

P. W. GATES.
APPARATUS FOR CASTING JOURNAL BOXES.

No. 525,412.

Patented Sept. 4, 1894.

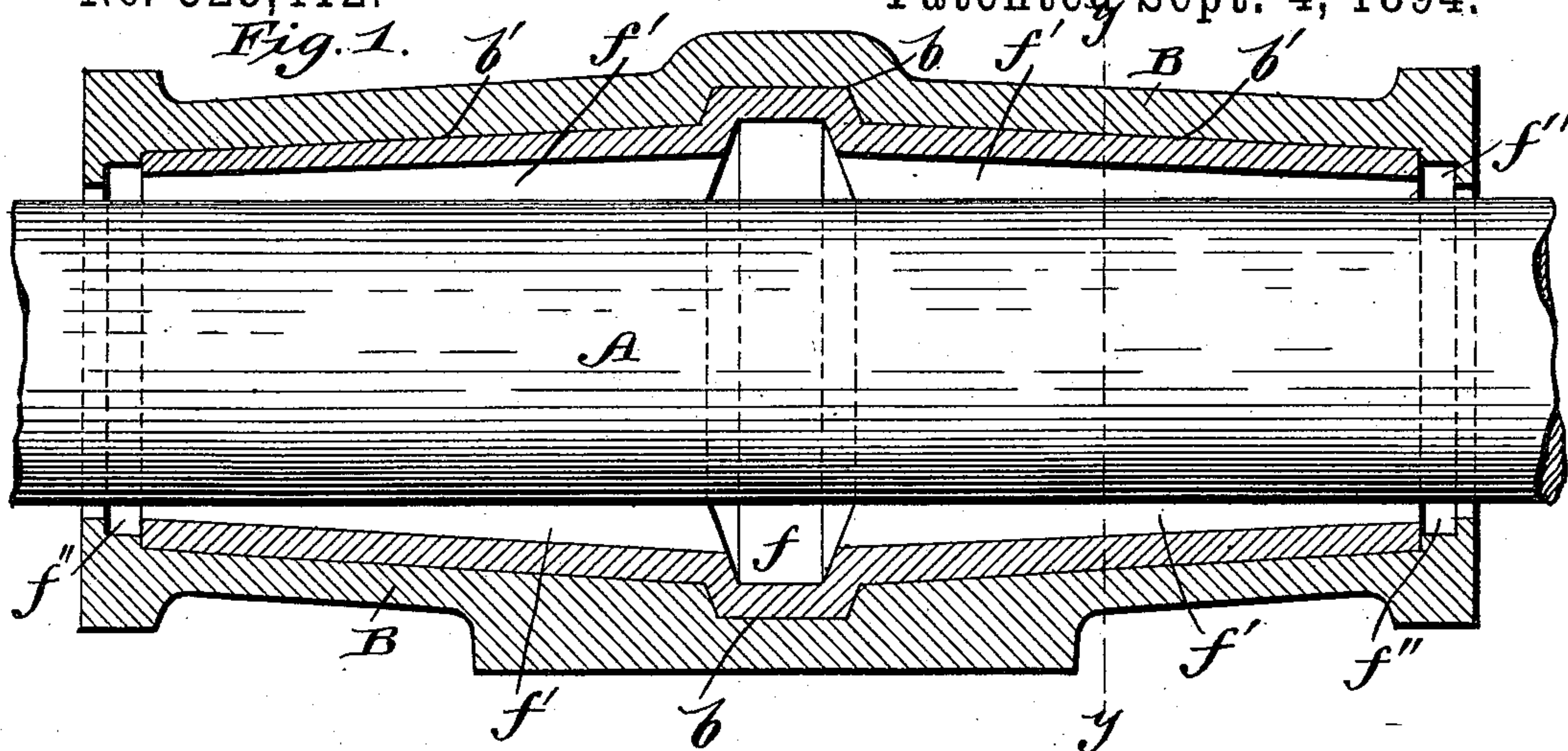


Fig. 2.

