

R. MILLER.

HOIST.

APPLICATION FILED SEPT. 18, 1908.

958,883.

Patented May 24, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

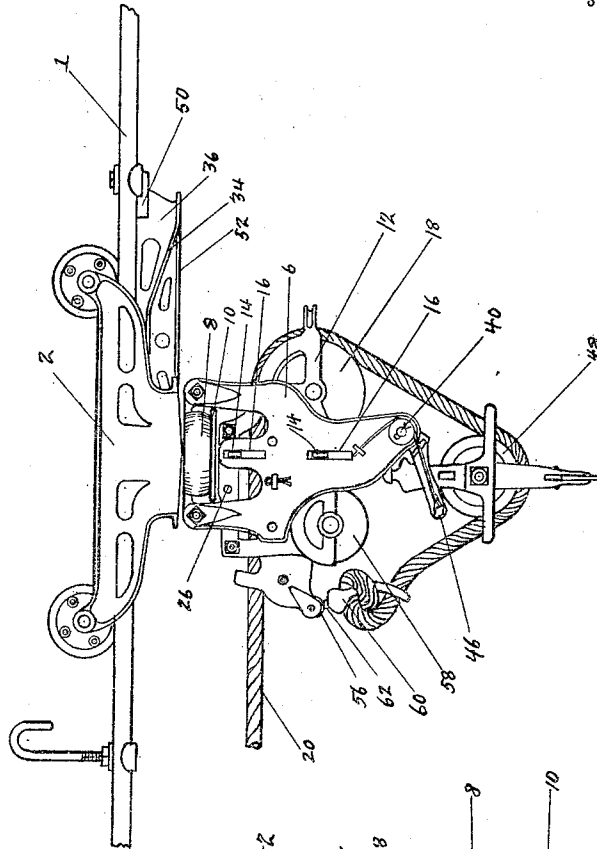
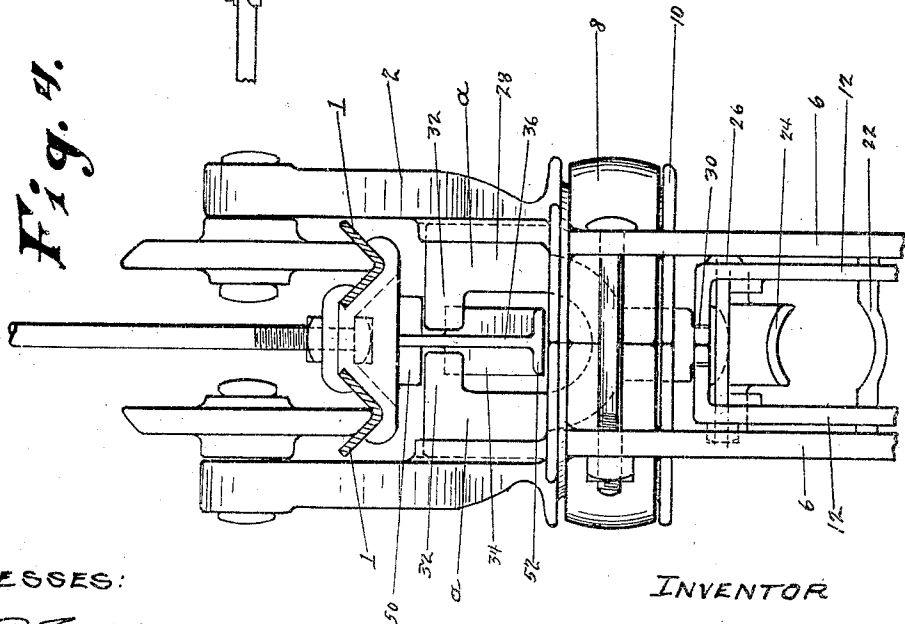


Fig. 4.



WITNESSES:

O. R. Erwin
J. D. Bremer

INVENTOR

Richard Miller
By Erwin & Wheeler
ATTORNEYS.

R. MILLER.

HOIST.

APPLICATION FILED SEPT. 18, 1908.

958,883.

Patented May 24, 1910.

3 SHEETS—SHEET 2.

Fig. 2.

