

No. 710,203.

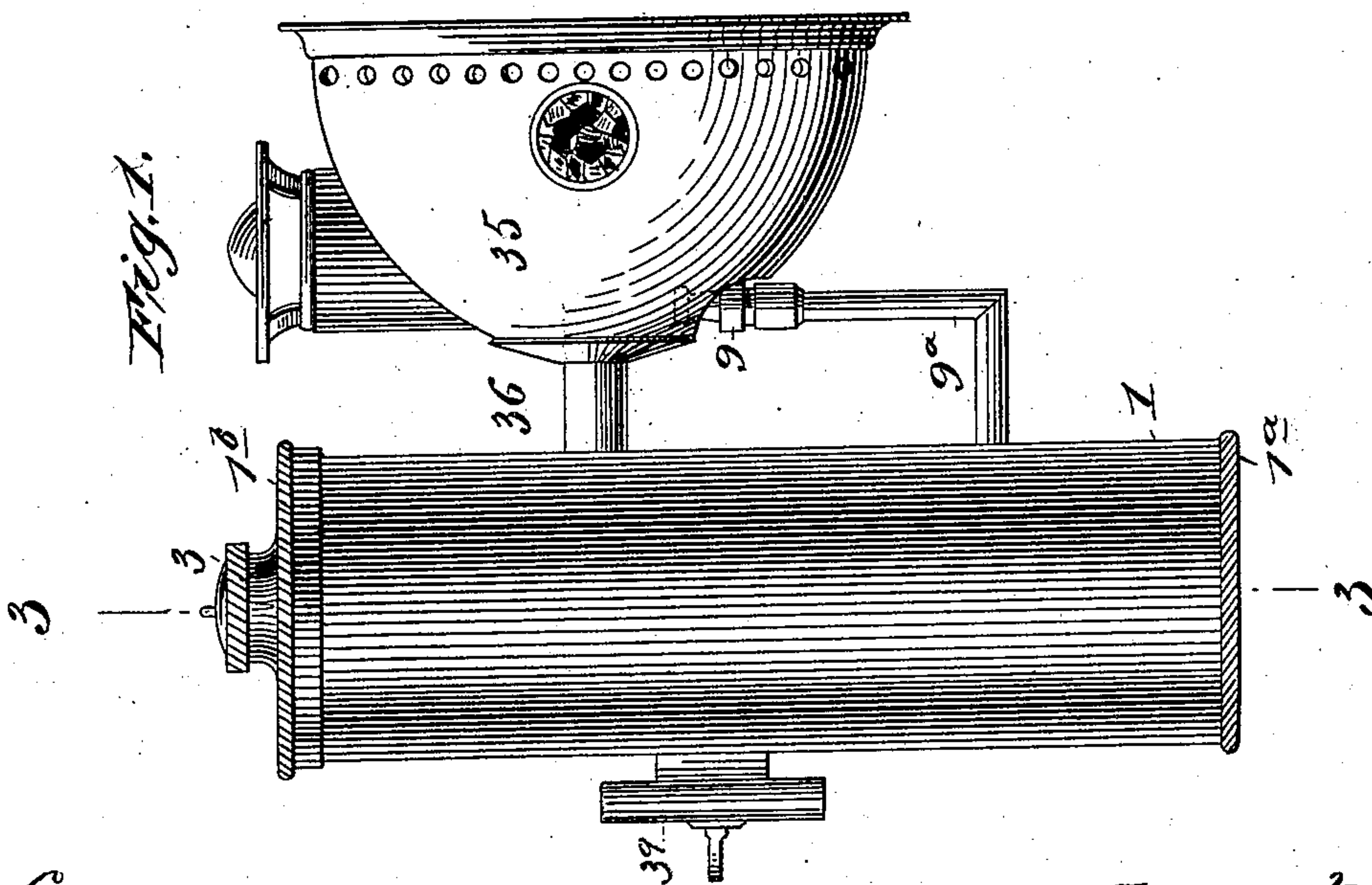
