

(No Model.)

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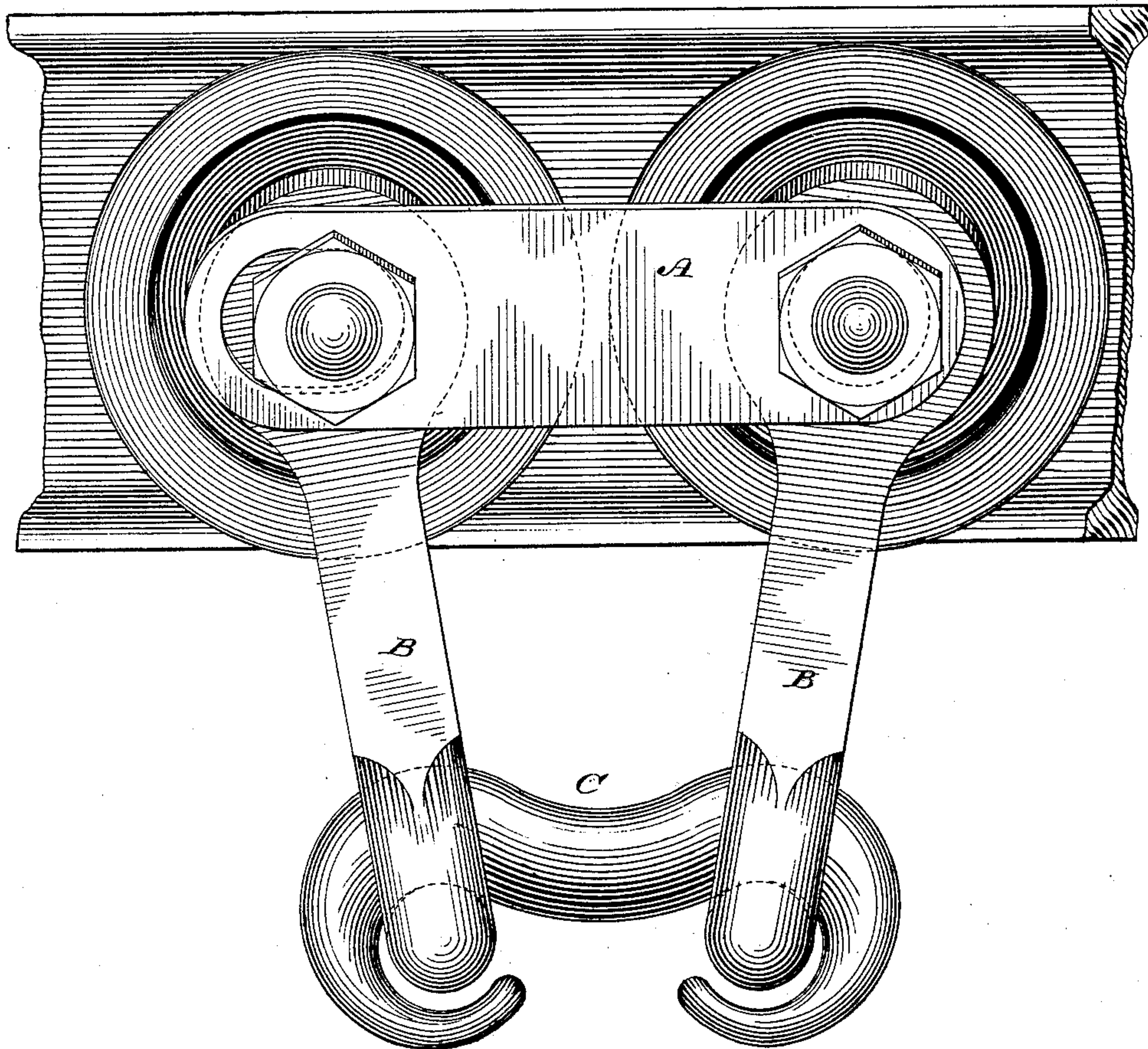
R. CARTWRIGHT.

TROLLEY FOR OVERHEAD TRACKS OR TRAMWAYS.

