

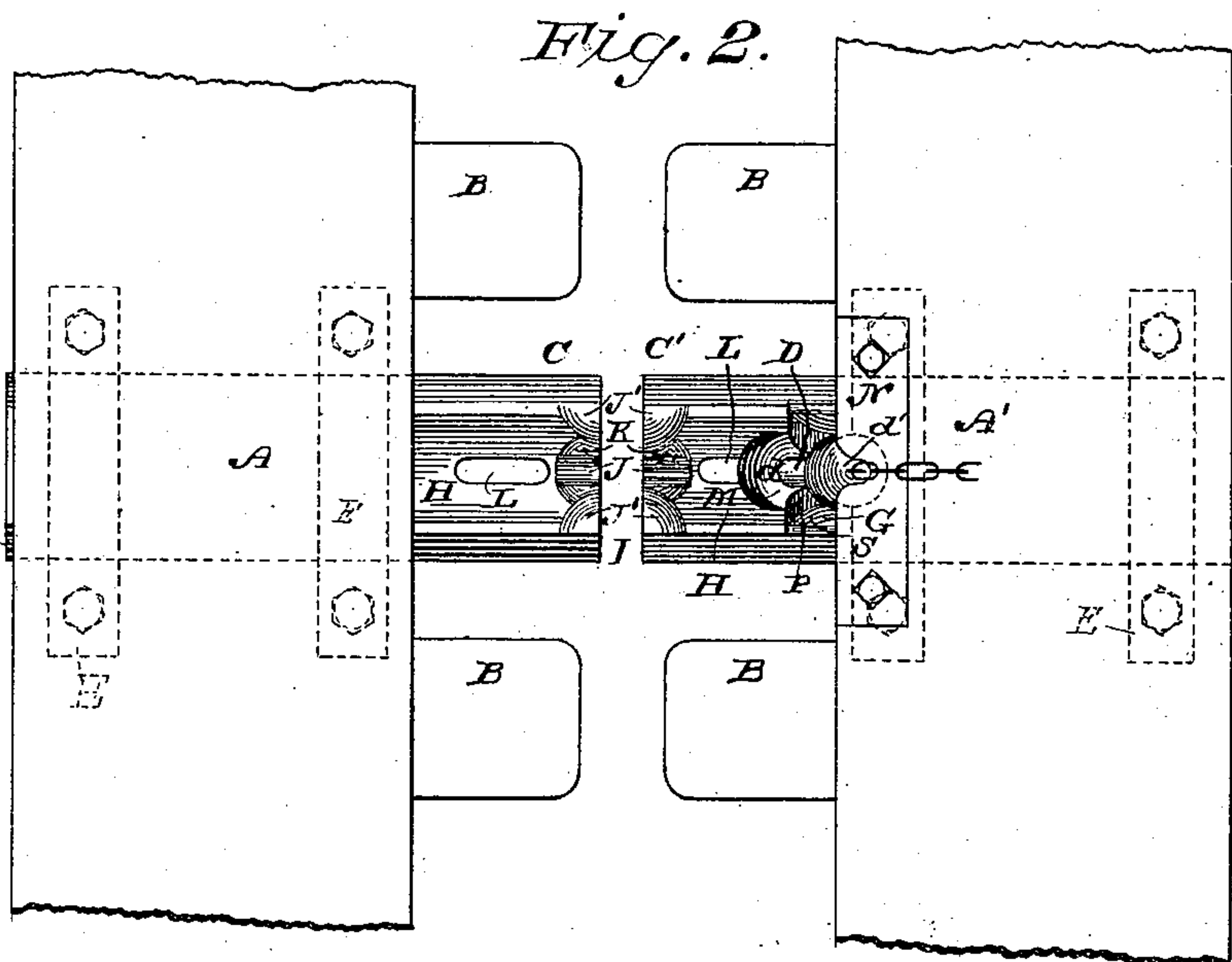
