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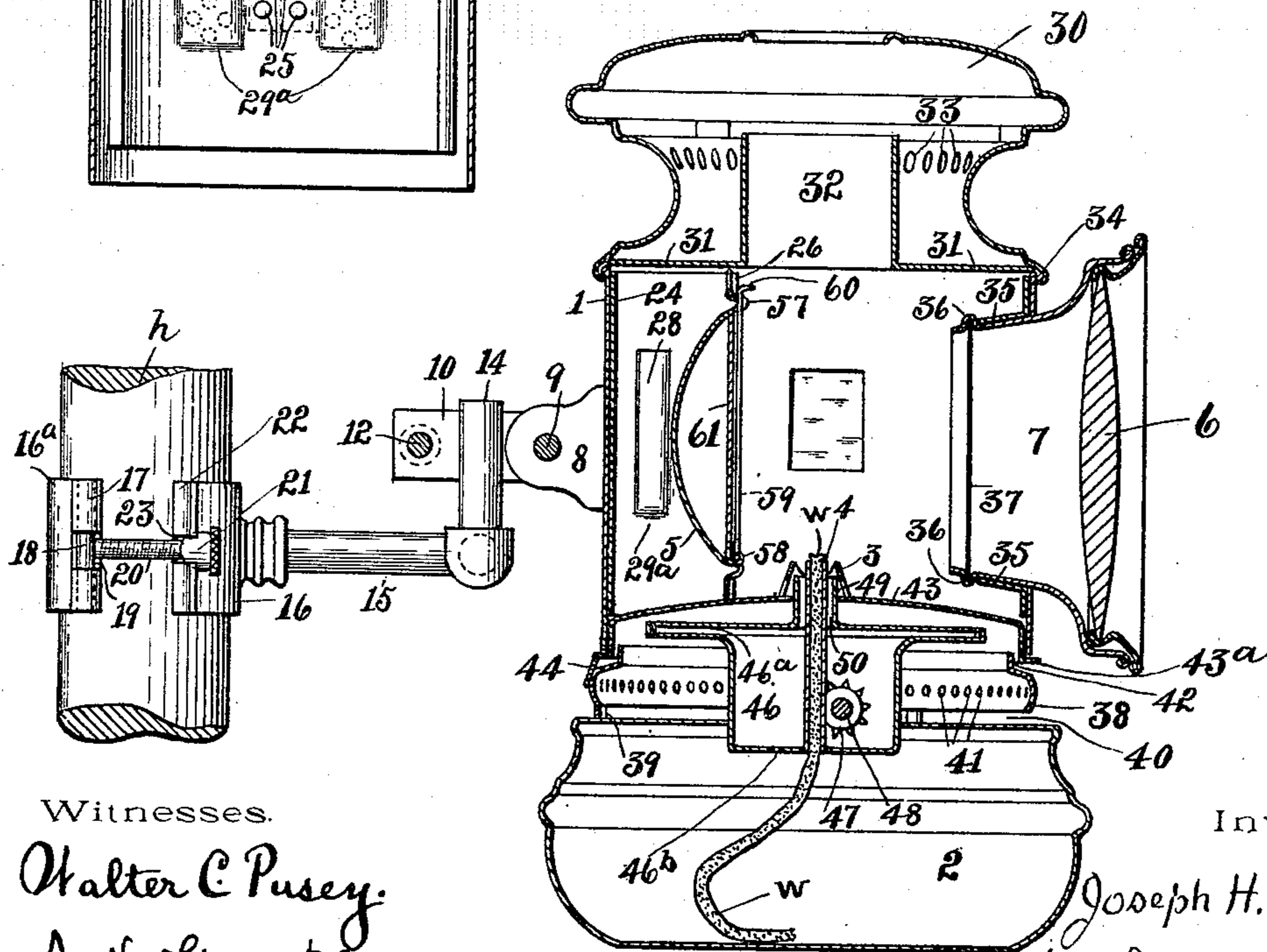
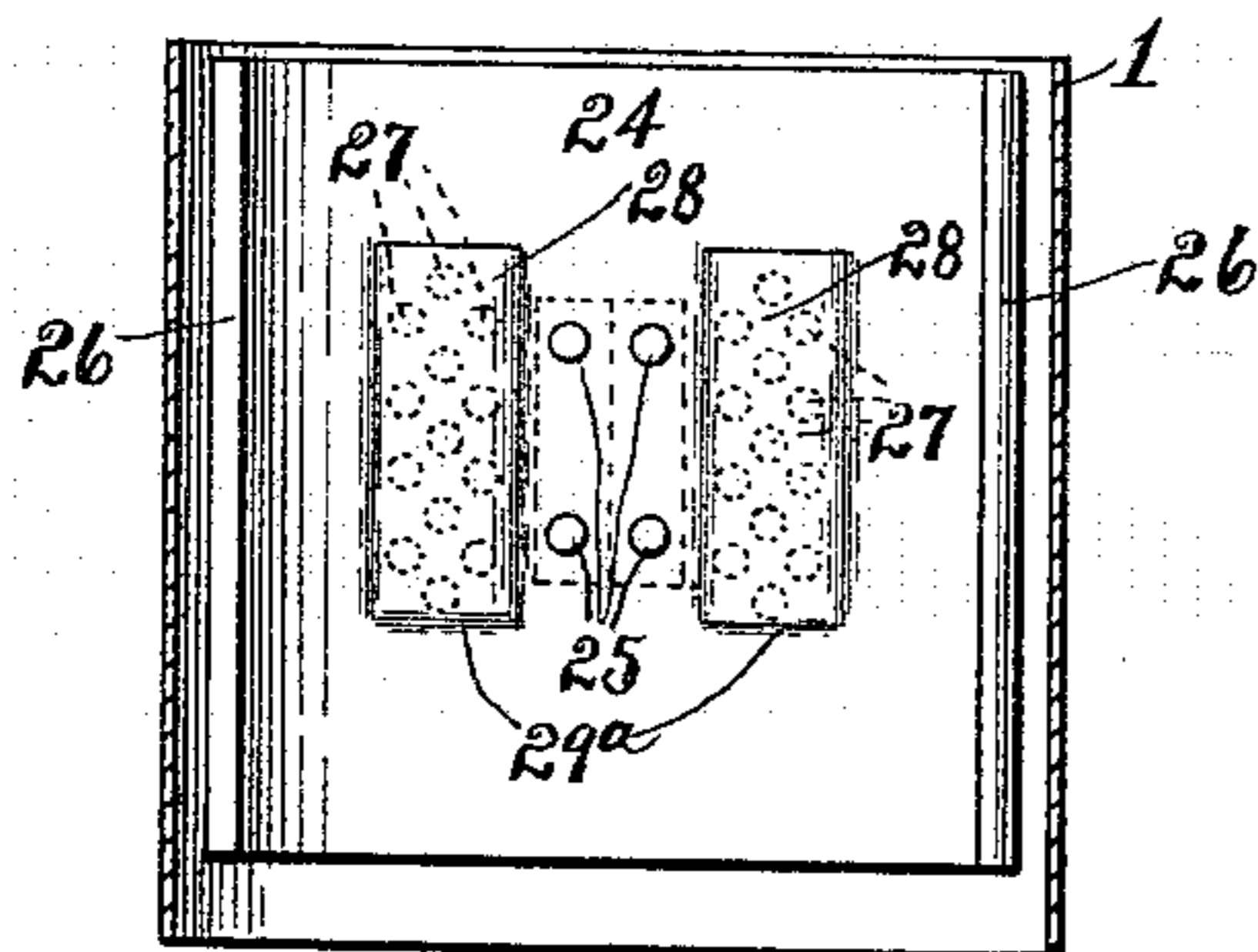
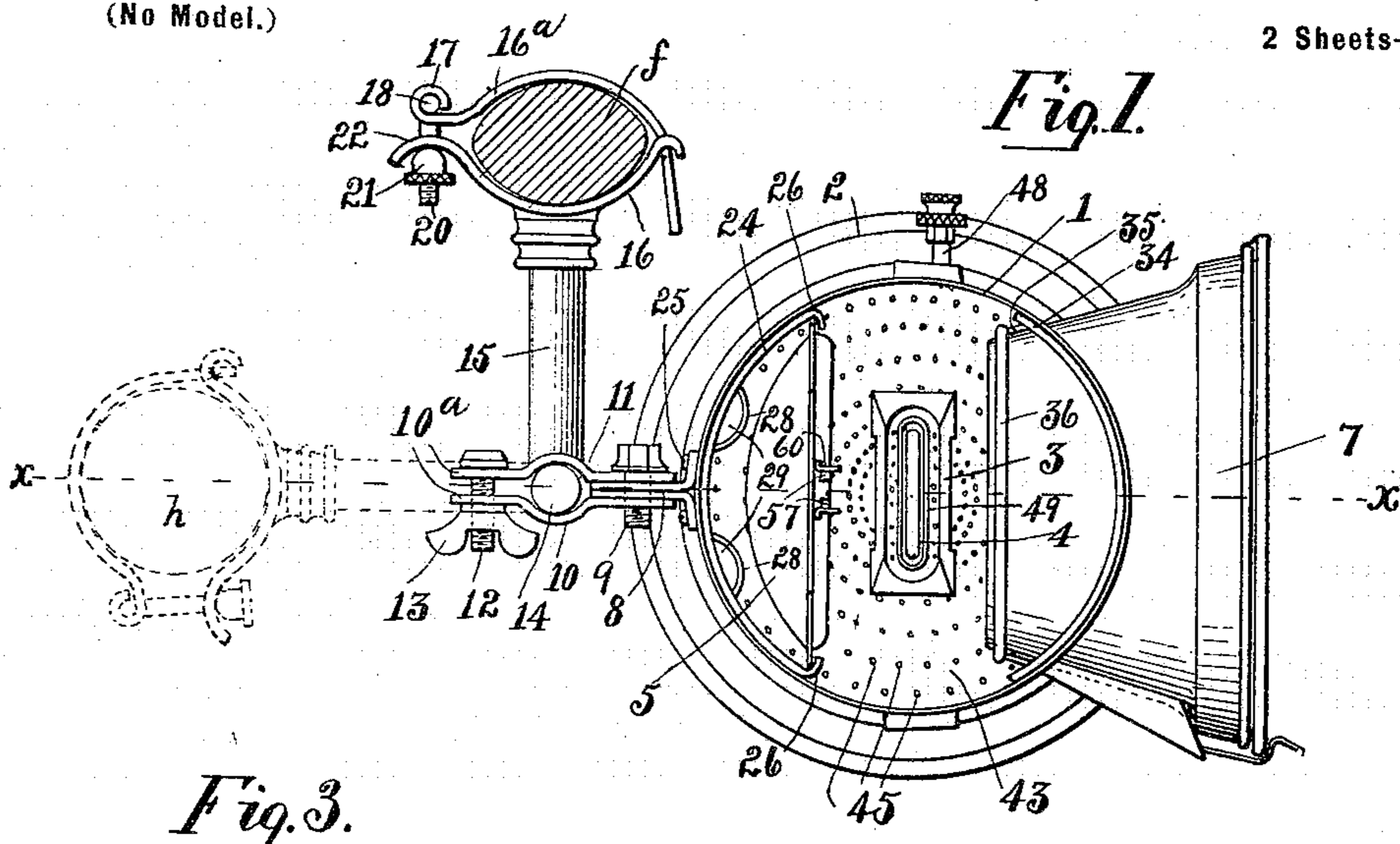
Patented July 19, 1898.