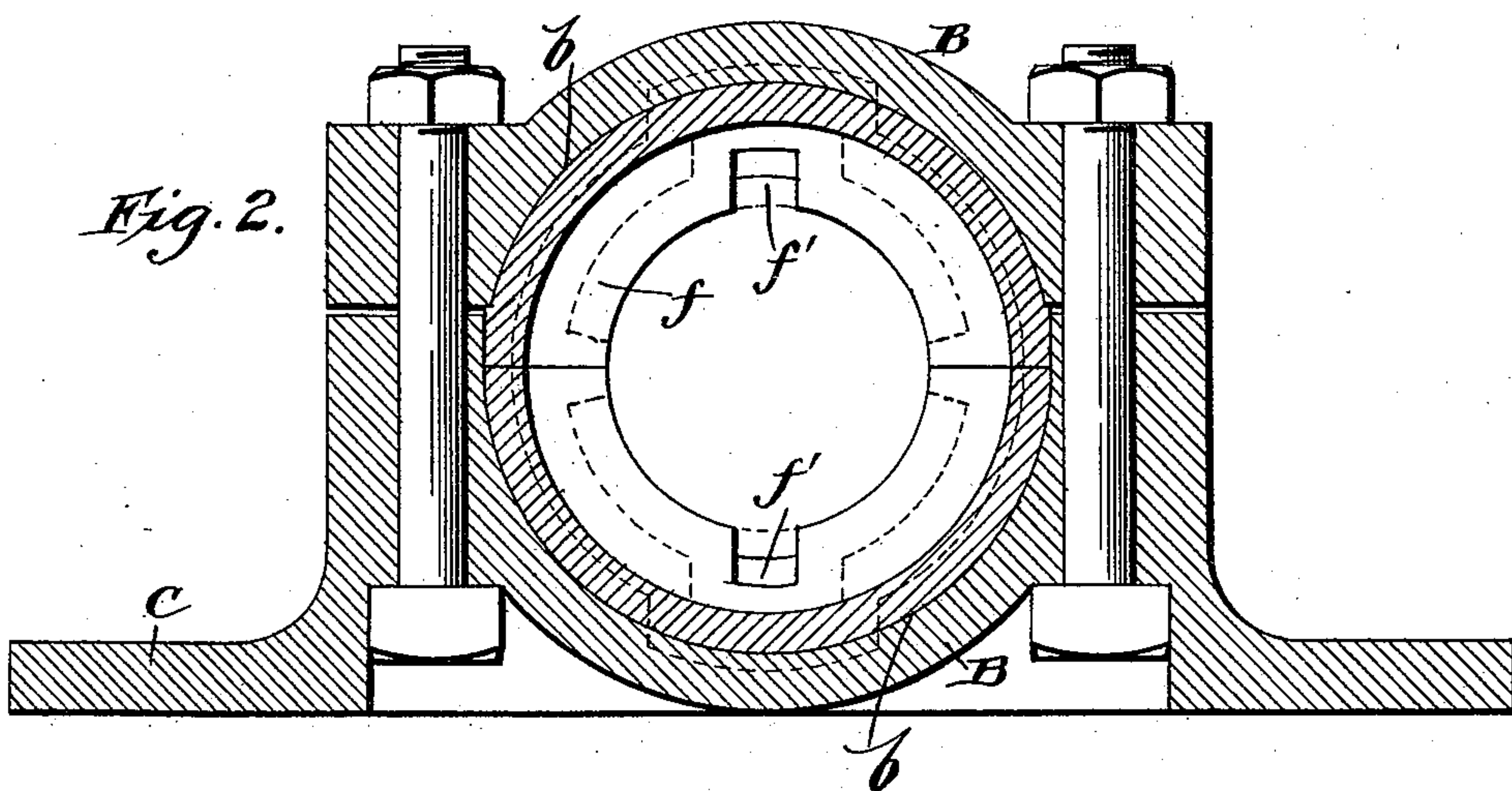
