

No. 776,529.

PATENTED DEC. 6, 1904.

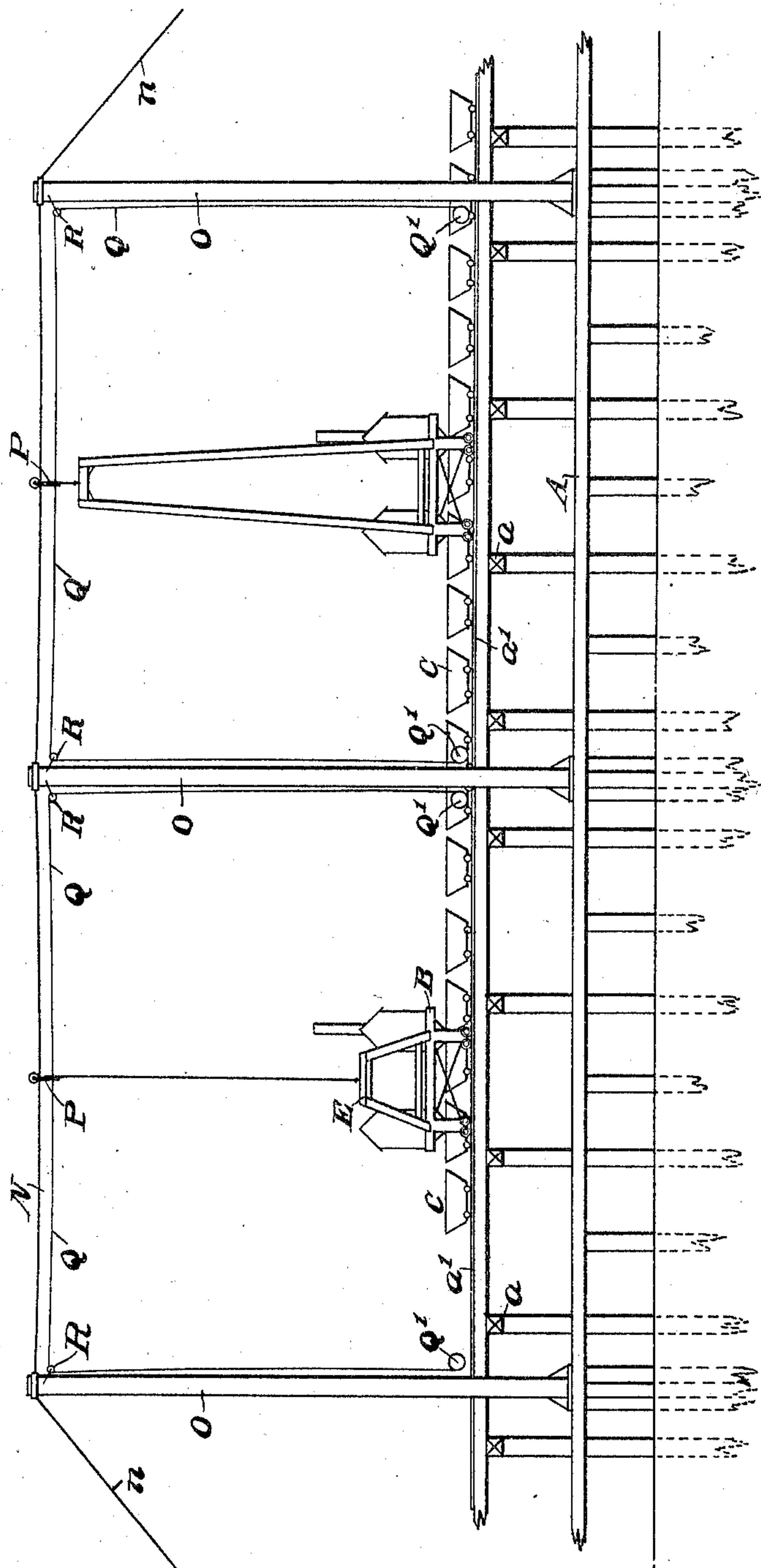
T. S. MILLER.
HOISTING DEVICE.

APPLICATION FILED JUNE 6, 1901.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses
H. L. Reynolds.
W. A. Pauling

Inventor
Thomas Spencer Miller
By his Attorneys
Lufford & Bull.

No. 776,529.

