(No Model.)

G. F. CORLISS.

TROLLEY EQUALIZER.

No. 426,436. Patented Apr. 29, 1890

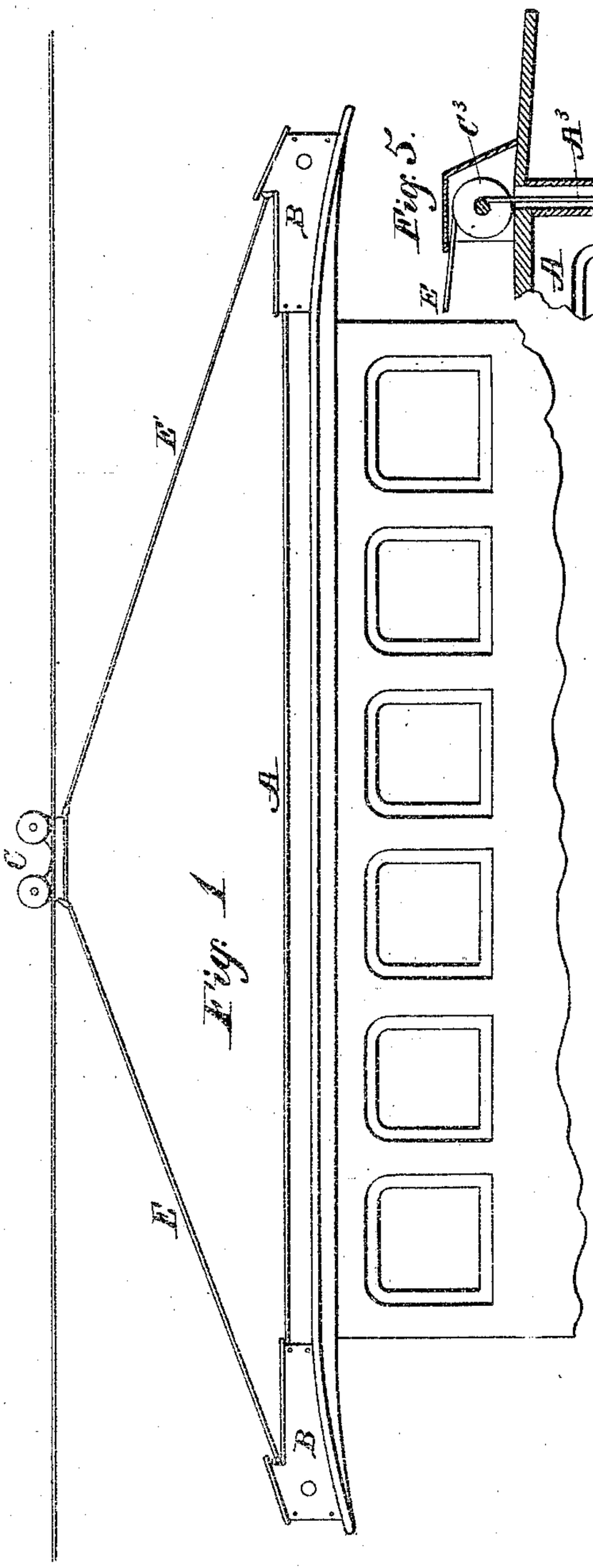

Fig. 1

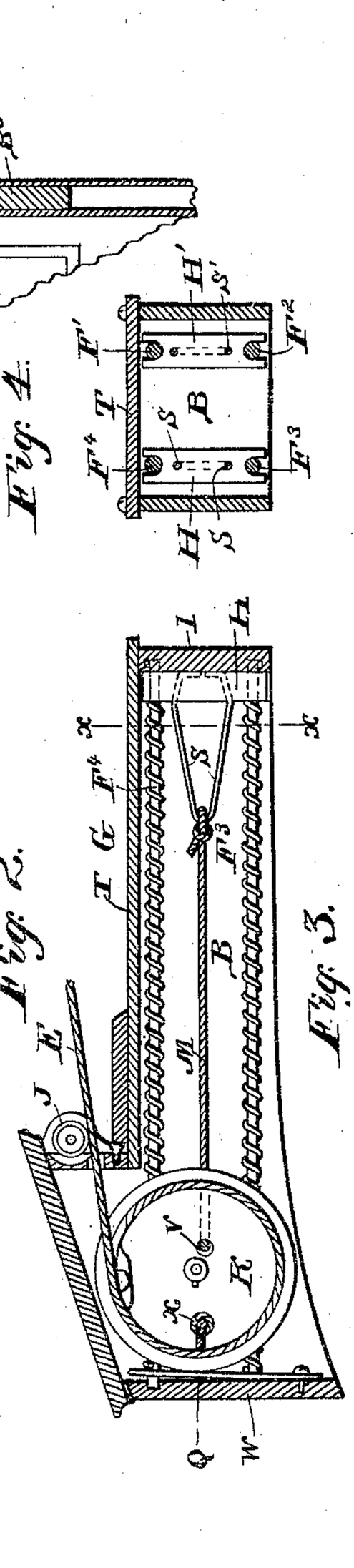

Fig. 2.

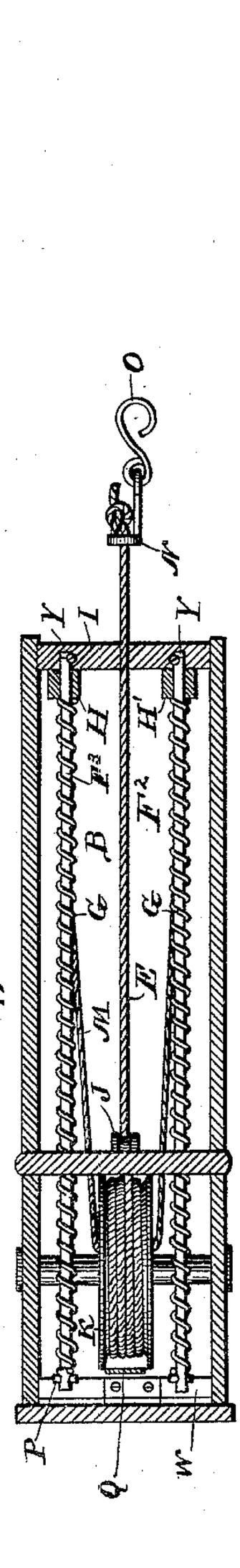

Fig. 3.

Fig. 4.

Fig. 1

Fig. 5.

Witnesses:
Percy L. Borwein.
Wm. J. Moore.

Inventor:
George F. Corliss;
By Thomas E. Barrow.
Attorney.

UNITED STATES PATENT OFFICE.

GEORGE F. CORLISS, OF MANSFIELD, OHIO.

TROLLEY-EQUALIZER.

SPECIFICATION forming part of Letters Patent No. 426,436, dated April 29, 1890.

Application filed July 30, 1889. Serial No. 319,145. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. CORLISS, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Trolley-Equalizers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to improvements in trolley-equalizers for electric street-cars in which the trolley is above the car and the wires suspended, and has for its object a means of retaining the trolley centrally over the car, and also to regulate the length of trolley-connections at different elevations of the wires.

The distinctive characteristics will be more fully described hereinafter.

In the accompanying drawings, Figure 1 is a longitudinal side elevation of a portion of an electric street-car, showing the trolley-equalizer placed upon the top and at each end of the car. Fig. 2 is an enlarged view of the trolley-equalizer B, showing a longitudinal sectional side elevation of same embodying all its general construction. Fig. 3 is a top view of same, showing its general construction. Fig. 4 is an end view showing the construction of slides, taken in line x x, Fig. 2. Fig. 5 is a detail view.

A represents the upper portion of an electric street-car. Centrally and at each end is secured the trolley-equalizer B, which is composed of a case B. Journaled in the outer end is the sheave-pulley K, running loosely upon a pin or bolt, said bolt having bearings in each side of the case.

