

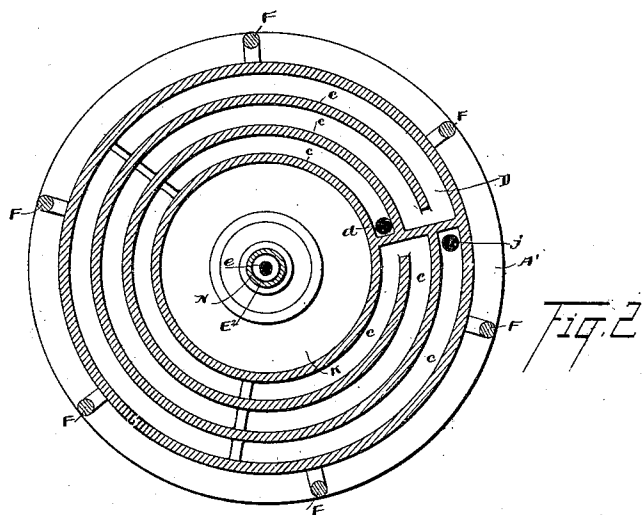
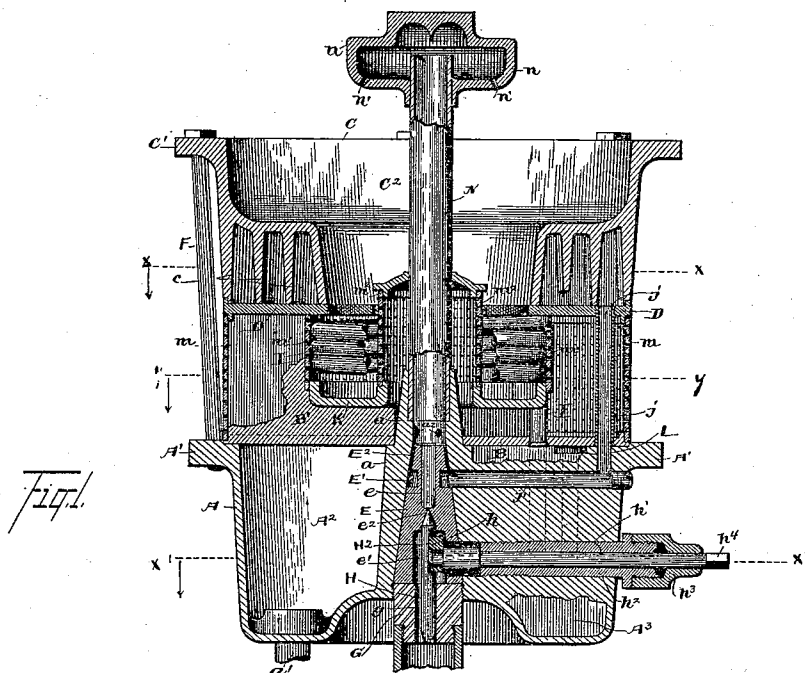
(No Model.)

2 Sheets—Sheet 1.

H. W. PARKER.
HYDROCARBON BURNER.

No. 508,045.

Patented Nov. 7, 1893.



WITNESSES:

N.S. Amstutz
Geo. W. King

H. W. Parker INVENTOR

By Leggett Leggett

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

H. W. PARKER.
HYDROCARBON BURNER.

No. 508,045.

Patented Nov. 7, 1893.

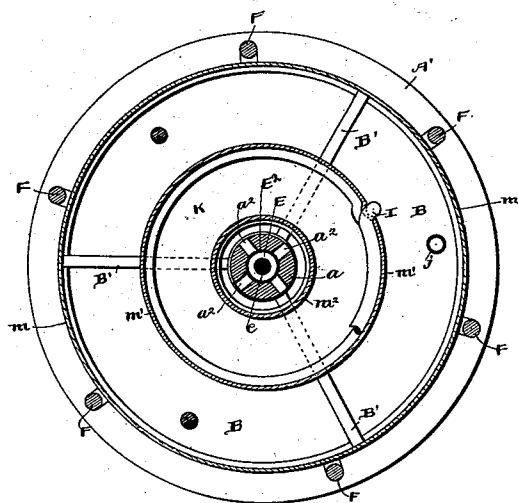


Fig. 3.

