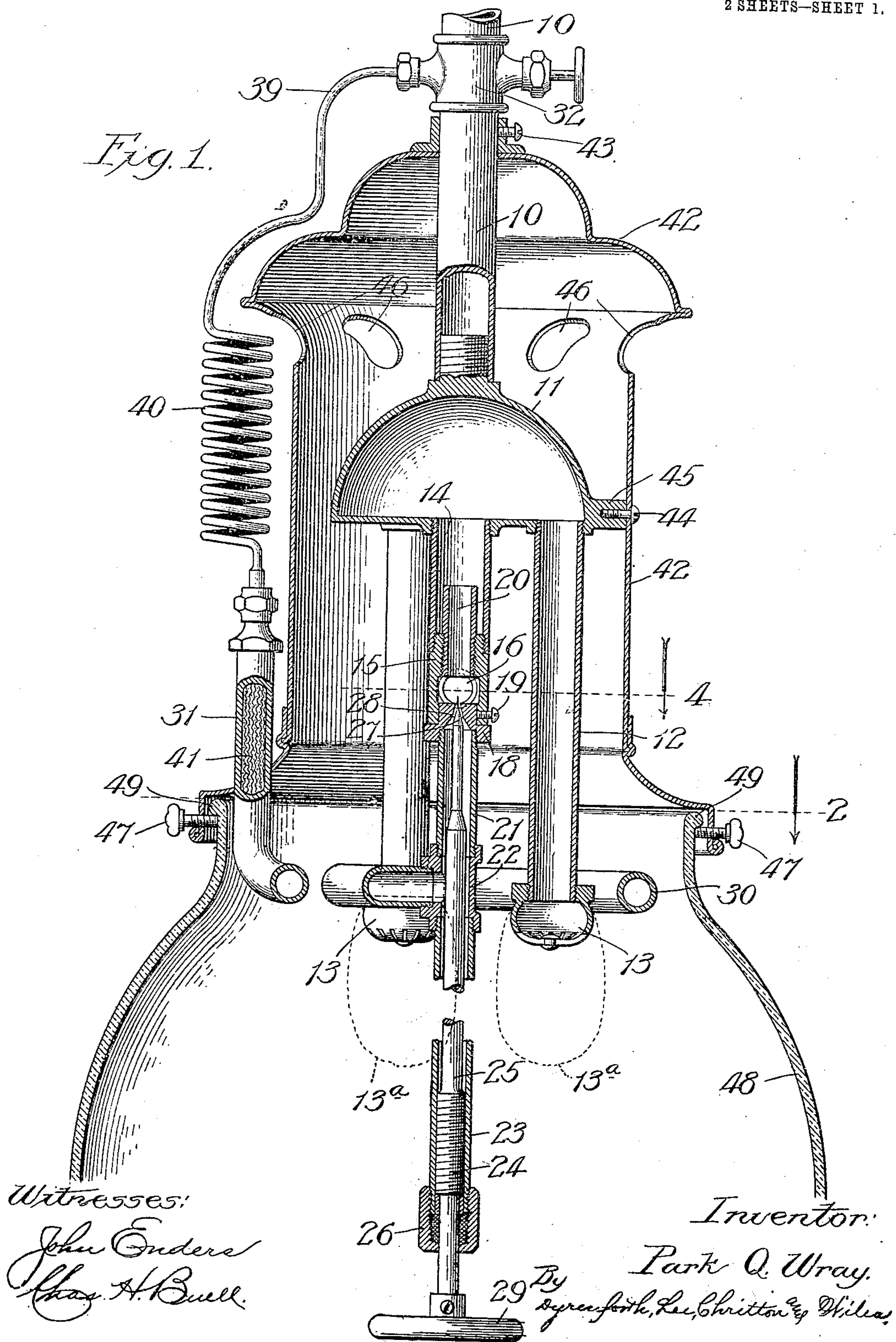


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APPLICATION FILED DEC. 6, 1909.

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Fig. 2.

