

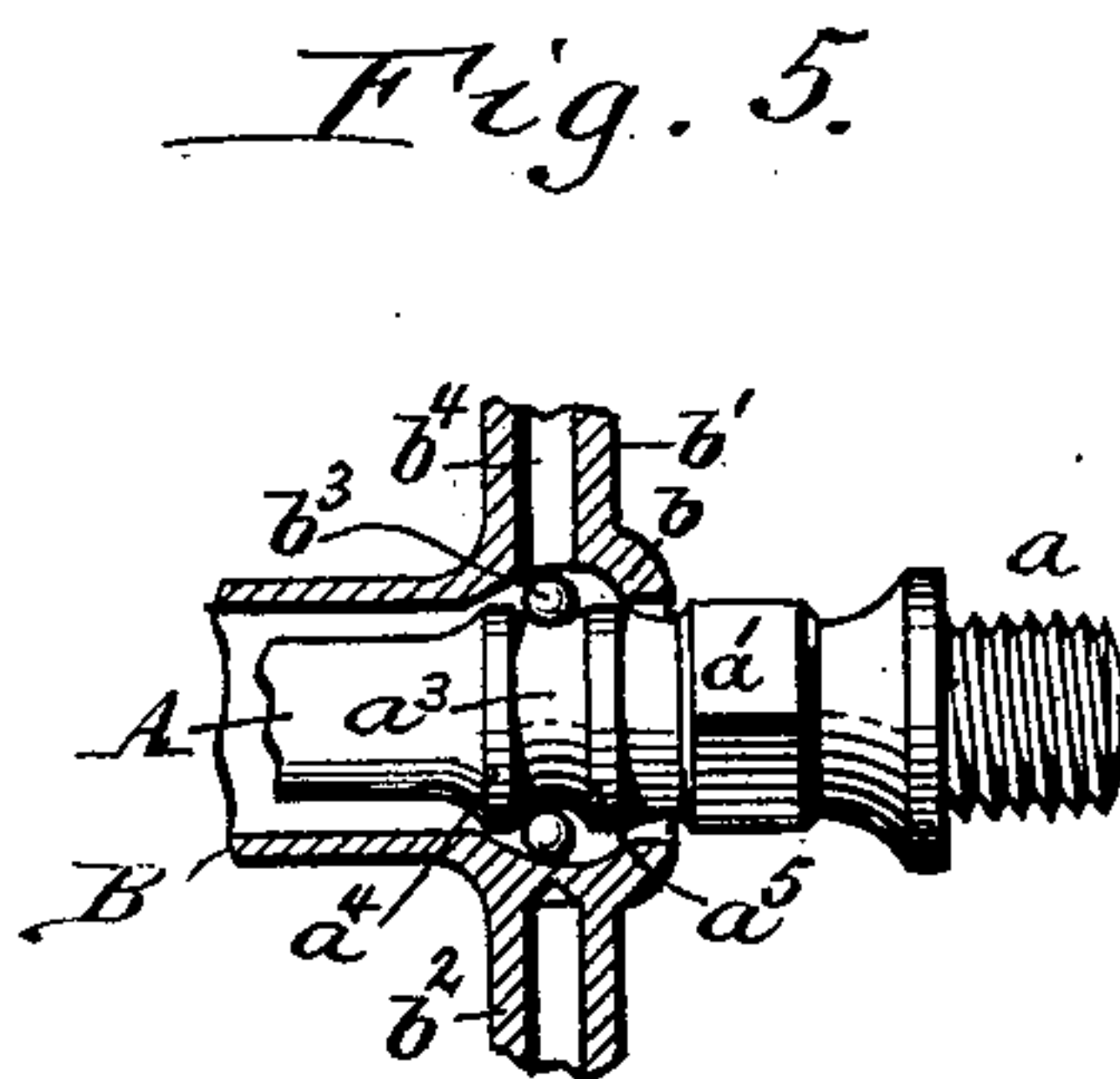
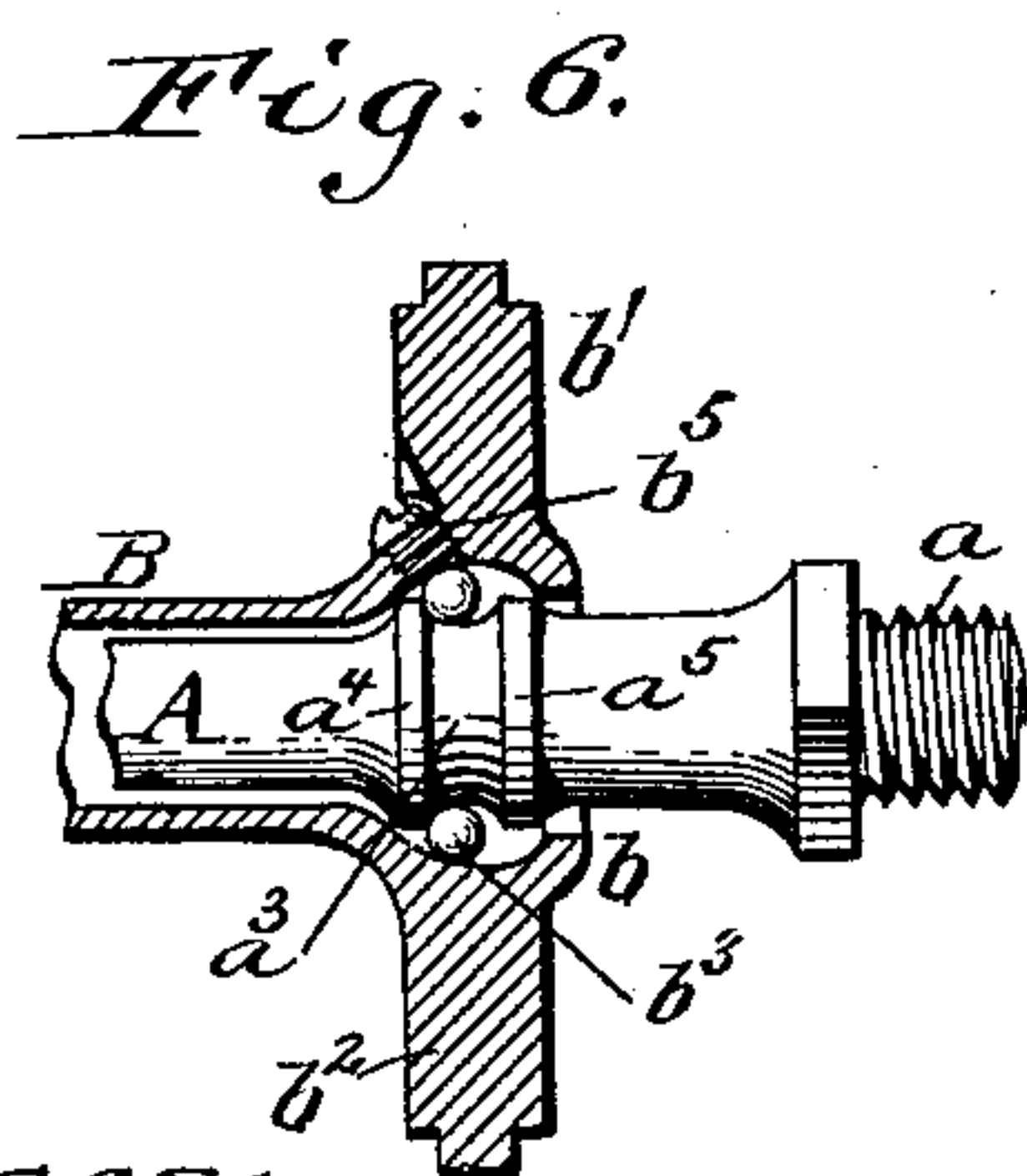