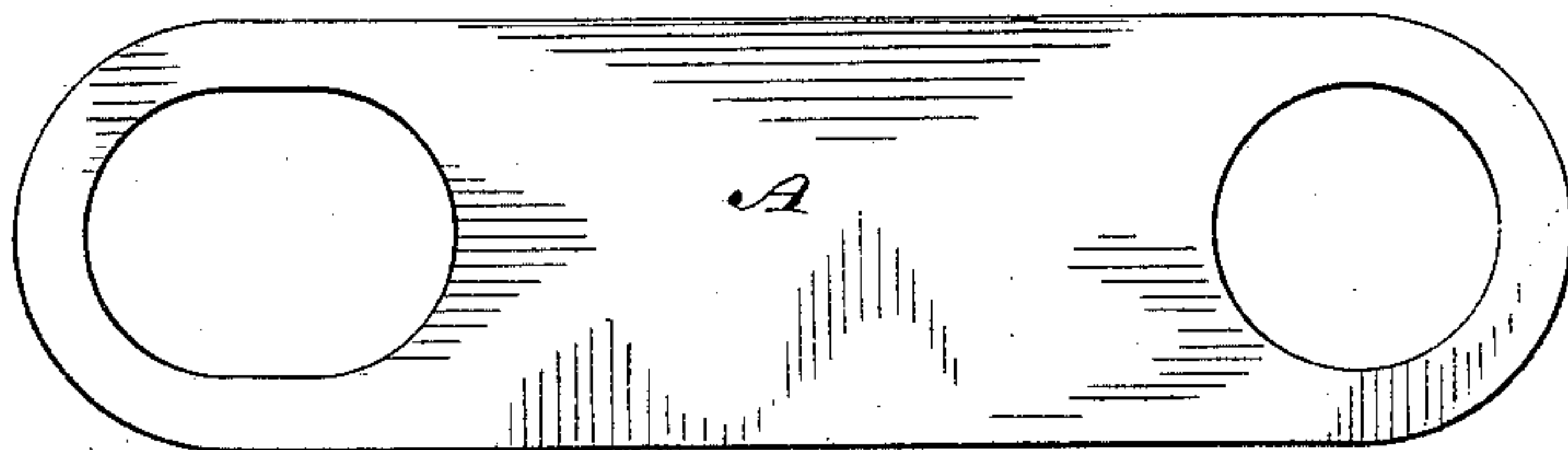
No. 318,165.

Patented May 19, 1885.

*Fig. 1.*



*Fig. 3.*



WITNESSES

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INVENTOR

*Robert Cartwright,*

*By his Attorneys*

*Baldwin, Hopkins, & Peyton.*

(No Model.)

