(No Model.)

3 Sheets—Sheet 1.

L. RAYMOND & A. HENRARD.

AXLE BOX.

No. 306,427. Patented Oct. 14, 1884.

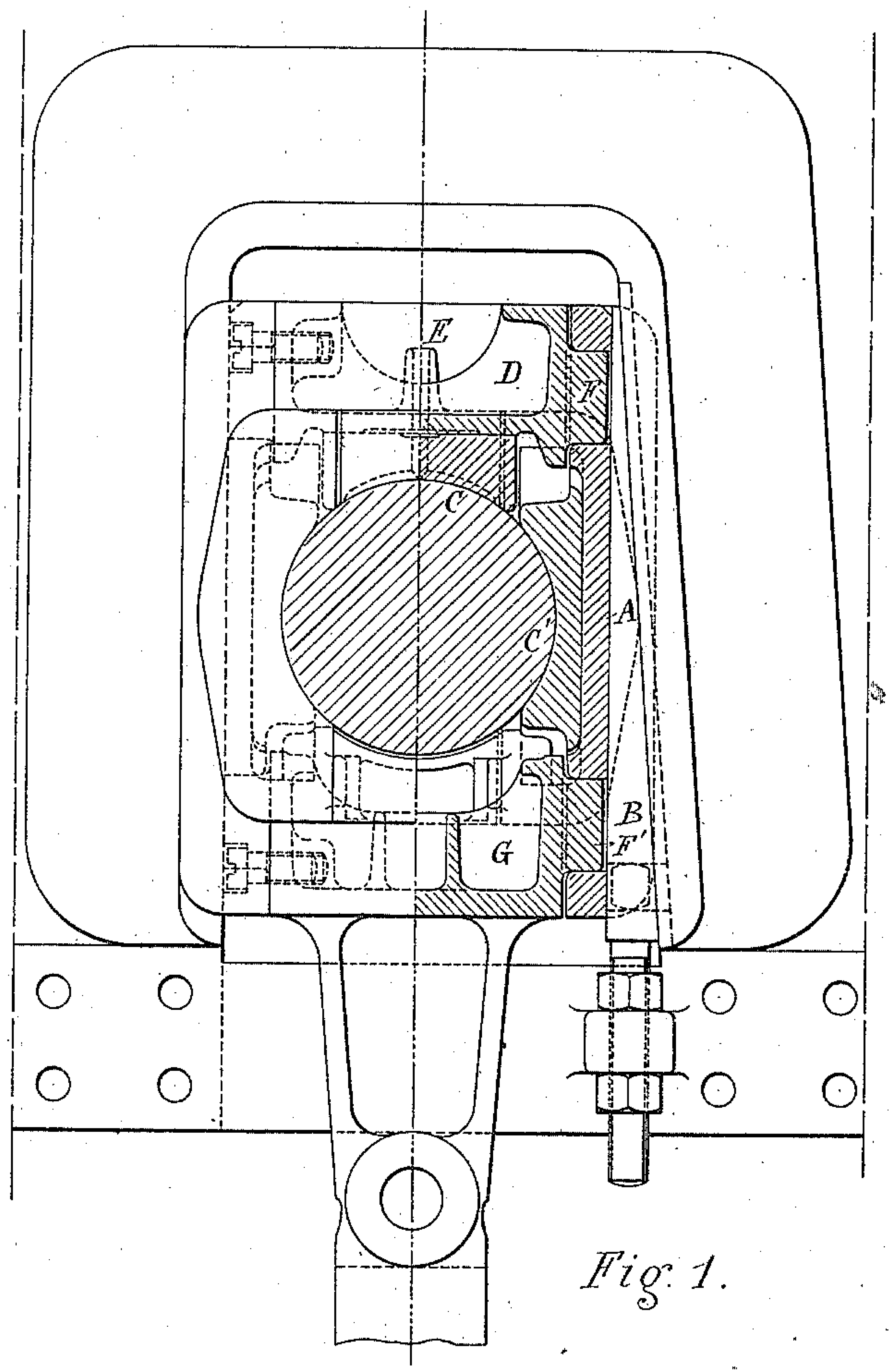


Fig. 1.

Fig. 2.

