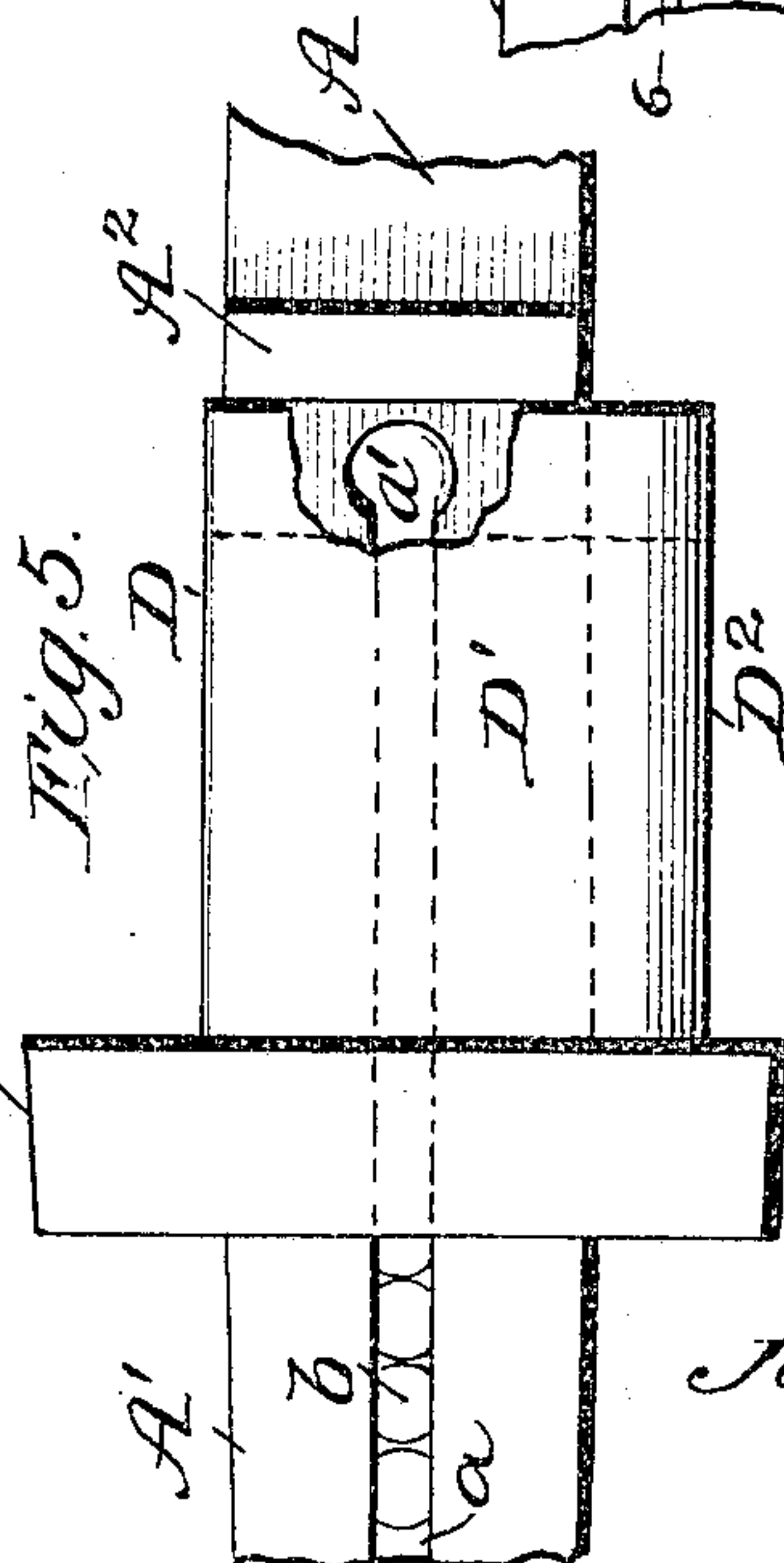
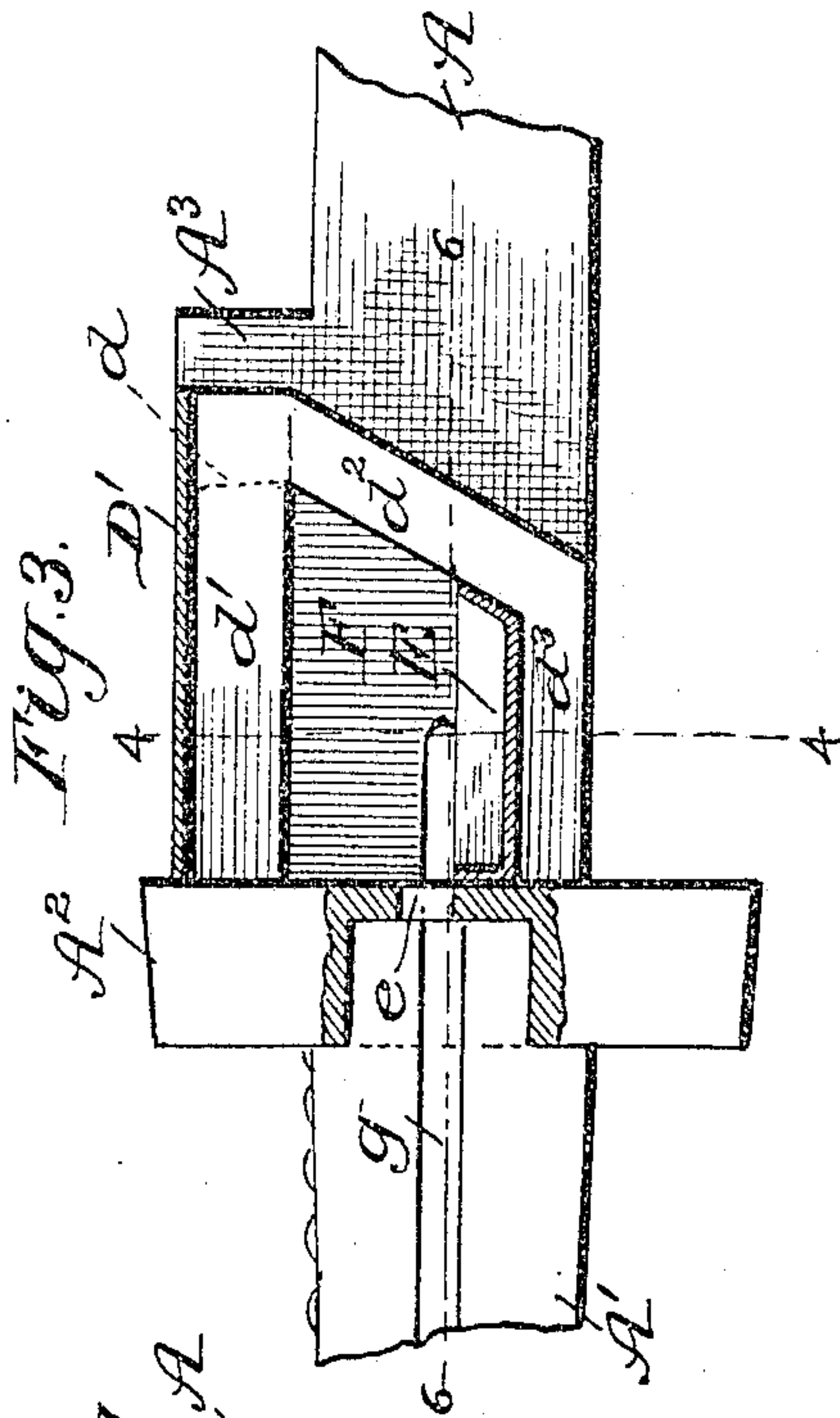
