

No. 811,572.

PATENTED FEB. 6, 1906.

R. MILLER.
HAY CARRIER.

APPLICATION FILED MAY 13, 1906.

2 SHEETS—SHEET 1.

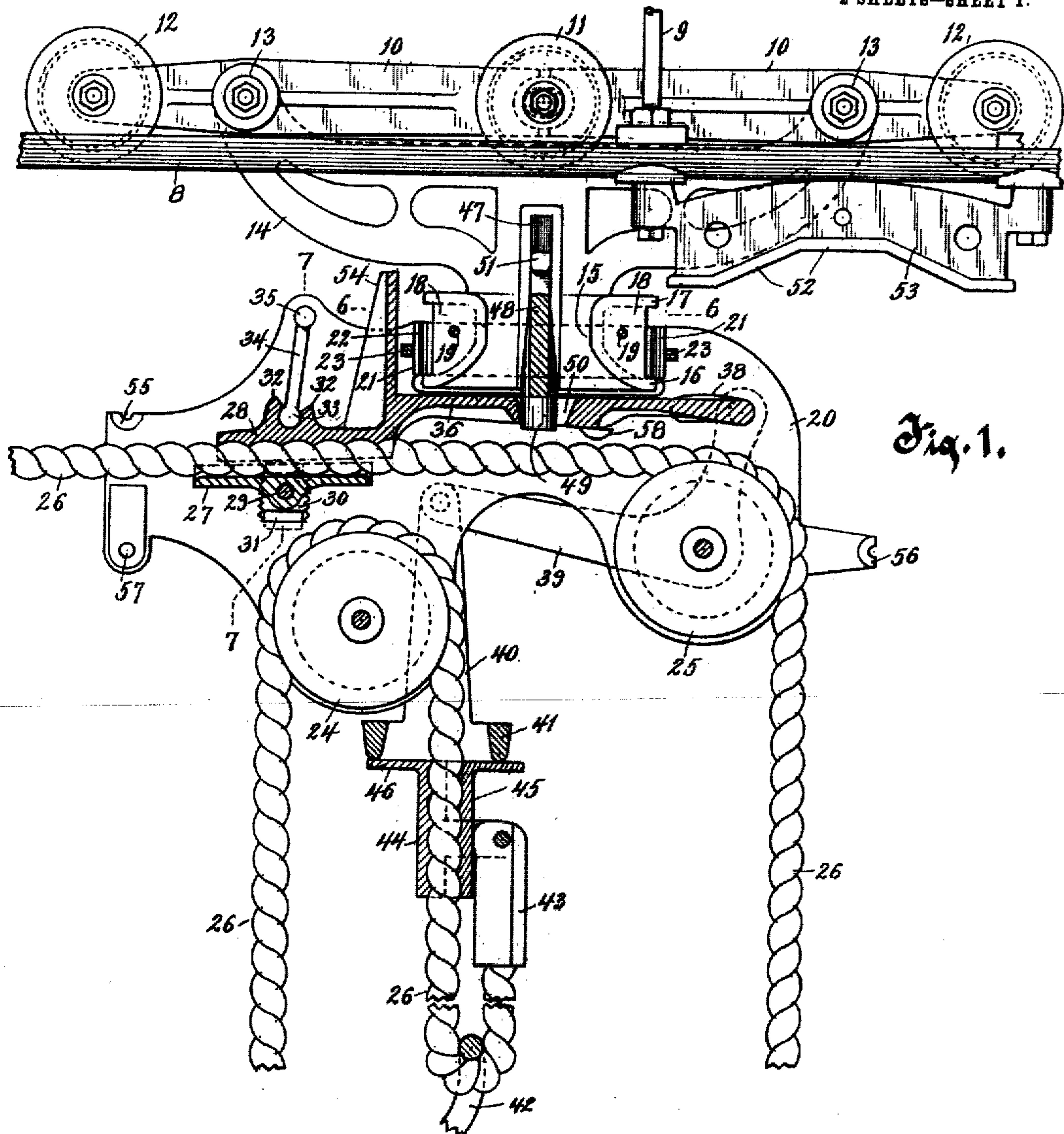
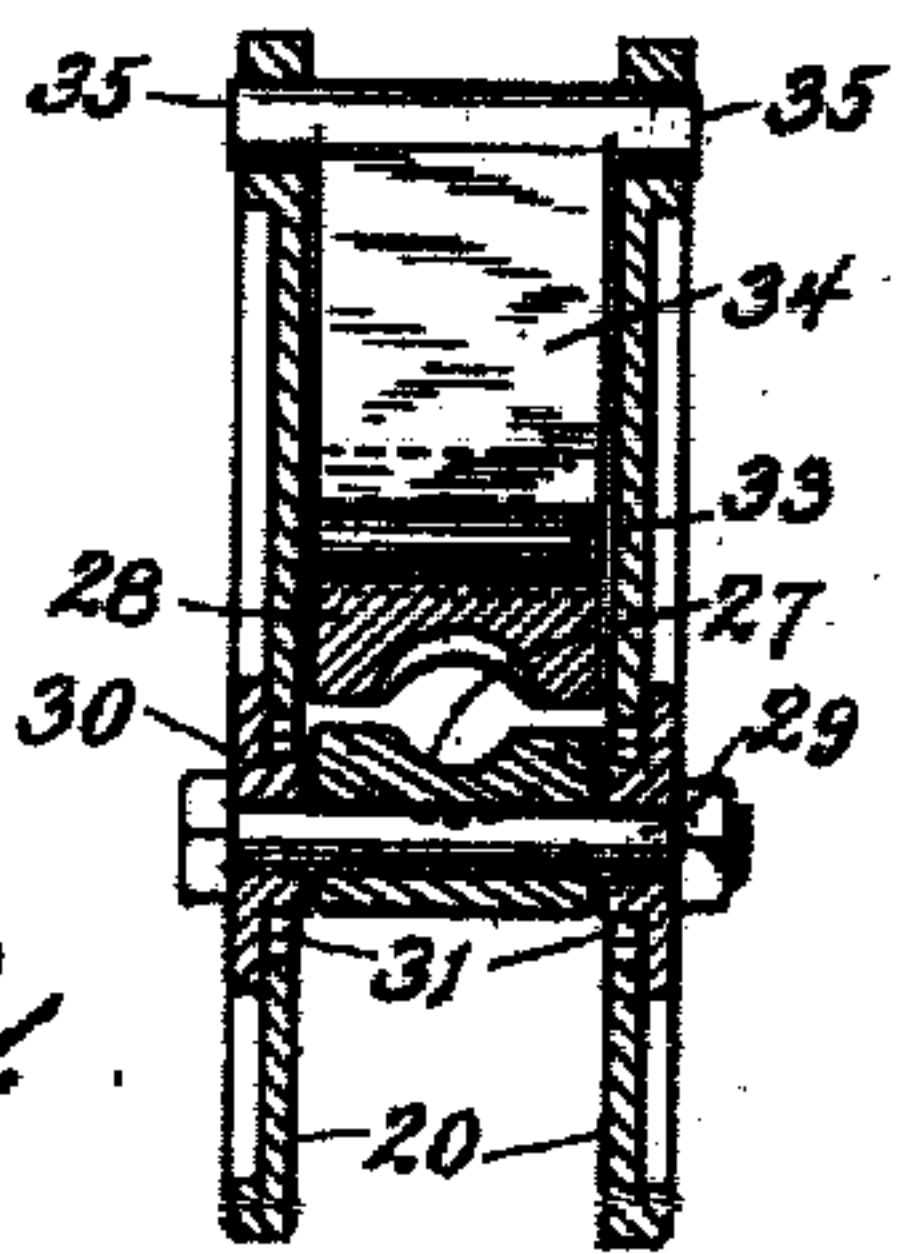