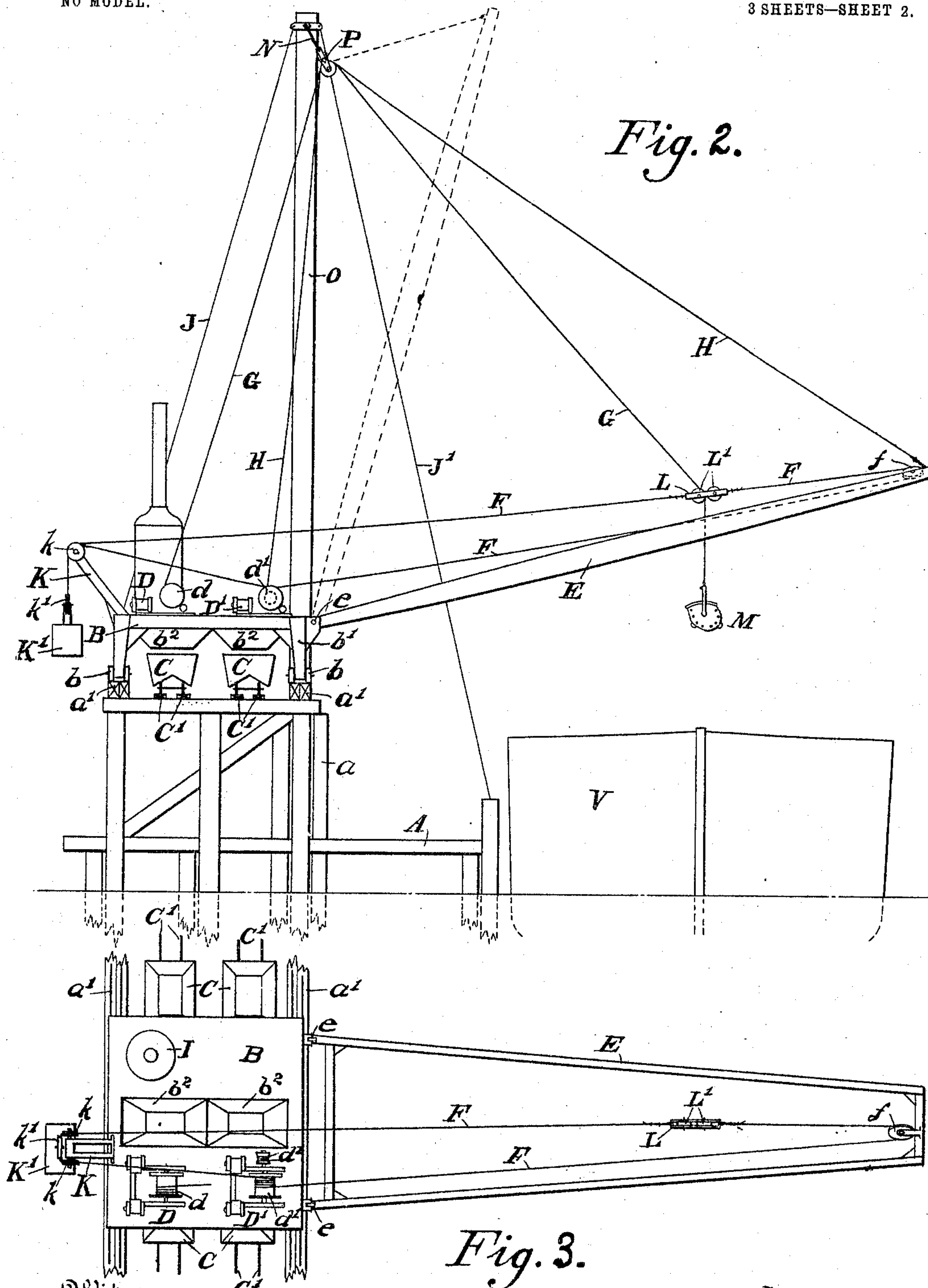
PATENTED DEC. 6, 1904.

T. S. MILLER.
HOISTING DEVICE.

APPLICATION FILED JUNE 6, 1901.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses
H. L. Reynolds.
W. A. Pauling

Inventor
Thomas Spencer Miller
By his Attorney
Lafford & Bull

No. 776,529.

PATENTED DEC. 6, 1904.

T. S. MILLER.
HOISTING DEVICE.

APPLICATION FILED JUNE 8, 1901.

NO MODEL.

3 SHEETS—SHEET 3.

Fig. 4.