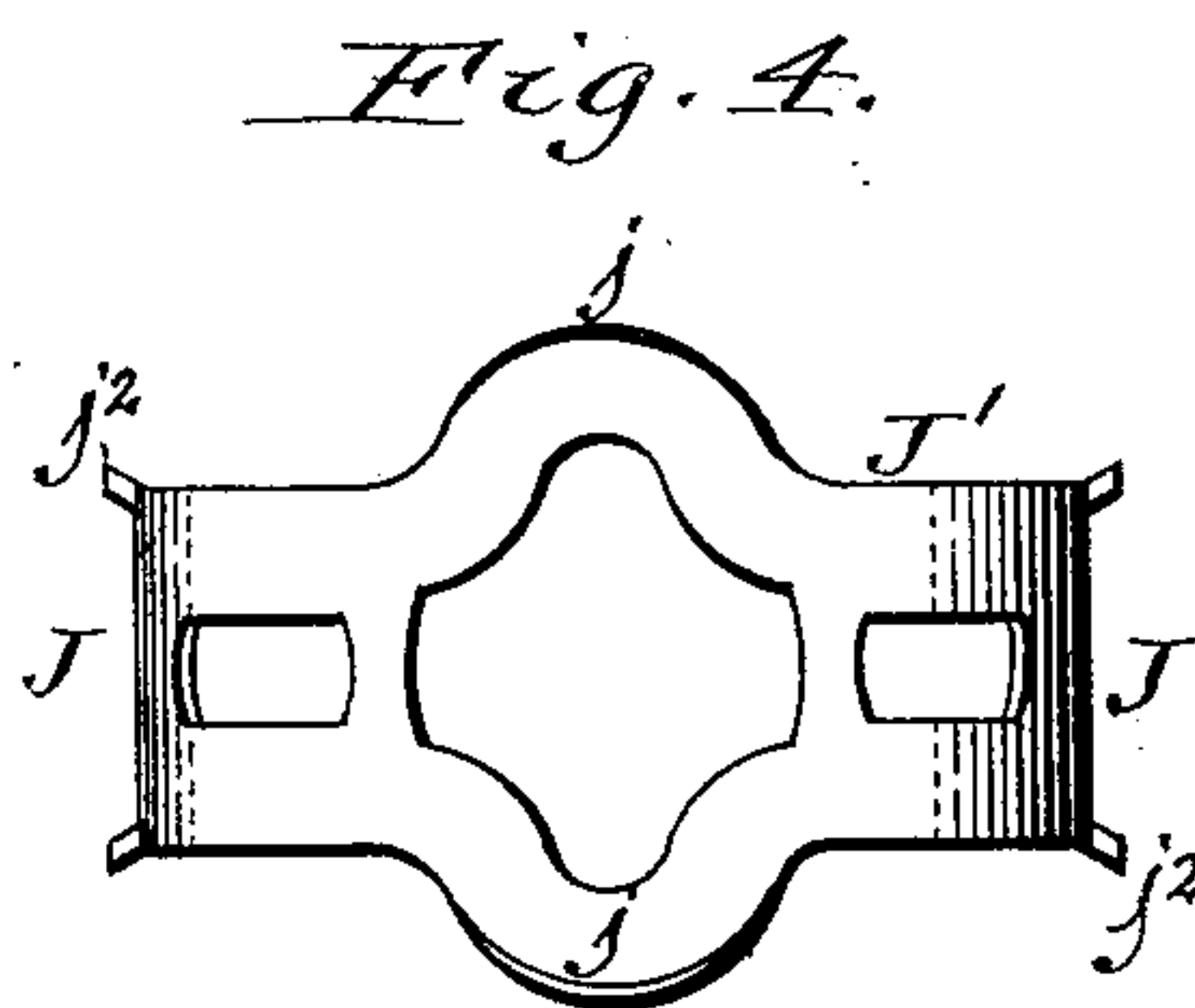
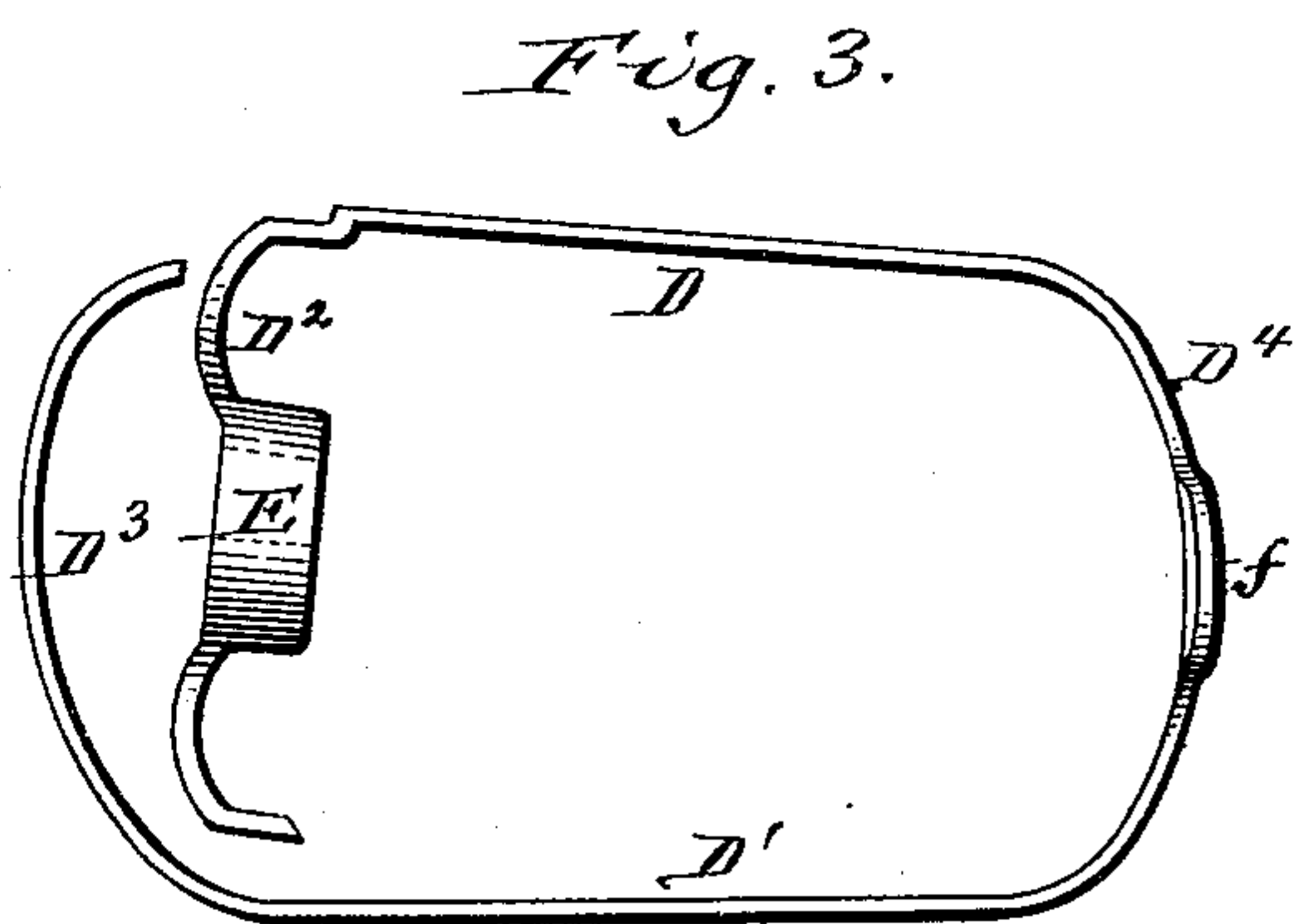
