

J. GOULET.
HYDROCARBON MINER'S LAMP.
APPLICATION FILED JAN. 4, 1911.

1,013,765.

Patented Jan. 2, 1912.

4 SHEETS—SHEET 1.

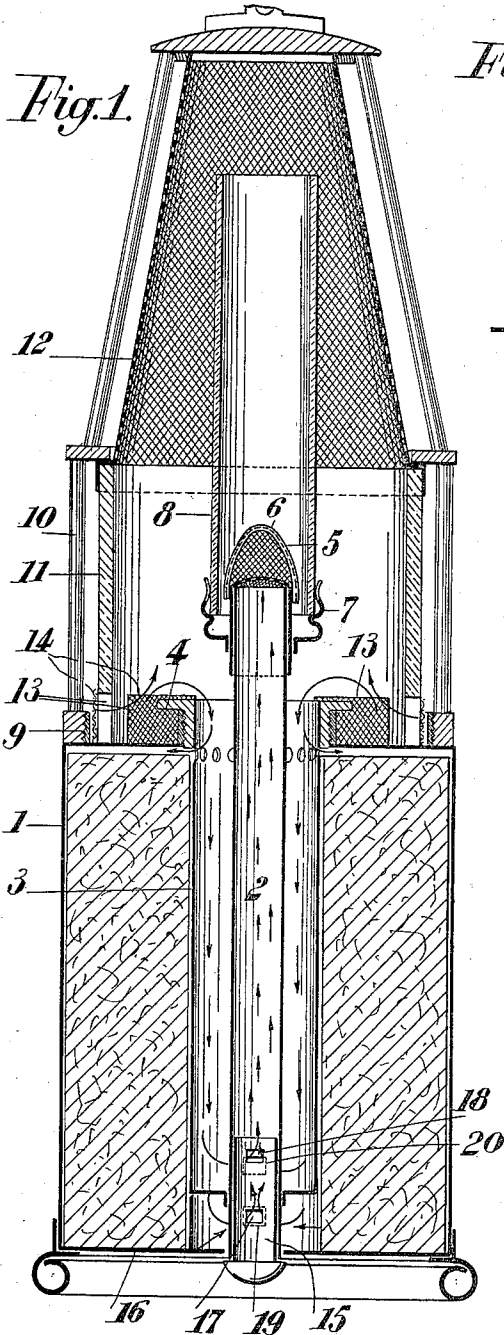


Fig. 3.

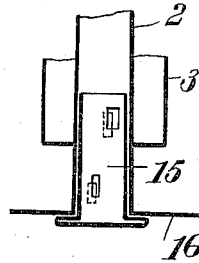
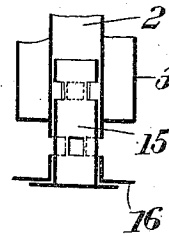


Fig. 2.



