A. C. CALKINS.

BURNER.

APPLICATION FILED FEB. 27, 1905.

929,077. Patented July 27, 1909.

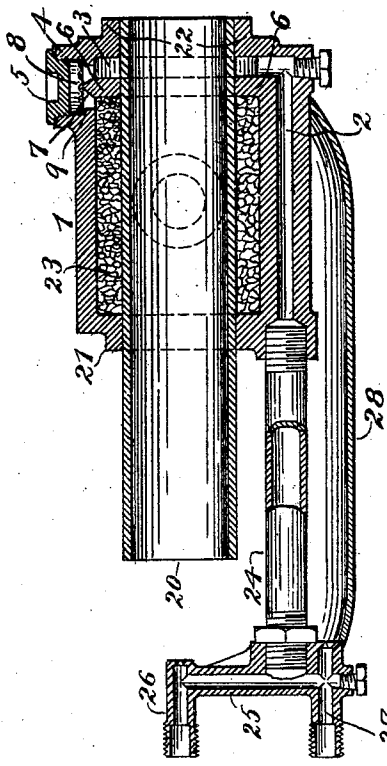

Fig. 2.

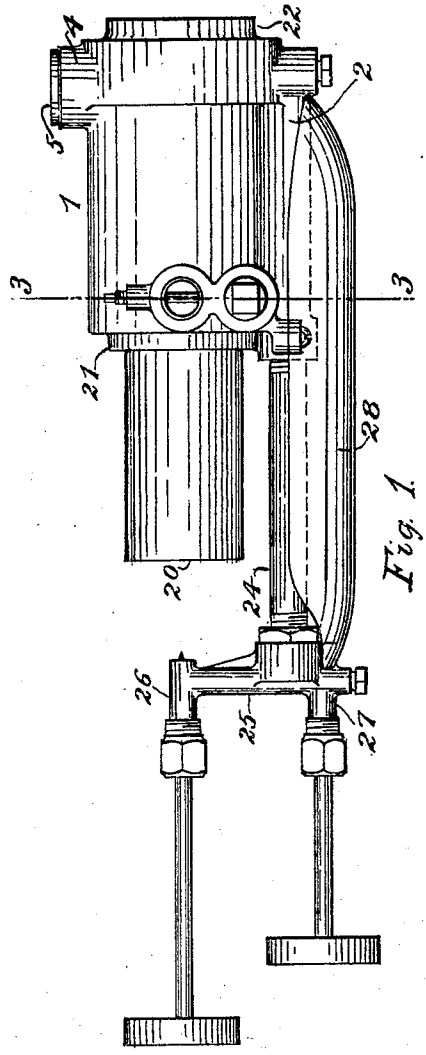

Fig. 1.

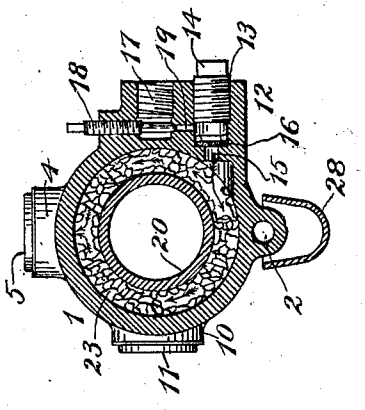

Fig 3.

Witnesses.

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By Stephen Rogers his Attorney.

UNITED STATES PATENT OFFICE.

ALBERT CHAMPLIN CALKINS, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO THE CALKINS COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

BURNER.

No. 929,077. Specification of Letters Patent. Patented July 27, 1909.

Application filed February 27, 1905. Serial No. 247,561.

To all whom it may concern:

Be it known that I, ALBERT CHAMPLIN CALKINS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in 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 appertains to make and use the same.

This invention relates to ignition devices, and particularly to hydrocarbon burners; and some of the objects of the invention are to produce a device of this general character which will be simple in construction, and positive and efficient in operation.

Another object of the invention is to retard the flow of the fuel through the burner, and to aid and facilitate the generation of the fuel into gas when once the entire burner becomes heated.

A further object of the invention is to provide a maximum surface for the deposit of the tars contained in the fuel, so that the fuel will be practically free thereof; and to provide for the removal of the tar so deposited, and the replacement of the material upon which such deposit is made.

It is also an object of the invention to construct a burner in such a manner that the fuel is subjected to a high degree of heat by the reflection thereupon, when the object heated by the flame from the burner has become heated.

With these, and other, objects in view the invention consists essentially in the construction, combination and arrangement of parts substantially as more fully described in the following specification and as illustrated in the accompanying drawings, forming part of this application, in which—

Figure 1 is a side elevational view of the burner embodying this invention; Fig. 2 is a longitudinal central sectional view of the same, with parts broken away and the valve stems removed; and Fig. 3 is a transverse sectional view taken on line 3—3 of Fig. 1.

Similar characters of reference designate corresponding parts throughout the several views.

