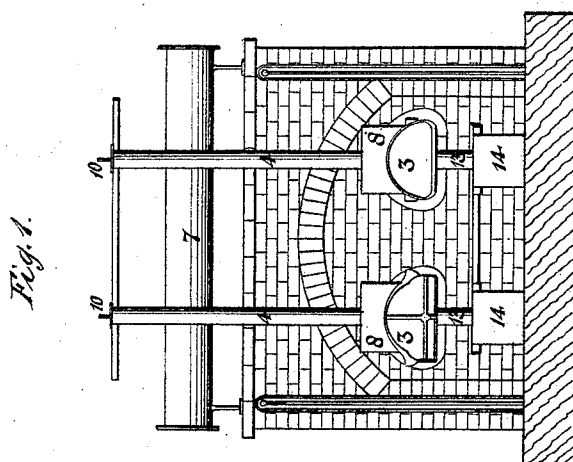
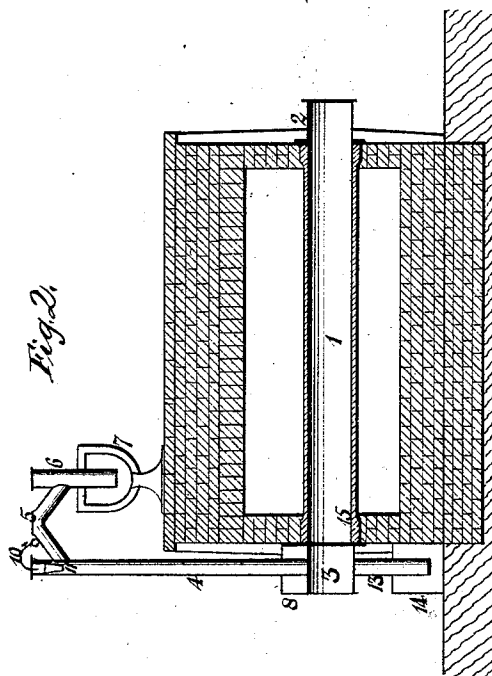


A. MALAM.
Gas-Making Apparatus.

No. 156,029.

Patented Oct. 20, 1874.



Witnesses:
Edmund Hunt
John Jenkins

Inventor.
Abraham Malam

UNITED STATES PATENT OFFICE.

ABRAHAM MALAM, OF DUMFRIES, SCOTLAND, ASSIGNOR TO HIMSELF,
THOMAS FERGUSON SMITH, AND ROBERT ARMSTRONG, OF SAME
PLACE.

IMPROVEMENT IN GAS-MAKING APPARATUS.

Specification forming part of Letters Patent No. **156,029**, dated October 20, 1874; application filed
July 30, 1874.

To all whom it may concern:

Be it known that I, ABRAHAM MALAM, of Dumfries, in Scotland, have invented certain Improvements in Gas-Making Apparatus, of which the following is a specification:

My invention has for its object to overcome some of the greatest difficulties that have hitherto attended attempts to obtain increased quantities of gas from coal by employing higher heats than those in prevalent use.

It has been well understood that a better yield of gas would be satisfactorily obtainable by raising the heats, were it not that with ordinary apparatus increased heats lead to so much deposition of earthy and adherent matter in the ascension or exit pipes leading from the retorts as to frequently choke those pipes, and necessitate interruptions in the working, thereby incurring serious inconvenience and loss.

By my present invention I overcome the difficulties referred to by providing apparatus or means whereby the exit-pipe and the mouth-piece of the retort are kept in a comparatively cool state, and this has the effect of preventing the inconvenient adherence of matters to the inside of the exit-pipe and mouth-piece.

The accompanying drawing comprises, Figure 1, a front elevation, and Fig. 2 a longitudinal vertical section, showing the application of my improved apparatus to a common form of gas-retort.

The retort or the main body 1 of it is shown as of fire-clay; but it may be of cast-iron, if preferred. At one end an ordinary mouth-piece, 2, is fitted, and the retort is charged and drawn at this end, while at the other end there is fitted to it a mouth-piece, 3, which is, by preference, of malleable cast-iron, and which

has the exit or ascension pipe 4 attached to it. The ascension-pipe 4 leads, in the usual way, by branches 5 6, into the hydraulic main 7. A trough or casing, 8, is formed on the mouth-piece 3, and round the lower part of the exit-pipe 4, and is kept filled or partly filled with water. The pipe 4 is cooled, and deposition in it prevented by introducing a small regulated quantity of water into its interior by a pipe, 10, the water being spread by first falling on a disk, 11, so as to wash down the sides of the pipe. In order that the mouth-piece 3 may not be filled up by deposited matters washed down from or prevented from entering the exit-pipe 4, an outlet is formed in the bottom of the mouth-piece, and communicates, by a pipe, 13, with a receiving-trough, 14, which is always kept sufficiently filled with water to seal the end of the pipe 13.

The improvements hereinbefore described can easily be applied to various forms or kinds of retorts; and, when the retort is single, or such as to open at one end only, the pipe 13 may be covered by a plate during drawing and charging.

I claim—

1. The combination of the water-pipe 10 and spreader 11 with the ascension-pipe 4, in the manner and for the purpose herein set forth.

2. The combination of the ascension-pipe 4 with the mouth-piece 3, water-trough 8, outlet-pipe 13, and trough 14, in the manner and for the purpose herein set forth.

ABRAHAM MALAM.

Witnesses:

EDMUND HUNT,
JOHN JENKINS.