

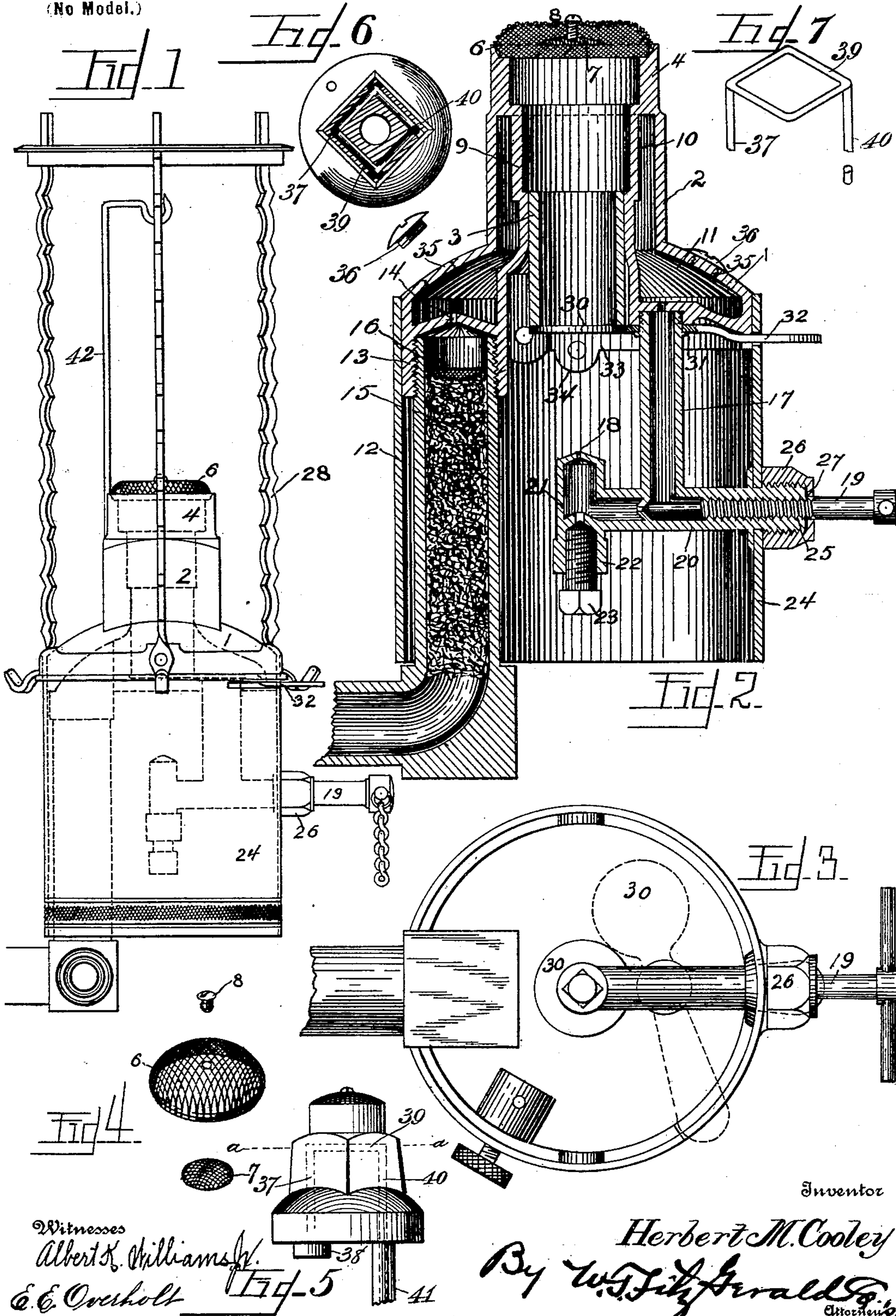
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Patented Aug. 15, 1899.

H. M. COOLEY.
INCANDESCENT LAMP.

(Application filed July 23, 1898.)

