

(No Model.)

F. G. BARTHEL.  
LAMP FOR BURNING HYDROCARBONS.

No. 442,281.

Patented Dec. 9, 1890.

Fig.1.

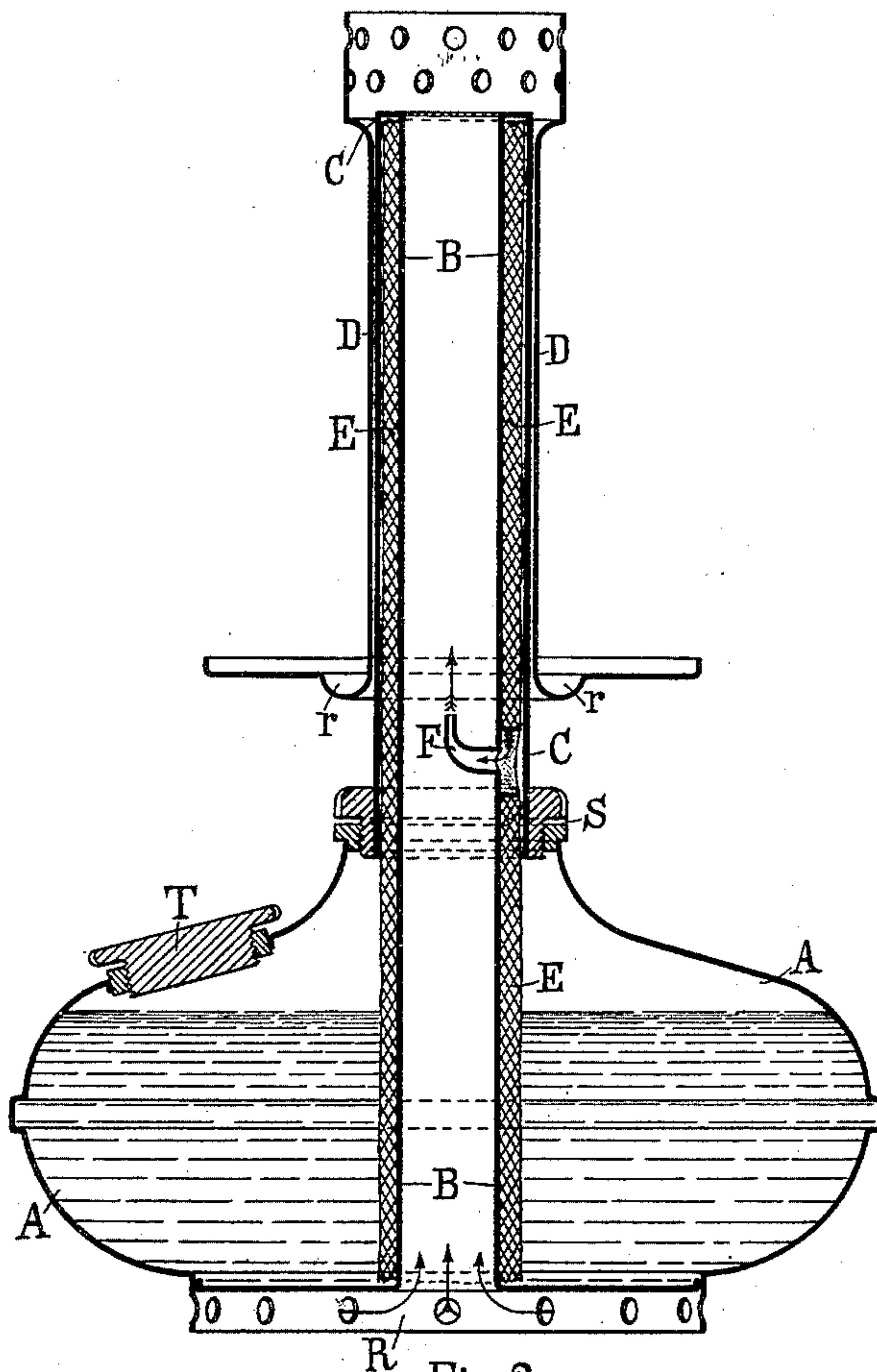
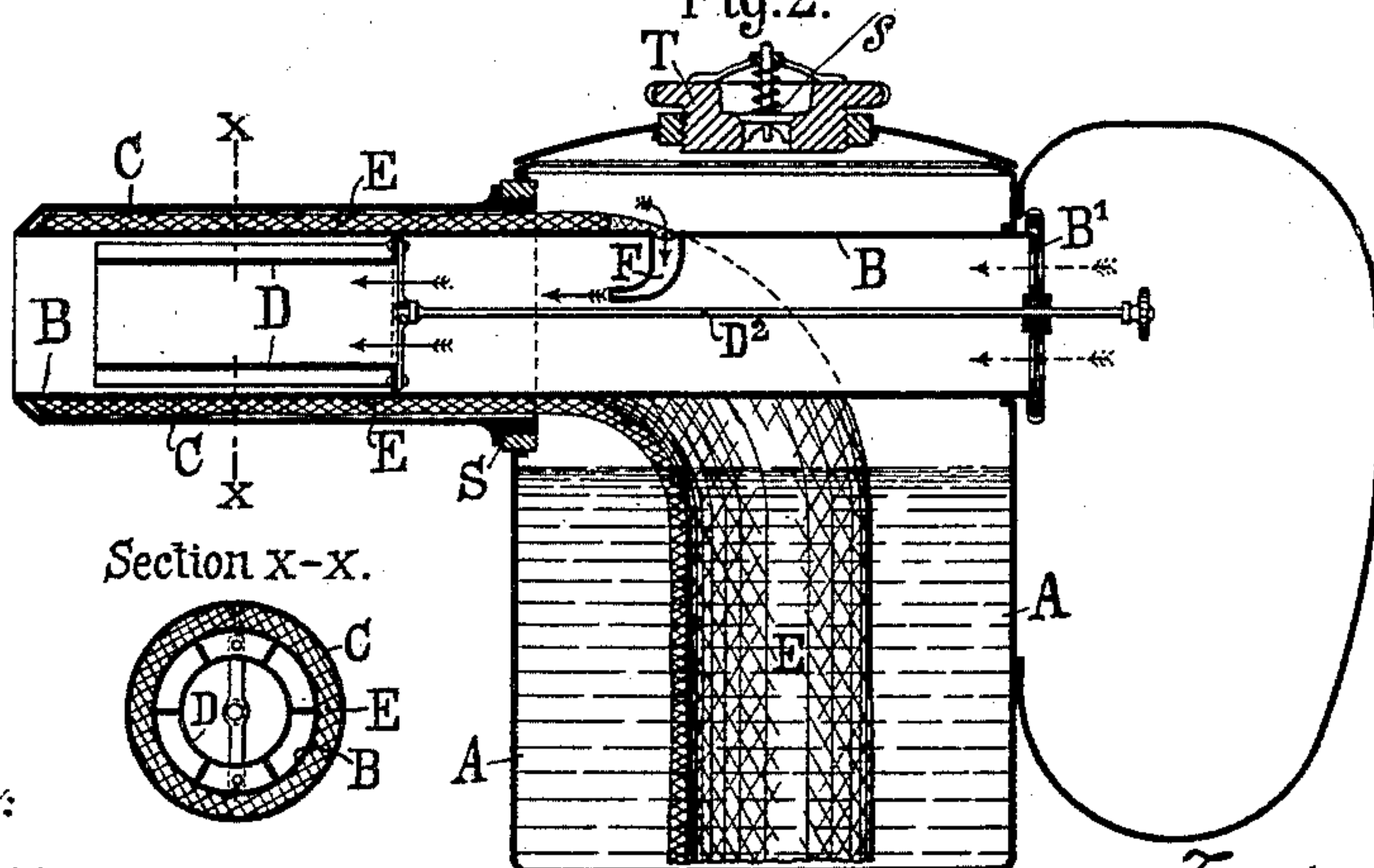


