

No. 808,710.

PATENTED JAN. 2, 1906.

E. K. YOUNG.
FALL ROPE CARRIER.
APPLICATION FILED MAY 17, 1905.

3 SHEETS—SHEET 1.

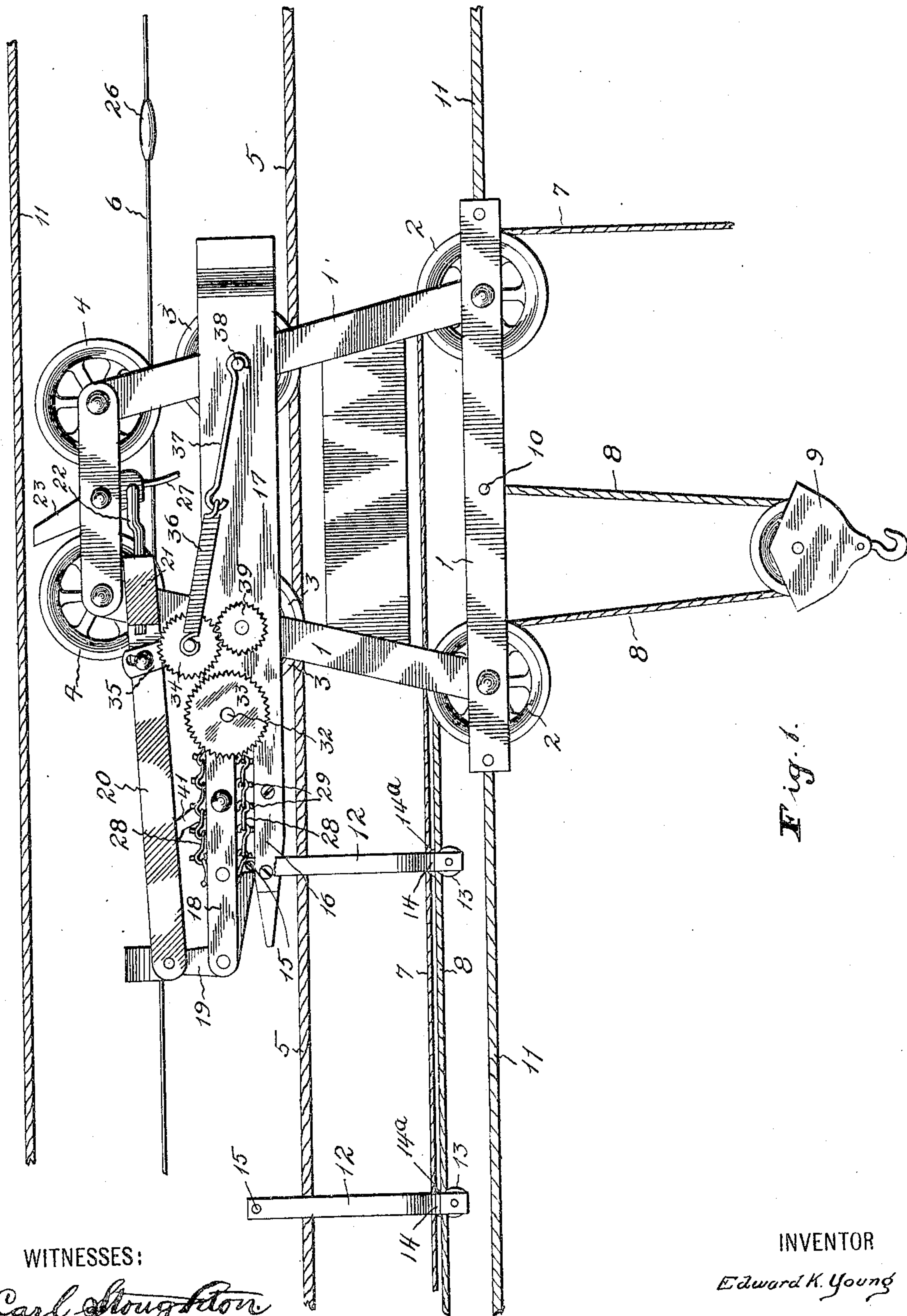


Fig. 1.