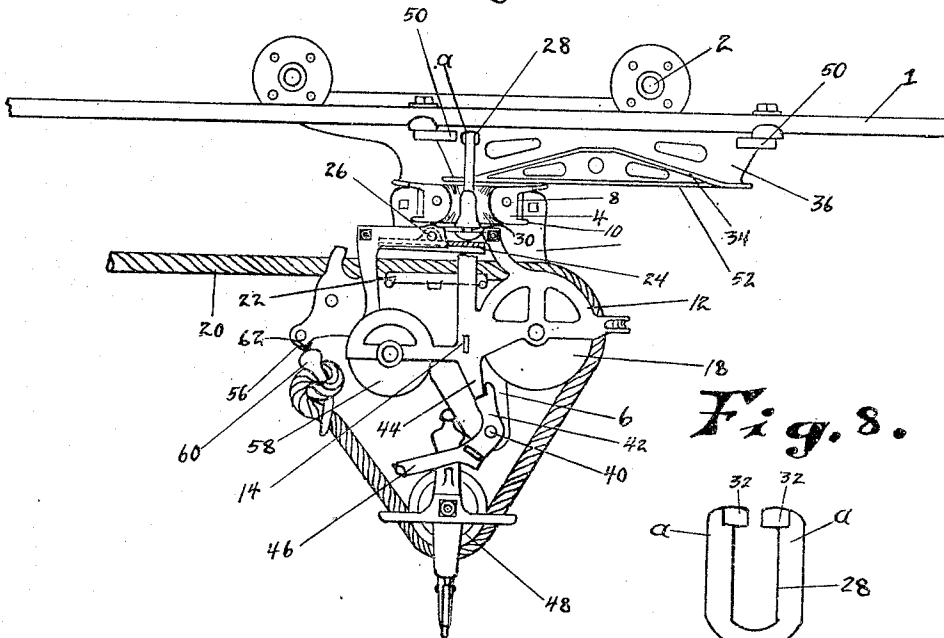


Fig. 8.

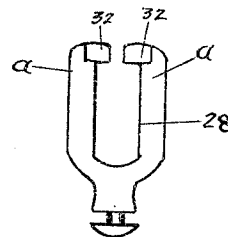
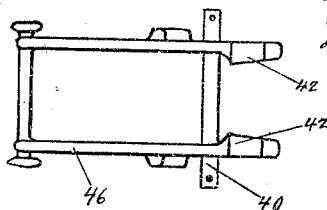


Fig. 5.



WITNESSES:

