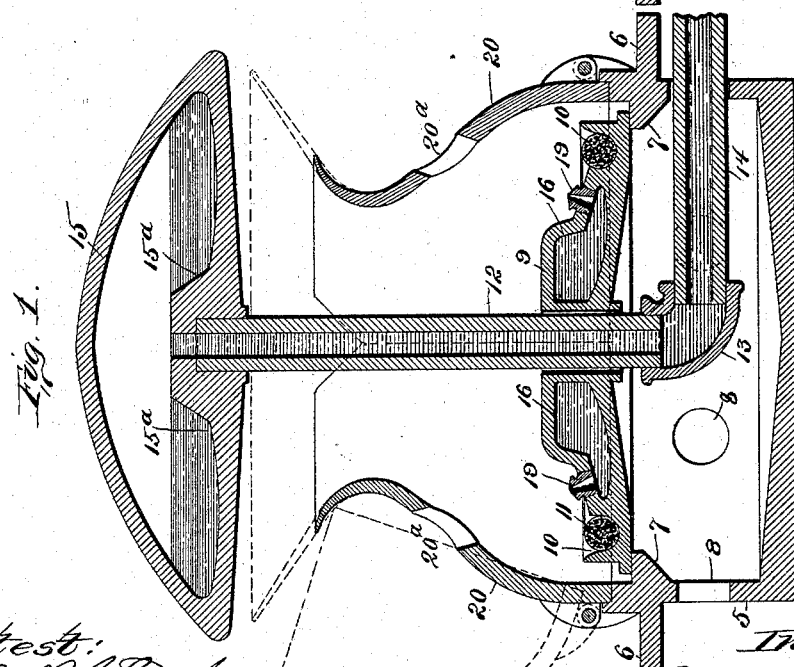
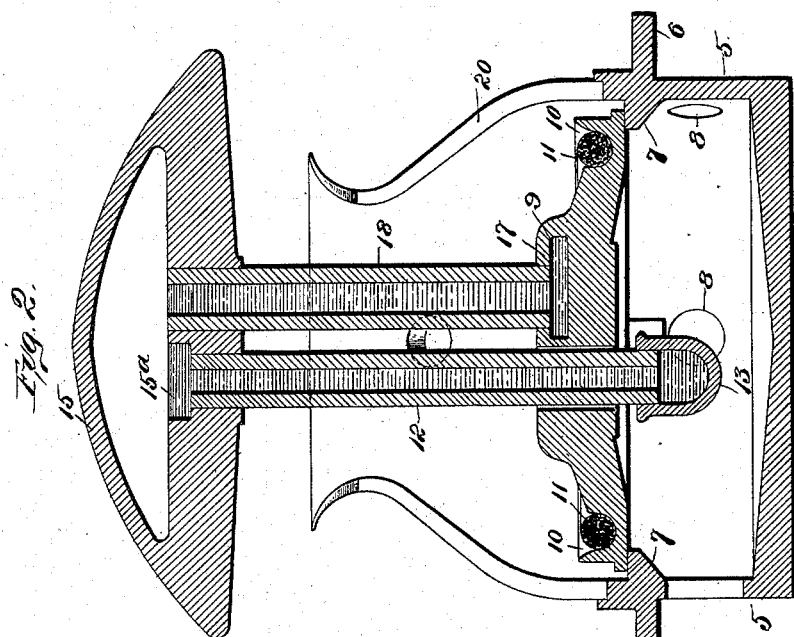


(No Model.)

2 Sheets—Sheet 1.

W. R. PEARSON.  
APPARATUS FOR BURNING LIQUID HYDROCARBONS.  
No. 526,737. Patented Oct. 2, 1894.



Attest:  
*Charles Pickles.*  
Charles Pickles.

Inventor:  
*W. R. Pearson*  
By *Fowler & Fowler*  
Attys

(No Model.)

2 Sheets—Sheet 2.

W. R. PEARSON.

APPARATUS FOR BURNING LIQUID HYDROCARBONS.

No. 526,737.

Patented Oct. 2, 1894.

Fig. 4.