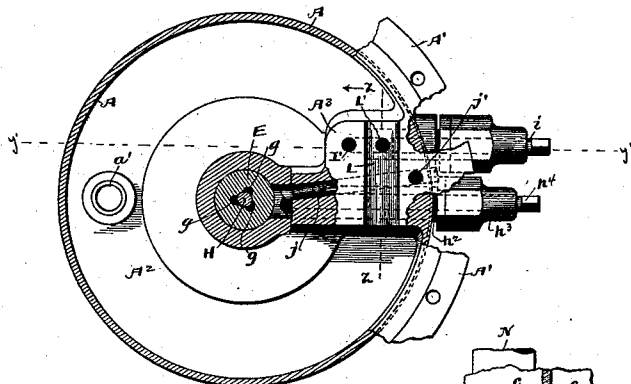


Fig. 4.

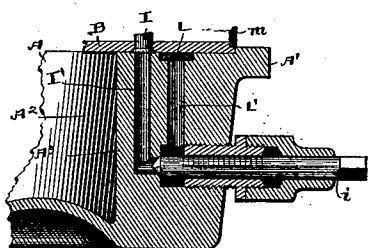


Fig. 5.

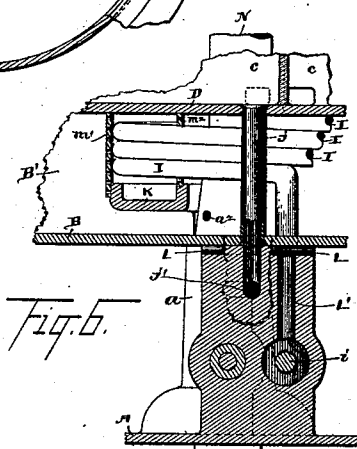


Fig. 6.

WITNESSES:
W. S. Armstrong,
Geo. W. King,

INVENTOR
H. W. Parker
BY *Leggett & Leggett*

ATTORNEYS

UNITED STATES PATENT OFFICE.

HARRY WILSON PARKER, OF CLEVELAND, OHIO, ASSIGNOR TO FERD. W. PECK,
WALTER L. PECK, AND CLARENCE I. PECK, OF CHICAGO, ILLINOIS.

HYDROCARBON-BURNER.

SPECIFICATION forming part of Letters Patent No. 508,045, dated November 7, 1893.

Application filed July 26, 1888. Renewed November 17, 1890. Serial No. 371,646. (No model.)

To all whom it may concern:

Be it known that I, HARRY WILSON PARKER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in hydro-carbon burners, of the variety employing superheated steam as a means of atomizing and vaporizing the oil and aiding combustion generally; and it consists in certain features of construction and in combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation in section through the center of the device. Figs. 2, 3 and 4 are horizontal sections respectively, on lines xx , yy and xx' , Fig. 1. Fig. 5 is an elevation in section on line yy' , Fig. 4. Fig. 6 is an elevation in section on line zz , Fig. 4.

The body of the burner consists in the main of three sections, A, B and C. The lower section A is substantially cup-shaped as shown in Fig. 1, and with a hollow upwardly-projecting hub, a , at the center, and with a circumferential flange, A' , at the periphery above. Next above section A is disk B, the latter being integral with wings B' , the wings and flange serving as a spider for supporting disk D. Upon disk D is secured section C, the latter having flanges C' connected by bolts F with flanges A' , thus firmly securing the different members of the casing. Section A incloses a water-chamber A^2 , such water-chamber extending nearly around this section except that block A^3 is cast solid from hub to rim for seating the valves and for other purposes hereinafter described. Induction water-pipes a' leads to chamber A^2 . Hub a has a conical bore in which is seated plug, E. The plug is held endwise to its seat by the abutting nipple G, this nipple connecting also with a coupling by means of which the oil-supply-pipe, not shown, is connected with the burner. Plug E is bored from either end re-