O. R. Erwin

J. D. Bremer

INVENTOR

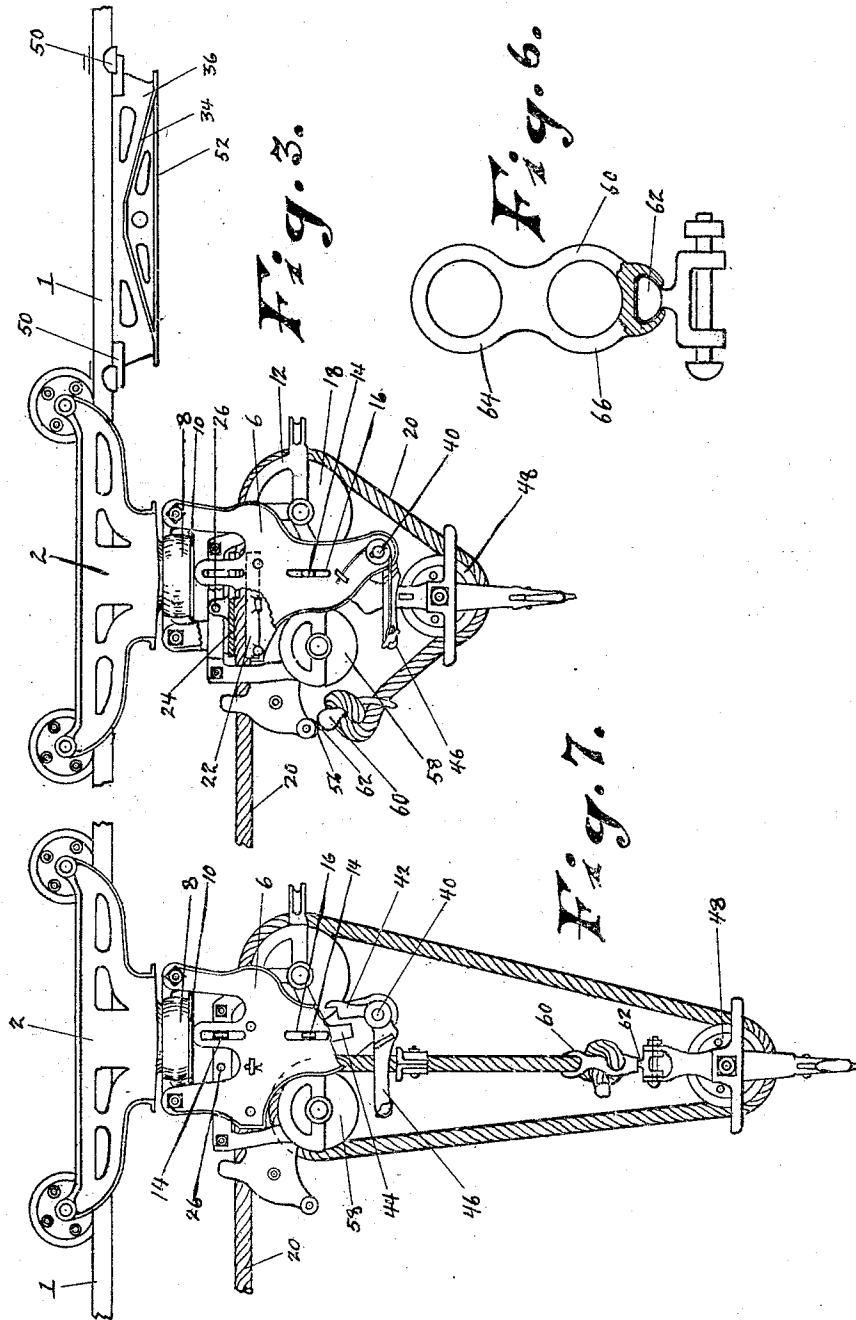
Richard Miller

By Erwin & Wheeler
ATTORNEYS.

958,883.

Patented May 24, 1910.

3 SHEETS—SHEET 3.



WITNESSES:

O. R. Erwin
J. D. Bremer

INVENTOR

Richard Miller
By Erwin & Wheeler
ATTORNEYS.

UNITED STATES PATENT OFFICE.

RICHARD MILLER, OF APPLETON, WISCONSIN.

HOIST.

958,883.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed September 18, 1908. Serial No. 453,684.

To all whom it may concern:

Be it known that I, RICHARD MILLER, a citizen of the United States, residing at Appleton, county of Outagamie, and State of Wisconsin, have invented new and useful Improvements in Hoists, of which the following is a specification.

My invention relates to improvements in hoists, with especial reference to that class of hoists shown and described in my former Patent, No. 811,572, dated February 6, 1906, and ordinarily used for elevating and carrying hay.

The objects of this invention are to provide means for permitting the pulley block to not only rotate upon the swivel hub of the carriage, but also upon the trip setting locking yoke, which is engaged and lifted by the stationary track bracket to release the draft rope; also to provide improved trip mechanism and rope clamping means, together with means for preventing the carriage from lifting from the track during the elevating or tripping operations; also to provide improved rope end fasteners to not only facilitate attaching the rope but to permit winding movements by means of a swivel connection between the rope and pulley frame.

In the following description, reference is had to the accompanying drawings in which,—

Figure 1 is a side elevation of a hoist embodying my invention as it appears in load lifting position. Fig. 2 is a similar view with one of the supporting frame plates removed and a portion of the pulley frame broken away to show the swiveled connection of the yoke, the pulley frame being in load lifting position. Fig. 3 is a view of the same with the pulley frame in load carrying position with a portion of the frame broken away to show the rope clamp. Fig. 4 is a rear elevation, showing the track in section. Fig. 5 is a detail view of the bell crank trip. Fig. 6 is a detail view of the swiveled rope end holder. Fig. 7 is a side elevation, with the hoisting rope adjusted for heavy loads. Fig. 8 is a detail view of the swivel yoke.

Like parts are identified by the same reference characters throughout the several views.

The supporting track 1 and carriage 2 may be of any ordinary construction.