$F' F^2 F^3 F^4$ represent rods—four in number—running longitudinally on each side of the center, two of said rods above the axle of the sheave-pulley K and two below. The said rods are secured at each end of the case in cavities made to receive them. At the outer end the method shown to secure them from turning is by a pin P, passing through the rod F near the end, and said pins fit in a mortise in the head W. At the end of case I a slot Y is made to receive the said rods, as shown in Fig. 2.

G indicates coil-springs, which extend the full, or nearly the full, length of the case, the rods $F' F^2 F^3 F^4$ passing through the center of the springs. One end of the springs G is secured to the end of case W, the opposite ends secured to the sliding blocks H and H'. The said slides are constructed with a slot in each end and slide upon the rods $F' F^2 F^3 F^4$ in the sliding blocks H. Centrally between the guide-rods F' and F^2, and attached to the sliding block H, is the link or bail S, to which is attached by any suitable method the cord M. One end of said cord is secured to said link S, then passes forward to the sheave-pulley K, passing through the hole V, then to the link S', attached to the sliding block H'. The trolley-connecting cord E is connected to the sheave-pulley K, as shown in Fig. 2. A hole x is made through the side of the pulley large enough to receive a knot on the end of cord. A hole is made through the edge of pulley at right angles to intersect with the hole x when the cord is placed in position and a knot made on the end. The knot, passing into the hole x, secures the cord permanently to the sheave-pulley K. The said pulley is of sufficient width between its flanges to receive any amount of coils required. The outer end of cord E is provided with the connection N. The link S is secured to the connection N. The open loop O is linked to the trolley C.

Fig. 1 shows the equalizers and trolley in position, with the cords E attached to the trolley C. It will be readily seen that when the connections are made there is an equal tension on the springs at each end of the car. Any obstruction that would retard the forward motion of the trolley would necessarily pull on the cord E. The tension on the cord rotates the sheave-pulley K. The cord M, attached to the sliding blocks H, will be wound around the axle of the sheave-pulley K, compressing the springs G. At the opposite end the springs would expand, taking up the slack by the backward motion of the sheave-pulley. Should the wires on which the trolley travels vary in elevation, the cords E will lengthen to suit the different grades. Coil-springs have been used and are in use at the present time. The said springs as used are not practical for this reason: Should the trolley be obstructed in passing over a bracket

or switch, the tension on the coil-spring is too great, stretching it beyond its elastic capacity, damaging the spring; or when the electric conductive-wires are raised, as in passing over a railway-track, the difference of tension is so great that it destroys the elasticity of the spring. By constructing a device as shown and described all that difficulty is obviated.

I do not wish to be limited to all the details of construction and arrangements shown, as they may be somewhat varied without departing from the spirit of my invention.

In Fig. 2 there is shown a spring Q. This spring is secured at its lower end to the end of case W. The upper or spring end passes between the flanges of the sheave-pulley to prevent the cord E from springing over the edge of the flange of pulley.

J shows a pulley under which passes the cord E. This obviates friction and wear on the cord when passing from the pulley through the case to the trolley.

I have also shown in Fig. 5 a modification in which a cord and weight are used in the place of the coil-springs G. The pulley C^3 is inclosed within a case. A cord A^3 and weight B^3 are attached to the journal of the pulley C^3, the weight B^3 acting in this case as the springs G, Fig. 2. In the place of the cord and weight, as shown, a coiled spring; the same as a clock-spring, can be used with the same result as the other methods shown.

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

1. In a trolley-equalizer, the combination of the trolley, the cords connected to said trolley, the drums on which said cords are wound, and the spring-actuated sliding blocks connected to said drums.

2. In a trolley-equalizer, the combination of the case, the drum mounted rotatably in said case, the cords connected to said drums, the blocks connected to said cords, the guide-rods for the blocks, and the springs around said rods.

3. In a trolley-equalizer, the combination of the trolley, cords, and drums, the spring-actuated blocks, and the guide-rods for said blocks.

4. In a trolley-equalizer, the combination of the case, the guide-rods therein, the springs on said rods, the blocks against which the springs bear, and the drum connected to said blocks.

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

GEORGE F. CORLISS.

Witnesses:

ROCLIFF BRINKERHOFF, Jr.,

JNO. GAY.