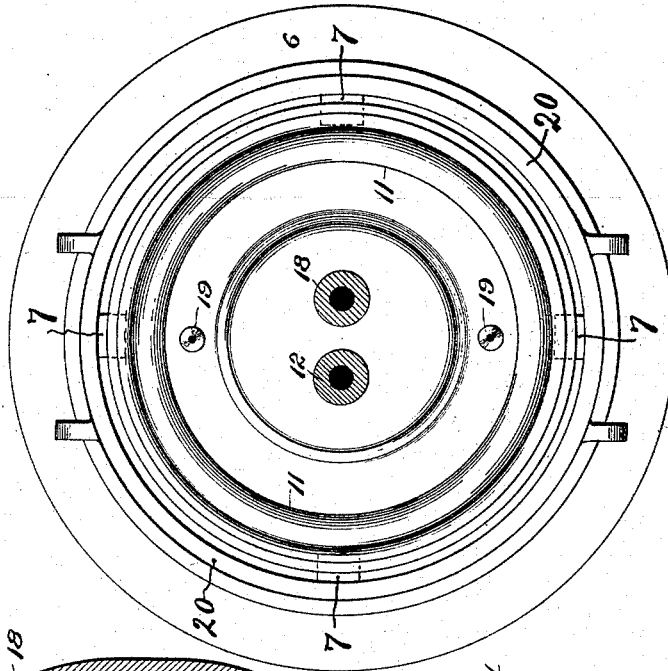
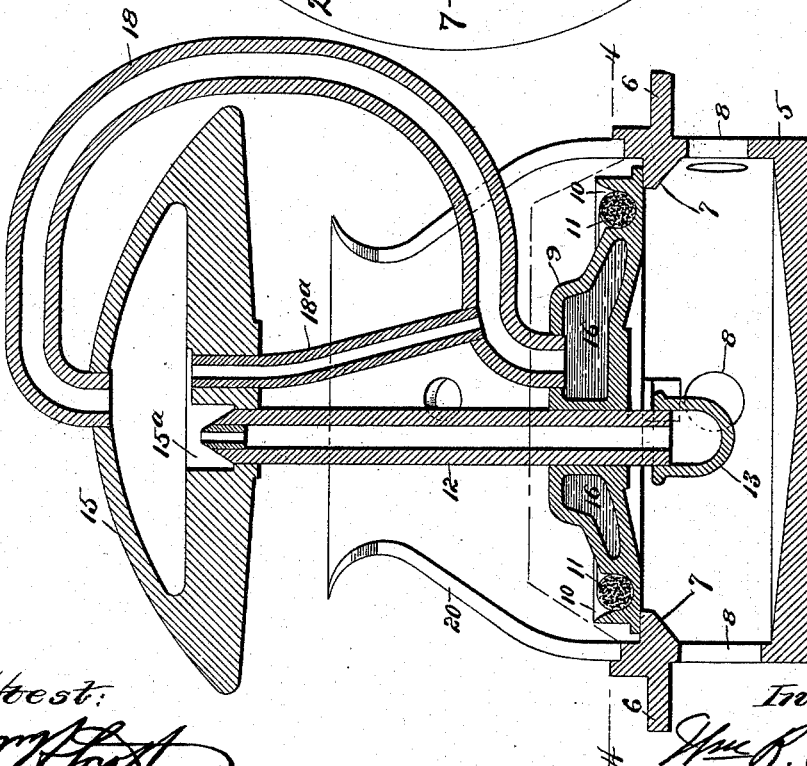


Fig. 3.



Attest:  
*Wm. H. Foster*  
Charles Pickles

Inventor:  
*Wm. R. Pearson*  
By *Frederick & Fawcett*  
Attys.

# UNITED STATES PATENT OFFICE.

WILLIAM R. PEARSON, OF ST. LOUIS, MISSOURI.

## APPARATUS FOR BURNING LIQUID HYDROCARBONS.

SPECIFICATION forming part of Letters Patent No. 526,737, dated October 2, 1894.

Application filed July 31, 1893. Serial No. 481,930. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. PEARSON, a citizen of the United States, residing in St. Louis and State of Missouri, have invented a certain new and useful Apparatus for Vaporizing and Burning Liquid Hydrocarbons, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The objects of my invention are to provide a hydro-carbon burner in which the liquid hydro-carbon will be vaporized almost immediately after lighting, that will operate in a uniform manner without being clogged by the distillates or residual products of vaporization, and that will be cheap and compact in construction and economical in operation. These several objects I accomplish by means of the novel construction and combination of parts hereinafter described and pointed out in the claims appended thereto.