The carriage 2 is provided with a depending centrally supported swivel hub 4 and

the side plates 6 of the pulley block are provided with a collar 8 which turns upon the hub above the annular shouldered hub base 10, which retains the collar in position. The pulley frame 12 is loosely supported between the side plates 6 and is provided with laterally projecting lugs 14, which extend into slots or channels 16 in the side plates and hold the frame in position while permitting a limited vertical movement. A main pulley 18 is journaled in the pulley frame and receives the draft rope 20, which passes around this pulley and over a fixed clamping member 22, which is rigidly connected with the side plates. A movable clamping member 24 is pivotally secured to the pulley frame at 26 in such a position that by slightly depressing the pulley frame, the member 24 will grip the rope between it and the fixed member 22, the weight of the load carried by the rope being borne by the member 24 and utilized to provide sufficient clamping pressure.

A trip setting yoke 28 is swiveled to the pulley frame at 30 and is provided with upwardly projecting forked arms *a*, each having an inwardly projecting lug 32 adapted to be engaged and lifted by an inclined flange 34 of a trip setting track bracket 36, when the carriage moves into position for such engagement. This movement lifts the pulley frame out of rope clamping position to the positions shown in Figs. 1 and 2, whereupon a spring actuated bell crank trip lever, which is pivotally secured to the side plates at 40, swings into locking position with one arm 42 engaging a shoulder 44 on the pulley frame and the other arm 46 extending (preferably with a slight downward inclination) into the path of the frame of the traveling pulley 48, whereby, when the load has been elevated, the frame of the pulley 48 strikes the arm 46 and swings the trip lever to move arm 42 from under the shoulder 44. The carriage having in the meantime moved along the track to a position with the lugs 32 in contact with the bracket stops 50, this movement of the trip lever allows the pulley frame to drop and clamp the rope as above explained, and the lugs 32 are then in a position to pass under the stops 50 and permit the carriage to move along the track. The bracket 36 is provided with a base 52 and the arrangement is such that the upper surfaces of the swivel hub 4 and collar 8 are in close proximity to this base, which pre-

vents the carriage from lifting from the track during the tripping operation.

The end of the draft rope may for light loads be secured to a frame member 56. For heavy loads, it may be passed around the auxiliary pulley 58 and secured to the frame of the traveling pulley 48, as shown in Fig. 7. In either case, the end of the rope is secured by means of a connecting member 60, which engages the pulley frame at one end and the rope at the other, with a swivel joint at 62. The rope engaging end of this member is provided with eyes 64 and 66 through which the rope is passed and looped about the member to form a knot as shown.

Briefly reviewing the operation of the device and assuming the parts to be in the position illustrated in Fig. 2, it will be obvious that a further upward movement of pulley 48 will actuate arm 46 of the trip lever and release arm 42 from its supporting position underneath frame projection 44. This allows the pulley to drop until the rope clamp 24 engages rope 20. The yoke 28 being swiveled to the frame, the yoke arms *a* will also be depressed sufficiently to clear the adjacent stop 50, whereupon, the carriage 2 with the pulleys and tackle are free to travel along the track, the parts being then in the position illustrated in Fig. 3. When the carriage is again returned to the track bracket 36, the inclined flanges 34 of this bracket will again lift the lugs 32 and forked arms *a* of yoke 28 to their former position and permit arm 42 of the bell crank trip lever to reengage under shouldered projection 44 on the pulley frame. This will, of course, release the rope clamp and permit the depression of pulley 48 and tackle carried thereby for engagement with a fresh load. When power is again applied to the draft rope 20, the carriage 2 will move until arms *a* and lugs 32 abut the stop 50, when the load carried by pulley 48 will be lifted until the pulley frame again contacts with the arm 46 of the trip lever, whereupon the parts will again be in the position illustrated in Fig. 2.

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

1. In a hoist of the described class, the combination with a supporting track, of a carriage having a depending swivel hub, a set of supporting plates having swivel connection with the hub, a pulley frame movably mounted upon said plates, a yoke having swivel connection with the pulley frame, and provided with upwardly projecting arms, a stationary member adapted to engage and lift said arms and pulley frame, a trip arranged to engage and support said pulley frame in raised position, and rope actuated means for releasing said trip.

