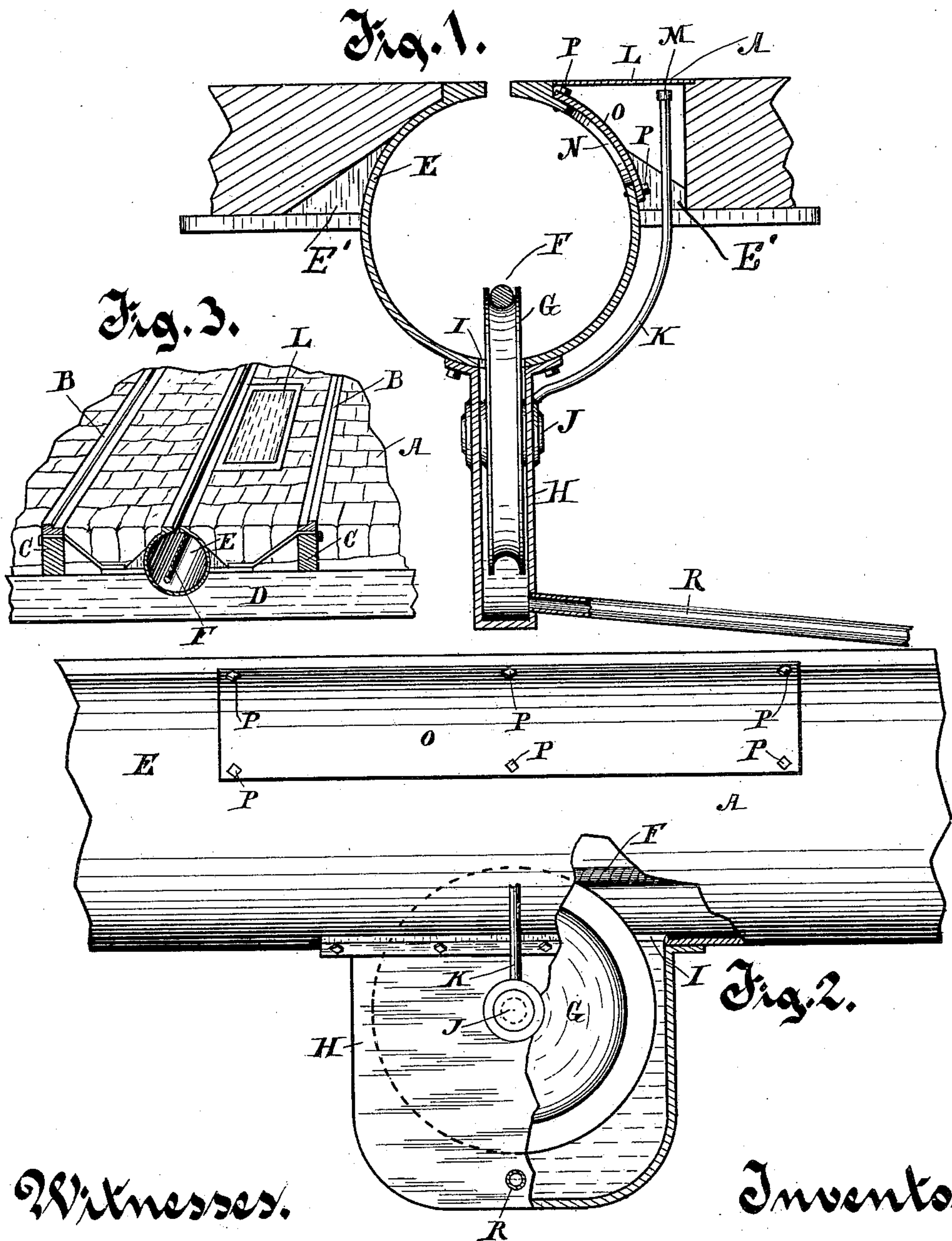


(No Model.)

A. G. BIERBACH.  
CABLE RAILWAY SYSTEM.

No. 429,004.

Patented May 27, 1890.



Witnesses.

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# UNITED STATES PATENT OFFICE.

ALBERT G. BIERBACH, OF MILWAUKEE, WISCONSIN.

## CABLE-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 429,004, dated May 27, 1890.

Application filed June 17, 1889. Serial No. 314,519. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT G. BIERBACH, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Cable-Rail Systems; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in a certain cable-railway system for which Letters Patent of the United States No. 378,918, were granted to me March 6, 1888; and it pertains more especially, first, to the combination and arrangement, with the slotted tubular receptacle, of the brackets by which such receptacle is supported; second, to the receptacle provided with supporting-brackets and the removable pulley-supporting case connected therewith, as pointed out in the claims.

