

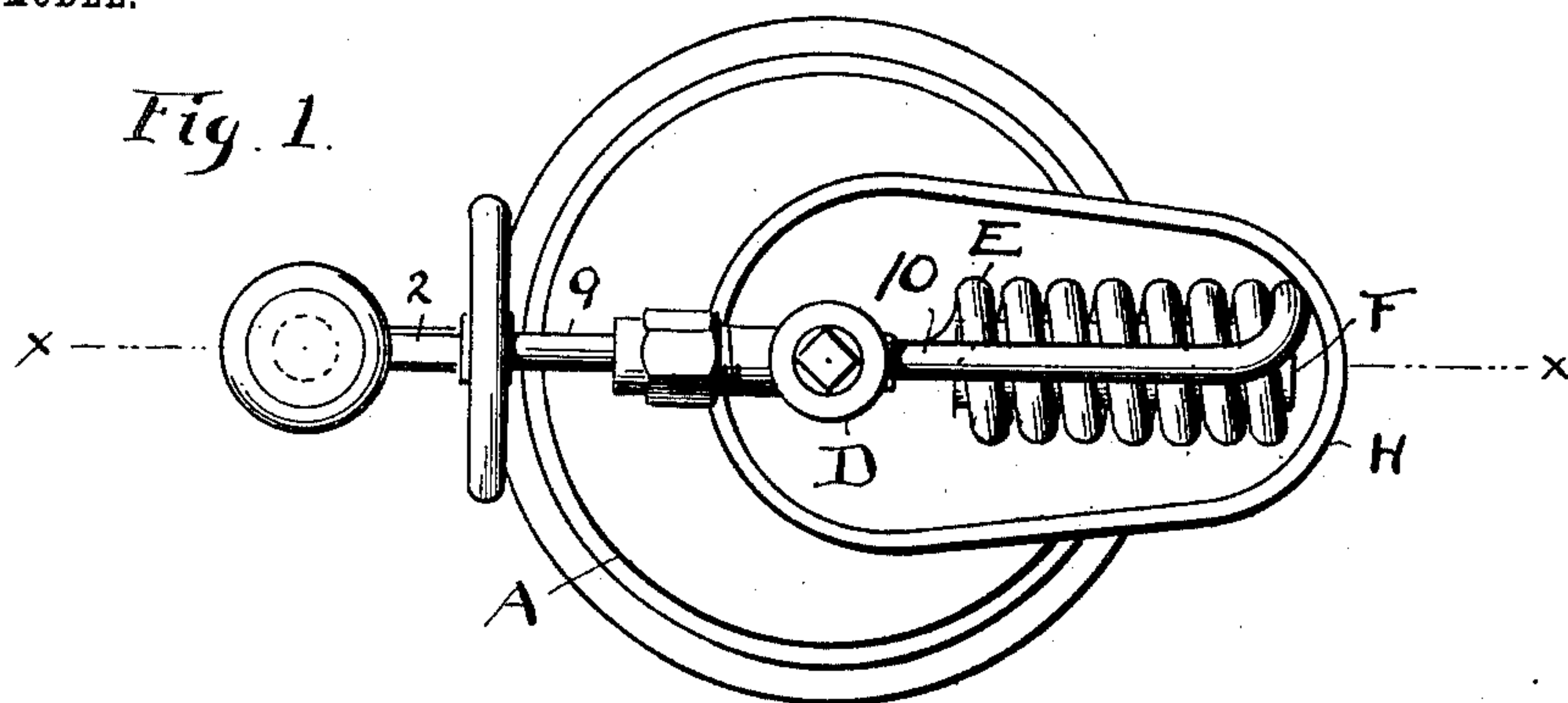
No. 756,748.