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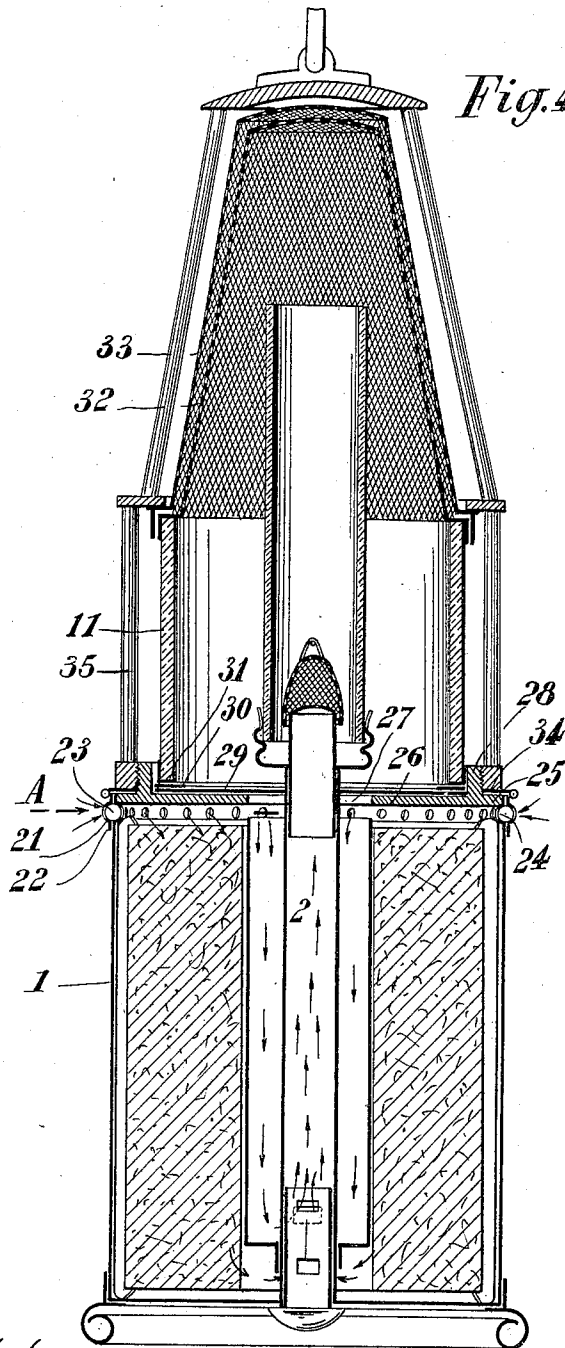


Fig. 4.

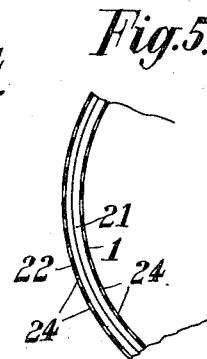


Fig. 5.

