

No. 771,855.

PATENTED OCT. 11, 1904.

G. W. ARPER.  
RETORT FOR HYDROCARBONS.  
APPLICATION FILED APR. 3, 1902.

NO MODEL.

Fig. 1

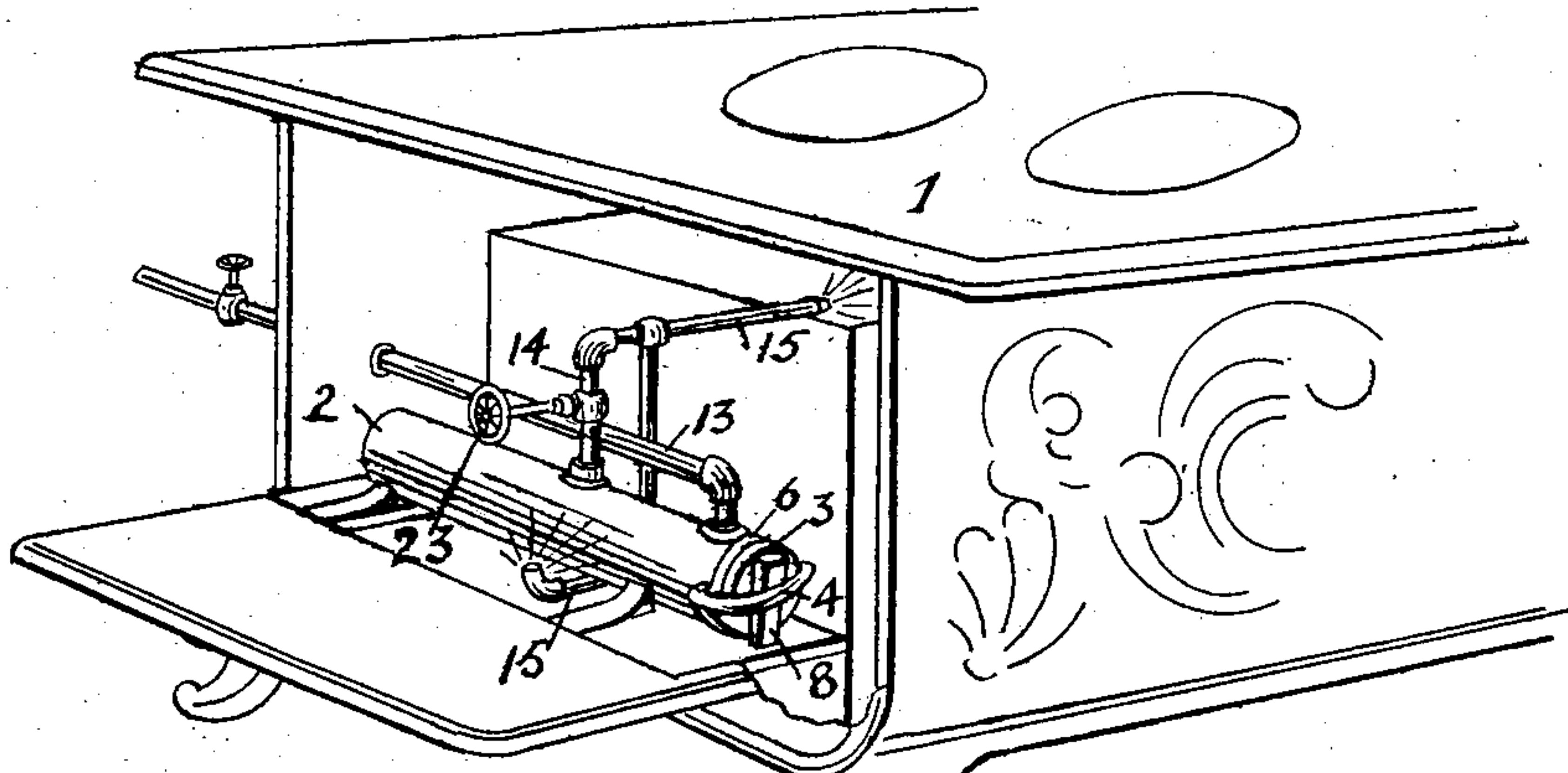


Fig. 2

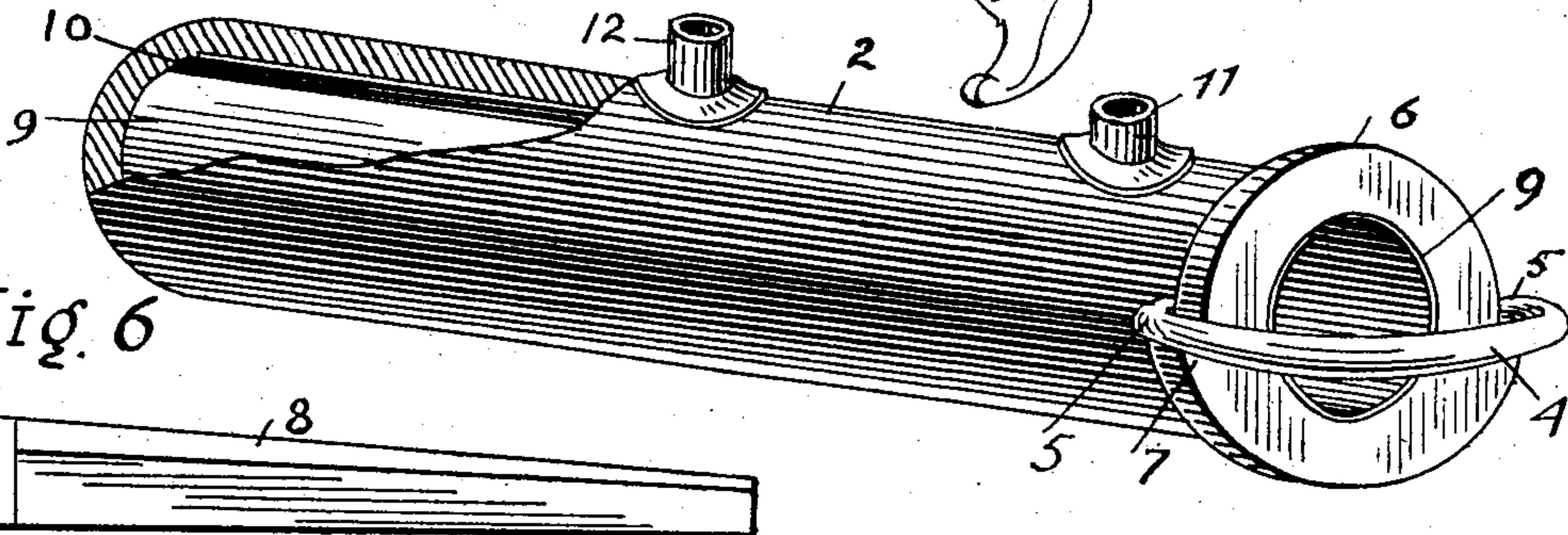


