

No. 881,604.

PATENTED MAR. 10, 1908.

R. MILLER.  
HAY CARRIER.

APPLICATION FILED AUG. 16, 1906.

2 SHEETS—SHEET 1.

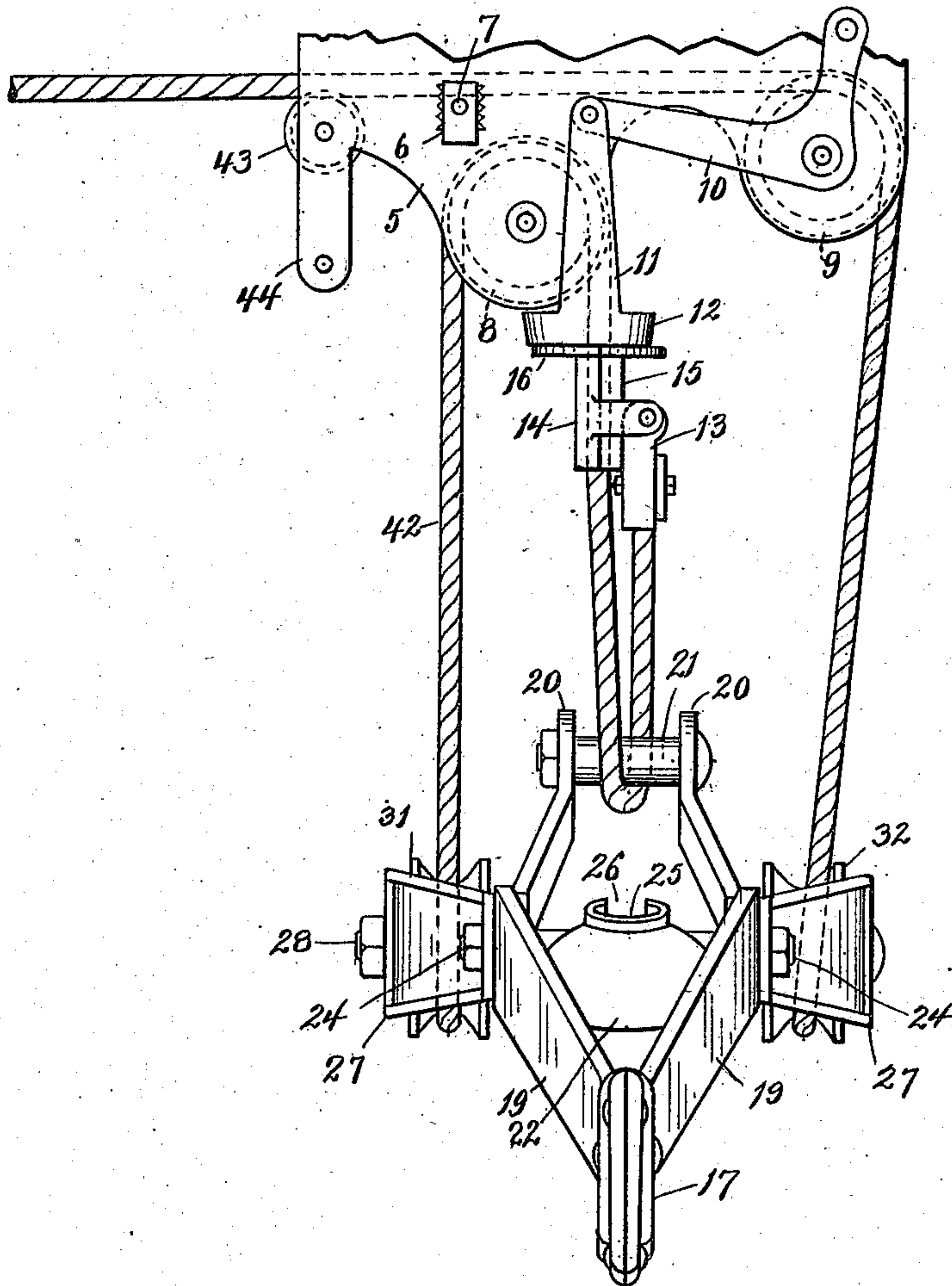


Fig. 1.

