

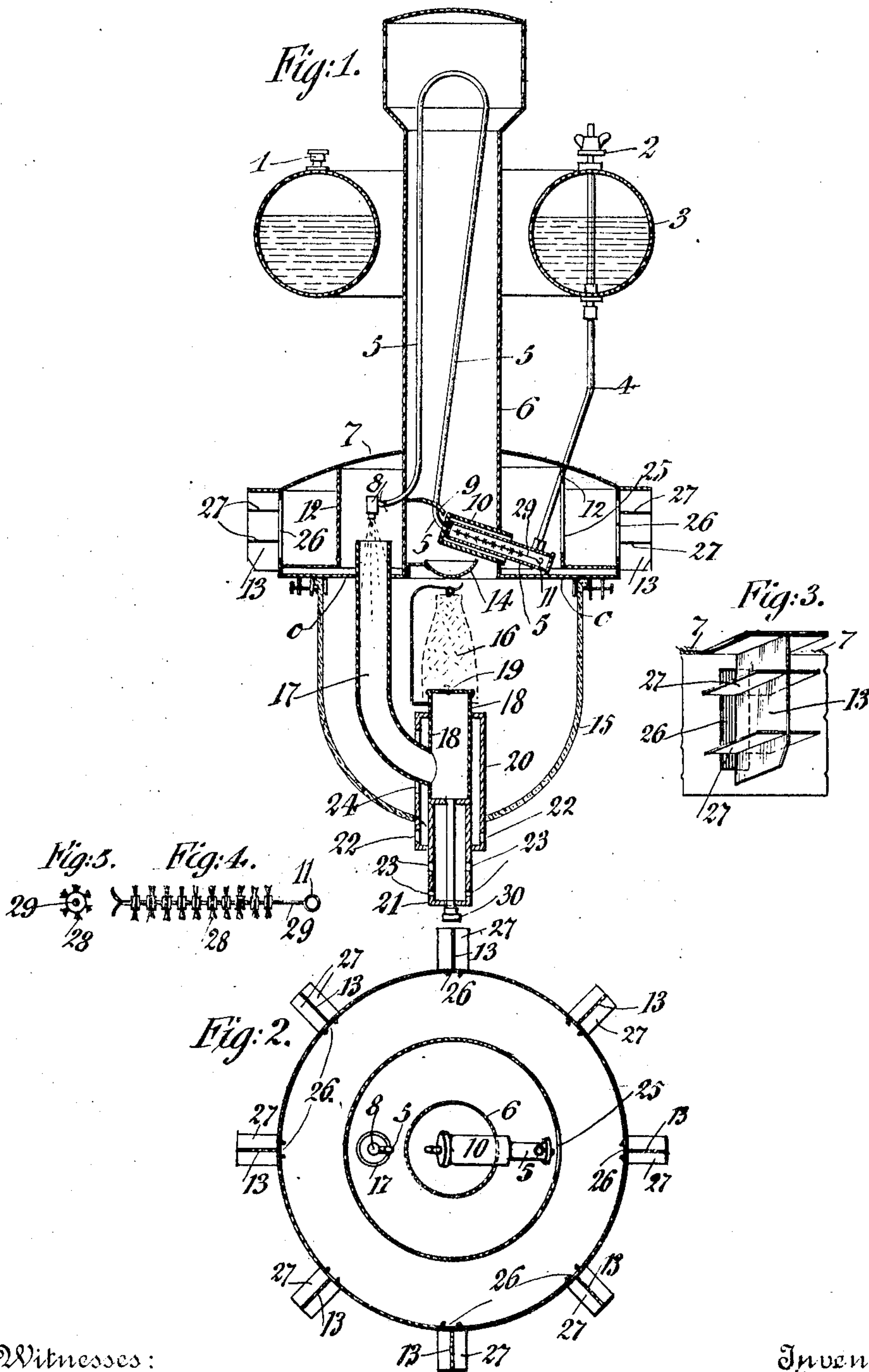
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INCANDESCENT PETROLEUM LAMP.

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927,804.

Patented July 13, 1909.



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INCANDESCENT PETROLEUM-LAMP.

No. 927,804.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALEXANDER BENEDIKTOWITSCH KRZYWIEC, a subject of the Czar of Russia, residing in Warsaw, Poland, Russia, have invented certain new and useful Improvements in Incandescent Petroleum-Lamps, of which the following is a specification.

This invention relates to incandescent petroleum lamps, and has among its objects to provide a construction which embodies improved means for vaporizing the fuel and mixing the same with air prior to combustion.

To this end, the invention consists in an improved form of vaporizer, and in an improved mixing-chamber, and further in the manner in which these parts are combined.

The invention also consists in other novel features of construction, as will be herein-
after described and claimed.

In the accompanying drawings, Figure 1 is a vertical central section of a lamp constructed in accordance with the invention, Fig. 2 is a horizontal section through the cover, Fig. 3 is a detail perspective view showing the vanes which are arranged in front of the apertures in the cover to prevent the lamp from being extinguished by gusts of wind, and Figs. 4 and 5 are a side and end view respectively of the filtering-core for the vaporizer.