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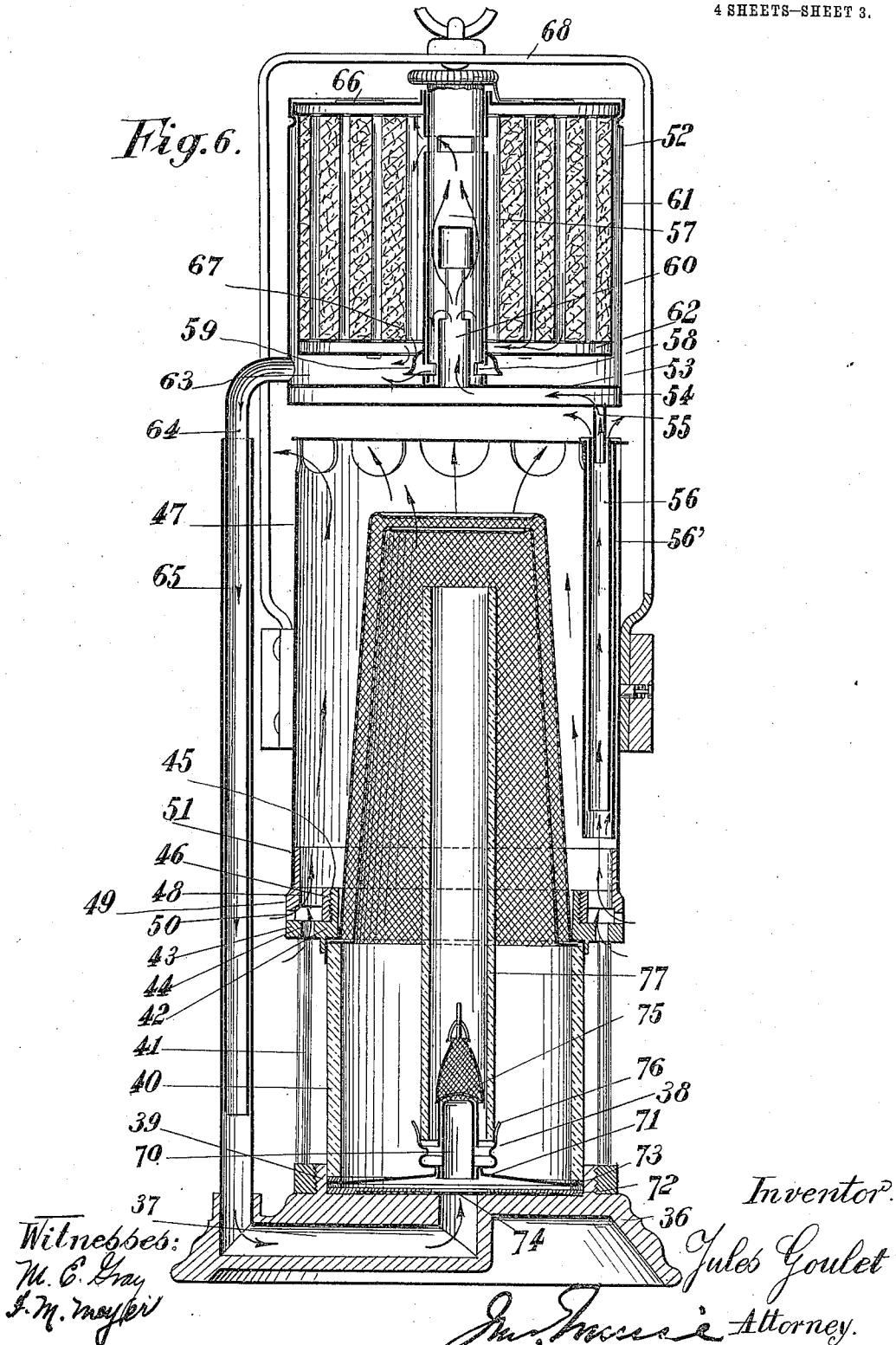
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Fig. 6.

