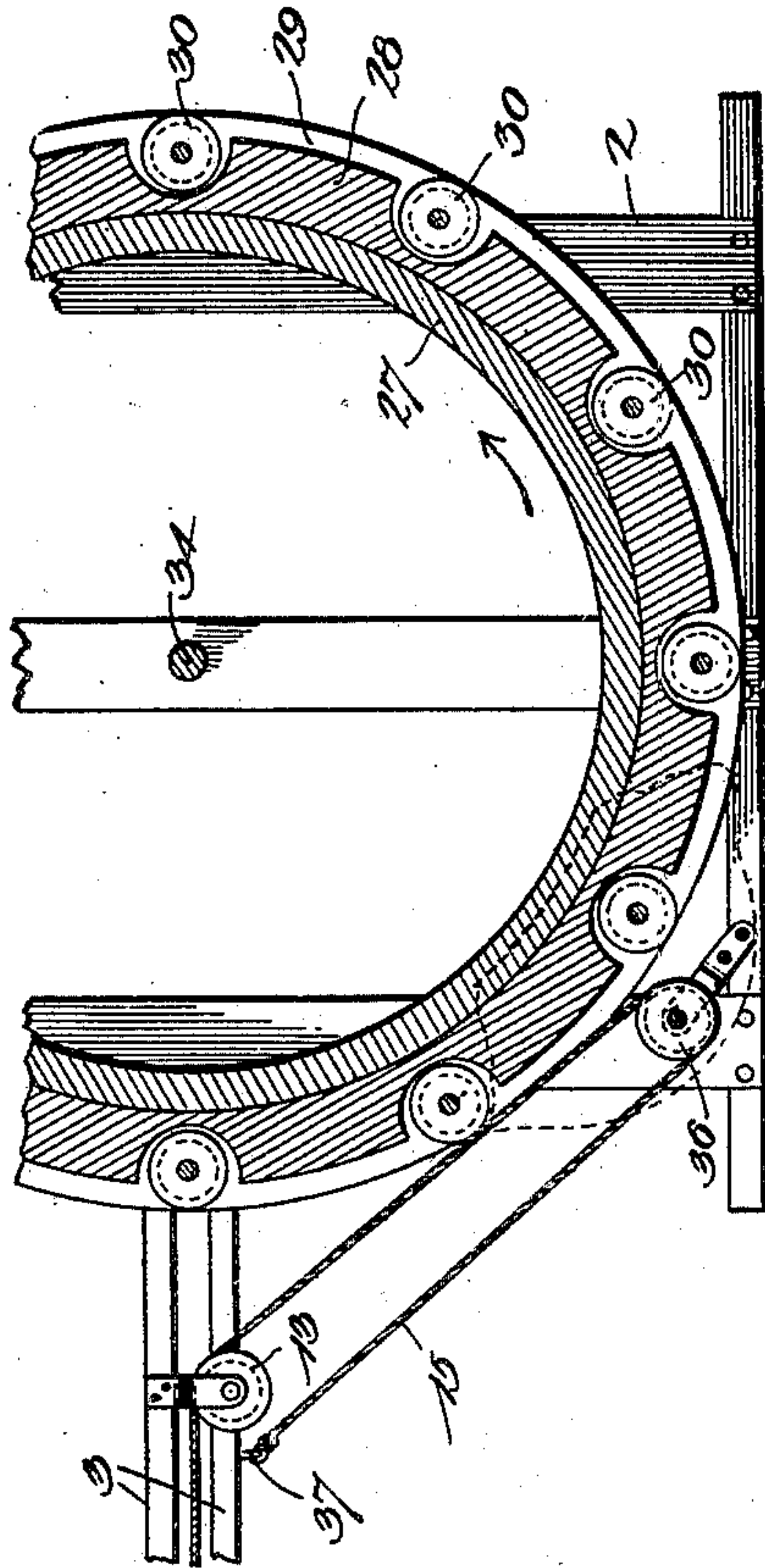


FIG. 4.

*Henry O. Sparks,* Inventor.  
by *C. A. Snow & Co.* Attorneys



# UNITED STATES PATENT OFFICE.

HENRY OWEN SPARKS, OF MONROE COUNTY, MISSOURI.