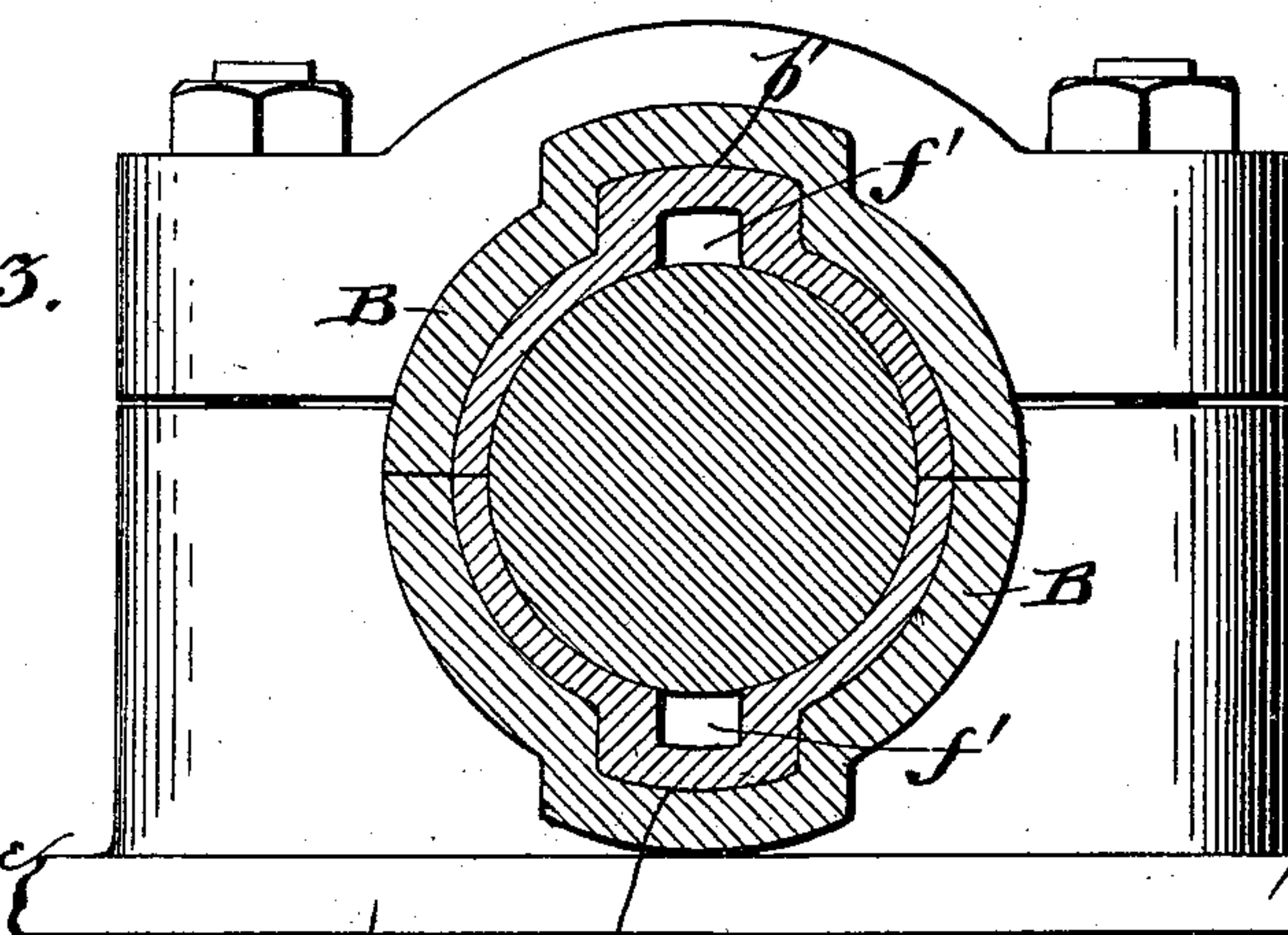