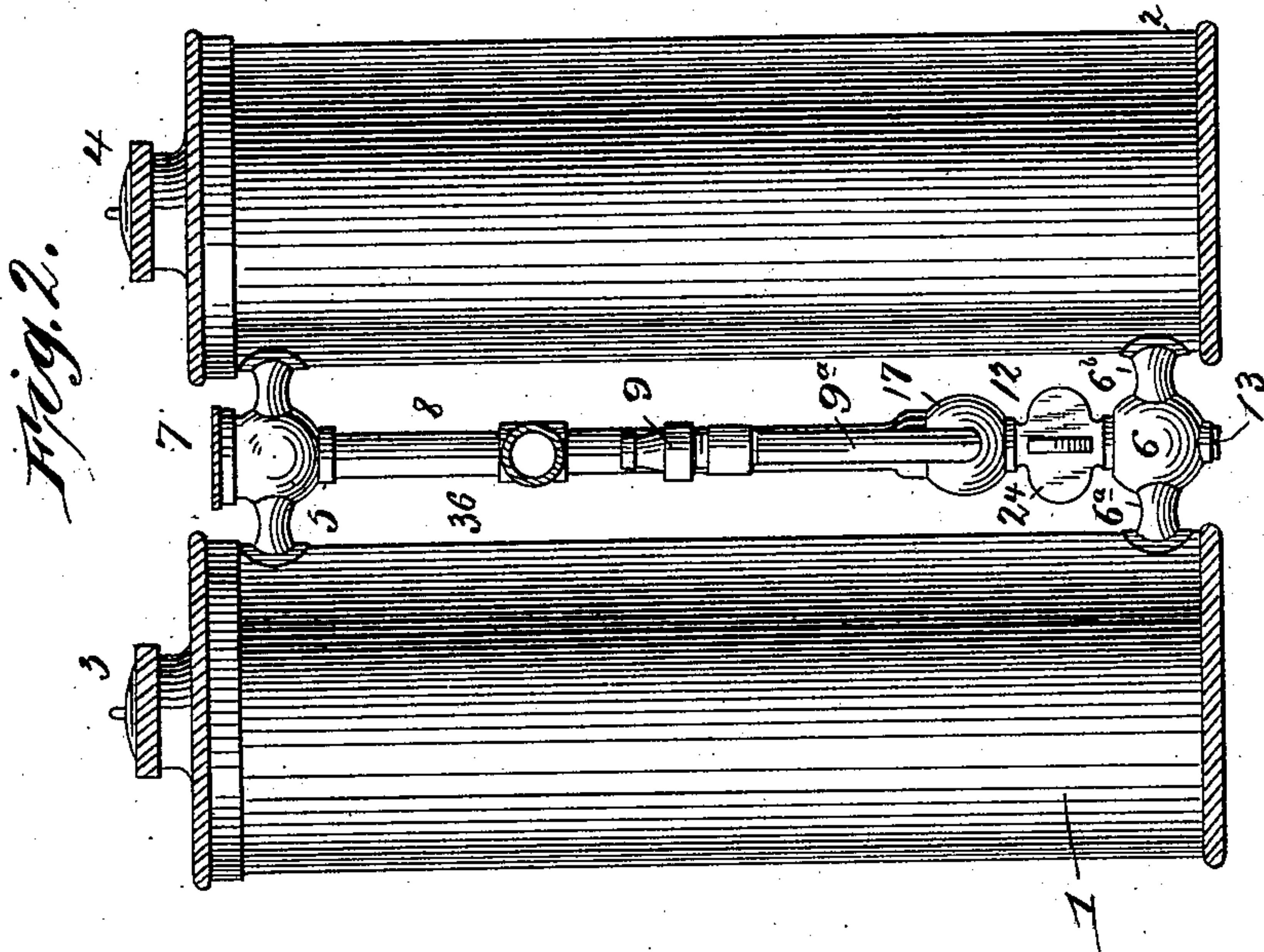
Patented Sept. 30, 1902.