spectively, at e and e' , the latter bore forming a chamber of considerable size, the two bores being connected by jet-orifice e^2 , and this jet-orifice being closed by valve H. This plug has also an annular groove, E' , and above the groove this plug is reduced in size, leaving an annular chamber, E^2 , extending from groove E' to the end of the plug. The stem of valve H extends through the central bore of nipple G for guidance, a group of smaller orifices, g , admitting oil through the nipple into chamber e' , see Fig. 4. A section of the valve has a transverse gain, H^2 , in which again operates the eccentric wrist, h , of rod h' , this rod being journaled in plug h^2 and the latter having a stuffing-box, h^3 , of ordinary construction. By turning this rod in the one direction or the other valve H is opened or closed, and for this purpose the outer section h^4 of the rod is usually squared for receiving a wrench or handle.

K is a lighting-cup and above this cup is a coil of small tubing, I, usually of copper, the lower end of the coil connecting with orifice I' . The upper end of the coil connects with orifice d the latter leading to the superheating-chambers c . These chambers are cored in section C and are arranged as shown in Fig. 2, different chambers connecting at their ends so that steam entering from orifice d , must pass through the three compartments c in reaching the discharging orifice j . The latter, as shown in Fig. 1, connects with horizontal duct j' , the latter duct discharging into the annular groove E' aforesaid. Recess L at either end thereof is in open relation with water-chamber A^2 . Duct L' leads downward from the recess and connects with duct I' with which latter coil I is connected, as aforesaid, the lateral passage-way between these two conducts being controlled by valve i .

Perforated bands, m , m' and m^2 , admit air to the central portion of the burner, more especially to support combustion at the lighting-cup. At the upper end thereof hub a is counterbored to receive the lower end of tube M, and below the tube the hub has lateral holes, a^2 , to admit air into the tube.

Upon the upper end of tube N is mounted cone, n , the latter having an imperforate top,

but having a series of jet-orifices, n' , discharging downward into the concavity C^2 of the burner.

In operating the device, valve H is first
 5 opened long enough to admit oil to fill the lighting cup, the oil by means of the pressure thereon being projected into cone n from whence it drips through orifices n' and falls by gravity into the lighting-cup below where
 10 it is ignited to supply the initial heat. Chamber A^2 is supposed to be full of water, and as coil I becomes sufficiently heated by opening valve i water is admitted to the coil and is quickly converted into steam, such steam by
 15 means of the conducts, passage-ways, &c., already described being eventually discharged into tube M. As soon as a goodly quantity of steam is seen escaping from the cone, valve H is again opened to admit oil. The steam
 20 in a thin annular sheet envelops the jet of oil, atomizing and vaporizing the oil and commingling with the oil-vapor, thus forming a highly combustible admixture that burns fiercely as it escapes from the cone. By reason of the downwardly directed jets of flame
 25 from the cone that impinge section C and fill the concavity C^2 thereof, the superheating chamber c soon becomes intensely heated whereby the steam passing through these
 30 chambers becomes heated and to such a degree that it is believed to separate into its elementary gases in the combustion in chamber C^2 ; at least the intense heat at this part would indicate such separation. Water-chamber A^2 serves as a purifying chamber
 35 wherein the sediment is allowed to settle and where, owing to the heat transmitted from the burner and absorbed by the water, the impurities of the water are in the main precipitated, so that little or no sediment reaches
 40 coil I, and consequently this coil is not subject to incrustation. Ground-joints are preferably used in place of packing and by removing bolts F the parts may be easily separated for cleaning, repairs, or other purposes
 45 and may as easily be reassembled. The sediment therefore, that may accumulate in the chamber A^2 , may easily be removed from time to time, but as a considerable quantity of
 50 sediment in this chamber will do no special harm such separation of the parts for cleaning need not be of frequent occurrence. By reason of the water-chamber below and of the free circulation of air through the central
 55 portion of the burner the lower section does not become overheated so as to injure the valves or hinder their free working. The oil when admitted past valve H, not having been heated to any considerable degree, does not
 60 deposit any sediment. The device is therefore not likely to clog from such source. Owing to the large amount of air consumed in supporting the combustion at the cone, together with the elementary gases of the superheated steam, the amount of oil consumed
 65 is small as compared with the amount of heat developed.

