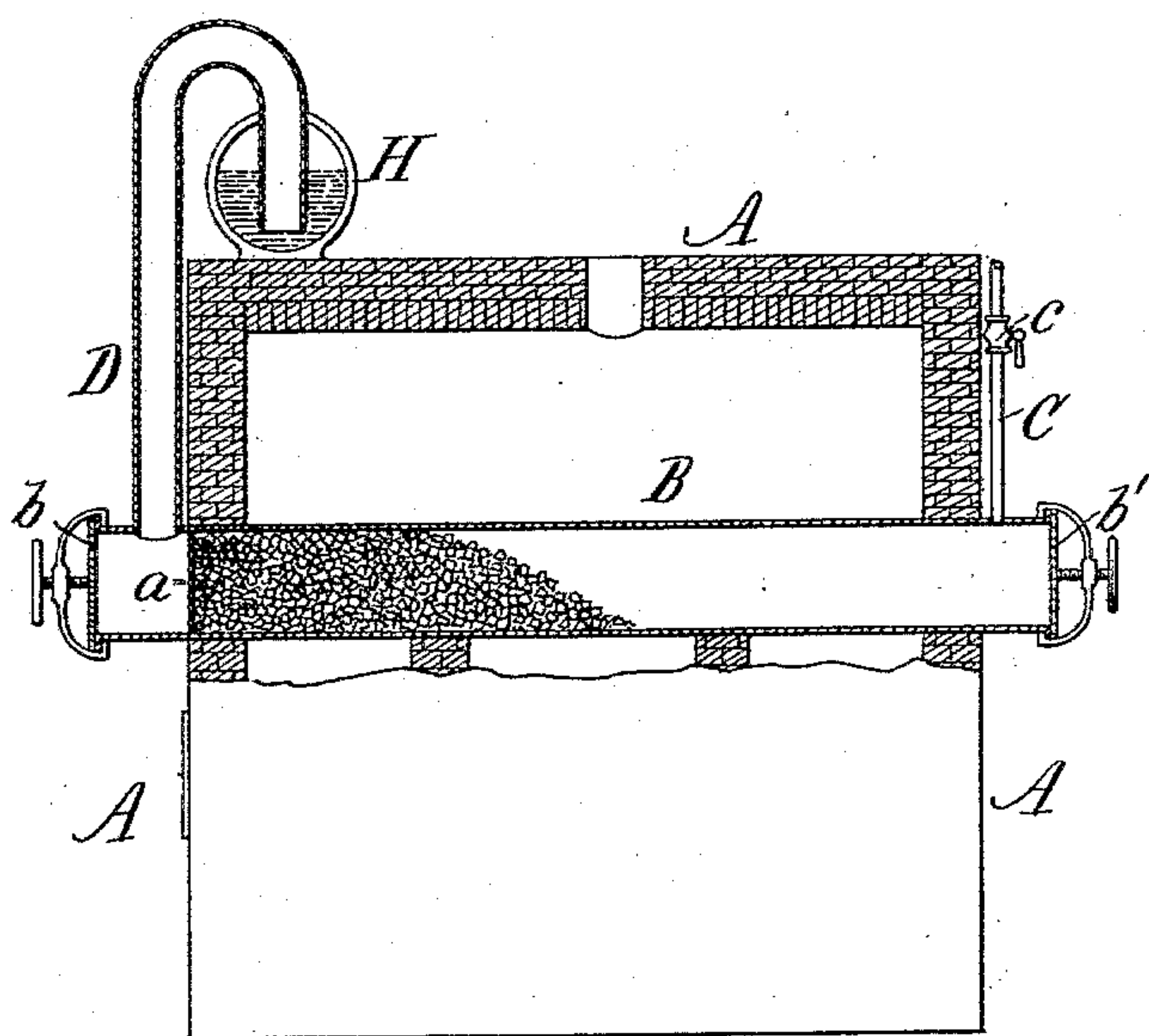


(No Model.)

A. W. WILKINSON.
PROCESS OF MANUFACTURING GAS.

No. 556,911.

Patented Mar. 24, 1896.



Witnesses
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UNITED STATES PATENT OFFICE.