Fig. 1.

Fig. 7.



Witnesses.
C. H. Keeney,
R. S. Caldwell.

Inventor.
Richard Miller.
By Benedict & Morsell,
Attorneys.

No. 811,572.

PATENTED FEB. 6, 1906.

R. MILLER.
HAY CARRIER.

APPLICATION FILED MAY 13, 1905.

2 SHEETS—SHEET 2.

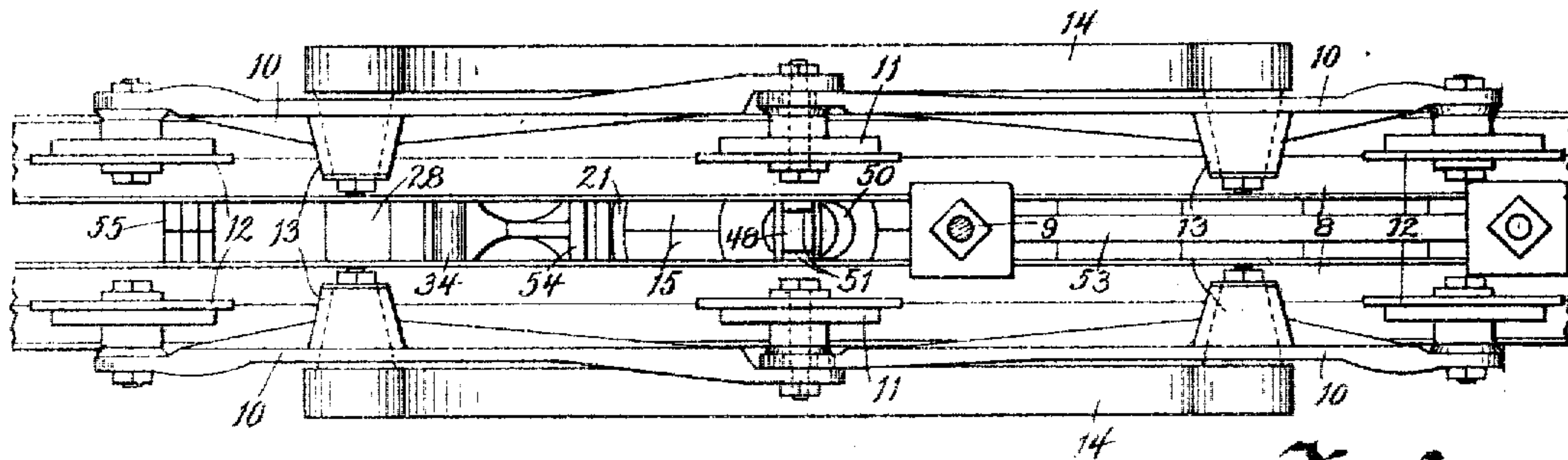


Fig. 2.

