

(No Model.)

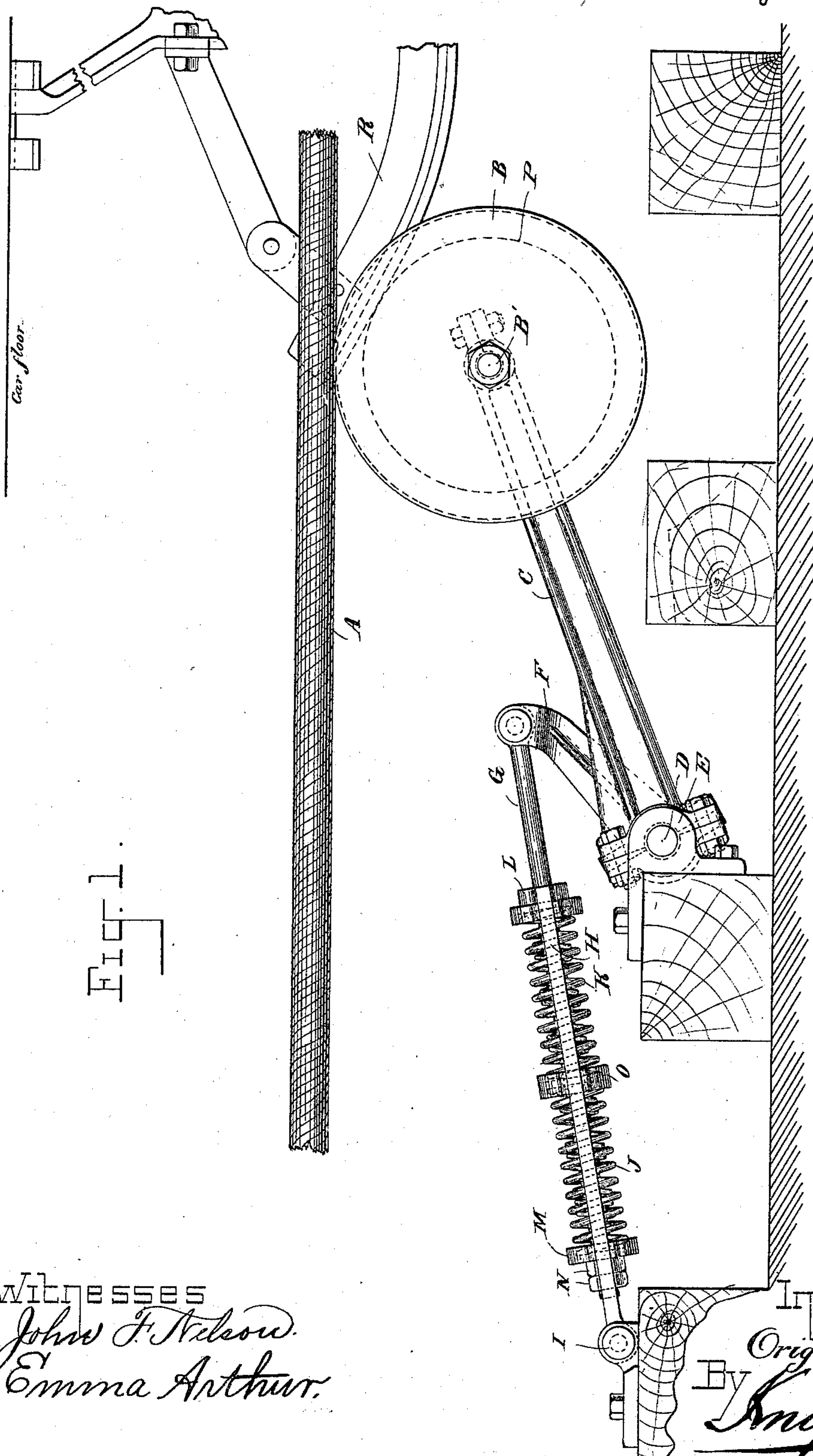
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O. C. CRANE.

CABLE SUPPORTING SHEAVE FOR CABLE RAILWAYS.

No. 383,708.

Patented May 29, 1888.



Witnesses

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(No Model.)