Fig. 6

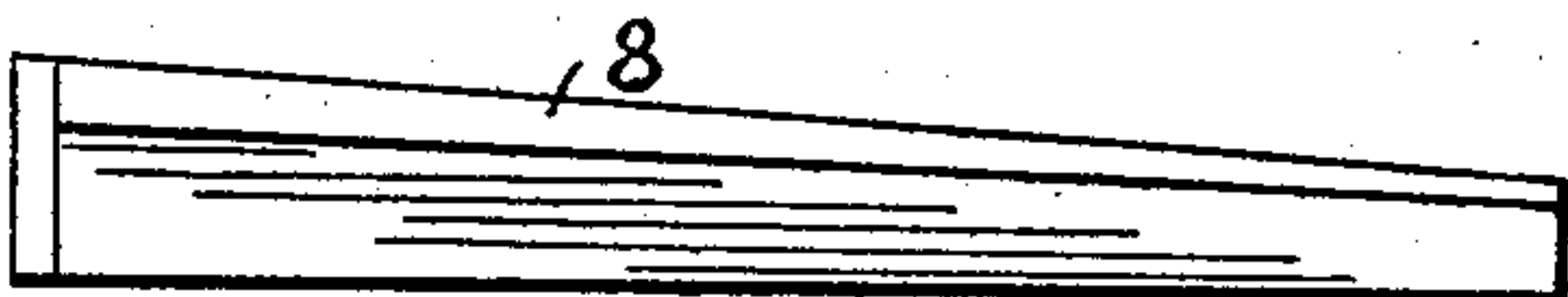


Fig. 3

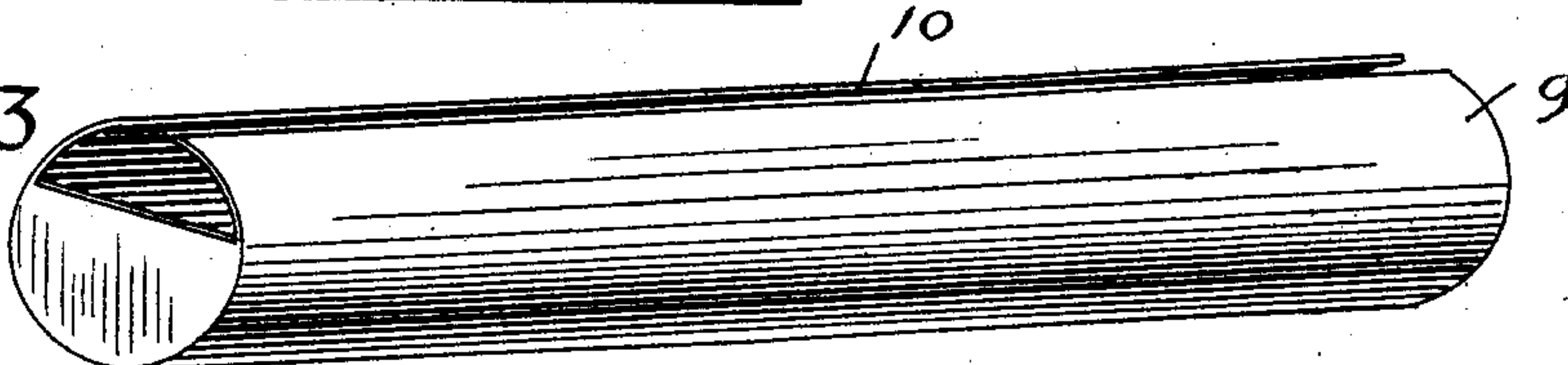