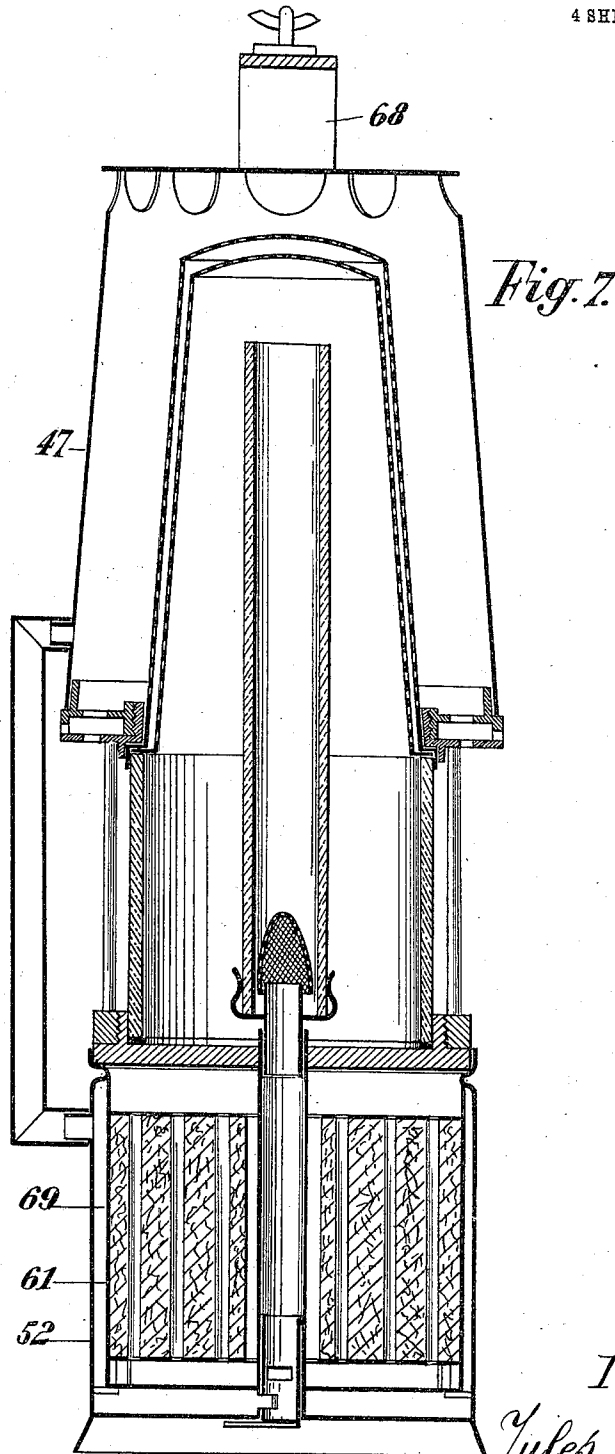


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UNITED STATES PATENT OFFICE.

JULES GOULET, OF BRUSSELS, BELGIUM.

HYDROCARBON MINER'S LAMP.

1,013,765.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JULES GOULET, a subject of the King of Belgium, and resident of Brussels, Belgium, have invented certain new and useful Improvements in Hydrocarbon Miners' Lamps, of which the following is a specification.

This invention relates to a miner's lamp.

In the drawings: Figure 1 is a vertical section of my improved lamp. Fig. 2 is a detail view illustrating one form of regulator. Fig. 3 is a similar view of another form of regulator. Fig. 4 is a vertical section of a modified form of lamp. Fig. 5 is a partial horizontal section on the line A, of Fig. 4. Fig. 6 is a vertical section of a further embodiment of the invention. Fig. 7 is a similar section of a still further form of the invention.

The miner's lamp shown in Fig. 1 comprises a lamp body 1, in which is a mixing tube 2. The mixing tube is surrounded by an air inlet tube 3, which opens out above the body 1, where it is screwed into a tubular extension 4, on the said body. The tubes 2, and 3, are soldered to each other but have no other connection with the body 1, than the screw threads of the tubular extension 4. The tube 2, is provided at its upper end with a burner 5, having a gallery 7, to receive a lamp chimney 8. Over the burner 5, is an incandescent mantle 6. The upper wall of the body 1, is provided with a circular rib 9, which is threaded to receive the protecting cage 10, which supports a very thick second casing 11 and an anti-fire-lamp wire gauze screen 12. The casing 11 is constructed in a particular manner to permit of the passage of air, necessary for the proper burning of the lamp, while removing however any danger of explosion. To this end the said casing is cut away at its lower edge to form a number of openings 13, which are entirely covered by a ring 14 of wire gauze, secured on the outer surface of the casing.

The mixture regulating device comprises a small tube 15 fitting in and frictionally engaging the lower open end of the tube 2. The tube 15 is provided with openings 17 and 18 located at different levels and arranged in a special manner so as to correspond to openings 19 and 20 formed in the lower part of the tube 2 so that the interior of the tube 2, is in communication with the tube 3, and said tube 2, is also in communication

with the interior of the body 1, thereby permitting air and combustible vapors to pass to the burner. It has been stated above that the openings are arranged in a special manner; as a matter of fact, the openings 19 and 20 of the tube 2, are arranged so that when the tube 15 assumes such a position that its admission openings 17 for the combustible vapors are opposite the openings 19, the air admitting openings 20, are about half closed so as to admit to the burner a very rich mixture. If the mixture is too rich the tube 15 may be adjusted to regulate the openings 19 and 20.

The regulating tube 15 may be constructed in any suitable manner. Its construction may be such that it may be moved vertically as shown in Fig. 1, or by rotating same as shown in Figs. 2 and 3.

As long as the volume of hydrocarbon vapor admitted is inversely proportionate to the amount of air introduced, the construction of the regulator is of little importance. The body of the lamp is filled with a porous mass, such as stone, felt, blotting paper made up into blocks, rolled sheets, washers and so on.