## HAY-DERRICK.

SPECIFICATION forming part of Letters Patent No. 696,505, dated April 1, 1902.

Application filed April 5, 1901. Serial No. 54,503. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY OWEN SPARKS, a citizen of the United States, residing in the county of Monroe and State of Missouri, have  
5 invented a new and useful Hay-Derrick, of which the following is a specification.

My invention is an improved horse-power especially adapted for operation in connection with a derrick loading hay in the field  
10 onto a wagon; and it consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a hay-derrick constructed in accordance with my invention, showing  
15 the same in operative relation with a hay-derrick. Fig. 2 is a vertical longitudinal sectional view of the lower portion of the same. Fig. 3 is a detail horizontal sectional view  
20 taken on a plane intersecting the ring which carries the antifriction-sheaves, the lateral offset of the revoluble wheel-ring which carries the pulley 26 being indicated in dotted lines. Fig. 4 is a detail sectional view of the horse-  
25 power and partly an elevation and partly a section of a means whereby the horse-power may be controlled in its operation by the person who operates the loading-fork.

The slide 1, which constitutes the supporting-base of the derrick, and the slide 2, on  
30 which is mounted the horse-power for operating the derrick, are connected together by a pair of bars 3, which are disposed a suitable distance apart. A bearing 4 is supported  
35 above the center of the slide 1 by suitable bars or standards 5. The derrick-post 6 is journaled in the bearing 4, and the lower end thereof is stepped in a bearing 7 at the center of the slide 1. An arm 8 is carried by the  
40 derrick-post, near the upper end of the latter, and is supported by a brace 9. Near the outer end of the arm 8 is a sheave 10. A similar sheave 11 is mounted at the upper end of the derrick-post. Direction-sheaves 12 13 are  
45 mounted on the bars 3.

The loading-fork 14 has a hoisting-rope 15, which engages the sheaves 10, 11, 12, and 13 and is operated by the horse-power 16. The  
50 said loading-fork has its head 17 pivotally connected to the lever 19, and a spring-operated detent 22, carried by said lever, is provided to lock the head in the position shown in Fig. 1.

A trip-cord 26 is attached to said detent and extends to the outer end of lever 19. Hence the said detent may be operated to release the  
55 fork-head and enable the latter to turn to a vertical position to discharge a load, as will be understood.

I will now describe the horse-power by which the hoisting-rope and loading-fork are  
60 operated. A fixed base-ring 27 is secured on the slide 2. On the said base-ring is a ring 28, provided with a peripheral groove 29 and with a series of antifriction-sheaves 30, which are mounted in recesses in said ring 28 and  
65 the outer edges of which are disposed in said peripheral groove. A fixed ring 31 is secured immediately above the fixed ring 27, and on said fixed ring 31 and on the fixed ring or  
70 drum 28 is a wheel-ring 32. In the form of my invention here shown the said wheel-ring 32 has a series of radial members 33, which correspond to spokes.

A pivotal bolt or spindle 34 projects upward from the center of the slide 2, and on the  
75 same is pivoted a sweep-lever 35, which bears on the upper side of the fixed ring 31 and is adapted to be revolved by horse-power, as is indicated in Fig. 1. Said wheel-ring 32 is provided on one side with a lateral offset,  
80 (shown in Fig. 1 and indicated by dotted lines in Fig. 2,) to which offset is connected a pulley 36, which is carried thereby when said wheel-ring 32 is revolved. The hoisting-rope  
85 15 is passed from the pulley 13 around the pulley 36 and is then secured to a fixed point, as at 37. Hence when the wheel-ring is revolved by the sweep-lever in the direction indicated by the arrow in Fig. 3 the elevating-  
90 rope 15 will be so drawn upon by said pulley 36 as to hoist the fork. The hoisting-rope as it is thus drawn engages and runs upon the sheaves 30, which reduce friction between the rope and the ring 28.

On the rear side of the sweep-lever is a tappet 38, which is pivotally mounted at its upper  
95 end, depends below the sweep-lever, and is adapted to engage the spokes 33 of the revoluble ring-wheel 32. A bolt 39 is adapted to engage the said tappet 38 and lock the same  
100 in a vertical position, and thereby lock the wheel-ring to the sweep-lever, so that the wheel-ring will be revolved by the sweep-lever. The said bolt 39 is adapted to be oper-



ated manually and is here shown connected to a hand-lever 40 by a link-rod 41. At the inner end of the sweep-lever is a seat 42, on which the driver, who also operates the bolt 39, may be seated.

