

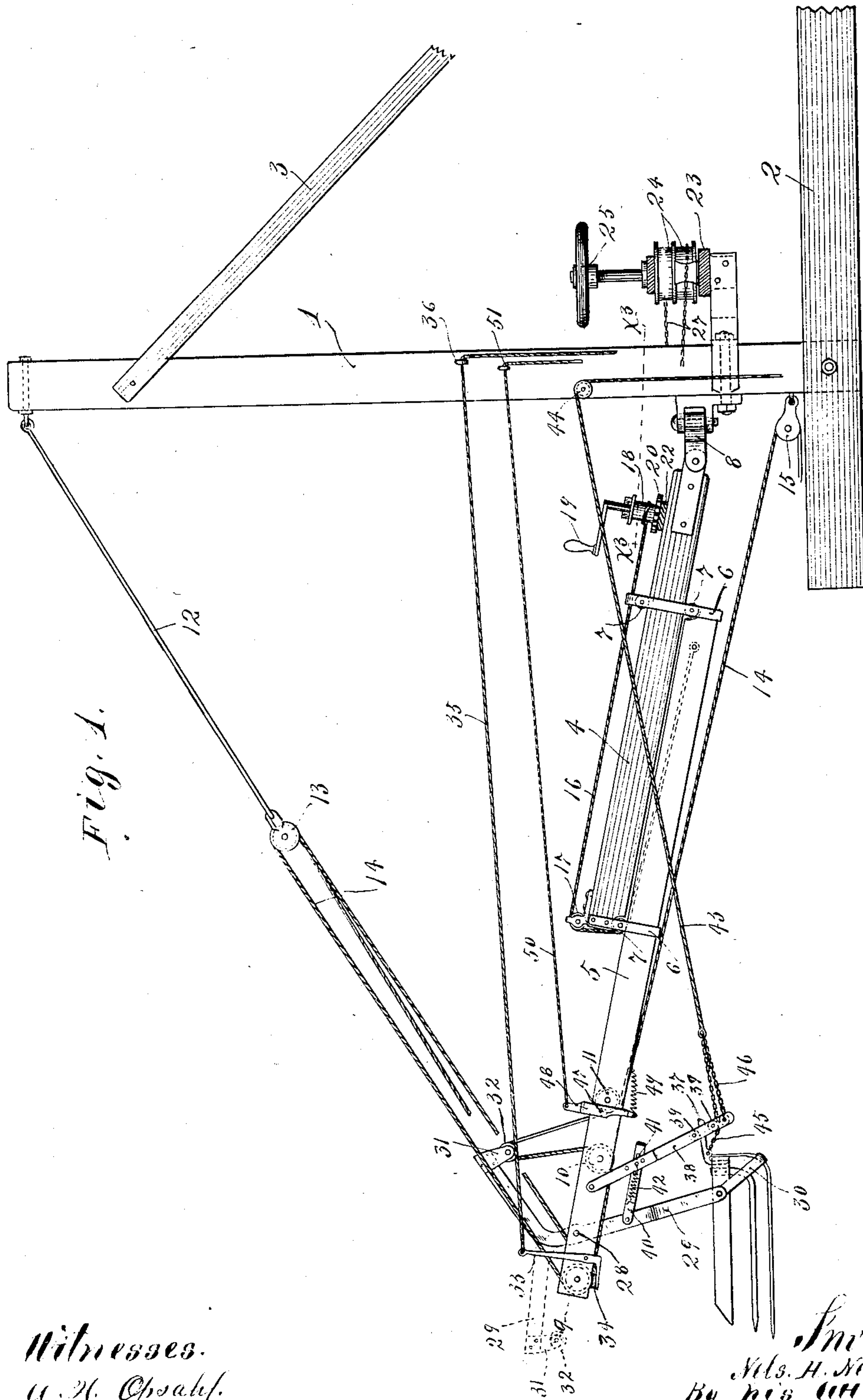
No. 842,904.

PATENTED FEB. 5, 1907.

N. H. NELSON.  
LOADING DERRICK.

APPLICATION FILED MAR. 17, 1906.