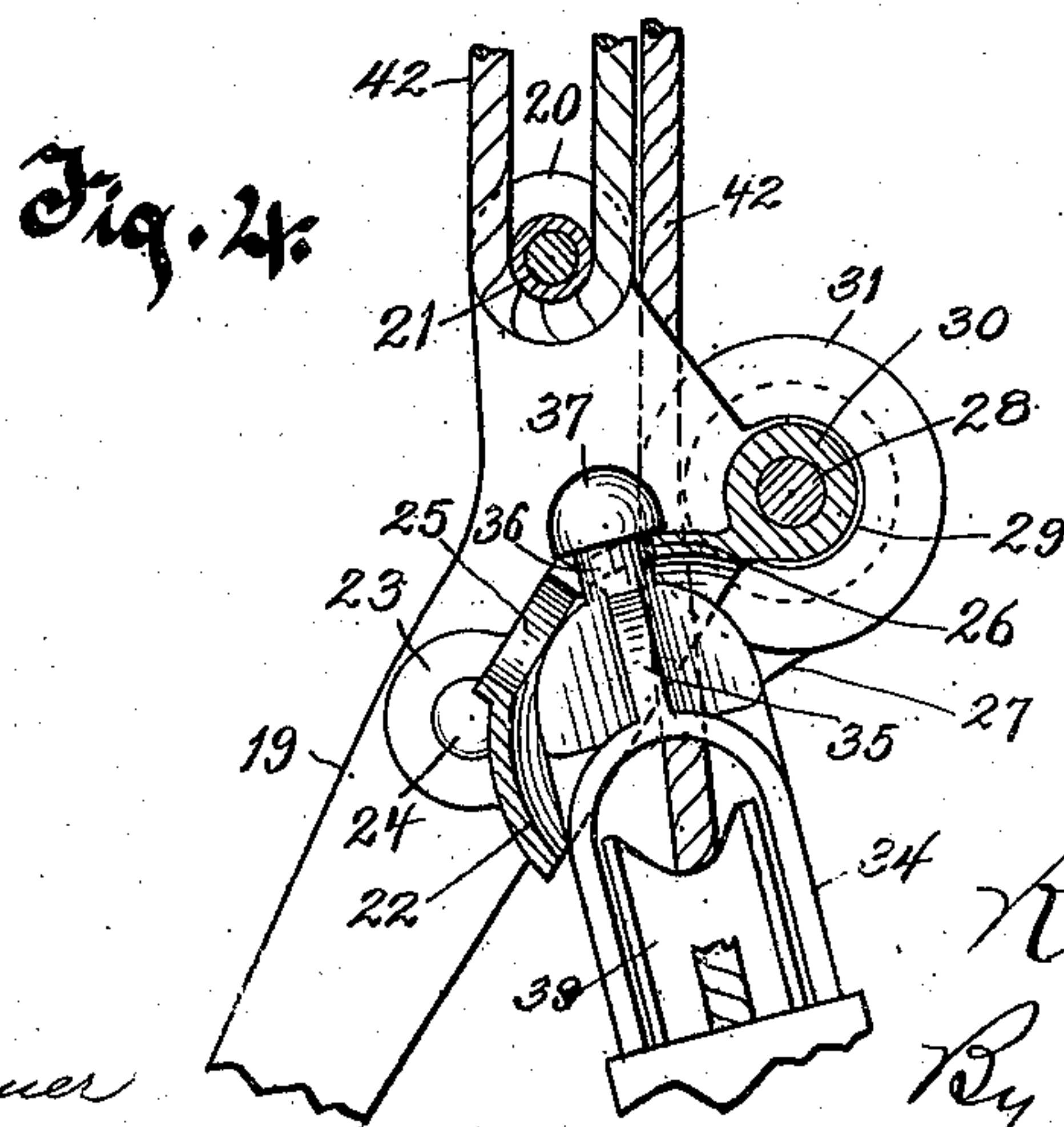


Fig. 2.