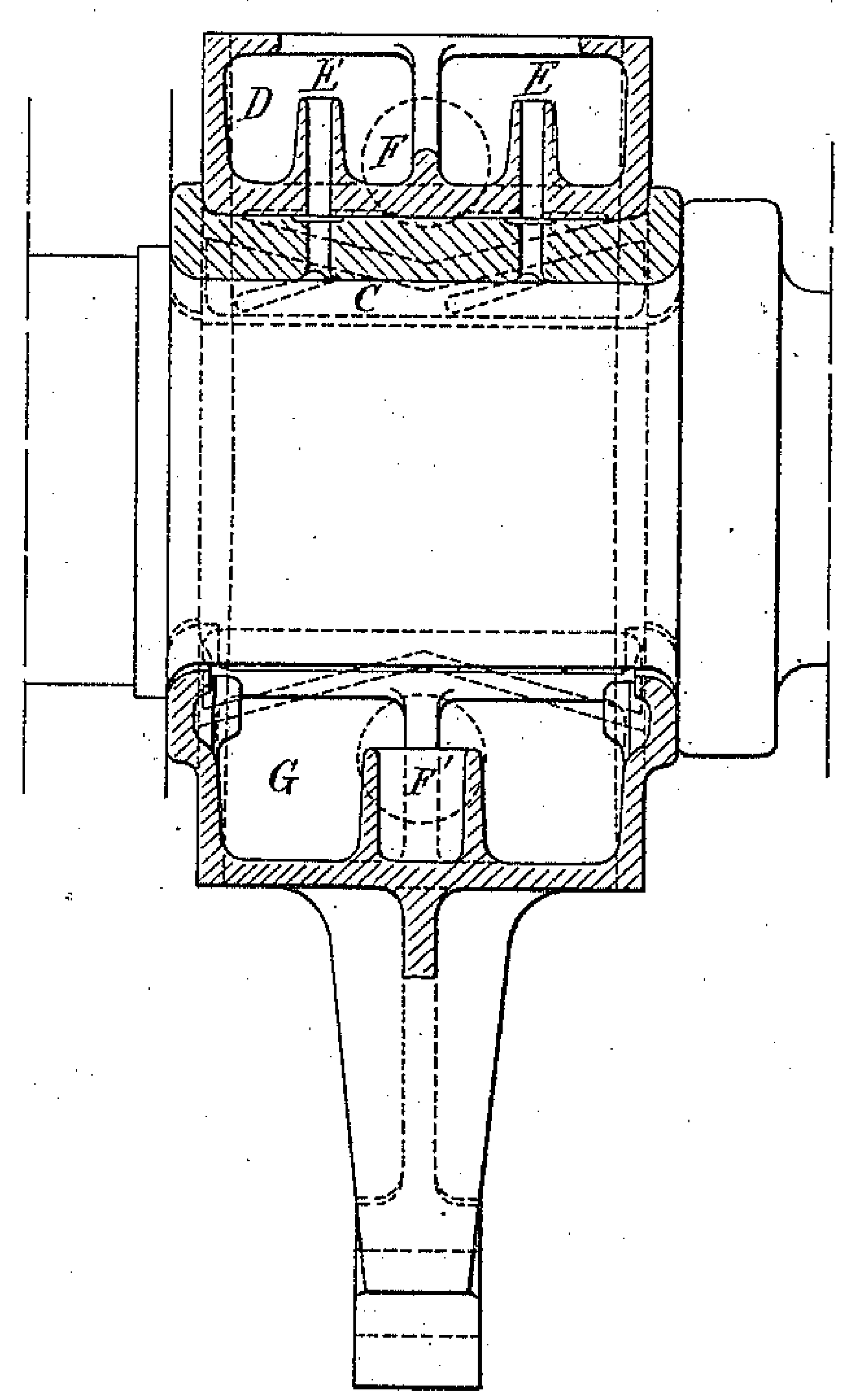