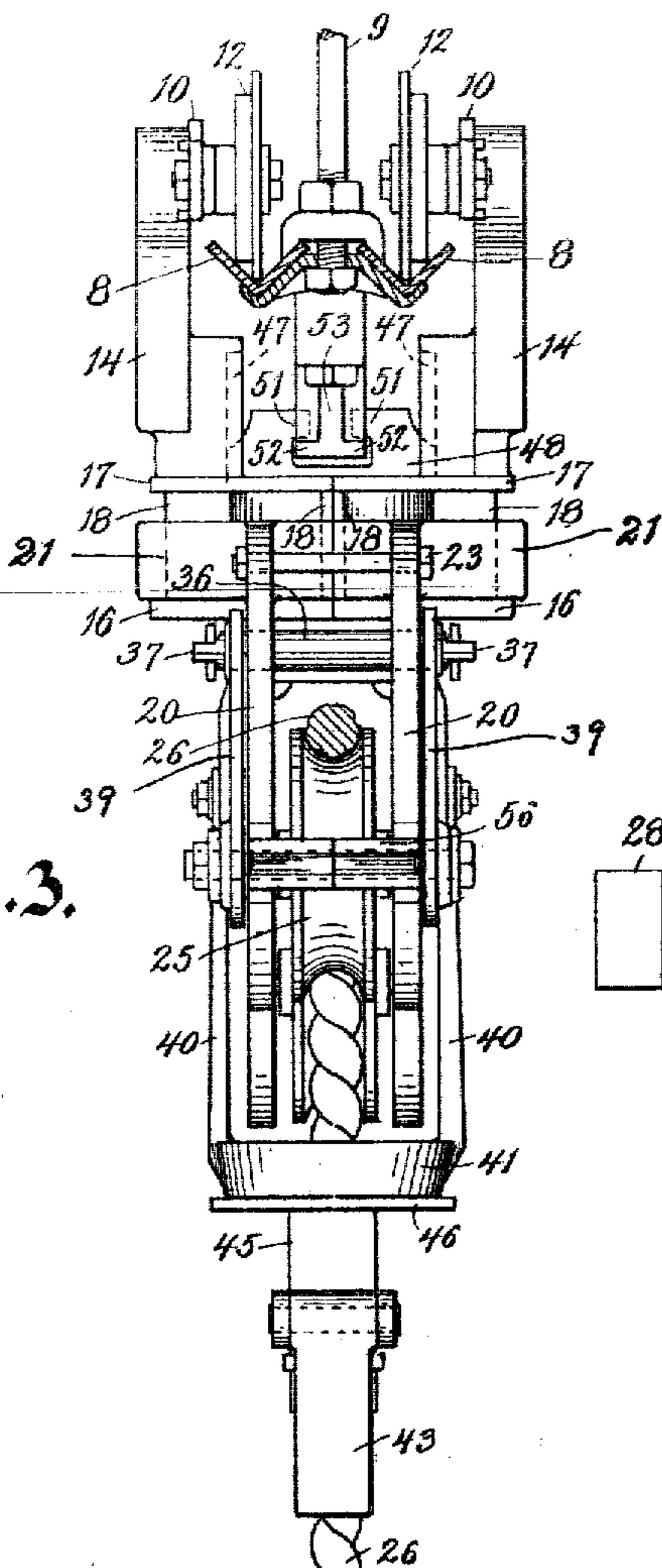


Fig. 3.

Fig. 4.