Fig. 3.



Witnesses

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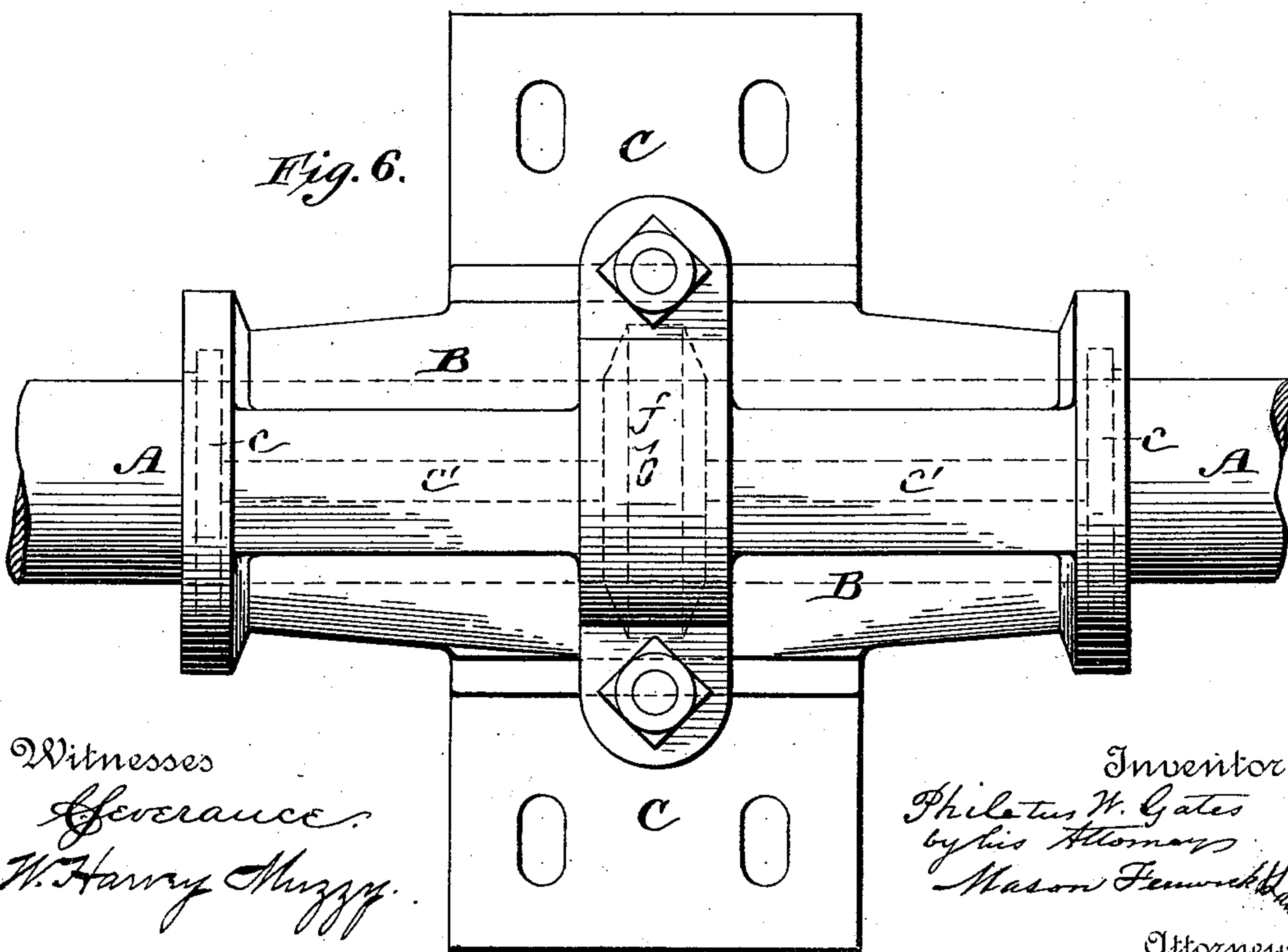