3 Sheets—Sheet 2.

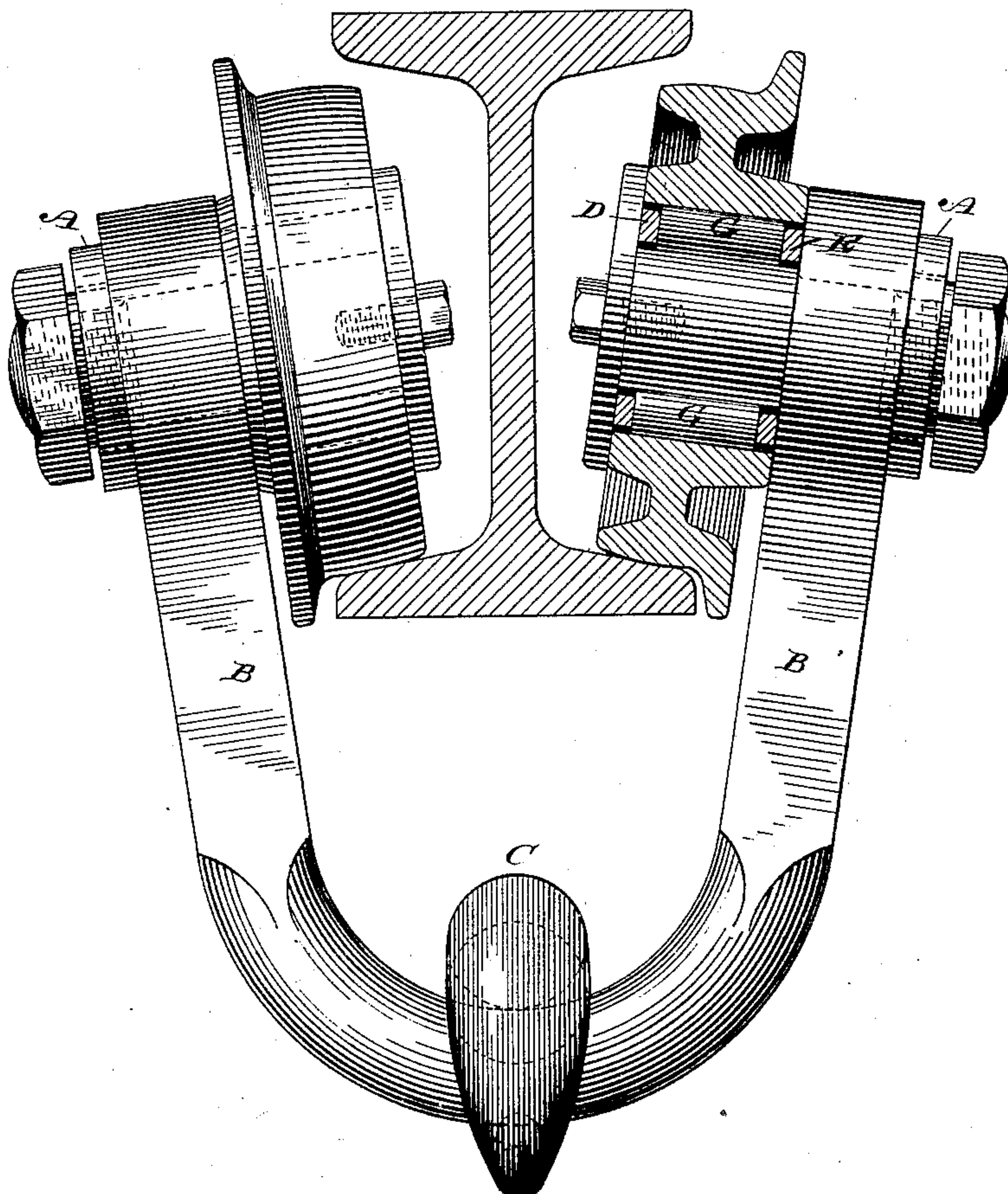
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