

(No Model.)

2 Sheets—Sheet 1.

W. W. WORSWICK.

JOURNAL BOX.

No. 362,864.

Patented May 10, 1887.

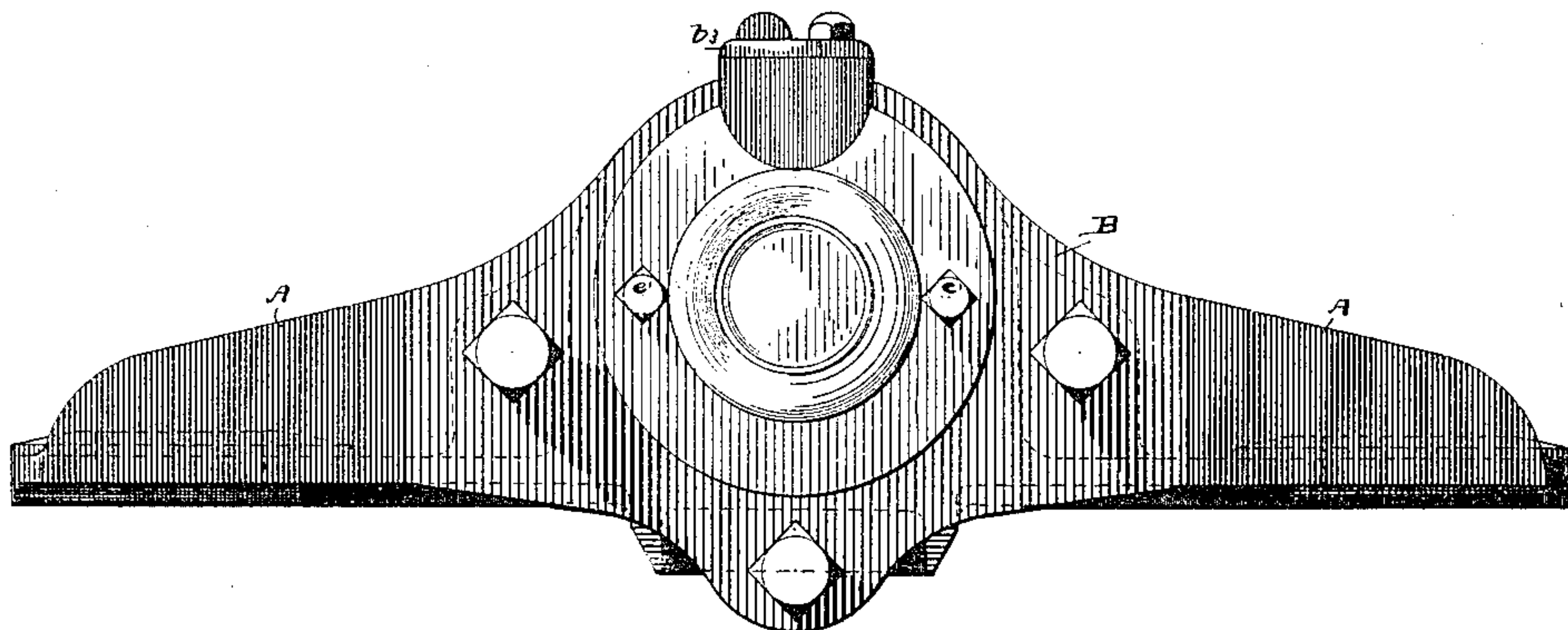


Fig. 1.