For the purpose of filling, the protecting cage 10 is unscrewed and the wire gauze 12, the casing 11, the chimney 8, and the burner 2, are successively removed so as to gain access to the open end of the tube 2. The hydrocarbon (benzin) is then poured into the tube 2, after the opening 19 of the regulating device has been previously opened to its greatest extent. When the stone is well impregnated, which takes place nearly instantaneously, the lamp is turned upside down so as to cause the excess of fluid to escape, then the various parts named above are again placed in position.

When it is desired to light the lamp, a flame is introduced under the chimney 8, the air current set up in said chimney draws the air and the hydrocarbon through the tube 2, and as soon as the said mixture reaches the sleeve, it is ignited and burns normally. The lamp is closed again and the miner may use it at once. If, in spite of the adjusting effected when the lamp is lighted, the mixture will not be formed in the proportions required for a good lighting, it would be sufficient to adjust the regulating device.

The form of the invention in Figs. 4 and 5 differs from that previously described, in

that the upper edge of the lamp body is so constructed as to dispense with the air inlet 13, of the casing 11, as well as with the protecting wire gauze 14. This result is obtained by forming a groove 21, at the upper edge of the body 1, and cooperating with said groove is a grooved ring 22 soldered, or otherwise secured to the body 1, the said plates having a groove 25, which with the groove 21, forms a chamber in which the dust particles and other impurities may settle. The chamber is formed with openings 24, for the passage of air necessary to promote combustion. On the top of the body 1, is a disk 26, provided with a central opening 27, to accommodate the tube 2. The disk 26, is provided with an annular flange 28, formed with exterior threads. On the disk is a washer 29, which fits snugly the tube 2, whereby to provide an air tight connection to insure the air passing through the openings in the chamber, and through the porous body. Arranged on the washer 29, is a packing ring 30, and a holding ring 31, for the casing 11, above which are two protecting wire gauze screens 32, and 33. Near the upper edge of the body 1, are hinged tongues 34, which are folded down over the edge of the disk 26, when the lamp is put together.

In the construction shown in Fig. 6, the burner is located in the lower end portion of the lamp adjacent the base 36. The base is formed with a U-shaped duct 37 which communicates at one end with a burner provided with an extension 70, fitting in a washer 71, which is supported on rings 72 and 73, on the upper surface of the base 36. Interposed between the base 36 and the ring 72, is a wire gauze 74 which prevents back firing. The tubular extension 70, is provided at its upper end with a grating 75, and is also provided with a gallery 76 for the chimney 77. The base 36, is provided on its upper surface with a threaded annular flange 39, which supports a thick chimney 40, the upper edge of which supports two protecting caps made of wire gauze. Screwed on the flange 39, is a ring of a gallery 41, the annular portion 42, holding in position the protecting caps, and a casing 40, in position. In the bottom 43 of the annular extension 42, are openings 44, and engaging the threaded flange 45 is a ring 46 of a sheet metal casing 47. The ring is also provided with an annular extension in which vertical openings 48 are formed. The ring 46, is provided with a vertical flange 49 in which notches 50 are formed for the admission of air. The flange 49 is extended as at 51, to form a support for the casing 47, the latter being covered at its top by a sheet metal plate. Below the cover plate the casing 47 is formed with openings for the escape of the burned gases. Located above

the casing 47, is the receptacle to receive the hydrocarbon. Arranged inside a hollow body 52, is a double bottom 53, which communicates with the lower part of the casing 47 by means of a lower tubular extension 55, fitting in a tube 56. The latter is in turn engaged in a second tube 56' supported on the cover of the casing 47. The space 54, formed by the double bottom 53 also communicates with the inside of a regulator 57, by means of a central tubular extension 60. The regulator is substantially the same as that previously described, except the opening 58, of the outer tube is protected by a deflector 59 which is closed at the top, and is open at the bottom. The tubes 56 and 56' are spaced from each other to form a passage through which the excess air drawn in at the lower part of the tube 56' may escape, said air passing through suitable openings formed in the upper part of the tube 56. The block which serves to retain the hydrocarbon is inclosed in a casing 61, and is held at a certain distance from the bottom of said casing by means of legs 62. The casing 61 has such depth that when it is placed in position, a space 63 is formed. A tube 64 communicates with the space 63, and its opposite end fits in a tube 65, the lower end of the latter fitting in the duct 37, of the base 36.

