(No Model.)

A. W. WILKINSON.

PROCESS OF MAKING GAS.

No. 566,363. Patented Aug. 25, 1896.

Fig. 1.

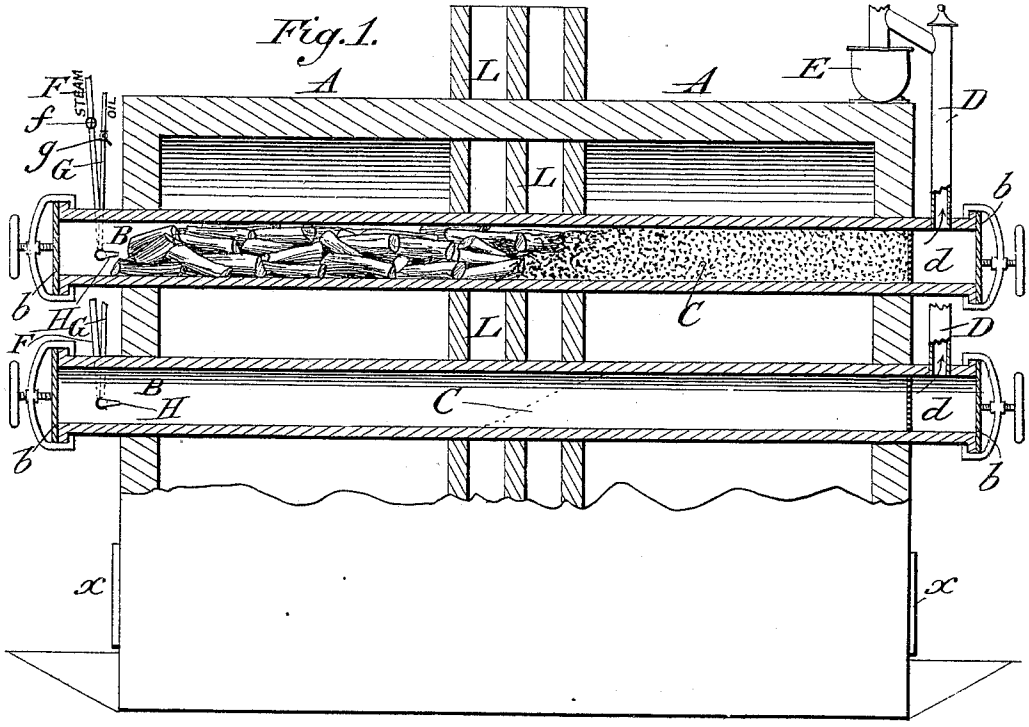
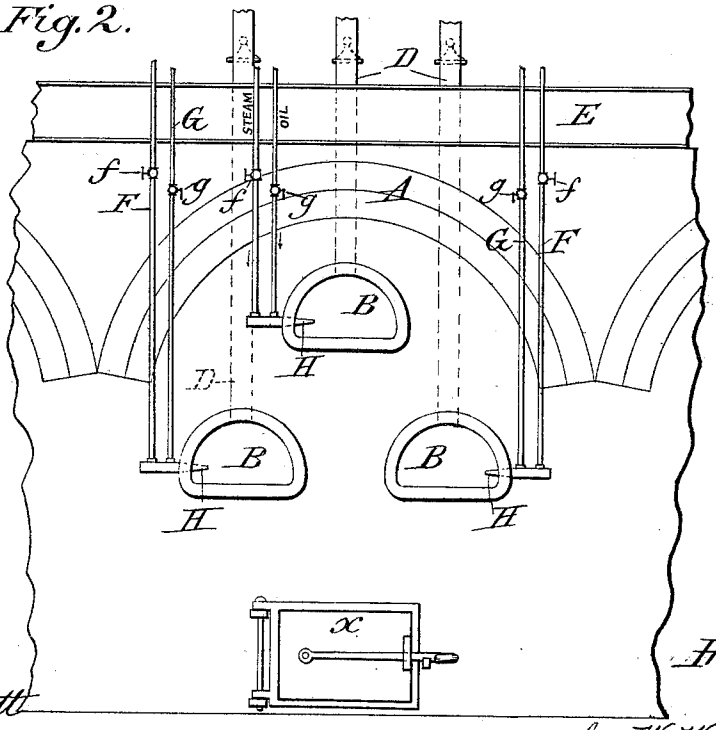


Fig. 2.



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PROCESS OF MAKING GAS.

SPECIFICATION forming part of Letters Patent No. 566,363, dated August 25, 1896.

Application filed February 10, 1896. Serial No. 578,771. (No specimens.)