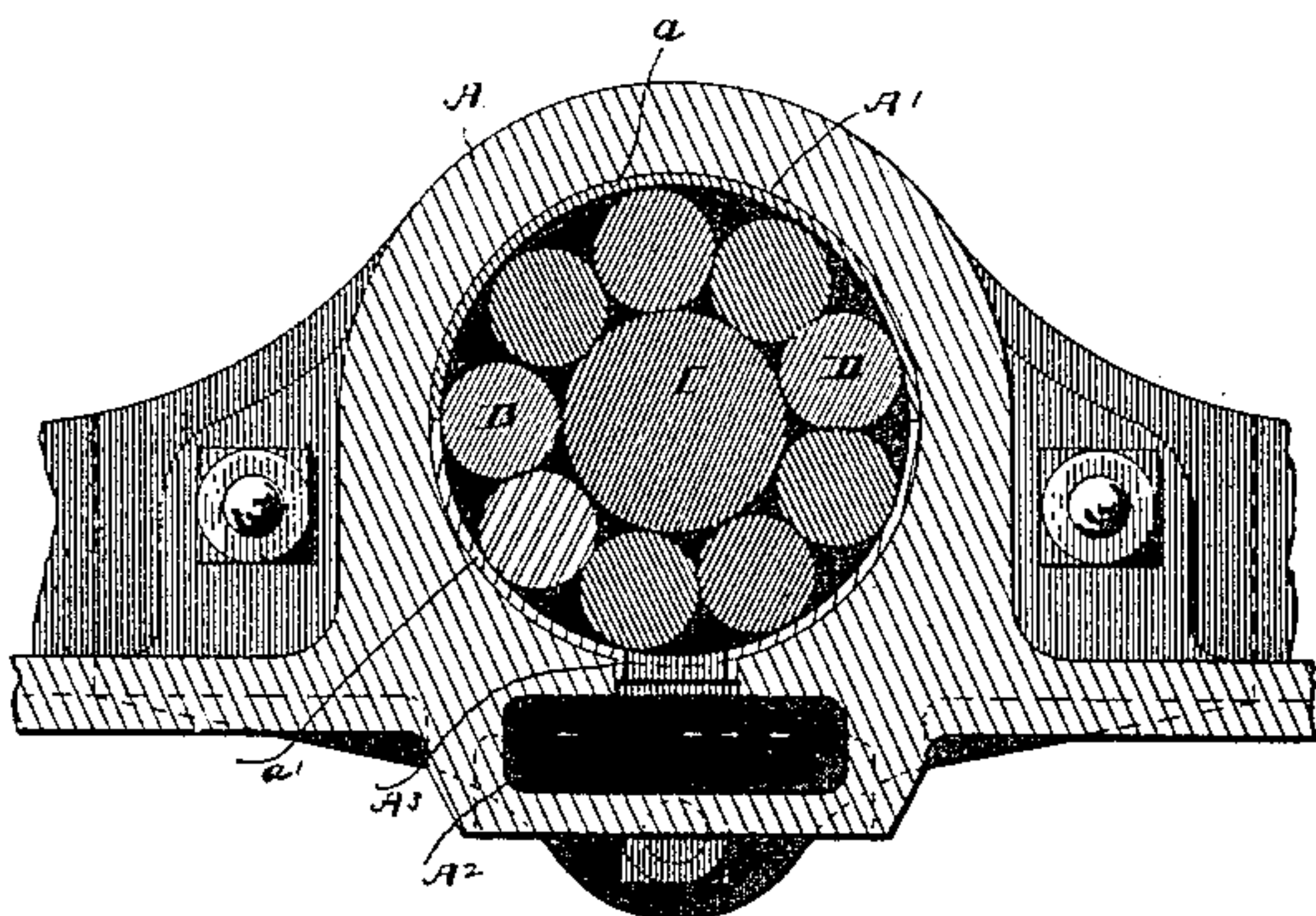


Fig. 2.

