

No. 614,044.

Patented Nov. 8, 1898.

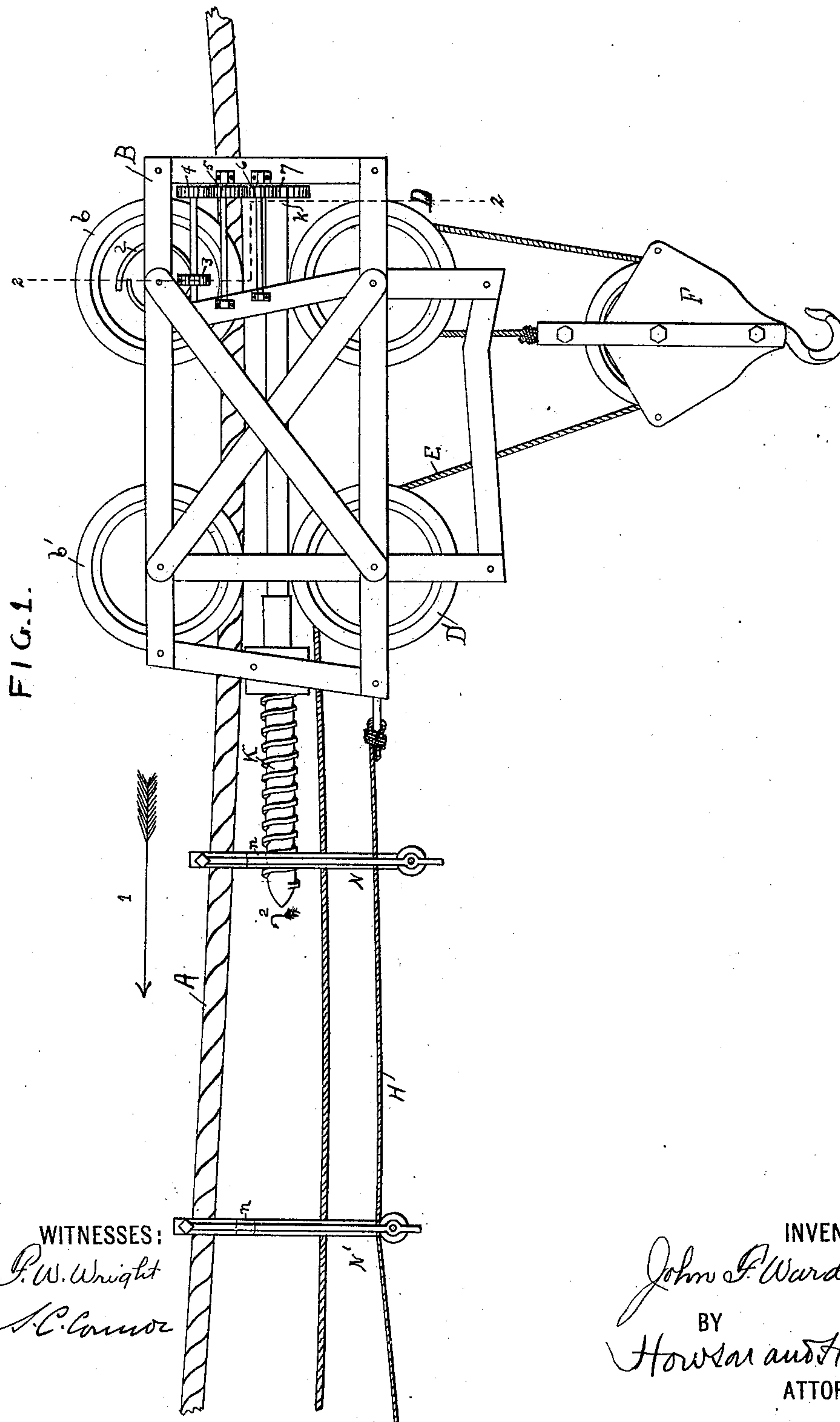
J. F. WARD.

CONVEYING AND HOISTING APPARATUS.

(Application filed Apr. 27, 1897.)

(No Model.)