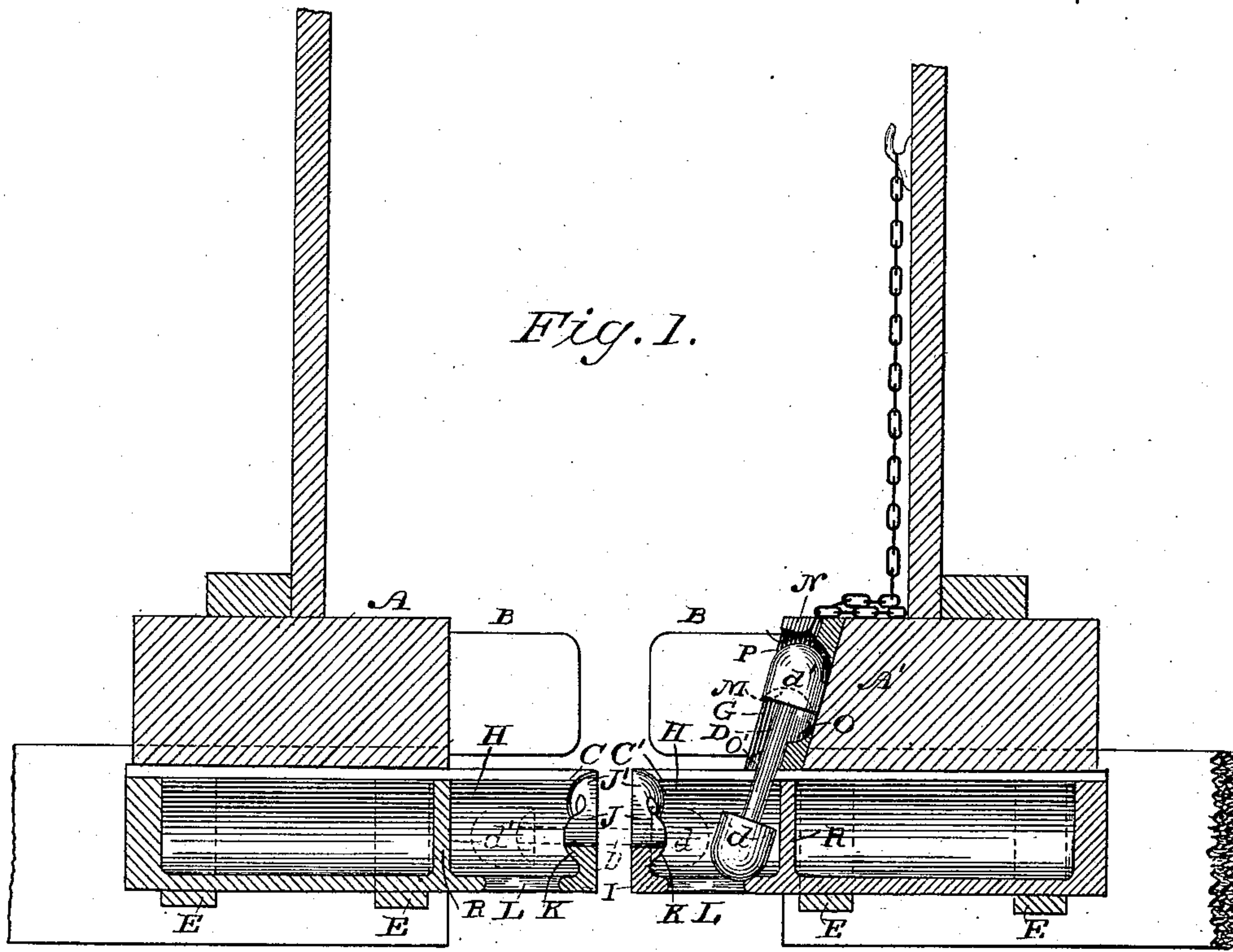
(No Model.)