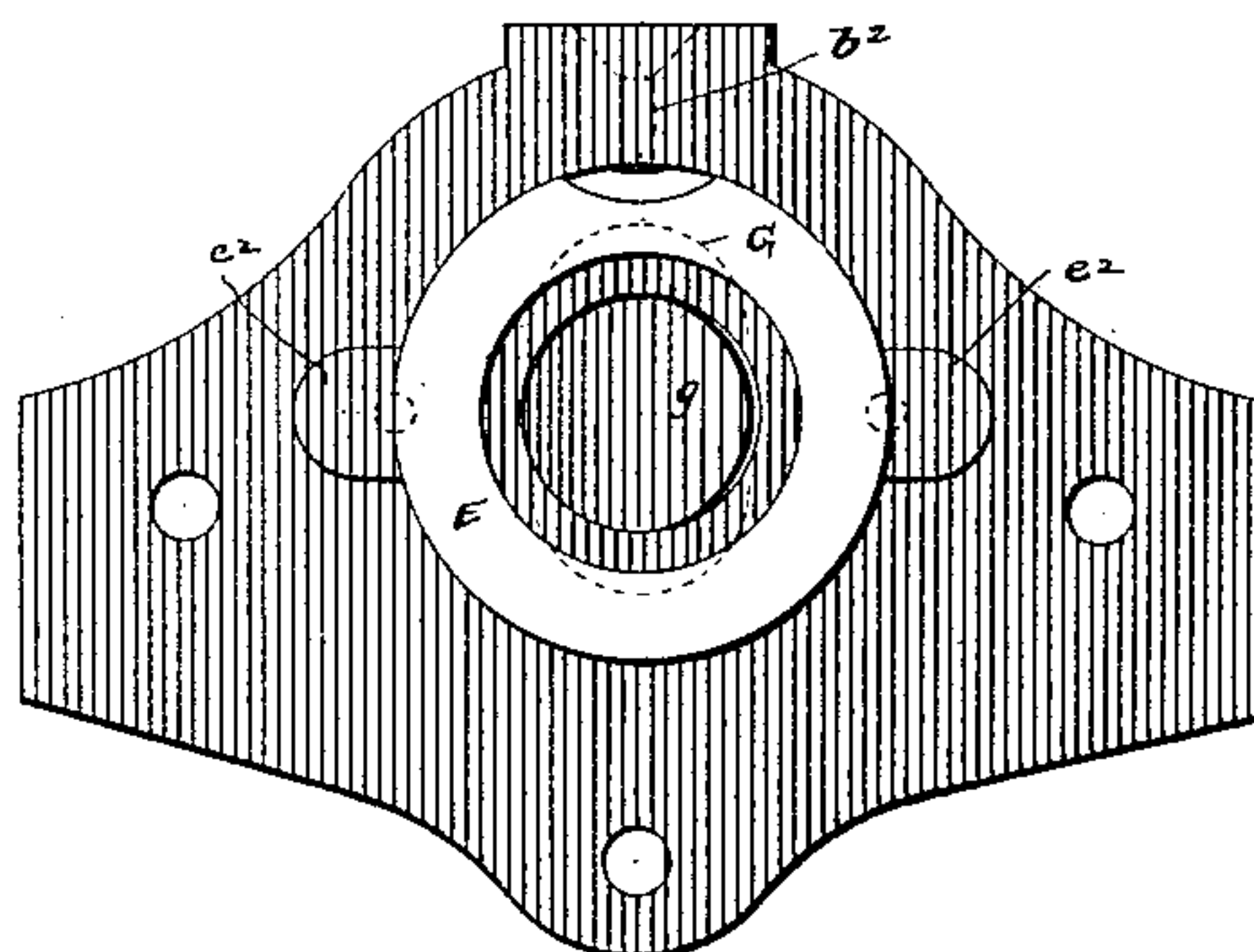


Fig. 3.

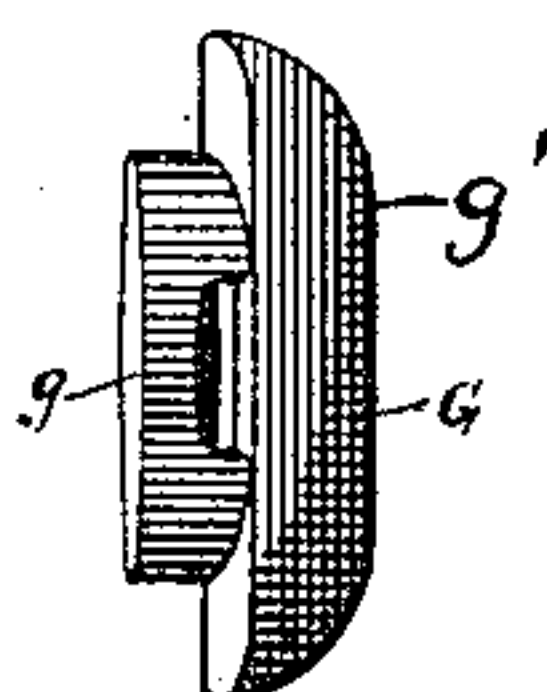


Fig. 4.

WITNESSES

W. S. Amstutz

Geo. H. King

William W. Worswick INVENTOR

Leggett & Leggett
Attorneys

(No Model.)

2 Sheets—Sheet 2

W. W. WORSWICK.

JOURNAL BOX.

No. 362,864.

Patented May 10, 1887.