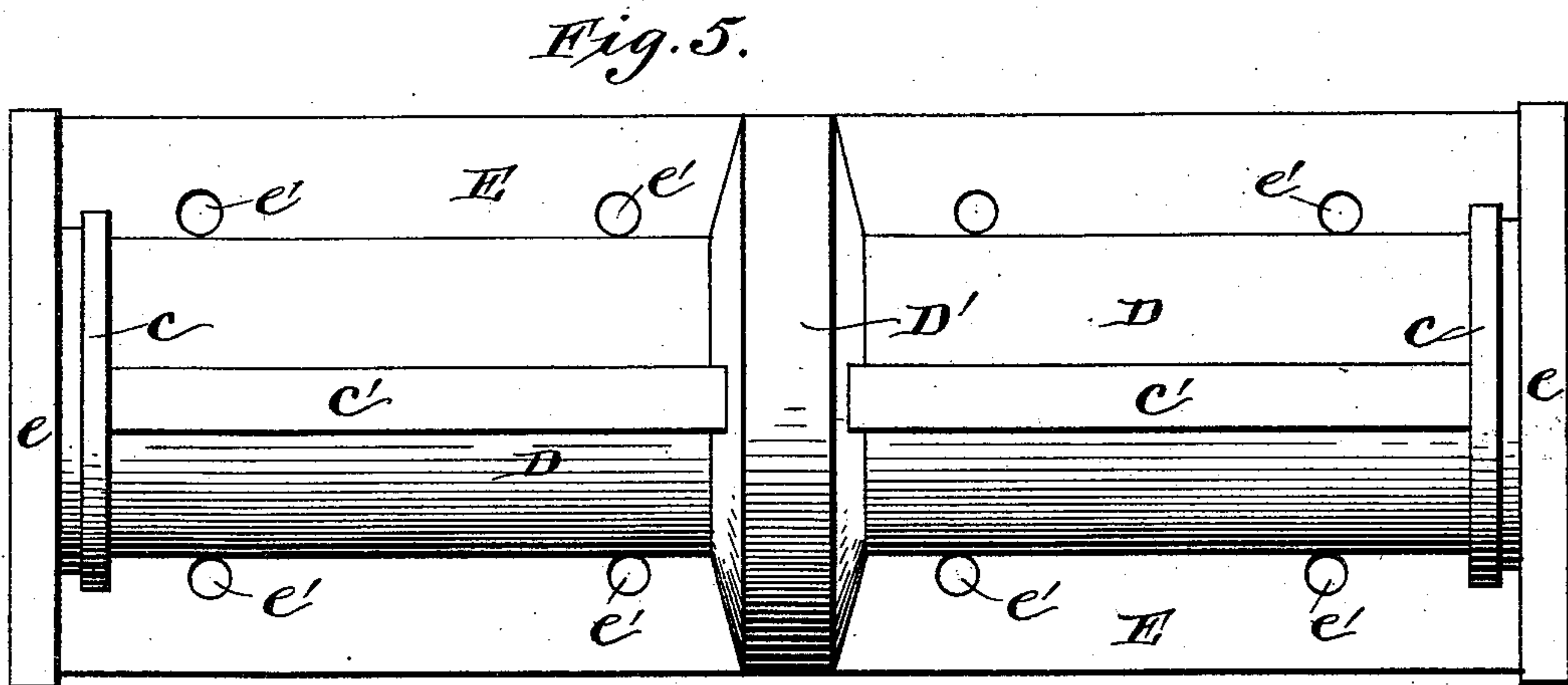
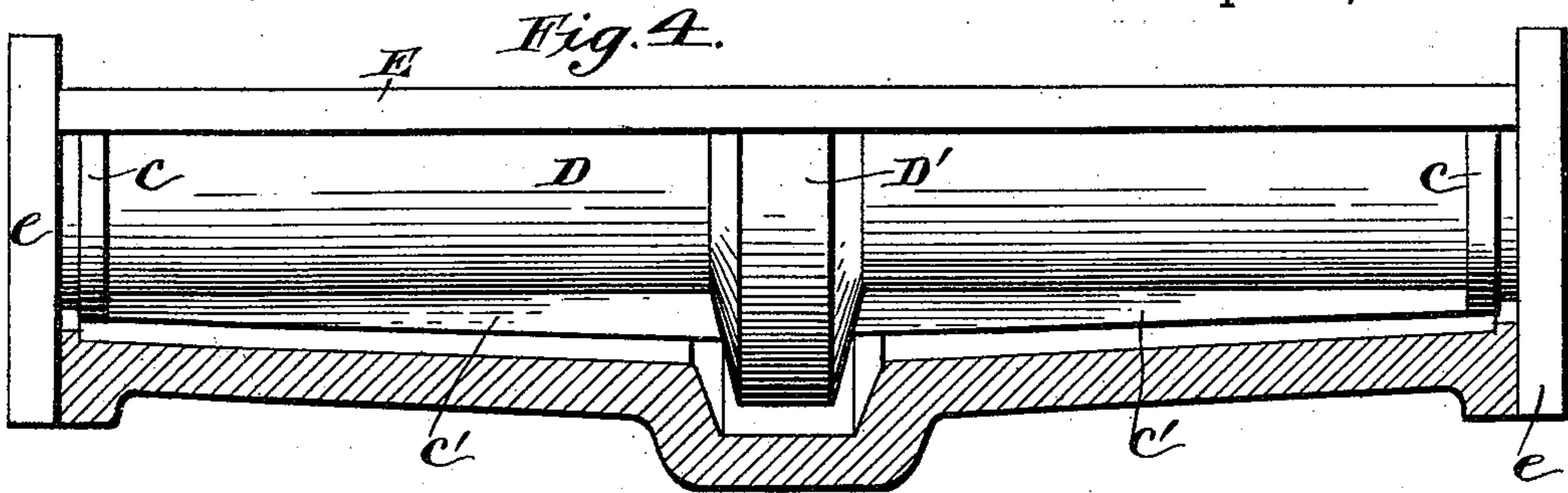
(No Model.)

