

No. 742,119.

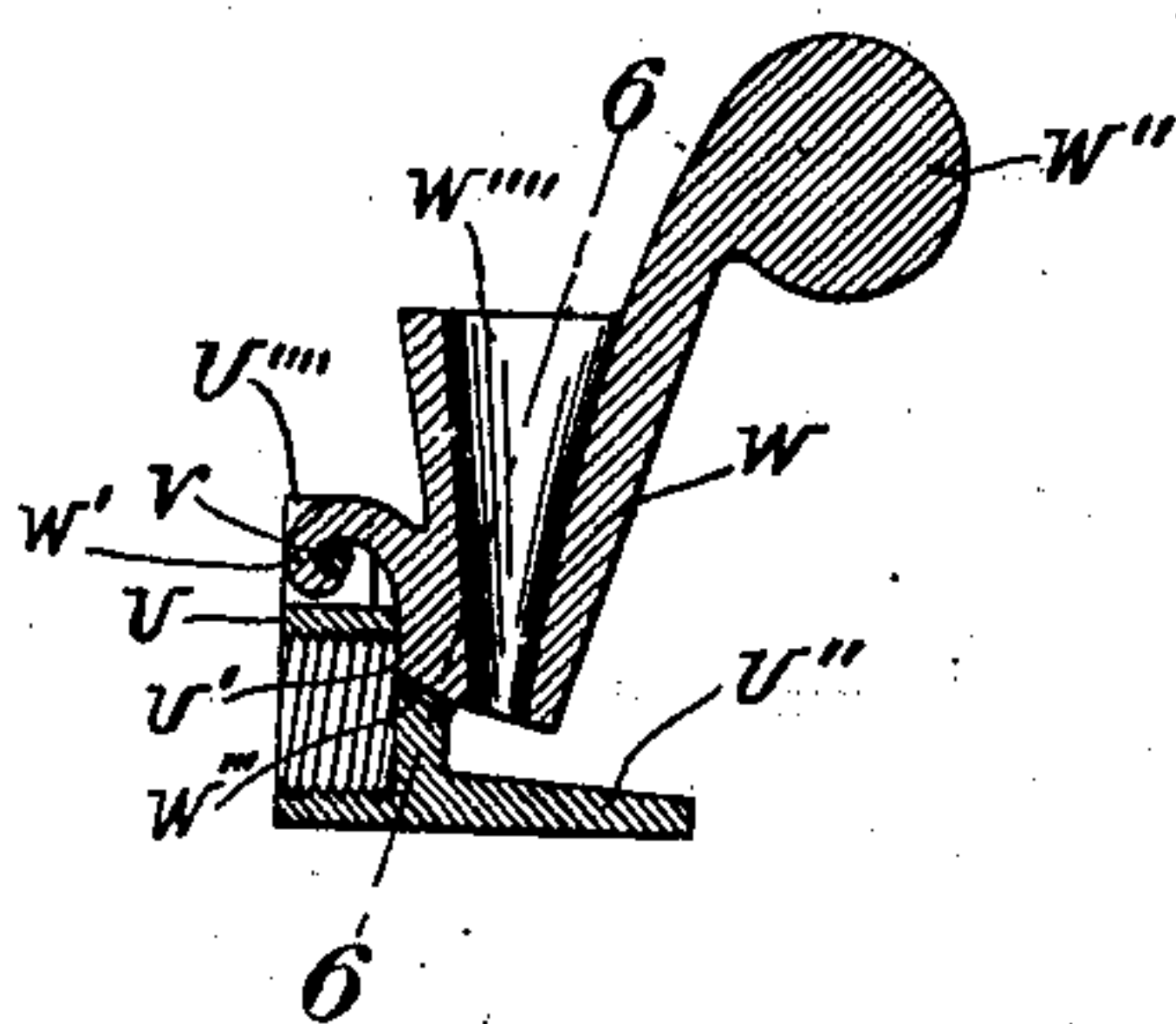
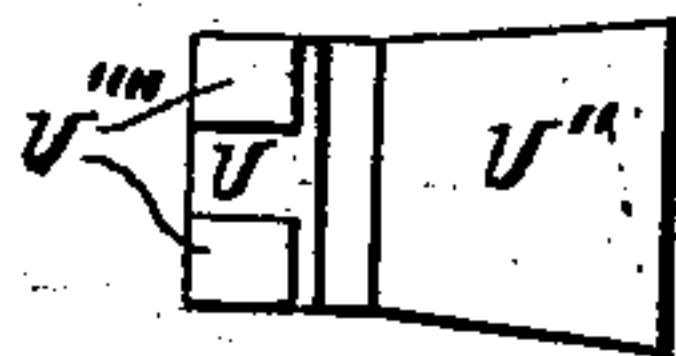