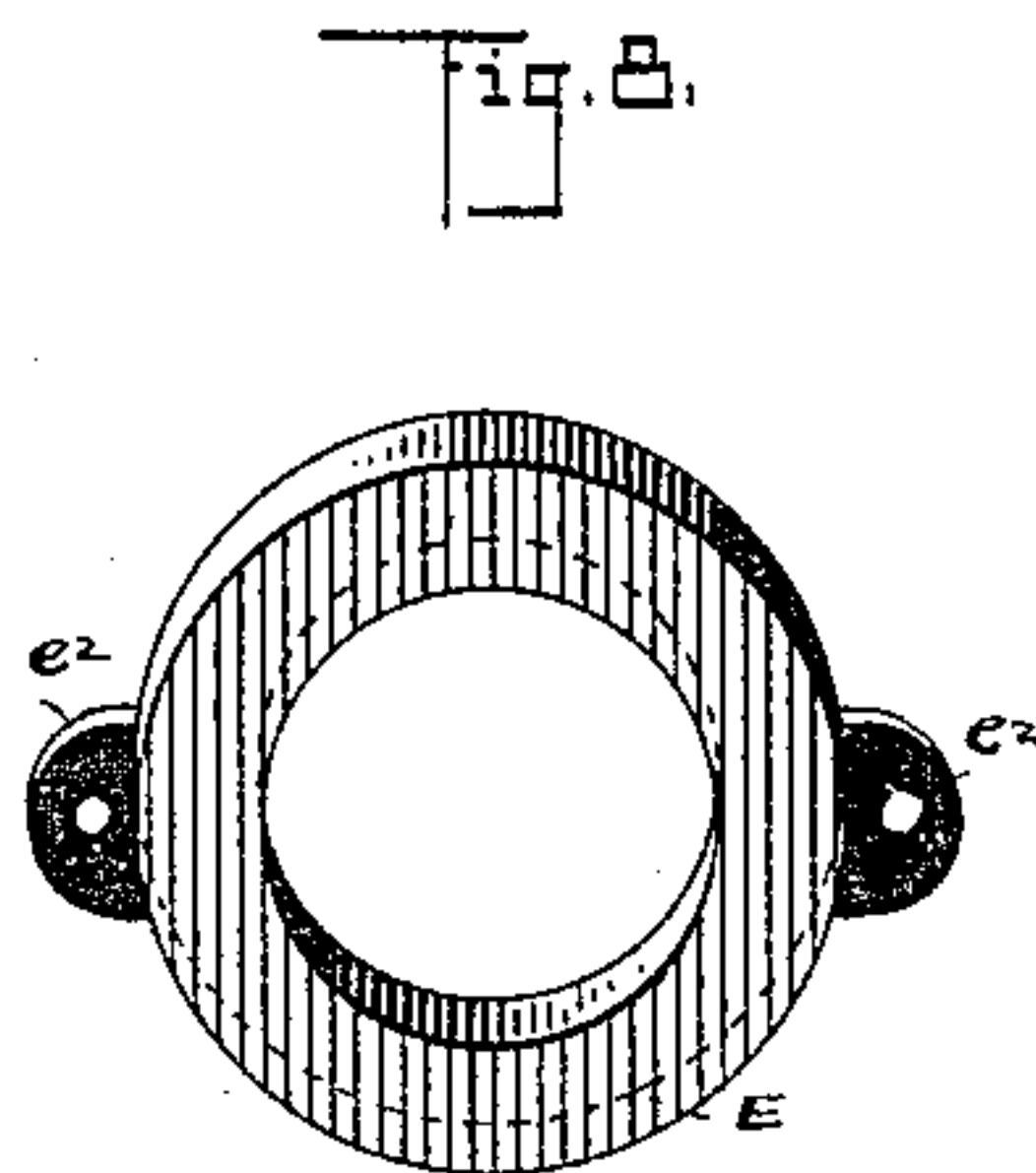