Witnesses:

*A. H. Keeney*  
*Anna F. Schmidbauer*

Inventor:

*Richard Miller*  
By *Benedict & Morsell*  
Attorneys.

No. 881,604.

PATENTED MAR. 10, 1908.

R. MILLER.  
HAY CARRIER.

APPLICATION FILED AUG. 16, 1905.

2 SHEETS—SHEET 2.

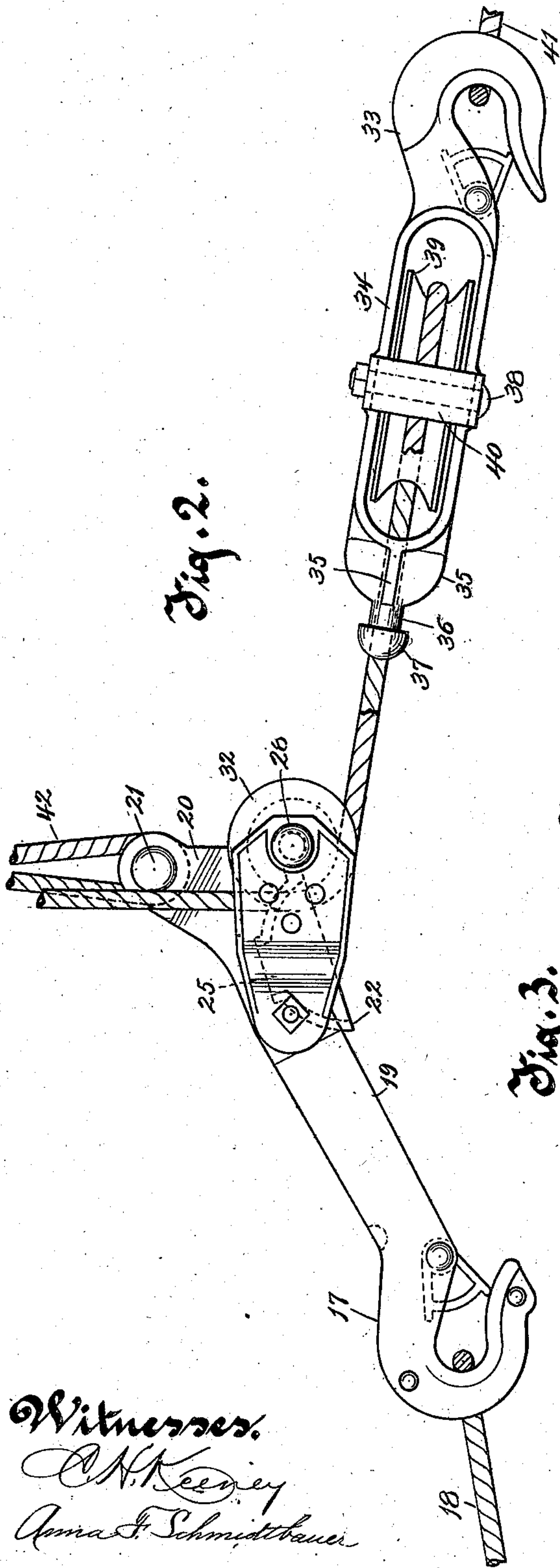
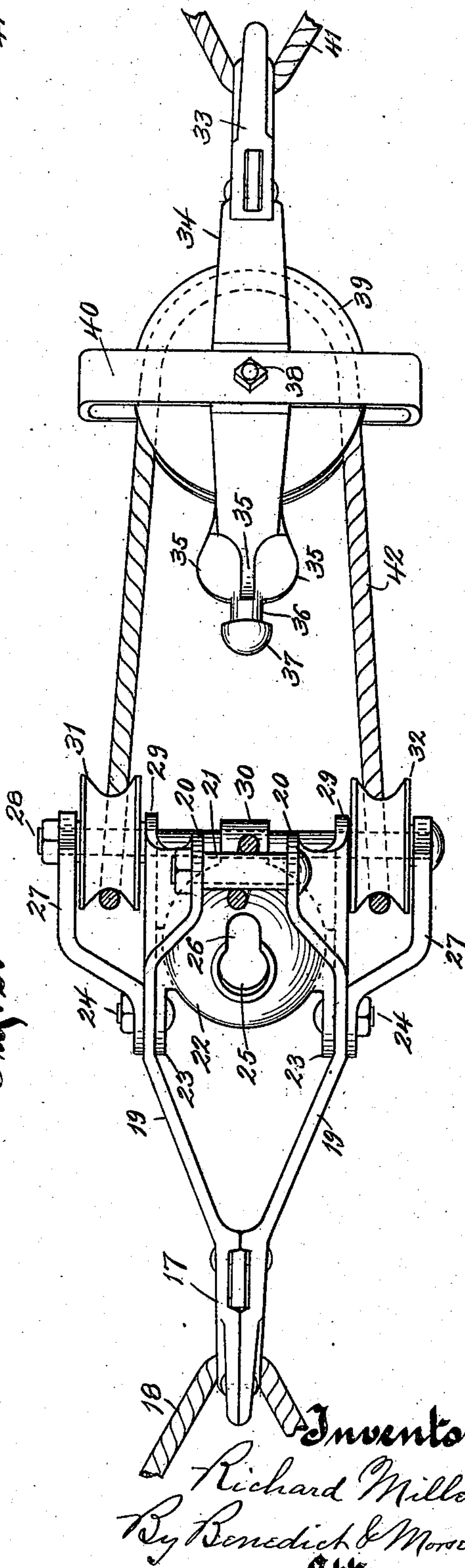