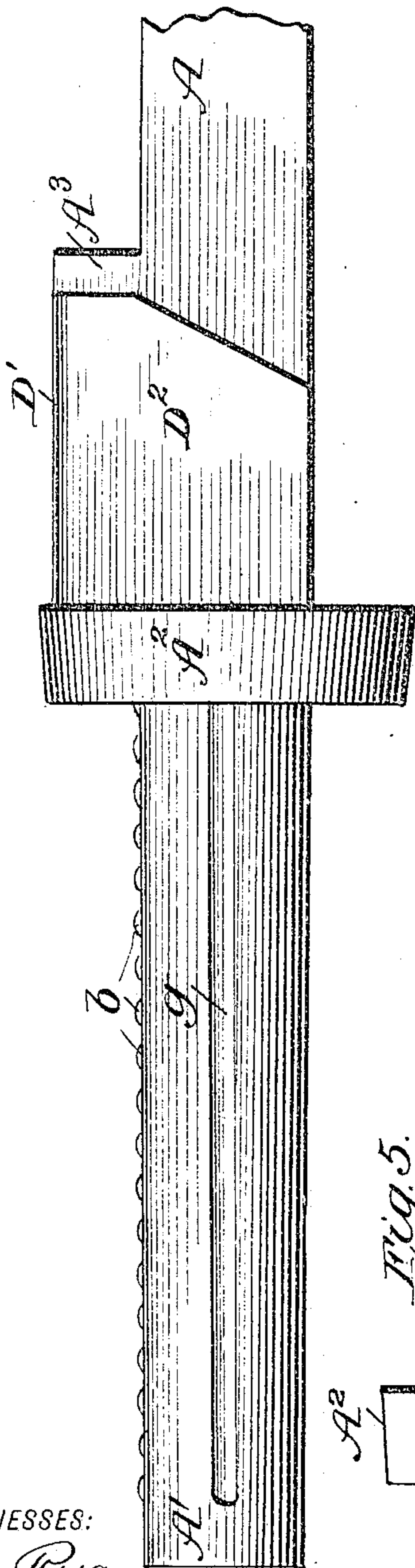