J. H. LEHMAN.  
BICYCLE LANTERN.

(Application filed Sept. 18, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses.

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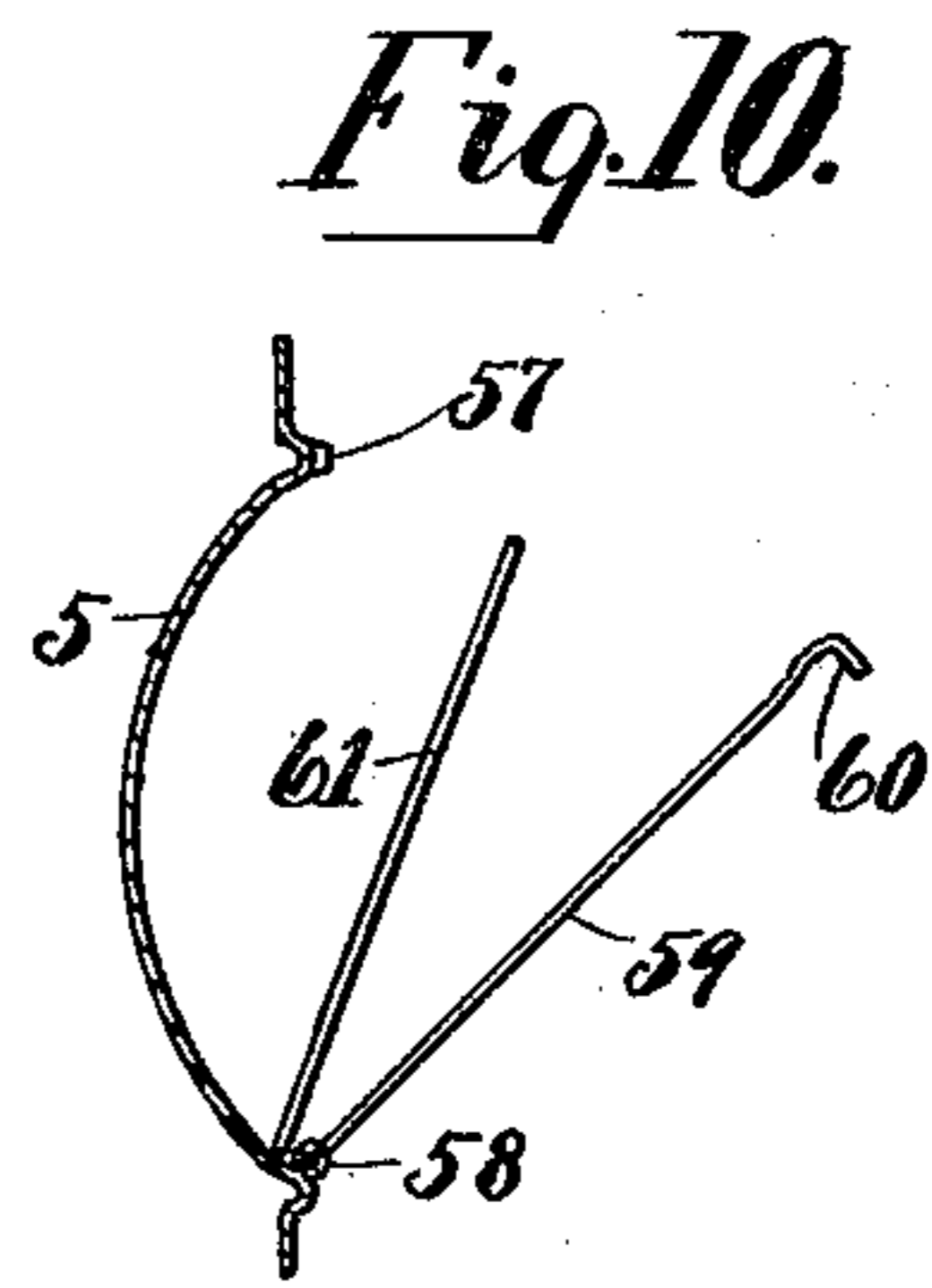
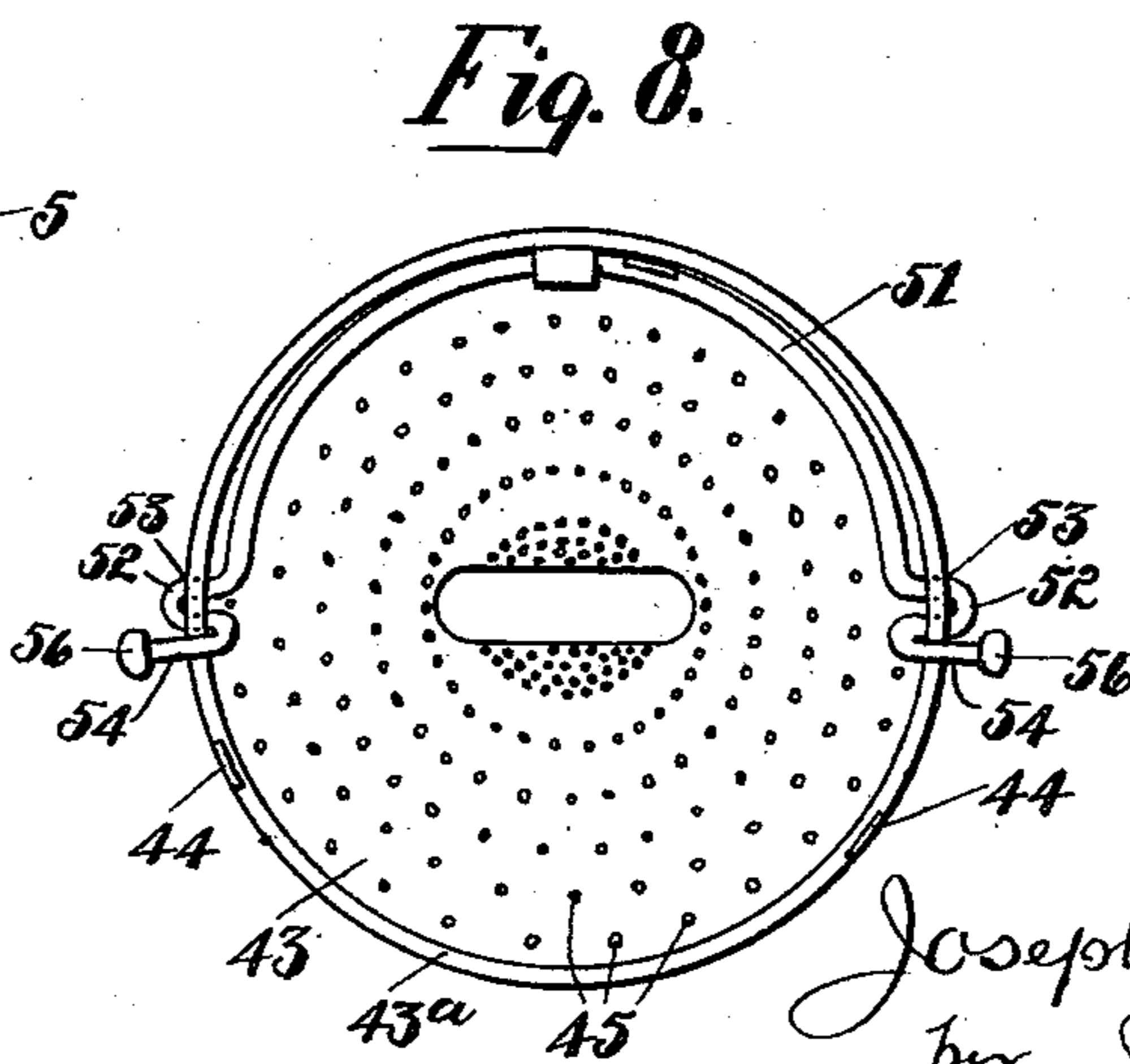
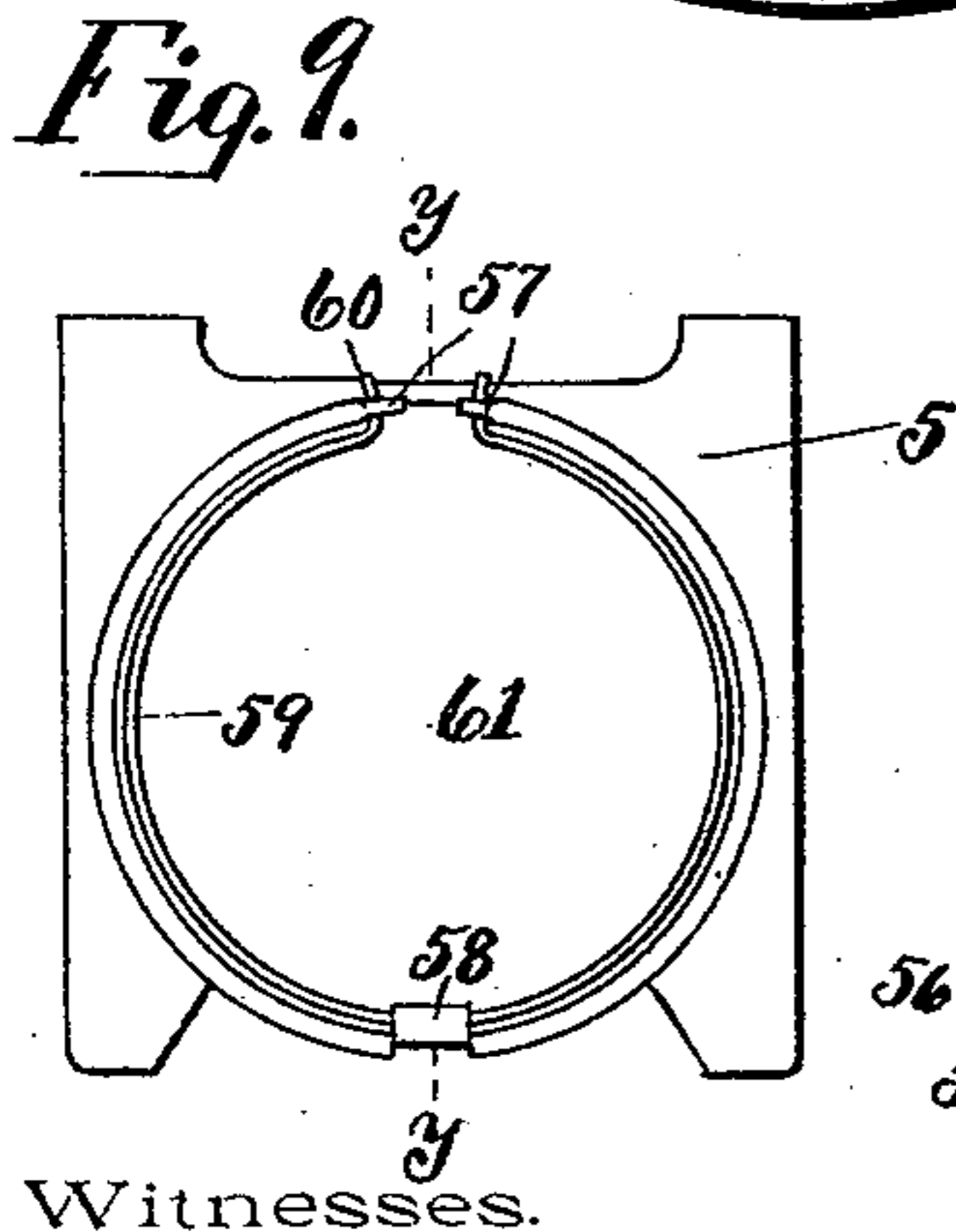
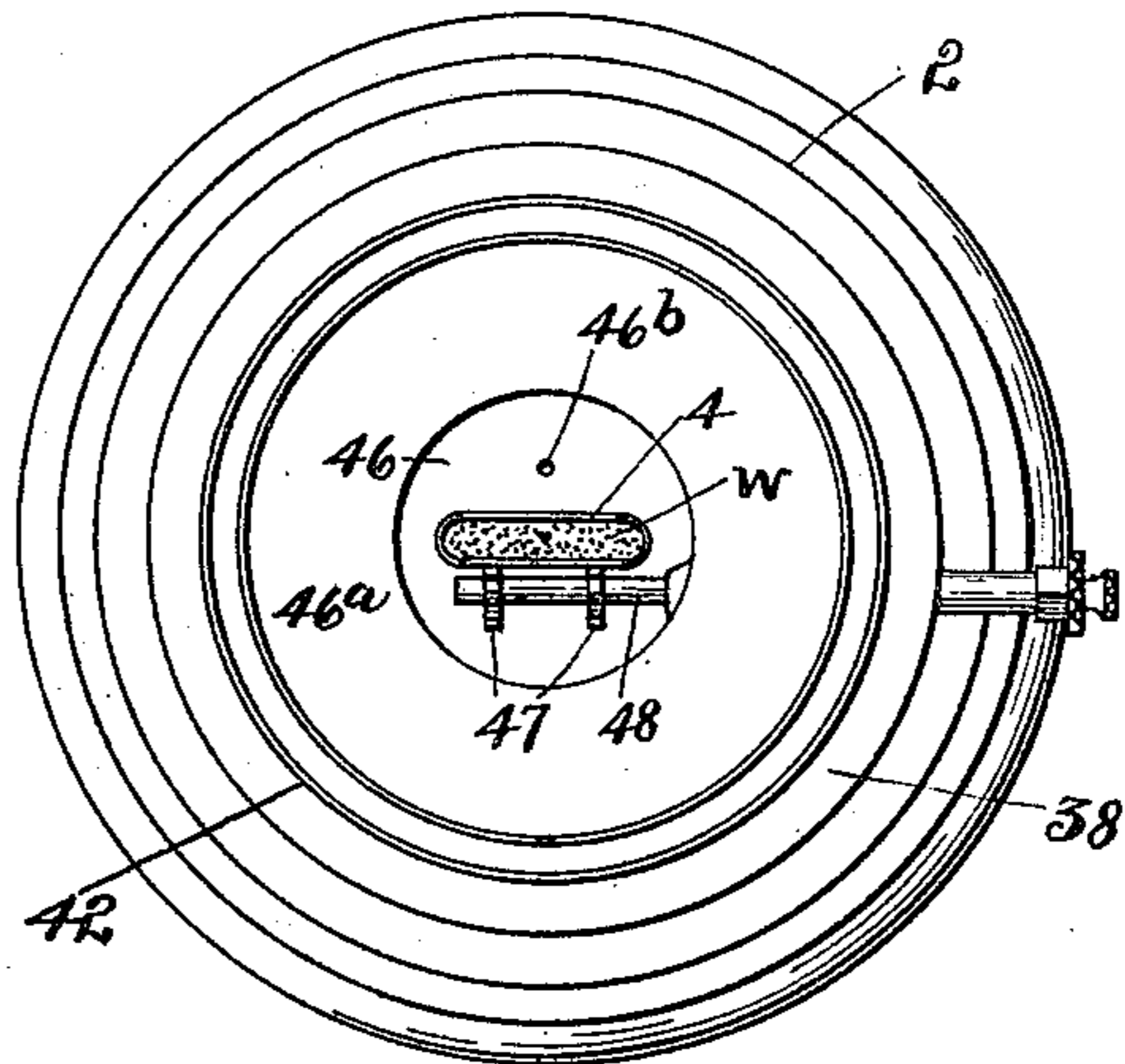
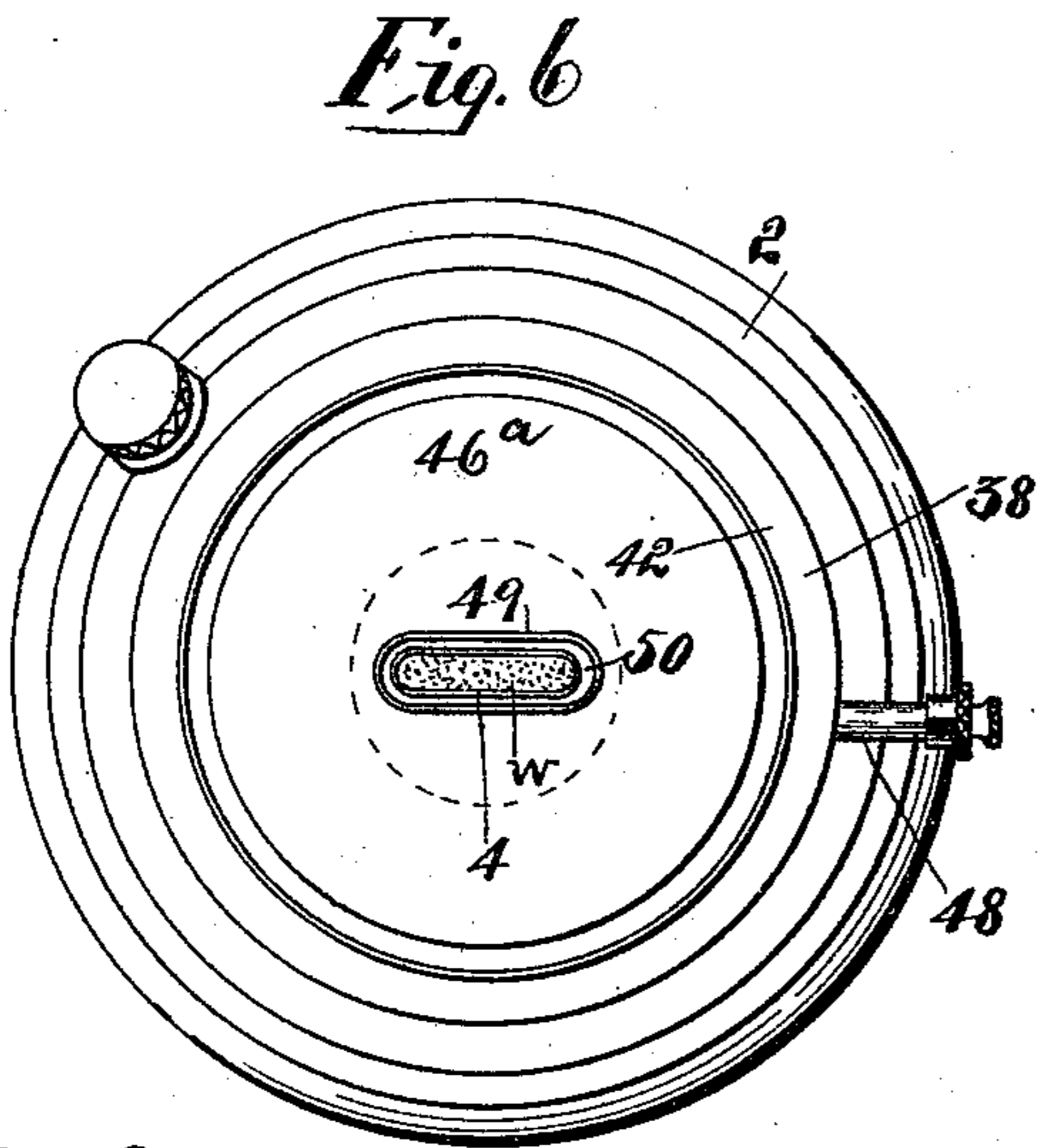
