

(No Model.)

4 Sheets—Sheet 1.

W. O. DUNBAR.
AXLE LUBRICATOR.

No. 397,901.

Patented Feb. 19, 1889.

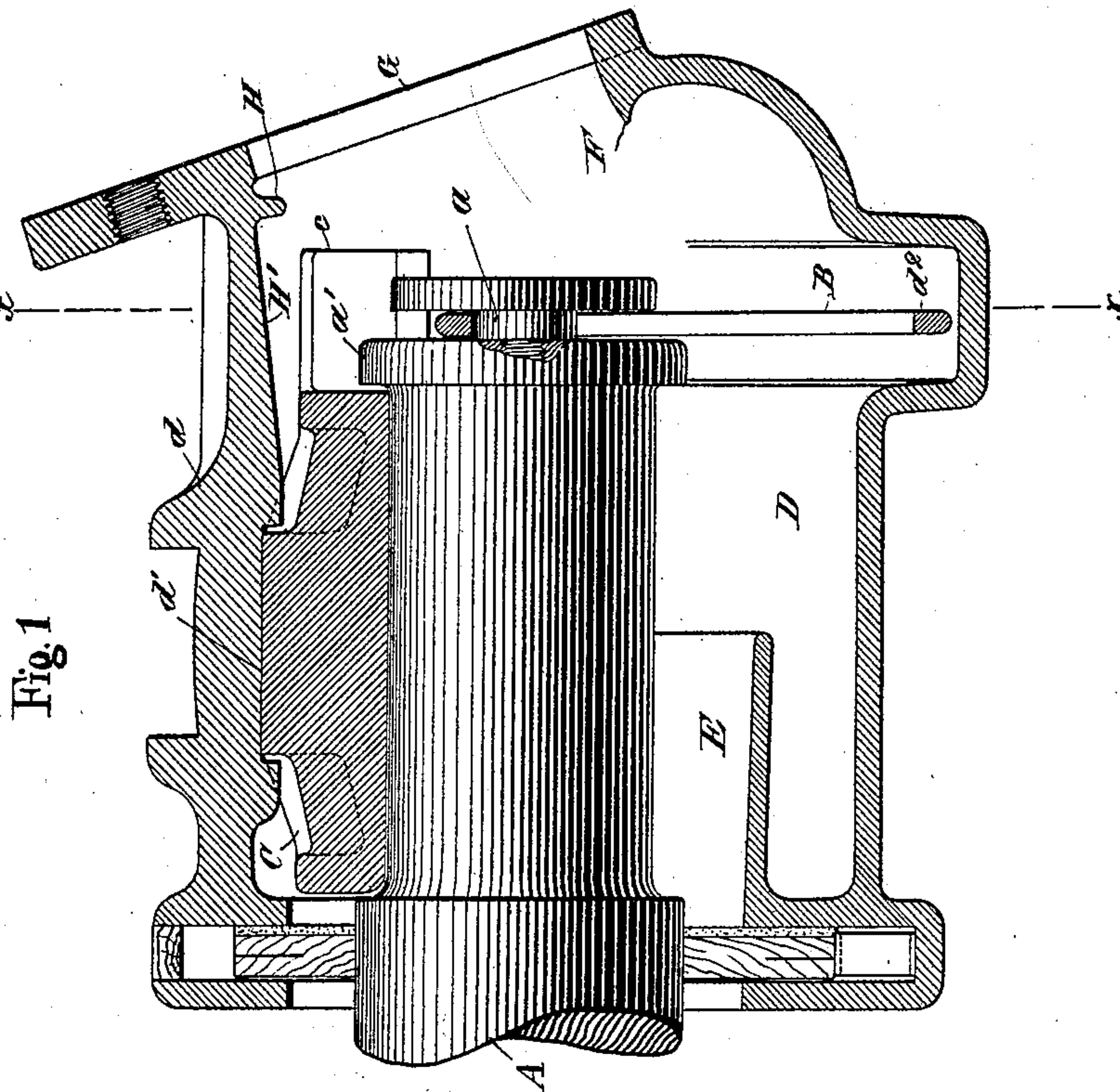


Fig. 1

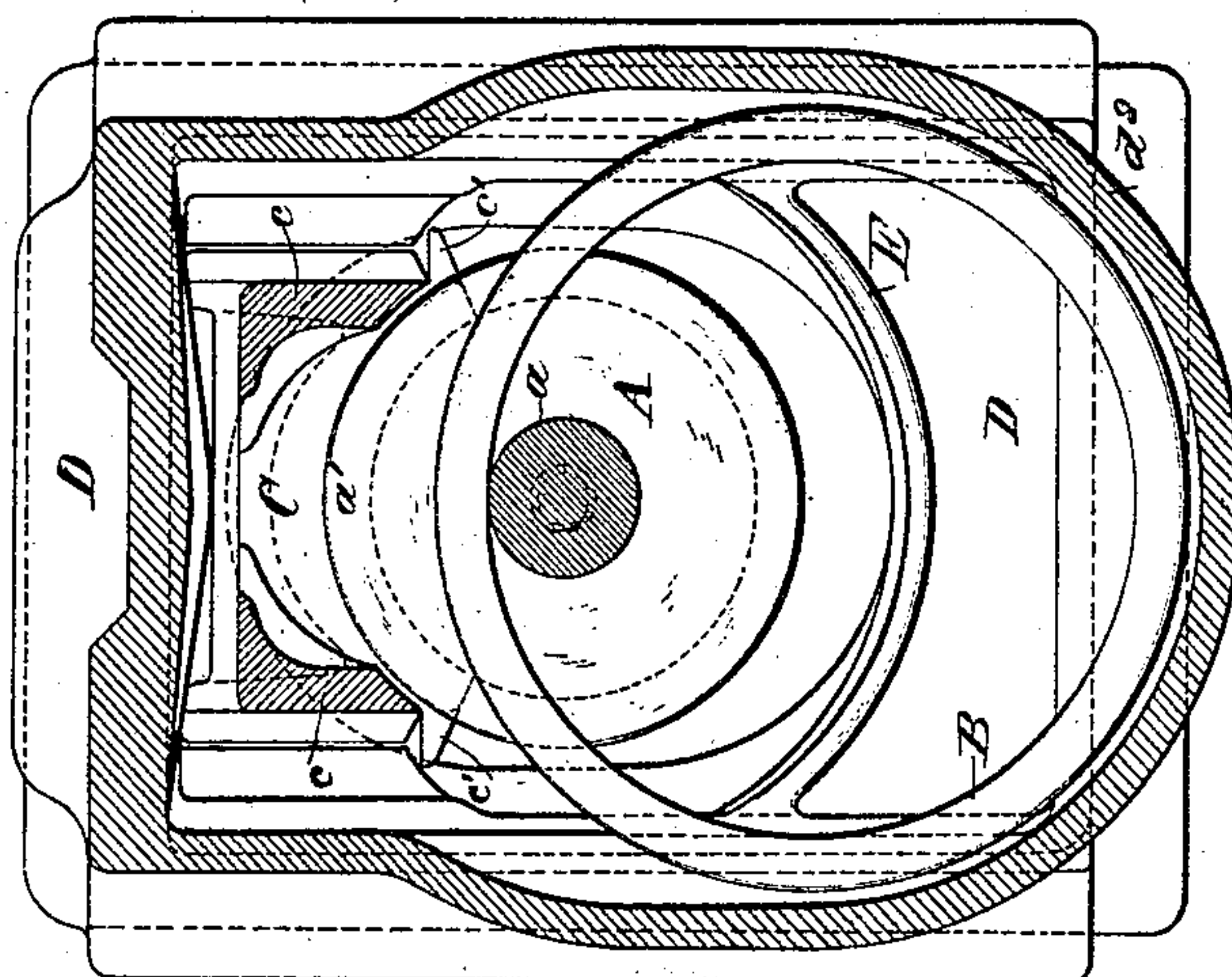


Fig. 2