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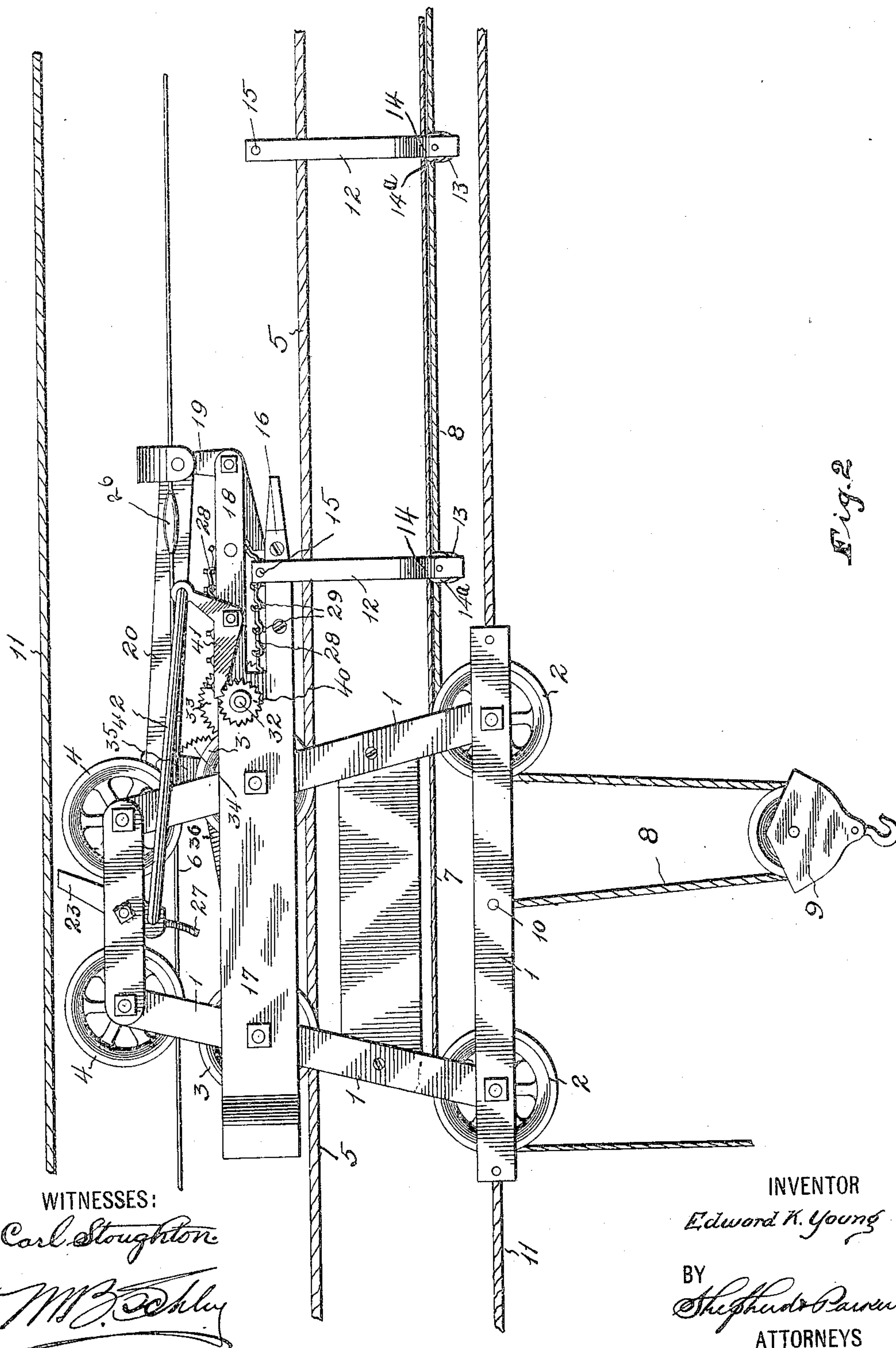


Fig. 2

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3 SHEETS—SHEET 3.