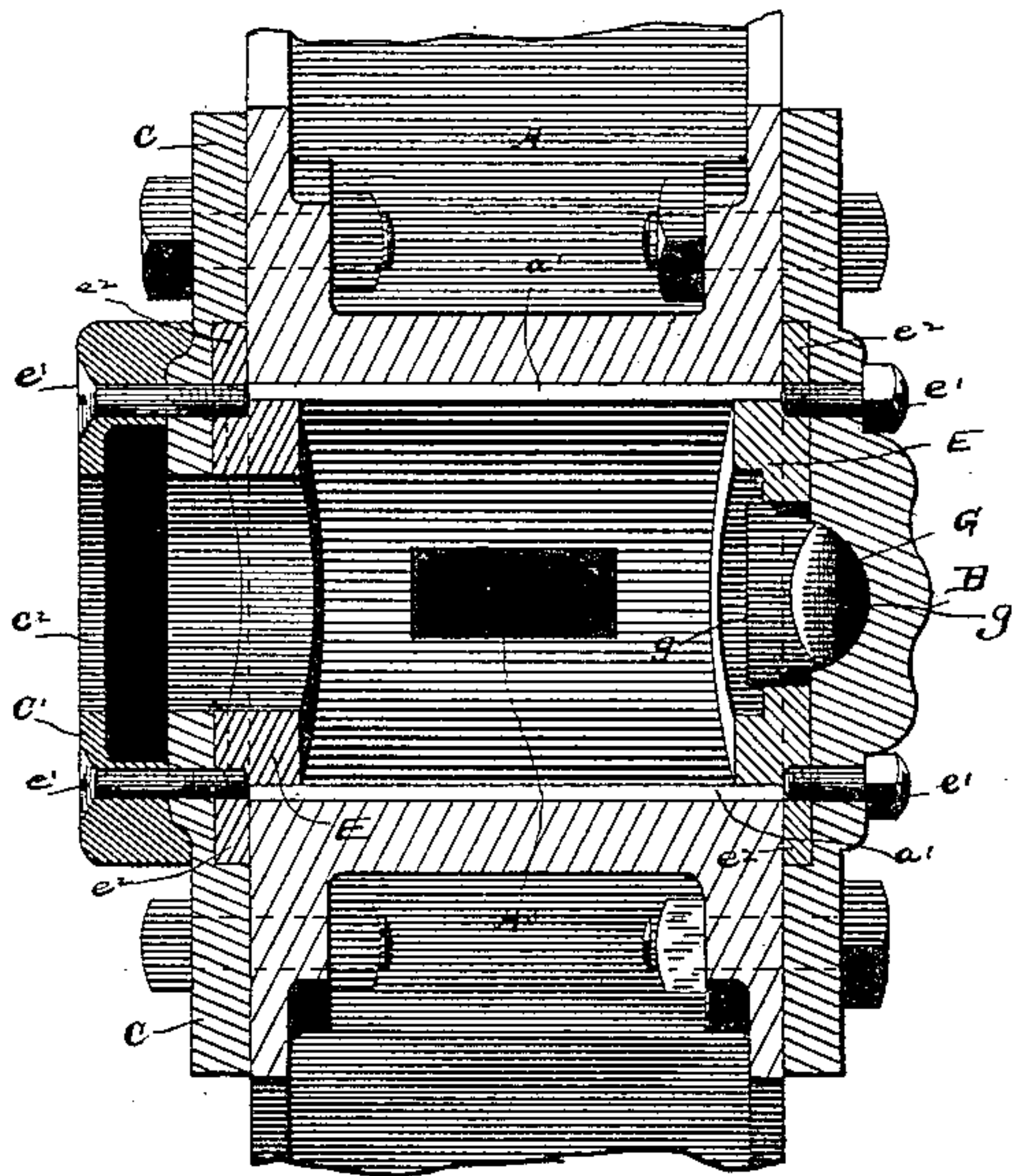
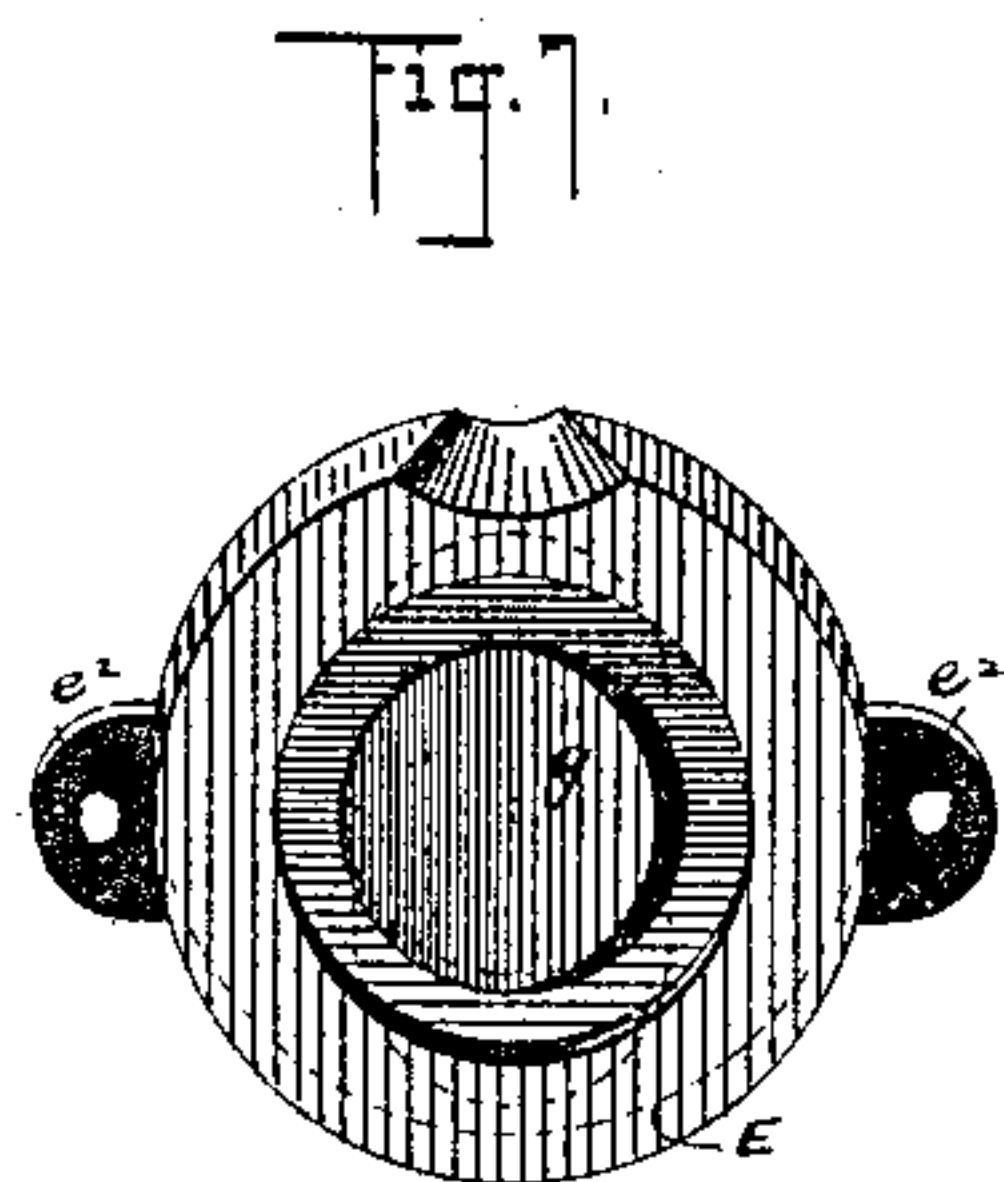