Fig. 3.



Witnesses.

*C. H. Keeney*

*Anna J. Schmidtbauer*

Inventor.

*Richard Miller*

*By Benedict & Morsell*

*Attorneys.*



# UNITED STATES PATENT OFFICE.

RICHARD MILLER, OF APPLETON, WISCONSIN.

## HAY-CARRIER.

No. 881,604.

Specification of Letters Patent.

Patented March 10, 1908.

Application filed August 16, 1905. Serial No. 274,374.

*To all whom it may concern:*

Be it known that I, RICHARD MILLER, residing in Appleton, in the county of Outagamie and State of Wisconsin, have invented new and useful Improvements in Hay-Carriers, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in hay carriers, and particularly to the mechanism for raising and lowering the load, and holding said load in locked elevated position below the carriage.

The primary object of the invention is to improve that portion of the mechanism of the carrier which is employed for raising and lowering the load, whereby a construction is produced which is most effective in operation, and whereby, also, simplicity is secured over constructions now in ordinary use.

A further important object of the invention is to provide an improved construction whereby the lifting devices are drawn towards each other and their inner ends made to automatically engage each other releasably, when draft is applied to the hoisting rope.

With the above object, and other incidental objects, in view, the invention consists of the devices and parts, or their equivalents, as hereinafter set forth.

Referring to the drawings, Figure 1 is an elevation of my invention; Fig. 2 is a side elevation of the lifting devices, showing the same in the position they would occupy before a pull is exerted upwardly on the hoisting rope; Fig. 3 is a plan view of Fig. 2; and Fig. 4 is a view showing the inner ends of the lifting devices locked releasably together, and which occurs, when draft is applied to the hoisting load.