2 Sheets—Sheet 1.

J. F. LEECH.
CAR COUPLING.

No. 312,362.

Patented Feb. 17, 1885.



WITNESSES

Ed. A. Newman.
Al. C. Newman.

INVENTOR

John Frederic Leech,
By his Attorney

Woodbury Lowrey

(No Model.)

2 Sheets—Sheet 2.

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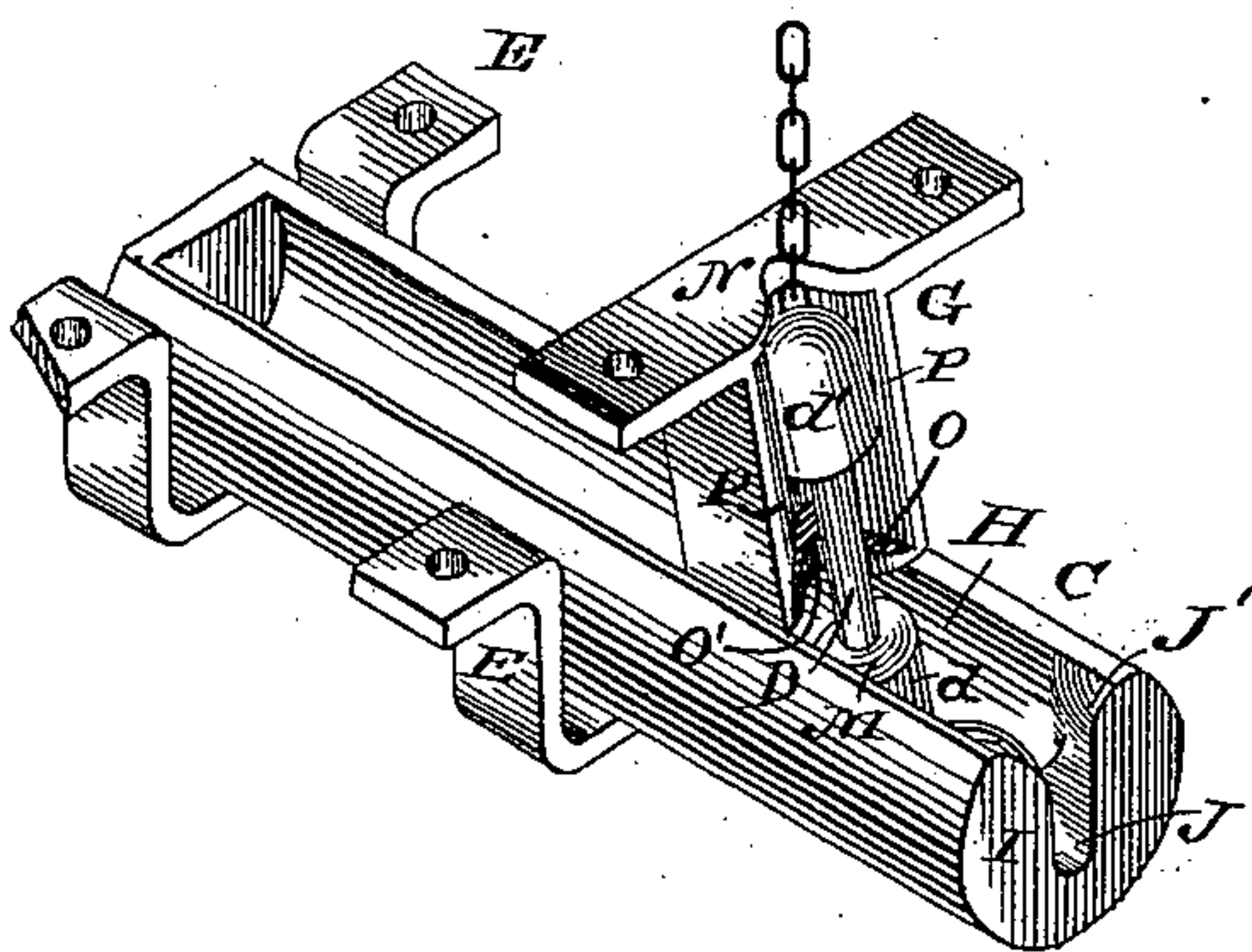


Fig. 3.

Fig. 6.