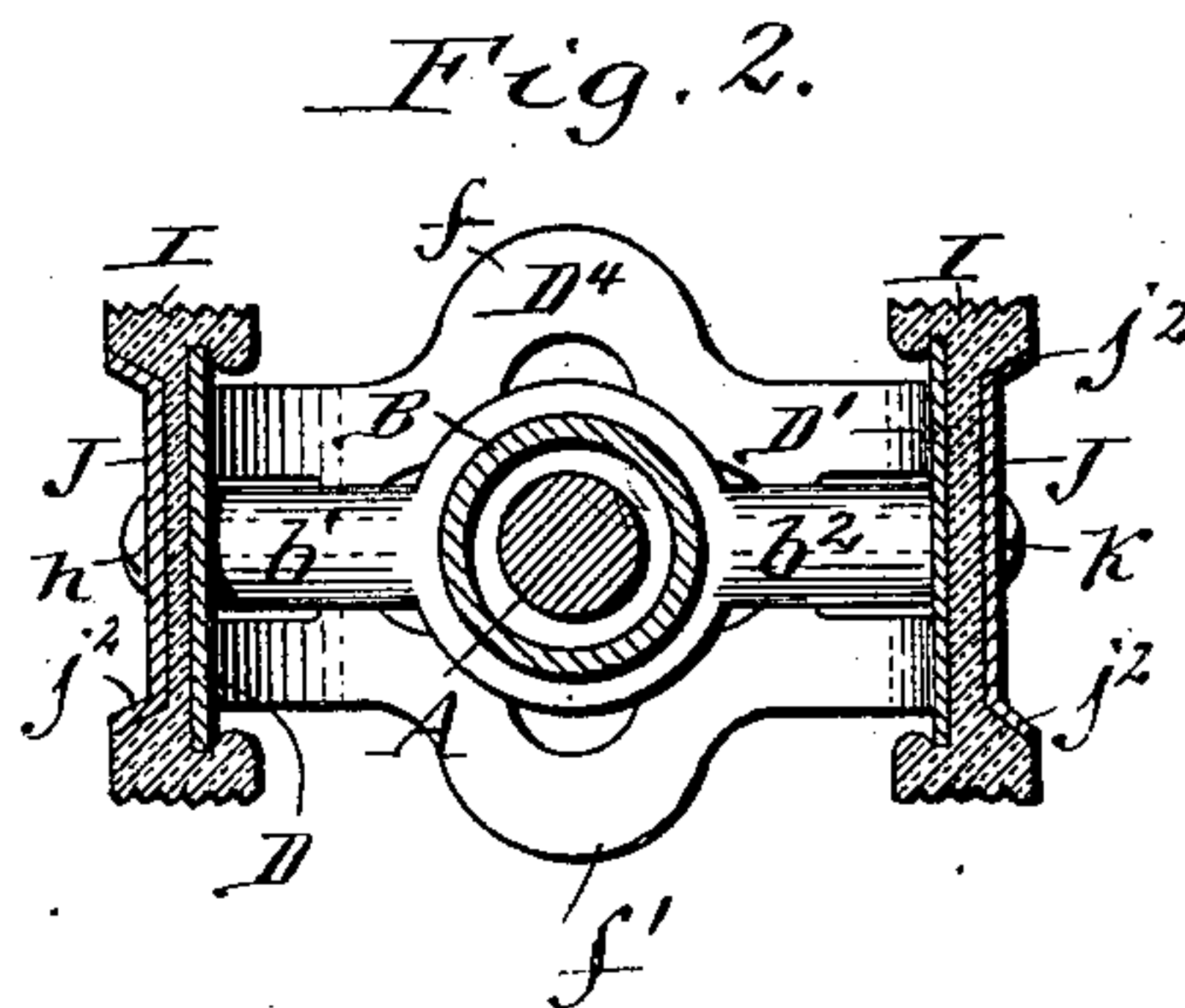
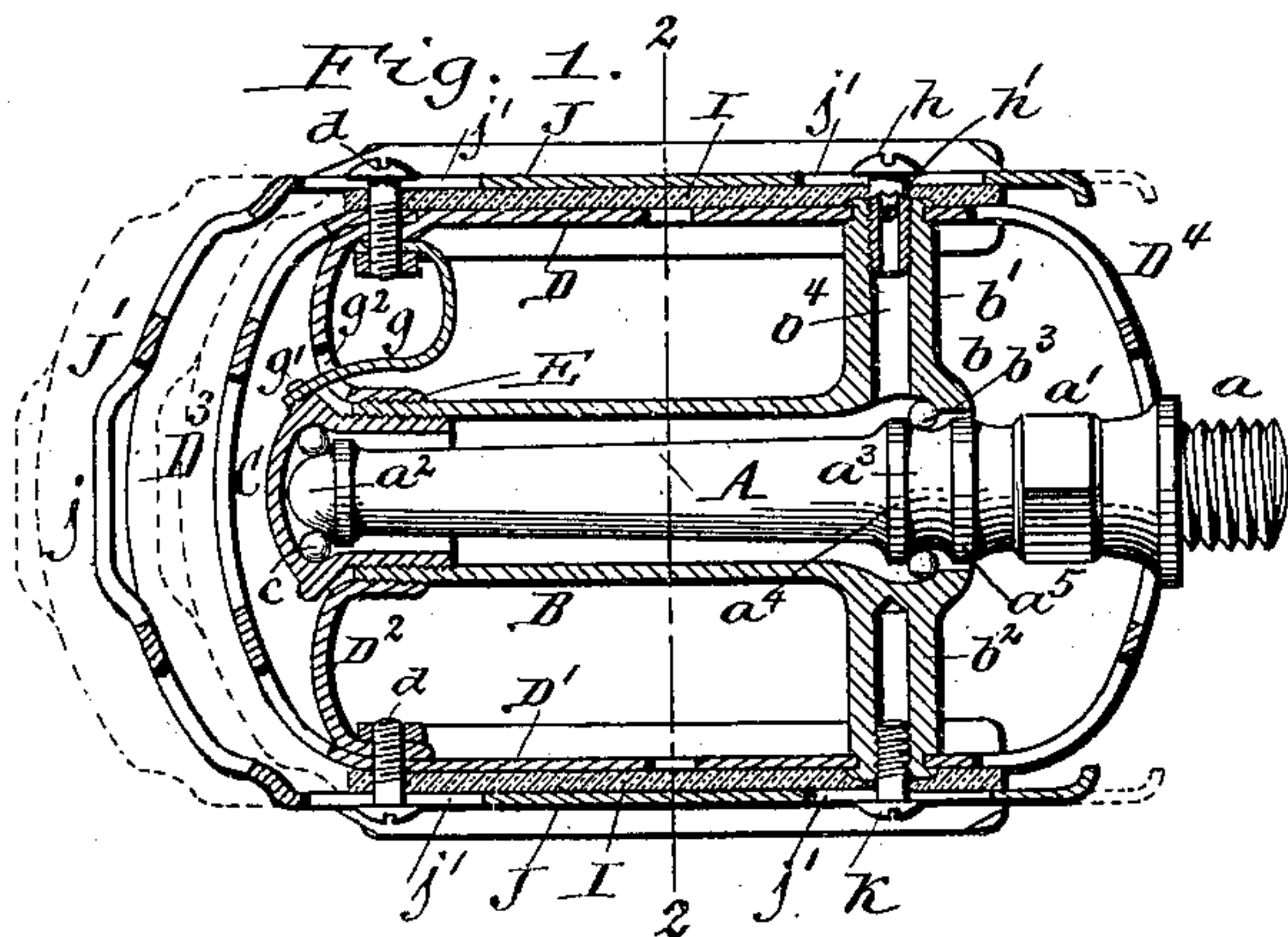
(No Model.)