The improvements are designed to be used in connection with any improved form of traveling carrier and allied parts, and may be found to work particularly well in conjunction with a traveling carriage and related parts such as shown in my pending application for patent, for improvements in hay carriers, filed May 12, 1905, Serial No. 260,201. I have, therefore, in Fig. 1 of the accompanying drawings, shown a fragment of one of the parallel side plates of the supporting frame, and also one of the adjustable plates for the pivot bolt of the pivotally mounted member of the rope clamping mechanism,

shown in my pending application for patent aforesaid, the said fragment of the supporting plate, in the present application, being designated by the numeral 5, the adjustable plate referred to by the numeral 6, and the pivot bolt by the numeral 7. I furthermore show the pair of pulleys mounted between the supporting plates and designated by the numerals 8 and 9; one of the pivoted bell-crank levers, designated by the numeral 10; the swinging yoke designated by the numeral 11, having formed at its lower end the ring designated by the numeral 12; the tubular cam lever designated by the numeral 13, pivoted in the outstretched arms of the section 14 of a lower rope clamp, whose other section 15 is adapted to be forced toward section 14 by means of the cam shoulder of the cam lever and clamp the hoisting rope therebetween, the said sections 14 and 15 being provided at their upper ends with the flanges forming the disk-shaped buffer 16 to engage with the ring 12. All the parts mentioned are shown clearly in my said prior application for patent, but will, nevertheless be hereinafter referred to briefly in explaining the operation of the present invention.

Referring particularly to the improvements, the numeral 17 indicates one of the lifting devices for engaging the ropes of the hay sling (not shown). This lifting device is provided at its outer end with a hook, which is shown, in Figs. 2 and 3, as in engagement with one of the ropes 18 of the hay sling. From its hooked outer end, this hook member preferably comprises two separated arms 19, 19 which are diverged for a desired distance in a direction away from the hook, then run straight and parallel for a short distance, then inwardly and upwardly for a limited distance, and finally upwardly in parallel lines to form lugs 20, 20 which are connected by means of a transverse bolt 21.

A substantially cup-like socket 22 is disposed between the arms 19, 19 of the lifting device 17, and this cup-like socket has extending from opposite sides thereof and outwardly lugs 23, 23, which are secured by means of bolts 24, 24, to the substantially straight parallel portions of the arms 19. The top of the cup-like socket is provided with an opening 25 having a branching narrow slot 26 extending inwardly therefrom.



Secured to the outside of the arms 19, preferably by means of the bolts 24 which secure the cup-shaped socket in place, are inwardly extending outstanding brackets 27, 27. In these brackets are mounted the opposite ends of a fixed shaft 28, the said shaft also passing through openings in lugs 29, 29 extending downwardly from the inner ends of arms 19, and through a sleeve 30 projecting inwardly from the cup-shaped socket. Mounted revolvably upon the fixed shaft, in the spaces between the brackets 27 and the outer sides of the arms 19, are grooved pulleys 31 and 32, respectively. The other lifting device is designated by the numeral 33, and from its outer end inwardly this lifting device is in the form of a yoke 34, with the arms of the yoke arranged one above the other, so that the space between said arms is disposed on a horizontal plane. The inner end of the yoke is formed with a series of indentations or recesses separated by ridges 35, said ridges having their outer edges of rounded convex contour. Projecting from the extremity of this ridged portion is a stud 36 terminating in a rounded head 37. Mounted horizontally on a vertical axial pin 38 in the yoke opening is a pulley 39. Extending transversely over the yoke 34, and secured by means of the axial pin 38 is a looped rope guard 40. The lifting device 33 is shown in engagement with another of the hay sling ropes 41.