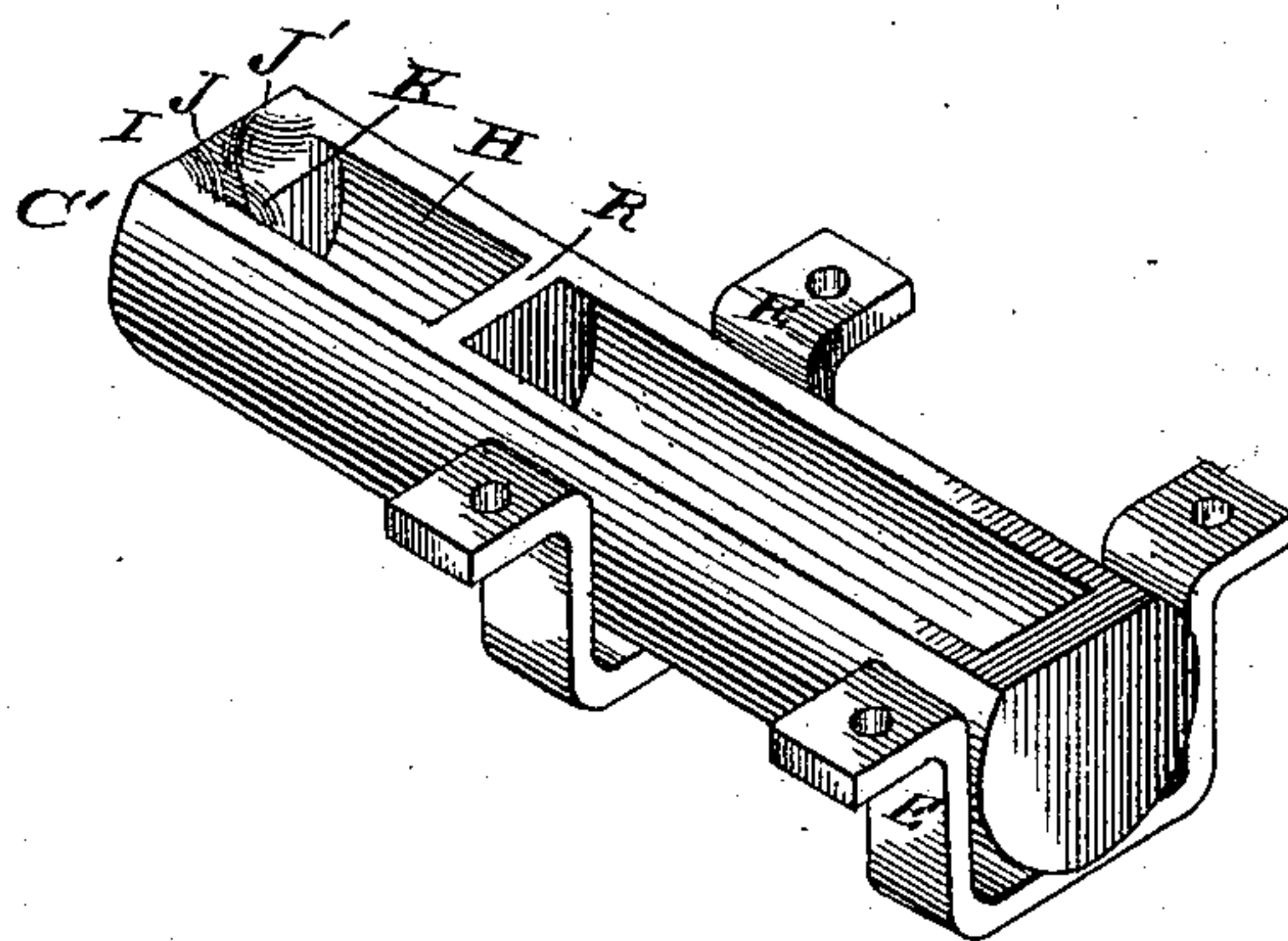