The construction of my improvements is explained by reference to the accompanying drawings, in which—

Figure 1 represents a cross-section of the cable receptacle or conduit with the cable-supporting pulley and its supporting-case. Fig. 2 represents a side view, part in section, of the device shown in Fig. 1. Fig. 3 is a perspective view, part in section, of a street-railway provided with my improved system.

Like parts are represented by the same reference-letters throughout the several views.

A represents a street-railway.

B B are the car-supporting rails, which are secured in the ordinary manner to the timbers C C, which are in turn supported upon the ties D.

E represents a slotted tubular cable receptacle or conduit, through which the motor-cable F is drawn upon supporting-pulleys G, said cable being connected with the street-cars to be drawn by a grip, in the ordinary manner. The cable-receptacle E is provided upon its respective sides with horizontally-projecting arms or brackets E' E', which are cast integral therewith, which arms are adapted to rest upon the supporting cross-ties D, whereby said tubular receptacle is secured firmly in place.

H is a water-tight pulley-supporting case

or bracket, which is temporarily attached to the lower side of the conduit E. The conduit E is provided with a slot I for the reception of the cable-supporting pulley G. The pulley-case H is open at its upper side, so that when the pulley G is secured to its supporting-shaft J its upper edge will project up through the slot I within the conduit E, whereby it is obvious that I am enabled to use comparatively small and light tubes for the cable conduit or receptacle and at the same time support the cable upon a large pulley, as stated.

To provide for lubricating the journal and bearings of the pulley G, a small tube K is employed, which is connected at its lower end with the journal-bearings of said pulley and extends upward upon the outside of the conduit to near the surface of the ground beneath the surface plate or cover L, whereby by removing said plate L and tube-cap M the journals of said pulley may be supplied with oil through said tube.

N is a hand hold or aperture, through which access to the cable or cable-supporting pulley is attained, as may be required, to make repairs. The aperture N is provided with a cover or plate O, which is secured to the conduit E by bolts P. It is obvious that by thus providing the hand hole or aperture N through the side of the tubular receptacle I am enabled by removing the plate or cover O and withdrawing the pulley-supporting shaft J from the exterior of the inclosing-case H to withdraw the cable-supporting pulley G for repairs from said conduits at any time without disturbing the conduit or inclosing-case H or interfering with the action of the cable, as the shaft J may be withdrawn from the outside and said pulley G may be reached and withdrawn through the hand-hole.

To the lower side of the wheel-case H is connected a pipe R, through which the accumulations of water may be conducted from said case. The connecting end of said pipe R is preferably located a slight distance from the bottom of said case, whereby the sediments of the water are less liable to enter and clog said pipe. It is obvious that by thus employing a separate detachable case H for holding the pulley G, I am enabled to form the cable-conduit E of comparatively light and small



wrought or malleable iron tubing, while conduits which are formed in a single piece with the pulley-supporting bearings or inclosure are necessarily made of cast-iron, and are therefore necessarily made much larger and heavier and at great additional expense. It is also obvious that as my pulley-supporting case is temporarily attached to the conduit it may be removed for repairs and replaced at will without disturbing the supporting-conduit. It is also further obvious that the pulley-case and its water-discharge duct serve to convey the accumulations of water from the conduit, while the exterior surrounding water cannot enter the case or conduit from the sides or from beneath the conduit, as would be the case were the pulley supported from the cross-tie or otherwise independently of the conduit from its exterior.

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

1. The combination of the conduit E, provided with horizontal supporting arms or brackets E' E', cable-supporting pulley G, pulley-supporting case or inclosure H, removably affixed to the exterior surface of said conduit E, and pulley-supporting shaft J, extending through said inclosing-case H and having its

respective ends located exterior to said conduit E, substantially as and for the purpose specified. 30

2. The combination of a slotted tubular receptacle E, provided with hand-aperture N, for inserting and removing the cable-supporting pulley, horizontal supporting-arms E' E', cable-supporting pulley G, having its journal-bearings exterior to said conduit E within its supporting-case H, inclosing-case H, and pulley-supporting shaft J, said receptacle E being adapted by said hand hole or aperture N to permit of withdrawing and inserting said cable-supporting pulley from its inclosing-case without disturbing said case or said inclosing-conduit, all substantially as and for the purpose specified. 45

3. In a cable-railway system, the combination, with a slotted tubular cable-receptacle E, provided with hand-aperture N, of the plate or cover O, affixed to said receptacle E, and surface-plate L, substantially as and for the purpose specified. 50

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

ALBERT G. BIERBACH.

Witnesses:

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