2 Sheets--Sheet 1.

E. G. LATTA.
VELOCIPEDE PEDAL.

No. 599,909.

Patented Mar. 1, 1898.



Witnesses:
 Ernest Puhford.
 Theo. L. Papp.

E. G. Latta Inventor
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Attorneys.

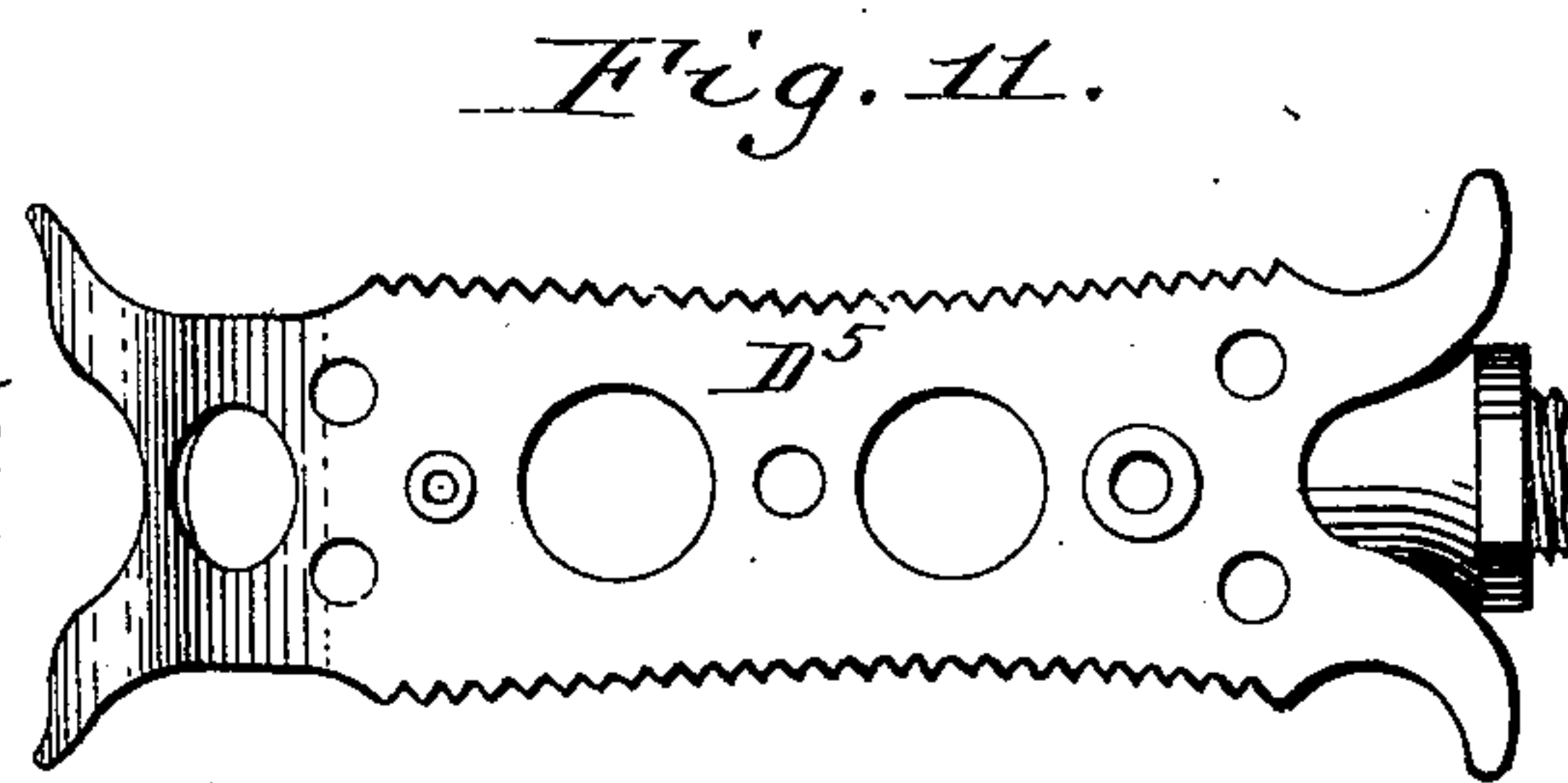
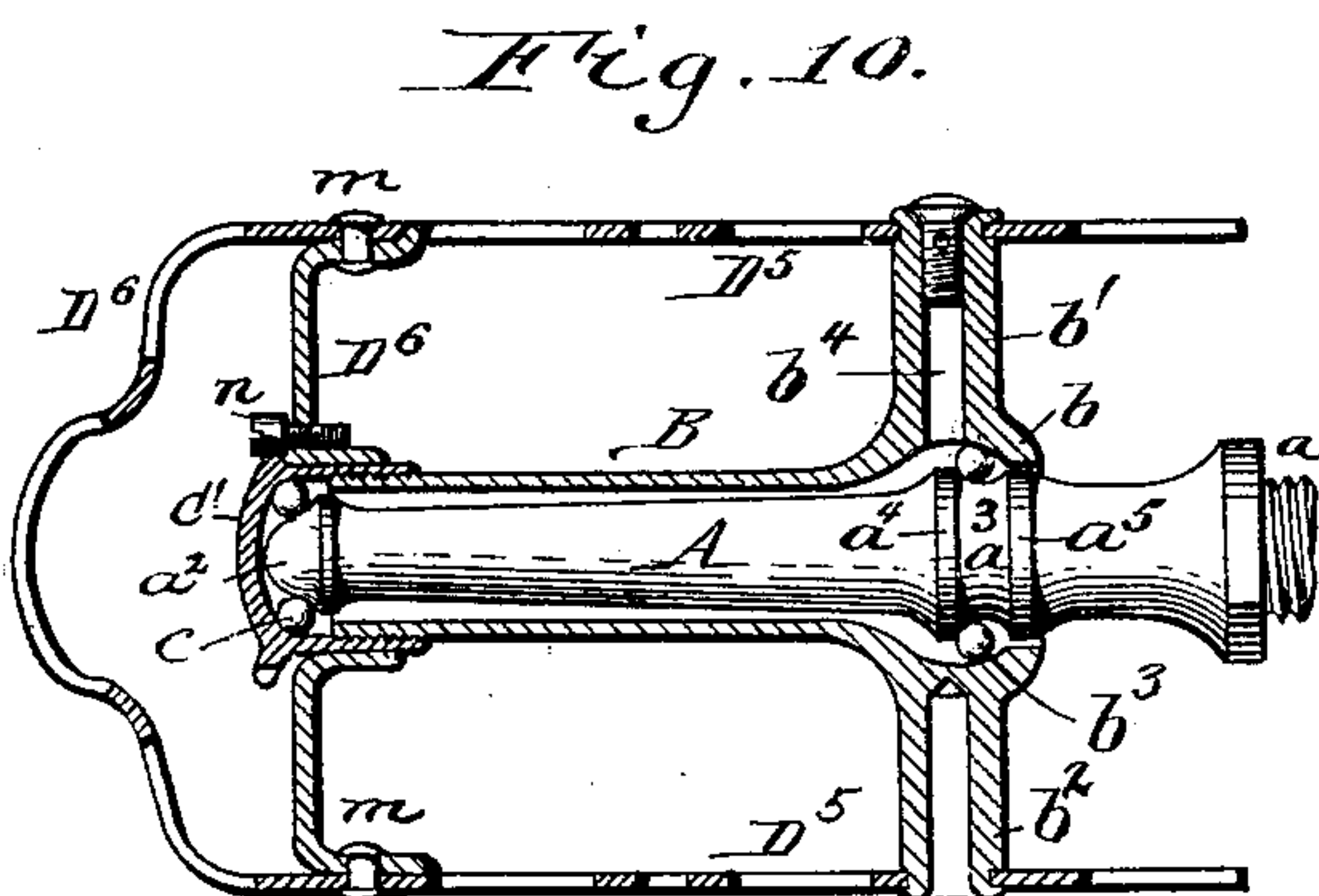