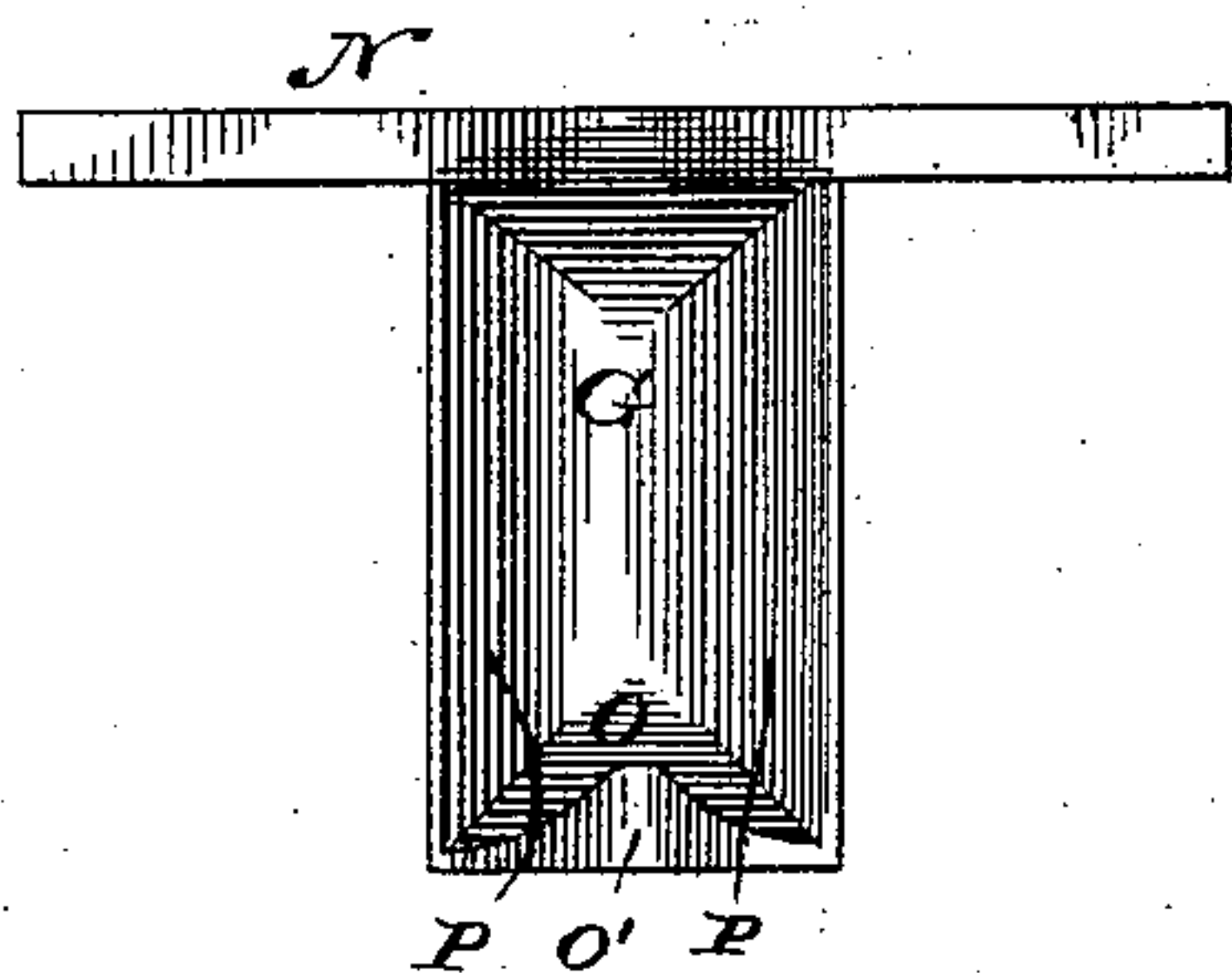
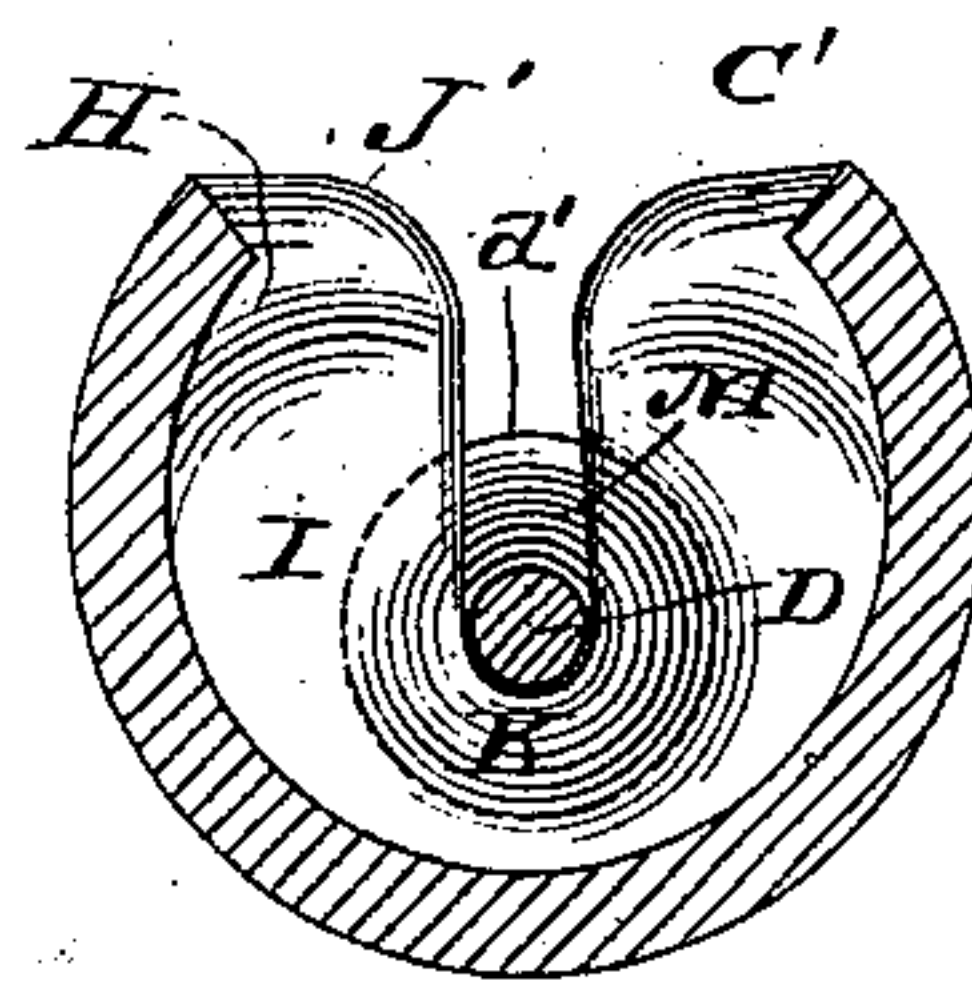
