

No. 729,292.

PATENTED MAY 26, 1903.

J. H. DICKINSON.

## HOISTING AND CONVEYING APPARATUS.

APPLICATION FILED JAN. 21, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

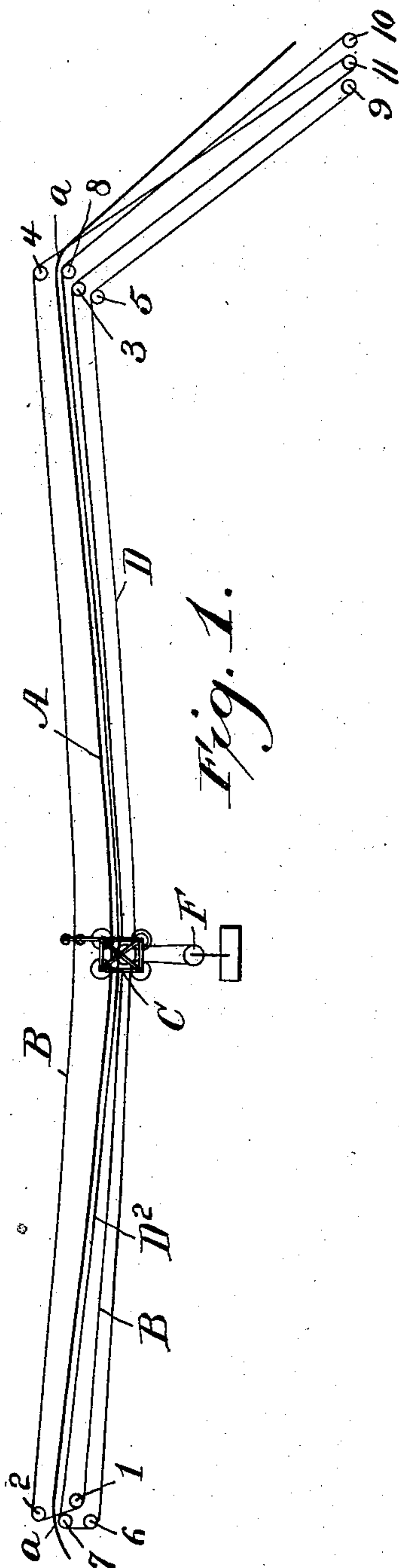


Fig. 1.