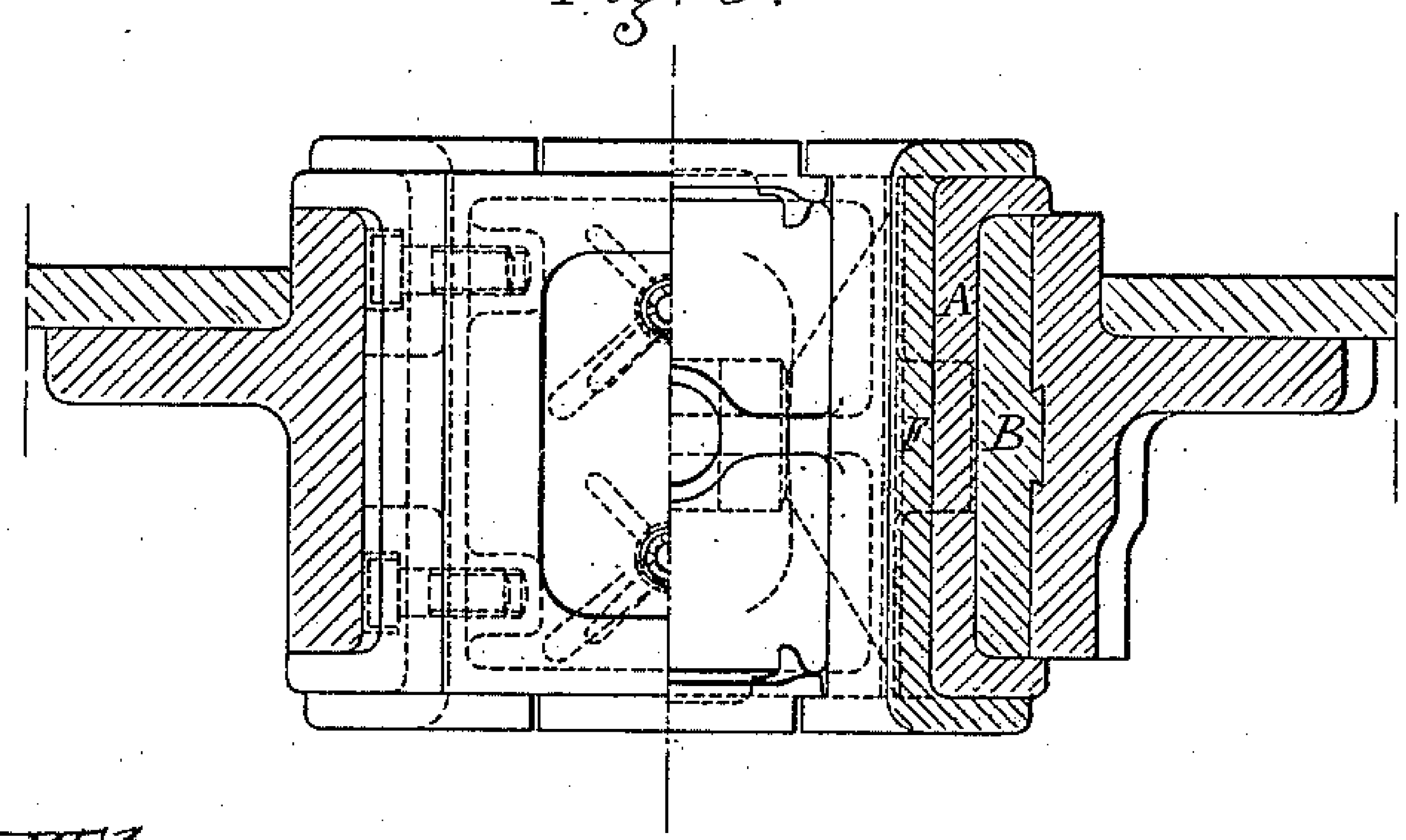