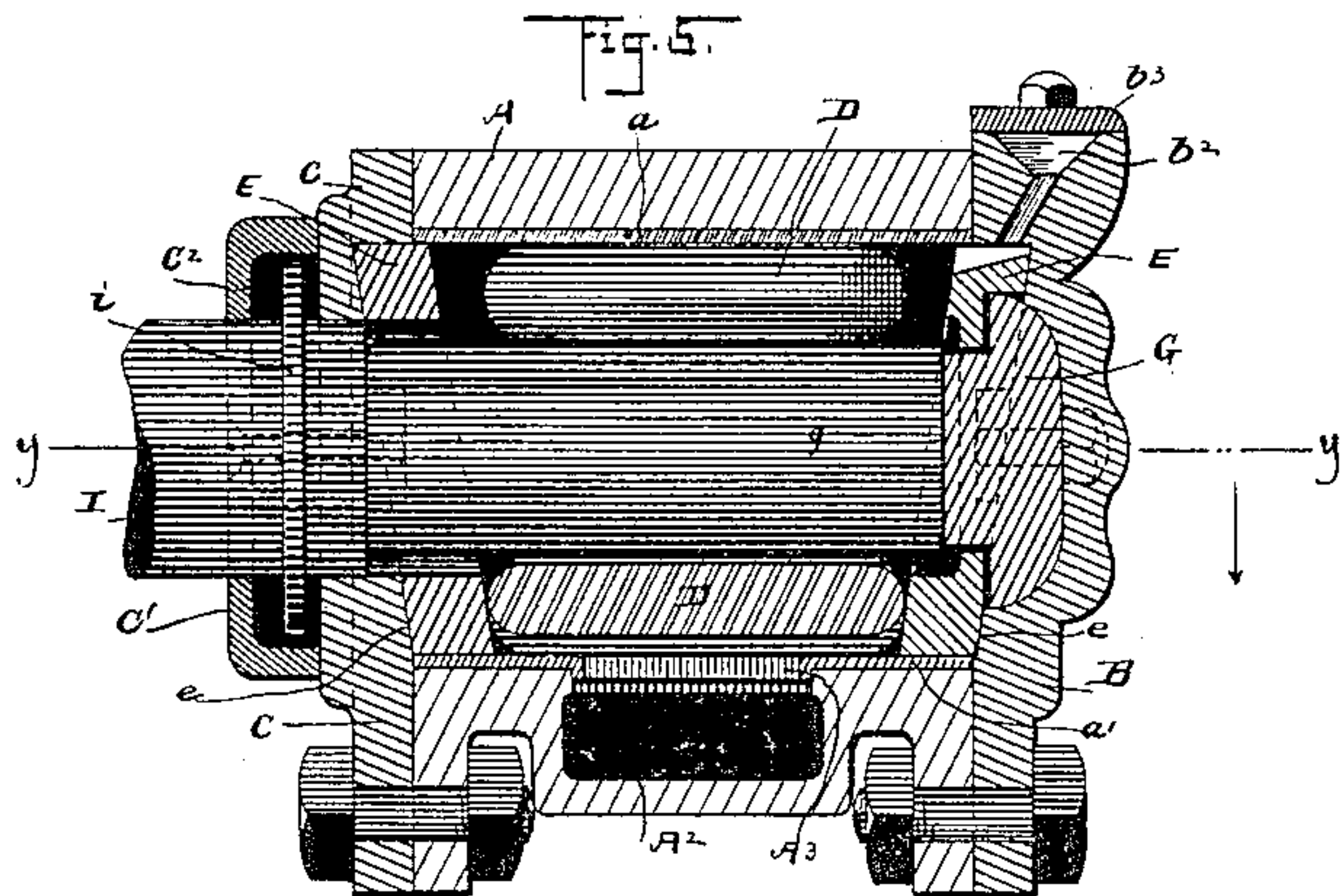