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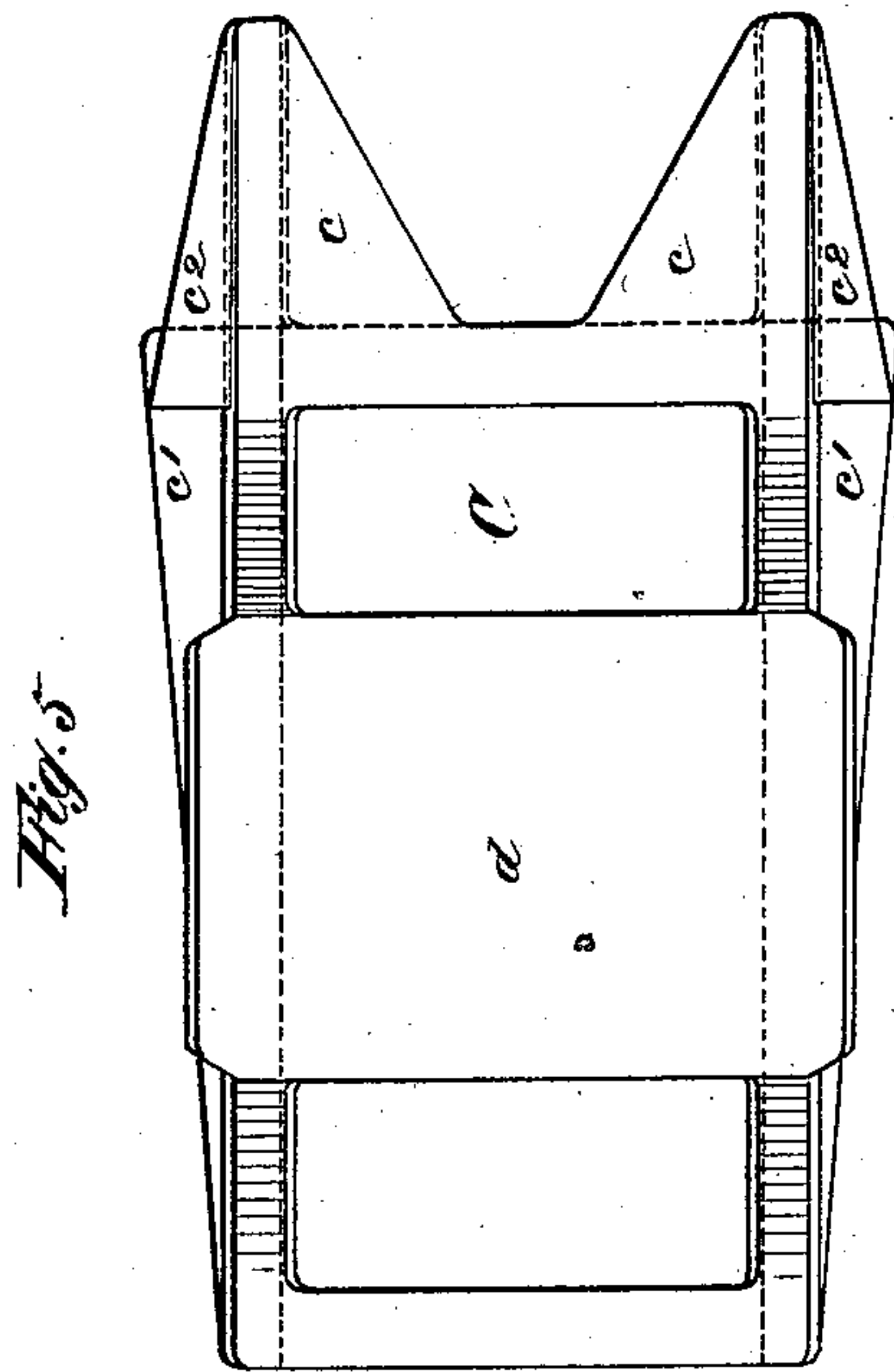
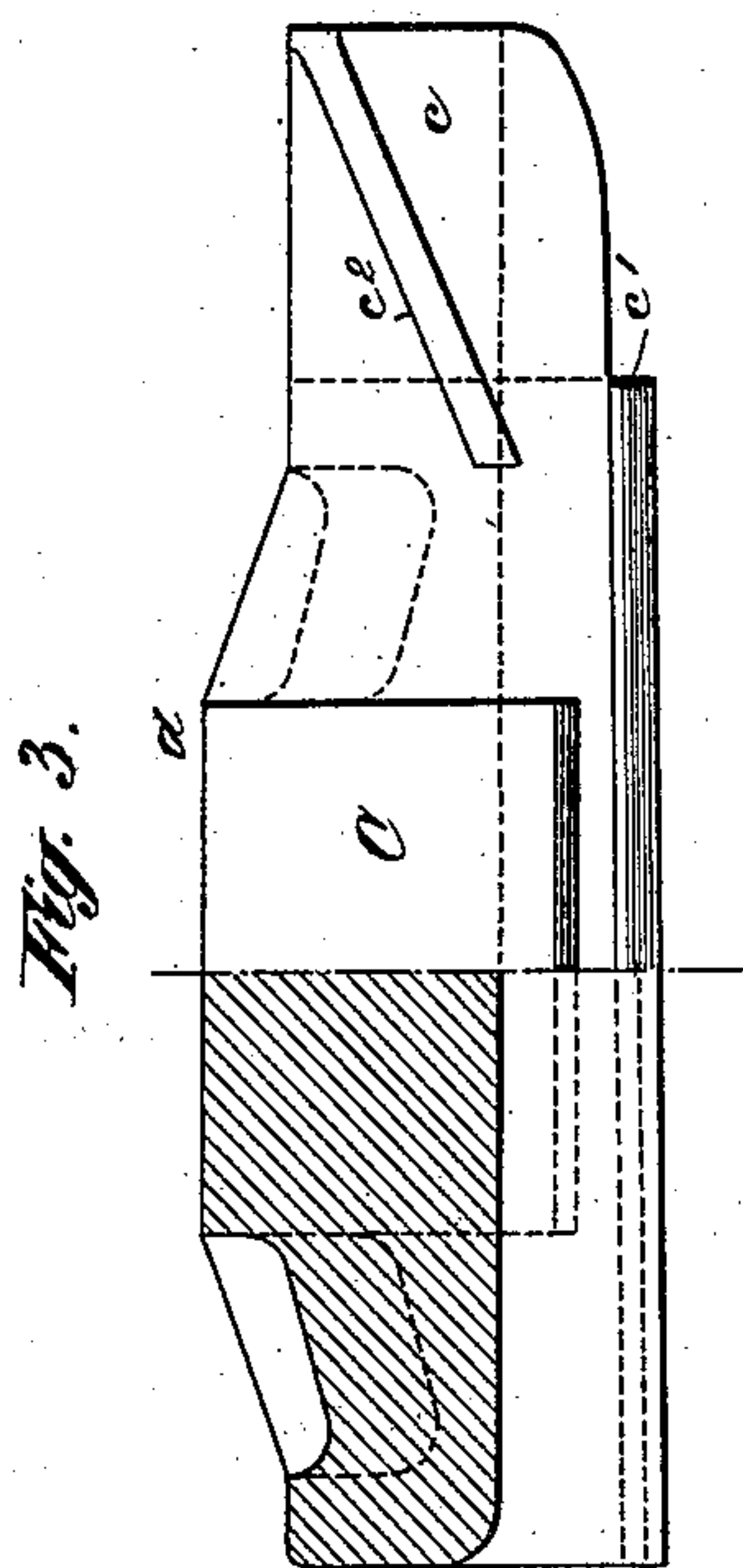