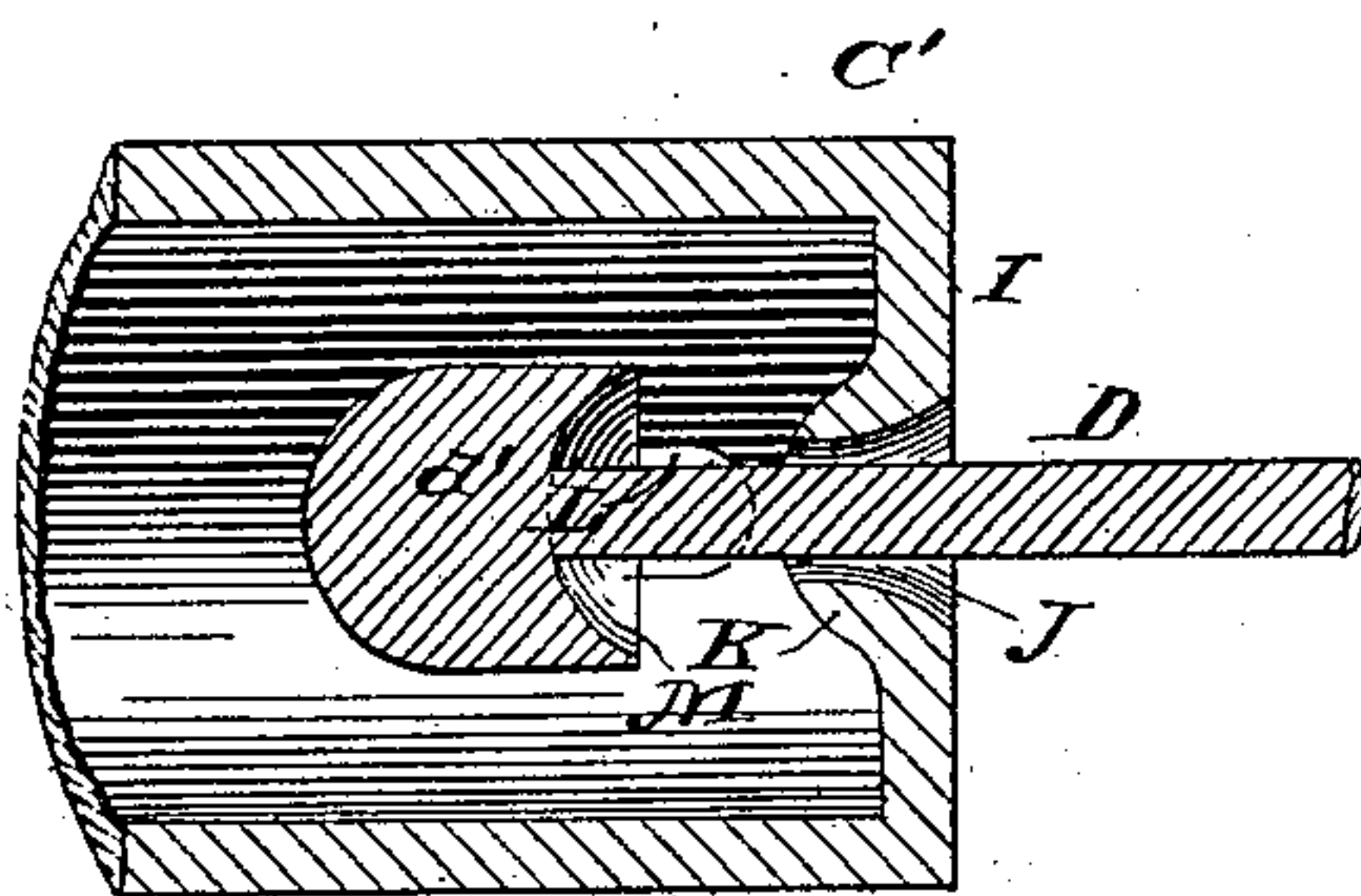