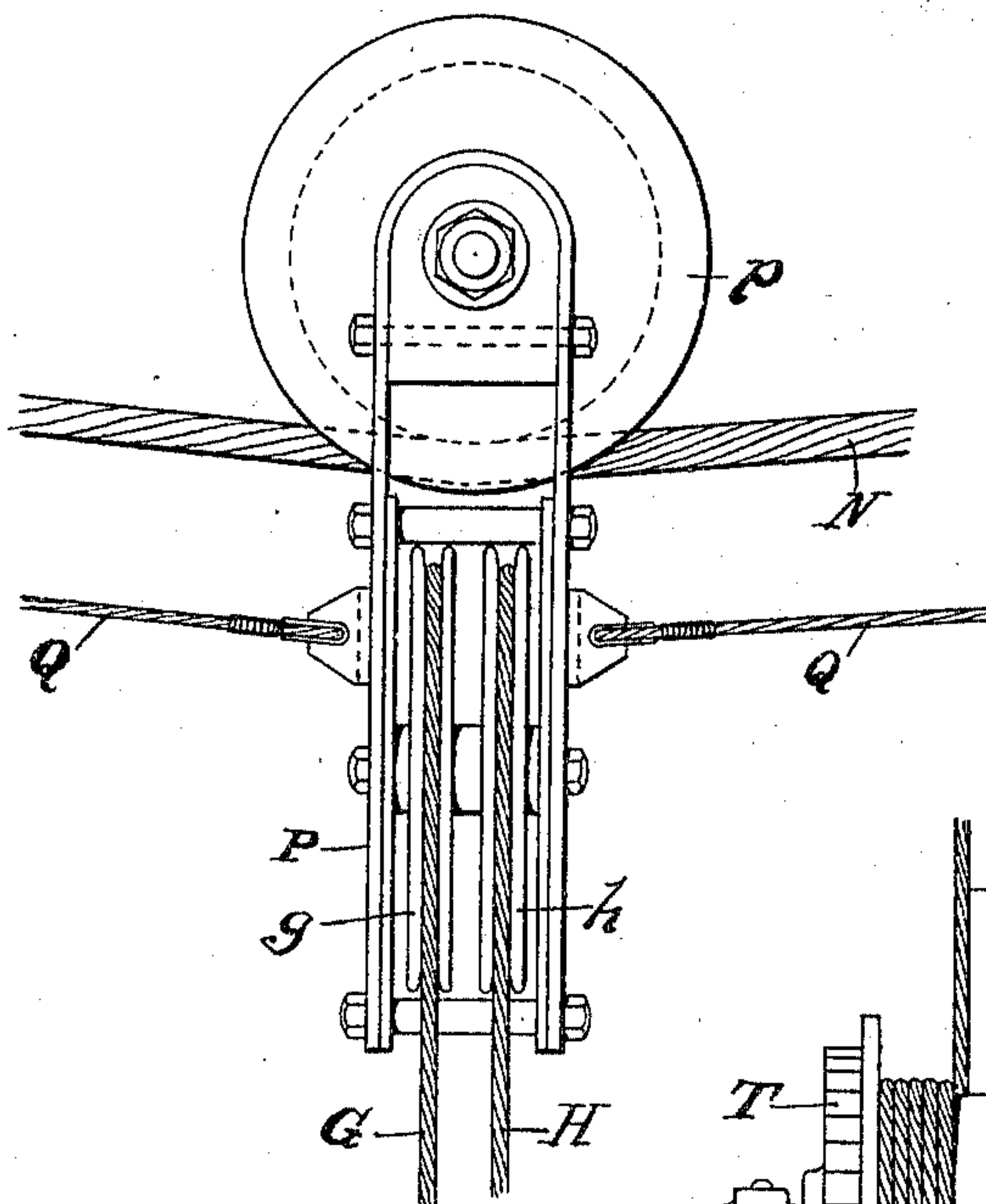


Fig. 5.