Fig.2.



Witnesses:  
*George Barry.*  
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*Friedrich Gustav Barthel*  
by attorneys  
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# UNITED STATES PATENT OFFICE.

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## LAMP FOR BURNING HYDROCARBONS.

SPECIFICATION forming part of Letters Patent No. 442,281, dated December 9, 1890.

Application filed July 1, 1890. Serial No. 357,443. (No model.)

*To all whom it may concern:*

Be it known that I, FRIEDRICH GUSTAV BARTHEL, of Neiderpoyritz, near Dresden, in the Kingdom of Saxony, in the German Empire, have invented certain new and useful Improvements in Lamps for Burning Hydrocarbons, of which the following is a specification, reference being had to the accompanying drawings.

This invention is applicable, generally, to lamps for burning hydrocarbons, but with especial advantage to those for burning the more volatile hydrocarbons, its object being the burning of the last-mentioned hydrocarbons in a more efficient manner. The improvement is applicable to lamps for cooking, heating, and illuminating purposes. In using benzine in this lamp, the flame may produce a heat up to about 1,300° centigrade, and it is therefore well qualified to be used in laboratories and for industrial purposes, such as hard-soldering, &c.

Figures 1 and 2 in the accompanying drawings represent central vertical sections of two lamps serving as examples of my invention.