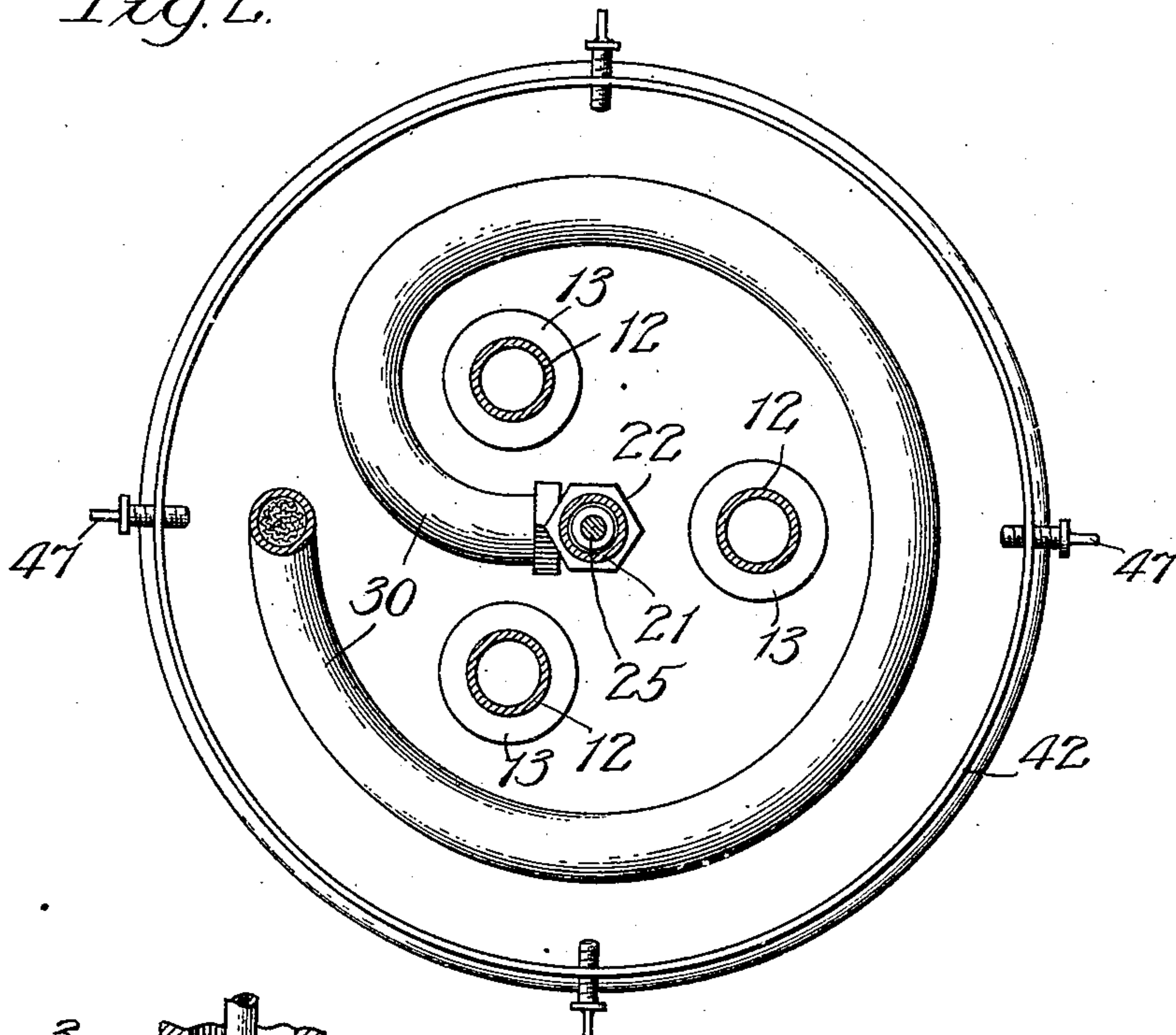


Fig. 3.