2 Sheets—Sheet 1.



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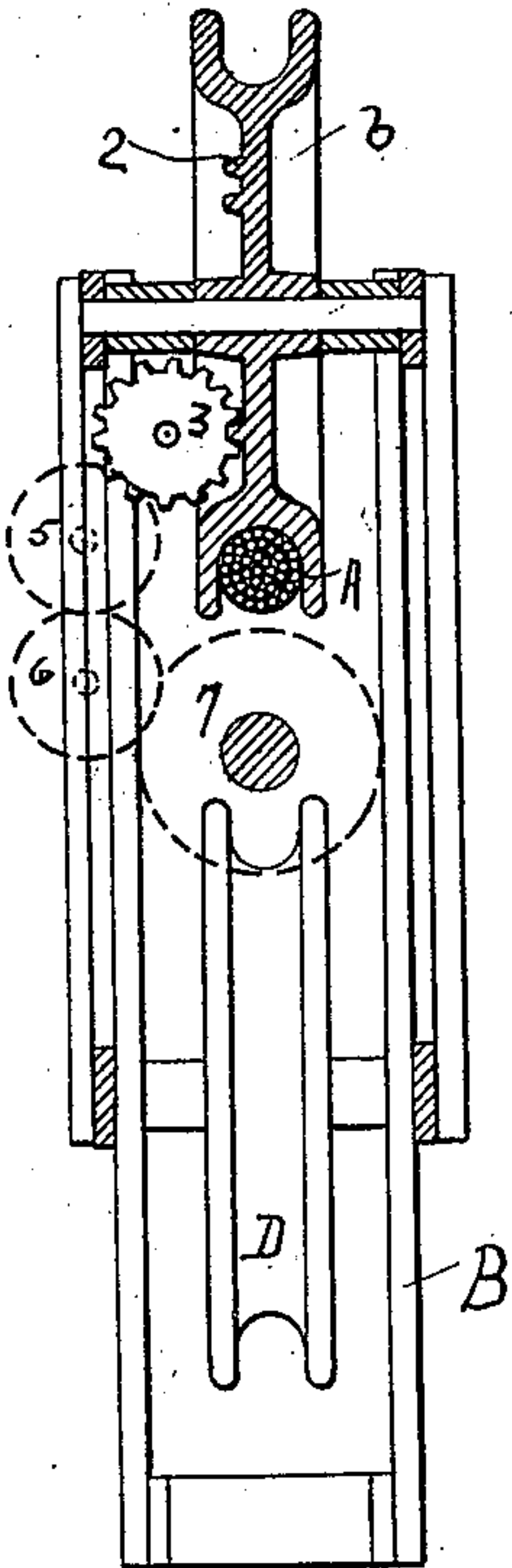


FIG. 2.