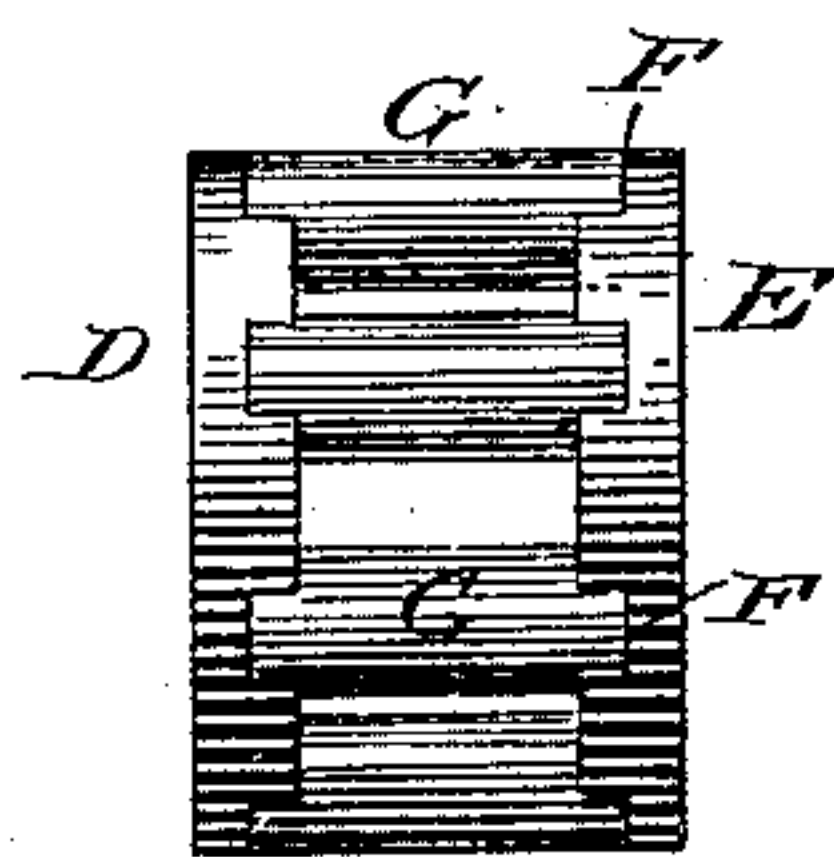
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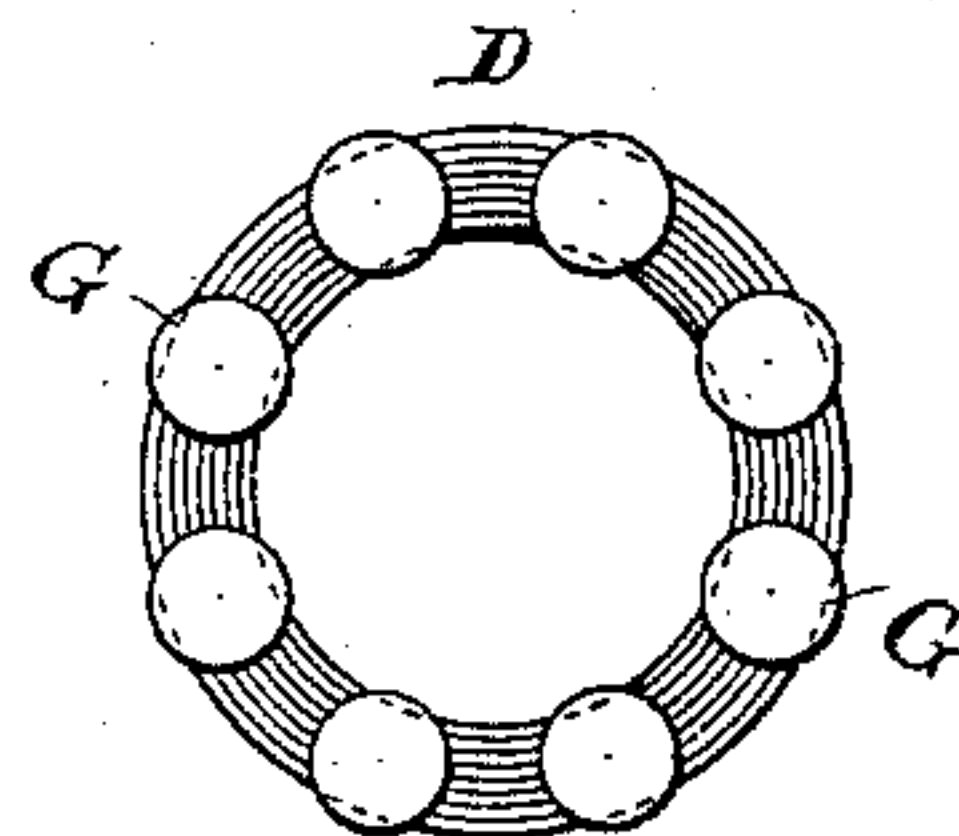
*Fig. 2.*