(No Model.)



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INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 630,862, dated August 15, 1899.

Application filed July 23, 1898. Serial No. 686,714. (No model.)

To all whom it may concern:

Be it known that I, HERBERT M. COOLEY, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Incandescent Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention, as will be hereinafter fully described and claimed, relates to a gasolene-burner, the object being to so utilize the gasolene or other liquid fuel that an illuminating-gas will be generated therefrom by certain parts of the burner and consumed through the mediation of other parts thereof, whereby a brilliant light will be produced. To render the device more effective, a mantle may be provided, if deemed desirable, which would be rendered incandescent.

Other objects and advantages will appear from the following specification considered in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of my burner complete, showing some of the interior construction by means of dotted lines. Fig. 2 is a vertical central section of the complete burner on a slightly-enlarged scale from that shown in Fig. 1. Fig. 3 is a bottom plan view of Fig. 1, while Fig. 4 is a detail showing the preferred construction employed for the point of exit for the gas, upon which the base of the frame rests. Fig. 5 is a side view of my burner on a reduced scale. Fig. 6 is a section of Fig. 5 on line *a a*. Fig. 7 is a perspective view of the passage for the fluid extending around the burner and thence to the exit-tube.

It is obvious that by means of the damper the flow of both gas and air to the burner may be partially or wholly cut off, as may be desired. It is evident that with the damper wide open a greater amount of air would or might enter the mixing-chamber than would be necessary to produce the best results. For this reason both the flow of gas and the flow of the gas and air should be under separate control.

Briefly stated, my invention relates to means for generating a gas by means of heat from the fluid known as "gasolene" and kindred substances and for conveying the gas thus generated to the point of combustion and certain additional means for preventing the flame from being communicated to the liquid fuel thus utilized and also for enabling the operator to control the extent or size of the flame, as desired.

Referring in detail to the several parts of my invention and the accessories deemed necessary in physically embodying the same, 1 indicates the body-section of my improved burner, which is, as clearly shown by Fig. 2, hollow and is preferably provided with the tubular extension upon its upper central portion, the tubular section thus provided and the body 1 being designed to receive the tubular throat 3 or mixing-chamber, the purpose of which will be hereinafter specifically set forth.

The tubular section 2 terminates at its upper end in the nozzle or rim 4, within the upper end of which I mount the guard or netting 5, preferably formed of wire or asbestos cloth and consisting of the exterior casing or section 6 and the centrally-disposed section 7, preferably disposed in the central portion of the rim 4 and retained in position by the set-screw or rivet 8, as clearly set forth in Fig. 2.

It will be seen that the tubular section 2 is provided a portion of its extent with the inner wall or casing 9, preferably integrally formed with the outer wall and with the body 1, thus providing the annular chamber 10, designed to extend upward as far as deemed necessary and entirely surround the inner wall 9, thus insuring that the liquid fuel, as gasolene or the like, shall be brought sufficiently near the burner proper, formed by the netting 5, to insure the generation of gas, it being understood that the tubular section 2 may be so constructed that the annular chamber 10 may extend very near the point of combustion, if deemed necessary.

The annular chamber 10 is practically a continuation, as will be seen, of the chamber or interior 11 of the body 1, the liquid fuel being introduced therein by the supply-pipe 12, suitably connected to the body 1, as by the

flange or rim 13, formed upon the under side of said body, a suitable point of entrance for the fuel being provided, as by the aperture 14.

In order to insure against the possibility of the flame communicating through the pipe 12 with the reservoir containing the liquid fuel, I prefer to fill a portion of the supply-pipe with a suitable packing 15, formed of some suitable material, as cotton-waste, asbestos fiber, or the like, the upper end of the pipe being preferably provided with a semi-closure 16, formed of wire-cloth or its equivalent, designed to more reliably retain the packing in position.