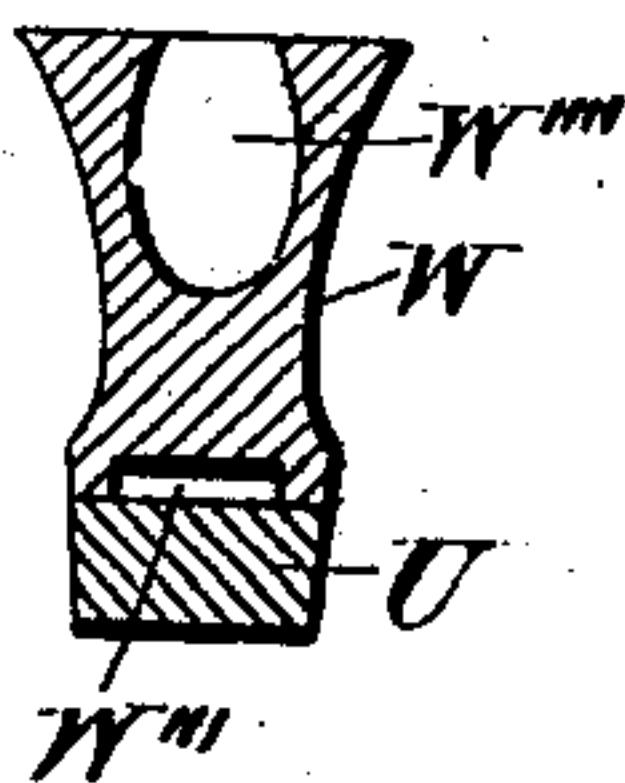
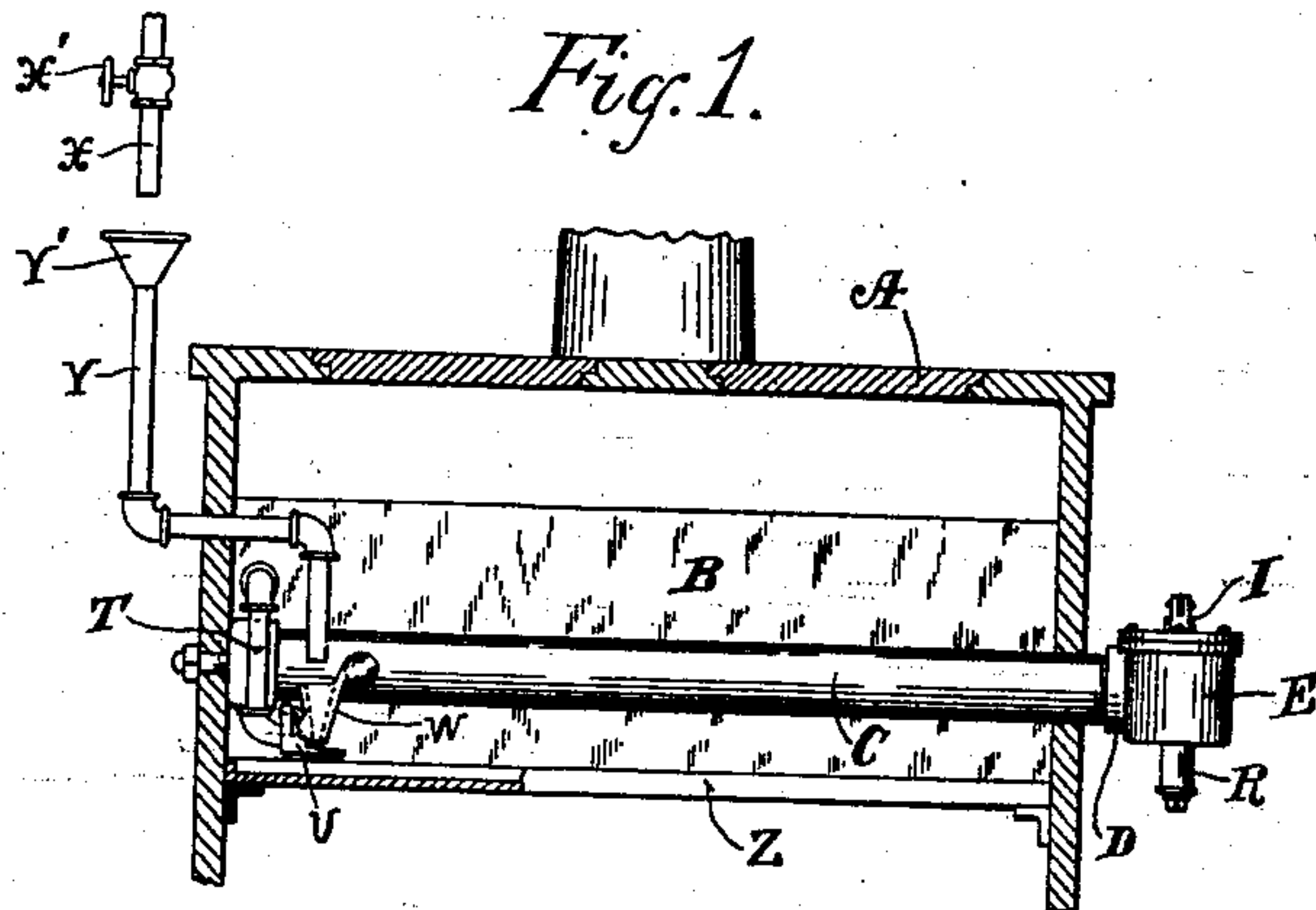
PATENTED OCT. 20, 1903.

