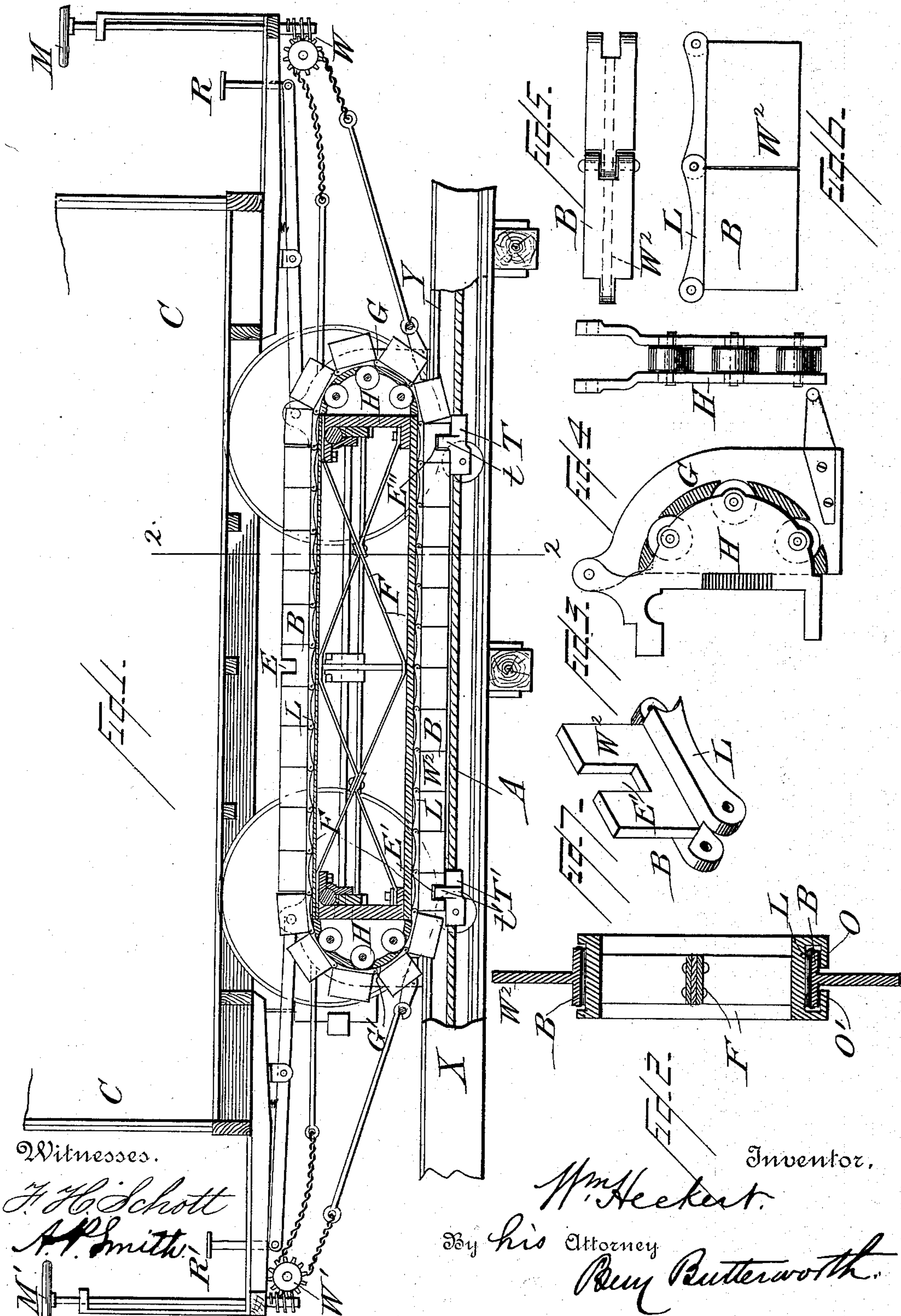


(No Model.)

W. HECKERT.  
CHAIN GRIP FOR CABLE ROADS.

No. 384,689.

Patented June 19, 1888.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## CHAIN-GRIP FOR CABLE ROADS.

SPECIFICATION forming part of Letters Patent No. 384,689, dated June 19, 1888.

Application filed April 20, 1888. Serial No. 271,298. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HECKERT, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Chain-Grips for Cable Roads; and I do hereby 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.

My invention consists in the improvement in chain-grips for traction-cable railroads hereinafter to be described and claimed.