2. In a hoist of the described class, the

combination with a pulley supporting member, a pulley frame movably mounted in said member, a pulley journaled in said pulley frame near one side thereof, a hoisting rope extending about said pulley and in a substantially horizontal position across the central upper portion of said pulley frame, rope clamping devices connected with said supporting member and pulley frame respectively, and means for adjusting said clamping devices into and out of operative position by lowering and raising said pulley frame, one of said clamping devices being pivotally connected with its support, and said clamping devices being located near the central upper portion of the pulley frame in clamping relation to the horizontally extending portion of the hoisting rope.

3. In a hoist of the described class, the combination of a track, a carriage mounted thereon, a supporting member having swivel connection with the carriage, a pulley frame movably supported by said member, a trip, arranged when set, to hold the pulley frame in one position of adjustment, a trip setting device having swivel connection with the pulley frame, and a bracket on the track arranged to engage and actuate the trip setting device to move the pulley frame to trip setting position.

4. In a hoist of the described class, the combination of a track, a carriage mounted thereon, a pulley supporting member connected therewith, a locking, trip setting device supported from said member, and a bracket on the track provided with inclined portions adapted to actuate the trip setting device, and having a base arranged to prevent the pulley supporting member and carriage from lifting during the load lifting and trip releasing operation.

5. In a hoist of the described class, the combination of a track, a carriage mounted thereon, a pulley supporting member connected therewith, a pulley frame movably mounted in said member, an elbow crank trip lever, adapted, in one position of adjustment, to hold the pulley frame in a raised position in the supporting member, a hoisting rope and pulley supported by the pulley frame, means for actuating the trip lever from said rope, a trip setting device carried by the pulley frame, a track bracket adapted to engage the trip setting device and lift the pulley frame to trip setting position, and rope clamping members, connected with the supporting member and pulley frame respectively, and adapted to engage the rope between them.

6. In a hoist of the described class, the combination of a track, a carriage mounted thereon, a pulley supporting member connected therewith, a pulley frame movably mounted in said member, rope clamping devices connected with said member and the

pulley frame respectively, a trip adapted to normally hold the pulley frame with the clamps in rope releasing position, a pulley in said pulley frame, a hoisting rope extending about said pulley and transversely through the upper portion of said frame, and devices connected with the hoisting rope for releasing the trip, said rope clamping devices being located above and below a horizontally extending portion of the hoisting rope.

7. In a hoist of the described class, the combination of a track, a carriage mounted thereon, a pulley supporting member connected therewith, a pulley frame movably mounted in said member, rope clamping devices connected with said member and the pulley frame respectively, a trip adapted to normally hold the pulley frame with the clamps in rope releasing position, a hoisting rope, and devices connected therewith for releasing the trip, a pulley in said frame about which the hoisting rope extends, said pulley being located near one side of said frame, and said clamping devices being located respectively above and below a horizontally extending portion of the rope with one of said devices pivotally supported from the pulley frame and in a central portion thereof.

8. In a hoist of the described class, the combination of a supporting member, a pulley frame adjustably connected therewith, a pulley mounted in said frame, a hoisting rope, an elbow crank trip lever connected with the supporting member and having one arm adapted to engage a shoulder on the pulley frame and hold the same in a raised position on the supporting member, said elbow crank having one arm arranged in loose engagement with the hoisting rope, and

means connected with the hoisting rope for actuating said arm to swing the other arm out of supporting position, together with clamping means connected with the pulley frame and adapted to engage said rope when the pulley frame is depressed.

9. In a hoist of the described class, the combination of a supporting member, a pulley frame movably mounted thereon, a rope clamping member connected with the supporting member, another rope clamping member pivotally connected with the pulley frame, and means for adjusting the pulley frame to move its clamping member into and out of clamping position, together with means for locking the frame with the clamp in releasing position, and means for releasing the lock when the load is at a predetermined height.

10. In a hoist of the described class, the combination of a supporting member, a pulley frame movably mounted thereon, a rope clamping member connected with the supporting member, another rope clamping member pivotally connected with the pulley frame, a draft rope in operative relation to the clamping members, a carriage connected with the supporting member, a track supporting the carriage, means connected with the track and pulley frame for moving the latter to clamp releasing position, and means connected with the draft rope, for releasing the frame and permitting it to drop to clamping position.

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

RICHARD MILLER.

Witnesses:

LEVERETT C. WHEELER,
O. R. ERWIN.