*Fig. 4.*



*Fig. 5.*



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(No Model.)

3 Sheets—Sheet 3.

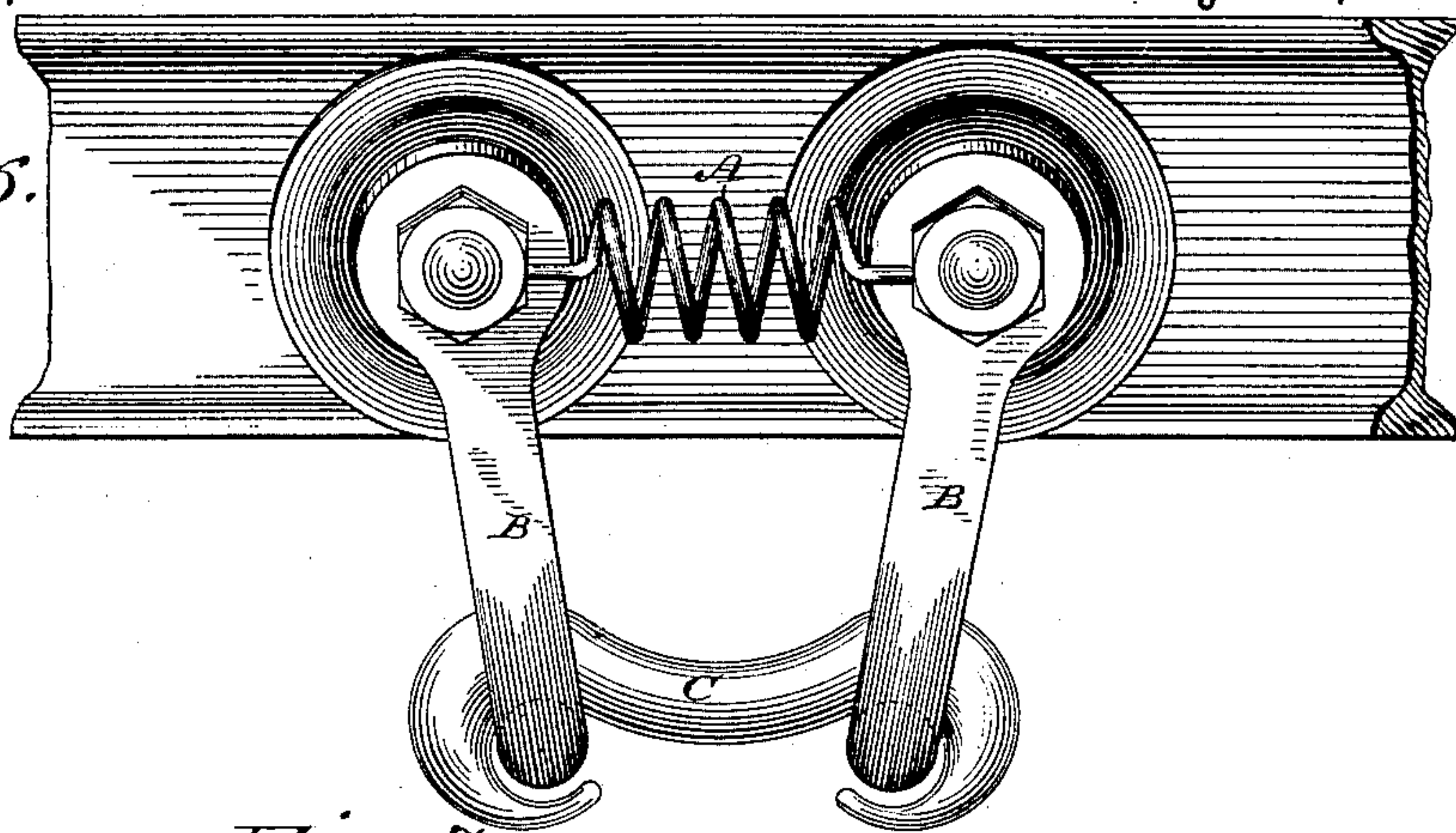
R. CARTWRIGHT.