When it is desired to operate the lamp just described, the block is held by the ears 66, and saturated with hydrocarbon by dipping it into a bath of this liquid, said block is then placed in its casing 61 and the carbureted air will at once be produced which owing to its specific gravity, will descend through the opening 67, and into the space 63, and thence through the tubes 64 and 65, and duct 37 to the burner, where it may be lighted. When the lamp is lighted, which it is needless to say can only take place after the regulating device has been opened, all the parts of the lamp which have just been described are successively put in position again, whereafter they are secured by means of a stirrup 68, which is provided with locking means to prevent unauthorized persons tampering with the lamp.

The lamp just described operates substantially as follows: The heat evolved by the burner produces a current of air in the casing. The air entering through the openings 44, 50, 48, is heated a part of this air being drawn through the tube 56, to the space 54, and through the tube 60, to the regulating device. The air mixes with the vapors in the block, and thence is drawn into the space 63 and is directed to the burner.

The form of the invention shown by Fig. 7, differs from that shown in Fig. 6, in that the hydrocarbon reservoir instead of being positioned above the casing of the lamp is arranged below the burner. In this con-

struction the warm pure air enters the casing 47, and a pipe is connected thereto, the opposite end of said pipe communicating with an annular space 69, formed around the casing 61.

Having now fully described my said invention, what I claim and desire to secure by Letters Patent, is:

1. In a lamp of the class described, the combination of a base, a burner supported on the base, a casing surrounding the burner, a ring above the aforesaid casing and formed with inlet openings for the admission of air, a second casing supported on the ring and formed at the top with openings, a carbureter above the lamp adapted to contain a porous block, a regulating device, a connection between the regulating device and the burner, and a connection between the second mentioned casing and the regulating device for the passage of part of the air introduced through the openings in the ring.

2. In a lamp of the class described, the combination of a base provided with a burner, a casing mounted on the base and formed with openings for the admission of air, a carbureter mounted above the casing including a central tube provided with openings arranged at different levels, a partition in the carbureter to form a passage, a tube communicating with the passage and the casing, a short tube extending from the partition into the central tube in the carbureter, a regulator including a tube interposed between the central and short tubes and provided with openings to regulate the admission of air to the carbureter, and a connection between the carbureter and the burner.

3. In a lamp of the class described, the combination of a base provided with a burner, a casing mounted on the base and surrounding the burner, the bottom of said casing communicating with the atmosphere for the admission of air and openings formed near the top of said casing for the exit of gas, a tube mounted in the casing and communicating therewith at its lower end, a second tube mounted in the aforesaid tube and communicating with the atmosphere at its upper end, a carbureter above the casing, said carbureter having a partition to form a space, a tube communicating with said space and the second one of the aforesaid tubes, a tubular extension on the partition and communicating with the space below the partition, a regulating device surrounding the tubular extension, said regulating device provided with openings near its lower end and openings near its upper end, and an interior casing mounted within the carbureter adapted to receive a porous block and formed with an opening at its bottom, the opening in the regulating device at the top of the latter communicating with the inner casing, the openings in the lower end of the regulating

device communicating with a space formed between the partition and the interior casing, a deflector for directing the air through the lower openings in the regulating device, and a connection between the space formed by the partition and the interior casing and the burner.

4. In a lamp of the class described, the combination of a burner, a casing, said casing communicating with the atmosphere at the bottom for the admission of air, a carbureter provided with a porous block, a regulating device mounted in the carbureter, a pipe connecting the carbureter and the casing to direct the air introduced thereto to the regulating device, and a pipe connecting the burner and the carbureter.

