

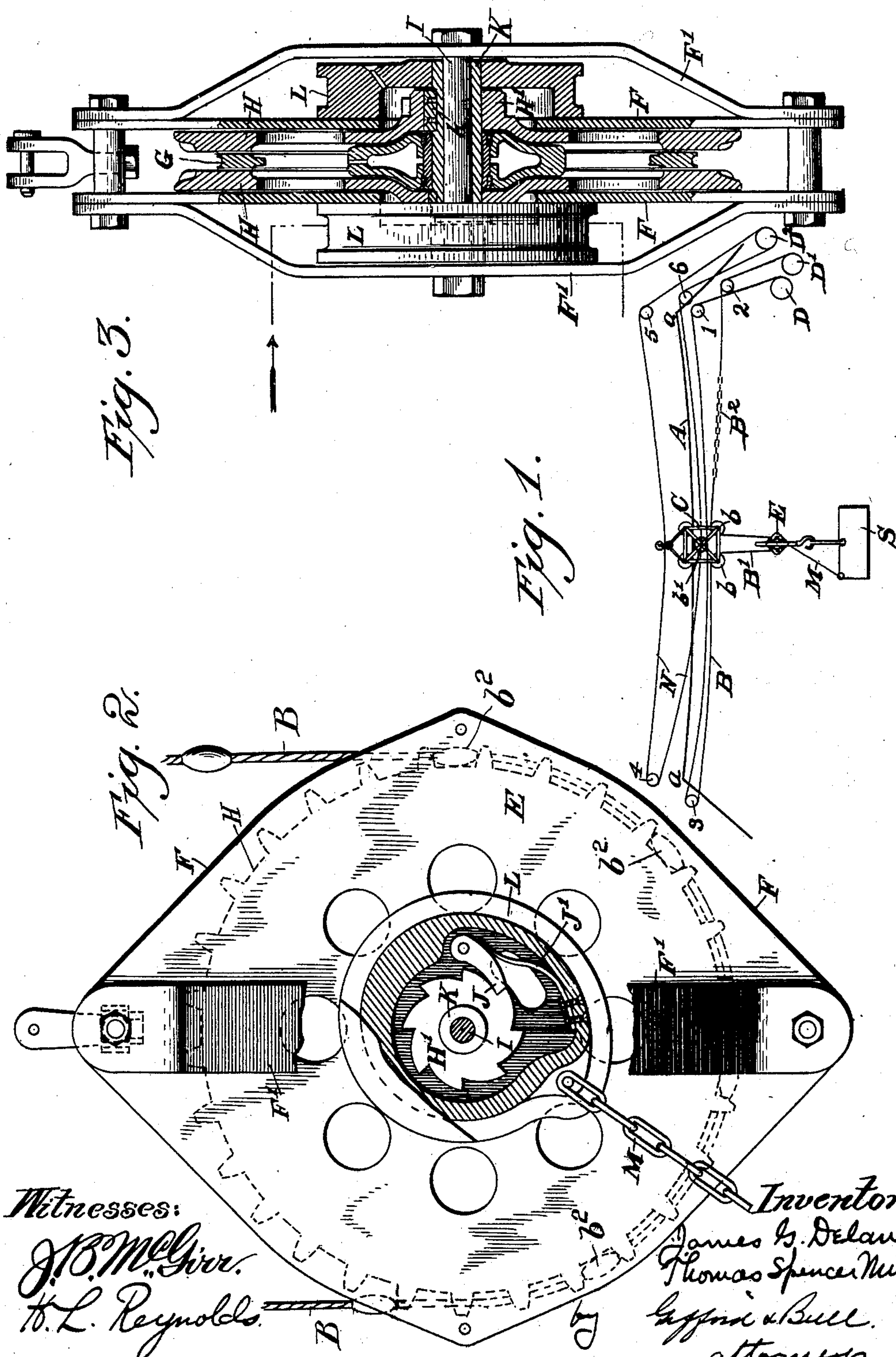
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J. G. DELANEY & T. S. MILLER.  
AUTOMATIC DUMPING DEVICE FOR CABLEWAYS.

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(No Model.)



Witnesses:

J. B. McGirr.  
H. L. Reynolds.

Inventors  
James G. Delaney  
Thomas Spencer Miller  
Laffin & Bull.  
attorneys



# UNITED STATES PATENT OFFICE.

JAMES G. DELANEY, OF NEW YORK, N. Y., AND THOMAS SPENCER MILLER,  
OF SOUTH ORANGE, NEW JERSEY.

## AUTOMATIC DUMPING DEVICE FOR CABLEWAYS.

SPECIFICATION forming part of Letters Patent No. 717,176, dated December 30, 1902.