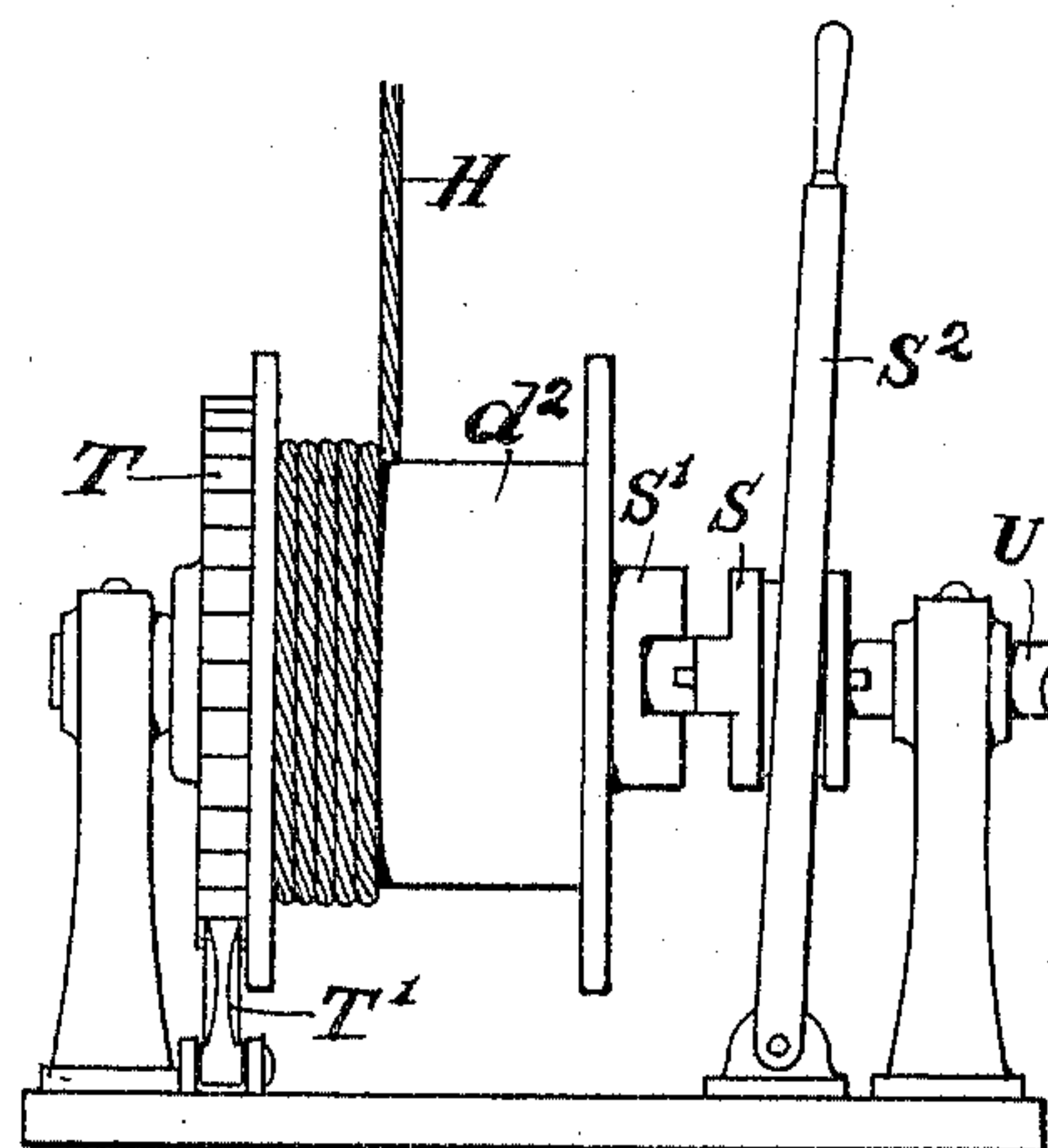
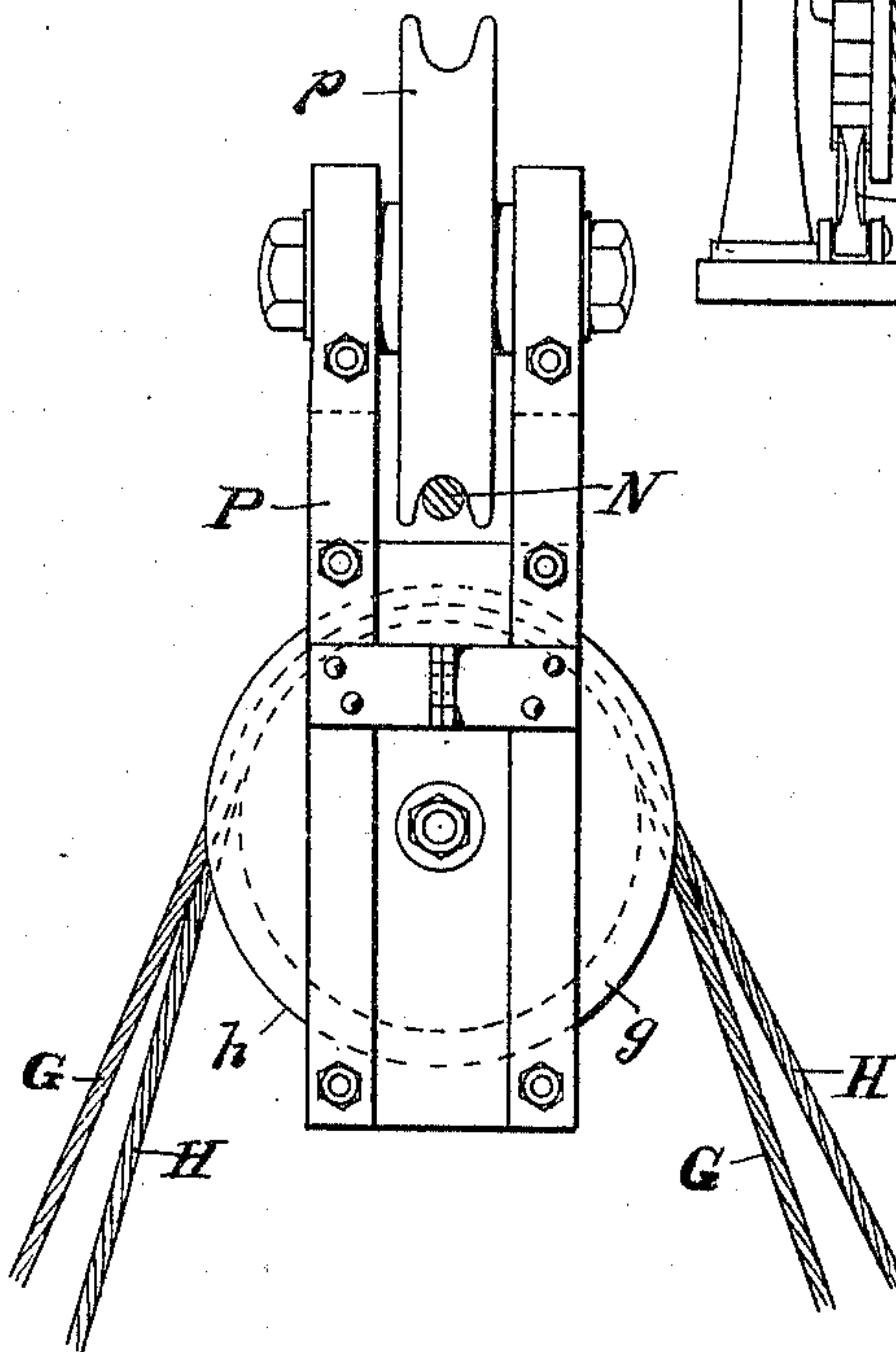