5. In a lamp of the class described, the combination of a burner, a casing surrounding the burner and formed with openings for the admission of air thereto, a carbureter including an outer casing, a tube formed with upper and lower openings, a tube fitting in the last mentioned tube and provided with openings which register with the aforesaid openings, an inner casing provided with a porous block, the upper openings in the tubes communicating with the interior casing, the lower openings of said tubes communicating with the space formed between the inner and outer casings, a tube connecting the first mentioned casing and the carbureter, and a tube connecting the space formed between the inner and outer casings of the carbureter.

6. A lamp of the class described, comprising a burner, a casing surrounding said burner and communicating with the atmosphere at the bottom for the admission of air, a tube communicating with said casing, an inner tube communicating with the aforesaid tube, the latter tube communicating with the atmosphere at the upper end, a carbureter supported above the aforesaid casing including an outer casing, a partition spaced from the bottom of the outer casing to form a passageway, a tube communicating with the passageway and the second mentioned tube, a tubular extension on the partition, a regulating device mounted in the outer casing and formed with openings near the top thereof and openings near the bottom thereof, the lower openings being below the level of the top of the tubular extension, a shield adjacent thereto, an inner casing mounted in the outer casing and provided with a porous block, the openings near the top of the regulating device communicating with the inner casing, said inner casing communicating at the bottom with the outer casing, and a pipe connecting the carbureter with the burner.

7. In a lamp of the class described, the combination of a burner, a casing surrounding the burner and communicating with

the atmosphere at the bottom for the admission of air, a tube communicating with the casing, a tube communicating with the burner, a carbureter mounted above the casing, and including an outer casing, a partition in the outer casing to form a passageway near the bottom of the same, a tube communicating with the passageway and the tube in the casing, a regulating device formed with openings near the top and openings near the bottom, an inner casing supported in the outer casing and provided with a porous block, the said inner casing communicating with the outer casing near the bottom and spaced from the partition to form a passageway, a tube communicating with the passage and fitting in the tube which communicates with the burner, and means for detachably securing the carbureter and the first mentioned casing.

8. In a lamp of the class described, the combination of a burner, a casing surrounding the burner, a ring at the upper end of the casing provided with openings, a second casing supported on the ring, the openings admitting air to said second casing, a tube extending into the second casing a second tube fitting in the aforesaid tube and communicating at its upper end with the atmosphere, a carbureter supported above the second mentioned casing and including an outer casing having a partition to form a passageway at the bottom, a tube communicating with the passageway and the second mentioned tube in the second mentioned casing, a tubular extension on the partition communicating at its lower end with the passageway, a regulating device surrounding the tubular extension, and provided with openings at its upper end and openings at its lower end, an inner casing supported in the outer casing and spaced from the partition to form a passageway, the in-

ner casing having openings at its bottom to afford communication between the inner casing and the outer casing, the lower openings in the regulating device communicating with the passageway and the upper openings in the regulating device communicating with the inner casing, a tube communicating with the passageway between the inner casing and the outer casings, a second tube communicating with the burner and the tube communicating with the passageway, and detachable means for securing the carbureter to the second mentioned casing.

9. In a lamp of the character described, the combination of a base, a burner, an incandescent mantle for said burner, a casing communicating with the atmosphere at the bottom for the admission of air, a carbureter located above the casing, means for conveying the air from the casing to the carbureter, and means for conveying the carbureted air to the burner including telescopic pipes.

10. In a lamp of the class described, the combination of a burner, of a casing which opens to the atmosphere for the admission of air, a carbureter located above the casing and comprising an inner and outer casing spaced from each other to form a chamber, the outer casing having a partition to form a passageway at the bottom, a regulating device arranged in the carbureter, means for conveying the air from the first mentioned casing to the space below the partition in the outer casing of the carbureter, and means connecting the carbureter and the burner.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

JULES GOULET.

Witnesses:

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M. C. JEPBEAULT.