3 SHEETS—SHEET 1.



Witnesses.  
A. M. Opsahl.  
E. W. Jepsen.

32-9-34  
Inventor.  
Wm. H. Nelson  
By his Attorneys.  
Williamson Merchant

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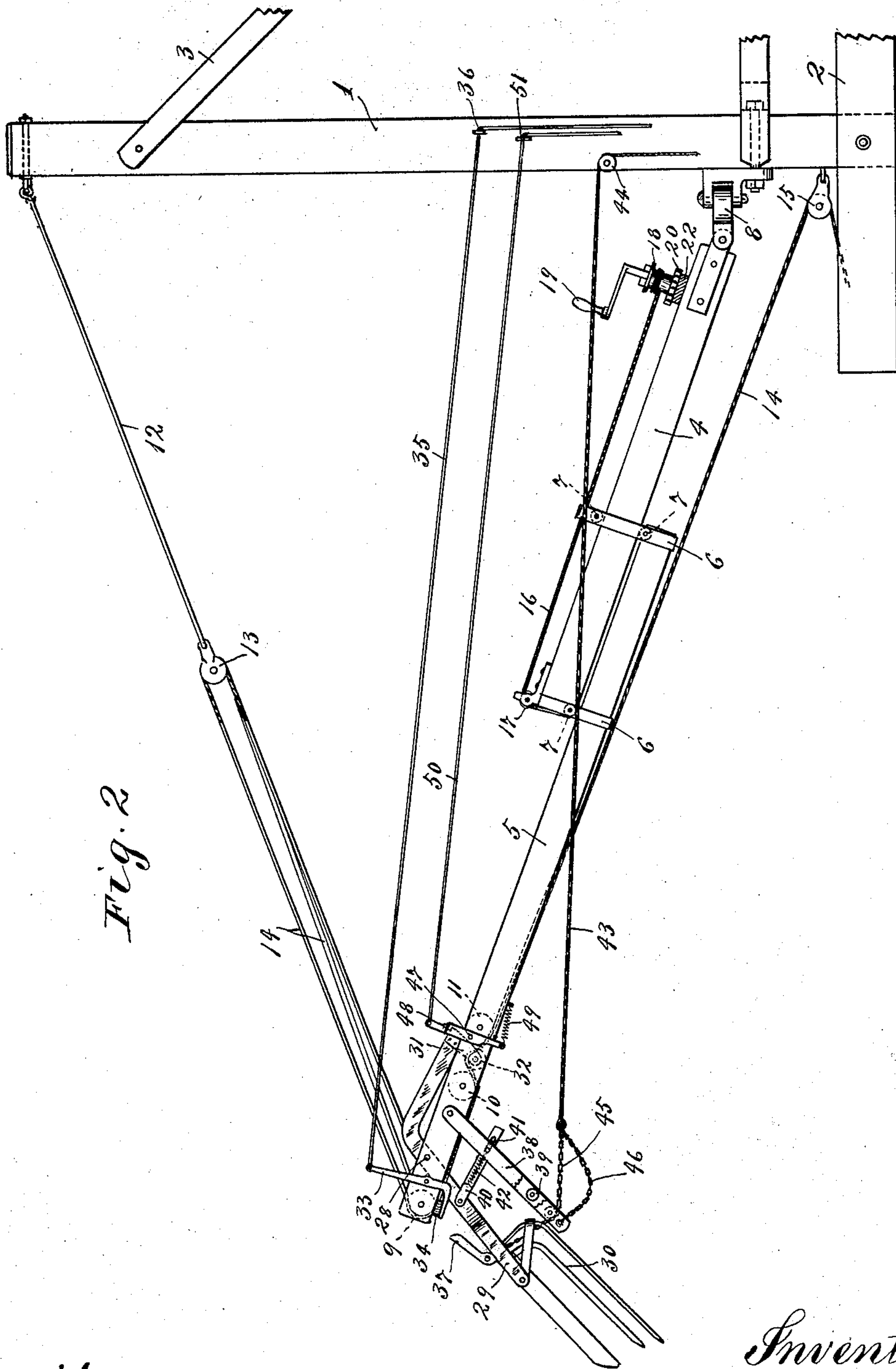


Fig. 2

Witnesses.  
A. H. Opsahl.  
E. W. Johnson.