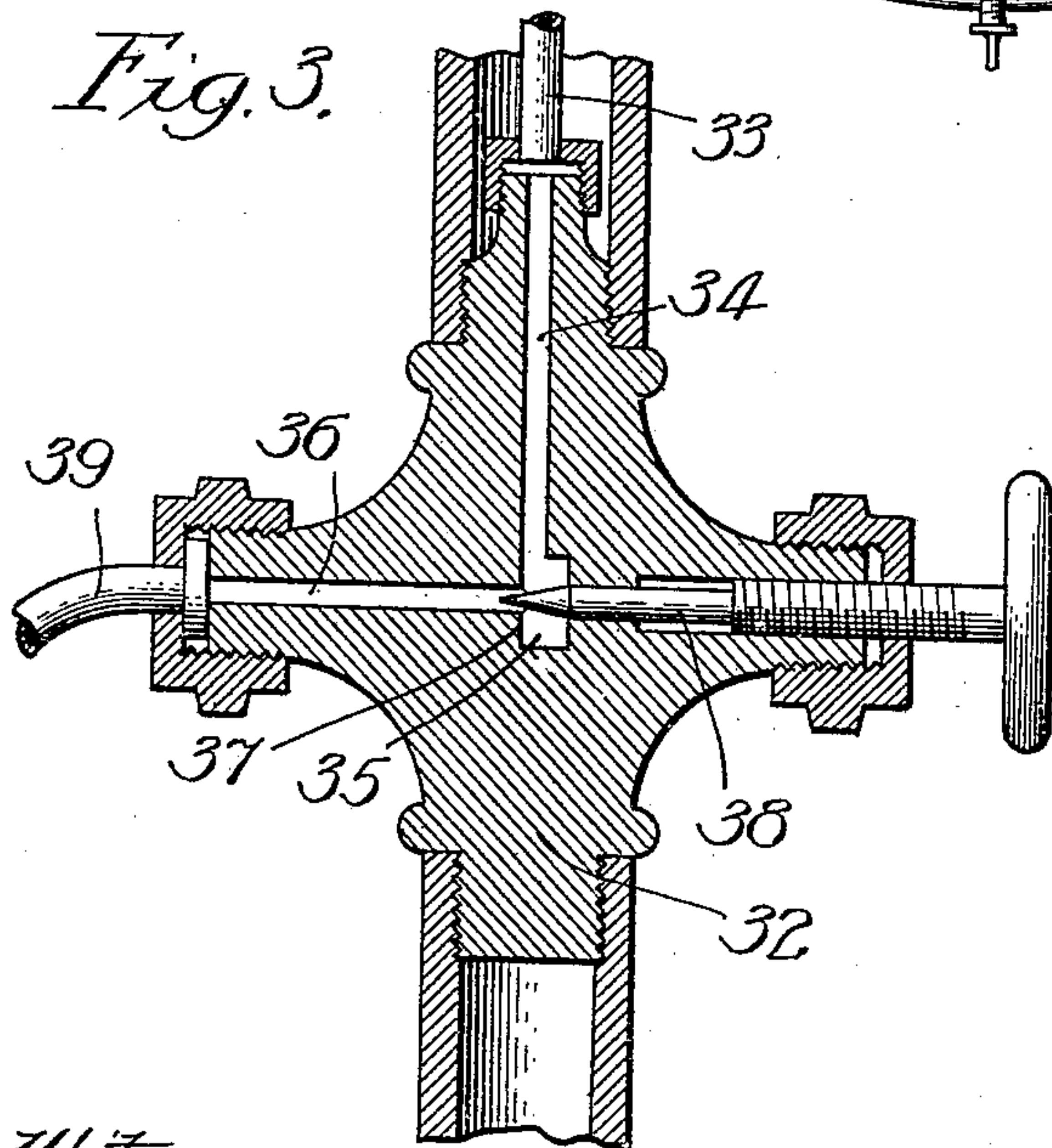
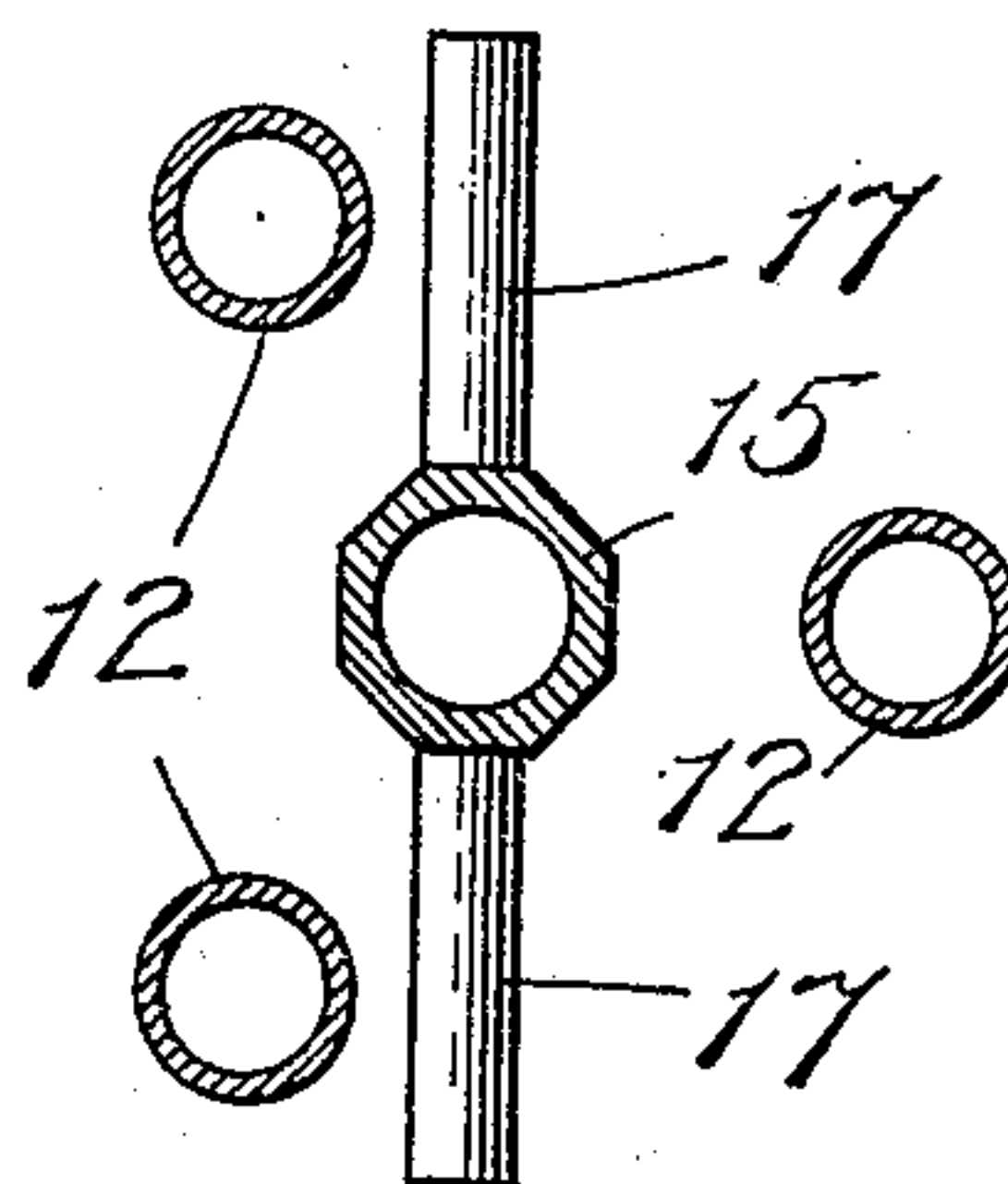