Fig. 3.



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(No Model.) 3 Sheets—Sheet 2.

L. RAYMOND & A. HENRARD.

AXLE BOX.

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Fig. 5.

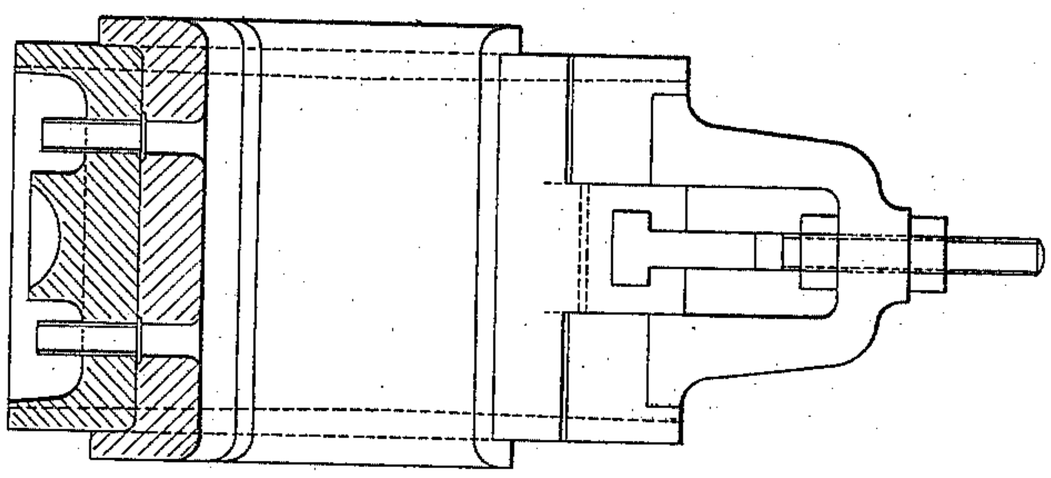
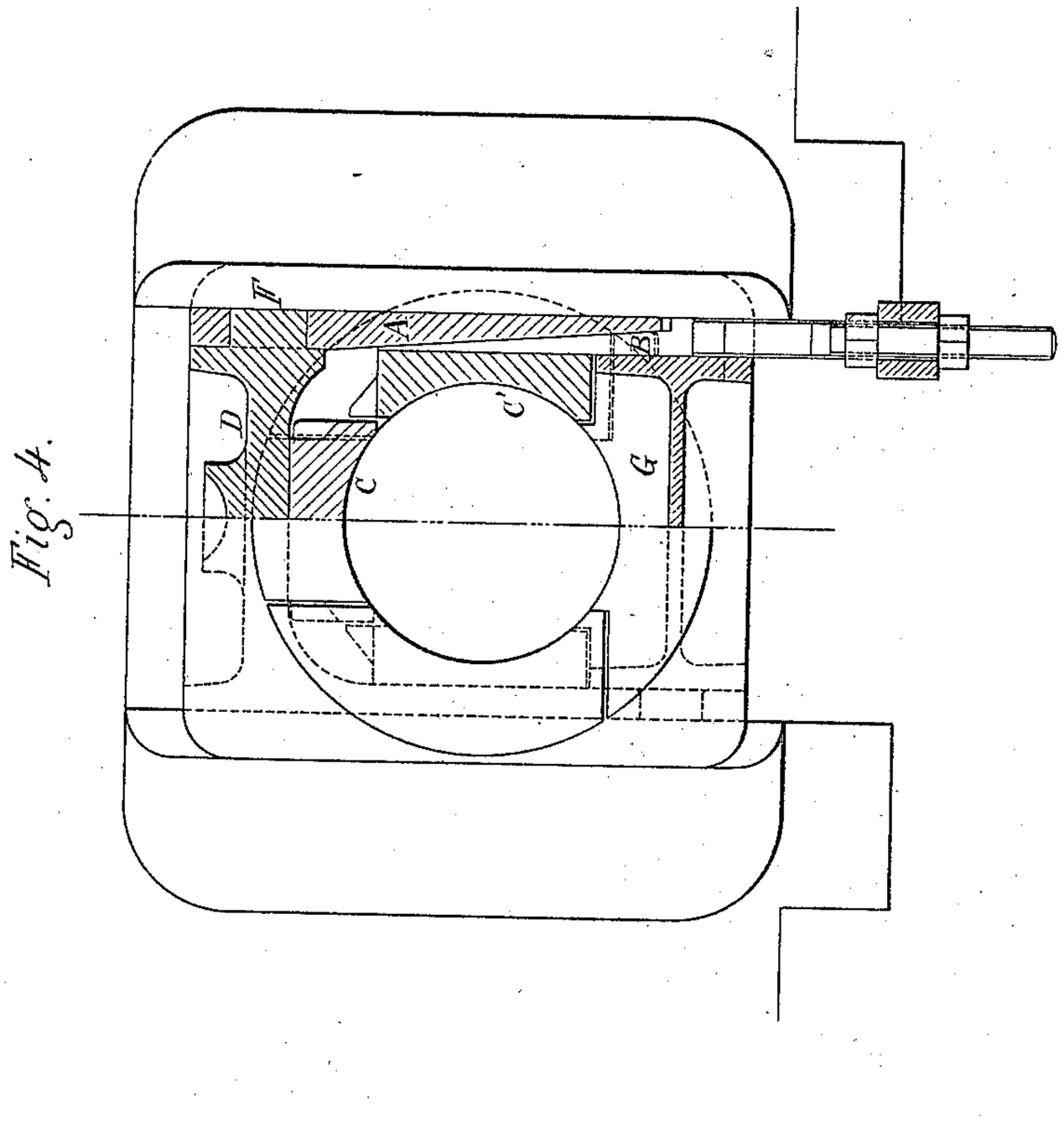


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

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AXLE BOX.

