

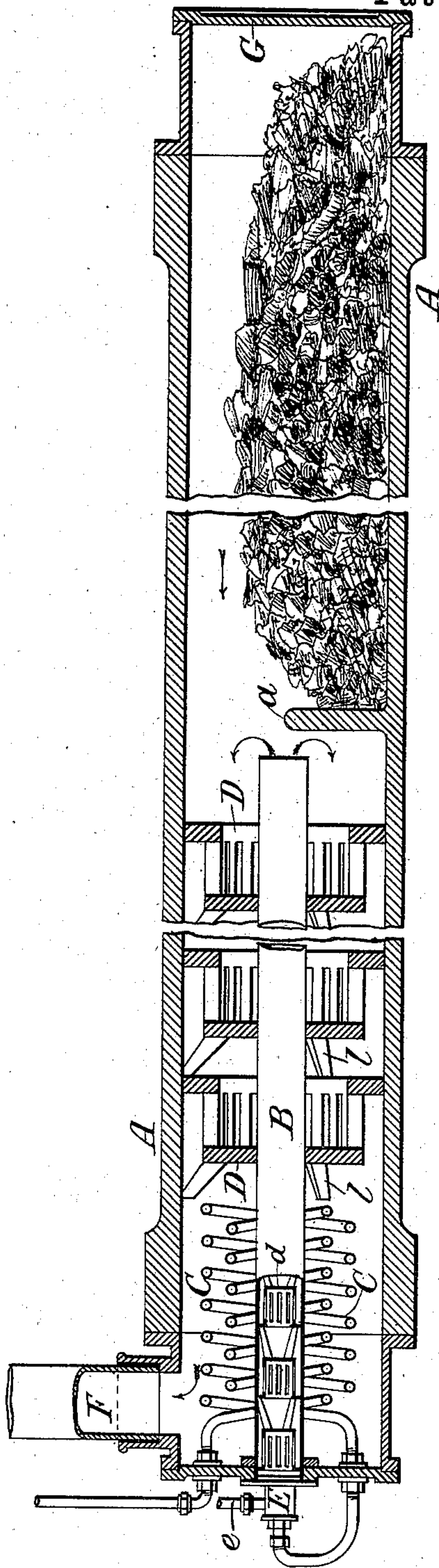
(No Model.)

A. G. MEEZE.

PROCESS OF MAKING COAL GAS.

No. 382,373.

Patented May 8, 1888.



Witnesses:  
Emil Korta.  
O. Sundgren.

Inventor:  
Arthur George Meeze.  
By Attorney  
Brown & Hall.



# UNITED STATES PATENT OFFICE.

ARTHUR G. MEEZE, OF REDHILL, COUNTY OF SURREY, ENGLAND.

## PROCESS OF MAKING COAL-GAS.

SPECIFICATION forming part of Letters Patent No. 382,373, dated May 8, 1888.

Application filed August 25, 1887. Serial No. 247,830. (No model.) Patented in England February 10, 1888, No. 8,679.

*To all whom it may concern:*

Be it known that I, ARTHUR GEORGE MEEZE, of Redhill, in the county of Surrey, England, have invented certain new and useful Improvements in Processes of Making Coal-Gas, (for which Letters Patent were granted me in Great Britain February 10, 1888, No. 8,679,) of which the following is a specification.

The object of my present invention is to improve the method of treating the products resulting from the destructive distillation of coal in the ordinary process of making coal-gas with the least possible departure from standard models of apparatus adopted by existing gas-works and approved by the common practice of gas-engineers.

According to my invention I manufacture a hydrocarbon fluid from coal, shale, or similar material by destructive distillation in retorts substantially as in the ordinary method of making gas for lighting and heating purposes. Instead, however, of allowing the products, consisting at first of much tar and condensable vapor as well as fixed gas, to pass off directly by the ascension-pipe, I cause them to pass, together with superheated steam, through a suitable fixing-chamber filled with special deflecting devices, whereby I effect the efficient gaseous thermolysis or dissociation of the heavier condensable portion of the first destructive distillate. At a later stage, when the destructive distillate is less rich in heavy hydrocarbons, I inject with the superheated steam a spray of petroleum, shale-oil, or other suitable liquid hydrocarbon, whereby the product is enriched, so that the destructive process may be carried with economy considerably further than heretofore. I thus effect a saving both at the beginning and at the end of the usual process of destructive distillation.