Application filed August 5, 1901. Serial No. 70,842. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES G. DELANEY, of the city of New York, borough of Manhattan, in the county of New York and State of New York, and THOMAS SPENCER MILLER, of South Orange, in the county of Essex and State of New Jersey, have invented a new and Improved Hoisting Apparatus, of which the following is a full, clear, and exact description.

10 One part of our invention consists in an improved automatic dumping device whereby the load may be automatically dumped as desired.

Another part of our invention consists in means whereby an intermittently-operating mechanism in a hoisting apparatus may be operated at a regulatable time or position.

In the accompanying drawings this invention is shown as applied to cableways.

20 Figure 1 shows diagrammatically in elevation a cableway having our invention embodied therein. Fig. 2 is a side elevation and partial section of the fall-block, showing the automatic dumping devices. Fig. 3 is a cross-sectional elevation of the block.

In the operation of cableways and similar conveying apparatus it is often desirable to be able to automatically dump the load at any desired point. Devices to accomplish this purpose have been produced; but our present device is believed to have greater elements of safety against accidents than previous devices in that it relies upon two separate conditions to secure the result, each of which must be operative at the same time. In other words, the load-carriage must have reached a fixed point in the length of the cableway and in addition the load must be lowered. This result is secured by the coöperation of mechanism embodied in the fall-block with mechanism which forms part of the cableway.

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In Fig. 1 is shown a cableway having our invention embodied therein. While this shows a preferred arrangement of parts, it is not the only arrangement known to us which may be used, and we do not wish to be limited to the use of this arrangement only. In this figure a supporting or trackway cable A is shown, which is supported at *a a* at opposite ends of the span. Upon this cable travels a carriage C, which is shown as connected with

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one run of an endless hauling or traction rope N. This hauling-rope is shown as passing over sheaves 4, 5, and 6 and down to a drum D<sup>2</sup>.

The hoisting-rope is herein shown as an endless rope, the two runs of which pass, respectively, over sheaves 1 and 2, carried on the head-support, and about sheave 3 at the tail-support. The ends of this rope wind upon separate drums D and D', one of which serves as an anchorage for its end of the rope, by which the rope may be let out or taken in, as desired. This may be merely a reel, which is to be operated by hand or be connected with the engine, so that power may be applied to turn it. The drum connected with the other end of the hoisting-rope is the regular hoisting-rope drum. If desired, the hoisting-rope may extend only once across the span, in which case one drum would be at the head-support and the other at the tail-support. In case it is made an endless rope it is desirable that the return-run pass beneath a pulley *b'* on the carriage, and thus assist in supporting the carriage.

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The hoisting-rope passes over two sheaves *b b* upon the carriage, and between these sheaves is formed a loop B', within which is suspended the fall-block E, which is shown in detail in Figs. 2 and 3. The fall-rope is also provided at some point in its length with a chain-section, buttons, or an enlargement of some sort adapted to engage a member of the fall-block to actuate the load tripping or discharging mechanism carried by the fall-block. In Fig. 1 a chain-section B<sup>2</sup> is shown as incorporated in the rope, while in Fig. 2 buttons *b<sup>2</sup>* are shown as applied to the rope. In either case this chain or button section of the hoisting-rope confers upon the hoisting-rope a portion having a different capacity of engagement from the balance of the hoisting-rope.

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The fall-block comprises a rope-carrying sheave or wheel G, two drums or pulleys L, two rotatable disks or wheels H, and ratchet-and-pawl connections between each disk H and its respective drum L. All of these parts are mounted to turn about a common axis. The rope-carrying sheave or wheel G is at the center of the block and turns freely upon a sleeve K, which in turn can turn freely upon

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the bolt I, which is supported by the bars F', forming part of the frame.

The disks H are of larger diameter than the wheel G and are close alongside thereof, forming, as it were, detached or separated flanges therefor. The outer edges of these disks upon their inner surfaces are recessed to fit the chain or the buttons, whichever may be used, on the rope B. Where buttons are used, they should be spaced at such a distance that, preferably, at least two be in contact with the disks at once. These disks at their center carry toothed or ratchet wheels H' upon their outer sides and are secured to the sleeve K by keys k, so that they, in effect, form parts of a unitary structure. Plates F of the frame are shown as interposed between the disks H and the drums L, the plates being provided with central holes of a greater diameter than the ratchet-wheels H' to permit the wheels to project therethrough.

The drums L each carry a pawl J, adapted to engage the ratchet-wheel H', and a spring J' to hold the pawl into engagement independent of gravity. For compactness of construction the inner faces of the drums L are recessed to receive the pawls and ratchet-wheels. Each drum has a chain or rope M secured thereto and adapted to be wound thereon when the drum is turned. These chains are secured to one end of the skip, as shown in Fig. 1, so that as the drums are turned to wind up the chains the skip is tilted, so as to discharge its contents.