R. M. JACKSON.

# HYDROCARBON BURNER.

APPLICATION FILED SEPT. 12, 1902.

NO MODEL..



WITNESSES

Chas. L. Hyde.

Nina B West.

*INVENTOR*

Ralph M Jackson

BY Hazard & Harpham  
ATTORNEYS.

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

RALPH M. JACKSON, OF NEAR FULLERTON, CALIFORNIA, ASSIGNOR OF  
ONE-HALF TO G. E. HARPHAM, OF LOS ANGELES, CALIFORNIA.

## HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 742,119, dated October 20, 1903.

Application filed September 12, 1902. Serial No. 123,179. (No model.)

*To all whom it may concern:*

Be it known that I, RALPH M. JACKSON, a citizen of the United States, residing near Fullerton, in the county of Orange and State of California, have invented new and useful Improvements in Hydrocarbon-Burners, of which the following is a specification.

My invention relates to a hydrocarbon-burner designed to burn hydrocarbon oils, and especially crude petroleum, for domestic uses in cooking-stoves, furnaces for heating houses, &c.; and the object thereof is to produce a practical burner of simple construction for that purpose. I accomplish this object by the burner described herein, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section of the fire-box of a cooking-stove with my burner in place therein. Fig. 2 is a side view, partly in section, of the water-regulating device. Fig. 3 is a central longitudinal vertical section of the burner-tip. Fig. 4 is a plan of a part of the tip. Fig. 5 is a detail of the manner of connecting the boiler with the water-regulating chamber. Fig. 6 is a cross-section on the line 6 6 of Fig. 3.

So far as I know the most economical way to burn crude petroleum is by the aid of steam. In manufacturing plants where boilers are used steam can be conveniently supplied therefrom for that purpose; but in domestic use it is desirable to provide means of simple construction that are self-regulating to supply steam for that purpose, as the ordinary user of a cooking-stove is not skilled in the use of steam-regulating apparatus, which requires attention.

In the drawings, A is a cooking-stove, and B is the fire-box thereof, through which extends the boiler C, in which the steam is generated. One end of the boiler being threaded is faced smooth and is screwed into a smooth-faced socket D on the side of the water-regulating chamber E, so as to make a water-tight joint in which the water may not contact with the threads, thereby preventing them from rusting. By unscrewing the water-chamber from the end of the boiler access may be had to the interior of the boiler to clean it out when desired. Port F, near

the top of the boiler, and ports G, near the bottom of the boiler, connect the interior thereof with the interior of the water-chamber. Port F is always above the water-line in the boiler, and the other ports are below the water-line when the boiler is working properly. In the top of the water-chamber is safety-port H, which is controlled by the weight-regulated valve I, which port may afford an escape for the surplus steam which may be generated in the boiler. In the water-chamber is a self-regulating valve which controls the amount of water which is admitted therein. This valve is composed of the float J, which is attached to the lever K, which lever is pivoted in bearings L, affixed to the casing of the water-chamber. Near the pivot is pivotally attached the valve-stem M', which passes through the valve-seat N and carries a valve-stopper M on the lower end thereof, the position of which on the stem may be regulated by nut O. The hole in the valve-seat is a little larger than the valve-stem, and the valve-seat is reduced in size where it passes through the casing of the water-chamber and is externally threaded. To this threaded end the water-supply pipe P is connected by a T-fitting R, which has a plug R' in the bottom thereof to afford convenient means to enable one to reach the valve-stopper to regulate its position on the valve-stem. The water-supply pipe is provided with a union-coupling S, so that the water-chamber can readily be disconnected therefrom in case the boiler needs cleaning. Leading from the top end of the boiler opposite the water-chamber is the steam-pipe T, on the lower end of which is the burner-tip. This tip is composed of a socket U, into which the steam-pipe is screwed. The upper portion of the socket has a steam-outlet U', and the lower portion carries the atomizer-apron U'', which is preferably wider at its forward end than at its rear end. On the rear end of the socket are the upright supports U''', through which passes the pin V, over which passes the hook W' of the rearwardly-extending arm of the steam-regulator W, which regulator is provided with a forwardly-projecting weighted end W''. The lower part of the regulator contacts with the