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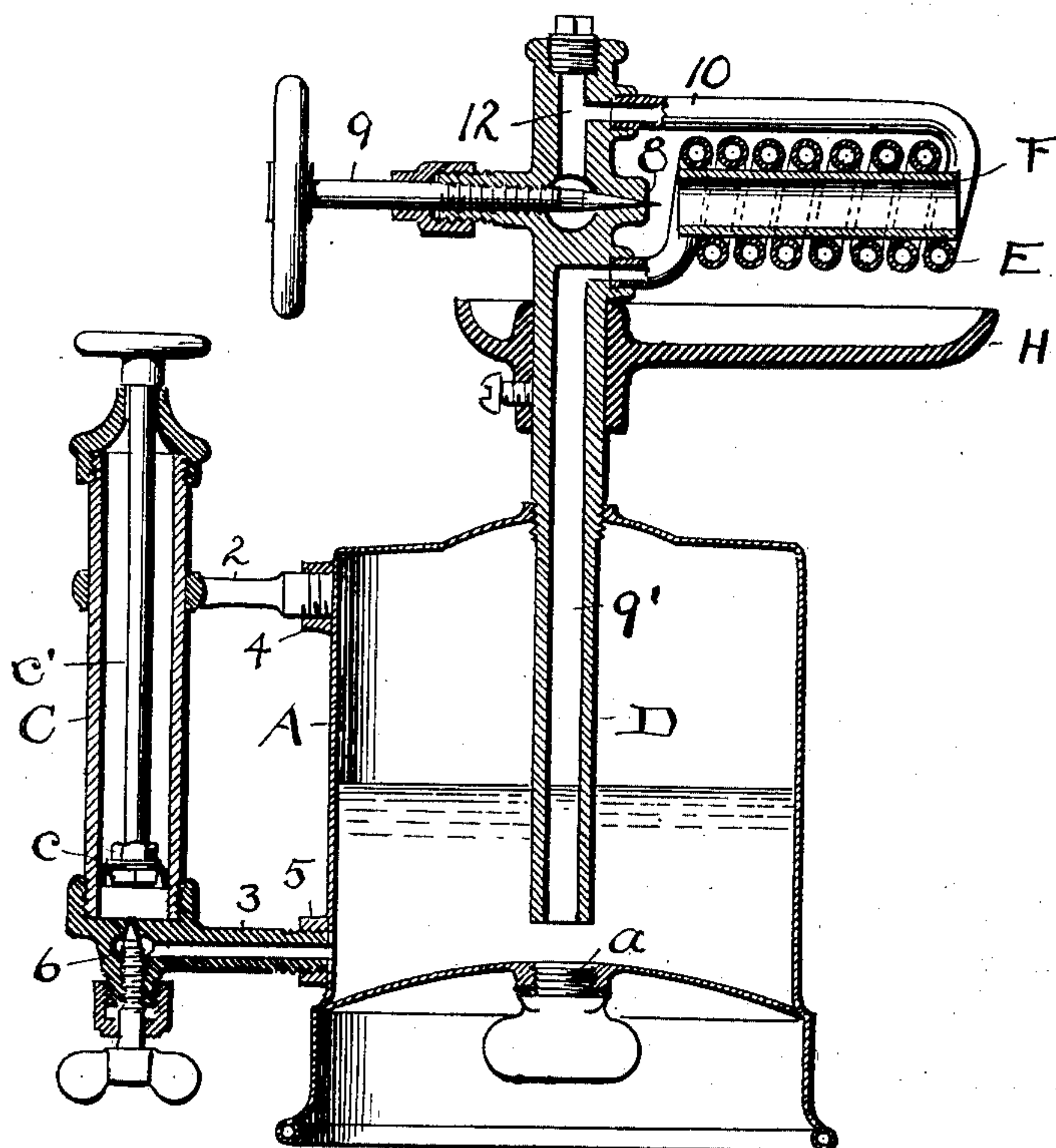
C. F. WARNER.  
VAPOR TORCH.

APPLICATION FILED NOV. 14, 1903.

NO MODEL.



*Fig. 2.*



WITNESSES:

*R. B. Moser*  
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INVENTOR.

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# UNITED STATES PATENT OFFICE.

CHARLES F. WARNER, OF CLEVELAND, OHIO, ASSIGNOR TO FRANK B. MANY, OF CLEVELAND, OHIO.

## VAPOR-TORCH.

SPECIFICATION forming part of Letters Patent No. 756,748, dated April 5, 1904.

Application filed November 14, 1903. Serial No. 181,239. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. WARNER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vapor-Torches; and I do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to a vapor-torch; and the invention consists in a torch adapted to use a fluid that can be vaporized, and especially the grade of hydrocarbon oil known as "kerosene." The torch is so constructed that when heated up to a vaporizing condition it will work to its highest possible efficiency and produce what I regard as a phenomenal flame in both volume and intensity by the use of ordinary kerosene-oil.

In the accompanying drawings, Figure 1 is a plan view of the torch, and Fig. 2 is a vertical sectional elevation thereof on line *x x*, Fig. 1.

