

T. PARKER.
DISTILLATION OF BITUMINOUS COAL OR SIMILAR CARBONACEOUS SUBSTANCES.
APPLICATION FILED MAY 3, 1909.

941,352.

Patented Nov. 23, 1909.

Fig. 1.

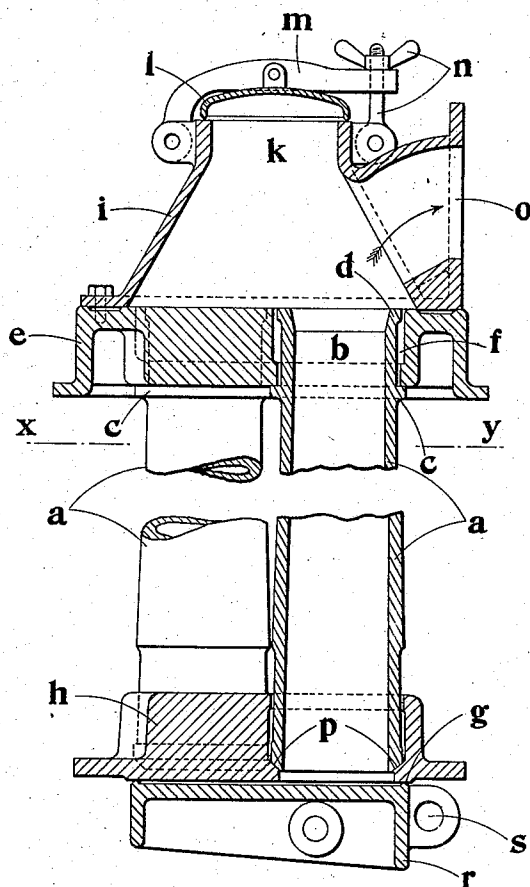
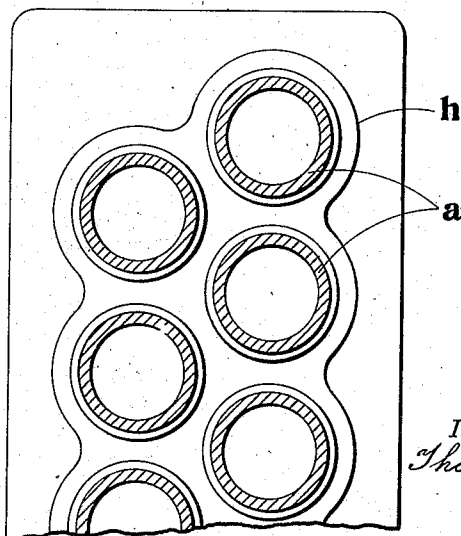


Fig. 2.



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UNITED STATES PATENT OFFICE.

THOMAS PARKER, OF IRONBRIDGE, ENGLAND.

DISTILLATION OF BITUMINOUS COAL OR SIMILAR CARBONACEOUS SUBSTANCES.

941,352.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed May 3, 1909. Serial No. 493,685.

To all whom it may concern:

Be it known that I, THOMAS PARKER, a subject of the King of Great Britain and Ireland, residing at Severn House, Ironbridge, Salop, England, have invented certain new and useful Improvements Relating to the Destructive Distillation of Bituminous Coal or Similar Carbonaceous Substances, of which the following is a specification:

This invention relates to the partial destructive distillation of bituminous coal or similar carbonaceous substance and particularly to the process described in the specification filed on application for Patent No. 865,724 26/1/07 that is to say to an apparatus for the partial destructive distillation of coal at a low temperature arrested at the point when illuminating gas ceases to be evolved.

The invention has for its object to effect such a distillation with economy and efficiency and in such manner as to produce a thoroughly homogeneous product without any wastage due to insufficient distillation of any part of the mass.

According to the invention I employ fine coal which is charged into vertical retorts so that its volume is sufficient completely to fill the retorts and so that when subjected to heat in the process of distillation the charge is compressed and may fall out of the retorts and thus a fuel produced that is hard and dense. I effect the distillation of such substance within vertical retorts of small diameter, that is to say of about from 4 to 6 inches internal diameter and I apply heat uniformly around the retorts so that the distillation takes place toward the center of the charge in the retorts by gradual penetration and the whole mass uniformly distilled so that a homogeneous and uniform product results with no wastage and without the necessary insufficient distillation of any part of the charge.