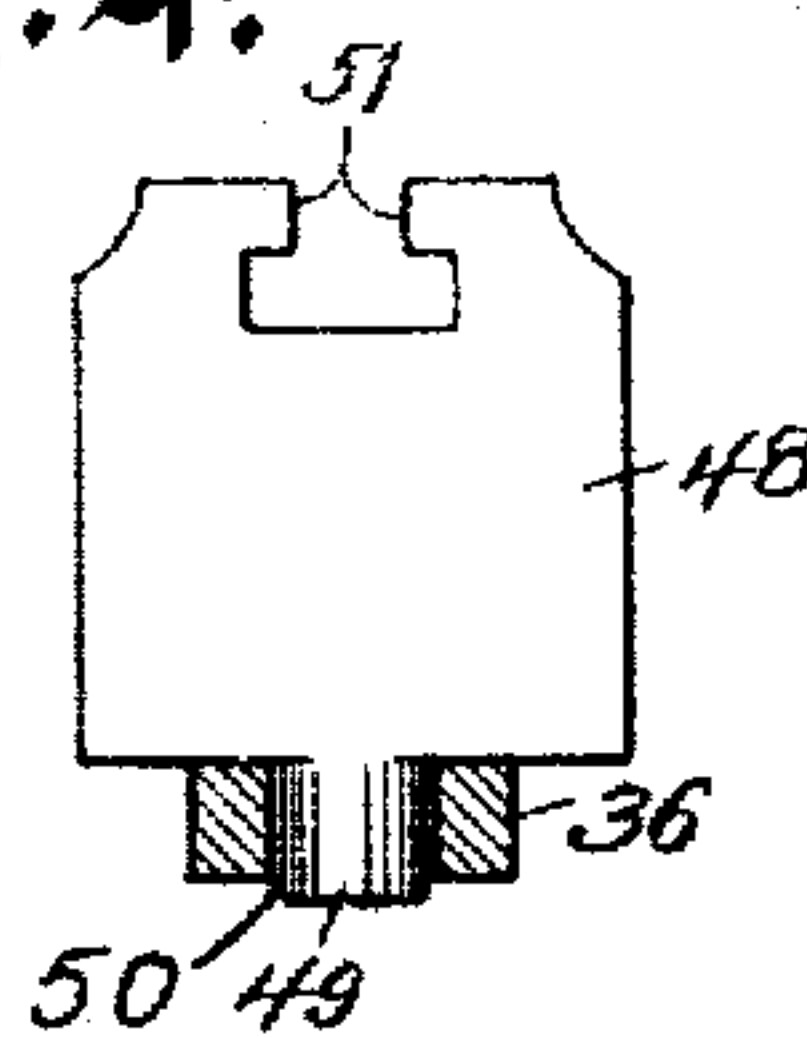


Fig. 5.

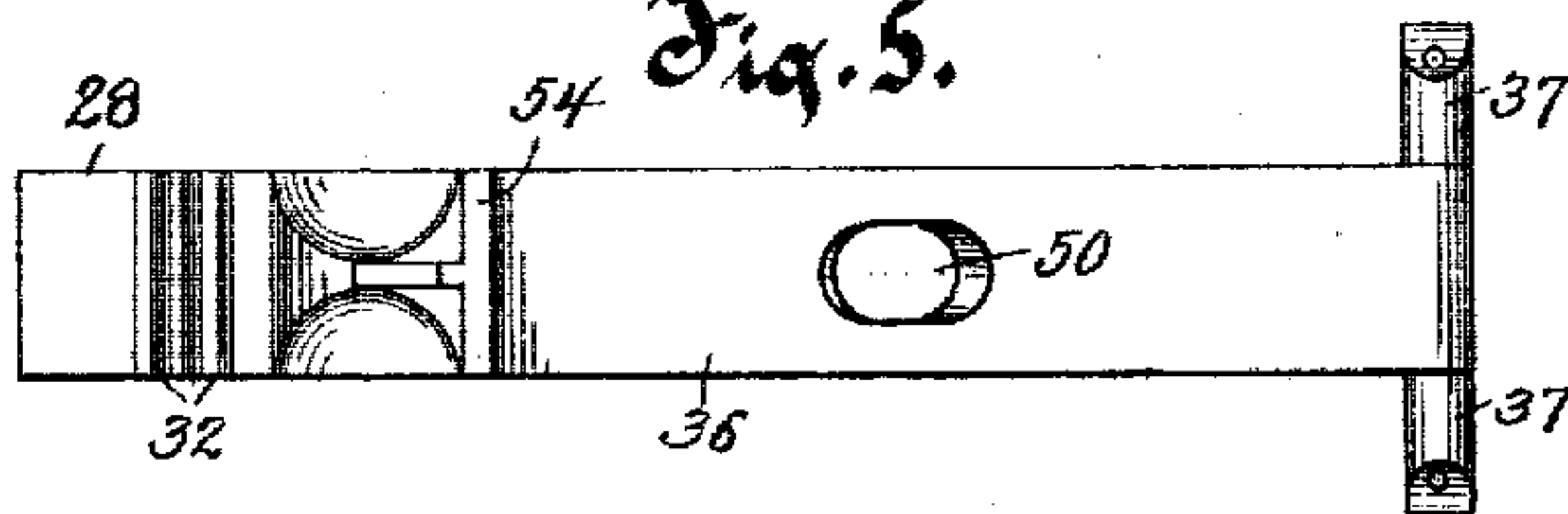
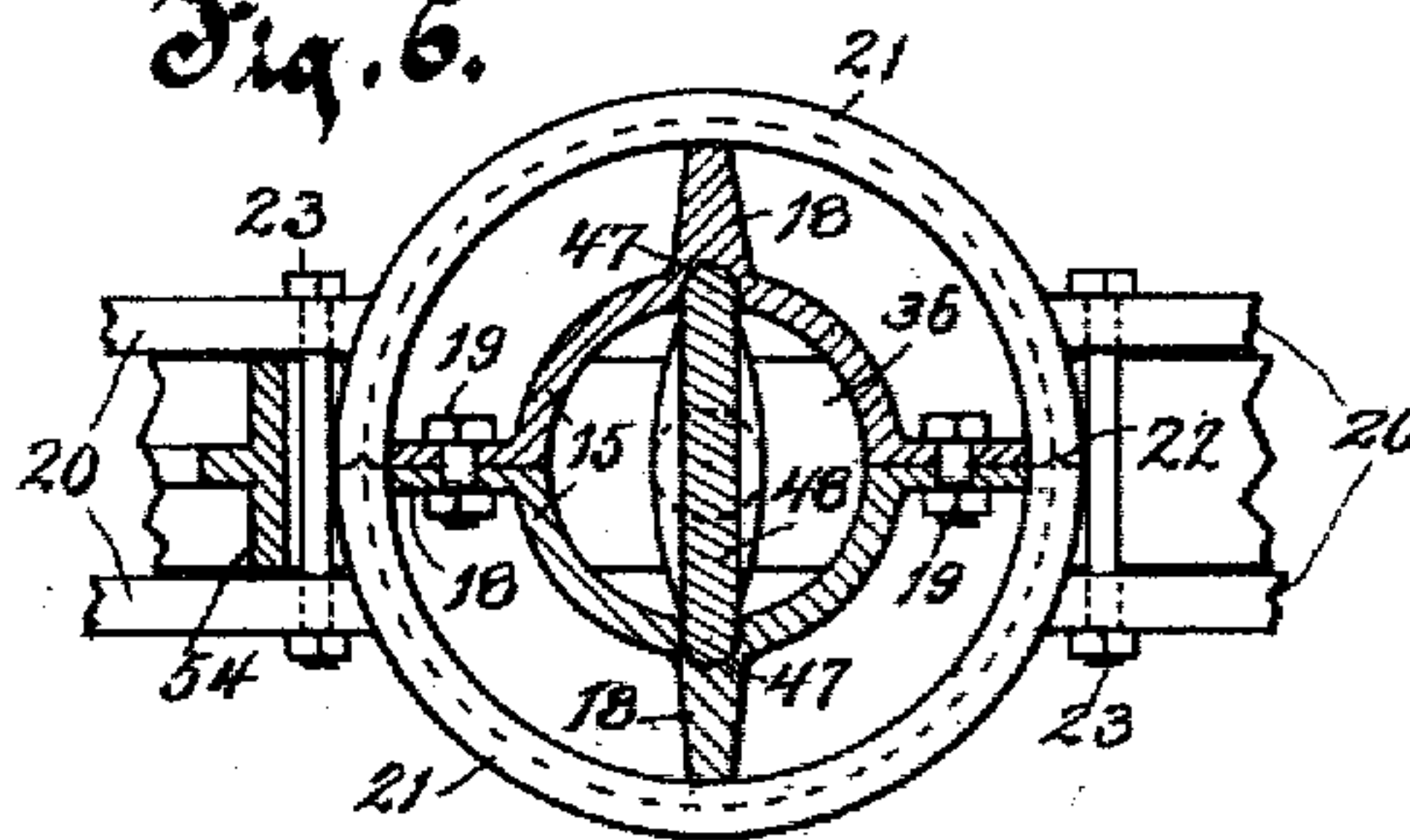