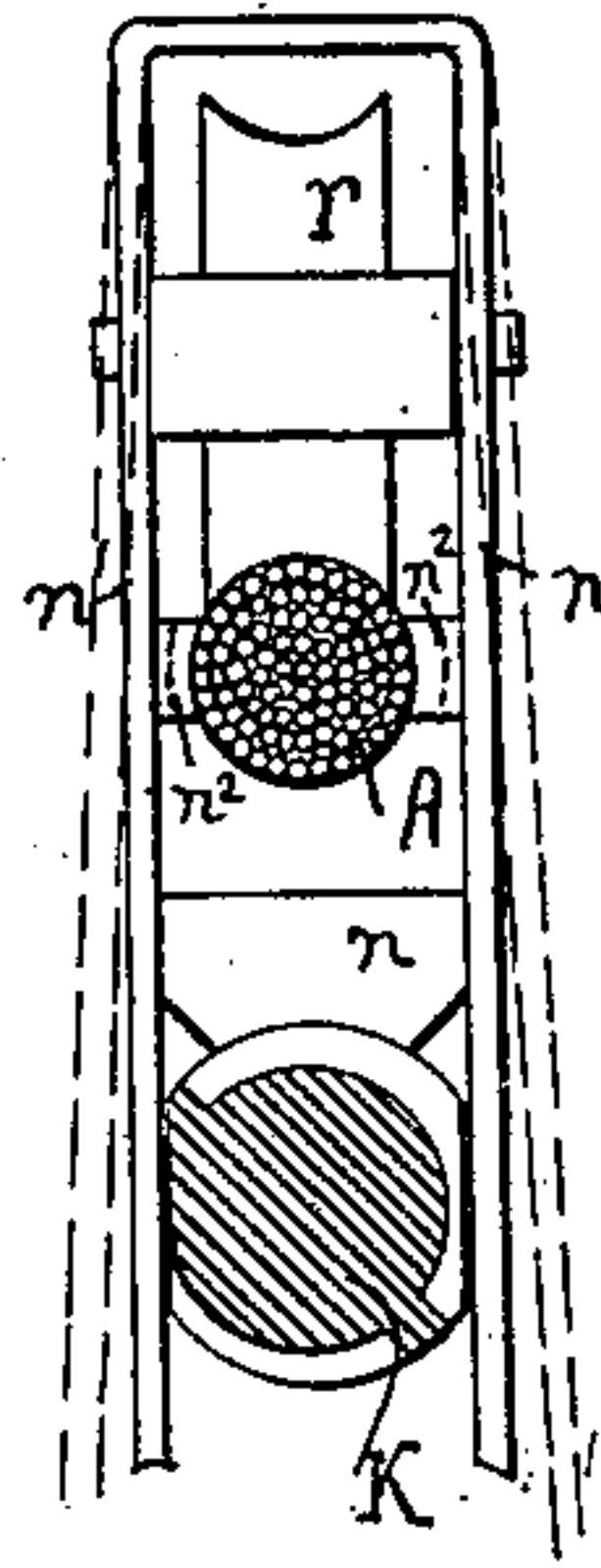


FIG. 4.