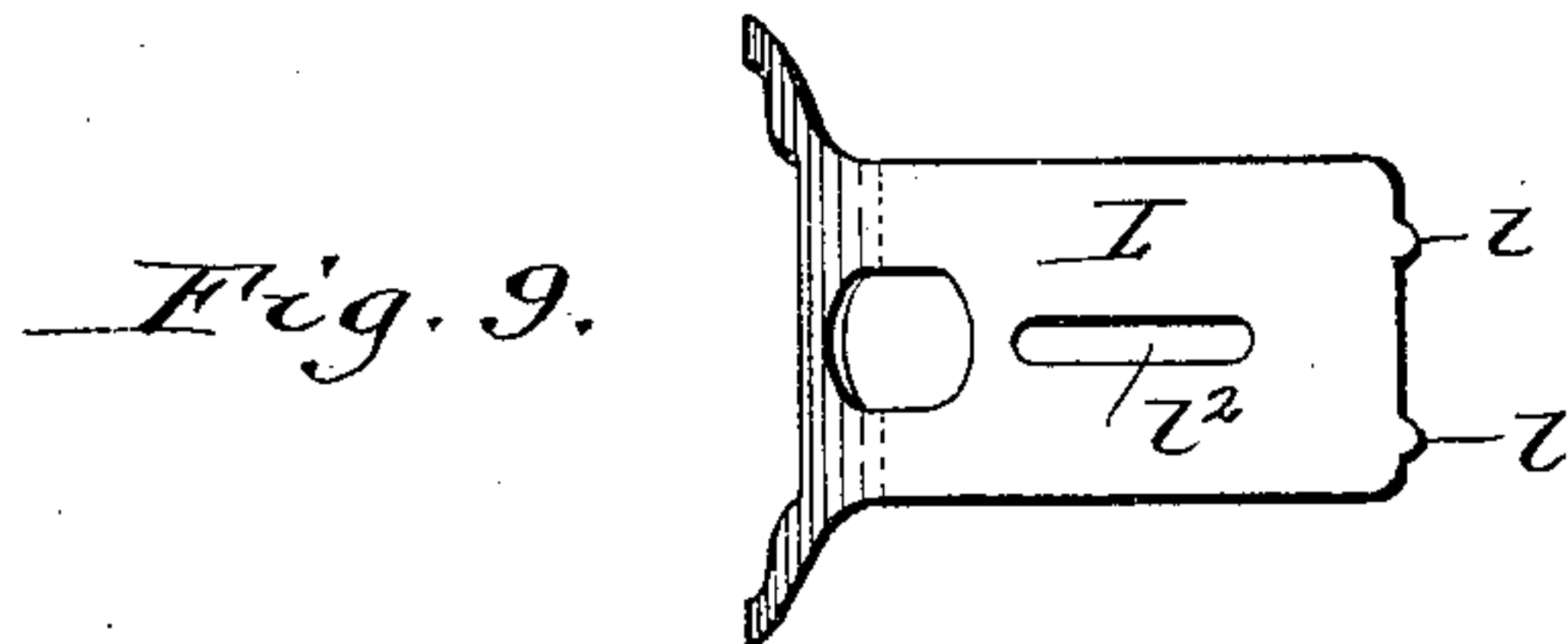
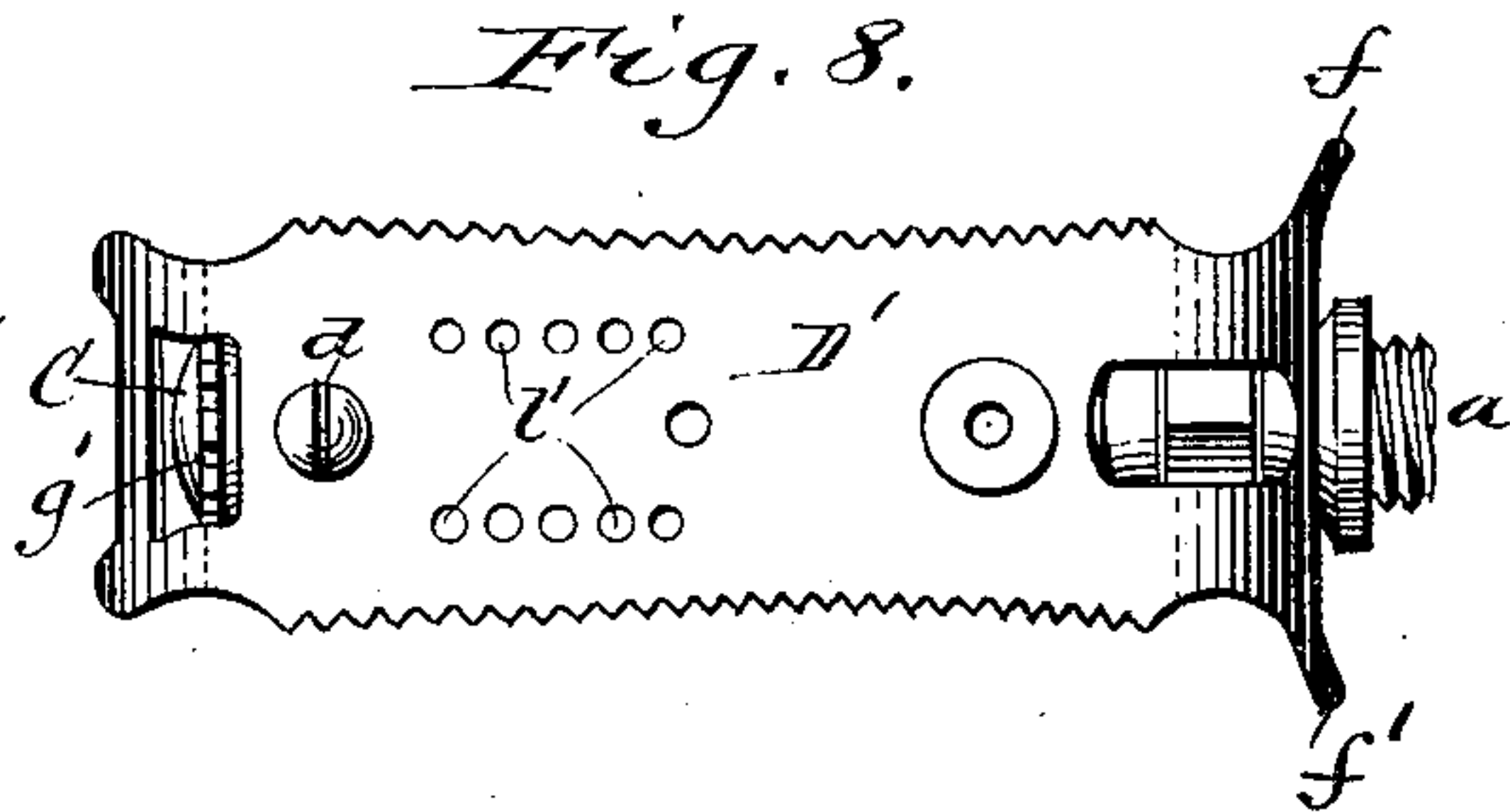
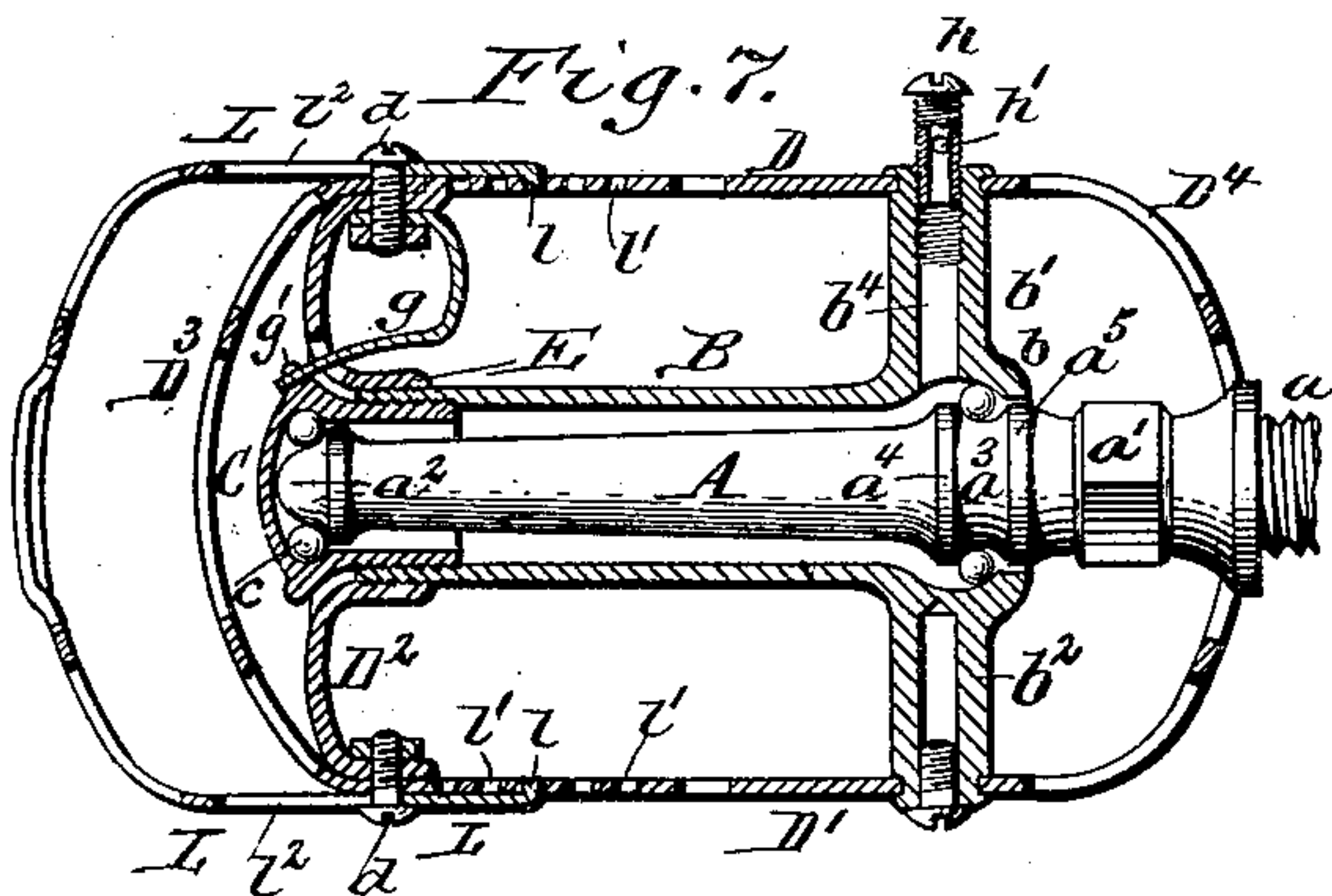
(No Model.)