Fig. 6.

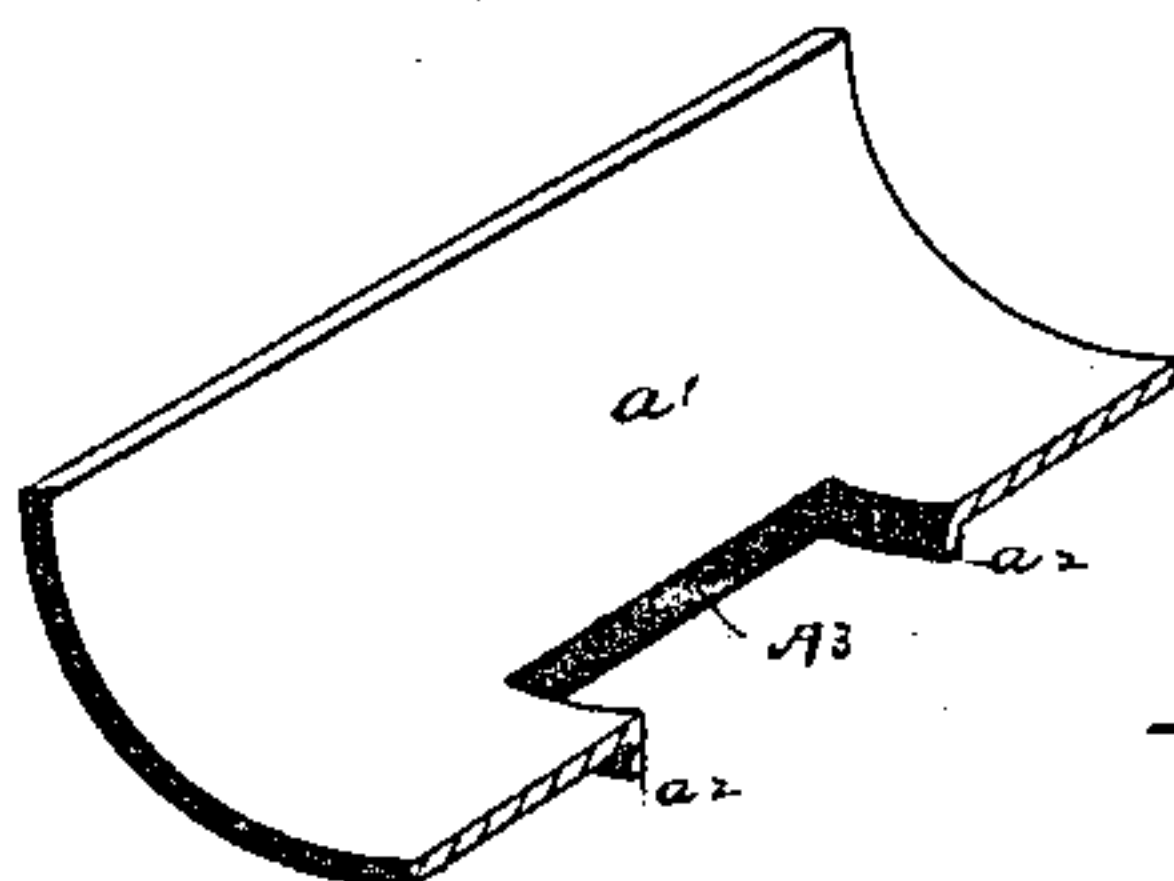


Fig. 9.

WITNESSES

N. S. Amstrong
Geo. W. King

William W. Worswick INVENTOR

By
Leggett & Leggett

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM W. WORSWICK, OF CLEVELAND, OHIO.

JOURNAL-BOX.

SPECIFICATION forming part of Letters Patent No. 362,864, dated May 10, 1887.

Application filed October 18, 1886. Serial No. 216,529. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. WORSWICK, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in 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 pertains to make and use the same.

My invention relates to improvements in journal-boxes designed more especially for street-cars; and it consists in certain features of construction and in combination of parts, hereinafter described, and pointed out in the claims.

My present invention is designed as an improvement on a journal-box for which United States Letters Patent No. 322,032 were granted to me July 14, 1885.

My present improvement consists, first, in the manner of securing lining-plates in the box; second, in providing cam-rings made detachable from the end plates; third, in providing a rocking end bearing for the axle, and, fourth, in providing a new device for excluding dust from the journal-box and retaining the oil in the same.

In the accompanying drawings, Figure 1 is a side elevation of my improved journal-box seen from the outside. Fig. 2 is an elevation in section through the center of the box. Fig. 3 is an elevation showing the inside of the front plate. Fig. 4 is a view in perspective of the rocking plate that forms an end bearing for the axle. Fig. 5 is an elevation in longitudinal section through the center of the box. Fig. 6 is a plan view of the lower half of the box. Fig. 7 is an end elevation of the cam-ring and rocking plate. Fig. 8 is an end elevation of the cam-ring. Fig. 9 is a view in perspective, in section, of the lower lining-plate.

A represents the body of the box, to which are bolted the end plates, B and C. The box has a cylindrical bore, A' , with a chamber, A^2 , below, forming an oil-well, with an opening, A^3 , of considerable size leading from the well into the bore of the box. The bore A' has lining-plates a and a' , preferably of steel. The lower plate has an opening punched in the bottom thereof to correspond with the opening A^3 , and the metal is pressed downward

and formed into a depending flange, a^2 , that fits inside the opening A^3 . In assembling the parts the upper edges of the plate a' are pressed toward each other, and the plate slid endwise into the box until the flange a^2 is over the hole A^3 . The plate may then be pressed downward to its seat, after which the upper plate, a , is driven in endwise. With this construction the lining-plates are held from turning in the box by means of the flange a^2 . The lower plate is subject to so little wear that it will usually last as long as the body of the box. The plate a , that sustains the wear, can be driven out and a new one inserted at any time and with little trouble and expense.