Inventor.  
Nels. H. Nelson  
By his Attorneys.  
Williamson & Merchant

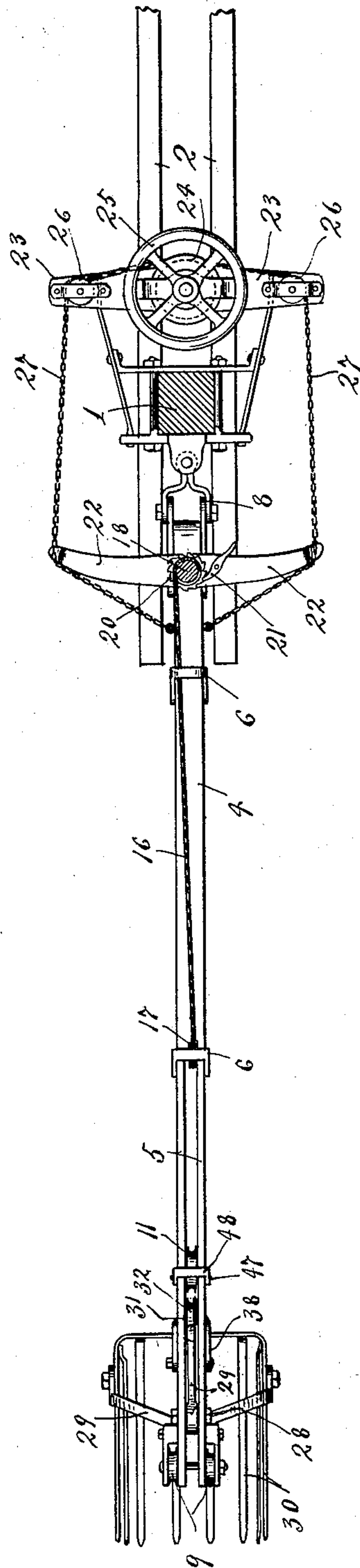
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3 SHEETS—SHEET 3.

Fig. 3.



Witnesses.  
A. H. Opsahl  
E. W. Jeppesen.

Inventor.  
Nels H. Nelson  
By his Attorneys  
Williamson & Muehant



# UNITED STATES PATENT OFFICE.

NELS H. NELSON, OF WILLMAR, MINNESOTA

## LOADING-DERRICK.

No. 842,904.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed March 17, 1906. Serial No. 306,666.

*To all whom it may concern:*

Be it known that I, NELS H. NELSON, a citizen of the United States, residing at Willmar, in the county of Kandiyohi and State of Minnesota, have invented certain new and useful Improvements in Loading-Derricks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention has for its object to provide an improved manure-loader, but relates, broadly, to hoisting devices having shovel, scoop, or fork attachments.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figures 1 and 2 are views in side elevation showing the improved device, but illustrating different positions of the parts; and Fig. 3 shows the improved device chiefly in plan, some parts being sectioned on the line  $x^3 x^3$  of Fig. 1.

The numeral 1 indicates a heavy post or upright that is rigidly secured at its lower end to a supporting base-frame 2 and is also preferably connected to said base-frame at its upper portion by means of an inclined stay 3. The beam of the derrick is made up of two sections 4 and 5, that slide upon each other and are held for true straight-line movements by a pair of yoke-like guides 6, one of which is rigidly secured to the section 4 and loosely embraces the section 5 and the other of which is rigidly secured to the section 5 and loosely embraces the section 4.