2 Sheets—Sheet 2.

E. G. LATTA.
VELOCIPED PEDAL.

No. 599,909.

Patented Mar. 1, 1898.



Witnesses:
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UNITED STATES PATENT OFFICE.

EMMIT G. LATTA, OF FRIENDSHIP, NEW YORK.

VELOCIPED-PEDAL.

SPECIFICATION forming part of Letters Patent No. 599,909, dated March 1, 1898.

Application filed December 17, 1895. Serial No. 572,398. (No model.)

To all whom it may concern:

Be it known that I, EMMIT G. LATTA, a citizen of the United States, residing at Friendship, in the county of Allegany and State of New York, have invented new and useful Improvements in Velocipede-Pedals, of which the following is a specification.

This invention relates more particularly to velocipede-pedals which can be converted into different forms.

The objects of my invention are to produce a pedal of this kind which can be adjusted to different sizes, to simplify the construction of the bearings and render the same nearly dust-proof, and to increase the strength and rigidity of the pedal-frame.

In the accompanying drawings, consisting of two sheets, Figure 1 is a longitudinal sectional elevation of a pedal embodying my improvements, showing the same in the form of a rubber pedal. Fig. 2 is a transverse section of the same in line 2 2, Fig. 1. Fig. 3 is a detached plan view of the outer or main frame of the pedal, showing the ends thereof separated. Fig. 4 is an elevation of the outer end of the combined foot-guard and clamping-bars. Fig. 5 is a sectional elevation of the inner portion of the pedal-shaft and barrel, showing the position of the parts for introducing the balls into the inner bearing-cup. Fig. 6 is a similar view showing a modified construction of the ball-inlet. Fig. 7 is a longitudinal sectional elevation of the pedal in the form of a rat-trap pedal. Fig. 8 is a side elevation of the rat-trap pedal with the outer foot-guard omitted. Fig. 9 is a side elevation of the outer foot-guard used in connection with the rat-trap pedal. Fig. 10 is a longitudinal sectional elevation of a modified construction of the pedal. Fig. 11 is a side elevation thereof.

Like letters of reference refer to like parts in the several figures.

A is the shaft or journal of the pedal, which is provided at its inner end with the usual screw-stem a for attaching it to the crank and with a square or flat-sided portion a' for receiving a wrench. The pedal-shaft is provided at its outer end with an integral bearing-cone a^2 and near its inner end with a ball-groove a^3 , which is formed between two inte-

gral annular collars a^4 a^5 , the inner one of which forms a bearing-cone.

B is the hub or barrel of the pedal inclosing the pedal-shaft and having at its inner end an integral bearing-cup b and a pair of radial arms b' b^2 , extending from diametrically opposite sides of the cup.

b^3 represents the row of balls interposed between the inner bearing-cup and the opposing cone. The adjacent arm b' is provided with a ball-inlet b^4 , leading to the inner bearing-cup, which inlet is preferably formed by making said arm hollow, as shown in the drawings.

C is the outer bearing-cup, which is formed by the closed outer end of a cap screwed into the outer end of the pedal-barrel, and c are the balls arranged between this cup and the outer cone of the shaft.

The two bearing-cups b and C are reversed or faced inwardly instead of outwardly, as usually arranged.

The main frame of the pedal consists of a band or strip of sheet metal bent into the oblong form shown in Figs. 1, 3, and 7, the straight side bars D D' of the frame being serrated at their edges, as shown in Fig. 8, and forming rat-trap blades. The end portions or extensions D^2 D^3 of these side bars are bent inwardly in opposite directions, so as to overlap each other. The inner transverse end portion D^2 is secured at its end to the inner side of the adjacent side bar D' by a screw-bolt d or other fastening, while the end of the outer end portion D^3 is secured to the outer side of the opposite side bar by a similar fastening, as clearly shown in Figs. 1 and 7. By thus extending both end portions of the strip across the pedal-frame the side bars are connected by three cross-pieces—namely, one cross-piece D^4 at the inner end of the frame and the two cross-pieces D^2 D^3 , forming a double cross-bar, at the outer end of the pedal. The inner end portion or cross-bar D^2 is provided centrally with an internally-screw-threaded sleeve or collar E, and the outer end of the barrel B is provided with an external thread, which engages with this sleeve, thereby connecting the outer portion of the pedal-frame with the barrel. The sleeve E is preferably formed integrally with

the cross-bar D^2 by pressing the central portion of the bar inwardly, as shown in the drawings. The side bars of the pedal-frame are secured to the outer ends of the radial arms $b' b^2$ of the barrel, preferably by passing the contracted end portions of said arms through openings in the bars and upsetting or riveting the ends of the arms, as shown in Figs. 1 and 7. In assembling the barrel and pedal-frame after screwing the outer end of the barrel into the sleeve E the side bars of the frame are riveted to the radial arms $b' b^2$ of the barrel and the end portions of the side bars are then secured to the side bars by the screw-bolts d . This construction produces a pedal of much greater rigidity than one in which the outer end of the pedal-frame consists of a single cross-bar. The central portion of the innermost cross-bar D^4 is perforated for the passage of the pedal-shaft, and the bar is widened or provided with projections at this point to form guards $f f'$ at the inner end of the pedal for preventing the rider's foot from slipping against the crank.

g is a spring or automatic catch whereby the outer adjustable bearing-cup C is yieldingly held against turning. This spring is secured at one end to the pedal-frame by one of the bolts d and engages with its opposite or free end in one of a series of notches g' , formed in a rim or flange of said cup, as shown in Figs. 1 and 7, the spring passing through a longitudinal slot g^2 , formed in the intermediate cross-bar D^2 of the pedal-frame. This intermediate cross-bar while increasing the rigidity of the pedal-frame serves also as a guard, which prevents the rider's clothing from catching on the notched flange of the adjustable cup.