The hoisting rope 42 enters at one end between the plates 5 of the supporting frame, and preferably over a small guide roller 43 at said end of the frame, and is extended to and passes out over roller 9 at the other end, and then extends down and around pulley 32 of the lifting device 17, thence to and around pulley 39 of lifting device 33, thence to and around the other pulley 31 of lifting device 17, thence upwardly and over pulley 8, thence downwardly between the arms of the yoke 11, thence through the ring 12 and buffer 16, thence between the two members 14 and 15 of the rope clamp, thence around the pin 21 of the lifting device 17, thence upwardly to form a loop, its extremity being adjustably connected to its downwardly extending portion by being clamped within the tubular cam lever 13. The cam shoulder of the tubular cam lever is adapted to force the section 15 of the rope clamp toward the other section of said clamp, to thereby clamp the hoisting rope 42 therebetween, in the same manner as pointed out in my pending application for patent herein before referred to. Also, as fully described in said pending application for patent, the rope clamp with its disk-shaped flange 16, forms an adjustable stop which may be raised or lowered on the hoisting rope, when the cam lever 13 is in a horizontal position, in order to lengthen or

shorten the loop at the end of the hoisting rope, and when the desired adjustment is obtained, it may be rigidly clamped upon the hoisting rope by turning the cam lever 13 to the position shown. During the hoisting operation, the movements of the hoisting rope will bring the buffer 16 into engagement with the ring 12, and thereby lift the horizontal arms of the bell-crank lever 10 (it being understood that two of these bell-crank levers are employed) causing them to swing. These bell-crank levers are employed to operate upon rope clamping mechanism carried between the plates 5, but as this clamping mechanism forms no part of the present invention, and is fully covered in my pending application for patent herein before referred to, no detail illustration and description thereof are here deemed necessary.

Figs. 1, 2 and 3 show the hoisting rope and lifting devices in their lowered positions and the hooked ends of said lifting devices are shown as in engagement with the ropes 18 and 41 of the hay sling. Draft is now applied on the hoisting rope, and as at this time the carriage is locked in its position, such draft will serve to elevate the lifting devices 17 and 33 and the load carried thereby. As the lifting devices are thus elevated their inner ends are drawn closer and closer together, the head 37 of the stud 36 of the lifting device 33 finally seating itself in the cup-shaped socket 22, and with continued draft on the hoisting rope, the said head passes through the opening 25 and thence into the narrow slot 26, whereby the two parts of the lifting devices are automatically locked together, as clearly shown in Fig. 4, and said lifting devices caused to assume the position shown in said Fig. 4. The rounded convex contour of the head 37, and the rounded concaved shape of the cup-shaped socket compels the head 37 to pass through the opening 25. The rounded ridges 35 on the end of the yoke 34 form practically a ball bearing on the concave surface of the cup-shaped device, so as to permit turning of the stud 36 in the slot 26 without excessive friction.

After the load is lifted, as above explained, the carriage is released, and consequently the draft on the hoisting rope will cause said carriage to move along the track. At the point of the discharge, the carriage is stopped in any suitable manner, and the load is released by uncoupling the two sections of the hay sling, and said load allowed to drop without lowering the end of the hoisting rope, so that the return movement of the carriage to its loading position is made with the hoisting rope still clamped in its raised position until the carriage is again locked, and the hoisting rope is then released and allowed to lower. After the lowering of the hoisting rope and the lifting devices in the manner described,



the said lifting devices if they had been previously recoupled are grasped by hand and turned so that the stud 36 is brought into the opening 25 of the cup-shaped device, when of course the two lifting devices can be separated and made to assume the position shown in Figs. 1, 2 and 3, ready to again engage the ropes of the hay sling.

From the foregoing description, it will be seen that I provide a comparatively simple, but yet exceedingly effective lifting mechanism for hay carriers, and also one in which the two lifting devices automatically couple together when a pull is exerted upwardly on the hoisting rope.