J. ADEN.  
AXLE LUBRICATOR.  
APPLICATION FILED DEC. 20, 1904

2 SHEETS—SHEET 1.

Fig. 1



WITNESSES:

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Edw. W. Byrn

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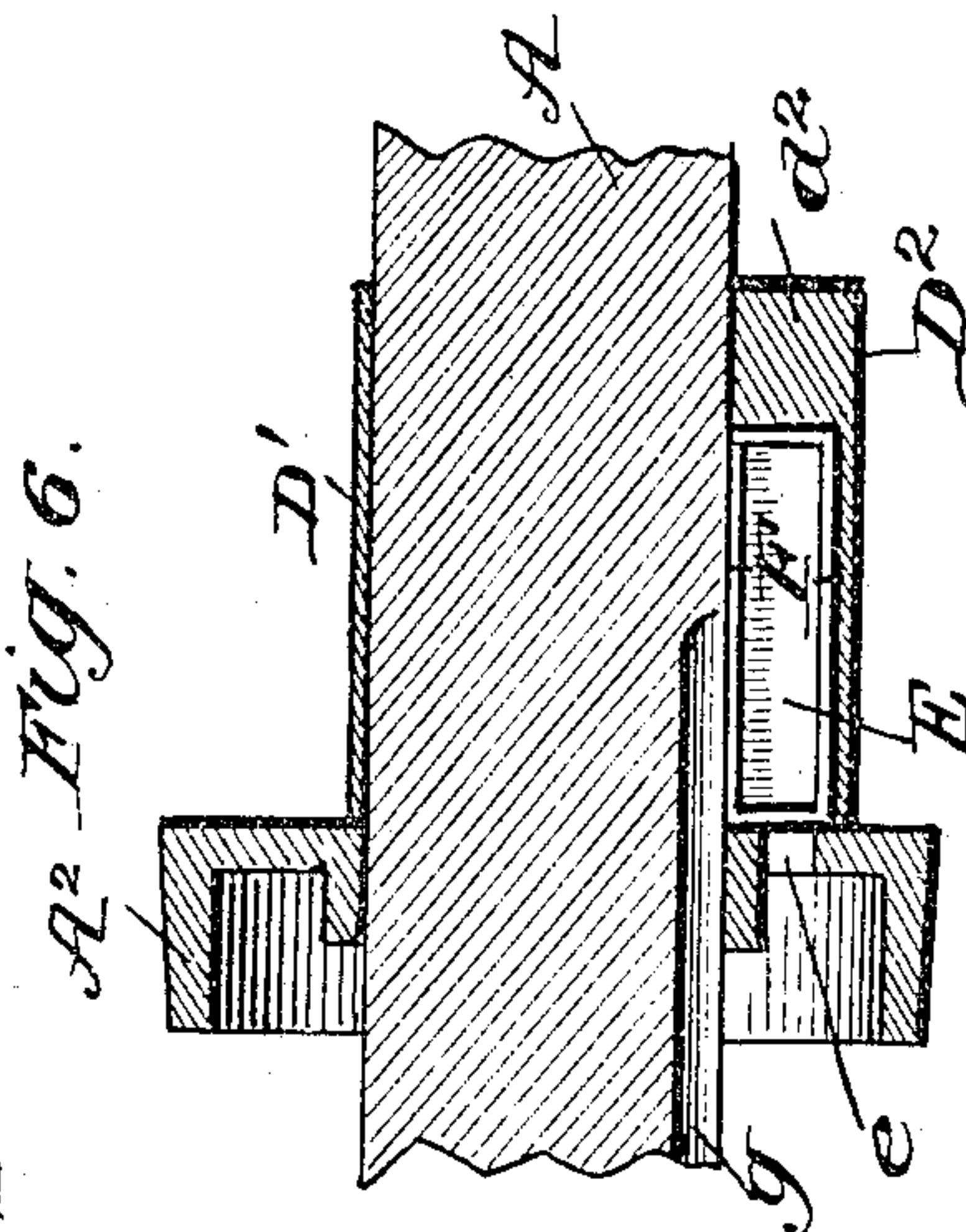
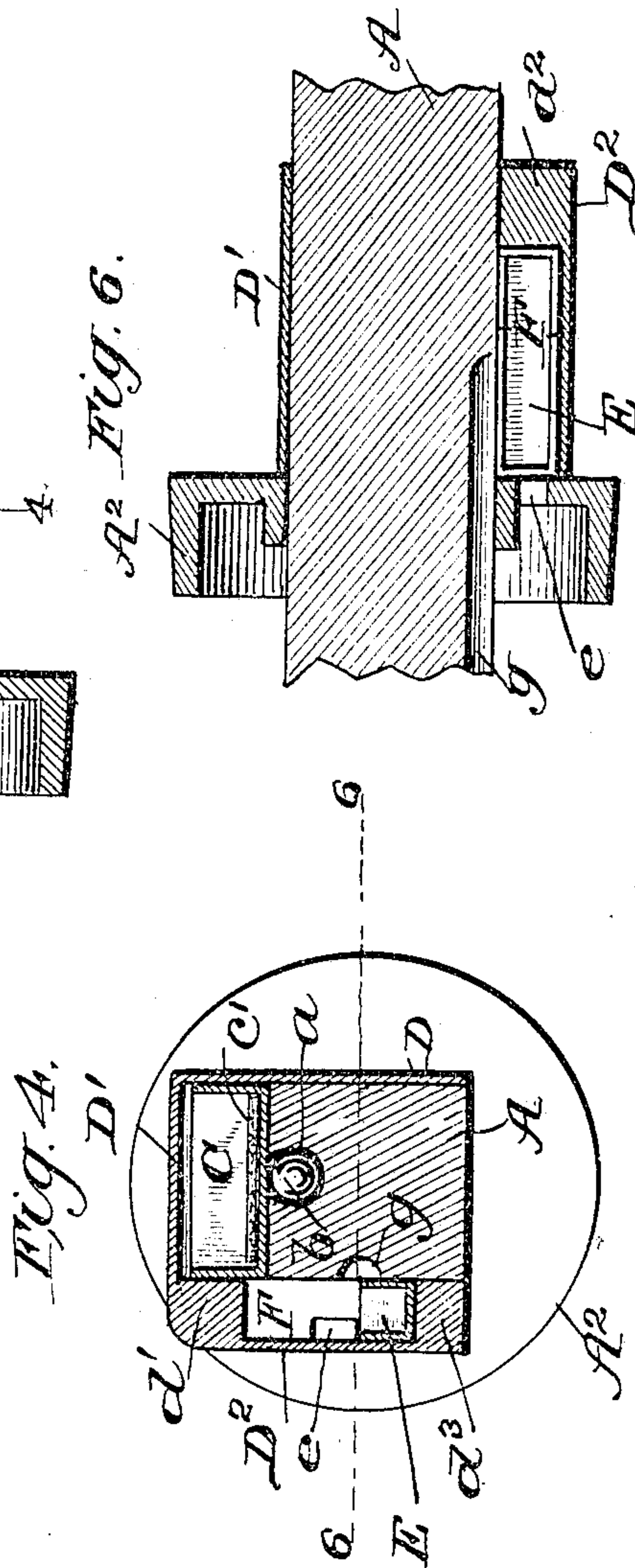