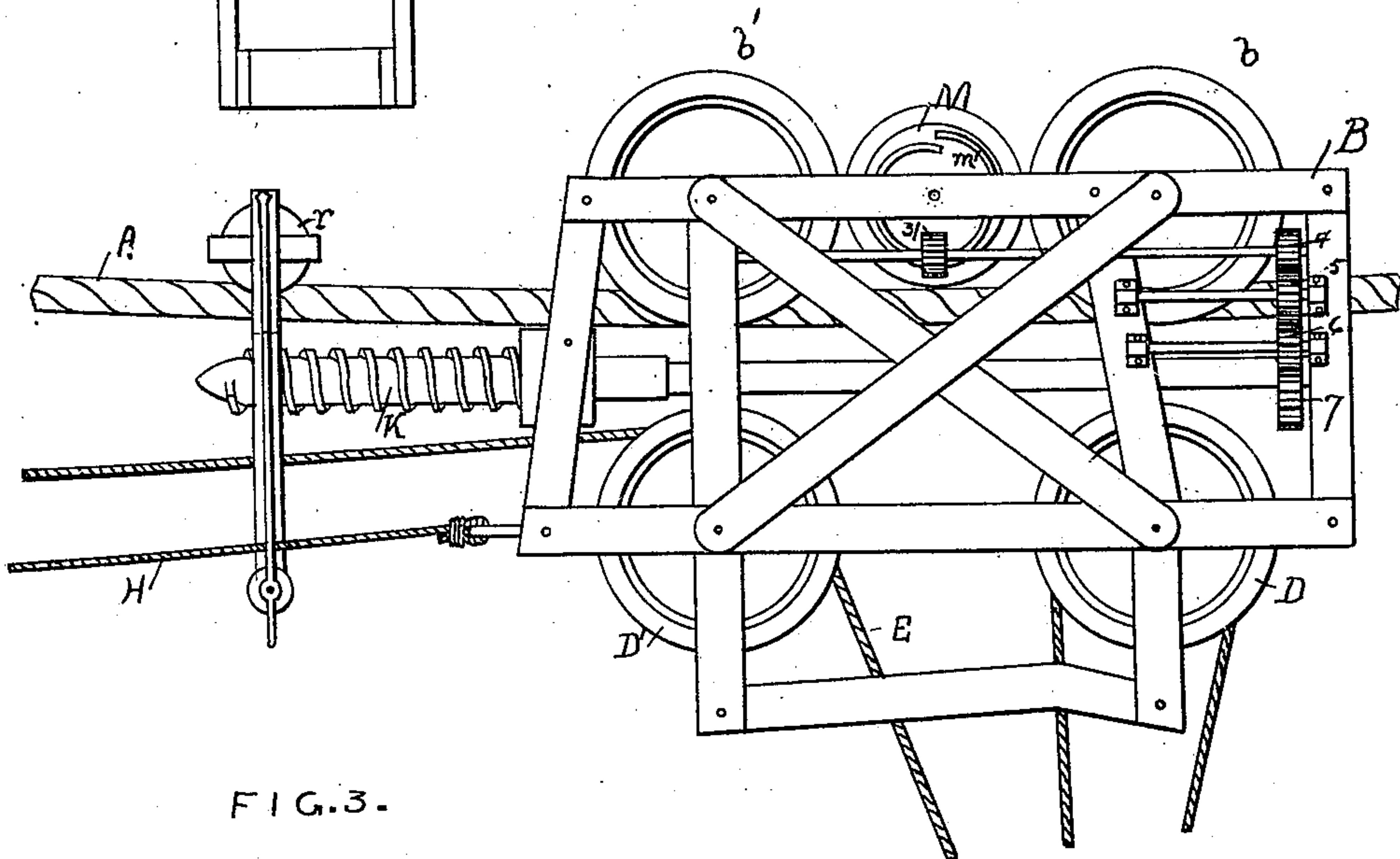


FIG. 3.

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CONVEYING AND HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 614,044, dated November 8, 1898.

Application filed April 27, 1897. Serial No. 634,141. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. WARD, a citizen of the United States of America, and a resident of New York city, New York, have invented a new and useful Improvement in Conveying and Hoisting Apparatus, of which the following is a specification.

My invention has more particular reference to that class of hoisting and conveying apparatus in which a cable-trackway is stretched between two fixed points and a carriage is arranged to travel on this trackway, in connection with hauling and hoisting ropes to cause the traverse of the carriage on the cableway and to hoist and lower the load. In connection with such conveying and hoisting systems, particularly on long lines, it is necessary to use what are termed "rope-carriers" to carry and guide the hoisting and hauling ropes, these rope-carriers being suspended on the cableway and being picked up and distributed again at intervals along the cableway as the carriage is traversed back and forth. A common means of providing for the distribution of the rope-carriers at proper intervals along the cableway is what is known as a "button-rope," extending from one end of the cableway to the other and provided with buttons of various sizes to arrest the successive carriers and pull them off the carriage at proper points as the carriage moves along the cableway.

The main object of my present invention is to provide the carriage with means for engaging, controlling, disengaging, and distributing the rope-carriers without the use of a button-rope or its equivalent.

I am aware that it has been proposed to dispense with the use of the button-rope or its equivalent; but in the proposed construction the carriage was to be provided with one means for picking up or engaging the rope-carriers and a separate means for disengaging the rope-carriers from the first engaging means. By my invention I provide one and the same means or device, having a motion in or upon the carriage, to both engage and discharge or disengage the rope-carriers in regular order and, furthermore, to keep each carrier within control and retain it against accidental displacement from the time it is

engaged until it is discharged onto the ropeway again.

In the accompanying drawings, Figure 1 is a side view of sufficient of a cableway and carriage provided with my invention to illustrate the latter. Fig. 2 is a sectional view on the line 2 2 on Fig. 1, but drawn to a larger scale. Fig. 3 is a view similar to Fig. 1, but of a modification; and Fig. 4 is a view, drawn to a larger scale, of a modified form of rope-carrier.

In the drawings I have illustrated my invention as applied to a carriage and ropeway requiring the mechanism for engaging and disengaging the rope-carriers at one end of the carriage only; but it will be understood that such engaging and disengaging mechanism may be applied to both ends of the carriage where desired.

In the drawings, A represents the cable or track way on which travels the carriage B by means of the usual grooved wheels *b b'*. This carriage is provided at its lower part with any suitable arrangement of sheaves or pulleys D D', over which passes the hoisting-rope E for the block or tackle F. A suitable hauling-rope H is connected to the carriage to cause the traverse of the latter upon the cable or track way A. This rope H may be so connected and arranged as to positively traverse the carriage in both directions, back and forth, or in one direction only, gravity being relied on to traverse the carriage in the opposite direction in the case where the cableway is arranged in an inclined position.