Fig. 4.



Witnesses:

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Chas. H. Buell.

Inventor:

Park Q. Wray.  
By Ogdenforth, Lee, Chittou & Wiles



# UNITED STATES PATENT OFFICE.

PARK Q. WRAY, OF CHICAGO, ILLINOIS, ASSIGNOR TO ACORN BRASS MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## HYDROCARBON INCANDESCENT LAMP.

955,571.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed December 6, 1909. Serial No. 531,650.

*To all whom it may concern:*

Be it known that I, PARK Q. WRAY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Hydrocarbon Incandescent Lamps, of which the following is a specification.

My invention relates to improvements in hydro-carbon incandescing lamps, of the suspended variety in which the mantles are inverted, and is especially applicable to a lighting system wherein oil, such as gasoline, is fed under pressure through a hollow wire to the lamp.

My object is to provide a lamp of this class, of novel and improved construction wherein the light shall be uniform at all time with entire absence of pulsations causing flickering of the lights.

Referring to the accompanying drawings—Figure 1 is a broken vertical sectional view of my improved lamp; Fig. 2, a plan sectional view taken at the irregular line 2 in Fig. 1; Fig. 3, an enlarged broken sectional view of a valved coupling; and Fig. 4, a section on line 4 in Fig. 1.

A hanging pipe 10 affording the medium for supporting the lamp in suspended position, extends downward from the ceiling or other support (not shown), and carries at its lower end a dome 11. Depending from the dome and communicating therewith, are a number of burner-tubes 12 provided at their lower ends with burner-heads 13 to which are secured inverted mantles 13<sup>a</sup>. These tubes are spaced at equal distances apart and, as shown in the drawings, are three in number though, of course, a greater or less number may be employed, if desired.

A pipe 14 is screwed into the dome to depend centrally therefrom and is equipped with a fitting 15, provided with a mixing-chamber 16, to which lead oppositely disposed air-inlet pipes 17, Fig. 4. A head 18 is inserted in the lower end of the fitting and held in place by a set-screw 19, and a nozzle 20 is screwed into the opposite end of the fitting to extend therefrom into the pipe 14 which forms an expansion-chamber for the gas. The nozzle 20 and expansion-chamber together form a continuation of the mixing-chamber proper. A pipe 21 is screwed into the head 18 and at its lower end carries a T-coupling 22 below which extends a similar

pipe 23 in alinement with the pipe 21. The pipe 23 is internally screw-threaded to receive the threaded section 24 of a valve-stem 25, and is provided at its lower end with a stuffing-box 26, surrounding the stem 25. The stem above the threaded section 24, is of a somewhat reduced diameter to permit of the flow of gas around it, and terminates in a needle-point or valve 27 which engages a port 28 forming a valve-seat in the head 18. The stem at its lower end is equipped with a hand-wheel 29 for regulating the valve at the seat 28.