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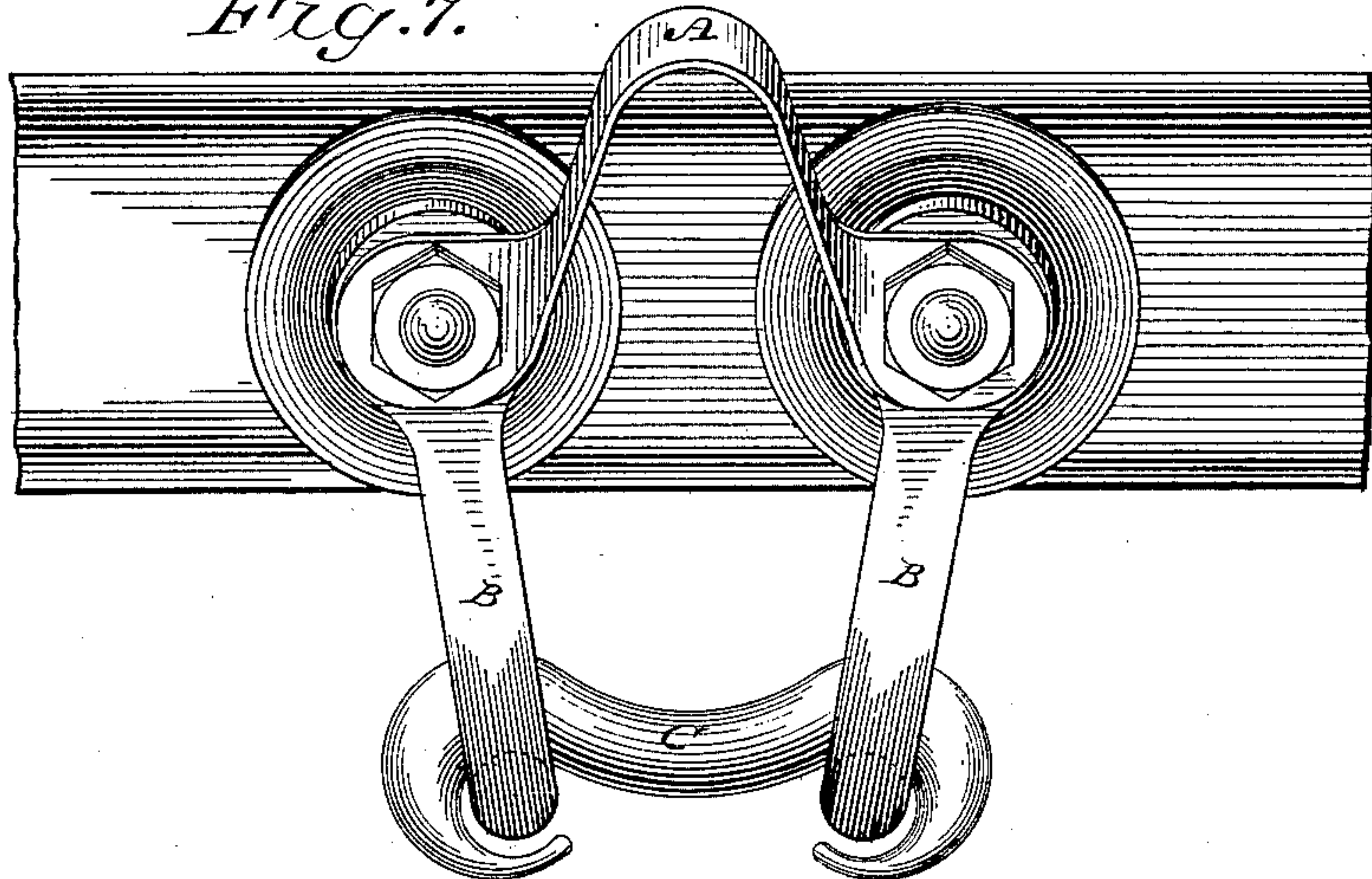
No. 318,165.