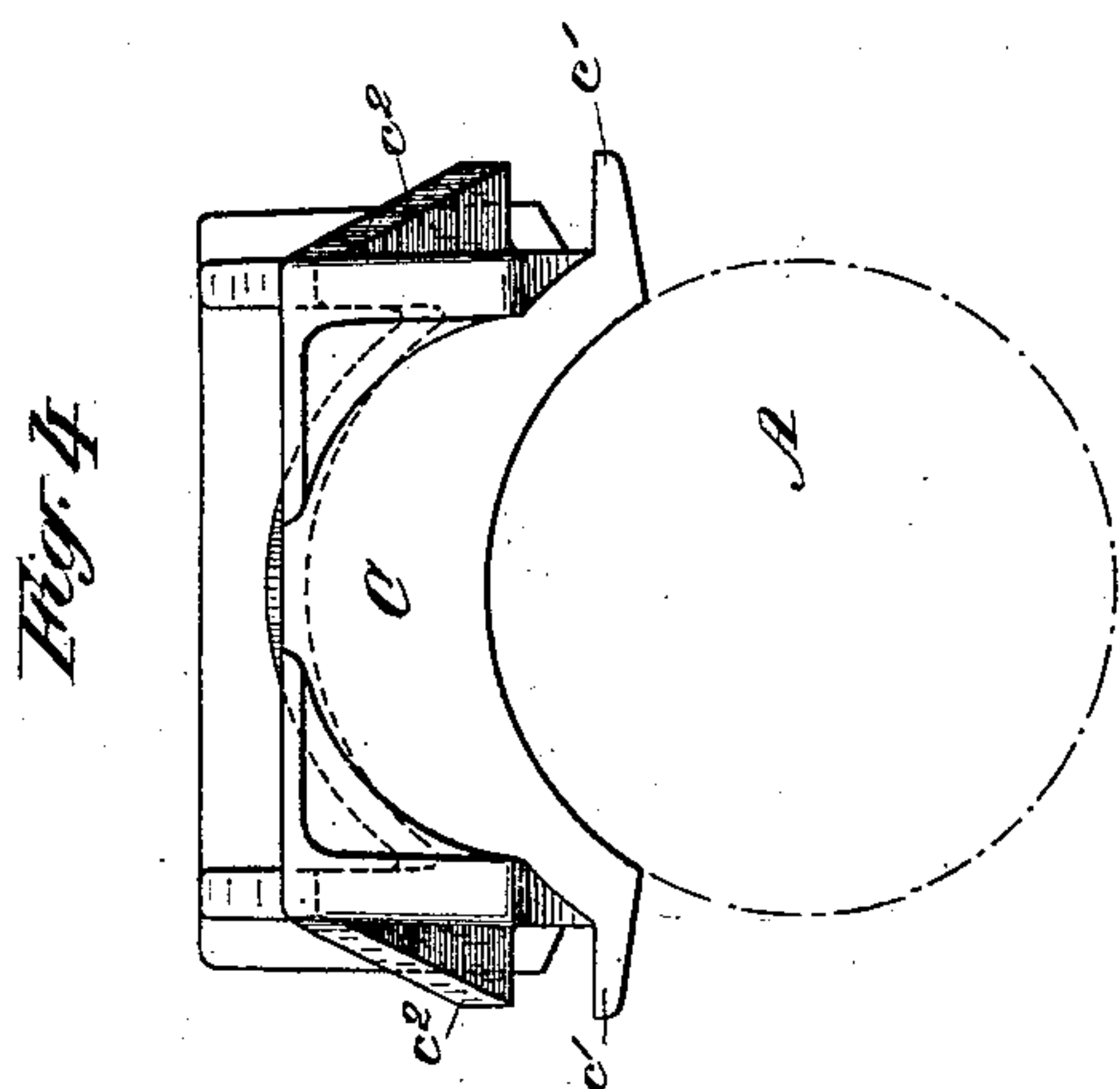
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Fig: 6.