Similar letters of reference designate corresponding parts in both figures.

The lamp represented in Fig. 1 is a vertical one. It consists of a reservoir A with a screw-plug T, for filling it with hydrocarbons. A central pipe B, open at both ends, is affixed to the bottom of the reservoir. The pipe B is surrounded above the reservoir by a pipe C, which, by means of an air-tight screw S at its bottom, is connected to the top part of the reservoir A. The intermediate space between pipes B and C is occupied by the wick E, which is represented as extending to the bottom of the reservoir.

The pipe C is surrounded by a pipe D, which is adjustable vertically, and serves the purpose of transmitting the heat from the lower part of the flame to the pipe C, and through this pipe to the wick E. This pipe D has its upper part extended upward beyond the tops of the pipes B and C, and perforated with numerous holes. By the vertical adjustment before mentioned the flame may easily be regulated at will.

At the lower end the pipe D may be and is

shown as provided with a dish-shaped extension forming a gutter *r* around it. This gutter is filled with spirit, the ignition of which serves for starting the lamp.

The central pipe B has a small branch pipe or nozzle F directed inward to its central part and terminating in a fine-pointed aperture, through which issue the hydrocarbon vapors which are developed by heating the upper parts of the pipes C D. These vapors are injected through the nozzle F into the tube B in a fine jet, and are therein well mixed with the necessary quantity of air, which, by the upward injection, is drawn in at the bottom of the said tube, as indicated by arrows, through the perforations of the base-ring R, upon which the reservoir is supported. The mixture if ignited will burn with a blue flame at the top of the central pipe B. The space between B and C is of course closed at top, and the opening of the pipe B is covered by wire-gauze to prevent any inward draft of the flame and to insure a perfect combustion of the issuing mixture.

The lamp represented in Fig. 2 is a horizontal one, suitable for soldering and other purposes. Its pipe B passes horizontally through the reservoir A, and is surrounded on its outer or free part by the pipe C, which, by means of an air-tight screw, is fastened to the wall of the reservoir. The annular space between these pipes B and C is closed at the outer end, as in the first-described example. Between the two said pipes the wick E is placed, split longitudinally and hanging down at its inner end into the reservoir A. From the inner wall and into the center part of pipe B the nozzle F protrudes, with its fine opening directed toward the outer opening of pipe B. At the rear end the opening of B may be provided with a perforated disk, covered by a perforated adjustable register B', by which means the entrance of air may be regulated at this end. Within the pipe B, at its front end, a pipe D is arranged, provided with ribs at its outer surface and being made shiftable by means of a rod D<sup>2</sup>. I prefer to provide the screw-plug T with a small safety-valve, and have represented it so provided at s.

For starting this lamp, any convenient



burner—such as a bent wire surrounded by cotton or wool dipped into spirit and ignited—may be used for heating the outer pipe C. The hydrocarbon in the wick E will thus be  
5 converted into vapors issuing under pressure through the nozzle F, mixing with the air admitted through the register B', and after leaving the pipe B at its outer end may be ignited there. The heat of this flame will continue  
10 to convert the hydrocarbon into vapors, and this action of the flame may be regulated at will by shifting the inner pipe D. The nearer this pipe is brought toward the issuing flame the more heat will be transmitted to the pipe  
15 B. The mouth of the latter may, as in the instance of Fig. 1, be covered by a wire-netting.

It will be understood that, although in the first - described example of the invention  
20 (shown in Fig. 1) the regulating-pipe D surrounds the pipes B and C and in the other example (shown in Fig. 2) the said pipe D is surrounded by the said pipes B and C, the regulating action of the said pipe D is the  
25 same in both cases.

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

1. The combination, with the lamp-reservoir, of the two concentric pipes B and C, of  
30 which the inner one B is open at both ends

and forms an air-passage through the reservoir, and the outer one C opens into the reservoir and has a closed connection at its outer end with the inner one, whereby there is formed between the two said pipes an annular wick-receiving space closed at its outer  
35 end, and the nozzle F, provided in the inner tube for the passage therein of vapors generated in the lamp, substantially as herein set forth.

2. The combination, with a reservoir, of the pipe B, passing through the reservoir and open at both ends, the pipe C, surrounding the said pipe B and open at its inner end to the reservoir, but having a closed connection  
45 at its outer end with the said pipe B, the nozzle F, projecting through the wall of the said pipe B into the interior thereof, and the regulating-pipe D, surrounding the said pipes B and C and adjustable lengthwise relatively  
50 thereto, substantially as and for the purpose herein set forth.

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

FRIEDRICH GUSTAV BARTHEL.

Witnesses:

WILHELM WIESENHÜTTER,  
RICHARD KUNZE.