A convenient construction of apparatus for carrying my invention into effect consists of an ordinary double-mouthed or through retort of round, oval, D-shaped, or other section. One half of this retort may be fitted, as will be presently described, with "ingression-pipe," superheater, steam and oil injector, and complement of deflectors, which constitute a series of auxiliary heating-surfaces, against which the gaseous products directly impinge, and by which they are repeatedly broken up and in-

termixed. The other half may be used for charging with gas-coal in the ordinary way, the products of distillation from which are compelled to pass through the fixing-chamber surrounding the ingression-pipe in the former half, and there in the first stage, when rich in condensable hydrocarbons, to undergo thermolysis in contact with the superheated steam, and at the later stage, when the distillate is impoverished, to be enriched by the oil-gas.

In the accompanying drawing I have given a sectional view of a through or double-mouthed retort by means of which my invention can be carried into practical effect.

A is the retort, provided with a dividing-bridge, *a*. In one end of the retort is placed gas-coal for distillation. In the other end is placed an ingression-pipe or internal retort, B, surrounded by a steam-superheater, C, and supported in place by deflectors D. The ingression-pipe B is also, by preference, provided with deflectors *d*.

E is an injector of any suitable construction for injecting steam or steam and oil into the retort.

*e* is a pipe for the admission of petroleum or similar oil to the injector E, and F is the ascension-pipe. The steam-boiler and oil-tank are not shown in the drawing.

The coal having been placed in the retort and the lid G secured, the distillation begins and superheated steam is admitted from the injector E through the ingression-pipe B. The destructive distillate in contact with this steam then passes off through the deflectors D, by means of which both become thoroughly thermolyzed and dissociated into fixed gases. At a later stage, when the destructive distillate is less rich in heavy hydrocarbons, the oil is injected with the superheated steam through the ingression-pipe B and deflectors *d*, so as to mix with and enrich the impoverished distillate and become thermolyzed therewith in passing through the deflectors D to the ascension-pipe. By this means I make a fixed and uniform illuminating-gas, and at the same time effect an important double economy.

It has heretofore been proposed to decompose steam by passing it up through a body of incandescent coal in a retort, forming carbonic oxide and hydrogen, and to supply the neces-



sary illuminating element to such gases in the form of tar and oil from the coal and petroleum admitted by a pipe leading into the retort.

A method has also been described of making  
5 gas by decomposing steam in contact with iron scrap, producing hydrogen and passing such gas through a body of coal for taking up the richer gases evolved therefrom, and afterward injecting oil through and among the hot coals.  
10 In my process neither steam nor hydrogen is passed through the body of distilling coal, as such operation would injuriously lower the temperature of the coal and cause an increased yield of condensable vapors; but, on the con-  
15 trary, the condensable tarry vapors arising from the coal under the most favorable conditions are passed into a heated fixing-chamber beyond the coal-distilling compartment and there mixed with superheated steam and the  
20 two conjointly decomposed, whereby the elements of the steam—namely, oxygen and hydrogen—combine directly with the excess of carbon in the tarry vapors as they are decomposed, so that the entire distillate is converted  
25 into a fixed gas. In the continuance and completion of my process the poor gas, deficient in illuminants, arising from the coal in the latter stages of distillation, are mixed with added hydrocarbon vapors in the heated fixing-cham-  
30 ber and the two combined in the condition of a fixed illuminating-gas. The profitable distillation of the coal can thus be carried much farther and the yield of gas much increased.

I avoid introducing either steam or oil into the body of coal, as they would lower the tempera- 35  
ture and interfere with its successful distillation.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I 40  
declare that what I claim is—

The process of manufacturing gas which consists in distilling coal, shale, or similar material, and during the early stages of distillation passing the distillate, composed of condensable 45  
tarry vapors and gas containing an excess of rich hydrocarbons, together with an added supply of superheated steam, into a heated chamber and therein causing their mutual decomposition, so that the excess of carbon shall be 50  
combined with the oxygen and hydrogen of the steam and the whole converted into a fixed gas of the desired candle-power, and then during the latter stages of distillation enriching the thin gaseous distillate which is deficient in 55  
illuminants with injected hydrocarbons and converting the mixture into a fixed gas by passage through the heated fixing-chamber, whereby the products of the coal are fully utilized and an increased volume of fixed illuminat- 60  
ing-gas produced.

ARTHUR G. MEEZE.

Witnesses:

H. K. WHITE,

G. H. G. MATHIESON,

*Both of 6 Bream's Buildings, London, E. C.*