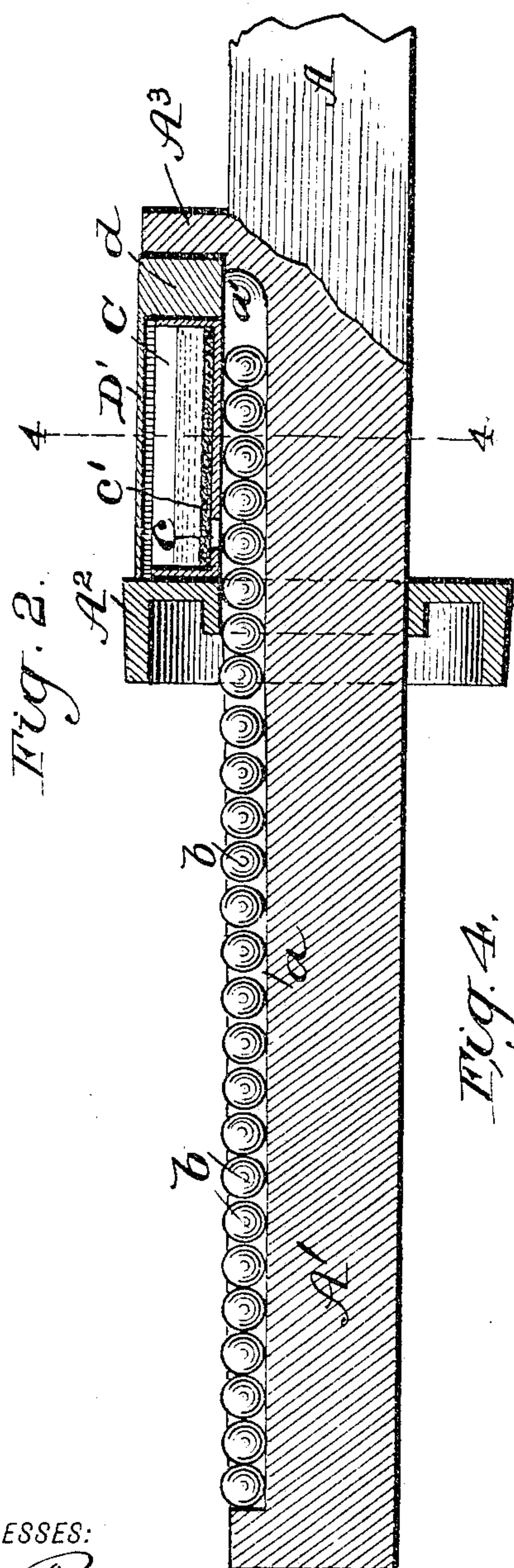
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## UNITED STATES PATENT OFFICE.