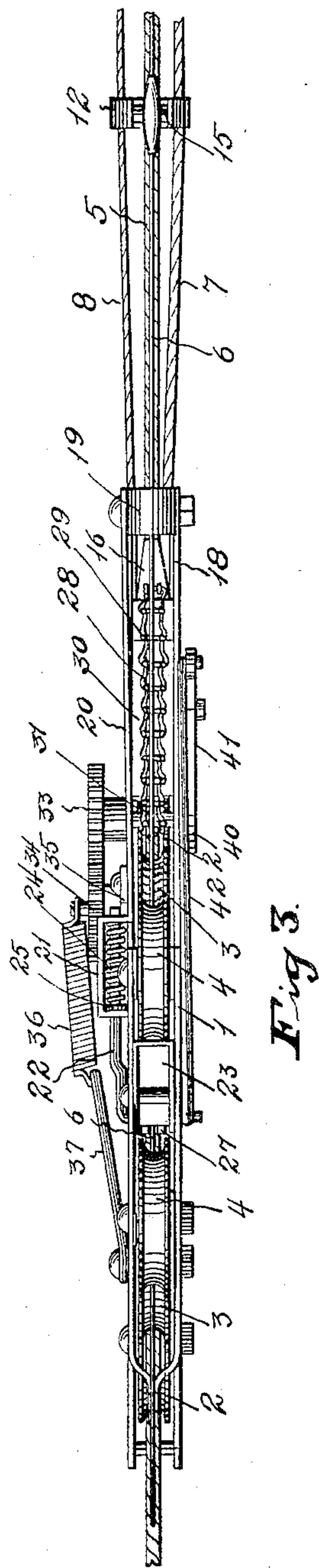


Fig. 3.

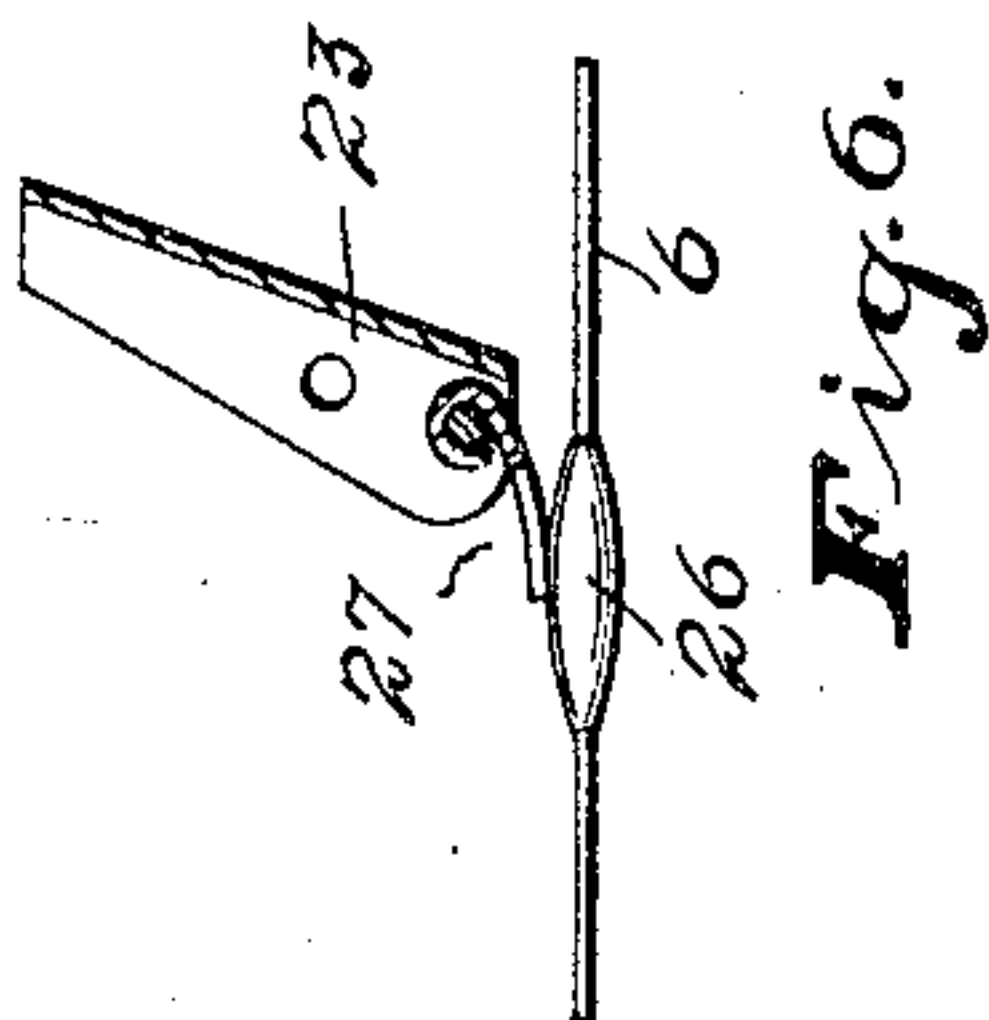


Fig. 6.