Preferably upon the opposite side of the body 1 from that occupied by the aperture 14 I seat and secure in position, as by screw-threads, the exit-pipe 17, which may be integrally formed or otherwise connected with the feeding or exit aperture 18, a suitable regulating-needle 19 being provided in order that the desired quantity of gas may be permitted to escape.

For convenience in constructing the exit tube and port 18 said tube may be cast integrally with the tube 20 and the vertically-disposed section thereof 21, in which case all of said parts may be rendered tubular by a process of boring or otherwise, the lower end 22 of the tubular section or chamber 21 being closed by the threaded bolt 23, it being understood that the bore designed to accommodate the needle 19 shall be of the usual size in which a needle-point is employed to regulate the flow of a fluid.

In order to render the parts neat and attractive in appearance, the housing or outer casing 24 may be provided, a suitable aperture being formed in said casing to accommodate the extended end 25 of the tubular section 20, a packing-box 26 being designed to be screwed upon the end of said tubular section, thereby confining the packing 27 in position to prevent the escape of the gas around the threaded section of the needle 19. The casing 24 may be secured to the body 1 by any suitable means, as set-screws or their equivalent, and the chimney-supporting frame 28, carrying the usual standards 29, may also be secured in position by suitable set-screws, thus rendering the interior parts easily accessible.

In order that the body 1 may be thoroughly heated during the initial process of preparing the burner so that it will generate its own gas, I provide the damper 30, of sufficient size to entirely inclose the lower end of the throat 3, said damper being provided with the preferably integrally formed flange 31, which is designed to surround and thereby be pivoted near the upper end of the exit-tube 17, and when thus mounted in position the damper 30 may be easily moved to either side of the end of the tubular throat by means of the operating-handle 32, arranged to extend through a suitable slot or opening formed in the housing 24 at this point.

By reference to Fig. 4 it will be observed that the netting 6 may be easily formed of a section of wire-cloth, as by forcing said cloth into a suitably-shaped recess by a plunger fitting said recess, thus causing the section of cloth to take on the desired form and enable the free edges thereof to be easily inserted in the open end of the nozzle or rim 4, it being understood that a properly-formed section of said cloth of considerably less diameter than the outer section shall be provided and held in position immediately over the center of the throat 3 by the screw 8.

The section 7 is preferably disposed with its concave surface down, the object in thus locating said section over the throat 3 being to deflect the gas, and thus cause it to spread, and thus be properly supplied with oxygen, which can come upward through the throat 3, insuring absolutely perfect combustion thereof, the netting 5 being also designed to insure a more thorough commingling of the oxygen and the gas.

It will be seen that the body 1 may be easily and cheaply formed of any suitable material, as by casting the same, and it will be seen that it will also be desirable to provide the lower edge of the body with an integrally-formed flange 33, designed to provide a more reliable bearing or point of contact for the upper edge of the housing 24 and also a seat, as by the depending ears 34, for the set-screws employed to hold said housing in position. The casting is made with a circular flaring rim or flange and an intermediate rectangular part, the latter carrying a circular burner.

In order that the body-section of my improved burner, provided with the annular chambers 10 and 11 formed therein, may be easily cast in one piece, it is thought that a suitable core formed of compressed sand, held together by compression by some suitable adhesive material and having a suitable shape to form said chambers, may be adjusted in the outer mold and suitably suspended therein by points passing through the apertures 35 and that when the body of the burner has been formed around it by the use of suitable molten metal the sand forming the core may be readily removed through the apertures 35, as it will be understood that said core will be so formed that it will be soluble when placed in water or will become disintegrated, so that the sand forming said core will readily pass out of the apertures 35. It will be understood that said apertures may be provided with a screw-thread and effectually closed by the caps 36. If it should for any reason be deemed impracticable to cast the body in one piece, as above set forth, said body may be cast entirely solid, as shown in Figs. 5 and 6, in which case a suitable bore, as indicated by the dotted lines 37, is arranged to extend upward from the supply-tube 38, when by properly boring the four sides of the burner near its top, as indicated by the numeral 39, a continuous channel may be provided which will

entirely encircle said burner when a vertical bore, as indicated by 40, will provide communication from the bore 39 downward to the exit-pipe 41.