Fig. 6

Witnesses
H. L. Reynolds.
W. A. Pauling

Inventor
Thomas Spencer Miller.
By his Attorneys
Gifford & Bull

UNITED STATES PATENT OFFICE.

THOMAS SPENCER MILLER, OF SOUTH ORANGE, NEW JERSEY.

HOISTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 776,529, dated December 6, 1904.

Application filed June 6, 1901. Serial No. 63,348. (No model.)

To all whom it may concern:

Be it known that I, THOMAS SPENCER MILLER, a citizen of the United States, and a resident of South Orange, in the county of Essex and State of New Jersey, have invented a new and Improved Hoisting Device, of which the following is a full, clear, and exact description.

My invention relates to an improvement in hoisting devices adapted to transfer goods, as from a vessel to a dock and other similar locations, and is especially designed for use in unloading coal and similar material, although it is equally applicable to use in handling other forms of material.

My invention comprises novel features, which will be hereinafter described, and particularly pointed out in the claims.

Figure 1 shows in front elevation two of my hoisting devices. Fig. 2 is an elevation of one of my hoisting devices, taken from the side or at right angles to that of Fig. 1. Fig. 3 is a plan view omitting the masts O and the ropes and other parts supported thereby. Figs. 4 and 5 are elevations at right angles, showing the elevated traveler or guide for the hoisting-rope. Fig. 6 is an elevation of the drum used for controlling the position of the boom.

My device is herein shown and will be described as employed for hoisting coal, ore, and similar material from a boat and depositing it in cars upon a dock. From this description its other uses will be evident.

In Fig. 2 a boat V, from which a load of coal or other similar material is to be taken, is shown as lying alongside a dock A. In the case shown the coal is to be delivered into cars C, which run upon one or more tracks C', extending parallel with the side of the dock. In this case the cars run upon an elevated structure *a*, as for coal-storage plants it is desirable to have the coal delivered at considerable elevation. This elevated structure carries tracks *a'*, which lie outside of the tracks occupied by the cars while loading.

A platform B, upon which the hoisting-engines and other apparatus used in handling the material are placed, are supported above the tracks C', which carry the cars, by legs *b'*, said legs carrying wheels *b*, which run upon the tracks *a'*, so that the device may be moved

along the dock to any point where it may be needed. Of course where employed upon a different kind of work and under different conditions the elevated structure and the supporting-legs of the platform B may be dispensed with or modified. I have also shown the elevated structure as located a short distance back from the edge of the dock; but it is evident that it may be advanced to the dock margin, if desired.

Upon the platform or car B are mounted three rope-winding mechanisms and means for operating them independently. These mechanisms, as herein shown, consist of the drums *d*, *d'*, and *d''*, the engines D and D', and the boiler I for supplying them with steam. The drum *d* carries the hoisting-rope G, the drum *d'* carries the load-swinging rope F, and the drum *d''* the boom-hoisting rope H.

The drum *d* is an ordinary friction-operated drum, and in many cases the drum *d'* would be of the same character, although where the bucket or load being hoisted is to swing back beyond the point of support of the hoisting-rope it might be desirable to have this drum reversible. Such a condition is shown in Figs. 2 and 3; but the swing of the bucket beyond its point of support is obtained by using a counterweight.

The drum *d''*, which carries the boom-hoisting rope, may be operated in any convenient manner, either by hand or by power, although I prefer a power connection. Such a device is shown in Fig. 6. The drum *d''* is loosely mounted upon the shaft U of the drum *d'* or any shaft which may be turned from the engine. A clutch (or equivalent device) composed of the two parts S and S', secured one to the drum and the other to slide upon but turn with the shaft U, is operated by a lever S², so that the drum may be turned to wind up the rope when desired. Ratchet-teeth T and dog T' are provided, by which the drum may be held against backward rotation.