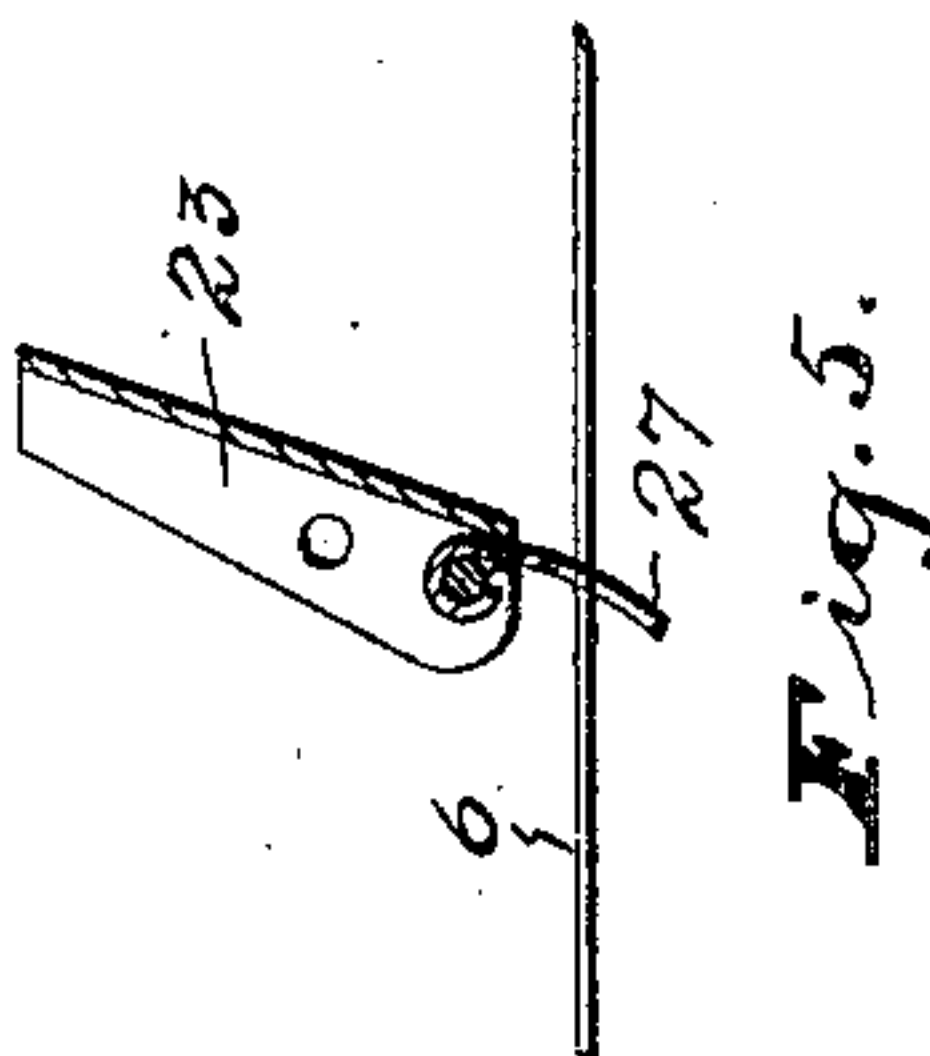


Fig. 5.