A vaporizing-pipe 30 bent to approximately circular form, as shown in Fig. 2, and disposed so as to occupy a horizontal plane above the burners and adjacent thereto, is threaded at one end and screwed into the T-coupling at a point between the pipes 21 and 23, and is bent near its opposite end to present an upturned section 31. The pipe 21 forms a continuation of the vaporizing-pipe for conducting vapor to the mixing-chamber.

A valved-coupling 32, shown in section in Fig. 3, is interposed at a convenient point in the pipe 10. A wire 33, of the hollow-wire lighting-system, extends downward within the pipe for supplying oil to the lamp and is flanged and connected with the coupling as shown. A port 34 extends from the wire 33 to a point located centrally of the coupling where it is enlarged slightly to form a chamber 35, from which leads at right-angles to the port 34, a similar port 36; the junction of the last-named port with the chamber 35 forming a valve-seat 37. The coupling is equipped with a needle-valve 38 of ordinary form and is adapted to close the port 36 to the flow of oil from the port 34, or to regulate the flow therethrough as desired. A pipe 39 similar to the pipe 33 is flanged and attached in like manner to the coupling to communicate with the port 36 from which it leads and is formed into an upright coil 40 connected at its lower end with the upright extension 31 of the pipe 30, for conducting oil from the coupling 32 to the extension 31 in which is placed a coiled screen, or other strainer-material 41, for the purpose of filtering the oil before it reaches the pipe 30.

A casing 42 is provided to inclose the lamp and is held in place by a set-screw 43, engaging the pipe 10, and by a plurality of



similar set-screws 44 passing through the casing and entering lugs 45 projecting from the dome 11, one of which lugs is shown in Fig. 1. The casing is of ornamental contour provided near its top with openings 46 through which products of combustion may escape, and at its base with a number of set-screws 47 for supporting a globe 48 provided with a bead 49 adapted to rest upon the inwardly projecting ends of the set-screws 47.

In order to obtain a thorough incandescing of the mantle for the purpose of producing a brilliant light of high candle-power, it is desirable to raise the vapor to a high temperature before mixing it with the air and to maintain the mixture highly heated until it reaches the burners. The oil before entering the vaporizing-pipe is conducted through the hollow-wire coil 40 which is shielded from the heat of the lamp, by being placed outside the casing, and separated therefrom so that air circulates freely around it. This keeps the oil cool and prevents its gasification in the coil, thereby insuring a steady feed to the vaporizing tube, which obviates pulsations and consequent unsteadiness, or flickering, of the flames at the burners.

The vaporizing-pipe is disposed in a horizontal plane in close proximity to the burners which, it completely encircles, to provide within the pipe a vaporizing chamber of great length which is heated from the burners to a high degree, but the inlet end of this pipe is outside the casing where the air in circulating around it may keep it comparatively cool. Within this extension is placed the filter-material and the coil is connected with the end of the pipe, so that before the oil finally reaches the vaporizing-chamber proper, it has been filtered and gradually heated.

After the gas has been mixed with the incoming air it enters the expansion-chamber and thence into the dome or distributing-chamber passing therefrom through the

burner-tubes to the inverted burners. These parts are centrally arranged within the casing, which confines about them the heat from the mantles, and the products of combustion pass to the atmosphere, through the holes 46, in the upper part of the casing. This arrangement provides for the continuous heating of the vapor from the time it enters the vaporizing-pipe, until discharged from the burners.

All of the above features contribute to the production of very intense and steady flames at the burners.

What I claim as new, and desire to secure by Letters Patent, is—

In a hydro-carbon incandescing lamp, the combination of a surrounding casing, a central mixing-chamber, means for supplying air to said chamber, a dome above the mixing-chamber containing a distributing-chamber, a hanging pipe connected with said dome for suspending the lamp, a plurality of burner-tubes depending from said dome to extend about the mixing-chamber and provided with burners at their lower ends, a vaporizing-pipe extending through the casing and horizontally disposed throughout part of its length above the burners within the casing, the vaporizing-pipe terminating at its inner end at a port leading into the underside of the mixing-chamber and forming at its outer end an up-turned section extending outside the casing, a valved-coupling interposed in said hanging pipe, a hydro-carbon oil-feeding hollow wire in the hanging-pipe connected with said coupling, an outer hydro-carbon oil-feeding hollow wire forming a coil connected at one end with said coupling and at its other end with said up-turned section, and a regulating-valve at said mixing-chamber.

PARK Q. WRAY.

In presence of—

CHAS. E. GAYLORD,  
R. A. SCHAEFER.