Fig. 5.

Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN FREDERIC LEECH, OF ALLEGHENY, PENNSYLVANIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 312,362, dated February 17, 1885.

Application filed December 2, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN FREDERIC LEECH, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My car-coupling consists of two similar cylindrical draw-heads and a removable coupling-bolt. The cylindrical draw-head is suspended from the bottom of the car in the usual way. When the cars come together, the two draw-heads, which on all rolling stock project somewhat beyond the buffers, meet and yield to the motion of the cars until the coupling-bolt resting in one draw-head is automatically, by concussion and retreat of the draw-head, thrown into place in the other draw-head and the coupling is done.

My draw-head consists of a cylinder having on top a longitudinal slot of sufficient size for the reception of the enlarged head of the coupling-bolt, and a smaller slot extending from the edge to below the center of the cylinder-head, perpendicular to and communicating with the upper longitudinal slot. In size it corresponds to that of the shank of the coupling-bolt. A section of a sphere projects from the center of the head-plate on the inside, through which the slot in the head-plate is continued. The draw-head is provided with the usual drainage-opening. The coupling-bolt consists of a shank having at each end an enlarged head concave on the inner side, so as to fit over the hemisphere on the inside of the draw-head, thus forming a ball-and-socket joint. In coupling, the bolt is dropped by means of a chain attached to one end of it into the large slot of the draw-head, where it remains in a more or less perpendicular position, one head resting against the bottom of the draw-head, the other in a pocket provided for it immediately above the draw-head in the cross-beam of the car-platform.

In the accompanying drawings, which illustrate my invention, Figure 1 is a view in section of the two draw-heads and bolt prior to coupling. The position of the pin when coupled is indicated in dotted lines. Fig. 2 is a top plan of the same. Fig. 3 is a view in perspective of the draw-heads and bolt in place for coupling. Fig. 4 is a view, partly

in section, of the bolt. Fig. 5 is a plan view of the inner side of the head-plate of the draw-head in detail, and Fig. 6 a view of the receiving-pocket for the bolt-head.

In the drawings, A A' are the car-platforms, B B B B the buffers, C C' the draw-heads, and D the coupling-bolt. E E are brackets by which the draw-heads C C' are suspended from the bottom of the car, and G G' the receiving-pockets for the head *d* of bolt D.