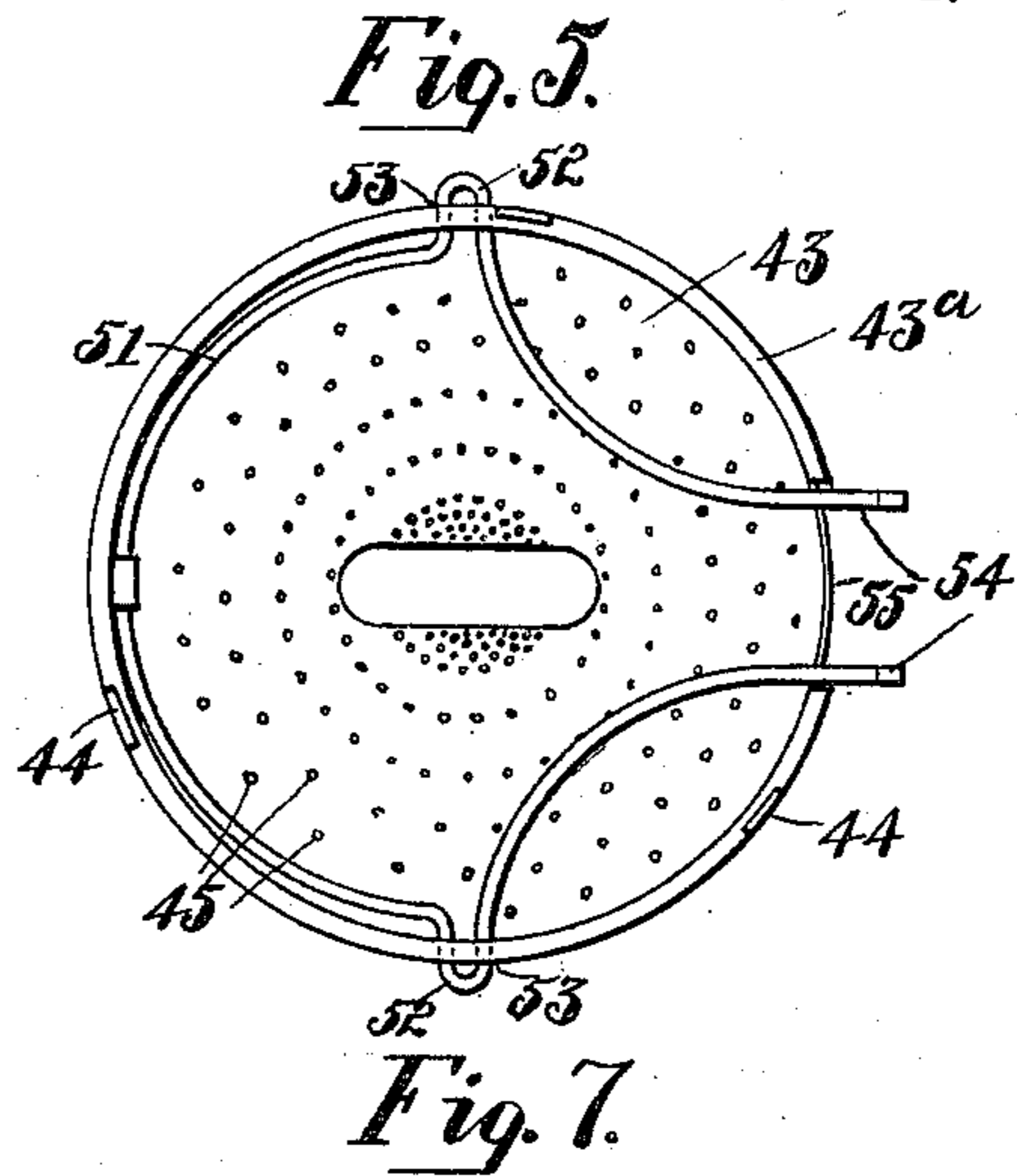
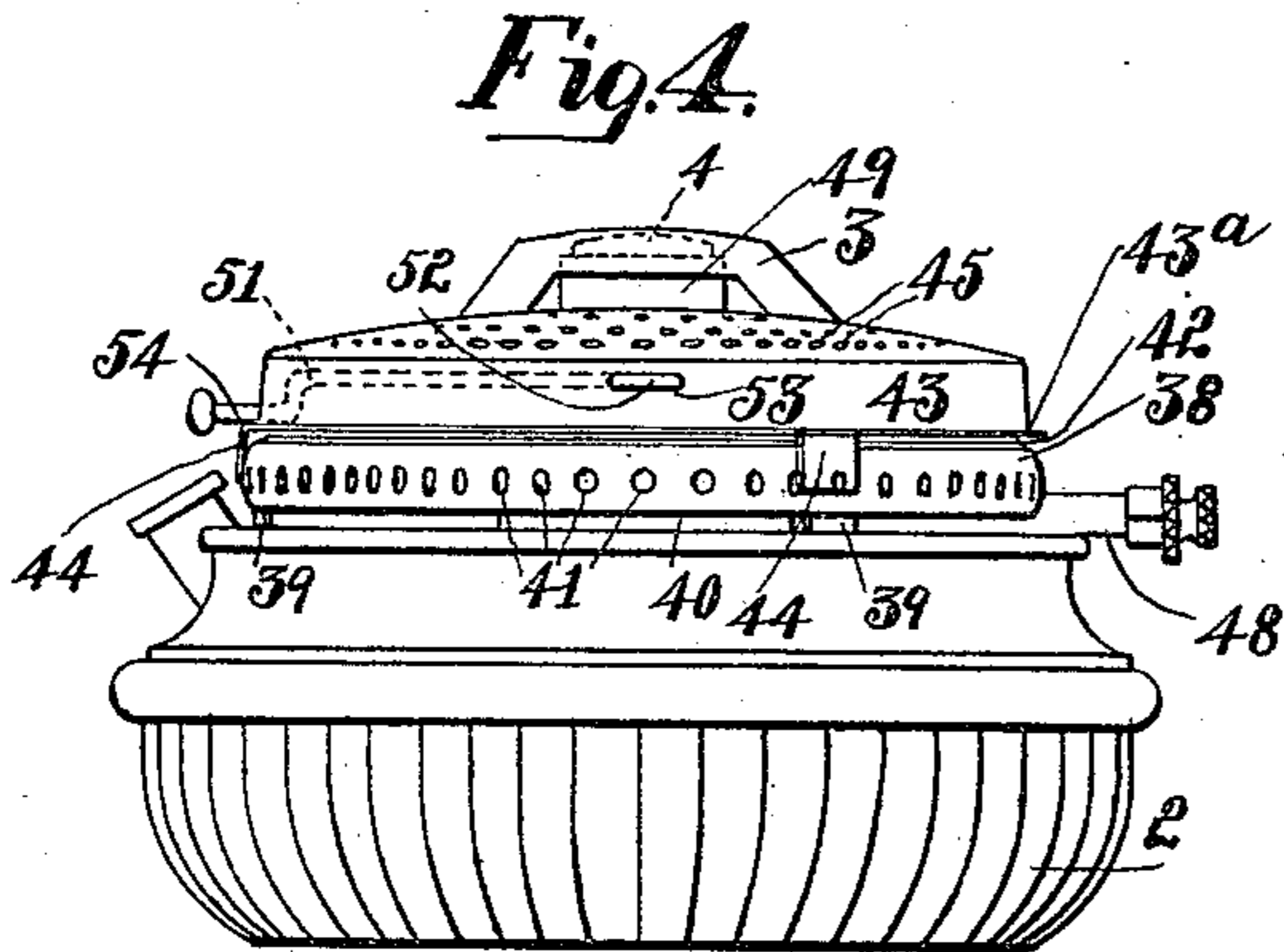
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(Application filed Sept. 18, 1897.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JOSEPH H. LEHMAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO  
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## BICYCLE-LANTERN.

