To all whom it may concern:

Be it known that we, EDWARD H. EARN-  
SHAW and WILLIAM H. GARTLEY, citizens of  
the United States, residing at the city of Phila-  
delphia, in the county of Philadelphia and State of Pennsylvania, have jointly invented  
certain new and useful Improvements in Appar-  
atus for Making Gas, of which the following is a specification.

The invention relates to improvements in  
that class of gas apparatus in which use is made of retorts and of recuperator means for  
heating them; and the principal object of the invention is to provide for independently con-  
trolling the temperature to which the retorts  
are heated at different portions or sections of  
their lengths.  

To this and other ends hereinafter set forth the invention, stated in general terms, com-  
prises the combination, with a bench of retorts  
and its secondary air-supply, of means for intro-  
ducing more or less air in this secondary air-supply at different sections throughout the  
lengths of the retorts.

The invention further comprises the im-  
provements hereinafter described and claimed.  
The nature, characteristic features, and  
scope of our invention will be more fully un-  
derstood from the following description, taken  
in connection with the accompanying draw-  
ings, forming part hereof, in which—

Figure 1 is a perspective view, principally in  
section, illustrating portions of a gas-retort apparatus embodying features of the invention.  
Fig. 2 is a view showing at the left-hand side thereof a front elevation and at the right-hand side a sectional view of apparatus embodying features of the invention, and  
Fig. 3 is a sectional view taken on the line  
3 3 of Fig. 2 on an enlarged scale.

In the drawings, Fig. 2, 1 represents the retorts.  
2 represents the passages for feeding gas  
which is burned by the secondary air-supply  
at 3 in order to heat the retorts. The prod-  
ucts of this combustion traverse the flues 4  
and in that way serve to heat the supply of air which constitutes the secondary air-supply.  
The secondary air-supply is taken in—  
for example, at 5—and traverses separate pas-  
sages 6. Generally speaking, the flues 4 for  
the products which descend from the cham-  
er surrounding the retorts to the off-take  
are horizontal, as is shown in Fig. 1 and also  
in Fig. 2. The passages 6 for the incoming  
secondary air-supply are arranged side by  
side, as shown in Fig. 1, and vertically. The  
arrrows in that figure marked "8" show the  
path of the products of combustion and the  
arrrows marked "9" show the path of the sec-  
ondary air-supply in one of the passages, of  
which there are shown six, although the num-  
ber is not material nor is the construction  
and arrangement of details of the flues and  
passages. The intake for the supply of sec-  
ondary air is subdivided, each portion of it  
provided with a door or other means for regul-  
atling the passage of air through it. Each  
subdivision extends to a set of passages 6.  
As shown in the drawings, there are two sub-  
divisions 10 and 11. The subdivision 10 is  
arranged to supply air to the three separate  
vertical passages 6, which are located nearest the front of the apparatus, and the subdivi-  
sion 11 is arranged to supply the group of  
three passages 6 near the back of the appar-  
atus. Of course the number of subdivisions,  
as well as the number of passages connected  
therewith, may be increased or diminished.

The mode of operation of the described im-  
provement may be explained as follows: The  
apparatus as a whole is operated in the ordi-  
nary way, with the exception that the doors,  
as 13 and 14, which control the intake to the  
secondary air-supply, are so opened and  
closed as to control the degree of heating of  
the various portions of the retorts through-  
out their lengths, and in this way the opera-  
tion of the apparatus as a whole is materially  
improved. For example, it frequently hap-  
pens that the retorts are not charged evenly  
throughout their lengths, and by the present
invention this may be corrected by the application of the proper degree of heat in proportion to the extent of the charging throughout the length of the retorts.

5 It will be obvious to those skilled in the art to which our invention appertains that modifications may be made in detail without departing from the spirit thereof. Hence we do not limit our invention to the precise construction and arrangement of parts hereinabove set forth, and illustrated in the accompanying drawings; but,

Having thus described the nature and objects of our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A recuperative gas-retort setting provided with retorts, a gas-furnace having gas-outlets arranged beneath the retorts, induction-flues for carrying off the products of combustion, separate systems of induction-flues surrounding the eduction-flues and heated thereby and having separate groups of discharge-orifices arranged in proximity with said gas-outlets, and means at the points of admission for controlling the intake of air to each system of induction-flues thereby providing independent secondary air-supplies for different portions of the setting throughout its length, substantially as described.

2. A recuperative gas-retort setting provided with retorts, a gas-furnace having gas-outlets arranged in rows beneath the retorts, eduction-flues for carrying off the products of combustion, separate systems of induction-flues surrounding the eduction-flues and heated thereby and having separate groups of discharge-orifices arranged in proximity with said gas-outlets, and means at the points of admission for controlling the intake of air to each system of induction-flues thereby providing independent secondary air-supplies for different portions of the setting throughout its length, substantially as described.

In testimony whereof we have hereunto signed our names.

EDWARD H. EARNshaw.
WILLIAM H. GARTLEY.

In presence of—
W. J. JACKSON,
K. M. GILLIGAN.