JOSEPH ADEN, OF RURALHALL, NORTH CAROLINA.

## AXLE-LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 787,255, dated April 11, 1905.

Application filed December 20, 1904. Serial No. 237,601.

*To all whom it may concern:*

Be it known that I, JOSEPH ADEN, a citizen of the United States, residing at Ruralhall, in the county of Forsyth and State of North Carolina, have invented a new and useful Improvement in Axle-Lubricators, of which the following is a specification.

My invention relates to automatic lubricating devices for vehicle-axles of that class in which a reservoir for oil is located on the axle just back of the axle-collar, from which oil is fed down along the spindle by distributing-grooves.

It consists in certain novel construction and arrangement of parts whereby the oil is uniformly fed without obstruction and whereby the dust is excluded and the gummy waste matters removed, as will be hereinafter fully described, with reference to the drawings, in which—

Figure 1 is a side elevation; Fig. 2, a central longitudinal vertical section. Fig. 3 is a sectional side view taken through the waste-box. Fig. 4 is a vertical transverse section on line 4 4 of Figs. 2 and 3. Fig. 5 is a partial plan view with parts broken away, and Fig. 6 is a horizontal section on line 6 6 of Fig. 4.

In the drawings, A represents a steel axle, whose end terminates in the round and tapering spindle A' and between which spindle and the square portion of the axle is rigidly fixed the flanged collar A<sup>2</sup>, having an outwardly-facing annular groove into which the inner end of the hub of the wheel fits and turns. At a short distance from the collar and inside of the same is arranged a shoulder A<sup>3</sup>, formed on or attached to the axle and between which and the collar the oil-reservoir and its accessory parts are detachably held. In the top side of the spindle is formed a longitudinal groove *a*, which is wider at the bottom than it is at the upper edges, where it opens along the spindle. This groove extends from a point near the outer end of the spindle along the full length of the same inwardly and under the collar A<sup>2</sup> and nearly to the shoulder A<sup>3</sup>. In this groove is arranged a series of quarter-inch steel balls *b*, which are prevented from getting out of the groove by reason of the

fact that they are of greater diameter than the width of the slot where it opens on the surface of the spindle. These balls, however, project a slight distance above the top surface of the spindle, so that they may come into rolling contact with the inner surface of the wheel-boxing. These balls are inserted into the groove by widening the end of the groove near the shoulder A<sup>3</sup>, as seen at *a'* in Fig. 5, so that they readily drop into the same and then run down to the outer end of the spindle. These balls, it will be seen, are on the top of the spindle and are not used for the purpose of making a ball-bearing, but are used as carriers and distributors of the oil which is admitted to the groove from a reservoir C at the inner end, and which oil flowing along the bottom of the groove is picked up by the balls and carried up to contact with the inner surface of the boxing of the wheel. The balls approach the inner surface of the boxing close enough to touch the boxing from the vibration of the wheel and axle and are thereby turned over to continuously transfer fresh portions of oil to the boxing, and thus maintain a constant lubrication.

The oil-reservoir C is seated on the axle and has an opening *c* in its bottom immediately above the groove, through which oil is fed to the groove. To prevent flooding and to regulate the passage of oil through this hole, a piece of felt or other absorbent pad *c'* is placed in the bottom of the reservoir and causes only a small quantity of oil to pass through the hole *c* with a gradual and regulated flow. The oil-reservoir is covered and protected from dust, dirt, and the weather by a housing D D' D<sup>2</sup>, composed of three sides, of which the sides D and D<sup>2</sup> extend down along the opposite sides of the axle, while the side D' extends over the top of the same and covers the oil-reservoir. These three sides of the housing are preferably made in one piece of thin malleable iron, so as to have a slight spring action that will cause them to pinch and hold to the axle as the housing is forced down over the same. This housing extends the full distance from the rigid collar A<sup>2</sup> to the rigid shoulder A<sup>3</sup> and is firmly held between the same against longitudinal movement on