SPECIFICATION forming part of Letters Patent No. 607,544, dated July 19, 1898.

Application filed September 18, 1897. Serial No. 652,089. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. LEHMAN, a citizen of the United States, residing in the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Bicycle-Lanterns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1, Sheet 1, is a plan view of a lantern in which my improvements are embodied, the detachable top having been removed and showing the holder as secured to the fork of a bicycle. Fig. 2 is a vertical section as on line *x x*, Fig. 1, but showing the holder as secured to the head of a bicycle—that is, in the position shown in dotted lines in Fig. 1. Fig. 3 is an elevation of the rear side of the interior of the cylinder, showing the reinforcing-plate. Fig. 4, Sheet 2, is an elevation of the oil-receptacle and adjuncts detached from the cylinder. Fig. 5 is a plan view of the burner-plate removed and inverted and also showing the device for detachably securing the oil-receptacle to the cylinder. Fig. 6 is a plan view of the oil-receptacle and adjuncts, the burner-plate having been removed. Fig. 7 is a plan view similar to Fig. 6, but the top or lid of the gas-chamber having also been removed. Fig. 8 is a view of the burner-plate similar to Fig. 5, but showing a modification of the means for securing the said plate, &c., to the cylinder. Fig. 9 is a front elevation of the reflector removed. Fig. 10 is a section as on line *y y*, Fig. 9, but showing the ring which retains the protecting-disk in front of the reflector in position to allow the said disk to be removed.