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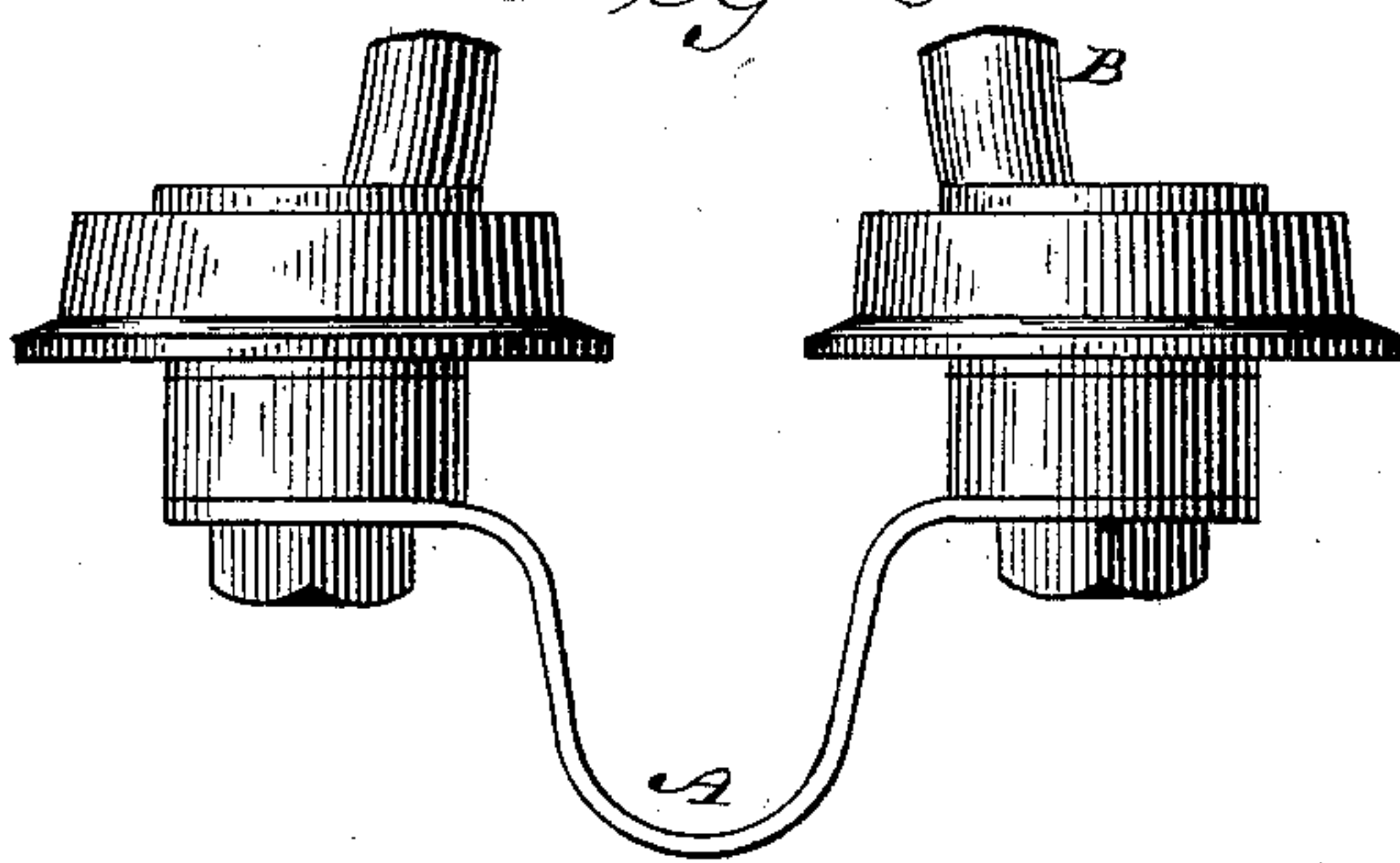
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



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# UNITED STATES PATENT OFFICE.

ROBERT CARTWRIGHT, OF STAMFORD, CONNECTICUT, ASSIGNOR TO THE  
YALE & TOWNE MANUFACTURING COMPANY, OF SAME PLACE.

## TROLLEY FOR OVERHEAD TRACKS OR TRAMWAYS.

SPECIFICATION forming part of Letters Patent No. 318,165, dated May 19, 1885.

Application filed April 11, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT CARTWRIGHT, of Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Trolleys for Overhead Tracks or Tramways, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to increase the facility with which trolleys having four or more wheels move upon their tracks.

It is in the nature of improvements upon the trolley patented to T. W. Capen by United States Patent No. 275,465; but the improvements are not limited to that particular type of trolley, being applicable to any trolley using four wheels.

While the trolley of Mr. Capen is well adapted to a straight track, and to beams in which the upper surface of the lower flange is regular, there is difficulty experienced when this surface is irregular, or if the flange is bent, or when it is desired to turn a sharp curve, because the axles of the wheels, being rigidly fixed with relation to each other, cause the wheels to grind and bind in turning a curve, or, when the track is uneven, the wheels sometimes mount the rail toward the center and bind against the web of the beam.