5 In Fig. 7 I have shown a perspective view of the several bores 37, 39, and 40 as though the same were removed from the body of the burner. It will, however, be understood that various methods may be employed in locating
10 these several bores, as it will be clear that a series of them designed to encircle the top of the burner may be provided, though for all practical purposes it is thought that the plan indicated by Figs. 5, 6, and 7 will be found
15 amply sufficient. The standard 41 is designed to suspend the mantle.

It will be understood that various modifications may be adopted in the construction of the various parts comprising my improved
20 lamp, and I do not, therefore, wish to be confined to the exact showing I have set forth, as the equivalent of said parts is comprehended by me.

Having thus fully described the construction and advantages of my incandescent lamp by which a liquid fuel, as gasolene or the like, is converted into a gaseous form, what I claim as new, and desire to secure by Letters Patent, is—

30 1. In a lamp of the character described, a body portion having a central vertical mixing-tube, a vaporizing-chamber, a conveying-pipe directing the flow of gas to chamber 21, said pipe having an encircling flange, a damper supported by said flange and controlling the mouth of said tube, all arranged as set forth.

2. In a lamp of the character described, a casing having a central mixing bore or tube
40 inclosed thereby, a vaporizing-chamber located above said tube, means to convey the gas to chamber 21, said chamber having a tip with an orifice disconnected from the mixing-tube, a device for closing the lower end of
45 said bore or tube, all arranged as set forth.

3. A hydrocarbon-burner comprising a casing having a central tubular throat or mixing-chamber, a closed vaporizing-chamber extending around said throat, a supply-pipe for
50 delivering oil to said chamber and means for entirely closing the lower end of the throat, whereby the gas will be quickly generated, all arranged as set forth.

4. A hydrocarbon-burner, comprising a casing having a central tubular throat, a vaporizing-chamber formed in said casing and ex-

tending around said throat, a supply-pipe for delivering oil to said chamber, a damper closing the lower end of the throat and means to operate the damper, all arranged as set forth. 60

5. A hydrocarbon-burner, comprising a casing forming an annular chamber 10 11, a central tubular throat or mixing-chamber, a vaporizing-chamber formed in said casing and extending around said throat, means for delivering oil to said vaporizing-chamber a
65 housing attached to said casing, a damper for closing the throat or mixing-chamber and an operating-handle extending through a slot in said housing whereby the damper may be
70 operated from the outside, all arranged as set forth.

6. A hydrocarbon-burner, comprising a casing, a vaporizing-chamber formed in the solid part of the casing, a pipe for supplying oil to
75 said vaporizing-chamber, means for controlling and delivering the gas to a central tubular throat or mixing-chamber and means located in the path of the discharged vapor adapted to control the supply of air to said
80 chamber, whereby the gas and oxygen may be directed to the burner in relative proportions, as may be desired, all arranged as set forth.

7. A hydrocarbon-burner, comprising a casing having formed therein an annular chamber 10 11, a housing attached to said casing, a central mixing-chamber or throat, means for generating gas and regulating its deliver-
85 ance, and means located in the path of the discharged vapor adapted to regulate and control the admission of air whereby the air and gas will be delivered to the mixing-chamber in proportionate quantities, all combined
90 as set forth. 95

8. In a lamp of the character described, a casing having a central mixing bore or tube inclosed thereby, a vaporizing-chamber located above said tube, a burner forming the top of said chamber, means to convey the gas
100 to chamber 21, said chamber having a tip with an orifice disconnected from the mixing-tube, means located at the lower end of said bore for regulating the flow of gas and air to the vaporizing-chamber, all combined as set
105 forth.

In testimony whereof I affix my signature in presence of two witnesses.

HERBERT M. COOLEY.

Witnesses:

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J. J. KENDRICK.