A. K. MILLER.  
ACETYLENE GAS LAMP.

(Application filed Oct. 26, 1898.)

(No Model.)

2 Sheets—Sheet 1.



*Witnesses*  
*C. W. Benjamin*  
*Caroline Herbrandt*

*Inventor*  
*A. K. Miller*  
*By T. F. Bourne*  
*att'y*

No. 710,203.

Patented Sept. 30, 1902.

A. K. MILLER.  
ACETYLENE GAS LAMP.

(Application filed Oct. 26, 1898.)

(No Model.)

2 Sheets—Sheet 2.

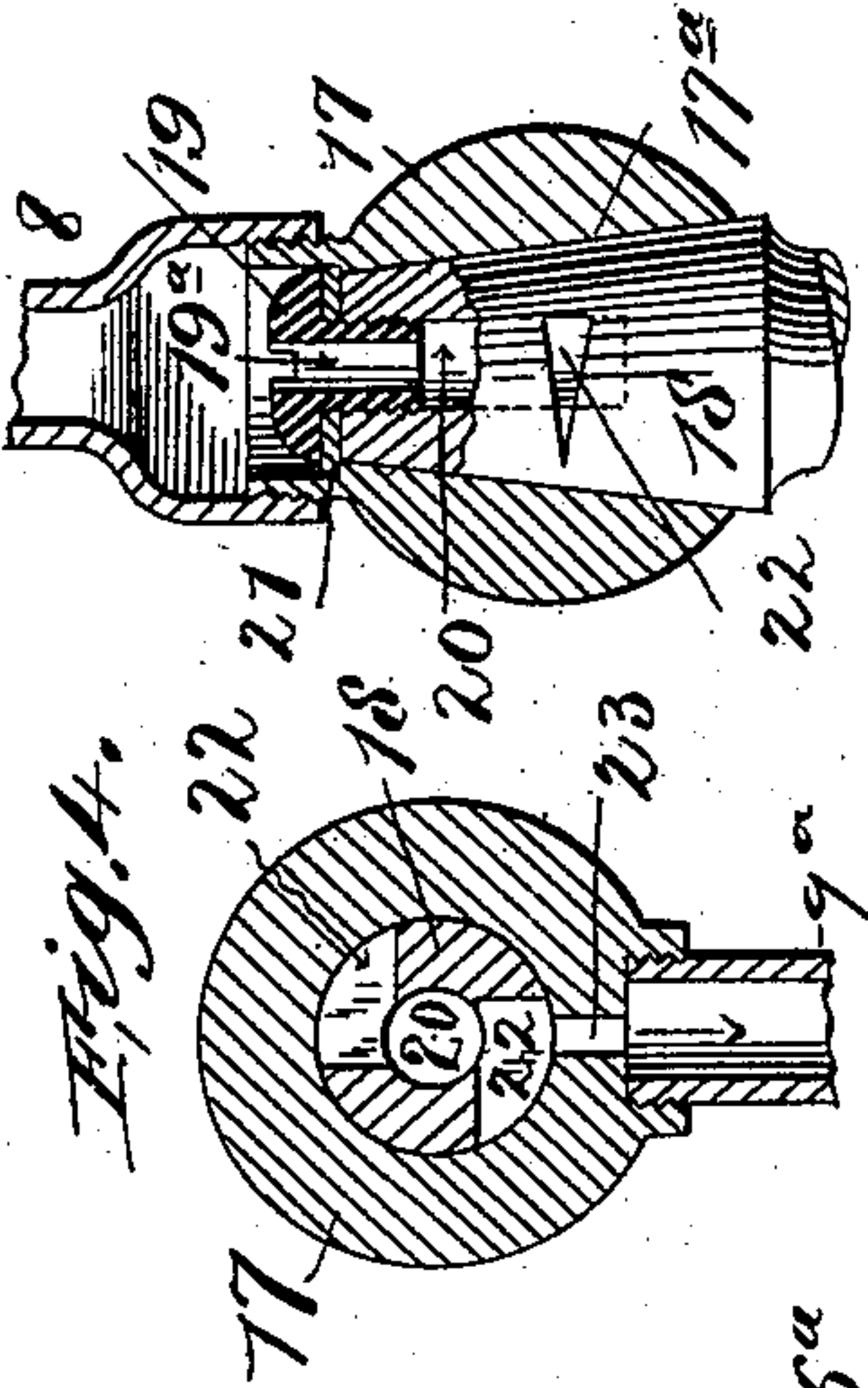


Fig. 4.

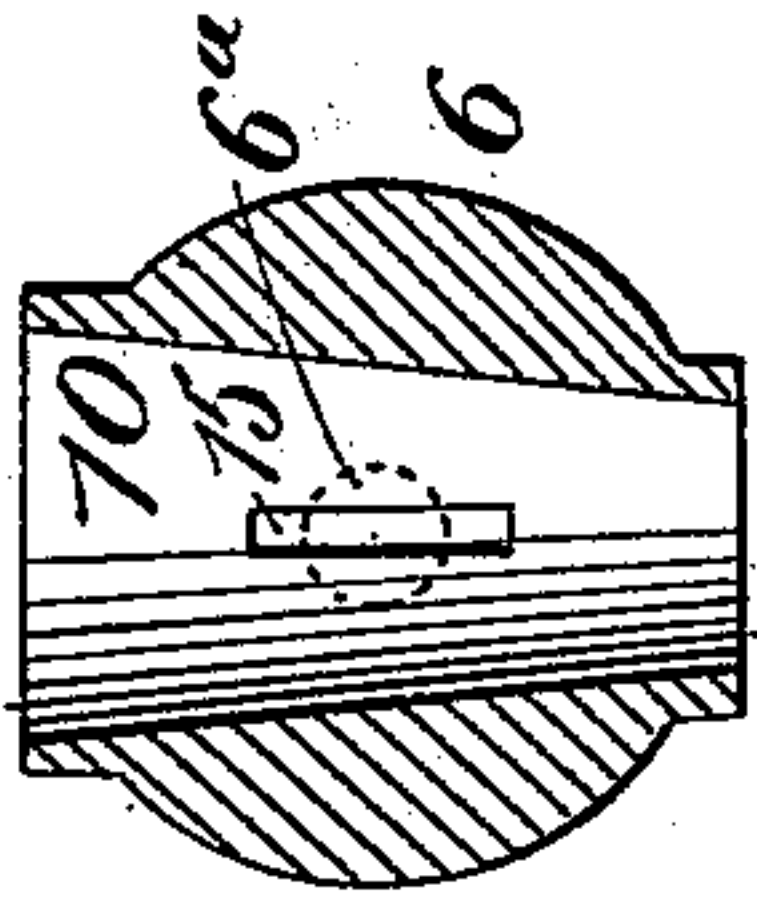


Fig. 6.