Fig. 6.



Witnesses:
C. H. Keeney,
R. S. Caldwell.

Inventor.
Richard Miller.
By Benedict & Morsell,
Attorneys.

UNITED STATES PATENT OFFICE.

RICHARD MILLER, OF APPLETON, WISCONSIN.

HAY-CARRIER.

No. 811,572.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed May 13, 1905. Serial No. 260,201.

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.

This invention relates to hay-carriers and devices of a similar nature adapted to hoist a load of material at one point and convey it to another point where it is to be released, and comprises a carrier of novel construction which will automatically lock itself in position for receiving the load and remain so locked during the lowering and raising of the load-engaging means and which automatically unlocks itself when the load-hoisting operation is completed, simultaneously clamping the hoisting-rope, so that the draft upon said hoisting-rope will produce a movement of the carrier upon its track to the position in which it is desired to release the load, the return of the carrier to its load-receiving position besides automatically locking the carrier in position serving also to release the clamping of the hoisting-rope.

An object of the invention is to provide a carrier with a jointed carriage having intermediate rollers and supporting the mechanism in such a manner that the pressure upon all of the rollers is equalized.

Another object of this invention is to provide a clamping means for the hoisting-rope which will be adjustable for different sizes of ropes and which will be automatically operated by the locking mechanism for the carriage to engage and release the rope as the carriage is released and locked, respectively.

Another object of this invention is to provide such a rope-clamp with diagonal grooves in one member corresponding to the twist of the rope and with a smooth surface in the cooperating member to avoid injuring the rope.

Another object of the invention is to improve upon the details of construction generally and to combine a novel form of carriage locking and unlocking means with a novel form of rope-clamping means.

With the above and other objects in view the invention consists in the carrier, its parts and combinations of parts, as herein described, and all equivalents.

Referring to the accompanying drawings, in which like characters of reference indicate

the same parts in the several views, Figure 1 is a side elevation of a carrier constructed in accordance with this invention, parts being sectioned for clearness of illustration. Fig. 2 is a plan view thereof. Fig. 3 is an end elevation thereof. Fig. 4 is an elevation of the sliding dog with the locking-plate in section. Fig. 5 is a plan view of the locking-plate. Fig. 6 is a sectional plan view of the swivel connection, taken on the line 6 6 of Fig. 1; and Fig. 7 is a sectional elevation of the rope-clamping means, taken on the line 7 7 of Fig. 1.

In the drawings, 8 represents a track of usual construction, with parallel rails, V-shaped in cross-section, suitably clamped together and supported from above by hangers 9.

A carriage is provided to ride on the track and comprises opposite pairs of side members 10 in the form of levers, which are slidably pivoted together at their inner ends and carry intermediate supporting-rollers 11 at such connections and similar supporting-rollers 12 at their outer ends. The slidable pivotal connection between the inner ends of the levers 10 is produced by the pivotal pins on which rollers 11 are mounted, having a sliding movement in longitudinal slots in the levers, as shown in dotted lines in Figs. 1 and 2. The side members 10 of each pair are fulcrumed at 13 to upwardly-extending arms of a side frame 14, which arms spread apart to produce a fork-shaped formation, with the depending middle portion supporting an inwardly-extending half-section 15 of a cylindrical swivel-hub. When the two half-sections of the opposite side frames are fitted together, the hub produced thereby has a lower outwardly-extending annular bearing-flange 16 and an upper outwardly-extending retaining-flange 17, connected by radial vertical webs 18, as clearly seen in Fig. 6. Certain of the webs 18 of the two half-sections bear against each other and are secured together by means of bolts 19, passing therethrough, thus holding the two side frames 14 together and holding the half-sections of the swivel-hub rigidly in their proper relation to each other.