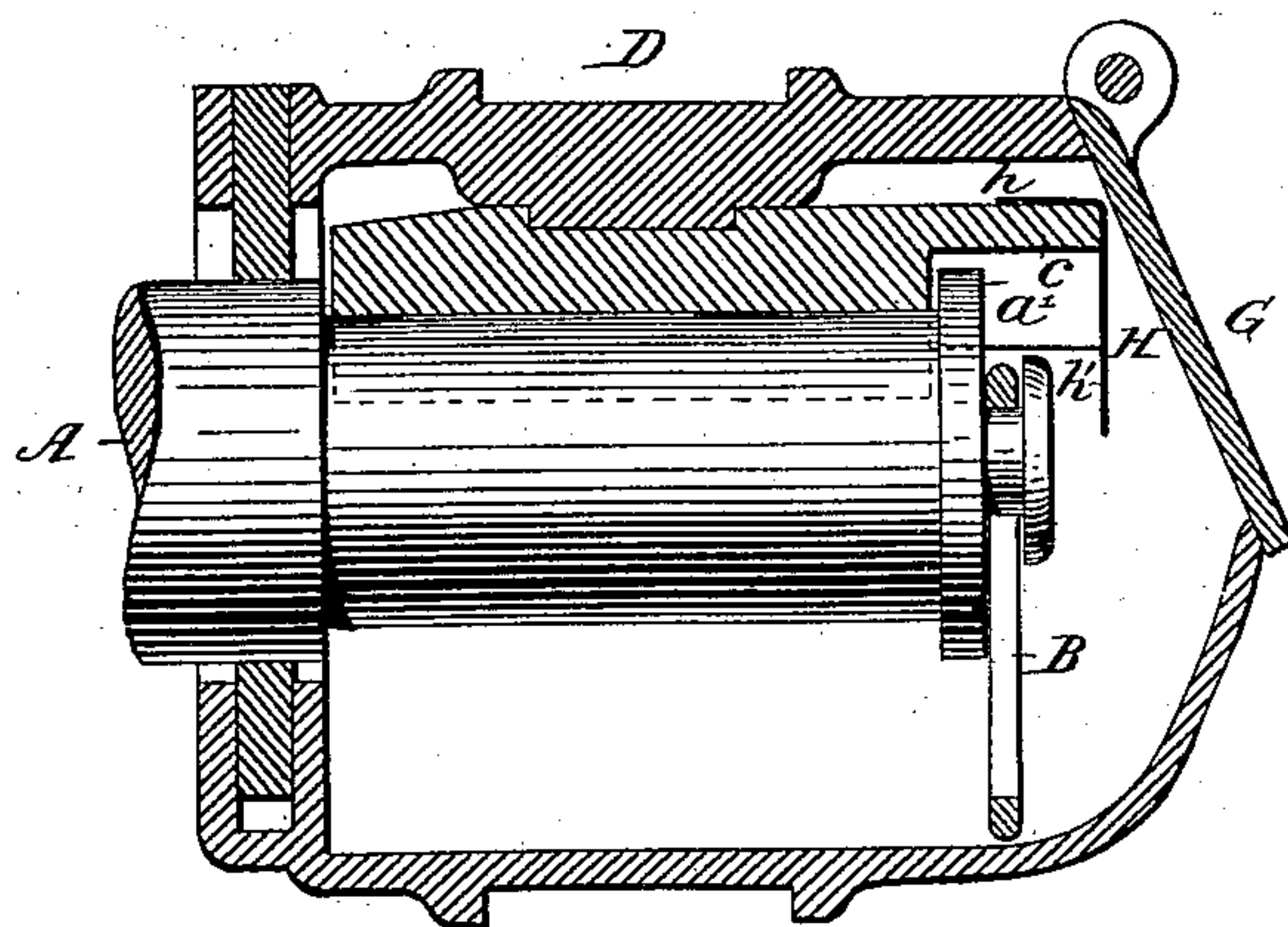
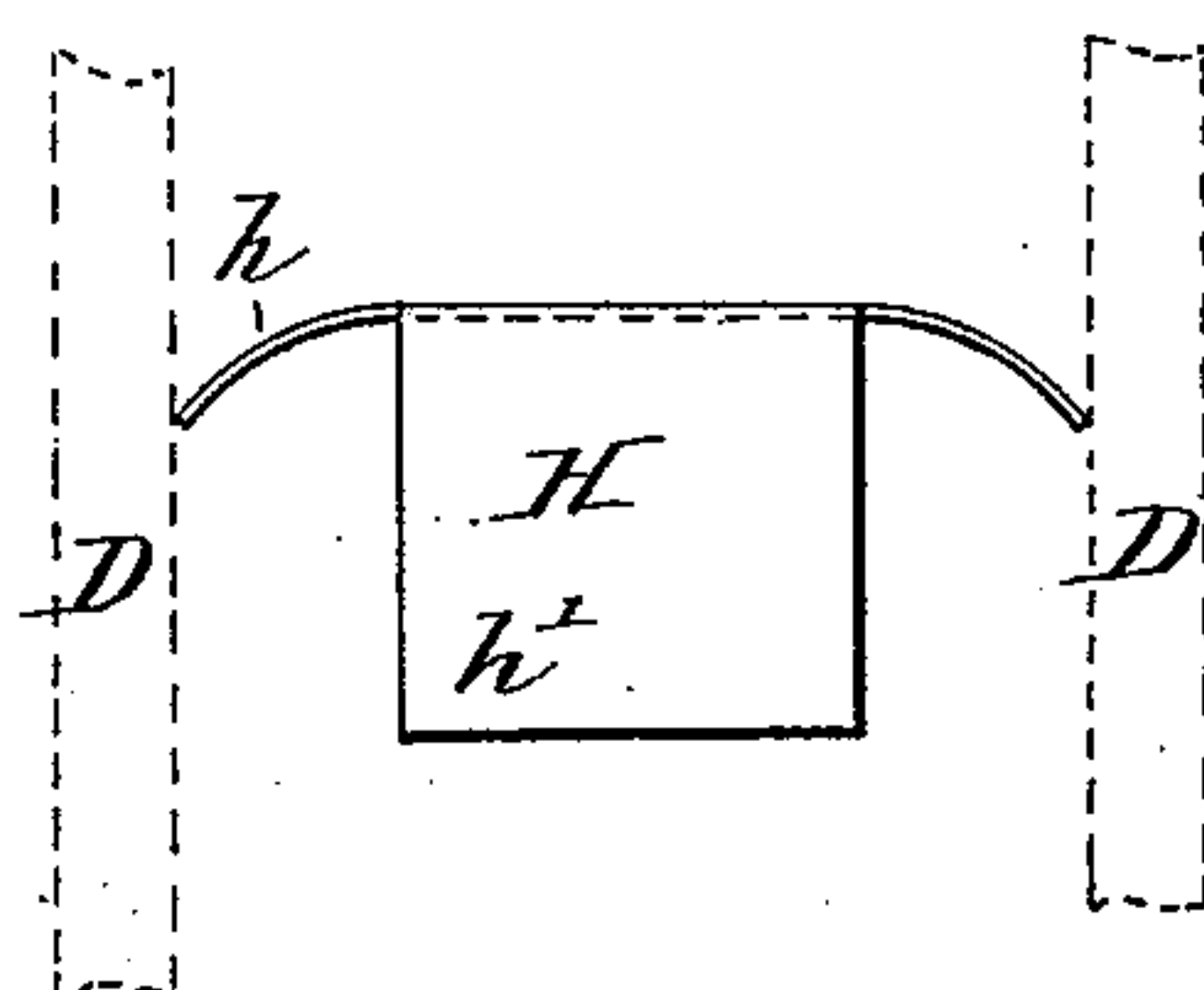