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Fig. 7.

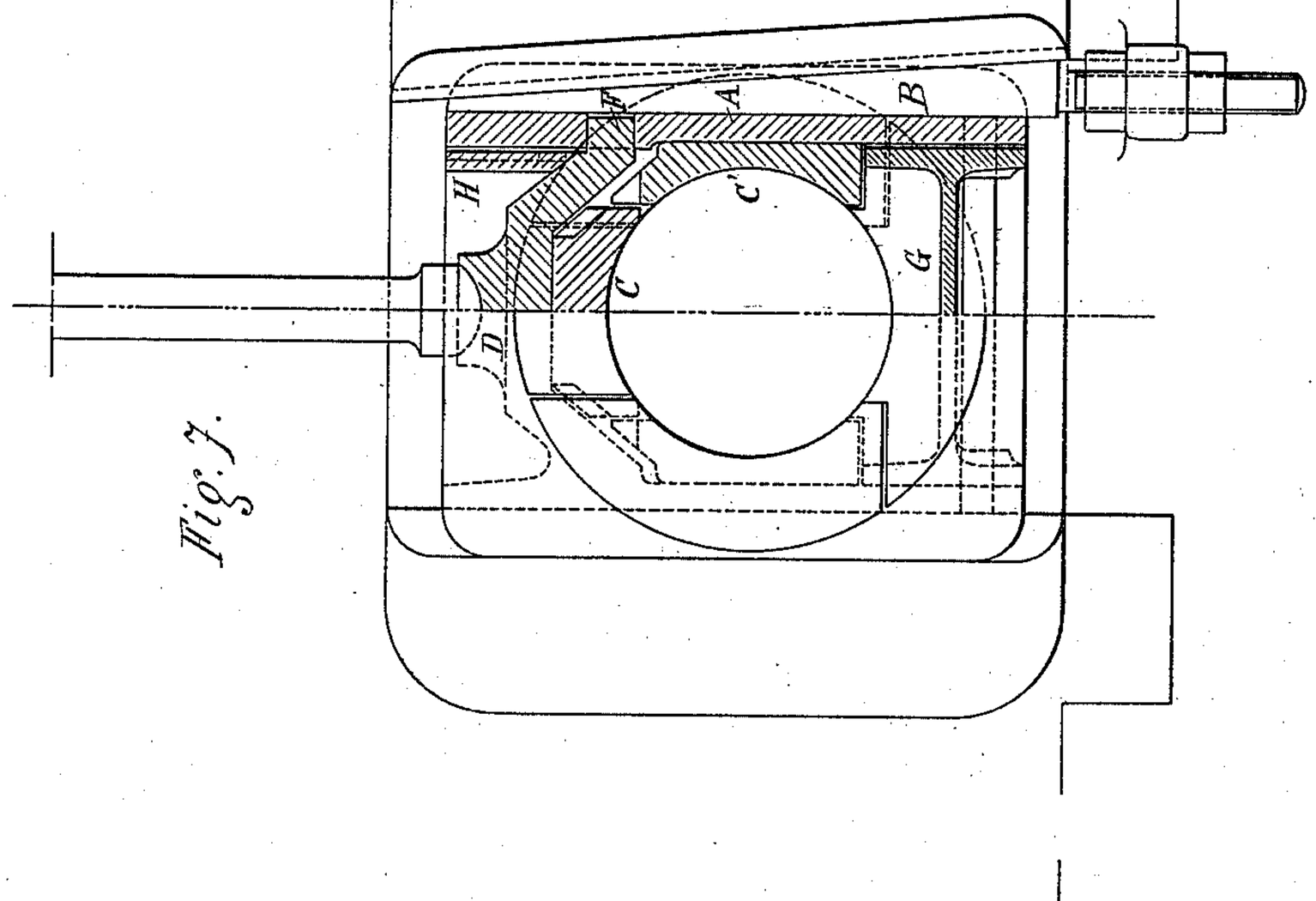
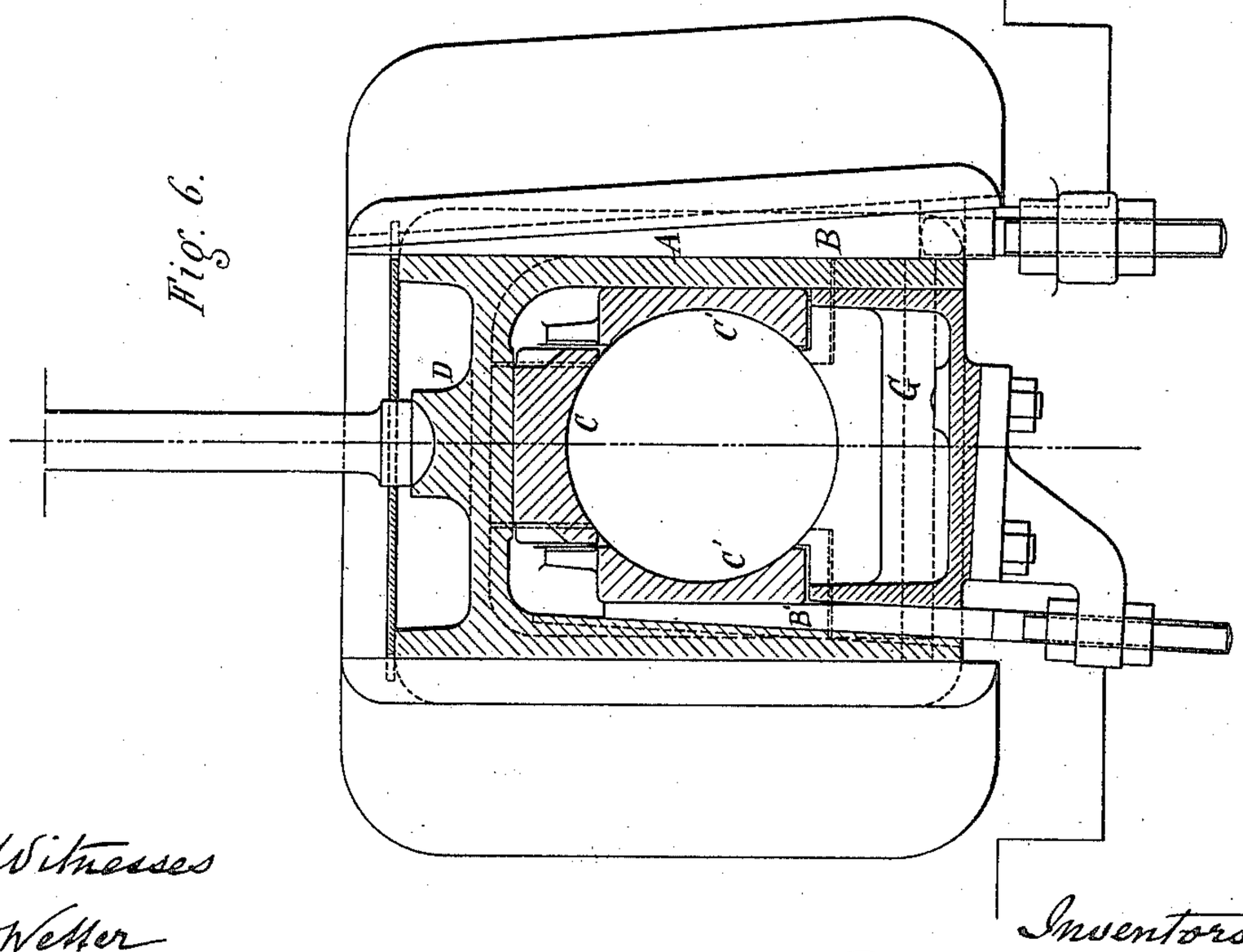


Fig. 6.



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UNITED STATES PATENT OFFICE.

LÉON RAYMOND AND ANDRÉ HENRARD, OF BRUSSELS, BELGIUM.

AXLE-BOX.

SPECIFICATION forming part of Letters Patent No. 306,427, dated October 14, 1884.

Application filed February 4, 1884. (No model.) Patented in Belgium January 4, 1884, No. 63,443, and in France January 7, 1884, No. 150,936.