Fig. 4

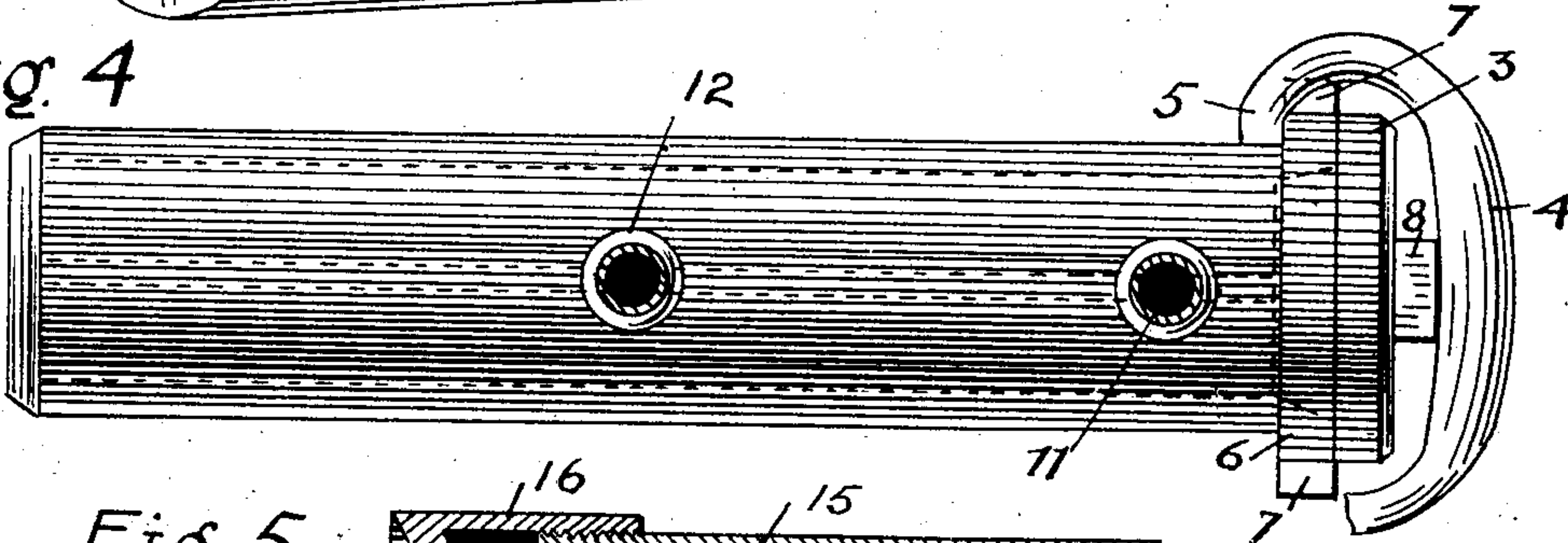
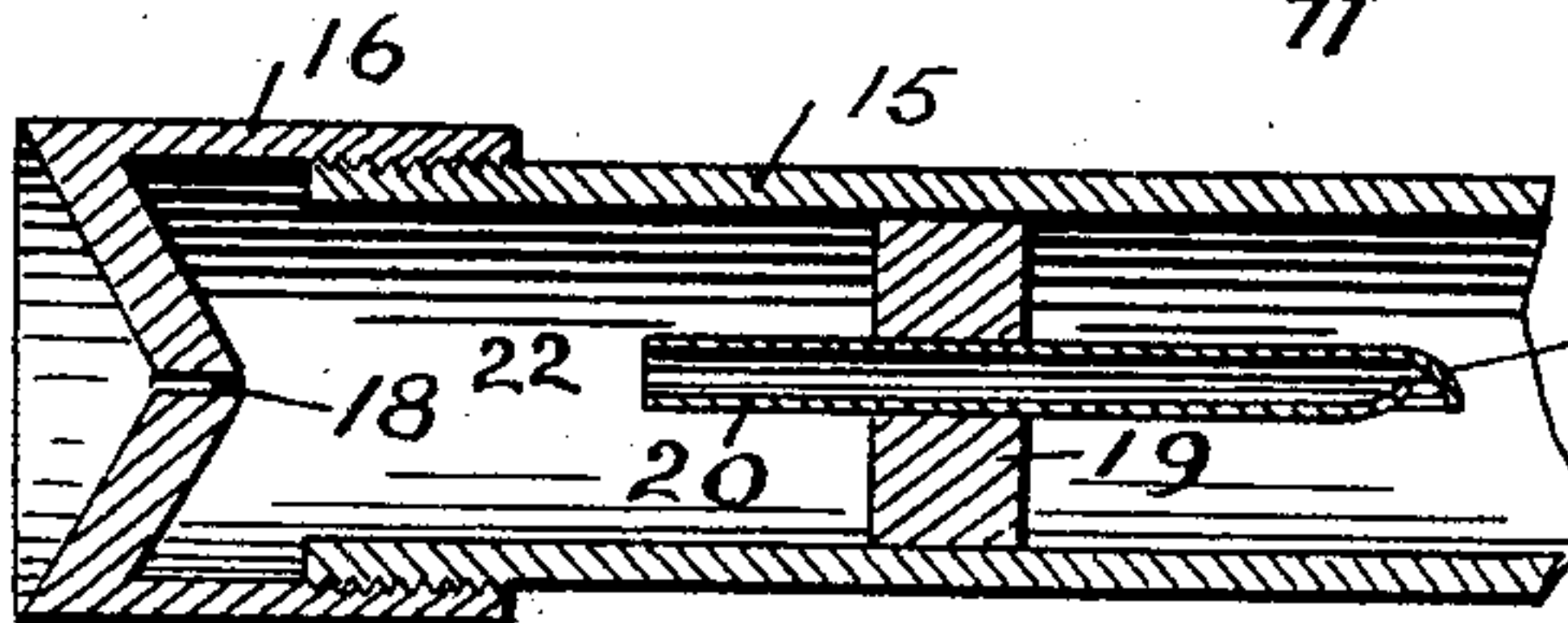