To all whom it may concern:

Be it known that I, ASA W. WILKINSON, a citizen of the United States, residing at New York city, in the county and State of New York, have invented certain new and useful Improvements in Processes of Making Heating and Illuminating Gas; 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 the manufacture of gas by the distillation of wood and the decomposition of the resulting products and steam and oil by passing the gases and vapors through a bed of incandescent carbon of a previous charge to produce a fixed gas.

The object of my invention is to provide for thoroughly decomposing and fixing the gases and vapors generated from wood, oil, and steam by first distilling a charge of wood, producing a bed of incandescent carbon, then pushing such carbon back to fill the whole cross-area of one end of the retort, then distilling a fresh charge of wood and injecting oil by a jet of steam into contact with said distilling charge, and passing the whole gaseous product of the wood, oil, and steam through said body of incandescent carbon, thereby making a high-grade heating-gas or an illuminating-gas of the desired candle-power.

A suitable apparatus for carrying out my process is illustrated in the accompanying drawings, in which—

Figure 1 represents a bench of through-retorts, partly in elevation and partly in vertical section. Fig. 2 represents a front end view of the bench.

I preferably use through or double-length retorts, so as to provide ample space at one end for a body of incandescent carbon, such as charcoal, and a space at the other end, or in the main body of the retort, for distilling a fresh charge of wood and for generating gas from oil and steam. The through-retorts B are set in the furnace A in the usual manner and are closed at their opposite ends by the tight-fitting lids *b*. The furnace is provided with the usual fire-boxes at each end, closed by the doors *x*, and is constructed with the usual flues leading into the smoke-stack flues L, placed at the middle of the bench or setting. At one end the retorts are provided with the usual stand-pipes D, dipping into the hydraulic main E, and at the same end they are preferably provided with transverse perforated plates or grates *d* for sustaining the charcoal and preventing it from choking the outlets to the stand-pipes. An injector nozzle or pipe H, for oil and steam, connects with the opposite end of the retort, and with such pipe H there connects an oil-supply pipe G, having a valve *g*, and a steam-supply pipe F, having a valve *f*. The oil is preferably injected by a jet of steam through one of the well-known injectors, though the oil and steam may be admitted into the retorts through separate pipes. The retorts are heated to the proper temperature in the usual manner and are charged with wood, which is distilled until it is reduced to charcoal. When a sufficient quantity of incandescent charcoal has been formed, it is pushed back to the rear or one end of the retort, at which the stand-pipes connect, so as to completely fill the whole cross-area at that end, as indicated by the body of charcoal C. A fresh charge of wood is now introduced into the retort and subjected to distillation, and the resulting products, consisting of gases, acids, alcohols, creosotes, and tar, with steam generated from the occluded water in the wood, are caused to pass through the body of incandescent charcoal C, where decomposition is effected, producing hydrogen, carbureted hydrogen, and carbonic oxid, with traces of other gases. When the charge of wood has been exhausted of its gases, particularly its moist gases or vapors, a suitable supply of hydrocarbon, such as petroleum or some of its distillates, or animal or vegetable oil in a fluid state, is injected by the aid of the steam-jet injector into contact with the charge of distilling wood or the incandescent charcoal therefrom. The oil will undergo decomposition in contact with the hot coal or charcoal, and the resulting vapors, together with the steam or partly-decomposed steam, are caused to pass through the bed C of incandescent carbon, where the gases are fixed and a rich illuminating-gas is produced. These gases mixing with the gas produced from the charge of wood make a

compound gas of from fourteen to sixteen candle power, depending upon the percentage of oil used. The gas, being largely composed of carbureted hydrogen, is one of the best artificial gases for heating purposes.

Some years ago the demand was for a gas having the highest illuminating power, without regard to its heating properties, but at the present time the demand is for a gas carrying the greatest number of heat units. Gas made from wood and oil in the manner above described possesses this property to the highest extent.

As the body of incandescent carbon C becomes wasted away a fresh bed of incandescent charcoal is pushed back and the excess of charcoal, as formed in the retorts, is raked out in the usual manner and a fresh charge of wood then placed in the retort and the latter tightly closed for again conducting my process of manufacturing gas.

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

The process of making gas which consists in distilling a charge of wood in a closed retort and pushing back the resulting incandescent carbon to fill the cross-area of the retort, then distilling a fresh charge of wood, and passing the resulting moist vapors and gases through the incandescent carbon for effecting their decomposition, and then, by means of a steam-jet, injecting hydrocarbon or other oil, into contact with the partially-distilled charge, and causing the gaseous products from the wood, oil, and steam to pass through said body of incandescent carbon for converting the vapors into fixed gas.

In testimony whereof I affix my signature in presence of two witnesses.

ASA W. WILKINSON.

Witnesses:

WM. H. SMITH,

G. M. LEE.