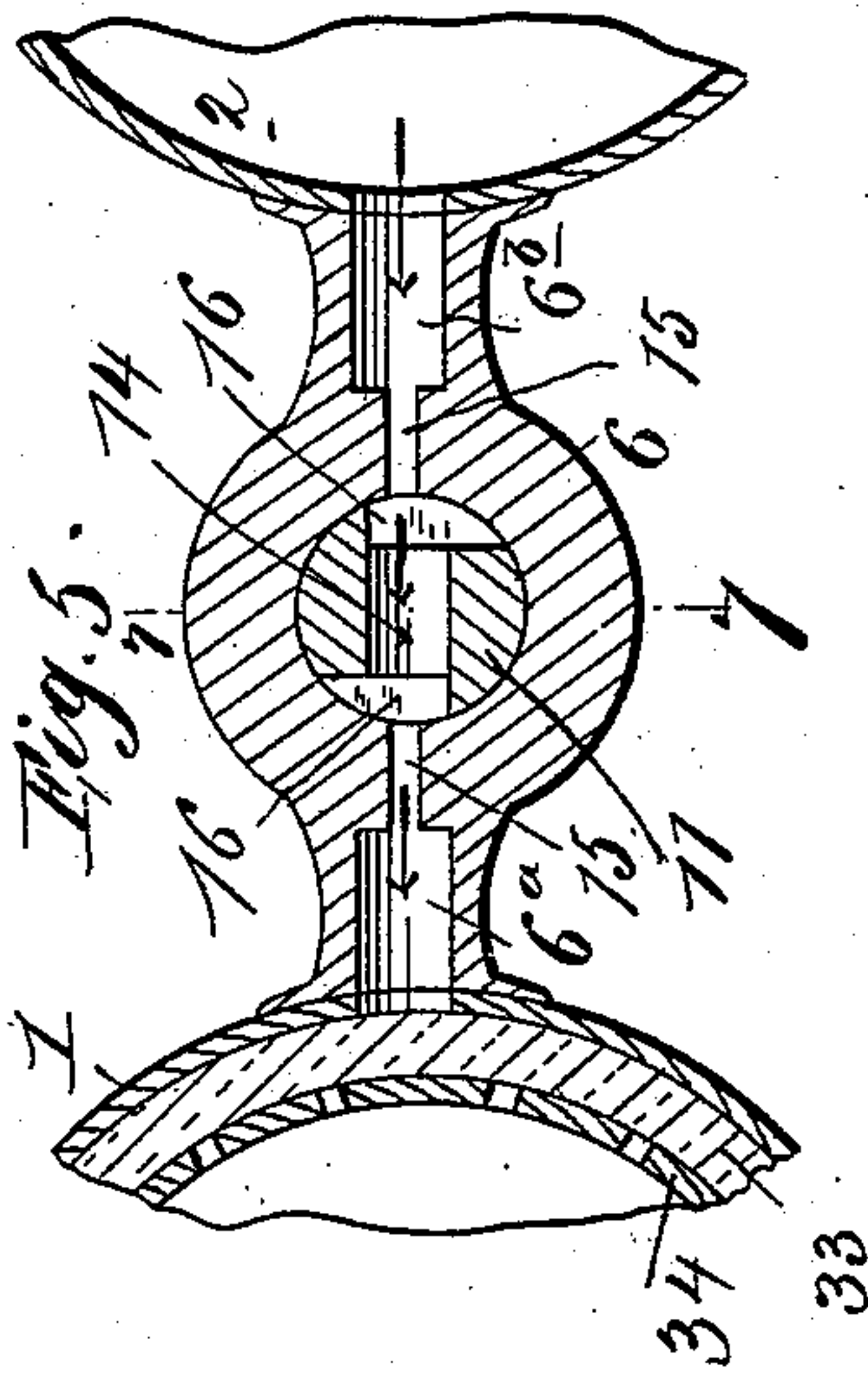


Fig. 5.

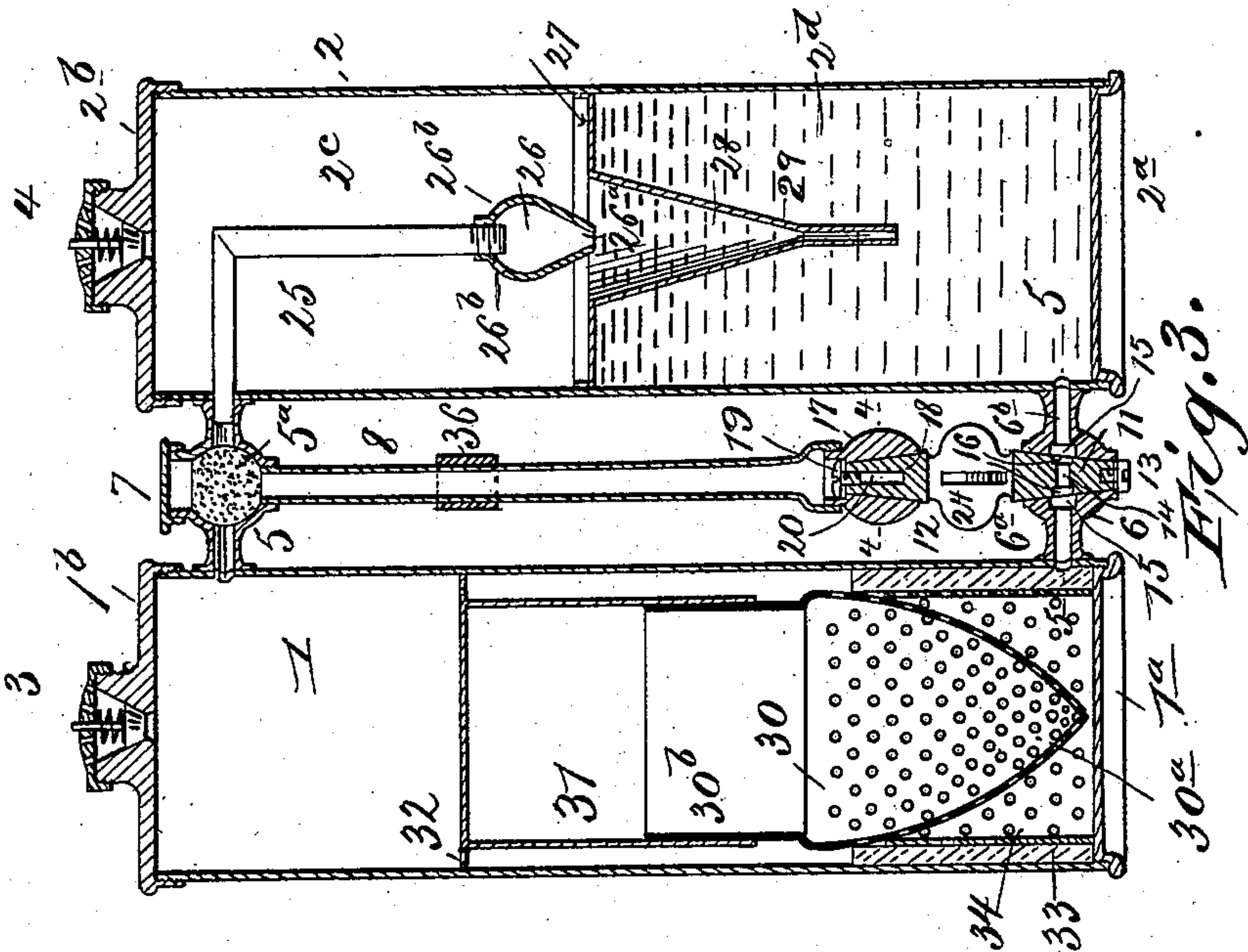


Fig. 3.