A pair of parallel side plates 20 of a supporting-frame are provided with half-sections 21 of a swivel-ring, which fits around the swivel-hub 15, bearing against the outer edges of the radial webs 18 and confined between the annular flanges 16 and 17 and bearing upon the former. The swivel-ring sec-

tions 21 have tongue-and-groove connections 22 with each other at their abutting ends and serve to space the side plates 20 apart, while clamping-bolts 23, passing through said side plates beyond each end of the ring-sections, rigidly clamp them together.

A pair of pulleys 24 and 25, respectively, are journaled between the side plates 20 in depending projections thereof, and a hoisting-rope 26 enters at one end of the supporting-frame and passes over pulley 25 at the other end and then extends down and around one or more pulleys upon the hay-sling or other lifting device (not shown) and returns upwardly, passing over pulley 24, and then again extends downwardly to be secured to said lifting device.

After entering the supporting-frame and before passing over pulley 25 the hoisting-rope is caused to pass through a rope-clamp, which comprises a lower pivotal member 27 and an upper swinging member 28. The lower member 27 is pivotally mounted upon a bolt 29, which has its ends passed through adjusting-plates 30, said plates having inwardly-extending bosses with side teeth fitting in corresponding teeth in the side walls of openings 31 of side plates 20. By locating the adjusting-plates 30 higher or lower in the openings 31 before tightening bolt 29 the engaging teeth thereof will lock the pivotal lower member of the rope-clamp in positions to accommodate hoisting-ropes of various sizes.

The upper member 28 of the rope-clamp is provided with a grooved lower surface having oblique serrations formed therein to fit the shape of the twisted rope. At its upper part the clamping member 28 is provided with bent flanges 32, forming a pivotal socket extending transversely across it, in which socket is pivotally mounted an enlarged rounded end 33 of a link-plate 34, which has trunnion-lugs 35 at its upper end pivotally mounted in openings therefor in the side plates 20. The link-plate 34 thus suspends the clamp member 28 so that it may swing, and in doing so it approaches or recedes from the opposing clamp member 27 to clamp or release the hoisting-rope 26 therebetween.

The clamp member 28 forms an integral part or end extension of a locking-plate 36, which has laterally-extending lugs 37 at its other end projecting through arc-shaped slots 38 in the side plates 20, so as not to interfere with the swinging motion of said clamp member, as above referred to. These arc-shaped slots 38 are concentric with the pulley 25, so that the lugs 37 traveling therein may have connection with the upwardly-extending arms of bell-crank levers 39, which are pivoted outside of the supporting-frame upon the same shaft or pin that supports pulley 25. The other arms of said bell-crank levers 36, which extend in an approximately horizontal

direction, have suspended therefrom a swinging yoke 40, with a ring 41 forming its lower portion and surrounding that portion of the hoisting-rope 26 which engages with the hay-sling.

The end of the hoisting-rope 26 which is adapted to be engaged with the hay-sling after passing through an eye or hook 42, forming part of said hay-sling, returns upwardly to form a loop, its extremity being adjustably connected to its downwardly-extending portion by being clamped within a tubular cam-lever 43, which is pivoted in the outstretched arms of a section 44 of a rope-clamp, whose other section 45 is adapted to be forced toward section 44 by means of the cam-shoulder of the cam-lever and clamp the hoisting-rope 26 therebetween. The sections of the rope-clamp are provided on their grooved surfaces with oblique serrations to fit the twists of the rope, and at their upper ends they are provided with flanges forming a disk-shaped buffer 46 to engage with the ring 41.

The rope-clamp, with its disk-shaped flange, constitutes an adjustable stop which may be raised or lowered on the hoisting-rope when the cam-lever 43 is in a horizontal position to lengthen or shorten the loop at the end of the hoisting-rope, and when the desired adjustment is attained it may be rigidly clamped upon the hoisting-rope by lowering the cam-lever 43 to the position shown. During the hoisting operation the movements of the hoisting-rope will bring the stop into engagement with the ring 41, and thereby lift the horizontal arms of the bell-crank levers 39, causing them to swing and draw the lock-plate rearwardly, and so swing the clamping member 28 downwardly to clamp the hoisting-rope therebeneath, which will prevent a further movement of said hoisting-rope around the pulleys 24 and 25.

On the inner walls of the side frames 14 of the carriage are vertical grooves 47, in which slide the rounded edges of a sliding dog 48, which is broad and flat at its upper part and has a locking-pin 49 at its lower end adapted to enter an opening 50 through the locking-lever 36 when said lever is in the position to clamp the hoisting-rope by means of the clamping member 28. The sliding dog has a pair of oppositely-disposed overhanging shoulders 51 at its upper end, which are adapted to receive and ride upon the inclined and horizontal flanges 52 of an ordinary trip-block 53, mounted on the track 8 in the usual manner. While the carriage is moving on the track the locking-plate 36 is in the position to clamp the hoisting-rope 26 with its clamping member 28, and the presence of the locking-pin 49 in the opening 50 prevents the change in position of said locking-plate to release the hoisting-rope, so that it may not raise or lower the load at such time.