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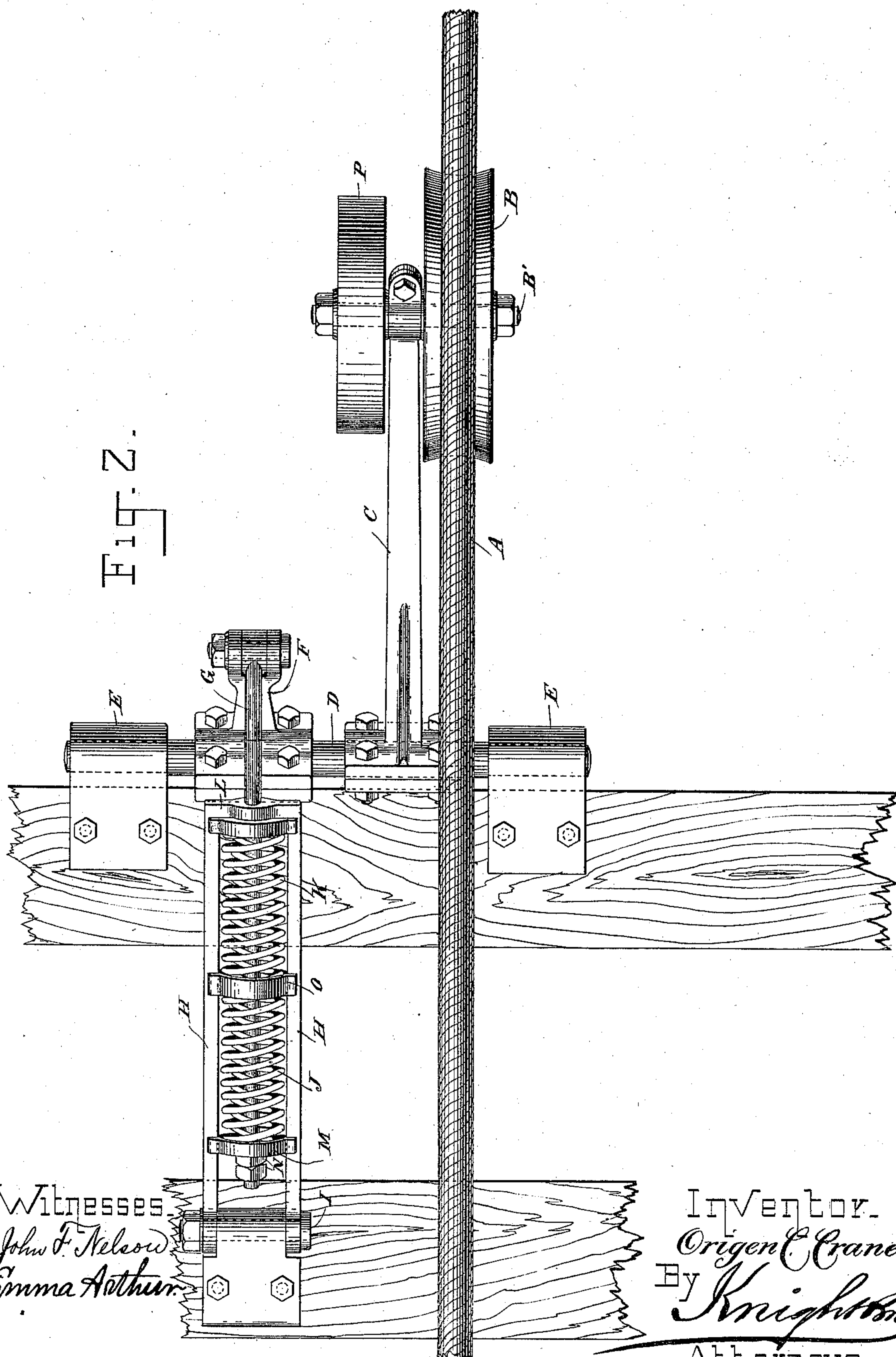
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Fig. 2.