Fig. 5



WITNESSES:  
*Leon Boillot*  
*Halter F. Van.*

INVENTOR:  
*Geo. H. Arper*  
by *W. A. Acker*  
his atty.



# UNITED STATES PATENT OFFICE.

GEORGE W. ARPER, OF OAKLAND, CALIFORNIA.

## RETORT FOR HYDROCARBONS.

SPECIFICATION forming part of Letters Patent No. 771,855, dated October 11, 1904.

Application filed April 3, 1902. Serial No. 101,185. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. ARPER, a citizen of the United States, residing at Oakland, county of Alameda, State of California, have invented certain new and useful Improvements in Retorts for Hydrocarbons; and I do hereby declare the following to be a full, clear, and exact description of the same.

The difficulty experienced in connection with the use of retorts for the generating of gas from liquid carbons, such as crude oil, is that the base or worthless portion of the oil is conveyed toward the burner-tips and stops or clogs the outlet-orifice thereof, necessitating much care in maintaining the outlet-openings free or unobstructed.

The object of the present invention is to so construct the retort that the base or worthless portion of the liquid carbon will be retained within the retort proper and prevented from escaping into the delivery pipe or pipes, means being provided whereby at proper intervals the interior of the retort may be cleaned of such accumulation as may have taken place therein during the generating of gas from the oil fed thereto.

The invention comprises certain details of construction, as will be hereinafter more fully set forth and described at length.

To comprehend the invention, reference should be had to the accompanying sheet of drawings, wherein—

Figure 1 is a detail sectional view of an ordinary cooking-stove with the improved retort arranged therein. Fig. 2 is a perspective view of the retort, partly broken away, so as to illustrate position of the removable lining. Fig. 3 is a detail view of the lining for the retort; Fig. 4, a plan view of the retort; Fig. 5, a detail sectional view of one of the gas-jets, and Fig. 6 is a detail view of the clamp-wedge.

The invention is designed more especially for use in connection with the utilization of oil as a fuel in stoves, ranges, and furnaces.

In the drawings, the numeral 1 is used to indicate an ordinary cooking-stove within the fire-box of which is situated the retort 2. This retort preferably consists of a cylindrical shell of suitable size one end of which

is open. The open end of the retort is closed by a removable plug or cap 3, which is held in place by means of the retainer 4. The inner ends 5 of this retainer or clamp embrace a circular collar or flange 6, secured to the open end of the retort, said clamp or retainer being held in position by means of the projecting shoulders 7, upon which it rests.

Closing plug or cap 3 is forced into the open end of the retort by means of a wedge 8, which wedge is driven between the head of the plug or cap and the retainer or clamp. It is obvious that in lieu of this manner of closing the open end of the retort the cap or plug may be screw-threaded and screw into or onto the open end of the retort.

Within the retort there is fitted a metallic lining 9, the free edges of which are left a slight distance apart or separated, thereby forming a longitudinal opening 10 in the upper surface of the lining. However, the lining may be completely closed, and a series of outlet-openings may be formed in the top or upper surface thereof. The ends of the lining are partially closed by being inwardly bent, so that such oil will be held within the lining as may be fed thereto.