This invention relates more especially to lanterns for bicycles, and has for its object the improvement of the construction of certain details or parts which shall tend to increase the convenience and efficiency of the same, as hereinafter set forth.

The construction and mode of operation of the various improvements will appear from the following description, reference being had to the accompanying drawings, and the features and combinations which I believe to be novel will be particularly pointed out.

Referring to the drawings which form a

part of this specification, 1 is the usual body or cylinder of a bicycle-lantern; 2, the detachable oil-reservoir, having connected thereto the deflector 3 and wick-tube 4.

5 is the reflector, and 6 the lens opposite thereto, which latter is suitably held in place within the funnel-shaped holder 7.

Secured to the wall of the cylinder to the rear of the reflector is a lug 8, to which is pivoted, on a horizontal set-screw 9, a clip 10, the said screw passing horizontally through the outward extension of said lug and through the two parts of the clip, as clearly seen in Fig. 1. These parts of the latter are bent outwardly at 10<sup>a</sup> to form an approximately circular opening 11, and the extensions beyond the opening are connected by a through bolt or screw 12, having a thumb-nut 13 thereon for drawing the two parts of the clip together. The opening 11 is adapted to receive a vertical post 14 on the end of a horizontal bracket or arm 15, on the outer end of which is hinged a clip 16, that is adapted to be applied to either the head *h* or the fork *f* of the bicycle-frame. Such clips are well known, except that instead of drawing together or separating the two parts of the clip by means of the usual screw and thumb-nut I bend over outwardly the end of one of the parts 16<sup>a</sup>, as shown, of the clip to form a bearing 17, Figs. 1 and 2, for the reception of a pivot-pin 18, having projecting therefrom through a slot 19 a screw-pin 20, which latter has on its free end a nut 21. The corresponding end of the other part of the clip is turned outwardly at 22, as seen in Fig. 1, and is provided with a slot 23, Fig. 2, adapted to receive the screw 20. When the clip has been applied to the fork or head of the bicycle-frame, the screw is swung around on its pivot and is seated in the slot 23, whereupon the nut 21 is screwed up against the outwardly-turned part 22 until the clip has been sufficiently tightened on the head or fork, as the case may be. Thus the clip 16, and consequently the bracket and lantern, may be quickly and readily detached by releasing nut 21 and then swinging the screw-pin out of the slot 23; also, that the lantern may be readily detached from the bracket-post when desired by suitably turning the thumb-nut 13 of clip 10.

It will be obvious from the construction described that the lantern may be readily set to the desired position either vertically or horizontally, and thus the height and direction of its light thrown forward by the reflector may be suitably adjusted. In the full lines in Fig. 2 and in the dotted lines in Fig. 1 it will be seen that the clip 16 is attached to the head *h* of the bicycle-frame and the bracket extends directly to the rear in line with the lantern, while in the full lines in Fig. 1 the clip is attached to the fork *f* and the bracket stands at right angles to the other position.

On the inner side of the cylinder 1 opposite to and extending laterally on each side from the base of the lug 8 (to which the clip 10 is pivoted) is a reinforcing-plate 24, that is secured to the cylinder by means of rivets 25, Figs. 1 and 3, that pass through the base of said lug and through the cylinder. The free ends of said plate are in the present instance bent inwardly, as seen in Fig. 1, to form offsets or hooks 26 for holding the reflector 5 in place. Heretofore it has been customary to provide a number of perforations 27 in the rear wall of the cylinder and through the said plate 24, as indicated by dotted lines in Fig. 3, for the admission of air directly to the interior of the cylinder. I found, however, in practice that the air thus admitted and passing directly across to the flame of the lantern would sometimes extinguish the flame. In order to obviate this and at the same time to improve the draft, I make inward bends or depressions 28 in the reinforcing-plate on each side of the connection of the line of the lug 8 with the cylinder to form vertical channels 29. These channels are open at the top, but are closed at the bottom by a plate 29<sup>a</sup>, and the perforations 27 lead into the same. Thus the inflowing currents of air instead of passing immediately over to the flame are directed upwardly and pass over the top of the reflector 5.

30 is the top of the lantern which is attached to the cylinder and through which the products of combustion ascend. In order to improve the draft in this part of the lantern, I employ a horizontal plate 31, that rests upon the top of the cylinder and has a central tube or chimney 32 substantially concentric with the wick-tube. The open top of the tube 32 is adjacent to the usual series of apertures 33 in the lantern-top.

The funnel-shaped or tapering lens-holder 7 has heretofore been secured in place to the cylinder by soldering, riveting, or other objectionable means. To improve the manner of securing the said holder, I employ the following construction: 34 is an annulus tapering similarly to the lens-holder and having a peripheral flange 35, that when in place abuts against the inner side of the cylinder, as seen in Figs. 1 and 2. The annulus is first inserted in the latter and there held in place, its rear end coinciding with the opening in the cylinder for the lens-holder. The latter is then

passed into the opening and wedged tightly therein by reason of its taper. The length of the holder and the diameter of the opening are such that when the former is thus wedged its inner end will then project some distance beyond the end of the annulus 34. I now, by means of a suitable tool, knurl over the holder against the end of the annulus, as seen at 36 in Figs. 1 and 2. Thus the holder will be held firmly and securely in place.

37 is the usual disk of glass which is inserted in the inner end of the holder for the purpose of protecting the lens from the products of combustion.

The upper end of the wick-tube 4 is made convex, as shown by dotted lines in Fig. 4. While this form of the end of the tube is not new, the top of the deflector 3 has heretofore been made straight or in a horizontal plane, so as to form a guide to determine the shape of the wick in cutting off the latter with scissors, and thus the two corners of the wick extended farther from the wick-tube than the intermediate portions, thereby, as it has been claimed, increasing the volume of flame.

By making the top of the deflector of convex shape in the arc of a circle of greater radius than that of the top of the wick-tube and eccentric with respect thereto, whereby the edge of the wick when trimmed thereby is neither straight nor of an arc concentric with the top of the wick-tube, but is a medium between the two, the shape of the flame is much improved. This is due to the fact that the corner portions of the wick have a sufficient projection to burn with a square flame, but not sufficient to cause flaring and smoking.

38 is an annulus that is supported by posts 39 upon the top of the oil-reservoir so as to leave a passage-way 40 for air. Said annulus is provided with a series of apertures 41, which, however, may sometimes be dispensed with. It has also an upwardly-projecting flange 42.

43 is the burner-plate, having a downwardly-extending flange 43<sup>a</sup>, that is adapted to project over the flange 42 of annulus 38, and is supported by legs 44 a short distance above the latter, so as to leave an air passage-way between it, the annulus, and the burner-plate. The top of the burner-plate is provided with the usual perforations 45.