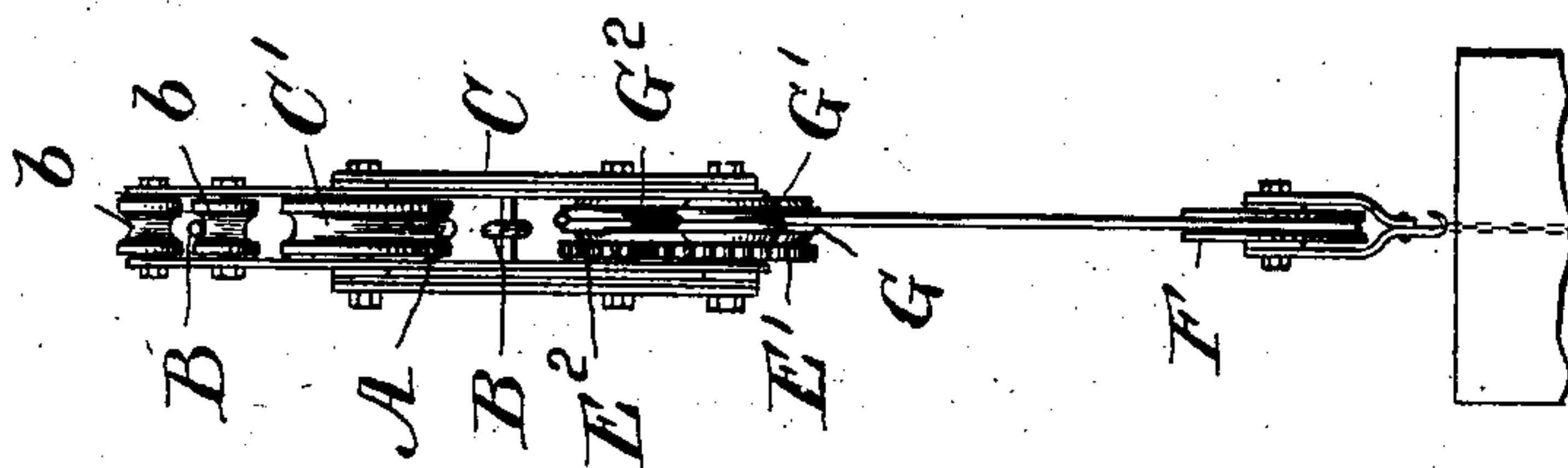


Fig. 3.