Pivoted to the car or platform B is a boom E, which is shown as having two side members, each of which is secured to the platform B at one side of the vertical plane in which the fall-rope swings, so as to be out of the way of said rope and the load carried thereby. These side members preferably incline toward

the swinging-rope F and are provided at their outer ends with a cross-bar, to which is secured the sheave *f*, constituting the tail-guide, over which passes the swinging-rope F. This rope is herein exemplified as an endless one, winding upon one side of the drum *d'* as it winds off of the other side; but I do not wish to limit myself to the endless form. One run of this rope leads over vertically-placed guide-sheaves *k*, carried by a bracket K, and thence leads beneath a sheave *k'*, from which is suspended the counterweight K', which is shown to exemplify herein a form of tension device for the ropes controlling the guide L. The other run of this rope passes over the sheave *f* at the outer end of the boom and then back to a guide L for the hoisting-rope, the other run of the load-swinging rope connecting with said guide from the opposite direction. This guide consists of a frame carrying two pulleys or sheaves L', between which the hoisting-rope runs.

Extending in a row alongside of the path of travel of the car or platform B are a series of posts or masts O, which support a trackway-cable N, the cable at the ends of the series extending downward to anchorages or the end masts being provided with corresponding guys, as at *n*. Upon this trackway-cable, between each pair of masts, is placed a traveler or movable support for the sheaves carrying the boom-hoisting and load-hoisting ropes. This is shown in Figs. 4 and 5. This consists of a frame, as P, in which is mounted a single sheave *p*, adapted to run upon the trackway-cable, and two sheaves *g* and *h* at right angles to sheave *p*, designed to receive the boom-hoisting rope H and the load-hoisting rope G. To the frame and extending oppositely are attached two traveler moving or steady ropes Q, which pass over sheaves R at the tops of the mast and then down to hand-winches Q'. By these means the traveler may be moved to and held in any position on the trackway-cable and may thus be made to correspond with the position of the car B.

The floor of the platform or car B has openings in line with the swing of the bucket M and hoppers *b'*, through which the coal may be discharged into the cars C beneath.

It is evident that by sufficiently extending the bracket K so as to act as a boom my device may be employed for transferring goods from a boat to a car or dock at the side of the device opposite that where the boat is. In such case it might be advisable for convenience to pivot the boom which corresponded with the bracket K. In the condition shown the bracket K is a short fixed boom. With such a construction it would probably be desirable that the engine D' be reversible or the drum *d'* be connected thereto, so that it might be reversed.

As shown in Figs. 2 and 3, the bucket M is caused to swing to its dumping position by the

action of the counterweight. The counterweight is useful also to take up slack in the rope F, especially when the boom is raised. In case two booms were used extending oppositely the counterweight might preferably be located otherwise than at the outer end of the boom.

The operation of my device is as follows: The car or platform B is caused to travel along its tracks until opposite the point from which the loads are to be raised. If the ropes Q are loosened, the traveler will be moved to nearly the same point. By means of the ropes Q the traveler may be properly placed and made fast. To hoist, the guide L for the load-hoisting rope is moved outward to the proper position by pulling in upon the lower run of the swinging rope F. The bucket M is then lowered and when filled is hoisted, the rope F being operated to swing the load inward either while hoisting or after the bucket has been sufficiently raised. Unless the bucket may be permitted to drop somewhat while swinging in, the rope G must be drawn in somewhat while swinging the bucket in. When the bucket reaches the proper position, it is dumped into the hopper.

One important feature of my invention consists in the fact that the guide L is rope-supported, and although I have shown it as supported by the rope F, by which it is also moved, I do not wish to be limited to supporting it by ropes in this position or necessarily by the same ropes by which it is moved. Among the advantages of having the guide L rope-supported may be mentioned the fact that thereby is obviated any disaster from collision between the bucket and the guide should the bucket either by carelessness or intention be raised higher than the normal position of the guide, the flexibility of the rope support permitting the bucket under these conditions to push the guide L upward without disaster. Another advantage of the rope support consists in the fact that thereby the apparatus may be rigged largely of ordinary rigging appliances.

Another important feature of my invention consists in the fact that the runs of rope F operating and supporting the guide L are under substantially constant tension, and although I have shown the counterweight K' as the tension device for this purpose I do not wish to be limited thereto. Among the advantages of such tension are the fact that the run of rope F between the guide L and tension device is promptly taken up as the fall-rope swings toward the vertical, and, moreover, said tension tends to restrain the vibration of the guide L in undesirable directions.

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

1. In a hoisting device the combination with a hoisting-engine adapted to be moved along a

definite track, and a hoisting-rope, of an elevated trackway substantially parallel with the direction of movement of the engine, a guide-sheave for the hoisting-rope adapted to be supported from and to be moved along said elevated trackway, and steady-ropes extending from said sheave toward each end of the trackway.

2. In a hoisting device the combination with a hoisting-engine, a track upon which said engine is adapted to move, and a hoisting-rope, of a cable supported above and along the track, a sheave mounted to run upon said cable, and a guide-sheave for the hoisting-rope supported from the other sheave.

3. In a hoisting device the combination with a hoisting-engine, a track upon which said engine is adapted to move, and a hoisting-rope, of a cable supported above and along the track, a sheave mounted to run along said cable, a guide-sheave for the hoisting-rope supported from the other sheave, and ropes extending from said sheaves each way along the trackway-cable.