In placing the pedal-shaft and the balls in position the adjustable bearing-cup C is screwed about half-way into the barrel and the outer row of balls is then dropped into said cup through the inner bearing-cup b . The pedal-shaft is next placed into the barrel and the balls of the inner bearing are introduced through the ball-inlet b^4 , the shaft being held in such a position during this operation that its inner ball-groove a^3 stands opposite the inner end of the ball-inlet, as shown in Fig. 5, so as to cause the balls to enter said groove. The ball-race of the inner bearing-cup b is widened or elongated transversely sufficiently to permit of this movement of the shaft, as shown in the drawings. After the balls have been put in place the pedal-shaft is drawn back to the position shown in Figs. 1 and 7, which causes the inner cone a^4 to force the inner row of balls into their operative position against the wall of the cup b . The outer or adjustable bearing-cup C is then screwed into its normal position, whereby the balls of the outer row are forced against the outer cone a^2 of the pedal-shaft, thereby holding the shaft against longitudinal movement and retaining the two rows of balls in their operative position.

Any wear of the bearings is readily taken up by screwing the outer cup C farther into the barrel of the pedal, the cup being released for this purpose by compressing the spring g sufficiently to clear the notched flange of the cup.

The outer end of the ball-inlet b^4 is closed by a screw or screw-plug h , which is preferably hollow and provided in one side with an opening or duct h' for the admission of oil, this opening being exposed for use by partly unscrewing the plug, as shown in Fig. 7.

If desired, the arms of the pedal-barrel may be made solid, as shown in Fig. 6, and in this case the ball-inlet b^5 is formed obliquely in the inner portion of one of the arms instead of axially, as in the construction previously described.

The outer wall or collar a^5 of the ball-groove a^3 closes the opening at the outer end of the inner bearing-cup b and excludes dust from the latter.

By this construction of the pedal-shaft and bearings the shaft is formed in one piece with the cones and all portions of the same excepting its flat-sided portion a' can be easily made by lathe work alone. The opening in the outer end of the cup b is smaller than if made to admit the balls in the usual way, and the oil is therefore retained and the dust excluded to better advantage.

I I represent longitudinal rubber bars or strips which are arranged on the outer sides of the serrated side bars of the pedal-frame and which are clamped between said bars and metallic bars or strips J. The latter are preferably connected at their outer ends by a bow or cross-piece J' , formed integrally therewith and serving as an outer foot-guard, the cross-piece being for this purpose formed with guard projections j . The rubber bars are clamped in position near their ends by the screws $d h$ and a screw k engaging in the outer end of the radial barrel-arm b^2 . The several screws pass through longitudinal slots j' , formed in the clamping-bars J, so that upon loosening these screws the U-shaped frame formed by the clamping-bars and the foot-guard J' can be adjusted lengthwise on the pedal-frame, as indicated by dotted lines in Fig. 1, for increasing or diminishing the distance between the inner and outer foot-guards to suit the size of the rider's foot. The edges of the rubber strips project beyond the edges of the rat-trap side bars, as shown in Fig. 2, and the clamping-plates are preferably provided with marginal flanges j^2 , which bear against the inner sides of the overhanging edge portions of the rubber bars, whereby such edge portions are better supported than they would be if the clamping-plates were not flanged. The flanges also stiffen the clamping-plates.

In the form shown in Fig. 1 the pedal is a so-called "rubber" pedal and the rat-trap bars serve merely as a part of the frame.

Should the rider desire a rat-trap pedal

without an outer guard, the combined clamping-frame and guard J J' and the rubber bars I are detached from the pedal-frame by removing the fastening-screws *d h* and *k*, when the pedal will appear as shown in Fig. 8.

In case a rat-trap pedal with both an inner and an outer foot-guard should be desired a detachable guard of the construction shown in Figs. 7 and 9 is applied to the outer end of the pedal. This guard consists of an approximately U-shaped strip of sheet metal adapted to embrace the side bars of the pedal-frame and having its side members L provided at their ends with inwardly-projecting studs *l*, which are adapted to engage in openings *l'*, formed in the side bars of the pedal-frame, as shown in Fig. 7, the side bars being provided with a longitudinal series of such openings, as shown in Figs. 7 and 8, so that the guard may be adjusted inwardly or outwardly on the pedal-frame by springing its studs into a set of such openings. This adjustable guard is firmly secured in place by the screw-bolts *d*, which pass through longitudinal slots *l''*, formed in the side members of the guard. Upon loosening these bolts the side members of the guard can be sprung apart for withdrawing their studs from the holes of the pedal-frame and after adjusting the guard the screws are again tightened.

By constructing the pedal as herein shown and described a dealer having but one pair of the pedals in stock can furnish a customer with either a rubber or a rat-trap pedal and either of these two forms with an outer adjustable foot-guard, if desired.

In Figs. 10 and 11 is shown a less expensive form of pedal embodying the improved frame and bearings of the constructions previously described. In this modification of the invention the side bars D⁵ of the pedal-frame are made in two pieces instead of a single piece, and are disconnected at their rear ends, while their front portions D⁶ are bent transversely across the outer end of the pedal, as in the construction first described. The overlapping end portions or bars are secured together by rivets *m* instead of screws, and the outer bar forms a fixed foot-guard. The outer bearing-cup C' is screwed over the outer end of the pedal-barrel instead of into it, and the cup is held in place by a screw *n* instead of a spring-catch.

The bearings of my improved pedal comprise few parts, which are not liable to work loose. The pedal-frame, while possessing considerable strength and rigidity, presents a smooth outer surface, and the cost of manufacture of the complete pedal is comparatively small.

I claim as my invention—

1. In a pedal, the combination with a shaft and a surrounding barrel, of a pedal-frame, and a supporting-arm connecting the frame with the barrel and provided with an oil duct or passage leading from the outer end thereof to the interior of the barrel, substantially as set forth.

2. The combination with a pedal hub or barrel having a bearing-cup provided in its side with a ball inlet or aperture, of a shaft capable of lengthwise movement in said barrel and having a bearing-cone arranged within said cup and a row of balls interposed between said cup and said cone, the ball-race of the cup being of sufficient width to permit the cone to be shifted inwardly in the bearing-cup beyond its ball-inlet, substantially as set forth.

3. The combination with a pedal hub or barrel having at its outer end an adjustable bearing-cup and at its inner end a fixed bearing-cup provided in its side with a ball-inlet and having a transversely-elongated ball-race of a shaft having bearing-cones arranged in said inner and outer cups, respectively, and balls interposed between said cones and cups, substantially as set forth.

4. The combination with the center barrel of a pedal, of an outer frame composed of a single strip of metal bent into oblong form and having both its end portions extended across the outer end of the pedal, one on the inner side of the other, forming a double cross-bar, the inner bar being connected to the outer end of the center barrel and the other cross-bar forming a guard for the inner bar, substantially as set forth.

Witness my hand this 2d day of December, 1895.

EMMIT G. LATTA.

Witnesses:

C. J. RICE,
H. L. BLOSSOM.