The preferred form of my device for engaging, controlling, and disengaging the rope-carriers consists of a screw-threaded shaft K, which turns in bearings in the frame and is rotated in such bearings by any suitable means in proper proportion or relation to the travel of the carriage on the trackway. In the case illustrated in Figs. 1 and 2 I have shown this controlling screw-shaft as rotated by the traverse of the carriage. For this purpose one of the traveling wheels *b* of the carriage has formed or affixed to one of its side faces a snail 2, which engages a worm-wheel or pinion 3 to be geared to the back end *k* of the threaded shaft K. In the present instance this intermediate gear consists

of a series of pinions 4, 5, 6, and 7, the last being on the end k , as will be readily understood. As the carriage traverses in the direction of the arrow 1 the screw-shaft K will be turned in the direction of its arrow 2 at a certain slow rate. The rope-carriers N N' are each provided with a cross-block n in such position thereon in relation to the threaded rod K that the point of the latter as the carriage travels forward will come into engagement with the under side of the block n , which will then engage with the thread of the screw, and the carrier will be fed slowly on to the screw-shaft K. By the time the second of these rope-carriers N' is reached the first carrier will have been fed its proper distance on the shaft K, and so with the successive carriers, they being severally taken care of or controlled in properly-spaced positions on the screw K, which is made of such a length and rotated at such a rate that it will positively gather up and hold and control and retain against accidental displacement in regularly-spaced positions upon it all the rope-carriers which it has to take care of in the given cable or track way. When the carriage is traversed back again in the opposite direction from that pointed out by the arrow 1, the controlling-screw K will discharge the rope-carriers successively onto the rope or cable way A again in properly-spaced positions, as will be readily understood.

Instead of imparting motion to the shaft K by means of the traverse of the carriage I may employ an independent motor—such as an electric motor M, Fig. 3—mounted on the carriage and receiving current from a generator at a suitable point through suitable conductors. On the shaft of this motor is a snail-wheel m , gearing into a worm 31, geared by pinions 4, 5, 6, and 7, as before, to the shaft K, and the motor is so regulated or supplied with current (as by driving the generating-dynamo from the hoisting-engine) as to rotate the shaft K in proper relation to the movement of the carriage. While I have thus illustrated more than one means for carrying my invention into effect, I do not here claim this specific means, as it will form the subject of a separate application.

In Figs. 3 and 4 I have shown the rope-carrier as mounted on a roller r to traverse the ropeway A, and the sides $n' n'$ of the carrier are made elastic and with a tendency to keep in the parallel positions shown by full lines in Fig. 4. Projections n^2 are formed on the inner faces of these pieces $n' n'$ to normally grip the rope A. The outer end of the screw K is slabbed, as shown in Fig. 4, to freely en-

ter between the side pieces $n' n'$ when in the position shown in Fig. 4. It will always reach the position shown in its rotation at the time the traverse of the carriage brings the nose of the shaft to a carrier. As the shaft rotates its larger diameter at the slabbed end will act as a cam to spread the side pieces $n' n'$ and relieve the rope A from the grip of the pieces $n^2 n^2$.

As there is comparatively little strain upon the screw-thread of the shaft A, I construct it by pinning or welding or otherwise securing to a plain shaft a spiral rod of square or rectangular cross-section instead of cutting the thread on the shaft.

I do not wish to restrict myself to the specific devices illustrated and described for engaging, controlling, disengaging, and distributing the carriers, as my invention may be carried into effect by other constructions of mechanism.

I claim as my invention—

1. A cable or track way carriage provided with a device moving in or on the said carriage and means for operating the said device to both engage and disengage a rope-carrier and to control and retain the same against accidental displacement from the time it is engaged until it is disengaged, substantially as described.

2. A cable or track way carriage provided with a screw-threaded shaft in position to have its thread engage with the rope-carriers on the trackway and means for rotating the said shaft as the carriage is traversed on the trackway, substantially as described.

3. A cable or track way carriage provided with a screw-threaded shaft adapted to have its thread engage with the rope-carriers on the trackway, and means for rotating the said shaft from the traverse of the carriage to engage or disengage the rope-carriers with or from the said screw-threaded shaft as the carriage is traversed in one direction or the other, substantially as described.

4. The combination of the rope-carriers of a cable or track way with a traveling carriage, having a screw-threaded shaft adapted to have its thread engage the said carriers, and means for rotating the shaft in one direction or the other from the traverse of the carriage, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. WARD.

Witnesses:

F. WARREN WRIGHT,
HUBERT HOWSON.