2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

PHILETUS WARREN GATES, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE GATES
IRON WORKS, OF SAME PLACE.

APPARATUS FOR CASTING JOURNAL-BOXES.

SPECIFICATION forming part of Letters Patent No. 525,412, dated September 4, 1894.

Application filed December 2, 1893. Serial No. 492,625. (No model.)

To all whom it may concern:

Be it known that I, PHILETUS WARREN GATES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Methods of and Means for Babbitting Journal-Boxes; 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 relates to improvements in a means for molding Babbitt or other metal bearing surfaces, of journal boxes, and is especially applicable to journal boxes in which lubricating channels are provided in the bearing surfaces for fully distributing the oil in the journal box, and the object of my invention is to provide a babbitted journal box in which the lubricant will be fed from an oil recess along the entire length of the journal, and then be returned to the said recess to be fed again, and in a similar manner to the journal. I attain this object by the devices described in the following specification and illustrated in the accompanying drawings, in which latter—

Figure 1. represents a central vertical longitudinal section through a journal box constructed according to my invention. Fig. 2. represents a transverse vertical section through the center of Fig. 1. Fig. 3. represents a transverse section on the line $y-y$ of Fig. 1. Fig. 4. represents a side elevation of the half mandrel, hereinafter described, shown as applied to the journal box, the latter being shown in section. Fig. 5. represents a bottom plan view of the half mandrel, and Fig. 6. represents a top plan view of the journal box and shaft, the position of the oil channels being shown in dotted lines.

In the drawings A represents the shaft, and B the journal box within which it is to be mounted; and C any suitable base or frame for supporting said journal box. This box is provided near its middle and in its inner face with an annular channel b . Inclined channels b' extend from the channel b at the top and the bottom of the box, toward each end of the box. These channels b and b' , are provided in the box so that the box may be made

thereby to conform in shape to those channels in the inner face of the Babbitt-metal bearing surfaces, when they are molded within the same. For this molding operation I provide a mandrel D which is turned to the diameter of the journal end of the shaft; and a central portion or semi-circular projection D' , corresponding in position and shape to the channel b , is formed thereon; as are also end semi-circular projections c . Between these projections D' and c , I place strips c' which have one of their sides tapered to correspond to the tapering or inclined portions of the channels b' .