Fig: 7.



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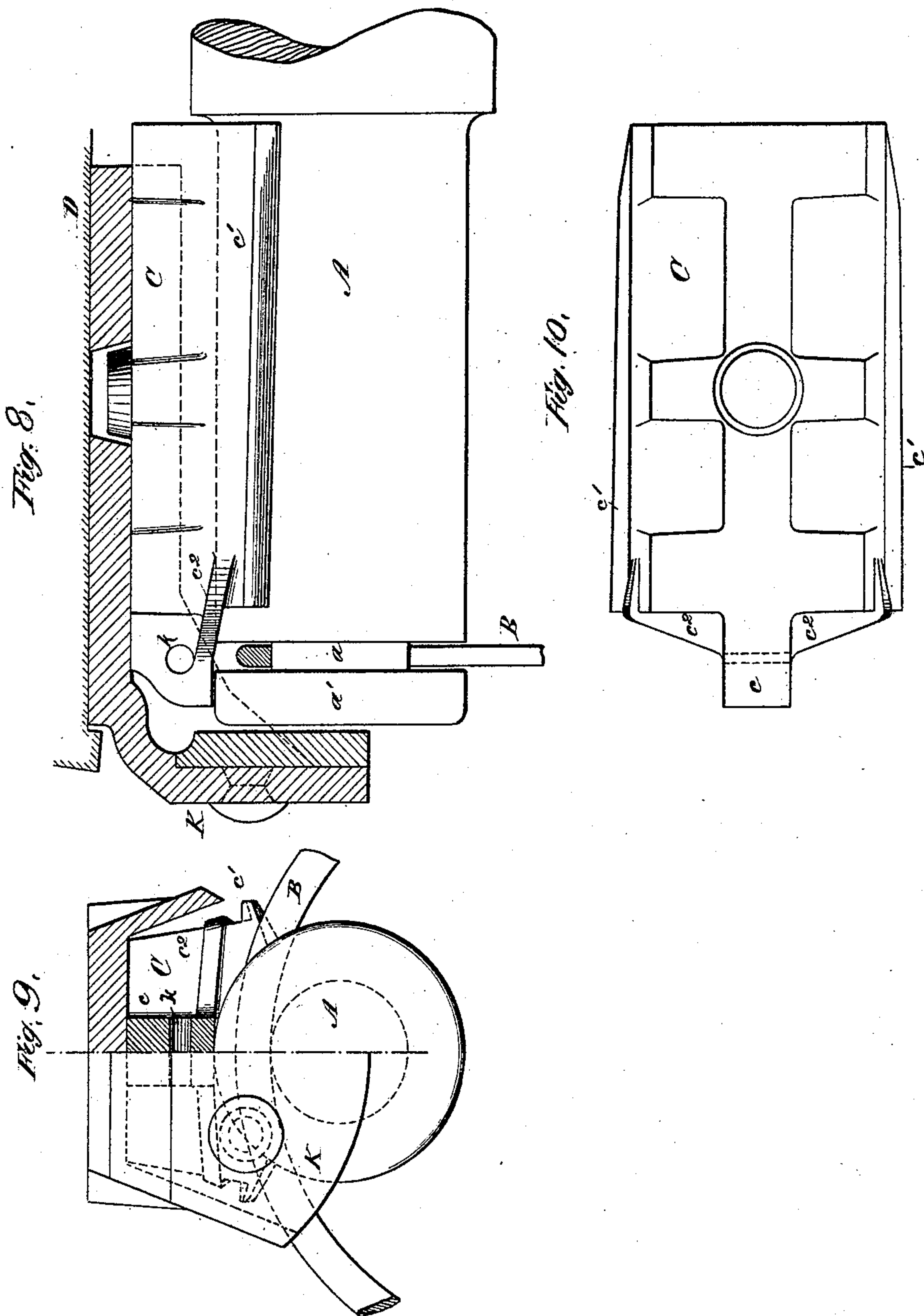
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4 Sheets—Sheet 4.

W. O. DUNBAR.
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No. 397,901.

Patented Feb. 19, 1889.



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UNITED STATES PATENT OFFICE.

WILLIAM OTIS DUNBAR, OF ALTOONA, PENNSYLVANIA.

AXLE-LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 397,901, dated February 19, 1889.

Application filed June 6, 1888. Serial No. 276,248. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM OTIS DUNBAR, a citizen of the United States, and a resident of Altoona, county of Blair, and State of Pennsylvania, have invented certain new and useful Improvements in Mechanism for Effecting the Lubrication of Journals and Journal-Bearings, of which the following is a specification.

10 In an application for Letters Patent filed by me in the United States Patent Office on or about October 26, 1887, Serial No. 253,434, and patented November 13, 1888, No. 392,593, I have shown and described means for effect-
15 ing the lubrication of the journals and journal-bearings of the axles of cars, in which a ring mounted upon the journal, or upon a stud projecting from its end, is caused by its rotation to raise the lubricant from the bot-
20 tom of the box in which the journal-bearing is arranged and deposit it upon the journal itself, or upon a flange secured either to its end or to the stud, the distribution of the lubricant thus raised along the journal being afterward
25 effected by means of projections and shelves or troughs upon the journal-bearing, the former of which serves to remove it from the surface where deposited and to carry it to the
30 latter, which in turn conducts it to the journal and deposits it along the same. With these devices are also employed a horizontal partition, which is arranged across the box containing the journal-bearing, near the bot-
35 tom thereof, to prevent the spilling or wasting of the lubricant as the box is thrown violently from side to side by the action of the car when in motion.

My present invention, while applicable in part to journals and journal-bearings gener-
40 ally, is designed more especially for use in connection with the forms shown in the application aforesaid, upon which it is intended as an improvement, and has for its object not only the increasing of the efficiency of the
45 same, but also the simplification of some of the parts thereof.

To this end it consists, first, in a journal-bearing which is not only provided with the parts for removing the lubricant from the sur-
50 face upon which it is deposited and the shelves or troughs by means of which it is distributed along the journal, but also with supplement-

ary shelves or troughs, whereby the more positive delivery of the lubricant from the former to the latter is insured than was pos- 55
sible with the devices heretofore in use; second, in the box in which the journal-bearing is arranged with its lubricant-holding receptacle and inwardly-projecting flanges or de-
60 flectors for preventing the spilling of the oil when such box is moved violently back and forth, as is frequently done when the car is in rapid motion, and, third, in various other constructions and combinations of parts, all
65 as will hereinafter more fully appear.