The operation of our device is as follows: The hoisting-rope B is first set so that the chain or button section B<sup>2</sup> corresponds in location with the point where it is desired to dump the skip. The carriage with the loaded skip is then run out until the fall-block reaches or passes the tripping-section B<sup>2</sup>. The fall-block is then lowered. When the tripping-section of the fall-rope engages the recesses in the disks H, the said disks are rotated along with the drums L, thereby winding up the chains M on said drums, and thus tipping the skip. The disks H are turned whenever the tripping-section of the rope passes them; but the drums L are not turned except when the tripping-section of the rope passes in one way. There are thus two ways of dumping the skip, either by lowering while in such position that the tripping-section of the rope will pass over the wheel or by running the carriage back, so as to pass the tripping-section over the wheel G. Since the ends of the rope B are controlled by separate drums D D', the section B<sup>2</sup> of said rope, which has a different capacity of engagement from the balance of said rope, can be shifted relatively to the balance of the apparatus by winding more or less of said rope from one of said drums onto the other. Thus said drums, besides acting as actuators for said rope B, constitute means of adjustment for the portion B<sup>2</sup> thereof by which the operator at the drum-engine can govern the point at which the section B<sup>2</sup> shall

act with respect to the travel of the load-carriage on the cableway. Moreover, this adjustment enables the operator to control the point in the descent of the fall at which the section B<sup>2</sup> shall act. Since we are not aware of any prior device in which a rope composed of parts having different capacities for engagement and connected at opposite ends with separate drums was employed for producing any intermittent operation in a hoisting or conveying apparatus, we do not wish to limit ourselves with respect to this feature to a dumping operation.

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

1. In a hoisting and conveying device the combination with a trackway, a carriage traveling thereon, a hoisting-rope extending the length of trackway and back again, and a trip-actuating device carried by said hoisting-rope, of a block having a sheave suspended beneath the carriage in a loop of the hoisting-rope, and a load-releasing device adapted to be engaged and operated by the tripping device when reached.

2. The combination with two sheaves or pulleys adapted to receive distinct ropes or chains, of a rotatable member between said sheaves or pulleys adapted to be engaged and turned by a particular section of the rope or chain running on one sheave, and a ratchet device adapted to engage the other sheave to turn it in one direction.

3. The combination with two sheaves or pulleys, a rope or chain running freely upon one sheave and a rope or chain secured to the other sheave to be wound thereon, of a rotatable member intermediate said sheaves and adapted to be engaged and turned by a particular section of the rope running on one sheave, and a ratchet connection between said intermediate member and the other sheave adapted to turn it in one direction only.

4. The combination with a sheave or pulley, a rope or chain running freely thereon and carrying a tripping member of an enlarged cross-section, and a drum having a rope or chain secured to wind thereon, of a rotatable member adapted to be engaged by the enlarged section of the rope to be turned thereby, and a ratchet connection between said rotatable member and the drum to turn the latter in one direction only.

5. In a block in combination, a rope-carrying sheave or wheel, two drums located respectively on opposite sides of the rope-carrying wheel, drum-actuating disks between said wheel and the drums and projecting beyond the rim of the wheel to be engaged and turned by an enlargement of the rope, all of said parts being mounted to turn upon a common axis, and ratchets and pawls carried one by the disks and the other by the drums whereby the drums may be turned in one direction from the disks.

6. In a block in combination, a rope-carrying



sheave or wheel, two drums located respectively on opposite sides of the rope-carrying wheel, drum-actuating disks between said wheel and the drums and projecting beyond the rim of the wheel to be engaged and turned by an enlargement of the rope, a shaft secured to both of said disks and extending through the rope-carrying wheel, and means for connecting the disks with the drums to turn them in one direction.

7. In a hoisting or conveying apparatus, in combination, a rope containing parts of different capacity for engagement, mechanism operated by the passing of one of such parts and actuators controlling both ends of said rope.

8. In a cableway, in combination, the trackway, the load-carriage thereon, a carriage traction-rope, a rope extending from one end of said cableway to said carriage and back again composed of parts having different capacities for engagement, actuators whereby both ends of said rope are controlled and mechanism actuated by the passing of one of said parts.

9. In a cableway, in combination, a carrier, a tripping device toward and from which the carrier travels, a winding device mounted on the carrier, a member mounted on the carrier and adapted to be tripped by said tripping device when the carrier in its travel reaches the said tripping device and means interposed between said winding device and tripped member whereby said tripped member is operatively connected with said winding device when moving in one direction, but operatively disconnected therefrom when moving in the opposite direction.

10. In a cableway, in combination, a hoisting-rope containing two parts of different engaging capacities, actuators for both ends of said hoisting-rope, a fall-block suspended in a loop of said hoisting-rope and mechanism appurtenant to said fall-block adapted to be actuated by one of said fall-rope parts.

JAMES G. DELANEY.

THOMAS SPENCER MILLER.

Witnesses:

H. L. REYNOLDS,

C. J. RATHJEN.