To all whom it may concern:

Be it known that we, LÉON RAYMOND and ANDRÉ HENRARD, subjects of the King of Belgium, and residing at Brussels, in the Kingdom of Belgium, have invented a new and useful Improvement in Axle-Boxes, (for which we have obtained patents in Belgium on the 4th of January, 1884, and in France on the 7th of January, 1884,) of which the following is a specification.

The improved axle-box for locomotive and other axles differs from others by the use of three bushes or brass cushions instead of one, which bushes are made movable on the surfaces of their contact with the interior of the axle-box, being retained therein by flanges or projections, which prevent any motion of the bush along the axle, but allow the bushes to follow any displacement of the axle, so as to keep the whole rubbing-surface in contact with the axle. This contact is maintained by a special construction of the axle-box, which may be made of several pieces or provided with wedges or keys adapted to tighten the bushes, so as to take up the wear. It is advisable, in order to minimize the sliding resistance of the contact-surface of the upper bush with the box, to provide special means of lubricating these surfaces from the upper oil-receptacle of the box.

In further describing this invention reference will be made to the accompanying drawings, of which Figure 1 is half front view and half cross-section, Fig. 2 a vertical axial section, and Fig. 3 a horizontal section, of an axle-box embodying our invention, while Figs. 4 to 7 represent modifications.

The construction of Figs. 1 to 3 is easily applicable to the majority of existing locomotive-engines.

The body of the box is composed of three parts, and the lateral cheeks A are, or at least one of them is, made movable, so as to enable their being placed nearer to each other. In this arrangement the wedge B is sufficient to regulate the play of the box inside and outside. The bush C is placed over the journal of the axle, under the block D, which takes up the load and serves as an oil-receptacle. The sliding motion of the bush is facilitated by the oil supplied through the siphon-holes E and spreading between the contact-surfaces. The block D has studs or guide-pins F, serving to suspend the movable cheeks A, and the lower bush, G, is suspended from the cheeks A by means of the guide-pins F'. The drawings represent the case of an axle-box, which is loaded from the bottom. The two lateral bushes C' are retained in the cheeks by their lateral flanges only, and in the same way the bush C is secured to the block D. The latter may, however, be rigidly connected or form one piece with the bush C, if the block D is adapted to slide between the cheeks A. In this case the guide-pins would slide in slots of the cheeks and serve as guides.

The various movable parts described above have to resist the load of the engine and heavy strains, and are therefore made of phosphor-bronze. In the arrangement illustrated the key B is sufficient to take up the wear and to adjust the play of the box. In certain cases—for instance, where it is desired to make the body of the axle-box of one piece—the lateral bushes may be made to approach each other by a key placed entirely inside the box and attached to one of the bushes.

Figs. 4 and 5 illustrate the application of our invention to axle-boxes without wedge-key, and where one is obliged to add a movable wedge-shaped cheek having its outer face in contact with one of the guides, while its inner face is inclined and in contact with the oblique face of a movable key, B, extending downward from the box, the other face of the key being parallel with the guide resting against the outer face of a lateral bush.

Fig. 6 is a cross-section of an axle-box made of one piece, and provided with outer adjusting-key, B, and inner adjusting-key, B', which latter may be attached to a downward extension of the box.

Fig. 7 is a cross-section of an axle-box with a movable cheek and an outer adjusting-key. This modification allows of the utilization of old axle-boxes by removing one of the cheeks of the box and replacing it by a movable cheek, A, suspended from a strong tenon or pin, F,

cut out from the upper block, the oil-reservoir of which is again closed by fixing to the block the side H.

It is evident that the construction of the axle-box may be modified without departing from our invention, and that the same is not only applicable to locomotive-axles, but also to other railway-carriage axles, and to any other axles which are subjected to frequent displacement, such as axles of steamboats.

What we claim is—

An axle-box having one or two movable cheeks, A, connected with the upper part of the box by studs or guide-pins F, and inclosing three bushes, C C′ C′, held in place by lateral flanges only, and adapted (as regards their height and width) to allow the two vertical bushes C′ vertical play without hinderance from the third bush, C, or from the box, and to allow the upper bush, C, horizontal play without hinderance from the two other bushes or from the box, substantially as described, and illustrated by the drawings.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

LÉON RAYMOND.
ANDRÉ HENRARD.

Witnesses:
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H. JANSSENS.