I prefer to arrange the pulleys 31 and 32 of the lifting device 17 in the manner clearly shown in the drawings, that is to say, upon the shaft 28, and in the spaces between the outstanding brackets 27, and the outer sides of the arms 19. By this construction, and by removing the nut on one end of the fixed shaft 28, said shaft can be readily drawn out of its bearings, and consequently the pulleys removed, so that the hoisting rope 42 is separated from the lifting device 17. This enables the lifting device 33 to be used independently of said lifting device 17. In such case the hoisting rope is made to extend through the frame 5, thence over pulley 9, thence downwardly and around pulley 39 of the lifting device 33, and thence upwardly and secured to a depending finger 44 from frame 5. Under this arrangement, the pulley 8 would of course be idle, and the clamp 14—15 and cam 13 would also be omitted. Instead of the buffer 16 contacting with the ring 12, the head 37 of the stud 36 would under this arrangement act to contact with the ring 12 in order to operate the bell-crank levers 10.

What I claim as my invention is;

1. In lifting mechanism for hay carriers, the combination of lifting devices having means at their outer ends for engaging the load, and one of said lifting devices provided at its inner end with a cup-shaped socket having an opening in the top thereof, with a narrow slot extending from the opening, and the other lifting device provided at its inner end with a projecting stud having a headed extremity, and a hoisting rope engaging the lifting devices and adapted, when draft is applied thereto, to pull the lifting devices toward each other and thereby cause the headed stud of one of said lifting devices to enter the cup-shaped socket of the other lifting device and pass through the opening of said socket, and finally seat itself in the narrow slot extending from said opening, whereby the two lifting devices are automatically releasably locked together.

2. In lifting mechanism for hay carriers, the combination of lifting devices having

means at their outer ends for engaging the load, and one of said lifting devices provided at its inner end with a cup-shaped socket, having an opening in the top thereof with a narrow slot extending from the opening, and the other lifting device provided at its inner end with a projecting stud having a convex headed extremity, and a hoisting rope engaging the lifting devices and adapted, when draft is applied thereto, to pull the lifting devices toward each other and thereby cause the convex headed extremity of one of said lifting devices to enter the cup-shaped socket of the other lifting device and pass through the opening of said cup-shaped socket, and finally seat itself in the narrow slot extending from said opening, whereby the two lifting devices are automatically releasably locked together.

3. In lifting mechanism for hay carriers, the combination of lifting devices having means at their upper ends for engaging the load, and one of said lifting devices provided at its inner end with a cup-shaped socket having an opening in the top thereof, and the other lifting device provided at its inner end with a series of convex ridges, and with a headed stud projecting from the ridged portion, and a hoisting rope engaging the lifting devices, and adapted, when draft is applied thereto, to pull the lifting devices toward each other and thereby cause the headed stud of one of said lifting devices to enter the cup-shaped socket of the other lifting device and pass through the opening of said cup-shaped socket, whereby the two lifting devices are automatically releasably locked together.

4. In lifting mechanism for hay carriers, the combination of lifting devices having means at their outer ends for engaging the load, and one of said lifting devices diverged inwardly into two members, and the other lifting device provided at its inner end with a projecting headed stud, a cup-shaped socket carried between the diverging arms of one of the lifting devices and provided with an opening having a narrow slot extending therefrom, outstanding brackets secured to the outer sides of the diverging members of said last mentioned lifting device, a shaft having its ends removably mounted in the brackets, pulleys mounted on the shaft in the spaces between the brackets and the outer sides of the diverging arms, a horizontally mounted pulley carried by the other lifting device, and a hoisting rope extended beneath one of the pair of pulleys of one of said lifting devices, thence to and around the horizontally mounted pulley of the other lifting device, thence to and around the other pulley of the pair of pulleys, and thence upwardly, said hoisting rope adapted, when draft is applied thereto, to pull the lifting devices toward each other and thereby cause the headed



stud of one of said lifting devices to enter the  
cup-shaped socket of the other lifting device  
and pass through the opening of said cup-  
shaped socket and finally seat itself in the  
5 narrow slot extending from said opening,  
whereby the two lifting devices are auto-  
matically releasably locked together.

In testimony whereof, I affix my signature,  
in presence of two witnesses.

RICHARD MILLER.

Witnesses:

ANNA F. SCHMIDTBAUER,  
R. S. C. CALDWELL.