Witnesses,  
G. W. Benjamin  
Caroline Herbrandt.

Inventor  
A. K. Miller  
By J. F. Bourne  
his atty



# UNITED STATES PATENT OFFICE.

ARTHUR K. MILLER, OF NEW YORK, N. Y.

## ACETYLENE-GAS LAMP.

SPECIFICATION forming part of Letters Patent No. 710,203, dated September 30, 1902.

Application filed October 26, 1898. Serial No. 694,586. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR K. MILLER, residing in New York city, borough of Brooklyn, State of New York, have invented certain new and useful Improvements in Lamps, of which the following is a specification.

My invention relates more particularly to improvements in the class of lamps adapted to produce gas from the action of water upon calcic carbide; and one of the objects of my invention is to produce a uniform water and gas feed; and to this end the invention consists in a pair of receptacles or chambers connected by passage-ways at or near their opposite ends, one of which receptacles is adapted to contain carbide and the other water and means for regulating the passage of the water to the carbide.

Another object of the invention is to enable the simultaneous regulation of the supply of water to the carbide and the passage of gas evolved, and for this purpose the invention consists in a pair of receptacles having a connecting water-passage, one of which receptacles is adapted to contain carbide and the other water, a gas-pipe connected with one or both of said receptacles to carry off the gas evolved by the action of the water and the carbide, and cocks connected with the water-passage and with the gas-pipe and so arranged that they will operate to simultaneously regulate the passage of water to the carbide and the passage of gas from the gas-receptacle.

Another object of the invention is to provide an improved cock or valve adapted to regulate the passage of liquid or gas; and this portion of the invention consists in a chamber having a narrow slit for the passage of liquid or gas and a stem adapted to fit within said chamber and having a bore to communicate with an inlet or outlet, which stem has a tapering socket in its side located at substantially right angles to said slit and leading to said bore, whereby as the stem is rotated the passage of liquid or gas will be regulated, according to which portion of said socket is brought in line with said slit.

The invention also consists in the novel details of improvement and the combinations of parts that will be more fully hereinafter set forth, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part hereof, wherein—

Figure 1 is a side elevation of a lamp embodying my improvement. Fig. 2 is a front elevation thereof, the reflector being removed. Fig. 3 is a vertical section on the line 3 3 in Fig. 1. Fig. 4 is a horizontal section, enlarged, on the line 4 4 in Fig. 3. Fig. 5 is a horizontal section, enlarged, on the line 5 5 in Fig. 3. Fig. 6 is a vertical section, enlarged, through the gas-valve; and Fig. 7 is a section on the line 7 7 in Fig. 5.

In the accompanying drawings, in which similar numerals of reference indicate corresponding parts in the several views, 1 2 indicate receptacles or chambers which are shown in the form of cylinders having removable caps 1<sup>a</sup> 1<sup>b</sup> 2<sup>a</sup> 2<sup>b</sup>, respectively, at the ends, which caps may be connected therewith by screw-threads or otherwise. The caps 1<sup>b</sup> 2<sup>b</sup> are shown provided with safety-valves 3 4, adapted to open outwardly. The receptacles 1 2 are connected at or near their ends by passage-ways, for which purpose I have shown castings, tubes, or the like 5 6, secured to the corresponding sides of said receptacles and communicating with apertures therein, whereby water and gas may pass from one receptacle to the other. The casting 5 is shown provided with four ways, two of which communicate, respectively, with receptacles 1 2 and with a central chamber 5<sup>a</sup>, adapted to contain a filtering medium—such as mineral wool, asbestos, charcoal, cotton, or the like—to filter gas. One of these ways is shown provided with a cap 7, which may be connected therewith by screw-threads, and the other way is shown connected with a tube or pipe 8, which is to lead gas to a burner 9, which may be of any suitable construction. As tube 8 is exposed to the air, it acts as a condenser to cool the gas in its passage to burner or tip 9, preventing excess carbonization at the tip and improving the light. The casting, tube, or the like 6 is shown provided with two ways 6<sup>a</sup> 6<sup>b</sup>, which communicate with apertures in the receptacles 1 2, respectively, and with a chamber 10, adapted to receive the stem 11 of a cock or valve 12. I have shown the chamber 10 and the stem 11 as tapering, so that the latter may fit snugly within the former



and to make a tight fit. The stem 11 is shown provided with a screw 13, adapted to act against the chamber 6. The stem 11 has a bore 14, adapted to register with the ways 6<sup>a</sup> 6<sup>b</sup> to permit the passage of water from receptacle 2 to receptacle 1 and to shut off such passage when the stem is turned.