It will be understood that in the operation of the derrick in hoisting the loaded fork the sweep-lever will be locked to the wheel-ring and caused to turn the latter through almost a complete revolution, the diameter of the wheel-ring being such that something less than a complete revolution thereof will cause the loaded fork to be raised to the maximum height required. When the fork has been discharged of its contents, which, as hereinbefore indicated, is done by tripping the detent 22, the bolt 39 is manually released from the detent 38, thereby releasing the wheel-ring from the sweep-lever, which continues to revolve, the wheel-ring being reversed and returned to its initial position by the weight of the unloaded fork as the latter descends to the ground. The bolt 39 is then reengaged with the tappet 38, and the fork having been reloaded by the operator thereof the operation before described is repeated.

My improved hay-derrick may be employed in stacking hay or straw and for loading and unloading wagons and may be also employed for storing hay, straw, or grain in a barn.

In Fig. 4 of the drawings I show means which may be employed in connection with the horse-power to enable the man who operates the fork to also operate the lever 40.

A standard 43, which is preferably a piece of tubing, has its lower end stepped on the upper end of the spindle 34. (Shown in Figs. 2 and 3.) A lever 44, which extends to a point within easy reach of the man who operates the fork, is fulcrumed to an arm 45, that projects from said standard. A vertically-movable tripping element, which is here shown as a weight-ring 46, guided by vertical pins or rods 47, that may be attached to and caused to vertically project from the sweep-lever, is connected to said lever 44, as by rods 48. This ring, which is shown in section in Fig. 4, bears under the lever 41 and raises the latter when said ring is raised by the lever 44 and rods 48, thereby withdrawing the bolt, as will be understood, said lever 40 and the bolt being returned to their initial positions by a spring 49.

I do not desire to limit myself to the precise construction and combination of devices herein shown and described, as it is evident that modifications may be made therein without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. A horse-power comprising a supporting-

slide, a fixed base-ring thereon, a ring 28 on said base-ring, said ring 28 having a peripheral groove and a series of antifriction-sheaves in said groove, a fixed ring 31, supported on said fixed base-ring, a wheel-ring 32 revoluble on said fixed ring 31, and bearing on said ring 38, said wheel-ring carrying a pulley 36, a sweep-lever pivotally mounted on said supporting-slide, a detent pivoted to said sweep-lever and adapted to engage said wheel-ring and rotate the same with said sweep-lever and a bolt carried by said sweep-lever, to lock said detent to said ring-wheel, in combination with a hoisting-rope engaging the pulley 36 and having one end secured to a fixed point, substantially as described.

2. The combination of a support, a hoisting-rope, a revoluble element mounted on said support, adapted to draw on said rope, when said revoluble element is rotated, said revoluble element having radial members, a sweep-lever mounted on said support above and revoluble independently of said revoluble element, a gravity-detent pivoted at its upper end to and carried by said sweep-lever and adapted to drop and engage one of said radial members of said revoluble element to lock the latter to said sweep-lever, and a bolt also carried by said sweep-lever, to lock said detent when thus engaged, and to release said detent to permit retrograde rotation of said revoluble element, for the purpose set forth, substantially as described.

3. The combination of a support, a hoisting-rope, a revoluble element mounted on said support, adapted to draw on said rope, when said revoluble element is rotated, said revoluble element having radial members, a sweep-lever mounted on said support above and revoluble independently of said revoluble element, a gravity-detent pivoted at its upper end to and carried by said sweep-lever and adapted to drop and engage one of said radial members of said revoluble element to lock the latter to said sweep-lever, a bolt also carried by said sweep-lever, to lock said detent when thus engaged, and to release said detent to permit retrograde rotation of said revoluble element, for the purpose set forth, and a lever connected to said bolt, to release the latter from said detent, and a spring to normally maintain said bolt in engaged position with relation to said detent, substantially as described.

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

HENRY OWEN SPARKS.

Witnesses:

J. E. PRESTON,  
L. W. KELLEY.