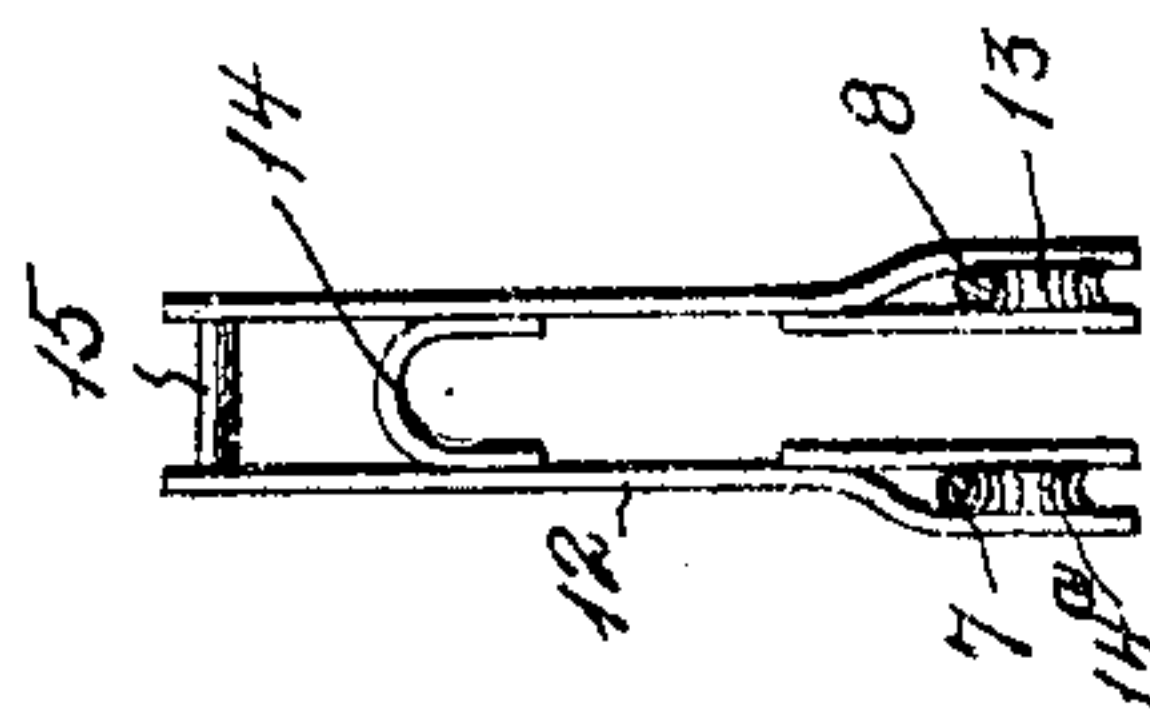


Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD K. YOUNG, OF MIDDLE FORK, OHIO.

FALL-ROPE CARRIER.

No. 808,710.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed May 17, 1905. Serial No. 260,762.

To all whom it may concern:

Be it known that I, EDWARD K. YOUNG, a citizen of the United States, residing at Middle Fork, in the county of Hocking and State of Ohio, have invented certain new and useful Improvements in Fall-Rope Carriers, of which the following is a specification.

My invention relates to a new and useful improvement in fall-rope carriers, and more particularly to mechanism for gathering and distributing the carriers.

The object of the invention is to provide a device for assuring the positive gathering and distributing of the carriers at the proper time and place and preventing more than one carrier being delivered at a discharging-point.

Another feature resides in the construction whereby the collection and distribution of the carriers are automatically accomplished.

Finally, the object of the invention is to provide a device of the character described that will be strong, durable, efficient, and one in which the several parts will not be liable to get out of working order.

With the above and other objects in view the invention consists of the novel details of construction and operation, a preferable embodiment of which is described in the specification and illustrated in the accompanying drawings, wherein—

Figure 1 is a side elevation of the hoist-carriage and showing portions of the cables and ropes and the fall-rope carriers in elevation. Fig. 2 is an opposite side elevation of the parts shown in Fig. 1. Fig. 3 is a plan view. Fig. 4 is an elevation of one of the fall-rope carriers. Fig. 5 is a vertical sectional view of the tripping-lever and its trigger, showing the latter in its normal position astride the button-rope; and Fig. 6 is a like view showing a portion of the button-rope and one of the buttons and the trigger passing over the button.

In the drawings the numeral 1 designates an ordinary hoist-carriage provided with the usual grooved wheels or sheaves 2, 3, and 4. The main or supporting cable is indicated by the numeral 5 and passes through the carriage, so as to receive the wheels 3. The wheels 4 at the top of the carriage travel on the button-rope 6 and act to guide and steady the carriage. The wheels 2 are located at the lower end of the carriage-frame at opposite sides, one of the said wheels receiving the tripping-rope 7 and the other the fall-

rope 8, which is looped so as to support the fall-block 9 and has its free end fixed in the lower portion of the carriage 1, as indicated at 10. The usual traversing cable 11 is secured to the opposite ends of the carriage and, being of the endless type, has its upper strand passing above the carriage and its parts, so as not to interfere with the same.