My improvements for regulating the passage through the stem 11 are as follows: In the walls of chamber 10, communicating with the bores 6<sup>a</sup> 6<sup>b</sup>, are slits 15, that are preferably narrower than long, (see Fig. 7,) and in the surface of stem 11 in line with the bore 14 and also horizontally in line with the slits 15 are sockets 16, that communicate with the bore 14. The sockets 16 extend substantially perpendicular to the axis of stem 11 and are preferably triangular in shape, or, in other words, taper from a large end to a fine point, as more clearly shown in Fig. 6. With this arrangement when the small ends of the sockets 16 are presented to the slits 15 only a small amount of liquid can pass, and as the stem is turned the large ends of the sockets will approach the slits, thereby gradually increasing the area of the passage-way and enabling more water to pass. Likewise, if the stem is rotated in a reverse direction—that is, from the large ends of the sockets toward the small ends—the water will be gradually cut off. By this means I am enabled to regulate the supply of liquid from receptacle 2 better than if the customary annular bore were used in the stem to coact with the bores in the casting 6. Substantially the same arrangement is provided for regulating the passage of gas to the burner 9. For this purpose I have shown a casting 17 connected with the pipe or tube 8, being shown connected therewith by screw-threads, which casting has a chamber 17<sup>a</sup>, in which a stem 18 works, the chamber 17<sup>a</sup> and the stem 18 being shown tapered to make a tight fit, a screw 19 being shown threaded in a bore 20 in stem 18 and acting against the casting 17 to draw the parts 17 and 18 together to make a gas-tight joint, a washer 21 being interposed between parts 17 and 19. The bore 20 extends into the stem 18 a suitable distance, and the screw 19 is shown provided with a bore 19<sup>a</sup>, leading to the bore 20 and to the tube 8 to permit the passage of gas from said tube to the bore 20. In the opposite walls of the stem 18 are sockets 22, communicating with the bore 20 in manner similar to that described with relation to the sockets 16 of stem 11—that is to say, the sockets 22 are triangular or tapering and extend perpendicularly to the axis of stem 18. In the side wall of casting 17 is a slit 23, located at right angles to the sockets 22 and communicating with the tube 9<sup>a</sup>, that leads to the burner 9, (see Fig. 4,) whereby as the stem 18 is rotated more or less gas will be allowed to pass, according to the width of the socket 22, that aligns with the slit 23 of casting 17. As there are two sockets 16 in stem 11 that are adapted to simultaneously aline

with the bores 6<sup>a</sup> 6<sup>b</sup> of casting 6, I have shown two sockets 22 in the side walls of stem 18, the sockets 22 being at right angles to the sockets 16, because the bores 6<sup>a</sup> 6<sup>b</sup> are at right angles to the tube 9<sup>a</sup>, and, furthermore, because I prefer to connect the stems 11 and 18 so that they will rotate in unison, whereby as the stem 11 in the example shown can make complete rotations in either direction a socket 22 will always be in line with the slit 23 while the sockets 16 are in line with the bores 6<sup>a</sup> 6<sup>b</sup>. The object in having the stems 11 and 18 connected together, as in a single piece, is because I desire that the amount of gas permitted to pass to the burner 9 will be commensurate with the amount of water allowed to pass to the carbid and so that as more or less water is passed to the carbid more or less gas will be allowed to pass to the burner 9, whereby a given light may be adjusted and maintained.

24 represents wings connected with the stems 11 and 18, whereby they may be rotated, and in the arrangement shown the stems 11 and 18 and wings 24 are all in a single piece of material. While I have shown the wings 24 as located between the stems 11 and 18, it is evident that the means for rotating said stems may be placed in a different position. It is furthermore evident that my improvements may be utilized in connection with a single stem and also in connection with a single socket 16 or 22 in a stem.

It will be understood that calcic carbid is to be placed in one receptacle, as in the receptacle 1, and water in the other receptacle, and in the arrangement shown the gas that is generated in receptacle 1 can pass through the casting or tube 5 into the receptacle 2, above the water therein in the space or compartment 2<sup>c</sup>, which will act as a gasometer, and, furthermore, the gasometer equalizes pressure and maintains an equilibrium between the two receptacles, allowing a uniform feed of water and gas. In order to keep the water in receptacle 2 from passing into receptacle 1 when the device is inverted, I have shown a pipe 25, connected with the casting 5 and leading to the central portion of receptacle 2, and upon the end of said pipe I have shown a chamber or bulb 26, that has an opening 26<sup>a</sup> at its end and apertures 26<sup>b</sup> at its upper part, whereby the gas can pass into receptacle 2 above the water therein, and yet this chamber or bulb 26 will serve to prevent water from passing into pipe 25 when the device is inverted. Furthermore, I prefer to divide the receptacle 2 into two compartments 2<sup>c</sup> 2<sup>d</sup> by a partition 27, which is shown provided with a funnel-like projection 28, having an opening 29 at its small end, which may be held within the receptacle 2 by friction against the walls thereof or otherwise. The funnel-like projection 28 permits the passage of water from compartment 2<sup>c</sup> into compartment 2<sup>d</sup> when the receptacle 2 is being filled, and when the receptacle is in-