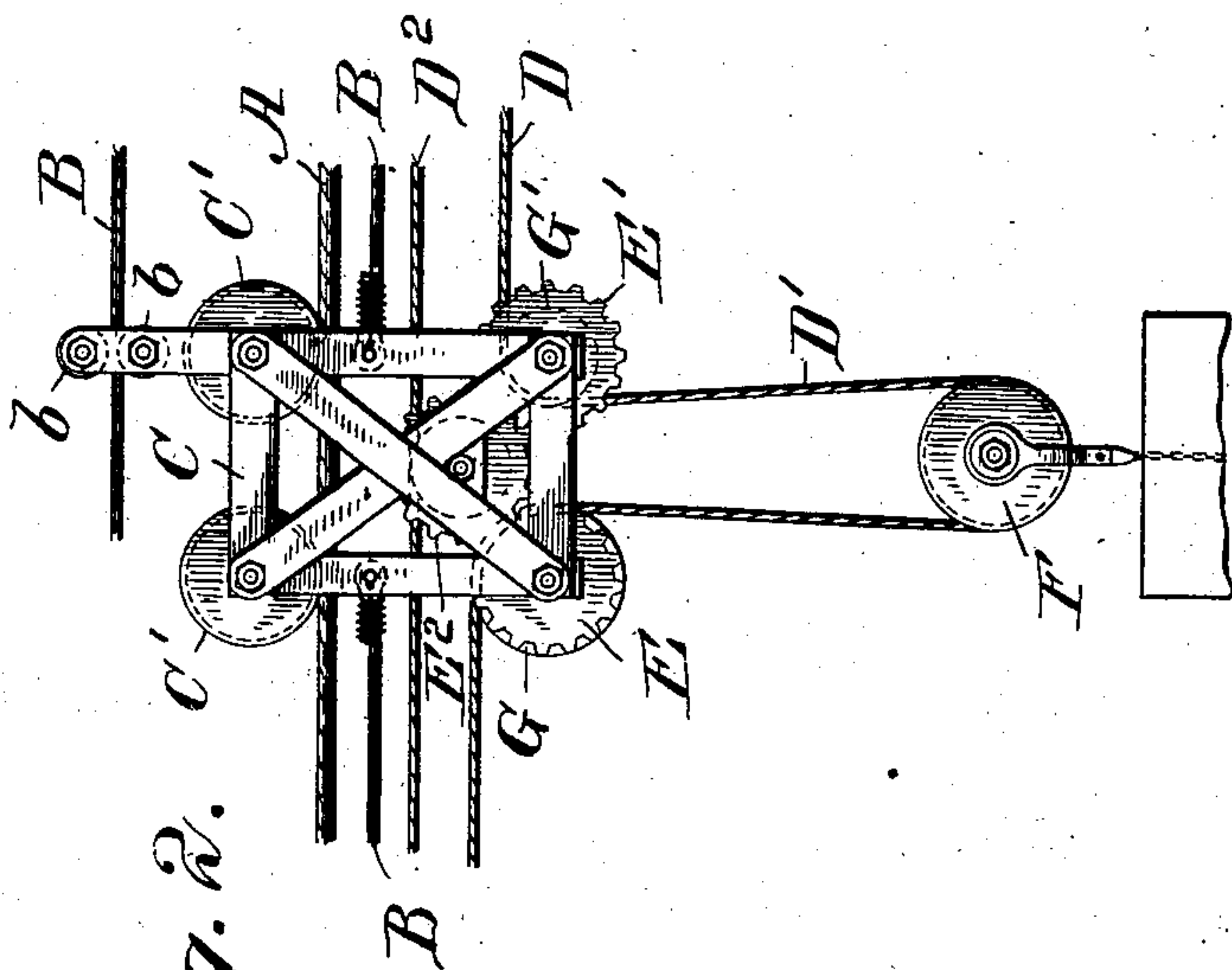


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 4.  
Fig. 5.