When the boxes are to be planed at their joints, the mandrel is formed so as to mold only one half of the Babbitt metal bearing surfaces at once, and I secure to the top of the half mandrel, as shown in Figs. 4 and 5, a flat piece E which is the length of the box and the width of the planed joint. I also fasten pieces e on the ends of the mandrel to hold it in place. I provide the flat piece E with apertures e' , through which the babbitt is poured in making the mold, casting first one half of the box and then the other; but in the case of rough boxes where the joints are not planed, I simply stand the box on end, and also the mandrel, and pour the babbitt around the latter. It will thus be seen that when the mandrel is removed, after the molding, there will be formed in the surface of the babbitt an annular oil channel f for the chain or ring which is to carry the oil up about the shaft; and also, communicating with this channel, the inclined channels f' formed by the strips c' on the mandrel; and at each end of the journal will be formed annular oil channels f'' connecting with said channels f' .

The chain or ring used in the oil channel f will carry the oil therein up on the shaft A and it will work its way along the shaft by aid of the upper oil channel f' until it reaches the channels f'' when it will descend to the bottom of said channels f'' and flow back to the oil channel f through the inclined lower channels f' , when it will be again raised by the chain or ring and pass through the journal box as before, thus keeping up a circulation.

In oiling long bearings I should form two or three channels like *f* at different points along the length of the bearing, and these channels would be connected together by
 5 grooves and, the oil would thus circulate from one chain, oil-channel to the other, as also from the ends of the box to the first adjacent chain-oiler channel. The object in forming the wells so that the oil circulates from the
 10 outer edge to the first adjacent well or channel, is to avoid a difficulty due to the fact that, any unevenness in the shaft or journal, caused from wear or from imperfect workmanship, may cause the oil to flow to one end
 15 of the box more rapidly than to the other, thereby robbing one well or channel and flooding the other, and ultimately causing the oil to flow out through that end of the box which is getting the most rapid feed.

20 The body proper of the mandrel forms, in the metal cast about it, the bearing surfaces for the shaft as can be plainly seen by reference to the drawings.

What I claim as my invention is—

25 1. A mandrel for casting the metal bearing surfaces in the journal boxes, the same consisting of a semi-cylindrical portion provided at its center with a semi-circular projection, and with longitudinal strips having their
 30 outer faces inclined upward from the annular projection and extending from said central projection and at right angles thereto so as to form connecting oil channels in the metal molded about them, the channels formed by
 35 the longitudinal strips having inclined bottoms, and said semi-cylindrical portion being adapted to form bearing surfaces for the shaft in the metal molded about it, substantially as described.

2. A mandrel for casting the metal bearing surfaces in journal boxes, the same consisting of a semi-cylindrical portion provided at its center, and at each end, with semi-circular projections; and with longitudinally inclined strips extending from said central projection to said end projections so as to form connecting oil channels in the metal molded about them; and said semi-cylindrical portion being adapted to form bearing surfaces for the shaft in the metal molded about it, substantially as described.

3. An improved article of manufacture, to wit, a journal box provided with babbitted bearing surfaces cast therein, and provided with lateral and longitudinal oil channels connected together, the latter inclined toward the center so as to drain all oil into the central lateral channel, substantially as described.

4. A mandrel for casting the metal bearing surfaces in journal boxes, the same consisting of a semi-cylindrical portion having a flat top, and end pieces for confining the molten metal during the molding operation, and provided with semi-circular projections and longitudinal, inclined strips, connecting the same; said projections and strips being adapted to form connecting oil channels in the metal molded about them; and said semi-cylindrical portion being adapted to form bearing surfaces for the shaft in the metal molded about it, substantially as described.

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

PHILETUS WARREN GATES.

Witnesses:

JOHN J. BREWIS,
 JAS. L. RIPPEY, Jr.