Referring to the accompanying drawings, in which my invention is illustrated, Figure 1 is a sectional elevation of a journal-bearing, a box in which such journal-bearing is ar-
70 ranged, and the lubricating-ring, taken longitudinally of the journal, which is also shown in elevation; Fig. 2, a section thereof taken in the line xx of Fig. 1; Fig. 3, a sectional elevation of the journal-bearing detached; Figs. 4 and 5, end and plan views, respect- 75
ively, of the same, also detached, the former showing, in addition, the end of the journal in dotted lines; Fig. 6, a sectional elevation of a journal-bearing, a box in which it is ar-
80 ranged, a lubricating-ring, and a splash-guard of a slightly-modified construction, taken longitudinally of the journal, which is also shown in elevation; Fig. 7, a front elevation of the splash-guard to prevent the escape of the
85 lubricant from the box thrown upward by the ring when in rapid rotation; Fig. 8, a side elevation of a slightly-modified form of journal-bearing and journal, with a stop for the
90 end of the shaft shown in section; Fig. 9, an end elevation thereof with the stop partly in section, and Fig. 10 a plan view of the journal-bearing shown in these two last figures detached.

In all the figures like letters are employed to designate corresponding parts. 95

A indicates a journal, which is or may be provided at or near its end with a reduced portion, a , for reception of the lubricating-
ring B, which is mounted thereon; and a' , a flange which may be secured to or formed on
100 such journal adjacent to the reduced portion thereof, if preferred. The reduced portion a may be formed either integral with the journal or in the form of an independent stud se-

cured thereto, preferably by screwing into its end, as shown, for instance, in Fig. 1. The several parts as thus referred to, however, being preferably of the forms of those shown in the application mentioned, require no further description herein.

C indicates the journal-bearing, which may be made in any approved form, and is provided upon its front end with projections c , which are so disposed as to bring their lower edges into contact either with the flange a' or other appropriate surface where such flange is omitted to remove the lubricant therefrom when brought up and delivered upon it by the lubricating-ring B.

Projecting outward from the lower edges of the journal-bearing are the shelves c' , which extend the entire length thereof, and are preferably of a gradually-diminishing width from front to rear, the same being provided on their upper sides with grooves, if desired, whereby to convert them into troughs. The under sides of these shelves incline inward and downward from their outer edges to the surface of the bearing which rests upon the journal, and the bearing may have its lower edges either horizontal, as shown in Fig. 3, or inclined slightly downward from front to rear, as shown in Fig. 9. This last arrangement I prefer in practice, however, as the transmission of the lubricant from the point where deposited by the lubricating-ring along the length of the journal is more positive and certain, and the inclined lower edges would to a large extent, if not entirely, make it possible to do away with the shelves along the lower edges of said bearing, if desired. Projecting outward from the outer sides of the projections c , and extending from points near their upper outer corners in an inclined downward direction, are supplementary shelves c^2 , the lower ends of which extend back and over the outer ends of the shelves c' , the object and purpose of which are to more positively insure the carrying back and delivery to said latter shelves of the lubricant thrown upon the sides of the projections by the action of the flange or other surface with which they engage when in rapid rotation.

D indicates the box in which the journal-bearing is arranged, the former being provided with the opening G and cover G' , and the latter being supported in said box in any well-known manner—as, for instance, by a suitable bolster, d , formed upon its upper side, resting within an appropriately-shaped recess, d' , formed in the under side of its top or otherwise, as may be desired. This box, in order to provide for the use of a more shallow construction than has been possible heretofore, is preferably provided in its bottom near its front with a chamber or well, d^2 , for the reception of the lubricant which is placed therein, and also for the lubricating-ring B, which depends from the reduced portion a of the journal, as shown.

Projecting inward from the back of the

box beneath the journal, and extending entirely across from one side to the other, is a flange or deflector, E, for preventing the lubricant from spilling through the orifice between the journal and the box when the latter is thrown violently outward by the motion of the car; and in order to prevent a similar spilling when the car is thrown in the other direction I provide the inner side of the front of the box immediately below the orifice G therein with an inwardly-projecting flange or deflector, F. These flanges or deflectors E and F are preferably inclined downward on their upper sides from the points where they join the box to their inner or free ends, to aid in returning the lubricant that may be thrown upon them back into the reservoir, and the deflector E at the back of the box, in addition, is made to partially surround the journal, as shown, to allow more room between its under side and the bottom of the box for the lubricant to expand into without escaping over its top as it is shaken about than is possible when such flange or deflector is made straight and placed horizontally.

Depending from the under side of the top of the box immediately in the rear of the edge of the opening G is a flange or splash-guard, H, by means of which the lubricant thrown against the top of the box by the lubricating-ring when in rapid rotation is prevented from escaping through said opening; and in order to insure more fully the prevention of this waste the under side of the top of the box from the flange H is inclined downward to the edge of the recess d' , which receives the bolster d on the top of the journal-bearing, as shown at H', whereby any lubricant striking the same is caused to flow down this inclined surface and upon the bearing over which it passes and is returned to the journal.

The flanges or deflectors E and F will preferably be made integrally with the box D, as shown in Figs. 1 and 2; but the splash-guard H may be made either integrally therewith, as shown in the former of said figures, or detachable therefrom, as illustrated in Figs. 6 and 7.

In the manufacture of new boxes it may be convenient to make the splash-guard integrally, as is the case with the flanges or deflectors E and F, since the union of the various parts can be readily effected in the casting operation; but in the case of old boxes which are not provided with this device, and when such would be desirable, it will be necessary to make it separate and afterward secure it in place.

The flange or splash-guard H, when made detachable, is preferably formed from sheet metal, and consists of the strip h , which is slightly longer than the distance between the inner sides of the walls of the box in which it is to be used, and when in place will rest upon the upper side of the projections c of the journal-bearing C, so as to substantially

cover the space between them, when one is provided, with its ends engaging with the inner sides of the walls of the box, a flange or portion, *h'*, slightly narrower than the opening *G*, being secured to the edge of the strip *h* at right angles thereto, so that when adjusted in place it will depend from the latter between the end of the journal *A* and the opening *G*. This flange or splash-guard may be made either of two pieces or one, as desired. I prefer, however, to make it of one, as the cost of manufacture is thereby greatly cheapened and a more effective article is produced.