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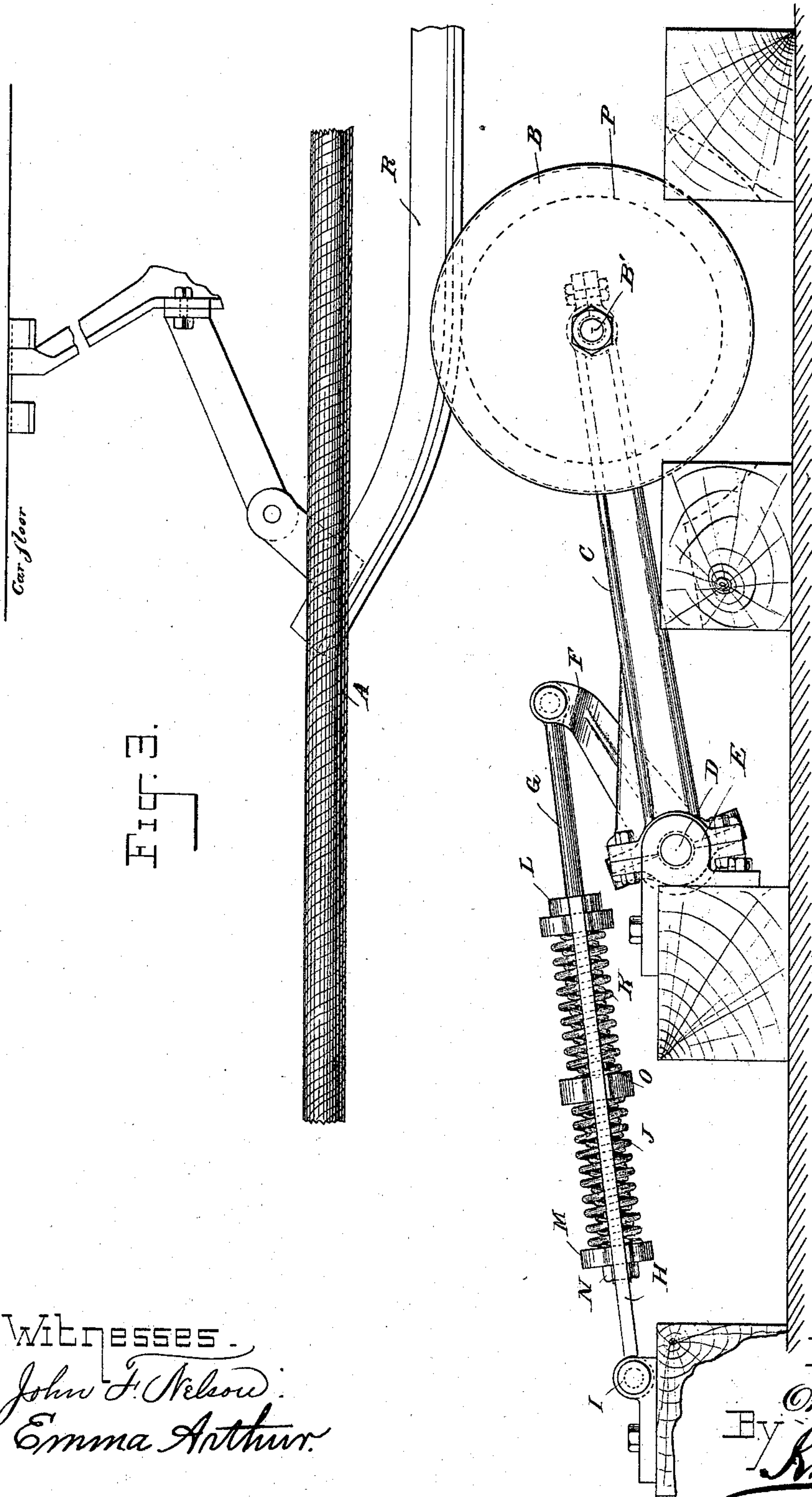
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# UNITED STATES PATENT OFFICE.

ORIGEN C. CRANE, OF NEW YORK, N. Y.

## CABLE-SUPPORTING SHEAVE FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 383,703, dated May 29, 1888.

Application filed February 25, 1888. Serial No. 265,253. (No model.)

*To all whom it may concern:*

Be it known that I, ORIGEN C. CRANE, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Cable-Supporting Sheaves for Cable Railways, of which the following is a specification.

The object of my invention is to provide an apparatus which, while supporting the traction cable or rope of a cable railway up within reach of the grip on the car, will be capable of depression by a suitable projection on the car, so as to avoid coming in contact with and injuring the grip or of being injured thereby.

It has been heretofore proposed to mount a cable-carrying sheave at the extremity of a depression-lever which is intended to be engaged by a roller at the extremity of an arm projecting downward from the car or grip; but this plan is open to serious disadvantages. For example, it has been found impracticable to hold the carrying-sheave depressed by the use of a single roller carried by a projection on the car while a grip of any considerable length is passing. In practice, therefore, it is customary to use, in connection with a depression-roller mounted on the road-bed, a guard rail or bar of sufficient length to hold the cable-supporting sheave or roller depressed until the latter has entirely passed the grip on the car. Heretofore the cable-supporting sheave or roller has been held up by means of a counter-weight, the roller and counter-weight being at opposite ends of a lever of the first order. With such an arrangement the inertia of the weight causes the roller to strike a heavy blow against the guard-rail on the car before the roller yields, and while a slowly-moving car might operate the weight satisfactorily, one moving at the ordinary rate of speed would abut against the roller with such violence as to result in breaking of the parts. My purpose, therefore, is to so arrange the apparatus that the movement of the guard-rail will meet with as little material inertia as possible on the part of the depression-sheave; and to this end my invention consists in certain construction of parts for yieldingly supporting the depression sheave

or roller to allow it to give way on receiving the impact of the guard-rail with an equal and easy movement, and with the avoidance of shock or jar to the sheave, and consequently to the cable which said sheave supports.