In the drawings, Figure 1 represents in longitudinal section a general arrangement of cable, car, and grip such as that which is described in the application heretofore filed by me February 13, 1888, and numbered 263,870. Fig. 2 is a cross-section of the adjustable frame and chain upon the line 2 2 of Fig. 1. Fig. 3 is a detail of the friction apparatus for temporarily locking the chain to the adjustable frame. Fig. 4 is an end view of Fig. 3, with the part G removed. Figs. 5, 6, and 7 show the links of the chain in detail.

In all systems of cable railroads in which chain-grips have heretofore been used it has been the practice to make the endless chain with certain projections which reach down into the slot and engage suitable recesses in or enlargements of the cable. The one difficulty with constructions of this kind has been that when the car begins to descend a grade it runs forward until the projection in the chain-grip is stopped by the next enlargement of or recess in the cable. Besides rendering in this way the motion of the car jerky and uneven, an element of danger is introduced when the descent of a long incline is begun, for the car may acquire sufficient headway to break the grip or overleap the second obstruction upon the cable and rush down the grade unrestrained. To remedy this I have devised the following apparatus, in which the recesses are in the chain and the projections are upon the cable, thus rendering the connection of the car to the cable a positive one and compelling it to travel exactly with the cable whether ascending or descending grades.

In the drawings, A represents the cable

running in the conduit X, which latter has the slot Y. The cable runs upon suitable trucks, T T', which trucks have projections t t'. The car C has the vertically-adjustable frame F, which may be raised and lowered by the treadles R R', and around which the endless chain B runs. At the ends of this adjustable frame are the semicircular pieces H, as shown in Figs. 3 and 4, and the swinging shoes G. By turning the wheels M M' the worm-gear and windlasses W W' swing the shoes G G' outwardly and subject the chain B to friction. The construction above described constitutes a suitable friction apparatus for temporarily locking the endless chain to the frame F. When such is the case, the chain, the frame, and the car must evidently move with the cable.

The chain B is composed of links L, which have long thin projections which together constitute a continuous web. One or more of these links may have its web cut away to form a recess, E E' E'', at or about an angle of ninety degrees inclination to the plane in which the endless chain travels. These recesses are such that the projections t t' of the cable-trucks just fit into them.

Another feature of my construction is the underhanging ledges O O', which, as shown in Fig. 2, are placed on the under side of the adjustable frame S. These prevent the lower half of the endless chain from sagging away from the frame F, and yet, as shown in Fig. 2, permit the chain B to have sufficient side play to enable it to accommodate itself to the curvature of the conduit-slot when the car is rounding a curve.

A further advantage of my system lies in the fact that the system of guides heretofore necessary to render certain the entrance of the projection upon the chain into the cable-conduit slot is entirely done away with. The greater portion of the lower half of the endless chain runs in the slot of the cable-conduit, and no guides are necessary.

The distinguishing feature of my invention over all previous forms of chain-grips known to me lies in this, that I virtually cause the chain to run upon one of its edges, thereby enabling me to get the chain itself into the cable-conduit and dispensing with all projec-



tions upon the chain, the connection being made by the meshing of suitable projections upon the cable with corresponding recesses in the chain.

5 Having therefore described my invention, both in essence and detail, what I claim as new, and desire to protect by Letters Patent, is—

1. In a grip for traction-cable railroads, the  
10 combination of a cable having suitable projections and an endless chain carried by the car, having suitable recesses into which the said projections on the cable may be inserted, substantially as described.

15 2. In a grip for traction-cable railroads, the combination of a cable having suitable projections, a vertically-adjustable frame upon the car, an endless chain running around said frame and having suitable recesses or inden-  
20 tations into which the said projections on the cable may be inserted, together with a friction apparatus by which the chain may be temporarily locked to the adjustable frame and ren-

dered immovable with relation thereto, substantially as described. 25

3. In a traction-cable railroad, the combination of the cable-conduit and the endless chain adjustably attached to the car, each link in the lower half of which chain has its larger portion within the cable-conduit, substantially  
30 as described.

4. In a chain-grip for traction-cable railroads, an endless chain composed of links, each of which links has a long thin web reaching far down into the slot of the cable-conduit,  
35 and one or more of which links has its web cut away to form a recess at or about an angle of ninety degrees inclination to the plane in which said endless chain travels, substantially as described. 40

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

WILLIAM HECKERT.

Witnesses:

E. R. SCHULTZ,  
JOHN NICOLL.