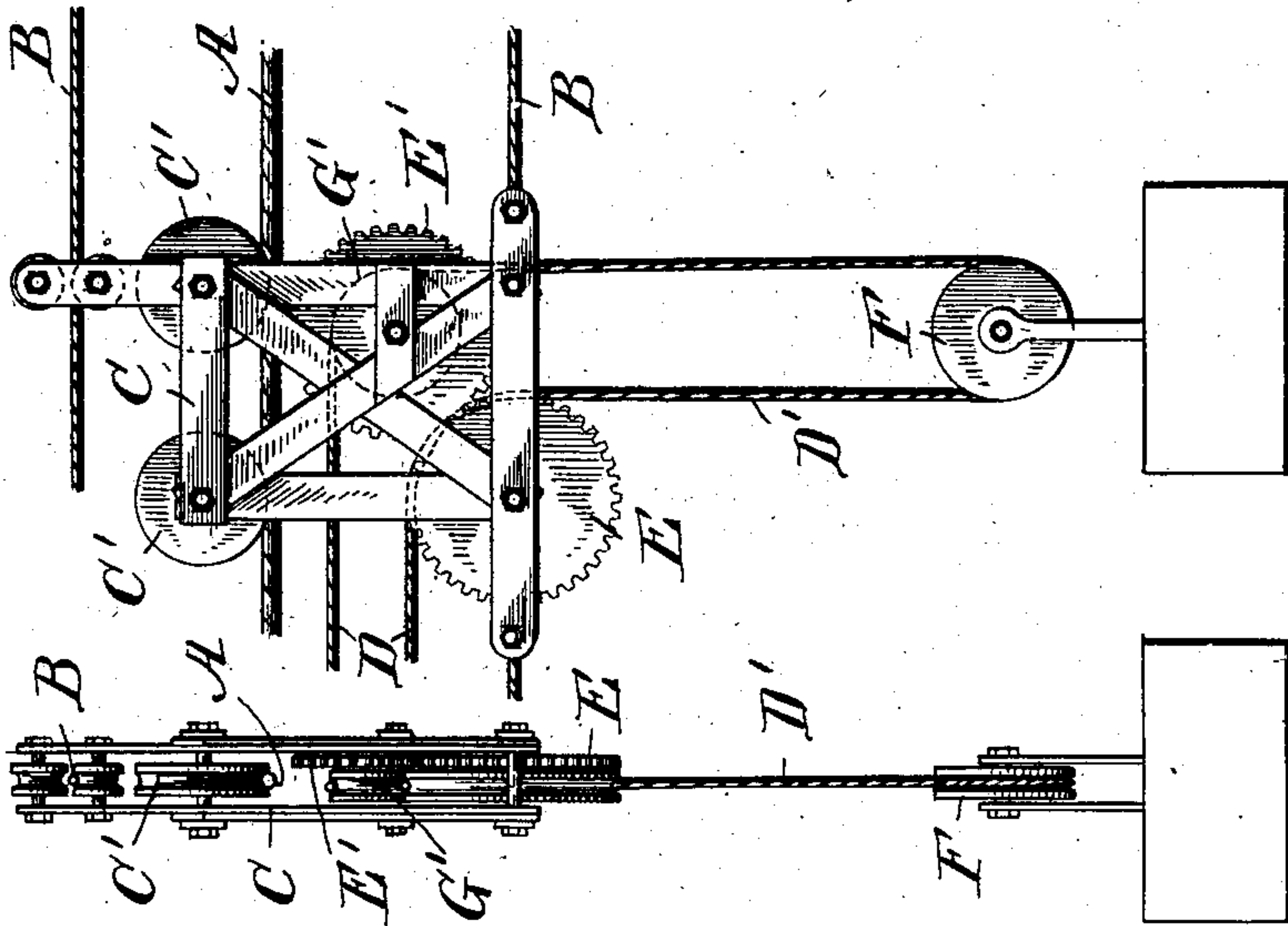
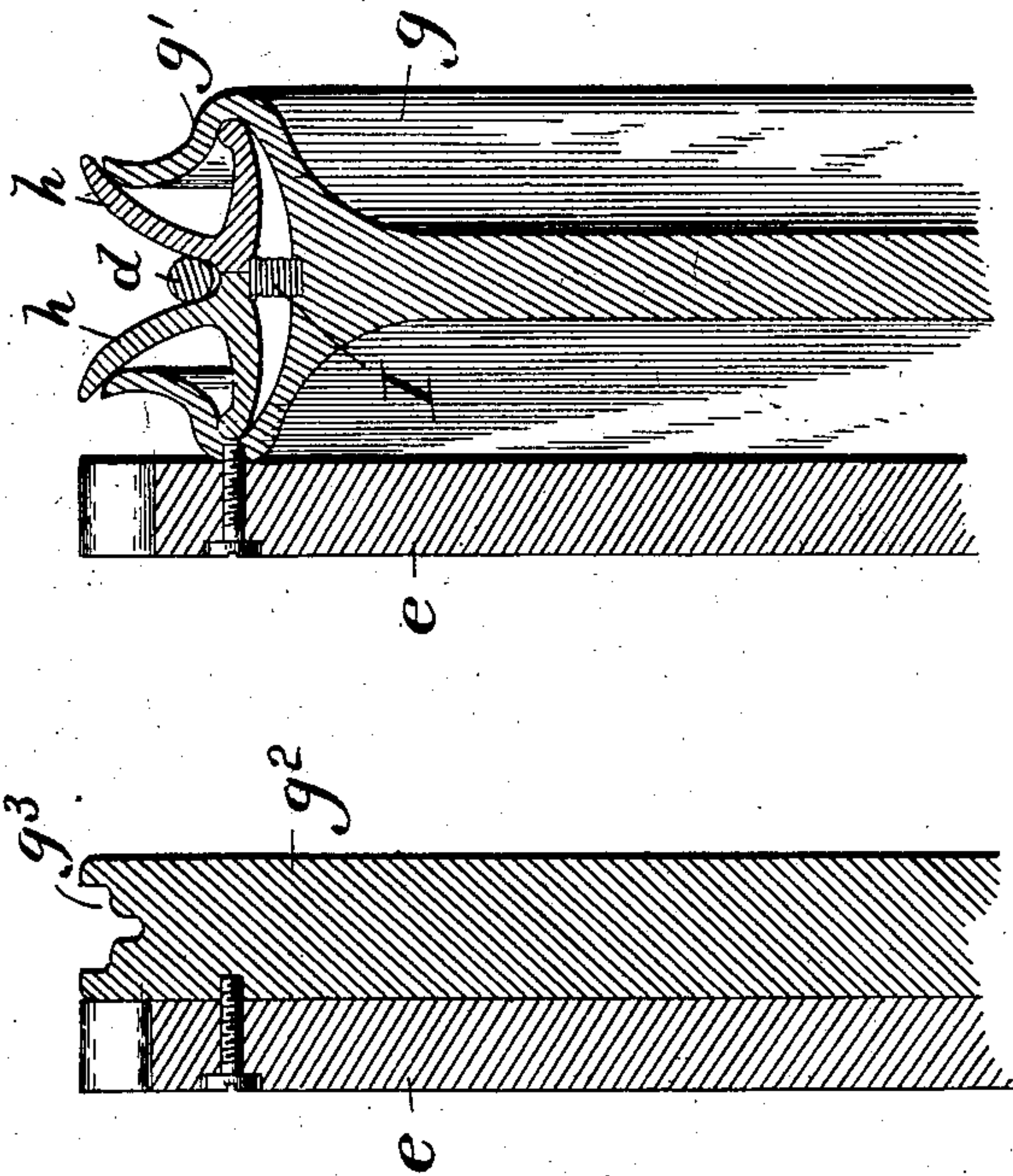