The invention will first be fully described with reference to the accompanying drawings, and the novel features will then be pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of the apparatus fixed to the road-bed and supporting the cable, the guard-rail on the car being also shown just approaching or leaving the sheave or pulley. Fig. 2 is a plan view omitting the guard-rail of the car. Fig. 3 is a side elevation similar to Fig. 1, showing the roller in depressed position.

A represents the cable, and B the cable-supporting sheave or pulley carried by one end of a pin or shaft, B', on the other end of which is an idle wheel or roller, P. Intermediately of the two rollers the pin or shaft B is mounted in the long arm of a lever made up of said long arm C, a shorter arm, F, and a rock shaft, D, to which both of said arms are clamped rigidly. The shaft D has bearing in straps or boxes E, fixed to the road-bed. Hinged to the shorter arm, F, of the lever is a rod, G, carrying a follower, M, which is adjustable on said rod by jam-nuts N. This follower is guided upon a frame, H, which is pivoted to the road-bed at I. A spring or springs, J K, are mounted in the frame between the end L thereof and the follower M, so as to be compressed at each depression of the arm F to which the rod G is connected. Either one or two springs, J K, may be employed; but two are preferable, a single long spring being more expensive and more liable to break, as well as having a tendency to buckle and require an extra guard. One guard to prevent buckling of the springs is shown at O. The springs are adjusted to the required amount of resistance by the nuts N on the rod G, and are made heavier than will be required in actual use, so that they will have a surplus of strength notwithstanding the loss of elasticity due to prolonged services.

The guard-rail on the car is shown at R.



Only one end is here shown, the two ends being identical and each having an inclined surface to bear upon and force down the loose roller P and allow it to gradually return to its normal upper position. When in such upper position, the roller B, as is shown in Fig. 1, supports the cable in position to be grasped by the grip of the car, and when depressed the roller is forced down out of reach of the grip, which then seizes the cable, so as to maintain it in the same position as shown in Fig. 3. The roller is then held down by the guard-rail R until the grip has entirely passed over the roller, when the latter rises to again support the cable.

It will be seen that with the described arrangement there is as little as possible material to oppose by its inertia the movement of the guard-rail as it strikes the roller P. The tension of the springs is adjusted so as to be just sufficient to support the cable in the proper position, and yielding readily when required.

Preferably the short arm F of the lever and the rod G are, as shown, in but slightly-divergent planes, which approach coincidence when those parts are depressed. In the instance illustrated in the drawings such a result is obtained by placing both the arms C and F on the same side of shaft D and placing the tension-springs on the other side. With such an arrangement a differential movement is obtained, and the purchase or effect of the lever increases as the tension of the spring increases, so that the effect of the spring at the cable-bearing sheave B remains substantially constant. In this respect, therefore, the spring is made to have the same advantage as a weight in opposing a constant resistance when the

cable-carrying sheave is being depressed, while possessing the advantage over the weight of not opposing the inertia of a heavy mass when such sheave is struck by the guard on the car.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a cable-supporting device, the combination of a sheave to receive the cable, a lever carrying said sheave, and a spring connected to said lever for upholding said sheave, so that the lever and the spring-connection have a differential movement, substantially as and for the purposes set forth.

2. The combination of the guard-rail R, carried by a car, the cable, the lever pivoted on the roadway, having both arms projecting on one side of its pivot, a cable-carrying roller carried by the arm, and a spring connected to the other arm, substantially as and for the purposes set forth.

3. The combination, with levers C F, pivoted as shown, and adapted to operate substantially as described, of frame H, pivoted to the roadway, rod G, connected to arm F and sliding in said frame, a spring guided in said frame, and a follower on said rod for compressing said spring.

4. The combination, with lever C F, pivoted as shown, rod G, connected thereto, of a follower adjustable on said rod, and a spring held between said follower and an abutment fixed to the roadway, substantially as set forth.

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Witnesses:

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