I provide any number of fall-rope carriers 12, formed at their lower ends with brackets to receive suitable pulleys 13 and 14^a, the carriers each being formed with a central interspace and near their upper ends with curved hangers 14, adapted to engage over the main cable 5 and support the carriers. The pulleys 13 receive the fall-rope 8, while the pulleys 14 support the tripping-cable 7. The carriers each extend some distance above the hangers 14, as shown in Fig. 4, and have arranged between their upper ends a bar 15. A shoe 16 is supported from the carriage 1 above the main cable 5, so as to slide under the bar 15 of each carrier or owing to its inclined surface to allow the bar 15 to slide thereon. The shoe 16 is formed at the forward end of side plates 17, secured on each side of the carriage 1 adjacent the wheels 3 and above the main cable. These side bars are bifurcated so as to provide upper forward extensions 18, at the outer end of which is pivotally supported a double latch 19, looped over the button-rope 6 and having its lower or latch ends normally resting on the shoe 16, so that after a carrier has been forced onto the said shoe the said lower ends will stand in front of the bar 15 and retain the carrier in place. For the purpose of tripping or swinging the latch to raise its ends above the shoe 16 to allow the carriers to be fed out or off the shoe I pivot to the upper end of the double latch a link 20, extending rearwardly to the frame 1 and at its rear end bent to form an angular keeper 21. An irregular-shaped rod 22 is slidingly mounted in the keeper 21 and has its rear end pivotally connected to the lower end of a tripping-piece 23, pivoted in the upper portion of the carriage-frame 1 between the wheels 4. A coiled spring 24 is disposed about the rod 22 and confined within the keeper 21. A washer 25, as best shown in Fig. 3, is fixed on the rod so as to bear against the end of the coiled spring, the said washer normally abutting the rear end of the keeper and acting as a stop. It will be apparent that when the

lower end of the tripping-piece 23 is swung forward or toward the shoe end of the carriage-frame the washer 25 will compress the spring 24, the rod having a limited sliding movement in the keeper. The spring 24, however, is of sufficient stiffness as to allow but a slight compression before the forward movement of the rod 22 is transmitted to the link 20, which upon being moved forward swings the upper end of the double latch 19, to which it is attached, downward, thereby raising the lower ends of the latch and allowing the carrier to be moved off the shoe. By compression of the spring 24 a yieldable connection is had, the purpose of which will be hereinafter described. For operating the tripping-piece 23 I arrange on the button-rope 6, which, it is apparent, passes directly beneath the said piece, buttons 26. These buttons are disposed near the points where it is desired to deliver the fall-rope carriers when the carriage 1 travels rearwardly or returns. In the lower end of the tripping-piece I pivotally support a trigger 27, having its lower end bifurcated and arranged so that when the carriage is moved forwardly to slip over the buttons 26 without operating the tripping-piece 23; but when the carriage is moved rearwardly the trigger 27 is moved forward so as to bind against the lower end of the tripping-piece 23 and swing the same forward, thus transmitting a forward movement to the link 20 and raising the ends of the latch, as described.

For feeding the carriers from the shoe 16 as the carriage is moved backward and for assuring that only one carrier will be delivered or discharged as each button is encountered I arrange between the upper extensions 18 a suitably-mounted endless chain 28, each link of which is provided with projections 29, adapted to travel along the upper surface of the shoe 16 and move the hangers forwardly, it being understood that the transverse bar 15 of each hanger is confined between the four adjacent projections 29 of adjacent links. The chain 28 travels about a plate or block 30, mounted between the extensions 18, and is propelled by a suitable sprocket 31 at its rear end and about which it travels. The sprocket is mounted on a shaft 32, supported in the side bars 17, and said shaft projects beyond the side bars on each side. On one side and beneath the link 20 I fixedly mount upon the shaft 32 a gear 33, adapted to mesh and receive motion from an idle pinion 34, loosely mounted on a swinging arm 35, pivoted to the carriage-frame 1 and having a loose connection with the link 20. This pinion 34 is normally held out of contact or mesh with the gear 33 by a coiled spring 36, connected by a hook 37 to a stud 38 at the rear of the carriage-frame 1. The forward wheel 3 of the carriage-frame 1 has its shaft extended and a driving-pinion 39