The wick-tube is secured to a cylindrical box 46, that is seated in a central opening in the top of the oil-reservoir, the tube being of course open at the top and also opening into the oil-chamber. The side of the said tube within the box 46 is slotted for the reception of the ordinary star wheel or wheels 47, that is adapted to engage the wick and is mounted upon the rotatable shaft 48. The top of box 46 projects a considerable distance beyond its body, forming a flange 46<sup>a</sup>, as shown, and has a central tubular projection 49, that surrounds the wick-tube, but not in contact therewith, so as to leave a passage-way 50. This tube projects through an opening in the

burner-plate, and its top is below the top of the wick-tube and deflector, as seen in Fig. 2. There is also a small aperture 46<sup>b</sup> in the bottom of the box, which serves to allow oil-vapor rising from the oil-reservoir to enter the box, and also to permit any oil-vapor that may be liquefied within the latter by condensation to return into the reservoir.

The main purpose of the box 46 and the construction specified is to form a chamber for gas or vapor of the oil (usually kerosene) rising from the oil-reservoir by way of the star-wheel slots in the wick-tube or through the aperture 46<sup>b</sup>, or both, and which vapor, passing up through the tube 49 adjacent to the top of the wick-tube, is ignited by and consumed in the flame, thus increasing the size or volume of the latter to a certain extent, and also serving to protect the wick from varying currents of air, and thus equalizing the temperature of the oil and improving the capillary action of the wick and further rendering the flame more steady; also, the star-wheels for adjusting the wick, being outside the oil-reservoir, "flooding" of the wick is thereby avoided.

The projecting part of the top of the box operates as a deflecting-plate for the currents of air coming under the annulus 38 and through the perforations thereof.

In order to provide a ready and convenient means for securing the oil-reservoir with its adjuncts detachably to the lantern-cylinder, I secure to the under side of the top of the burner-plate, near its edge, a spring-wire 51, Fig. 5, bent into semicircular form, and with opposite bends or projections 52, that extend through horizontal slots 53 in the flange 43<sup>a</sup> of said plate, and are adapted to enter corresponding slots (not shown) in the wall of the lantern-cylinder. Convergent extensions 54 of the wire from the heads 52 project through slots 55 in the burner-plate flange and said cylinder. When the oil-reservoir is to be secured to the cylinder the slots therein are brought to register with the projections 52, and the ends of the extensions 54 are pressed toward each other, and the said projections will enter the cylinder-slots upon releasing the extensions.

In Fig. 8 I show a modification of the device. This consists merely in carrying the extensions of the projections outwardly—that is, about radially—and putting knobs 56 on the ends. The operation is, however, substantially the same in each form.

The reflector 5, which is of the usual form, I stamp out from a sheet of suitable metal. At the same time I strike up by a suitable die or dies two adjacent lugs or projections 57 at points near the concave or reflecting part of the device, and about opposite these projections I strike up a lip 58. I then insert an elastic split ring 59, preferably of spring-wire, under the lip 58 and turn the latter over upon the ring, so as to form a hinge for the ring, as shown. I also turn out-

wardly the free ends of the latter to form hooks 60. The usual glass protector 61 is now inserted in place in the front portion of the reflector, the ring 59 being then swung outwardly on its hinge, as in Fig. 10. The ring is then pressed inwardly and its out-turned ends 60 are brought together and are respectively passed under the lugs 57, as in Fig. 9. Thus the protector will be securely held in place, but may obviously be readily removed when it is necessary to clean it or the reflector.

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

1. The combination with a lantern having a projecting lug, a bifurcated or slotted spring arm or clip embracing the said lug and pivoted thereto, a set-screw forming the pivot for the said arm and also providing means for securing its adjustment, the two parts of said arm being bent outwardly to form between them an approximately circular seat, and a second set-screw connecting the outer or free end portions of the clip, of a horizontal bracket-arm having means at its outer end whereby it may be secured to a bicycle-frame, or the like, and at its inner end a vertical arm or post designed to engage the approximately circular opening of the said arm or clip, substantially as specified.

2. In a lantern for bicycles and the like, the combination with the cylinder, of the reinforcing-plate secured to the inner rear portion thereof and provided with means for supporting the reflector, said reinforcing-plate being also formed with inward bends or depressions, closed at the bottom and open at the top, the cylinder in rear of the said bends or depressions having air-apertures which open into the spaces formed thereby, substantially as specified.

3. In a lantern for bicycles and the like, the combination with the cylinder, of the reinforcing-plate having the inward bends or depressions, closed at the bottom and open at the top, the holder-lug riveted to said plate and cylinder, the latter having the air-apertures leading into the space between the cylinder and said depressions in the reinforcing-plate, substantially as and for the purpose set forth.

4. In a lantern of the nature recited, the combination with the cylinder, of the tapering lens-holder and means for securing the latter to the cylinder; said means consisting of the annulus having a flange adapted to fit against the interior of the cylinder around the usual opening in the latter for the reception of the lens-holder, and against the inner end of which annulus the projecting end portion of the holder is knurled, whereby the holder is held securely in place, substantially as set forth.

5. In a lantern for bicycles or the like, the combination of the oil-reservoir, the burner-plate, the deflector, the box connected to

said reservoir, closed at the bottom and having the contracted tubular opening at the top, the wick-tube within said box, and communicating with the oil-reservoir and said  
5 tubular portion of the box extending above the burner-plate, and below the top of the wick-tube and deflector; the slot or slots in the wick-tube, the star wheel or wheels, entered in said slot or slots and means for rotating said wheel or wheels from the exterior  
10 of the lantern, substantially as and for the purpose set forth.

6. In a lantern for bicycles or the like, the combination of the oil-reservoir, the burner-  
15 plate, the wick-tube, the box connected to said reservoir closed at the bottom and having the top of considerably greater diameter than that of the box, and provided with the contracted opening leading from the interior of said box  
20 to a point below and adjacent to the top of the wick-tube and deflector, together with the rotatable wick-adjusting star-wheel, or the like, entered into slots in the wick-tube; the said tube extending through the said box and com-  
25 municating with the oil-reservoir and projecting above the burner-plate, substantially as and for the purpose set forth.

7. In a lantern for bicycles or the like, the combination of the wick-tube, the deflector, the oil-reservoir, the box secured to the latter  
30 and having an aperture communicating with the reservoir, and having also the tubular opening at the top adjacent to and below the said wick-tube and deflector, substantially  
35 as and for the purpose described.

8. In a lantern for bicycles or the like, the combination of the cylinder, the oil-reservoir, the burner, the annulus, 38, supported by and elevated above said reservoir, and having the  
40 upwardly-projecting flange, 42, together with the burner-plate having the downwardly-projecting flange surrounding the said flange, 42, but not in contact therewith, so as to leave a passage-way into the space beneath the  
45 burner-plate, substantially as and for the purpose set forth.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

JOSEPH H. LEHMAN.

Witnesses:

WALTER C. PUSEY,  
JOSHUA PUSEY.