The endwise-sliding movements of the beam-sections 4 and 5 are made easy by anti-friction-rollers 7, mounted in said yokes 6. The beam-section 4 at its lower end is attached to the lower portion of the upright 1 by means of a heavy knuckle-joint 8, which permits the said beam to move pivotally both in horizontal and vertical directions with respect to said upright. The beam-section 5 is made up of a pair of laterally-spaced metallic bars that are rigidly secured together in such manner as to leave a clear space between them. In the extreme outer end of the beam-section 5 is mounted a guide-sheave 9, and in the said beam-section farther inward is mounted two other similar guide-sheaves 10 and 11. A rod 12 is loosely pivoted at its upper end to the upper end of

the upright 1 and at its free end is provided with a sheave-equipped head 13. To raise the load, the free end of the beam of the derrick, a cable 14, which is attached at one end to said beam, is passed over or around the sheave of the head 13, under the sheaves 9, 10, and 11, and over the sheave of the tackle-block 15, that is anchored to the lower portion of the upright 1. The free lower end of said cable may be extended to any suitable point and may be provided with means for attachment of a horse thereto for the purpose of raising the derrick-beam.

The sliding movements of the beam-sections 4 and 5, the latter upon the former, are controlled by a cable 16, which is attached to the inner end of the beam-section 5, is passed over one of the guide-rollers 7 and over a guide-sheave 17 on the beam-section 4, and is attached to a windlass-drum 18, mounted in a suitable bearing on the inner end of the beam-section 4 and provided with a hand-crank 19, by means of which it may be turned. The lower flange of the drum 18 is provided with ratchet-teeth 20, with which a retaining-pawl 21 on a fixed part of the beam-section 4 is adapted to engage to lock said drum 18 against rotation to prevent the beam-section 5 from moving inward on the beam-section 4.

Rigidly secured to the inner and lower end of the beam-section 4 is a transversely-extended steering-bar 22. Rigidly secured to the lower portion of the upright 1 at the rear thereof is a transversely-extended bearing-bracket 23, upon which is loosely mounted a windlass-drum 24, the shaft of which projects upward and is provided with a hand-wheel 25, by means of which it may be turned. Mounted on the outer ends of the transversely-extended portion of the bracket 23 are guide-sheaves 26. Chains 27, that are secured to and wound in the reverse directions on the drum 24, are extended in opposite directions over the guide-sheaves 26, thence over the opposite ends of the bar 22, and are attached at their outer ends to the opposite sides of the beam-section 4. By means of this device the extensible beam 4 5 may be given horizontal pivotal movements in either direction at will.

Pivoted at 28 to the beam-section 5, just inward of the guide-sheave 9, is a bifurcated fork or scoop supporting lever 29, to the lower ends of the prongs of which is pivoted a fork-like scoop 30. To the free upper end



of the lever 29 is rigidly secured a bracket 31, in which is mounted a guide-sheave 32. The hoisting-cable 14 after it is passed under the guide-sheave 10 is passed up and over the guide-sheave 32 and thence downward and under the guide-sheave 11, so that the tension on the said cable tends to throw said lever into the position shown in Fig. 2.

A brake-lever 33, pivoted to the outer end of the beam-section 5, is provided with a brake-shoe 34, that is adapted to firmly clamp the cable 14 against the under surface of the guide-sheave 9, and to accomplish this a rope or cable 35 is attached to the extended end of said lever 33 and is passed through a guide 36 on the upright 1 and thence downward, where it is adapted to be rigidly secured by any suitable form of fastener. (Not shown.) Rigidly secured to the rear intermediate portion of the fork 30 is a rearwardly-projecting cam-arm 37, the free end of which is beveled. A latch-lever 38 is pivoted at its upper end to the beam-section 5. This lever 38 is made up of a pair of laterally-spaced metallic straps that are rigidly secured together, but spaced apart to afford seats for a pair of small guide-rolls 39, located near its lower end. Normally the cam-arm 37 engages between the rollers 39, so that the scoop 30 is held approximately as shown in Fig. 1. A short link 40 is pivoted to the lever 29 and is connected to the latch-lever 38 by a slot-and-pin connection 41. A coiled spring 42, attached to the link 40 and to the lever 38, tends to move the latter toward the lever 29.

A cable or flexible connection 43, which, as shown, is passed over a guide-sheave 44 on the upright 1, is provided at its extended end with a pair of flexible branches in the form of chains 45 and 46. The chain 45 is passed under the lower guide-roll 39 of the lever 38 and is attached to the cam-arm 37 of the scoop 30, and the chain 46 is attached to the lower end of said latch-lever 38. The relative lengths of the two chains 45 and 46 is best shown in Fig. 1. The cable 43 and its branches 45 and 46 afford a device for tripping or releasing the scoop 30 from the latch-lever 38 and for reengaging the same with said latch-lever.