4. In a hoisting device the combination with a hoisting-engine, a track upon which said engine is adapted to move, and a hoisting-rope, of a cable supported above and along the track, a sheave mounted to run along said cable, a guide-sheave for the hoisting-rope supported from the other sheave, ropes extending from said sheaves each way along the trackway-cable, and guide-sheaves for said ropes at each end of the trackway-cable.

5. In a hoisting device the combination with a hoisting-engine, a track upon which said engine is adapted to move, and a hoisting-rope, of a cable supported above and along the track, a sheave mounted to run along said cable, a guide-sheave for the hoisting-rope supported from the other sheave, ropes extending from said sheaves each way along the trackway-cable, and a winding device for said ropes at each end of the trackway-cable.

6. In a hoisting device the combination with a track, a car movable thereon, a hoisting-engine mounted on said car, a hoisting-rope, a swinging-rope, and a tail-guide for said swinging-rope carried by the car, of an elevated trackway extending substantially parallel with the track, and a guide for the hoisting-rope movable along said elevated trackway.

7. In a hoisting device the combination with a track, a car movable thereon, a hoisting-engine mounted on said car, a hoisting-rope, a swinging-rope, and a tail-guide for said swinging-rope carried by the car, of an elevated trackway extending substantially parallel with the track, a guide for the hoisting-rope movable along said elevated trackway, and means for moving and holding said guide along the trackway as desired.

8. In a hoisting device the combination with a track, a car movable thereon, a hoisting-engine mounted on said car, a hoisting-rope, a

swinging rope, and a tail-guide for said swinging-rope carried by the car, of an elevated trackway extending substantially parallel with the track, a guide for the hoisting-rope movable along said elevated trackway, and ropes extending from said rope-guide in both directions along the trackway, whereby said guide may be moved and held as desired.

9. In a hoisting device the combination with a track, a car movable thereon, a hoisting-engine mounted on said car, a hoisting-rope, a swinging-rope, and a tail-guide for said swinging-rope carried by the car, of an elevated trackway extending substantially parallel with the track, a guide for the hoisting-rope movable along said elevated trackway, ropes extending from said rope-guide in both directions along the trackway, and winding means acting upon said ropes at each end of the trackway.

10. In a hoisting device, the combination with a hoisting-rope, an endless load-swinging rope, and means for operating both of said ropes, of a pivoted boom, a guide for the load-swinging rope carried by said boom, a guide for the hoisting-rope carried by the load-swinging rope, and a weighted sheave running in a loop of the load-swinging rope.

11. In a hoisting device, the combination with a track, a car movable along said track, a boom pivoted to said car, a hoisting-rope, an endless load-swinging rope, and means carried by said car for operating both of said ropes, of a stationary elevated trackway extending in the direction of the travel of the car, a guide for the hoisting-rope movable along said trackway, a guide for the load-swinging rope carried by the boom, a guide for the hoisting-rope carried by the load-swinging rope, and a weighted sheave running in a loop of the load-swinging rope.

12. In a hoisting device, the combination with a track, a car on said track having a material-discharge opening therein, a boom extending from the car, a hoisting-rope, a load-swinging rope, and means carried by the car for operating both of said ropes, of an elevated trackway extending in the direction of travel of the car, a guide for the hoisting-rope supported by said trackway, a guide for the load-swinging rope carried by the boom, and a guide for the hoisting-rope carried by the load-swinging rope.

13. In a device for unloading coal and similar materials, the combination of a track, conveying devices adapted to convey the material lengthwise the track, a car on said track and adapted to pass over said conveying devices and having a discharge-opening, a hoisting mechanism comprising a hoisting-rope carried by said car, an elevated trackway extending in the direction of travel of the car, and a guide for said hoisting-rope carried by and movable along said elevated trackway.

14. In a device for unloading coal and simi-

lar materials, the combination of a track, conveying devices adapted to convey the material lengthwise the track, a car on said track and adapted to pass over said conveying devices, and having a discharge-opening, a hoisting mechanism comprising a hoisting-rope carried by said car, an elevated trackway extending in the direction of travel of the car, a guide for said hoisting-rope carried by and movable along said elevated trackway, and ropes extending from said guide along the trackway in each direction.

15. In a hoisting device the combination of a load-hoisting rope, a load-swinging rope, a boom-hoisting rope, means for operating all of said ropes, a car carrying said ropes and their operating means, a track carrying said car, a boom pivoted to said car, an elevated trackway extending in the direction of movement of said car, sheaves for the load-hoisting and boom-hoisting ropes supported from and movable along said elevated trackway, a sheave for the load-swinging rope carried by the boom, and a guide for the load-hoisting rope carried by the load-swinging rope.

16. In a hoisting apparatus, in combination, an elevated trackway, an elevated carriage containing a longitudinal wheel p running on said trackway, and transverse sheaves g and h , a fall-rope extending over said transverse sheave g , a boom-supporting rope extending over said sheave h , a boom and actuators for said ropes.