keyed thereon so as to mesh with the idle pinion 34 and transmit motion thereto. Thus when the carriage travels rearwardly and the trigger 27 encounters one of the buttons 26, thus causing the link 20 to be moved forward and the latch 19 raised, the arm 35 is swung forward by its loose connection with the link 20. This forward movement of the arm 35 is sufficient to throw the idle pinion 34 into mesh with the gear 33 and transmit motion to the same, thereby imparting motion to the endless chain 28. The meshing or clutching between the pinions 33 and 34 exists only through a short period and just long enough to move the chain one step or far enough to carry a single fall-rope carrier along the shoe 16 so that its transverse bar 15 will stand immediately behind the ends of the latch 19 when the same is lowered, and thus in a position to readily slide off the shoe when the next button is encountered and the latch 19 swung upward. From the above it will be obvious that as each carrier is released by the raising of the latch ends the endless chain 28, through its projections 29, is operating to feed the other carriers one step forward and to bring the next carrier to be discharged into a position immediately behind the latch ends when the latter are lowered. To prevent the chain from operating and to retain the carriers in position on the shoe when the tripping mechanism is not operating, I provide on the opposite end of the shaft 32 a toothed wheel 40, with which the free end of an angular dog 41, pivoted on the extension 18 on the opposite side from the link 20 and the pinion 33, engages. The upper end of the dog 41 is pivotally connected to a link 42, which is pivotally engaged at its rear end with the lower end of the tripping-piece 23. By this arrangement when the lower end of the tripping-piece 23 is moved forward by the trigger 27 the upper end of the dog is swung forwardly and downwardly, thus drawing its free end out of engagement with the toothed wheel 40, thereby allowing the chain to be moved.

It will be understood that as the carriage 1 travels forward the shoe 16 will pass under the transverse bars 15 of the fall-rope carriers 12 and gather them up, the bar of each carrier riding up on the shoe and passing under the latch which is swung upward. The carriers as they ride upon the shoe 16 and pass under the latch 19 engage the projections 29 of the chain 28, and thus crowding against each other are intermittently moved rearwardly, the distance between the projections 29 being such as to prevent the bars 15 of two carriers from crowding in between the same projections. When the latch 19 is swung upward, the link 20 will be moved forward and the arm 35 also swung forward to momentarily clutch the pinions 33 and 34, and thus transmit motion to the chain 28.

As the clutch is moving forward motion will be transmitted to the chain in the opposite direction to which it is transmitted when the clutch is moving rearwardly, thus causing the lower run of the chain 28 to move rearwardly and intermittently move the carriers by their bars 15 along the shoe 16 as they are gathered up. In this manner the carriers are gathered up on the shoe and positioned between the projections, so as to be readily distributed and intermittently fed forward as the carriage returns and the trigger 27 encounters the buttons 26.

The function of the spring 24, hereinbefore referred to, is to cause the idle pinion 34 to be yieldably thrown into mesh or contact with the gear 33, and thus prevent breaking of the teeth or binding of the same. The spring 36 not only serves to hold the pinion 34 normally out of contact or mesh with the gear 33, but will act to return the pinion 34 and also the link 20 and the latch 19, together with the tripping-piece 23, after the trigger 27 passes over the buttons 26.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, means associated with the shoe for moving the carriers backward or forward thereon, and means for intermittently imparting motion to the moving means.

2. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, a movable device for retaining the carriers on the shoe, means for intermittently operating the movable device to allow the carriers to be removed from the shoe, and means for moving the carriers onto and off of the shoe.

3. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, a movable device for retaining the carriers on the shoe, means for intermittently operating the movable device to allow the carriers to be removed from the shoe, means for moving the carriers onto and off of the shoe, and

means for intermittently imparting motion to the carrier-moving means.

4. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, a latch supported over the shoe for retaining the carriers thereon, and a tripping device connected to the latch for intermittently moving the same out of the path of the carriers.

5. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, and an endless device associated with the shoe for moving the carriers therealong.

6. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, an endless device associated with the shoe for moving the carriers therealong, and means for intermittently imparting motion to the endless device.

7. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, means for moving the carriers along the shoe, means for imparting motion to the said moving means normally out of engagement therewith, and means for throwing the parts into engagement to transmit motion to the moving means.

8. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, a latch device for retaining the carriers on the shoe, means for moving the carriers along the shoe, and means for simultaneously operating the latch device and setting the moving means to operate.

9. In a device for gathering and distributing fall-rope carriers, a carriage provided with a shoe adapted to receive the carriers, means associated with the shoe for moving the carriers therealong, and means for locking said moving means against operation.

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

EDWARD K. YOUNG.

Witnesses:

A. L. PHELPS,
M. B. SCHLEY.