As thus shown, the device consists of a few simple elements comprising a fluid chamber or receptacle, also referred to herein as the "body" of the device, and preferably made of sheet metal, because it is desirable to have the device as light as possible for convenience in handling, and in any event the said body is not exposed to the heat and need not be heavy on that account.

Now it is designed in this torch, as in vapor-torches generally, to maintain the oil-supply to the generator by atmospheric pressure artificially introduced, and to this end I have provided a handle comprising also an air-pump cylinder C, and the said cylinder is small enough to make a convenient grip for the hand and is supported from body A by means of brackets 2 and 3, threaded into sockets 4 and 5 on the side of body A. Bracket 3 is provided with an air-duct from the pump to the reservoir controlled by a valve 6 at the bottom of cylinder C, and piston *c* and its rod *c'*, extending out through the top of the cylinder, serve to force into the cylinder the requisite volume of air to maintain pressure of the

oil in reservoir A. Ordinarily there is sufficient render enough in the flexible exterior of piston *c* to take air from above, and the present construction is found sufficient for this purpose. Obviously a mere reversal of parts with immaterial changes would enable the upper bracket to be provided with the air-duct. Oil is supplied to the can in this instance through a screw-plugged opening *a* in its bottom; but a suitable inlet might be provided in the top of the can.

D is a stand-pipe or tube set into the body or reservoir A centrally through its top and extending down well toward the bottom of the reservoir, and upon this pipe or tube all the mechanism relating to the burner and the generator is supported.

It is well known that in order to use a low-grade oil like kerosene successfully in its vaporized form a generator especially adapted to vaporize such oil is required, and for this purpose an ordinary gasoline-generator will not suffice. Then, again, in this particular torch an exceptional generating power is required, because of the exceptional volume of flame and heat for which I have planned. Hence the novel and original arrangement of parts, as shown, wherein a uniform spiral coil E, of suitable pipe or tubing, is set a suitable distance from above oil-reservoir A upon stand-pipe D at right angles thereto and provided with open connection and communication at its ends with said pipe D, substantially as shown. Within said coil I place a mixing-tube F, and vapor is discharged into said tube through jet-orifice 8, controlled by needle-valve 9. In its travel the oil passes through stand-pipe D by duct 9' into the inner end of the generator, and the resultant vapor flows through the return-stem 10 of the coil-viaduct 12 to the needle-valve orifice. With this construction combustion occurs at or about the outer end of the coil or even some distance beyond it, especially when the vapor is jetted into the tube under a heavy pressure. In such case the flame can be shot two feet or more away.

The generator handles the kerosene with evident ease, and the oil is not only vaporized,



but the vapor itself appears to become superheated, thus promoting a perfect and odorless combustion.

For starting purposes I use a pan H, adj-  
5 justably sleeved upon stand-pipe D below the generator and adapted to burn any suitable starting fluid, such as alcohol or the like.

The torch thus constructed has many uses, and among these it has been found especially  
10 useful in starting automobile-burners and for burning paint off of buildings and the like places where an intense flame is wanted.

It will be observed as a feature of this invention that the generator-coil receives the  
15 oil from stand-pipe D at its inner portion and that the outer portion or end of the coil is connected by the end of the coil-pipe back over the coil and engaged with the top of the stand-pipe with duct 12. Thus the oil  
20 enters the cool end of the generator and the gases leave from its hottest portion, where they are practically superheated. I have found this to be the only practical way of constructing a kerosene-torch with a coil-genera-  
25 tor, as it is essential that the gases should come directly from the hottest place to get perfect combustion, and this is impossible if they be taken from the cold end of the coil.

Practically combustion occurs in the outer  
30 half of the burner-tube, which becomes red-

hot in a short time, while the rear portion of the coil and tube remain comparatively cool.

What I claim is—

In a hydrocarbon-torch of the kind described, a receptacle for oil and a stand-pipe 35 therein provided with separate passages at its top for oil and vapor, respectively, a generator-coil and a mixing-tube therein forming the burner of the torch, the said coil consisting of a spirally-wound tube supported from 40 the top of said stand-pipe at right angles thereto above said receptacle and interposed between said oil and vapor passages, the inner end of said coil communicating with said oil-passage and the outer end with the said 45 vapor-passage, whereby the hot vapors are delivered directly to the burner, a valve to control the flow of fuel to the said burner and a pump fixed upon said receptacle to keep up the pressure therein and a connection from 50 the pump having a passage for air to the receptacle provided with a valve to prevent leakage of air back into the pump, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses. 55

CHARLES F. WARNER.

Witnesses:

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C. A. SELL.