My invention obviates the difficulty of turning a sharp curve by leaving the axles of the trolley-wheels perfectly free to move radially with relation to each other, and the coupling-links of the axles are also free to move either radially, horizontally, or vertically with relation to each other. In other words, I make what may be termed an "articulated trolley," each member of which is, while held in position, still enabled to accommodate itself to any irregularities in the surface of the rail or to any curve. To avoid mounting the rail toward the web, I make the trolley-wheels flanged; but while this is a very desirable feature it is not the essence of my invention. To further diminish friction, I provide the trolley-wheels with improved roller-bearings.

In the accompanying drawings, illustrating my improvements, Figure 1 is a side elevation of my improved trolley in place upon an

overhead track. Fig. 2 is an end elevation of the same. Fig. 3 is a view of one of the side bars detached. Fig. 4 is a front or face view of my improved roller-bearing. Fig. 5 is an end view of the same. Figs. 6, 7, and 8 show different forms of yielding spring-connections between the axles of the trolley-wheels.

Referring to the letters upon the drawings, A A indicate two side bars or separators, which hold in position the axles of the wheels. The object of these separators is to hold the wheels in position and prevent them touching each other, so that they may be in the best position for turning curves and yet may not rub. These separators are made with a hole in one end, which fits one axle, and an oblong hole in the other end, so that the axles may have radial motion with relation to each other. These separators, however, may be of any desired construction to permit this radial motion—as, for instance, they may be joined by coil-springs rigidly attached to each end of the axles, or a spring of any form, or, indeed, of any construction which will permit the distance between the axles to vary. These separators, however, as above stated, are not necessary, and may be omitted altogether; but in that case the yoke C would have to be of necessary length to prevent the trolley-wheels from coming together.

Corresponding pairs of wheels on either side of the track are joined by coupling-links B, which are loosely joined by the yoke C. The essence of my invention is in this loose jointure of these connecting-links by means of a yoke, which will permit the coupling-links to move relatively to each other either radially or vertically or horizontally in either direction. It is evident that this connection will compensate for the necessary change in position of the various parts, either when turning a curve or when any irregularities in the track occur. For purposes of description I call this yoke a "swiveling yoke," by which I mean to convey capacity for all motions specified above. While the absolutely-loose connection shown in the drawings is, in my opinion, the best, it is evident that the yoke might be pinned or fastened to the links in a great



variety of ways, either directly or indirectly, without departing from the spirit of my invention.

5 The object of my improved roller-bearing is to provide for the use of rollers of different lengths and different lengths of bearings. In roller-bearings as heretofore constructed a cage which supports the rollers has been provided which is only adapted to one length and  
10 one size of bearing.

My improvement consists of an annular end bearing and holders, D E, which are loosely placed one at each end of the hole in the hub of the wheel. The radial width or thickness  
15 of these holders is a little less than the diameter of the rollers. The bearings are provided with pockets F, of such diameter that they will allow the rollers G to turn in them loosely. The rollers being inserted in pockets will  
20 project slightly on either side of the holder, as illustrated, forming a roller-bearing both against the wheel and against the axle—that is to say, between the two—thus making an anti-friction roller-bushing for the wheel.

25 It is obvious that the annular end bearings will be suitable to apply to wheel-hubs of varying thicknesses, and that varying lengths of rollers may be used for wheels with hubs of different thicknesses.

30 Having thus described my improvements, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a trolley having four or more wheels, two or more coupling-links connecting the wheels and united by a swiveling yoke, substantially as described. 35

2. In a trolley having four or more wheels, the combination of the axles and coupling-links depending from them, with one or more bars or separators for holding the axles and  
40 links in place and allowing them to have radial motion relatively to each other, substantially as described.

3. In a trolley, the combination of two or more pairs of flanged wheels connected by  
45 coupling-links, and the coupling-links being connected by a swiveling yoke, substantially as described.

4. In a trolley, the combination, with the axles of the wheels, of the side bars, A, links  
50 B, and yoke C, substantially as described.

5. In combination with a wheel, a roller-bushing composed of two annular end bearings provided with pockets for supporting the projecting anti-friction rollers, substantially  
55 as described.

In testimony whereof I have hereunto subscribed my name.

ROBT. CARTWRIGHT.

Witnesses:

SCHUYLER MERRITT,  
GEO. E. WHITE.