Fig. 6.  
Fig. 7.



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# UNITED STATES PATENT OFFICE.

JOSEPH H. DICKINSON, OF ATLANTA, GEORGIA, ASSIGNOR TO THE LIDGER-  
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## HOISTING AND CONVEYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 729,292, dated May 26, 1903.

Application filed January 21, 1902. Serial No. 90,674. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. DICKINSON, of Atlanta, Fulton county, Georgia, have invented a new and useful Improvement in Hoisting and Conveying Apparatus, of which the following is a full, clear, and exact description.

My invention relates to improvements in cableways, ropeways, and similar conveyers, and comprises the novel features which will be hereinafter described, and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which the same reference characters represent corresponding parts in the different figures.

Figure 1 shows diagrammatically in elevation a cableway having my improvements embodied therein. Fig. 2 is a side elevation of the carriage, showing the various ropes in place. Fig. 3 is an edge elevation of the carriage. Fig. 4 is a side elevation of a carriage, showing a slightly-modified construction. Fig. 5 is an edge elevation of the carriage shown in Fig. 4. Figs. 6 and 7 are sectional details showing, respectively, the construction of grip-wheels and chain-wheels which may be used on the carriage.

In operating cableways or ropeways much difficulty is often found in getting the fall-block to descend from the carriage when desired. This is due to the fact that the stretch of the hoisting-rope extending between the carriage and the first support sags down and causes a strain upon the rope which the weight of the fall-block is unable to overcome. It is this which has caused the necessity for fall-rope carriers. In my present invention I provide means, mounted largely upon the carriage, by which the hoisting or fall rope may be positively paid out without overweighting the fall-block or employing an excessive number of fall-rope carriers.

In the cableway as shown in Fig. 1 three cables or ropes are used—the trackway or supporting-cable A, which is supported at *a a* at opposite ends of the span, the hauling or traction rope B, and the hoisting or fall rope D. The hauling-rope B is endless, passing from the carriage over guide-pulley 3 on the head-

support to and about the drum 11, over guide-pulley 4 on the head-support, between guide-pulleys *b b* on the carriage, over guide-pulleys 2 and 1 on the tail-support, and back to the carriage. The hoisting-rope is double, the ends thereof winding, respectively, upon drums 9 and 10 and extending over guide-pulleys 5 and 8 on the head-support. One run of the hoisting-rope then extends to and about a wheel, as *G'*, on the carriage C, then down and about the wheel of the fall-block F and upward about a wheel, as *G*, upon the carriage. The hoisting-rope may then extend either about a guide pulley or pulleys, as 6 and 7, upon the tail-support and back to the head-support, as shown in Figs. 1 and 2, or may extend directly from the carriage back to the head-support, as shown in Fig. 4. In either case the wheels *G* and *G'* upon the carriage over which the hoisting-rope passes should be so constructed that the rope will grip them with sufficient force to insure that they will always turn with the hoisting-rope and prevent the possibility of the rope slipping upon the wheels. In case the ordinary groove in the wheel is not sufficient to prevent slipping a grip-wheel, such as shown in Fig. 6, or any other desired construction may be employed, or the wheel may be provided with pockets adapted to receive either the links of a chain or buttons upon a rope and a chain be inserted in the rope or buttons attached thereto to cooperate with the wheels.