According to the invention I provide unit batteries of retort tubes vertically disposed and carried within common top and bottom fittings. The top fitting I provide with a series of apertures for the reception of the ends of the retort tubes, and centrally above the series of retort tubes I arrange the charging aperture within a surmounting hood so that all the tubes may be filled

through the same charging aperture, and at the side of the hood or top fitting I arrange an outlet for the vapor and gas.

An apparatus for use in carrying out the invention is illustrated in the accompanying drawings in which—

Figure 1 represents in sectional elevation a unit battery of retort tubes, and Fig. 2 is a plan corresponding thereto on the line $x-y$ Fig. 1.

In carrying the invention into effect I provide the upper extremity b of the retort tubes a with an outwardly extending shoulder d and a laterally extending flange c some little distance below the extremity, so that the flange may engage on the under-side of the top fitting e , there being a clearance provided at f between the upper end of the retort tubes a and the respective aperture in the fitting into which suitable luting may be introduced so that thus the upper ends of the retort tubes may be firmly secured in position with a gas-tight joint.

The retort tubes a are provided with a taper bore of a diameter at their upper extremities of about $4\frac{1}{2}$ inches and a diameter of about $\frac{1}{2}$ inch more at their lower extremities and the lower extremity of each tube I advantageously form with a conical face p for seating upon a corresponding conical face provided on an inwardly extending flange g protruding in the respective aperture of the bottom fitting h . Upon the top fitting e I provide a hood i which advantageously contracts inwardly toward its upper extremity leaving an aperture k sufficiently large for charging the several retort tubes carried in the respective set of top and bottom fittings, and this aperture k is closed by a cover l which may advantageously be closed gas tight by means of a lever m pivoted in a bracket on the hood, which cover is pivotally carried by the lever m , and is tightly closed by means of a bolt and nut. An outlet o is formed laterally in the hood for the gas which passes up from all the tubes of the battery unit.

The respective apertures in the bottom fitting h are closed by a common cover plate r hinged at s , and capable of being brought down by suitable means for the discharge of the mass after partial distillation.

The retort tubes are so disposed with relation to each other as to leave interstitial

spaces through which the hot gas employed for heating them may pass so that the tubes may be uniformly heated by them.

5 I mount batteries of retort tubes provided as hereinbefore described within a furnace casing or setting and I heat the retort tubes externally by means of producer gas or any other gaseous fuel, the gas being led through the furnace casing or setting.

10 I charge the respective batteries of retort tubes with coal which I first pulverize preferably by passing the coal between grinding rollers, and I fill each set of retort tubes by charging fine or pulverized coal through the charging aperture *k* so that thus the volume of the fine or pulverized coal almost completely fills the retort tubes and thus the partial distillation takes place under compression due to the weight of the dense charge.

20 What I do claim as my invention and desire to secure by Letters Patent is:—

1. An apparatus of the class described, comprising a plurality of tapered tubes, a top fitting having a series of openings therein adapted to receive the upper ends of the tubes, a hopper carried by the upper fitting and common to all of the tubes, said hopper having a gas outlet therein, a bottom fitting having a series of openings therein adapted to receive the lower ends of the tubes, and a hinged cover plate common to all the tubes for closing the lower ends thereof.

2. A device of the class described comprising an upper fitting having a plurality of openings therein, and a lower fitting having a plurality of openings therein, a series of tubes having their upper and lower ends held in the openings, the upper end of each tube having an annular shoulder *d* at its upper end and a laterally extending flange *e* spaced from said shoulder, said flange engaging the underside of the top fitting, and the lower end of each tube having a conical face *p* and said bottom fitting having a corresponding face adapted to engage there- with.

3. Apparatus for the partial destructive distillation of bituminous coal or similar carbonaceous substance comprising a unit battery of tubes with common top and bottom fittings for the simultaneous discharge of the vapors and gases through a common outlet and for the simultaneous charging and discharging respectively of the number of retort tubes comprised in the unit battery substantially as described.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

THOMAS PARKER.

Witnesses:

A. LISTER PATERSON,
STANLEY H. CLARK.