What I claim is—

1. A sectional hydro carbon burner consisting of the lower section or chamber provided
 70 with a water supply pipe, a middle steam generating section or chamber connected with said lower or water chamber, and an upper section for super-heating steam connected with the steam generating section, a central
 75 hub located in the lowest section and a plug located in the box of the hub and having oil supply or discharge orifices therein, substantially as set forth.

2. A sectional hydro-carbon burner, consisting of the lower section or chamber provided
 80 with a water supply pipe, a middle steam generating section or chamber connected with said lower or water chamber, and an upper section for superheating steam connected
 85 with the steam generating section, of a central hub located in the lower section and provided with a steam supply opening, a plug located in the box of the hub and having oil
 90 supply and discharge orifices, and a cone connected with the hub, substantially as set forth.

3. A sectional hydro-carbon burner, having a lower section or chamber provided with a
 95 water supply pipe, a middle air space and steam generating chamber an upper steam superheating chamber and a centrally located pipe having oil and steam supply openings therein, substantially as set forth.

4. In a hydro carbon burner, the combination with means for supplying oil thereto, a
 100 water chamber, a steam superheating chamber and an air chamber between the water and superheating chambers, substantially as indicated, of a steam-generator located in
 105 such air-chamber, said steam-generator being connected with the water-chamber and with the superheating chamber, substantially as set forth.

5. In a hydro carbon burner, the combination with means for supplying oil thereto, a
 110 water chamber a steam super-heating chamber and an air chamber between the water and superheating chambers, of steam-generator located in said air-chamber and a lighting-cup located next below such steam-gen-
 115 erator, substantially as set forth.

6. In a hydro-carbon burner the combination with a sectional casing, the different sections thereof containing respectively a water
 120 chamber, an air chamber, and super-heating chambers, substantially as indicated, of an oil supply for said burner, a heating coil, ducts establishing communication between the water chamber and said heating coil, between the latter and the super-heating chamber
 125 and between the super-heating chamber and said oil supply, and valves for shutting off the supply of oil and steam, substantially as set forth.

7. In a hydro-carbon burner, the combination with a lower water chamber, an upper
 130 steam super-heating chamber and an intermediate air chamber, of an annular lighting cup located in said air chamber and having

a central opening and perforated walls surrounding said central opening, admitting air laterally to the lighting cup from the inside thereof, and means for supplying oil to the burner, substantially as set forth.

8. In a hydro-carbon burner, the combination with a lower chamber for water, an upper chamber for super-heating steam, and an intermediate air chamber, of a lighting cup located within such air chamber, the said lighting cup having a central opening, and perforated walls projecting upward from the lighting cup, said walls being surmounted by an imperforate cap and means for supplying oil to the burner, substantially as set forth.

9. In a hydro-carbon burner, the combina-

tion with means for supplying oil and water thereto, of a cone having jet orifices, steam super-heating chambers located next below and in line of the jet orifices of said cone and an upwardly projecting peripheral rim integral with the walls of the super-heating chamber, to give the latter a cup-shaped upper face for concentrating the jets of flame, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 29th day of May, 1888.

HARRY WILSON PARKER.

Witnesses:

CHAS. H. DORER,
ALBERT E. LYNCH.