The grip-wheel *g*<sup>2</sup>, as shown in Fig. 6, has a hollow and inwardly-curved rim *g'*, within which are placed angular gripping levers or blocks *h*, which are normally held outward by springs *I*, but are forced inward by the pressure of the rope, and thus caused to grip the rope. The wheel *g*<sup>2</sup>, as shown in Fig. 7, has its periphery provided with pockets *g*<sup>3</sup>, adapted to receive either the links of a chain or buttons on the rope.

The two wheels *G* and *G'* are made unequal in size and are respectively secured to gear-wheels *E* and *E'*, which bear to each other a different ratio than that between the wheels *G* and *G'*. In the drawings the gear-wheels are shown as of the same size. It is obvious that, if desired, the two rope-wheels *G* and *G'* might be made of the same size and the



gear-wheels E and E' unequal in size, the requirement being that the ratios between the two pairs of wheels be unequal.

In Figs. 1 and 2 I have shown the two gears E and E' as connected by an intermediate wheel E<sup>2</sup>, while in Figs. 4 and 5 they are directly connected. In Figs. 1 and 2 one run of the hoisting-rope extends from the carriage in opposite directions to the head and tail support and the other run D<sup>2</sup> extends between the head and tail support and is shown as supported by a wheel G<sup>2</sup> upon the same shaft as the intermediate gear E<sup>2</sup>.

In Figs. 4 and 5 both runs of the hoisting-rope extend from the carriage directly to the head-support. In both forms the ends of the hoisting-rope wind upon separate drums, which should be capable of turning at speeds differing in the same ratio as the peripheral speeds of the two wheels G and G'. They should also be capable of turning at the same speed, which should correspond in some cases with the speed given the hauling-rope.

In operating my device the carriage is caused to travel along the trackway by the operation of the endless hauling-rope in the usual manner. If it is desired that the fall-block and the load carried thereby be kept at a uniform distance from the carriage, the drums which are connected with the ends of the hoisting-rope are rotated oppositely at a peripheral speed equal to that of the drum which operates the hauling-rope. The fall-block will therefore not change its position relatively to the carriage.

If it is desired to raise or lower the fall-block, the two drums controlling the hoisting-rope are turned oppositely at peripheral speeds differing in the same ratio as the two wheels G and G'. When turned in one direction, this will cause the hoisting-rope to run off of that one of the two supporting-wheels having the greater peripheral speed and upon the one having the lesser peripheral speed, and the fall-block will be lowered at a speed equal to one-half of the difference between the peripheral speeds of the two supporting-wheels. If turned in the opposite direction, the hoisting-rope will be run off of that one of the two supporting-wheels having the lesser peripheral speed and upon the one having the greater peripheral speed and the fall-block will be raised at a speed equal to half the difference between the peripheral speeds of the two wheels. The operator thus has at his command means by which the descent of the fall-block may be positively secured independent of its weight or the distance of the carriage from the nearest fall-rope support.

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

1. In a hoisting and conveying device the combination with a trackway, a carriage thereon, and means for moving the carriage along the trackway, of a hoisting-rope, two

wheels upon the carriage receiving the hoisting-rope and connected to have differential peripheral speeds, means for taking up and paying out the two ends of the hoisting-rope independently of each other and at variable speeds, and a fall-block suspended in a loop of the hoisting-rope between said differential wheels.

2. In a hoisting and conveying device the combination with a trackway, a carriage thereon, and means for moving the carriage along the trackway, of a hoisting-rope, two wheels upon the carriage receiving the hoisting-rope and connected to have differential peripheral speeds, means for positively engaging the hoisting-rope and said wheels to prevent slipping, means for taking up and paying out the two ends of the hoisting-rope independently of each other and at variable speeds, and a fall-block suspended in a loop of the hoisting-rope between said differential wheels.