17. In a hoisting and conveying apparatus, in combination an elevated trackway, an elevated carriage containing a longitudinal wheel running on said trackway and a transverse sheave g , frame members suspended from said wheel and flanking said sheave on each side, a fall-rope extending over said sheave and a traction-rope secured to said frame on opposite sides of said sheave.

18. In a hoisting apparatus, in combination, a hoisting-rope, an elevated support from which it is pendent, a rope-supported swinger-guide engaging the pendent portion of the hoisting-rope below said elevated support and means whereby both said elevated guide and said swinger-guide are moved laterally of the plane of swing.

19. In a hoisting apparatus, in combination, two actuators, a hoisting-rope moved by one actuator, an elevated guide from which said hoisting-rope is pendent, a trolley upon which said guide is carried, and a rope-supported swinger-guide moved by the other actuator and engaging the pendent portion of said hoisting-rope.

20. In a hoisting device, the combination with a hoisting-rope, an elevated rope-guide therefor and a support for said rope-guide permitting horizontal movement thereof across the plane of swing, of a swinging-rope, a tail-guide for the swinging-rope and a guide for

the hoisting-rope carried by the swinging-rope.

21. In a hoisting device, the combination with a hoisting-engine, a car upon which it is mounted, a track along which it is adapted to move, a hoisting-rope, an elevated trackway substantially parallel with said track, a rope-guide for the hoisting-rope supported by said trackway and means supported by said car whereby the pendent portion of said hoisting-rope is guided.

22. In a hoisting device, the combination with a hoisting-engine, a car upon which it is mounted, a track upon which said car is adapted to move, a hoisting-rope, a cable supported above and along the track, a guide-sheave for the hoisting-rope supported from and movable along said cable and means supported by said car whereby the pendent portion of said hoisting-rope is guided.

23. In a hoisting device, the combination with a hoisting-rope, a load-swinging rope and means for hauling said ropes, of an elevated guide for the hoisting-rope, a guide for the hoisting-rope carried by the load-swinging rope, a pivoted boom, a guide for the load-swinging rope carried by said boom and a slack take-up pulling upon said load-swinging-rope guide laterally to the pendent portion of said hoisting-rope.

24. In a hoisting apparatus, in combination, an elevated trackway, an elevated carriage containing a longitudinal wheel p running on said trackway and a transverse sheave g having its axis in substantially the same vertical plane with the trackway, a fall-rope extending over said transverse sheave, a lower trackway, a car upon said lower trackway, a fall-rope actuator upon said car and means mounted upon said car whereby the pendent portion of said fall-rope is guided.

25. In a hoisting apparatus, in combination, a hoisting-rope, an elevated guide from which it is pendent, a swinger-guide engaging the pendent portion of the hoisting-rope below said elevated guide, separate supports for said elevated and swinger guides each admitting of movement lateral to the plane of swing and means connected with one of said guides whereby said lateral movement is produced.

26. In a hoisting apparatus, in combination, a hoisting-rope, an elevated guide from which it is pendent, a swinger-guide engaging the pendent portion of the hoisting-rope below said elevated support and a rope connected with said elevated guide and extending laterally to the plane of swing whereby said elevated guide may be moved.

27. In a hoisting apparatus, in combination, a hoisting-rope, an elevated guide from which it is pendent, a swinger-guide engaging the pendent portion of the hoisting-rope below said elevated support and separate trackways extending laterally to the plane of swing

whereon said elevated and swinger guides are respectively supported.

28. In a hoisting apparatus, in combination, a hoisting-rope, an elevated guide from which it is pendent, a swinger-guide engaging the pendent portion of the hoisting-rope below said elevated support, separate trackways extending laterally to the plane of swing upon which said guides are respectively mounted and a rope connected with said elevated guide whereby lateral movement is imparted thereto.

29. In a hoisting apparatus, in combination, a hoisting-rope, an elevated guide from which it is pendent, a swinger-guide engaging the pendent portion of said hoisting-rope below said elevated support, rope-supports for said swinger-guide extending in opposite directions away from said hoisting-rope and separate means for supporting said supporting-ropes and elevated guide and admitting of the movement thereof lateral to the plane of swing.

30. In a hoisting apparatus, in combination,

a hoisting-rope, an elevated guide from which it is pendent, a swinger-guide engaging the pendent portion of said elevated guide, ropes connected with said swinger-guide and extending in opposite directions away from said hoisting-rope, an actuator and counter-actuator between which the tension of said swinger-guide ropes is maintained and separate supports for said elevated guide and swinger-guide ropes admitting of the movement of the same laterally to the plane of swing.

31. In a hoisting apparatus, in combination, two actuators, a tension device, a hoisting-rope moved by one actuator, an elevated guide from which said hoisting-rope is pendent, a swinger-guide supported by ropes extending in opposite directions away from said hoisting-rope and impelled in opposite directions by the other actuator and the tension device.

THOMAS SPENCER MILLER.

Witnesses:

H. L. REYNOLDS,
C. J. RATHJEN.