5   verted it acts to retain water in compartment  
 2<sup>d</sup>, more or less, to prevent it from passing  
 into compartment 2<sup>c</sup> and pipe 25. The ar-  
 rangement is such that the carbid in recep-  
 10   tacle 1 will be acted upon by the water from  
 below, so that the gas evolved will pass up  
 through dry carbid to the upper part of re-  
 ceptacle 1 and thence to the gasometer 2<sup>c</sup> and  
 burner 9. I have shown means for holding  
 15   the carbid, so as to conveniently place it in  
 and remove the residue from the receptacle  
 1, which I term a "cartridge," and which  
 consists, essentially, of a perforated shell 30,  
 shown substantially in the form of an in-  
 20   verted cone or tapering thimble and a tubu-  
 lar extension 30<sup>b</sup> at its upper part, which  
 passes into or receives a cap 31, shown pro-  
 vided with a flange 32, which cap may be per-  
 forated and adapted to fit within the recep-  
 25   tacle 1, and a space may be left between the  
 flange and the receptacle for the passage of  
 gas. The shell 30 and cap 31 may be made  
 of metal, clay, or porcelain. This cartridge  
 is to be charged with the calcic carbid and  
 30   then inserted in receptacle 1 until its lower  
 end comes to the bottom of the receptacle,  
 and the water from receptacle 2 can pass  
 through the perforations in the cartridge, and  
 thus reach the carbid. The peculiar gradu-  
 35   ated shape of the cartridge prevents an ex-  
 cess generation of gas. Furthermore, as the  
 carbid expands it will rise in the cartridge  
 and may also cause the shell or tube 31 to  
 rise up along the cylindrical portion 30<sup>b</sup> of the  
 40   shell 30 to make room for the expanding car-  
 bid, and when the residue is to be emptied  
 the cover or covers on the receptacle is or are  
 removed and then the cartridge is withdrawn  
 and emptied, and as the parts 30 31 can be  
 45   separated the residue can be readily removed  
 and the parts cleaned, if desired.

I prefer to provide means to prevent the  
 too sudden flow of water from receptacle 2 to  
 receptacle 1, and for this purpose in one or  
 45   both of said receptacles I place fibrous ma-  
 terial 33—such, for instance, as a circular cot-  
 ton wick, which rests against the aperture  
 leading to bore 6<sup>a</sup> of casting 6, such wick be-  
 ing shown at the lower part of receptacle 1,  
 50   and the lower end of the carbid is shown pass-  
 ing into such wicking. To hold this wicking  
 in place, I have shown a perforated metal  
 ring or tube 34, which holds the wicking in  
 contact with the walls of receptacle 1 and into  
 55   which the cartridge projects. By this means  
 the water passes to the wicking 33, saturates  
 the same, and exudes therefrom, so as to  
 reach the carbid.

My improved lamp in the various forms in  
 60   which it can be made is adapted for use on  
 bicycles and for household and other pur-  
 poses. In the example illustrated I have  
 shown it adapted for a bicycle, and for this  
 purpose I have shown a reflector or flame-  
 65   chamber 35 connected with the lamp, as by a  
 stem 36, secured to the tube 8, to which re-  
 flector the burner 9 leads, and 39 is a suitable

clamp carried by the lamp adapted for attach-  
 ment to a bicycle in well-known manner.

When the lamp is to be charged, the cocks 70  
 are closed and the receptacles are supplied  
 with the carbid and water, respectively, and  
 when the lamp is to be used the cocks are  
 turned so that water can pass from recepta-  
 cle 2 to receptacle 1, wherein it will engage 75  
 the carbid and evolve acetylene gas in well-  
 known manner. The gas will pass to the up-  
 per part of receptacle 1 and thence through  
 the casting 5 and the filtering material there-  
 in, when it is used, to the burner 9 and also 80  
 to the compartment 2<sup>c</sup>, when there is an ex-  
 cess of gas, said compartment thus acting as  
 a gasometer to store extra gas and to provide  
 for any excess of pressure. However, as the  
 water and gas cocks are to be made so that 85  
 when the water is turned on the gas can flow  
 to burner 9 there will be little, if any, liabil-  
 ity of an undue amount of gas being gener-  
 ated and little liability of danger, and, fur-  
 thermore, it will be seen that by the arrange- 90  
 ment of the gas and water cocks shown when  
 the light is extinguished by turning off the  
 cock the water will be simultaneously shut  
 off, and any gas that might thereafter gener-  
 ate through the dampness of the carbid will 95  
 be collected in the gasometer 2<sup>c</sup> and the up-  
 per part of receptacle 1.

The lamp is so constructed as to provide  
 for a circulation of air around all the parts to  
 prevent excess heating and danger from ex- 100  
 pansion.

I do not limit my invention to the precise  
 details of construction shown and described,  
 as they may be varied without departing from  
 the spirit thereof. 105

Having now described my invention, what  
 I claim is—

1. A lamp comprising two vertically-dis-  
 posed receptacles placed side by side, inter-  
 posed connections securing said receptacles 110  
 together, one connection having a bore, a tube  
 connected with and depending from said bore  
 to conduct gas, and a burner connected with  
 said tube, a cock to control the passage of gas  
 from said tube to said burner, the other con- 115  
 nection leading to said receptacles having a  
 cock to control the passage of water through  
 said connection, substantially as described.