Referring to the drawings, reference character 1 designates the main or outside body portion of the burner, which is preferably cylindrical in shape, and is desirably provided with a tubular portion or duct 2, and with a circumferential portion or hollow chamber 3, with which communicate a tubular extension 4, adapted to be closed by removable cap 5. The circumferential chamber 3 is preferably separated from the major part of the main outside cylindrical portion 1, by an annular partition or wall 6, desirably extending midway of the orifice or tubular extension 4, and beveled or inclined, as shown at 7, in Fig. 2 of the drawings. If found desirable in practice a screen or foraminated plate 8, may be removably secured upon annular ledge or shoulder 9 in said tubular projection 4, so as to rest upon the edge 7 of the partitional wall 6, substantially as illustrated in Fig. 2 of the drawing, to facilitate the passage of the volatile or vaporized fluid from the main part of the body portion 1 into the chamber 3, as will be readily understood.

The main outside or body portion 1 of the burner is preferably provided with a tubular extension or threaded boss 10, Fig. 3, through which the material may be introduced into said portion, and the tubular extension or boss 10 may be closed by a removable plug 11 in the usual manner; and said main outside or body portion is also preferably provided with an extension 12, wherein is formed an inlet or induction passage 13, here shown as closed by removable plug 14, and having a reduced orifice 15, covered by a screen or foraminated plate 16, while extension 12 is also preferably provided with an induction passage or port 17, interiorly threaded to receive the threaded end of the connection with the source of fuel supply, which is preferably hydrocarbon; and an adjustable valve 18 is desirably secured in said extension 12 so as to regulate the flow of fuel through the by-pass or passage 19 into the burner, substantially as illustrated in Fig. 3 of the drawings.

A mixing chamber or cylinder 20 is preferably secured, removably or otherwise, in the contracted rear and front portions 21 and 22 respectively of the main body outside inclosing portion 1, essentially as shown in Fig. 2; and around the mixing chamber or cylinder 20 and within the main portion 1 of the burner there is preferably removably retained foraminated material, such as gravel

and coarse sand, shown at 23 in Figs. 2 and 3 of the drawings, designed and intended to retard the passage of the vaporized or volatilized fuel through the burner, and to effect a deposit upon such material of the tars contained in such fuel; and said material can be readily removed from the burner through the orifice or tubular extension or boss 10, Figs. 2 and 3, by removing the plug 11 thereof, and fresh material can be introduced into the burner by the same means.

A pipe or connection 24 is removably or otherwise secured to the tubular portion 2 and with a jet piece 25, provided with a valve-controlled burner jet 26 and a sub or auxiliary burner jet 27, communicating with a generating trough 28, as will be readily understood by those skilled in the art to which this invention appertains.

The operation of the invention will be readily understood from the foregoing description when taken in connection with the accompanying drawing, and the following explanation thereof. The fuel is admitted to the burner through the supply connection secured in the induction passage 17, from whence it passes through the valve controlled by-pass or passage 19, such passage being regulated by the adjustable valve 18, and thence into the annular space between the mixing chamber or cylinder 20 and the main outside body portion 1 of the burner, as indicated by arrows on Fig. 3 of the drawings, said space being substantially filled with foraminated material, through which the fuel is caused to pass, and is thereby retarded and caused to deposit thereon the tars in the fuel, as before explained. After passing through the foraminated material the fuel passes up over the bridge or partition 6 through the screen 8 and into the circumferential chamber 3 in the front or face end of the burner, and from thence into the tubular portion or duct 2, the connection or pipe 24 to the jet piece 25, and down into the sub—or auxiliary—jet piece or burner 27, escaping therefrom, when the valve thereof is opened, into the generating trough 28, where the fuel is ignited and burned to heat the burner portion and volatilize or vaporize the fuel therein, whereupon the sub or auxiliary burner valve is closed and the main burner valve is open and the vaporized or volatilized fuel is ignited and burned at the end of the burner jet 26, in the usual manner.

It will be understood that the burner will be arranged in proximity to the object to be heated thereby, and the heat reflected from such object will assist in heating the face of the burner and facilitate the volatilization or vaporization of the fuel passing through the circumferential chamber 3.

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

1. A burner, comprising a mixing chamber, a main outside inclosing casing having contracted ends to engage the mixing chamber and form a chamber therearound, a burner jet, circumferential and lateral passages leading from the inclosing casing, a connection between the lateral passage and burner jet, a tubular extension on the outside casing, and an annular partition wall rising substantially midway the tubular extension.

2. A burner, comprising a mixing chamber, a main outside inclosing casing having contracted ends to engage the mixing chamber and form a chamber therearound, a burner jet, circumferential and lateral passages leading from the inclosing casing, a connection between the lateral passage and burner jet, a tubular extension on the outside casing, an annular partition wall rising substantially midway the tubular extension, a generating trough, and a burner jet communicating with the generating trough.

3. A burner, comprising a mixing chamber, a main outside inclosing chamber, a tubular extension on the outside casing, a partition wall in the outside casing extending transversely across the tubular extension and forming a circumferential passage, a shoulder in the tubular extension, a foraminated plate resting on the shoulder, a pipe leading to the circumferential passage, and burner jets communicating with the same.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses at Los Angeles, county of Los Angeles, State of California, this fifteenth day of February, 1905.

ALBERT CHAMPLIN CALKINS.

Witnesses:

CHARLES S. ROGERS,

MIGNON FORD.