Similar reference characters indicate corresponding parts throughout the several views.

Referring to the drawings, *o* is a disk or supporting-plate on which a glass globe 15 is attached on one side, and on the other side a draft pipe 6 is arranged in a central aperture in this disk. In the petroleum container 3 a tubular piece 1 is inserted to enable the petroleum to be poured in. A pipe 4 connects the container with the vaporizer 5. An aperture in this pipe is closed by means of a tap 2. The vaporizer 5 consists of a metal pipe in the draft-pipe 6 which rises above the level of the petroleum in the container and is then bent downward and terminates in a finely perforated nozzle 8. This nozzle is arranged above the disk *o*, consequently also higher than the glass globe 15. In the lower part the vaporizer is protected by a casing 10 firmly soldered on the vaporizer itself. Vanes or wings 9 are also soldered on the vaporizer 5. The casing 10 and the vanes 9 have for their object to concentrate the incandescent heat at the point

of the vaporizer where the casing and the vanes are soldered on. By moving this soldering point along the vaporizer, up and down, the point of the maximum heating of the vaporizer may be altered as desired. The mixing chamber 17, 18, protrudes above the disk *o* and has, as may be seen from the drawings, a tubular form. One open end piece or branch of this chamber projects above the disk *o* and the other ends in the interior of the globe 15, this latter end being covered with gauze 19.

The incandescent mantle or body 16 is arranged above the sieve 19. A cooling chamber 20, 21, is attached to the mixing chamber 17, 18, and consists of two parts. One part 21 is firmly soldered to the part 18 and projects beneath the globe 15, and apertures 23 are provided in this lower section through which apertures the cold air enters, and while cooling the section 21 also causes the cooling of the chamber 18 soldered thereto. The other part 20 of the cooling chamber also projects beneath the globe 15, and has apertures 22 provided in its lower part, and in its upper part where it partly incloses the chamber 17, has an aperture 24. The cold air entering through the apertures 22 passes through the aperture 24, into the interior of the globe 15 and flowing around the pipe 17 cools this section of the mixing chamber. With such a construction the draft pipe 6 draws the air into the globe 15 and around the burner, not only through the chamber 17, 18, but also through the apertures 22 and 24 in the cooling chamber.

The lamp cover 7 is divided by means of a partition 12 into two sections, an inner and an outer. This partition has an aperture at a point opposite the nozzle 8, so that the air flowing into the inner compartment in no way alters the current of the vapor coming from the nozzle 8. In the outer section of the cover there are apertures 26 in front of which horizontal vanes 27 and vertical vanes 13 are arranged as shown in Fig. 3. These vanes neutralize the suction and also the pressure-action of any violent gusts of wind which may arise, so that the lamp is not extinguished thereby. The horizontal vanes 27 extend laterally from opposite faces of the upright vanes, as shown, each upright vane being located at the center of the corresponding air inlet of the fresh-air chamber. A dish 14 serves for heating the vaporizer, for which object alcohol or benzin is poured

into said dish. In the lower part of the vaporizer 5 a filtering-core 11 is inserted. The reason for its use is that during the pre-heating of the petroleum, its decomposition takes place with the formation of carbon particles. The particles float in the petroleum vapor. Although the lamp may eventually also work without a core it is well in order to avoid the stoppage of the nozzle 8 with fine carbon particles, to insert a core in the section of the vaporizer most exposed to heating, which core is intended for filtering the vapor. In order that the core may filter well and also not prevent the regular burning of the lamp it is necessary that on the one hand it should fill up the entire space of the tube occupied by it, so that it is impossible for the petroleum vapor to pass through the vaporizer without encountering the fibers of the core 28. The core on the other hand must not afford too great a resistance to the current of vapor. The core proposed by me consists of a shank 29 with fibers 28 of mineral or other suitable material attached thereto perpendicular and radially, as shown in Figs. 4 and 5. This core, which itself forms a complete arrangement easily removable from the vaporizer, may be inserted quite easily therein, the transverse fibers passing freely into the vaporizer and then spreading out so as to fill up to a certain extent the entire space without preventing the easy passage of the gas.

The lamp works in the following way:—
The container 3 is filled with petroleum through the tube 1, the tap 2 is turned and may remain constantly open from the starting of the preheating of the lamp as well as during the entire time it is burning. As the vaporizer may project above the level of the petroleum in the container, the petroleum flowing through the pipe 4 into the vaporizer cannot rise farther than up to the bend of the vaporizer, wherefore also the tap 2 may remain open at any time.

Alcohol or benzin is poured into the dish 14. As soon as the lamp has to be lighted the spirit is ignited and the lamp drawn up to its proper position. As the vaporizer becomes gradually heated, the petroleum is converted into vapor which automatically passes through the nozzle aperture into the mixing chamber 17, 18. By the action of the draft pipe 6 air is drawn into the same mixing chamber. The mixture of petroleum vapor and air thus formed, flows forth from beneath the gauze net 19 and becoming ignited by the flame of the spirit burning in the dish brings the incandescent body or mantle 16 to incandescence, whereupon the lamp commences to give light. In order to extinguish the lamp the tap 2 is closed.