In draw-head C, H is the upper longitudinal slot for receiving the head of bolt D. I is the head-plate, having the slot J flaring at the top J', where it joins slot H, so as to guide pin D more readily into place. K is the section of the sphere projecting on the inner side of the head-plate. L is the drainage-hole of the draw-head. M is the concave inner surface of the bolt-heads *d d'*, which conforms to the periphery of ball K, but does not completely cover the surface of the ball in order to allow for the play of the bolt.

The pocket G, placed immediately above draw-head C, consists of top plate, N, the downward flaring bottom plate, O, notched at O' to receive the shank of the bolt and the sides P, which also flare outwardly. The face of the pocket is not perpendicular, but inclined, the bottom projecting beyond the top to assist in guiding and retaining and impelling the bolt into place.

Draw-head C C' may be provided with a terminal plate R, or the plate may be dispensed with, or the cylinder beyond the end of slot H may be contracted to a lesser diameter, to facilitate its casting. The draw-head is materially re-enforced at the top on both sides by concave shoulders S S, which also serve to accurately guide the bolt home. I also prefer to make the draw-heads cylindrical, as greater strength is obtained thereby, although it is obvious that they may be varied in shape without departing from the spirit of my invention. The brackets by which the draw-heads are suspended are preferably made square, as shown in the drawings, which greatly decreases the friction where a cylindrical draw-head is used. Pocket G is also made in one casting. The shape of the bolt-head which I prefer is that shown in the drawings, being that of a truncated cone with the top rounded

off; but the particular shape of the bolt-head is not essential so long as it is provided with an inner concave surface such as I have already described, and to act in the manner set forth.

The operation of my invention is as follows: The brakeman having dropped bolt D into place by means of the chain attached thereto, it rests with head *d* in the drainage-slot L of draw-head C and head *d'* in pocket G, the shank of the bolt being held in notch O' at the bottom of the pocket. When the cars come together, the draw-heads C C' are the first opposing points to meet and retreat beneath the car in the usual manner. The forward impulse thus given to the top of the bolt by the retreat of the lower end, as well as conveyed to the head resting in the pocket, throws head *d'* out of pocket G, and, guided by the shoulders S S and the flare of slot J, causes it to fall into slot H of draw-head C', head *d* still remaining in draw-head C. When the train starts up, the bolt-heads are drawn up against the balls K K on the head-plates of the draw-heads and the coupling is done. To uncouple, the bolt is removed by means of the chain, and is left hanging to the car when not in use.

The advantage of the ball-and socket joint which I thus obtain is obvious. It allows of sufficient play of the bolt while the bearing is kept up over all the surface of the socket and ball whatever the angle given the bolt. I am thus enabled to couple cars of different heights with great facility and security, this point being one of the most important in all couplings.

Instead of spreading the slot, and with it the head-plate and draw-head, the greater the pull the more firmly the two halves of the head-plate are bound together.

The whole device is simple, of easy adjustment, and not liable to get out of order.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. The combination of a draw-head having a section of a sphere with a bar or bolt having a socket.

2. The combination of a draw-head having a section of a sphere, a bar or bolt having a socket, and a pocket placed immediately above the draw-head, for keeping the bolt in position preparatory for coupling.

3. A draw-head having a perpendicular slot in the head-plate for the admission of a bar or bolt, a section of a sphere upon such head-plate, and a bolt having a socket to fit such section of a sphere.

4. A draw-head having a longitudinal slot on top and a perpendicular slot in the head-plate for the admission of a bar or bolt, and a hemispherical projection on the head-plate, substantially as and for the purpose hereinbefore set forth.

5. A coupling-bolt consisting of heads concave on the inside where they are connected by a shank.

6. The pocket for receiving the bolt, having the flaring sides and bottom, a top plate, a notch in the bottom plate, and an inclined face, substantially as hereinbefore set forth.

7. The combination of the cylindrical draw-head having slots for the admission and retention of the bolt, the head-plate, the section of a sphere on the head-plate, the socket in the bolt, and the pocket, substantially as hereinbefore set forth.

8. The combination of the car-body, the cylindrical draw-head, and the square braces for supporting the draw-head, substantially as hereinbefore set forth.

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

JOHN FREDERIC LEECH.

Witnesses:

WOODBURY LOWRY,
M. P. CALLAN.