In Figs. 1, 2, 3, 4, and 5 I have shown the supplementary shelves *c² c²* applied to a bearing having two projections, *c c*, upon its end, the material between them being removed in order to lighten the bearing as much as is possible; but in Figs. 8, 9, and 10 I have illustrated them applied to a bearing in which the two projections are not separated, but appear as one, and a stop, *K*, for the end of the journal is employed therewith. With this construction I may sometimes find it convenient to provide means for preventing the projection *c* from interfering with the rotation of the ring, as would be the case when the wearing of the bearing has become so great as to bring it into contact therewith, and for this purpose I form an orifice, either by drilling or otherwise, through the projection above the ring, as shown at *k*, so that when the portions of the bearing immediately above the journal and the flange at its end, when one is used, have been worn away sufficiently to bring the portion of the projection above the ring into contact with it such former portions will communicate with the orifice and allow the part below it to fall out, and be thus removed from possible contact with said ring. This orifice, as will be apparent, may also be used in connection with the form of bearing employing two projections upon it and for a like purpose, such bearings differing from those employing but a single projection only in having the space between the projections removed for the purpose of lightening the same.

By the construction and arrangement of parts above set forth it will be seen that I produce a journal-bearing and a box therefor in which not only is the lubrication of the journal more effectively accomplished than has been possible heretofore, but the wasting of such lubricant by spilling is in a great measure obviated.

Having thus described my invention and the best means contemplated by me for carrying it into effect, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A journal-bearing provided with shelves or troughs along its lower outer edges and with supplemental shelves or troughs for co-operation therewith, substantially as described.

2. A journal-bearing provided with shelves

or troughs along its lower outer edges, and with an extension upon its front end which has supplemental shelves or troughs thereon for co-operation with the first-mentioned troughs, substantially as described.

3. A journal-bearing having shelves or troughs along its lower outer edges and an extension upon its front end which is divided into two projections, each of which is provided with supplemental shelves or troughs for co-operation with the first-mentioned shelves or troughs, substantially as described.

4. A journal-bearing having shelves or troughs along its lower outer edges, which are inclined on their under side from the front to the rear of said journal-bearing, substantially as described.

5. A journal-bearing having shelves or troughs along its lower outer edges and an extension upon its front which is provided with supplemental shelves or troughs for co-operation with the first-mentioned shelves, and with an orifice formed through such extension, substantially as described.

6. The combination, with a journal and a lubricating-ring mounted thereon, of a bearing having shelves or troughs formed along its lower outer edges, and with an extension upon its front end which is provided with supplemental shelves or troughs for co-operation with the first-mentioned shelves, and also with an orifice located above the lubricating-ring, substantially as described.

7. The combination, with a journal-bearing, a journal arranged within such bearing, and a lubricating-ring mounted loosely upon the journal, of a box in which the journal-bearing is disposed, provided with a chamber or well in its bottom, substantially as described.

8. The combination of a journal, a lubricating-ring loosely mounted thereon, and a journal-bearing, with a box in which the journal-bearing is arranged, provided with a chamber or well in its bottom, an orifice in its front, and a flange projecting inward beneath such orifice, substantially as described.

9. The combination of a journal, a lubricating-ring loosely mounted thereon, and a journal-bearing, with a box in which the journal-bearing is arranged, provided with a chamber or well in its bottom, and a flange extending inward from its back beneath the journal, substantially as described.

10. The combination of a journal, a lubricating-ring loosely mounted thereon, and a journal-bearing, with a box in which the journal-bearing is arranged, provided with a chamber or well in its bottom, an orifice in its front, a flange projecting inward beneath such orifice, and a second flange extending inward from the back of said box beneath and partially surrounding the journal, substantially as described.

11. A box for the reception of the journal-bearing, provided with an orifice or opening in its front, and with a flange or splash-guard

located above said opening and depending in rear thereof independently of the cover to said orifice, substantially as described.

5 12. A box for the reception of a journal-bearing, provided with an orifice or opening in its front, a flange or splash-guard depending from its top, and with an inclined surface extending from the rear side of such flange or splash-guard backward toward the center
10 of said top, substantially as described.

13. The combination, with a journal, a lubricating-ring mounted thereon, and a journal-bearing provided with an extension upon its front end for engaging with said journal, of
15 a box in which such journal-bearing is arranged, having in its top a depending flange or splash-guard, and an inclined surface extending from the rear of said flange or splash-guard backward toward the center of said
20 box, substantially as described.

14. The flange or splash-guard *H*, constructed with the supporting-strip *h* and depending portion *h'*, as and for the purposes set forth.

25 15. The combination, with the box *D* and the journal-bearing *C*, constructed with the projections *c c*, of the flange or splash-guard *H*, having the supporting-strip *h* and depending portion *h'*, as and for the purposes set
30 forth.

16. A journal-bearing having its lower outer edges inclined on their under side from front to rear, and also having on its front an extension, substantially as described.

17. A journal-bearing having its lower edges 35 inclined on their under side from front to rear, and also having on its front an extension which is provided with supplemental shelves or troughs for co-operation with the said inclined lower edges, substantially as de- 40 scribed.

18. A journal-bearing having its lower edges inclined on their under side from front to rear, and also having on its front an extension which is provided with an orifice formed 45 through the same, substantially as described.

19. A journal-bearing having its lower edges inclined on their under side from front to rear, and also having on its front an extension which is provided with an orifice formed 50 through the same, and also with supplemental shelves for co-operation with the said inclined lower edges, substantially as described.

In testimony whereof I have hereunto set my hand.

WILLIAM OTIS DUNBAR.

Witnesses:

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