As the carriage approaches the trip-block 53 the shoulders 51 of the sliding dog engage the flanges 52 and ride up the inclined portion thereof, lifting the sliding dog in the grooves 5 47 and removing the locking-pin 49 from opening 50. After the locking-pin has been so removed from the opening 50 and the shoulders 51 are engaged with the middle horizontal portions of the flanges of the trip-block a buffer-flange 54, which projects upwardly from the locking-plate, strikes against the end of the trip-block and moves the locking-plate to its other position, thereby releasing the rope-clamp 28 and placing the locking-plate beneath the locking-pin 49, so that 15 said pin is held in its upper position and the carriage is locked by the engagement of the sliding dog with the trip-block. The rope-clamp being released, the hay-sling or other load-receiving device carried by the end of the hoisting-rope is free to descend and receive its charge. When this is accomplished, draft is applied to the hoisting-rope 26, and as the carriage is locked in its position such 25 draft will serve to elevate the load until the adjustable stop 46 engages the ring 41 and swings the locking-plate 36 to the other position. In doing so the locking-plate tightly clamps the hoisting-rope by means of the rope-clamp 28 and moves the opening 50 beneath the locking-pin 49 to permit of the return downward movement of said pin, thus releasing the carriage from the trip-block to enable the further draft on the hoisting-rope 35 to move it along the track. At the point of discharge the carriage is stopped in any suitable manner, preferably by means of another trip-block 53 engaging with the buffer-flange 54, and the load is released by means of the hay-sling and 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 the position shown in Fig. 1 45 until the carriage is again locked with the trip-block and the rope is released, as before described.

The pivotal connections between the side frames 14 and the side members 10 are located about one-third the distance from the end rollers 12 to the intermediate rollers 11 in order that the weight supported by each of the intermediate rollers will be just equal that supported by each of the end rollers, and 55 in this manner the bearing for the carriage is increased over the ordinary four-wheel carriages without placing undue strain upon any part.

The construction of the rope-clamp is such 60 that it is adjustable for ropes of different thickness and is not liable to wear the rope as usual, because of its conforming to the twists in the rope. The clamping member is so mounted that it receives a positive clamping 65 action from the weight of the load, and the

locking-plate, of which it forms a part, prevents its releasing the rope in transit by the engagement with the locking-pin, though automatically effecting the release of said clamping member when its upstanding flange 70 54 strikes against the trip-block 53 simultaneously with the locking of the carriage in position.

The adjustability of the clamping-stop 46 enables the load-supporting loop to be lengthened or shortened to vary the elevation at 75 which the load is carried and constitutes a secure fastening means which is not liable to slip. The construction of the clamping-stop is such that it may be quickly and easily 80 changed from one position to another to accomplish the adjustments and the secure fastening without the use of tools or the necessity for detaching parts.

The arched lugs 55 above the hoisting-rope 85 26 where it enters the carrier and the arched lugs 56 at the back of pulley 25 form guides for preventing the hoisting-rope losing its proper place, and the bosses 57 beneath lugs 55 are for the purpose of attaching another pulley when desired. 90

A pair of lugs 58 project from the side plates 20 of the supporting-frame and constitute bearings for the locking-plate to rest upon while it is locking the carriage in position, and thus relieve the trunnion-lugs 37 95 from the pressure of the locking-pin 49.

What I claim as my invention is—

1. In a carrier, a carriage having pairs of side members pivotally connected together, 100 rollers mounted at the junction of the side members and at the outer ends thereof, and a frame carried by the side members.

2. In a carrier, a carriage comprising pairs of side members pivotally connected together, 105 rollers mounted at the pivotal junction of the side members and at the outer ends thereof, and a frame having pivotal connections with the side members at about one-third the distance from the end rollers to the 110 intermediate rollers.

3. In a carrier, a carriage comprising pairs of side members, the members of each pair having a sliding pivotal connection with each other, rollers mounted at such connections, 115 rollers mounted at the outer ends of the side members, and side frames each having pivotal connections with the side members of one pair at about one-third the distance from the end rollers to the intermediate rollers. 120

4. In a carrier, a pair of suitably-mounted side frames, a swivel-hub formed in sections which are carried by the side frames, radial webs with retaining and bearing flanges connecting their upper and lower ends respectively 125 formed on the swivel-hub sections, means for connecting together the radial webs of the swivel-hub sections, a supporting-frame comprising side plates, ring-sections carried by the side plates and having 130

tongue - and - groove connections with each other, said ring - sections fitting upon the swivel-hub and bearing upon the bearing-flange and against the edges of the radial webs, and means for connecting the side plates of the supporting-frame together.

5. In a carrier, a suitably-mounted supporting-frame having side plates, adjustable plates having teeth engaging in toothed openings of the side plates, a pivotal pin supported by the adjustable plates, a clamp member pivotally mounted on the pivotal pin, and a suitably-mounted cooperating member with means for operating it.

6. In a carrier, a carriage, a locking-pin carried thereby, a track on which the carriage travels, a trip-block on the track to engage and lift the locking-pin, a suitably-mounted locking-plate, and means on the locking-plate for engaging the trip-block when the locking-pin is raised to move the locking-plate beneath the locking-pin and thereby lock the carriage against moving on the track.