3. In a hoisting and conveying device the combination with a trackway, a carriage mounted to travel on said trackway, a hauling-rope connected with said carriage and a drum for actuating said hauling-rope, of two wheels upon the carriage connected to have differential peripheral speed, a hoisting-rope extending over said wheels and having a loop depending between them, a fall-block suspended in said loop, and means for taking up and paying out both ends of the hoisting-rope independently of each other and at variable speeds.

4. In a hoisting and conveying device the combination with a trackway, a carriage mounted to travel on said trackway, a hauling-rope connected with said carriage and a drum for actuating said hauling-rope, of two wheels upon the carriage connected to have differential peripheral speed, positive rope-gripping means carried by said wheels, a hoisting-rope extending over said wheels and having a loop depending between them, a fall-block suspended in said loop, and means for taking up and paying out both ends of the hoisting-rope independently of each other and at variable speeds.

5. In a hoisting and conveying device the combination with a trackway, a carriage mounted to travel thereon, and means for actuating the carriage, of a hoisting-rope extending to the carriage and back again, a fall-block suspended by the hoisting-rope beneath the carriage, means for lowering the fall-block by pulling upon one end of the hoisting-rope and means for raising the fall-block by pulling upon the other end of the hoisting-rope.

6. In a hoisting device the combination with a looped or double-run hoisting-rope and means for actuating the two runs at different speeds, of geared differential pulleys receiving the hoisting-rope to form a loop between them, and a fall-block suspended in said loop.



7. A carriage for use on cableways and similar devices having two wheels adapted to receive the hoisting-rope, and gearing connecting said wheels to produce differential peripheral speeds therein.

8. In a hoisting and conveying apparatus, the combination with a carriage and means for moving the carriage along a definite route of two connected differential wheels upon the carriage, means for driving said wheels independently of the carriage movement, a looped or double-run hoisting-rope passing over said differential wheels, and a fall-block suspended in the loop of said hoisting-rope between the differential wheels.

9. In a hoisting and conveying apparatus, the combination with a trackway, a carriage thereon and means for moving the carriage along the trackway, of a hoisting-rope, two wheels on the carriage receiving the hoisting-rope and connected to have differential peripheral speeds, a fall-block suspended in a loop of the hoisting-rope between said wheels, a rope-drum at one end of the trackway and a rope through which said wheels are driven from said drum.

10. In a hoisting and conveying apparatus, the combination with a trackway, a carriage thereon and means for moving the carriage along the trackway of a hoisting-rope extending along the trackway and forming a loop at the fall, two wheels upon the carriage receiving the hoisting-rope and connected to have differential peripheral speeds, means of positive engagement between the hoisting-rope and said wheels to prevent slipping and

a fall-block suspended in a loop of the hoisting-rope between said differential wheels.

11. A carriage for use on cableways and similar devices having two connected wheels adapted to clutch the hoisting-rope and having different peripheral speeds.

12. A carriage for use on cableways and similar devices having two wheels adapted to clutch the hoisting-rope and gearing connecting said wheels to produce differential peripheral speeds thereon.

13. The combination with a carriage adapted for use on cableways and similar devices, of two connected wheels of different peripheral speeds, a hoisting-rope fastened successively over said wheels and forming a loop between them adapted to receive the fall-block; said wheels being constructed to form a peripheral clutching engagement with said hoisting-rope.

14. In a hoisting apparatus, in combination, a hoisting-rope, a drum by which it is actuated, a lowering-wheel and a hoisting-wheel over both of which said hoisting-rope passes at the top of the fall and means whereby the hoisting motion of one of said wheels communicates the lowering motion to the other thereof.

In testimony whereof I have hereunto affixed my name in the presence of two witnesses.

JOSEPH H. DICKINSON.

Witnesses:

M. S. AMSTUTZ,  
A. M. DICKINSON.