Pivoted at 47 to the beam-section 5 is a U-shaped latch 48, the transverse upper portion of which is adapted to engage with the free upper end of the scoop-supporting lever 29 to lock the same in the position shown in Fig. 2. This latch is subject to a spring 49, which tends to make the same operative, and is adapted to be released by a trip-rope or connection 50, attached thereto and passed through a guide 51 on the upright 1.

From what has been said it is of course obvious that the beam 4 5 may be extended or shortened, raised, or lowered and to move transversely in either direction at will, so as to carry the scoop or fork 30 to and from the

proper position to pick up the material to be handled and to load the same into a wagon, which is conveniently located at one side of the hoisting device.

The fork is adapted to be filled when properly lowered by a downward movement of the beam-section 5 and also by a forward-swinging movement of the lever 29. In order to hold the fork in the position shown in Fig. 1, it is necessary to apply the brake-lever 33, and thereby hold the hoisting-cable 14 against the sheave 9 and against traveling movement at that point. When the brake-lever 33 is released, the weight of the load on the free end of the fork-beam and the pull on the cable 14 will cause the lever 29 to move into the position shown in Fig. 2, in which position it will be automatically latched by the pivoted latch-yoke 48. Then by pulling on the trip-rope 43 the latch-lever 38 may be moved rearward far enough to permit the cam-acting latch-arm 37 to clear the upper roll 39, and thereby permit the scoop 30 under the action of gravity to tip into the dumping position shown in Fig. 2. To return the scoop to its normal position with respect to the lever 29 after it has dumped its load, it is necessary to pull upon the cable 43, thereby pulling downward the rear end of the scoop and the cam-arm 37 and moving rearward the lower end of the latch-lever 38 and moving the same into such position that the cam-arm 37 will automatically cam itself past and under the upper roll 39, and hence cause the said lever 38 to again latch the scoop into position for filling.

In Fig. 1 the lever 29 is shown as reversed—that is, turned with its crooked upper end projecting forward—and in this case the fork may be attached to the lower end thereof in the same way as already shown, and the lever may be operated by a rope or cable, (not shown,) which could be passed over the sheave 32 and over cooperating guides in various different ways.

The device described is of course capable of a great many different uses. By substituting a suitable shovel or beveled sand-scoop for the fork 30 a device will be provided which will be well adapted for use in excavating. The device has in practice been found efficient for the purposes had in view.

What I claim is—

1. The combination with a derrick having an extensible beam, of a lever pivoted to the outer end of said beam, a scoop pivoted to said lever, means for latching said scoop to said lever and for releasing the same, and means for latching said lever to said beam and for releasing the same, substantially as described.

2. The combination with a derrick, of a lever pivoted to the free end of the beam thereof, a latch for securing said lever to said beam, and for releasing the same, a scoop



pivoted to said lever, and means for latching said scoop to said lever, and for releasing the same, substantially as described.

3. In a derrick, the combination with a  
5 beam and an upright, of a beam-supporting device involving a cable and guides therefor affording a connection between the upper end of said upright and the outer end of said beam, and extending along said beam to the  
10 base of said upright, a scoop-supporting lever pivoted to the outer end of said beam and subject to said hoisting-cable, a latch for securing said lever to said beam, a trip connection to said latch, a brake-lever applied to  
15 said beam and operative to hold said hoisting-cable against movement at will on the said beam, an operating connection for said

brake-lever, a scoop pivoted to said scoop-supporting lever and provided with an arm  
37, a latch-lever 38 pivoted to the said der- 20 rick-beam, and operating to engage said arm 37 and lock said scoop with respect to its supporting-arm, and a trip connection 43 having branches 45 and 46 connected respectively to the rear portion of said scoop and 25 the lower end of said latch-lever, substantially as described.

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

NELS H. NELSON.

Witnesses:

MARTIN A. ENGER,  
MATILDA BONDE.