7. In a carrier, a track, a trip-block carried thereby, a carriage movable on the track, a locking-pin carried by the carriage to engage with and be lifted by the trip-block, a locking-plate mounted to slide beneath the locking-pin, a means on the locking-plate for engaging the trip-block and causing the locking-plate to slide beneath the locking-pin to lock the carriage on the track, and means for automatically removing the locking-plate from beneath the locking-pin.

8. In a carrier, a track, a trip-block mounted thereon, a carriage movable on the track, a locking-pin on the carriage to engage and be lifted by the trip-block, a locking-plate having means for engaging the trip-block to move it beneath the locking-pin, and a rope-clamp operated by the locking-plate.

9. In a carrier, a track, a trip-block mounted thereon, a carriage movable on the track, a locking-pin on the carriage to engage and be lifted by the trip-block, a locking-plate adapted to move beneath the locking-pin when said locking-pin is raised, a rope-clamp operated by the locking-plate, a hoisting-rope passing through the rope-clamp, a stop on the hoisting-rope, and means adapted to be engaged by the stop for moving the locking-plate from beneath the locking-pin and causing the clamp to engage the hoisting-rope.

10. In a carrier, a track, a trip-block mounted thereon, a carriage movable on the track, a locking-pin on the carriage to be engaged and lifted by the trip-block, a locking-plate having an opening to receive the locking-pin, a rope-clamp having its clamping member carried by the locking-plate, a link suspending the clamping member, a bell-crank lever on which the locking-plate is supported, means on the locking-plate for

engaging the trip-block when the locking-pin is raised for moving the locking-plate beneath the locking-pin and opening the rope-clamp, a hoisting-rope passing through the rope-clamp, and a stop on the hoisting-rope adapted to automatically cause the bell-crank lever to swing and move the locking-plate from beneath the locking-pin and to close the rope-clamp upon the hoisting-rope.

11. In a carrier, a track, a trip-block mounted thereon, a carriage movable on the track, a locking-pin slidable on the carriage and adapted to be engaged and lifted by the trip-block, a supporting-frame swiveled to the carriage and comprising side plates, a locking-plate having lugs passing through slots of the side plates, bell-crank levers pivoted to the supporting-frame and engaging the lugs of the locking-plate, a rope-clamp on the supporting-frame with its clamping member carried by the locking-plate, a link-plate having a rounded end pivotally mounted in a socket of the clamping member and also having trunnion-lugs pivotally mounted in the side plates of the supporting-frame, a hoisting-rope passing through the rope-clamp, means on the locking-plate for engaging the trip-block when the locking-pin is raised to move the locking-plate beneath the locking-pin and release the clamping member from the hoisting-rope, a yoke suspended from the bell-crank levers, a ring carried thereby and surrounding the hoisting-rope, and an adjustable stop on the hoisting-rope to engage the ring and cause the bell-crank levers to move the clamping-plate from beneath the locking-pin and close the rope-clamp upon the hoisting-rope.

12. In a device of the character described, an adjustable stop for a hoisting-rope, comprising a tubular rope-clamp formed in sections, ears on one section embracing the other section, and a cam-lever pivoted between the ears and clamping the sections together upon the hoisting-rope, said cam-lever being adapted to clasp the end of the hoisting-rope.

13. In a carrier, a track, a trip-block mounted thereon, a carriage movable on the track and comprising pairs of side members pivotally connected together, rollers mounted on the side members at their pivotal connections and at their ends, side frames having pivotal connections with the side members between the end rollers and the intermediate rollers, a locking-pin slidable in the side frames and adapted to be engaged and lifted by the trip-block, a swivel-hub formed in sections carried by the side frames, radial webs with retaining and bearing flanges at their upper and lower ends respectively mounted on the swivel-hub sections, a supporting-frame comprising side plates, ring-sections carried thereby with tongue - and - grooved connections with each other and mounted on the swivel-hub with a bearing on the bearing-

flange and against the edges of the radial webs, a pulley mounted between the side plates of the supporting-frame, a hoisting-rope passing over said pulley, a pair of bell-
5 crank levers mounted on the shaft of the pulley, a locking-plate pivotally connected to the bell-crank levers and having an opening into which the locking-pin projects, a rope-clamp through which the hoisting-rope
10 passes having one member adjustable in the side plates and its clamping member formed with the locking-plate, a link-plate pivotally connected to the clamping member and to the side plates of the supporting-frame, said
15 clamp being closed upon the hoisting-rope when the locking-plate is in position to receive the locking-pin in its opening, a projecting flange on the locking-plate adapted to be engaged by the trip-block when the lock-
20 ing-pin is raised for moving the locking-plate beneath the locking-pin and opening the rope-clamp, lugs on the side plates of the sup-

porting-frame upon which the locking-plate bears, another pulley mounted in the supporting-frame and having the hoisting-rope 25 passing around it, a yoke suspended from the bell-crank levers, a ring carried thereby and surrounding the hoisting-rope, and an adjustable stop on the hoisting-rope having connection with the end thereof to form an 30 engaging loop at the end of the hoisting-rope, said stop adapted to engage the ring and swing the bell-crank levers to move the locking-plate from beneath the locking-pin and to force the clamping member upon the hoist- 35 ing-rope when the load has been elevated to the desired extent.

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

RICHARD MILLER.

Witnesses:

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