ASA W. WILKINSON, OF NEW YORK, N. Y.

PROCESS OF MANUFACTURING GAS.

SPECIFICATION forming part of Letters Patent No. 556,911, dated March 24, 1896.

Application filed January 10, 1896. Serial No. 574,951. (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 the Process of Manufacturing Illuminating Coal-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 illuminating-gas composed principally of olefiant gas.

The object of my invention is to increase the yield and candle-power of gas generated from a charge in a coal-gas retort and to obtain a product composed principally of olefiant gas.

In carrying out my improved process of manufacturing illuminating-gas I add to the ordinary charge of bituminous coal a suitable percentage, according to the candle-power required, of carbide of calcium, introduce the mixture into the ordinary coal-gas retorts and distill in the usual manner. The coal usually contains a sufficient amount of water to liberate all the acetylene that the carbide of calcium is capable of generating. If there should not be a sufficient amount of water in the coal, the mouthpiece of the retort is fitted with a steam-pipe for allowing a certain amount of steam to enter at the end of the distillation to discharge the last traces of acetylene from the carbide of calcium.

I have found that during the process of liberating gas from the coal and carbide of calcium there is formed olefiant gas. The nascent hydrogen coming in contact with the acetylene, a reaction takes place, producing olefiant gas, a gas more desirable as an enricher than acetylene. At the same time the volume of the gas is greatly increased.

A suitable apparatus for carrying out my process is shown in the accompanying drawing, which represents a through-retort in vertical longitudinal section and the furnace partly in section.

A through-retort B is suitably set in the furnace A in the usual manner, and the opposite ends of said retort are closed by the tight-fitting lids *b* and *b'*, and one end thereof

is provided with a stand-pipe D, connecting at its upper end with the hydraulic main H. The outlet end of the retort is also provided with a transverse perforated plate *a* near the stand-pipe D. A steam-pipe C, having a valve *c*, connects with the opposite end of the retort. A suitable percentage of carbide of calcium, such as one per cent. to five per cent., is added or mixed with the charge of bituminous coal, preferably before it is introduced into the retort. The charge is placed in the retort, after which the lids are tightly closed and the distillation of the charge proceeded with in the usual manner. At the end of the distillation the lid *b'* is preferably opened and the charge of incandescent coke and residual carbide of calcium is pushed back to the take-off end of the retort and against the perforated plate *a*, as shown in the drawing. The charge of coke is pushed back, so as to fill the entire transverse area of the retort and in the most favorable position for the decomposition of steam. A small stream of steam is now admitted by opening valve *c* and is decomposed in contact with the incandescent coke, producing carbonic oxide and hydrogen. Another portion of the steam will react on the carbide of calcium, thereby liberating acetylene gas. The reactions of the nascent hydrogen and acetylene will produce olefiant gas.

Coals that will ordinarily produce ten thousand feet of sixteen-candle-power gas can be made to produce fifteen thousand feet of any candle-power that may be desired, depending upon the amount of the carbide of calcium used.

I may add to the charge of coal to be distilled as much as ten per cent. of carbide of calcium, if I desire to produce a rich illuminating-gas, such as a thirty-candle-power gas.

The gas burns with a clear white flame and is very brilliant.

The purification and storage of this gas are the same as ordinary coal-gas.

No modification of the burner now in use is required in burning the illuminating-gas produced by my process.

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

1. The within-described process of distilling soft coal with the carbide of calcium and discharging the last traces of illuminating-gas by steam.
- 5 2. The process of manufacturing gas which consists in mixing with or adding to bituminous coal a suitable percentage of carbide of calcium and distilling the same in a closed chamber to produce olefiant gas.
- 10 3. The process of manufacturing gas which consists in mixing with or adding to bituminous coal a suitable percentage of carbide of calcium, distilling the mixture in a closed chamber and at or near the end of the distilling operation passing steam in contact with the charge of incandescent coke and residual carbide of calcium for setting free any remaining acetylene and producing olefiant gas.

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

ASA W. WILKINSON.

Witnesses:

WILLIAM C. EARLE,
CHARLES PLATNER.