My invention will be best understood by referring to the accompanying drawings, in which—

Figure 1 is a side view in section of my hydro-carbon burner, the section being taken through the center of the oil supply pipe. Fig. 2 is a side view in section of my hydro-carbon burner, the section being taken through both the supply pipe and the gas or vapor pipe. Fig. 3 is a side view in section of a modified form of my hydro-carbon burner. Fig. 4 is a plan view, of my burner the retort, and connecting pipes being removed.

Referring to the drawings in which the same marks of reference indicate the same parts throughout the several views, 5 is a hollow circular base on which my apparatus is mounted. The base 5 is preferably provided with the outward projection or rim 6, the design of said projection being to provide suitable supports for the burner; should it be desired to mount it upon an additional base, or otherwise support it. The base 5 is also provided with inwardly projecting lugs 7, said lugs forming a support for the burner, as hereinafter explained.

I preferably form in the base 5, the perforations or holes 8. The interior of the base serves as a drip reservoir into which passes any oil or other liquid hydro-carbon which may overflow from the firing basin.

Mounted upon the lugs 7 of the base 5 is the circular burner 9. Said burner 9 is provided near its outer edge with an annular groove or depression 10, forming a firing basin in which I preferably place the circular asbestos wick 11. Passing through a suitable orifice near the center of the burner 9 is the supply pipe 12. The supply pipe 12 is connected at its lower end by means of a suitable elbow 13 with a pipe 14, which conducts to any suitable oil supply reservoir (not shown in drawings). The upper end of the supply pipe 12 passes into the retort 15. The retort 15 is preferably made of cast iron and is provided with a cavity therein, said cavity having one or more depressions 15<sup>a</sup> lying below the level of the upper end of a gas or vapor pipe 18. The depressions 15<sup>a</sup> are of small capacity so as to contain but little oil. It is obvious that no more oil can accumulate in the retort 15 than will be sufficient to fill the depressions 15<sup>a</sup>, as the oil will flow therefrom as soon as it rises to the upper end of the gas or vapor pipe 18. The burner 9 has formed therein small hollow spaces or reservoirs 16, (Fig. 1.) The said reservoirs are of small capacity, adapted to hold but little oil, and are connected together by means of a duct or passageway 17 (Fig. 2). It has heretofore been found that the flow of gas from hydro-carbon burners takes place in an irregular and intermittent manner and the reservoirs 16 are designed to correct that difficulty and secure a regular and even flow of gas. Inserted in the burner 9, so as to form a means of communication between the reservoirs 16 and the exterior of said burner, are the gas tips or nozzles 19. Said gas tips or nozzles are preferably secured in apertures in which they fit snugly, and are provided with conical perforations as shown in Fig. 1. The reservoirs 16 communicate with the interior of the gas retort 15 through a gas or vapor pipe 18, the upper end of which passes into said retort, and the lower end into the passageway or duct 17, formed in the burner 9. Upon the top of the base 5, surrounding

55  
60  
65  
70  
75  
80  
85  
90  
95  
100

the burner 9, is mounted the jacket 20. Said jacket 20 is preferably made in two parts, and said parts are hinged or pivoted so that each one of them can be swung outward to the position indicated by dotted lines in Fig. 1. The jacket 20 is provided with apertures 20<sup>a</sup>, said apertures being so situated as to permit the gas flame from the gas tips or nozzles 19 to pass therethrough and come in contact with the retort 15. The purpose of having said jacket 20 made in two parts and hinged or pivoted as aforesaid, is to permit of its being swung outward for the purpose of lighting the fire after which it may be swung inward so as to direct the flame against the retort 15 for the purpose of intensifying the heat and rapidly vaporizing the oil in said retort, and after vaporization has begun, it may again be swung outward as indicated, the nozzles alone serving thereafter to direct the gas flame against the retort.

Fig. 3 represents a modified form of my apparatus, and is precisely similar in construction to the form just described, excepting only that the gas or vapor pipe 18, enters the retort 15 at the top instead of the bottom thereof, and is given the curved direction as indicated in Fig. 3.