casing of the socket which surrounds the steam-outlet thereof and has a small channel W''' extending through its lower face, which channel forms the steam-port. In the central portion of the regulator is the oil-directing channel W''', which causes the oil led into the fire-box to fall upon the atomizer-apron at the point the steam strikes it. The oil is brought from a supply-tank (not shown) by pipe X, having a cock X' to regulate the flow therethrough, and is discharged into pipe Y, having enlarged top Y', so that the quantity of oil flowing therethrough may be seen, the better to enable the regulation thereof. This pipe leads into the fire-box and discharges the oil so it will fall into the oil-directing channel in the steam-regulator. If desired, the supply-pipe X might end within the fire-box and discharge the oil into the said channel. Below the boiler is the starting-pan Z.

In the operating of my burner a sufficient quantity of oil is permitted to flow into the starting-pan to heat the boiler hot enough to generate steam, and it is then set on fire. The steam when generated is discharged upon the surface of the atomizer-apron and the oil is turned on, which also falls upon the surface of the atomizer-apron against which the steam strikes, whereby a flame is produced in which there is but little smoke, if any. By this construction the more oil consumed the hotter the fire will be and more steam is produced thereby, and as the supply of water to the boiler is automatically regulated by the float-valve the boiler will never become dry. Thus it will be manifest that the amount of oil burned will regulate the amount of steam produced, whereby the supply of both steam and oil is regulated by the one cock which regulates the supply of oil. It will also be observed that the float-valve prevents the water from rising in the boiler above a predetermined water-level. It will also be observed that the weighted steam-regulator will automatically rise whenever there is an excessive pressure of steam in the boiler and that if any scale or other obstructive matter should lodge at or in the steam-channel in the face thereof the person using the burner can readily cause the dislodgment and removal thereof by taking a poker and tipping the regulator back on its pivot, when the port will be enlarged and the obstruction blown out by steam. Should the obstruction not be removed by the steam, it is a very simple matter to unhook the regulator and remove it from the tip, when ready access is had to the opening in the steam-pipe, and

with a suitable tool all scale or other obstruction can be removed and the regulator replaced and the fire relighted. This can be done while the burner is still hot and will consume but little time, so that the operation of the stove is not seriously interfered with.

Where steam can be obtained, my tip may be used without the boiler and water-chamber and connections.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A water-chamber having an internally threaded and faced socket in the outer face of the casing thereof and provided with ports within said socket above and below the normal water-line thereof; a water-supply pipe arranged to supply water to said chamber; a float-valve in said chamber adapted to control said water-supply; a boiler having one end exteriorly threaded and faced and adapted to be screwed into the socket of the water-chamber.

2. A hydrocarbon-burner comprising a tip having a socket adapted to be screwed upon the end of a steam-supply pipe and having a steam-outlet in the upper part of the front face thereof; an atomizer-apron connected to said tip and extending forwardly therefrom from a point below said outlet; supports extending upwardly from said tip; a regulator having a lower face with a channel therein and adapted to control the steam-opening in said tip, except at said channel, hinged to the supports of said tip, said regulator having a weighted forwardly-projecting end and an oil-directing channel therethrough; and an oil-pipe adapted to discharge oil in said directing-channel.

3. In a hydrocarbon-burner for use in a cooking-stove, a boiler extending longitudinally into the combustion-chamber of the stove, said boiler having one end thereof projecting out of the combustion-chamber and exteriorly threaded and faced; a water-chamber having a faced interiorly-threaded socket adapted to be screwed upon the exterior end of said boiler and form a closure for the end of said boiler, said water-chamber having ports connecting the interior thereof with the interior of the boiler at the upper and lower edges of said boiler.

In witness that I claim the foregoing I have hereunto subscribed my name this 14th day of August, 1902.

R. M. JACKSON.

Witnesses:

G. E. HARPHAM,  
HENRY T. HAZARD.