The mixing-chamber 17, 18 is cooled for the purpose of reducing the counter-draft in a part of the branch 17, and of avoiding the

penetration of the flame through the gauze 19 into the mixing-chamber. This cooling of the mixing-chamber when the latter is inclosed in a glass-globe, is indispensable in the case of lamps working by gravitation of the fuel. As the globe is insufficiently cooled with air interiorly, the heat of the flame is concentrated too strongly, and the mixing-chamber becomes over-heated. As a result, there are two undesirable phenomena:—(1) The over-heating of the part 17 of the mixing-chamber causes a counter-draft and reduces the sucking of the air into the mixing-chamber, and (2) owing to the shell or casing of the mixing-chamber getting over-heated, the gauze net 19 ceases to function, and the flame penetrates through it into the mixing-chamber. These defects are overcome by providing a cooling-chamber such as that described.

In comparison with existing lamps, this improved lamp is characterized by a new combination of the parts, which consists in the lamp having a simultaneously existing combination of the vaporizer projecting above the level of the petroleum in the container, and the tubular mixing chamber 17, 18, one end of the mixing chamber projecting above the disk *o* and the other in the interior of the globe 15. As the petroleum vapor requires a large quantity of air for its full combustion and it is of the greatest importance that the air and vapor should mix, in, as far as possible, an ideal manner, in the mixing chamber, this requirement is only complied with by the foregoing construction.

Having thus described my invention, I claim:

1. An incandescent petroleum lamp functioning by gravitation of the liquid, comprising a supporting-plate, a draft-pipe extending upwardly from said plate, a fuel-container above said plate, a vaporizer projecting into the lower end of said draft-pipe, a feed-pipe forming communication between said container and said vaporizer, a looped vaporizing-pipe communicating with said vaporizer and arranged in said draft-pipe with its looped end above the level of the liquid in said container, and its free end projecting from the lower end of said draft-pipe, a mixing-chamber one end of which projects above the supporting plate to receive the vapors discharged by said vaporizing-pipe, and a protecting casing surrounding said vaporizer.

2. An incandescent petroleum lamp functioning by gravitation of the liquid, comprising a supporting plate, a draft-pipe extending upwardly from said plate, an apertured cover above said plate forming a compartment therewith above said plate, a fuel container above said plate, a vaporizer projecting into the lower end of said draft-pipe, a feed pipe forming communication be-

tween said container and said vaporizer, a looped vaporizing-pipe communicating with the inner end of said vaporizer and arranged in said draft-pipe with its looped end above the level of the liquid in said container and with its free end projecting from the lower end of said draft-pipe, said free end being provided with a nozzle, a mixing chamber one end of which projects above said supporting plate into said compartment to receive the mixture of vapor from said nozzle and air from said compartment, and a globe closely connected with said supporting plate and surrounding said chamber.

3. An incandescent petroleum lamp functioning by gravitation of the liquid, comprising a supporting plate; a draft-pipe, rising upward from said plate; a glass-globe closely connected with the lower part of said plate; a fuel-container above said plate; a vaporizer entering into the lower end of said draft-pipe; a feed-pipe establishing a communication between said container and said vaporizer; a looped vaporizing pipe communicating with said vaporizer, arranged within said draft-pipe and rising with its looped end above the level of the liquid in the fuel container, and extending with its free end from the lower end of said draft-pipe; a mixing chamber the upper end of which extends above said supporting plate in order to receive vapor discharged from said vaporizing-pipe, and the lower end of which branches upwardly with one arm for supporting the incandescent mantle, while the other arm extends downwardly through the glass-globe.

4. In an incandescent petroleum-lamp, the combination of a fresh-air chamber, a draft-pipe extending upwardly therefrom, a vaporizer within said draft-pipe having its discharge end projecting out of said draft-pipe into said chamber, a mixing-chamber which extends into said fresh-air chamber and into

which said vaporizer discharges, and a partition which divides said fresh-air chamber into an inner and outer part and prevents the air entering said chamber from changing the course of the current passing between said vaporizer and said mixing-chamber.

5. In an incandescent petroleum-lamp, the combination of a mixing-chamber, and a chamber which cools said mixing-chamber but is shut off from communication therewith.

6. In an incandescent petroleum lamp, the combination, with a globe and a burner therein, of a mixing chamber within the globe, and a cooling chamber for said mixing chamber which is cut off from communication therewith and conducts air into the globe and around said burner.

7. In an incandescent petroleum lamp, the combination with a vaporizing-pipe, of a filtering core therein, consisting of a shank and asbestos fibers attached to said shank, and extending radially and perpendicularly therefrom.

8. In an incandescent petroleum lamp, the combination of a supporting-plate, a cover above said plate divided by means of a partition into an interior and an exterior compartment, said compartments being in communication through an aperture in said partition, a draft-pipe extending upwardly from said supporting-plate, a vaporizer in said draft-pipe having its discharge-end arranged within said inner compartment at a point opposite said aperture, and a mixing-chamber communicating with said interior compartment of the cover.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

ALEXANDER BENEDIKTOWITSCH KRZYWIEC.

Witnesses:

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