Where the modified form shown in Fig. 3 is employed, it is necessary to provide an additional or overflow pipe 18<sup>a</sup> for conducting the oil from the retort 15 to the burner 9. Where the vapor or gas flows from the retort 15, through a pipe entering the retort through the top thereof, the gas is likely to be delivered in a more uniform manner; and may be freed from some of the heavier residual matter, whose gravity will prevent it from passing upward.

The mode of operation of my improved hydro-carbon burner is as follows: The liquid hydro-carbon to be vaporized and burned passes from any suitable reservoir through the pipe 14 and the pipe 12 to the retort 15. Such hydro-carbon may be caused to pass through the pipes 14 and 12 and into the retort 15, by means of pressure exerted on the oil in the supply reservoir, or by reason of the fact that the said reservoir is given a higher position than the retort 15. The oil or other liquid hydro-carbon passing into the retort 15 as aforesaid, fills the depressions 15<sup>a</sup> in said retort up to the level of the upper end of the gas or vapor pipe 18. When the oil reaches the level of the gas or vapor pipe 18, it can rise no higher, but will flow downward into the reservoirs 16 formed in the burner 9, and will flow outward through the gas tips or nozzles 19 and be collected in the annular depression or firing basin formed near the rim of the burner 9. Should any oil overflow from the annular depression 10, it will pass down into the drip reservoir which is formed in the base 5. When the oil has begun to flow from the gas tips or nozzles 19, said oil may be lighted, the oil valve closed,

and the flame will be directed upward against the retort 15 by the inclosing jacket 20. By reason of the small capacity of the depressions 15<sup>a</sup> in the retort 15, only a small quantity of oil will be contained therein, and it will be vaporized almost immediately upon lighting, the process of vaporization, beginning much more promptly than is the case with hydro-carbon burners provided with retorts containing larger quantities of oil. The gas or vapor formed in the retort 15 will pass downward through the gas or vapor pipe 18 and be emitted from the nozzles or gas tips 19, whereupon it will be ignited and the apparatus will become a vapor or gas burner exclusively. The oil valve is then opened. The tips 19 are given such a direction that the lighted gas issuing therefrom will be directed against the retort 15 so as to continue the process of evaporation. The conical form of the apertures in the gas tips or nozzles 19 render it very difficult for them to be clogged or stopped up by the small particles of solid carbon or other foreign bodies likely to be present in the gas or vapor. Should the gas tips or nozzles become clogged, they being simply inserted in close fitting apertures formed in the burner, they will be forced from their position by the pressure of the gas, before the pressure becomes so great as to render an explosion possible.

Having fully described my invention, what I wish to claim and secure by Letters Patent of the United States is—

1. In a hydro-carbon burner, the combination of a retort connected with an oil supply, a hollow burner below such retort with a surrounding firing basin, such burner connected with the retort by a gas or vapor pipe, a jacket surrounding such burner adapted to concentrate the flame from the firing basin, and apertures in the walls of such jacket through which flame jets from the burner are directed, to strike the retort, substantially as shown and described.

2. In a hydro-carbon burner, the combination of a hollow burner, a firing basin surrounding the same, a retort above such burner connected to the same by a gas or vapor pipe, a separable or divisible jacket surrounding the sides of the burner for concentrating the flame from the firing basin, such jacket pivoted or hinged so as to open or close, and apertures in the walls of the jacket through which flame jets from the burner are directed when such jacket is closed.

3. In a hydro-carbon burner, the combination of a retort, a burner below connected to such retort by a gas or vapor pipe, a firing basin surrounding such burner, said burner provided with a cavity having depressions of limited capacity therein, nozzles inserted in apertures formed in such burner, a divided jacket surrounding such burner and firing basin, such jacket having an open top and apertures in its walls, whereby when the jacket

is closed, the flame jets from the burner will pass through such apertures, and the flame from the firing basin will be concentrated within such jacket, substantially as shown  
5 and described.

In testimony whereof I have hereunto set my hand and affixed my seal, this 27th day of

July, 1893, in the presence of the two subscribing witnesses.

WILLIAM R. PEARSON. [L. s.]

Witnesses:

A. C. FOWLER,

PAUL F. COSTE.