D are the anti-friction rollers, the same having rounded ends, as shown more clearly in Fig. 5, and are arranged substantially as heretofore. In my former patent aforesaid cam-rings were cast integral with the end plates of the box. It was found that there was considerable wear on these rings, and that it was desirable to have them adjustable.

As an improvement, I make the cam-rings E separate and set them in annular inclined depressions or grooves e , made, respectively, in the plates B and C. The rings are held in place by cap-screws e' , that screw into ears e^2 of the cam-rings, suitable recesses being made in the plates for receiving the ears. With this construction the cam-rings may be replaced with new ones at a trifling expense, and the depth of the cam-rings may be varied at pleasure and made to extend more or less into the box, as may be desired, according to the length of the rollers. By this means the different lengths of boxes used may be had for the same castings simply by using cam-rings of the necessary depth. The end-thrust of the axle in turning sharp corners is considerable, and this heretofore has been sustained by the plate B; also, the cramping of the parts brings the wear on the side of the plate B that is next to the adjacent end of the car, and this side of the plate is soon worn away, leaving the side of the plate toward the middle of the car intact. I have therefore provided a rocking plate, G, with a raised part, g , that fits loosely inside the cam-rings, abutting the end of the axle. The part g' is round in cross-section, and is seated in a correspondingly-shaped recess made on the inner face of the plate B. As the parts

are cramped in turning a curve the plate G can rock a trifle, and thereby the bearing-surface *g* is always presented fairly to the end of the axle. The rocking plate G is of chilled cast metal, and may be renewed at a trifling cost.

The plate C is bored to fit easily on the axle, and from the bottom of the bore to the bottom of the inside of the box is a space about equal in depth to the diameter of a roll, D, and the space may be filled with oil, through which latter the rolls pass and carry the oil up and distribute it on the bearing-surface of the box and axle. An oil-hole, *b*², is provided, the latter being closed by a cap, *b*³, and is located in such position that in supplying the box with oil the plate G is lubricated. The oil-well A² is not so much for containing an extra quantity of oil as for forming a cavity into which the dust and dirt may gravitate. This well should be cleaned occasionally, and this is easily done by taking off the plate B and removing the one of the rolls D that happens to be at the bottom of the box.

Owing to the frequent sudden lurches of the car, the oil from the box is likely to be ejected where the plate C fits, as aforesaid, loosely around the axle, to prevent which, and to exclude as far as possible dust, I have devised the following: A cap, C', is bolted to the outside of the plate C. The cap is bored through the center to fit easily over the axle. The inner face of the cap has an annular chamber, C², somewhat larger in diameter than the axle. A collar, *i*, is made fast to the axle I, so as to revolve with the latter. The collar may be of metal or any suitable material, and a snug fit is all that is required to hold it in place, as the collar is not designed to come in contact with either of the plates C or C', between which it is located about midway. The periphery of the collar comes as near to the inner periphery of the overhanging part of the caps C' as may be without contact. There is intended to be space enough on either side of the collar, between it and the adjacent plates C and C', so that the collar does not collide with these plates with the end movement of the axle. When oil is ejected from the box, as aforesaid, it strikes the collar *i* and falls into the bottom of the chamber C². Dust, also, in entering strikes the collar on the outside and falls to the bottom of the chamber C². The accumulation of dust and oil in the bottom of this chamber in time forms a soft packing, and

it is found that very little dust enters the journal-box and no oil escapes therefrom farther than the chamber C². It will be seen that there is no wear or friction about the collar *i*, and it is therefore durable.

The device is quite inexpensive, and is found to be effective.

What I claim is—

1. The combination, with a journal-box provided with anti-friction rollers, and having an oil-well located at the bottom of the box, of lining-plates inside the bore of the box, the one lining-plate having a depending flange adapted to fit into the mouth of the oil-well, substantially as set forth.

2. The combination, with a journal-box provided with anti-friction rollers, end plates secured to the box, the parts being arranged substantially as indicated, of detachable cam-rings secured to the respective end plates, said cam-rings being located in position to engage the ends of the anti-friction rollers and provided with side ears, by means of which they are removably secured to the end plates of the boxes, substantially as set forth.

3. The combination, with a journal-box, the same having anti-friction rollers, and end plates secured to the box, of detachable cam-rings seated in depressions made in the inner faces of the respective end plates and provided with side ears, through which the securing-bolts pass, substantially as set forth.

4. The combination, with a journal-box and an end plate having a concave seat therein, of a rocking plate having a convex projection adapted to rest within the concave seat in the end plate and a flat face, the latter adapted to form a bearing for the axle, substantially as set forth.

5. The combination, with a journal-box and an end plate, the latter having a concave recess on its inner face, of a rocking plate having a flat bearing-face for the end of the axle and a convex projection, the latter adapted to fit within the concave seat on the inner face of the end plate, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 19th day of July, 1886.

WILLIAM W. WORSWICK.

Witnesses:

CHAS. H. DORER,
ALBERT E. LYNCH.