the axle. At the inner end of the upper portion D' of the housing there is a bar or thickened wall  $d$ , which extends down to and rests on top of the axle and fits between the oil-reservoir C and the shoulder A<sup>3</sup>. This thickened wall covers and closes the wide end of the ball-groove, so that the balls cannot get out of the same, and it also holds the reservoir to its proper place. On the side D<sup>2</sup> of the housing there are also thickened walls  $d'$   $d^2$   $d^3$ , (see Figs. 3 and 4,) which cause the side D<sup>2</sup> of the housing to set off a short distance from the axle, as seen in Fig. 4, and form the little chamber F, Fig. 3, between the thickened parts  $d'$   $d^2$   $d^3$ . This chamber opens on the side next to the collar A<sup>2</sup> and communicates through a hole  $e$  in the collar with the annular groove of the collar in which the gummy waste accumulates. This hole  $e$  is on the rear side of the axle, where the wheel is rising as it turns over, and the gummy matters are lifted by the hub of the wheel to this opening  $e$  and are forced through it into the waste-chamber F, in which waste-chamber a box E is placed to catch the waste. This box rests on the thickened wall  $d^3$  and is lifted out when the housing is lifted off the axle, and the boxing E may then be removed and cleaned of its contents.

On the rear side of the axle-spindle is formed another longitudinal groove  $g$ , (see Fig. 1,) which extends past the collar A<sup>2</sup> and opens into the waste-chamber F. Through this end of this groove after the housing is removed a wire will be inserted to clean out the waste on the spindle without taking off the wheel, and, if desired, this groove may be used to introduce a lubricant by hand, if desired, without removing the wheel.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An axle-lubricator comprising a spindle, and a rigid collar, there being a longitudinal groove along the spindle extending past the collar; transferring-balls arranged in said groove and an oil-reservoir located behind the collar and having an outlet communicating with the groove substantially as shown and described.

2. An axle-lubricator comprising a spindle and a rigid collar, there being a longitudinal groove along the spindle extending past the collar, transferring-balls arranged in said groove, an oil-reservoir located behind the collar and having an outlet communicating with the groove and a housing consisting of a top and two sides arranged to embrace the

axle and cover the reservoir substantially as shown and described.

3. An axle-lubricator comprising a spindle and a collar rigid on the spindle, there being a longitudinal groove extending past the collar and a shoulder at the inner end of said groove also rigid on the axle, an oil-reservoir arranged between the collar and shoulder and a housing embracing and inclosing the axle and reservoir and locked in position against longitudinal movement by the shoulder substantially as described.

4. An axle-lubricator comprising a spindle and a rigid collar, there being a longitudinal undercut groove extending past the collar and having a wide outlet at the inner end, a series of transfer-balls arranged in the groove, an oil-reservoir located above the same and having an outlet communicating with the groove, and a housing having two sides and a top and a thickened wall at its inner end fitting down between the reservoir and the shoulder to lock against longitudinal movement and also closing the wide end of the groove substantially as described.

5. An axle-lubricator comprising a grooved spindle having a rigid shoulder, a collar also rigid on the spindle at a point outside the inner end of the groove, an oil-reservoir resting on the axle between the collar and shoulder and a housing consisting of a top and two sides embracing the reservoir and axle between the collar and shoulder substantially as described.

6. The combination with the axle, its spindle and its collar having a hole  $e$  through the same; of a housing embracing the axle inside the collar and having a chamber in its side in communication with the hole  $e$  as and for the purpose described.

7. The combination with the axle having a collar and a spindle with a longitudinal groove extending past the collar; of a housing embracing the axle behind the collar and having a chamber communicating with the groove substantially as shown and described.

8. An axle having a spindle with a straight longitudinal groove in its peripheral surface, a collar fixed rigidly on the spindle outside the inner end of said groove to form a clean-out opening back of the collar and a detachable cover for the inner end of the groove substantially as described.

JOSEPH ADEN.

Witnesses:

J. W. WOLFF,  
W. T. JONES.