In the top or upper surface of the retort 2 is formed an oil-inlet 11 and a gas-outlet opening 12. With the inlet-opening 11 communicates the valve-controlled oil-supply pipe 13 and with the outlet-opening 12 connects the gas-outlet pipe 14. This gas-pipe may or may not be provided with a series of branch distributing-pipes 15, by means of which the gas may be conveyed to any portion of the stove's interior. It is required that at least one gas-tip 16, attached to the branch pipes 15, be so arranged that the flame thereof bear against the surface of the retort 2 for the purpose of heating same. By preference the jet impinges against the under face of the retort, the surface of the retort being flattened for this purpose.

To overcome possibility of the outlet-orifice 18 of the gas-tips becoming clogged in case any foreign matter or impurities be contained in the generated gas, there is secured in the distributing-pipes, near the discharge end thereof, a diaphragm 19, through



which extends a short tube 20. The inner end of this tube is bent over in order to form a hood 21, so as to prevent dirt or sediment which may be contained in the pipe entering therein. The gas discharged from tube 20 enters into chamber 22, formed by diaphragm 19 and face of gas-tip, and escapes therefrom through outlet-orifice 18 of the tip 16.

The oil-gas-outlet pipe 14 is provided with a regulating-valve 23, by means of which the flow of gas from the retort may be controlled.

For an initial heating of the retort 2 any suitable means may be employed. A simple arrangement for this purpose is to insert a narrow pan beneath the retort. This pan is filled with oil, which is ignited. The flame from the oil bearing against the surface of the retort heats the same, causing vaporization of the oil fed into the interior of the retort from oil-supply pipe 13. The gas thus generated within the retort escapes therefrom through the outlet-opening 12 into gas-outlet pipe 14. After the initial heating the retort is maintained in a heated condition by means of the flame directed thereagainst. The residue—carbon or other matter—of the crude oil will be deposited in the removable lining of the retort, being thus caught and retained.

Inasmuch as the outlet for the generated gas is in the top of the retort, the base or worthless portion of the oil is prevented from escaping into the gas-outlet pipe as the same settles in the lining of the retort.

To clean the retort, the end plug or cap 3 thereof is removed, when the lining 9 may be easily withdrawn and emptied of the material collected therein. The lining may be reinserted in the retort or a new one fitted therein.

Having thus described the invention, what is claimed as new, and desired to be protected by Letters Patent, is—

1. A hydrocarbon-burner provided with a retort comprising a horizontally-disposed tu-

bular shell open at one end, means for closing said open end, and a lining for the shell removably fitting the same; substantially as described.

2. A hydrocarbon-burner provided with a retort comprising a horizontally-disposed tubular shell open at one end, means for closing said open end, and a trough-like lining for the shell removably fitting the same; substantially as described.

3. A hydrocarbon-burner provided with a retort comprising an outer shell having an opening therein, means for closing said opening, and a lining for the shell removably fitting the same; substantially as described.

4. The combination with an open-ended shell, of a cap or plug for said open end, a lining removably fitted within the shell, said shell having an oil-inlet and a gas-outlet, a valve-controlled oil-feed pipe communicating with the oil-inlet, a gas-outlet pipe leading from the gas-outlet, said pipe arranged so as to permit of a gas-flame being directed to heat the shell, a gas-jet secured to said pipe, a diaphragm arranged within the pipe near its discharge, and a tube extending through said diaphragm, one end of said tube being provided with a deflecting shield or hood, substantially as described.

5. A retort of the character described having an oil-inlet and a gas-outlet, a discharge-pipe leading from said gas-outlet, a diaphragm arranged within said pipe, and a tube extending through said diaphragm, one end of said tube being provided with a deflecting shield or hood, substantially as described.

In witness whereof I have hereunto set my hand.

GEORGE W. ARPER.

Witnesses:

N. A. ACKER,  
D. B. RICHARDS.