2. A lamp comprising two receptacles, a  
 casting or tube connecting said receptacles 120  
 near one end, a cock to control said casting  
 or tube, a casting or tube secured to said re-  
 ceptacles near the opposite ends and commu-  
 nicating with the gas-generating receptacle, a  
 tube depending from said casting or tube, a 125  
 casting 17 connected with said tube, a burner  
 connected with the casting 17, a cock to con-  
 trol the passage of gas to said burner, and  
 means for operating said cocks simultane-  
 ously, substantially as described. 130

3. A lamp comprising a pair of receptacles,  
 a casting or tube connecting said receptacles  
 and having a chamber and narrow slits in the  
 wall of said chamber for the passage of liquid,



a stem located in said chamber and having tapering recesses in its sides communicating through the stem, a passage-way connecting said receptacles near the opposite end, a tube  
5 connected with said passage-way, a chamber connected with said tube and having a slit in its wall, a burner communicating with said slit, and a stem in said chamber having a bore and a tapering recess in its side commu-  
10 nicating with said bore to coact with said slit in controlling the passage of gas to said burner, substantially as described.

4. In a lamp the combination of two recep-  
15 tacles placed side by side and connected together so as to provide an air-space between them, said receptacles being in communication at their lower ends, a tube communicat-  
20 ing with one of said receptacles near its upper end to receive gas therefrom, a burner connected with said tube, and cocks compris-  
25 ing a stem having one portion provided with an aperture adapted to control the passage of liquid between the lower ends of the recepta-  
cles, and the other portion having an aper-  
30 ture adapted to control the passage of gas through said tube, substantially as described.

5. In a lamp the combination of two recep-  
35 tacles placed side by side and connected together by interposed castings located near opposite ends thereof, one casting having a bore communicating with both receptacles near their lower ends and also having a cham-  
40 ber, the other casting communicating with the gas-generating receptacle, a tube connected with said casting, another casting con-  
45 nected with said tube and provided with a chamber, a burner connected with said cham-  
ber, and cocks comprising a stem having a portion located in the chamber of the lower  
40 casting and having an aperture therein, an-  
other portion of said stem being located in the chamber of the third-mentioned casting and having an aperture, whereby said cocks  
45 may simultaneously control the passage of liquid and gas, substantially as described.

6. The combination of a pair of receptacles connected together by castings near opposite ends and spaced apart to provide an air-space between them, the lower casting having a  
50 passage-way and a cock to regulate the same, the upper casting communicating with the gas-generating receptacle, a tube connected with said casting, a burner connected with  
55 said tube, a cock to control the passage of gas through said tube, a reflector to which the burner leads, and a support for the re-  
flector connected to said tube, substantially as described.

7. The combination of two receptacles  
60 placed side by side and connected together by castings located near opposite ends, the lower casting having a passage-way connected with said receptacles and a cock to control said  
65 passage-way, the upper casting communicat-  
ing with the gas-generating receptacle, a tube connected with said casting, a casting con-

10 nected with said tube and having a chamber, a burner connected with said chamber, and a cock having a bore leading into the same axi-  
ally and leading through the side wall at an  
70 angle to the axis thereof to communicate with said burner, substantially as described.

8. In a lamp the combination of two recep-  
75 tacles connected together by a passage-way, means to control the passage of water through  
said passage-way, a burner connected with one of said receptacles, a carbid-holder pro-  
vided with a flange and comprising two shells one adapted to receive the other, one shell  
80 having perforations, a space being formed between the walls of the receptacle and the  
carbid-holder, and a circular absorbent or fibrous material surrounding the perforations  
of said shell, substantially as described.

9. In a lamp the combination of two recep-  
85 tacles connected together by a passage-way, means to control the passage of liquid through  
said passage-way, a burner connected with one of said receptacles, and a carbid-holder  
comprising a perforated shell and a shell de-  
90 tachably connected therewith and having a flange adapted to fit within one of said recep-  
tacles, to provide a space between the walls of the receptacle and the carbid-holder, and  
an absorbent or fibrous material surrounding  
95 the perforations of said shell, substantially as described.

10. A carbid-holder comprising a shell per-  
forated near one end, and a cap connected to the opposite end, said cap having a flange to fit  
100 within a receptacle to provide a space around the carbid-holder, and an absorbent or fibrous material surrounding the perforated shell, in  
combination with a receptacle to receive said  
105 carbid-holder, substantially as described.

11. A lamp comprising two receptacles placed side by side, interposed connections  
110 securing said receptacles together, one connection leading to said receptacles and hav-  
ing a cock to control the passage of water through said connection, a burner, and a tube  
communicating with the other of said con-  
115 nections and depending therefrom outside of the receptacle to communicate with the  
burner, the gas in the carbid-receptacle hav-  
ing access to the delivery end of the water-  
passage, substantially as described.

12. A lamp comprising two receptacles se-  
cured together side by side, a water-passage  
120 connecting said receptacles to permit water to feed from one to carbid in the other, a car-  
bid-holder, a burner communicating with the carbid-receptacle, the delivery end of the wa-  
ter-passage in the carbid-receptacle being  
125 open to the action of the gas in said recepta-  
cle, an absorbent material in the carbid-re-  
ceptacle opposed to the delivery end of the water-passage, and means to control the pas-  
sage of water to the carbid, substantially as  
described.

13. A lamp comprising two receptacles se-  
cured together side by side, a water-passage  
130



connecting said receptacles to permit water to feed from one to carbid in the other, a burner communicating with the carbid-receptacle, a carbid-holder provided with means  
5 to establish within the carbid-receptacle a gas-space in communication with the delivery end of the water-receptacle, and an absorbent material interposed between the carbid-holder and the delivery end of the water-passage, substantially as described.

ARTHUR K. MILLER.

Witnesses:

JOHN A. STRALEY,  
T. F. BOURNE.