

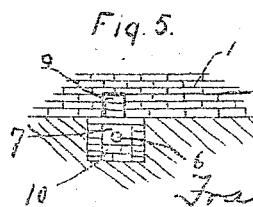
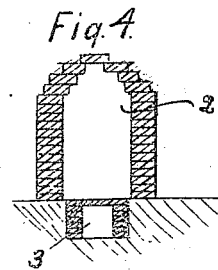
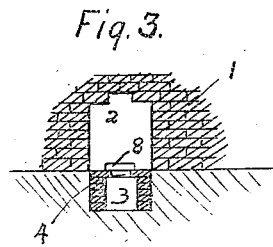
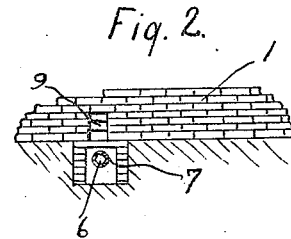
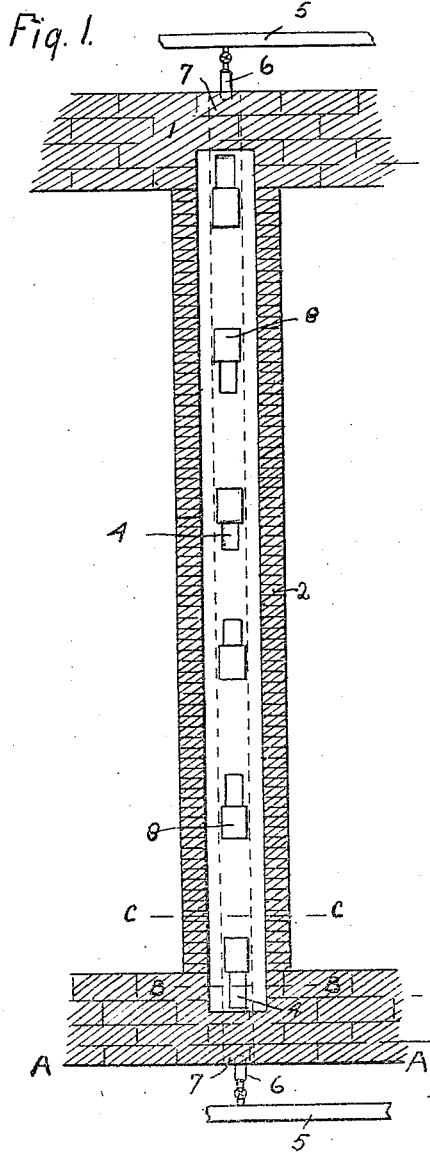
No. 648,844.

F. W. BUTTERWORTH.
BRICK BURNER.

Patented May 1, 1900.

(Application filed Aug. 21, 1899.)

(No Model.)



WITNESSES:

M. C. Buck.
G. H. Blaker.

INVENTOR.

Frank W. Butterworth
BY V. H. Lockwood

His ATTORNEY.

UNITED STATES PATENT OFFICE.

FRANK W. BUTTERWORTH, OF INDIANAPOLIS, INDIANA

BRICK-BURNER.

SPECIFICATION forming part of Letters Patent No. 648,844, dated May 1, 1900.

Application filed August 21, 1899. Serial No. 727,972. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. BUTTERWORTH, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Brick-Burner; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention relates to a device for burning bricks with the gas at low pressure. Heretofore, so far as I am aware, the gas has been piped into the ends of the furnace or arched chamber built in the old-fashioned manner.

With this arrangement it has been necessary to supply the gas at a pressure of fifteen pounds to the square inch in order to force the volume of heat sufficiently far into the furnace-chamber to burn the bricks. With this arrangement too the bricks are unequally burned, as those nearer the end receive a much higher degree of heat than those near the middle of the kiln. The gas-pipe could not be extended into the furnace-chamber, because it would be soon burned up.

My invention consists in providing a heat-conduit under or below the arched chamber or furnace of the kiln, with a number of outlets therefrom to the said chamber distributed at intervals throughout the length of said conduit. I also extend said furnace-chamber into the side wall of the kiln for nearly half its thickness. The ends of the furnace-chamber are contracted at the outlet and closed. One end of the heat-conduit is also partially closed to cause a draft through said conduit. With this arrangement the pressure of the gas need not exceed fifteen or twenty ounces to the square inch, so that a very great saving in gas results therefrom in comparison with the means heretofore employed. Furthermore, the heat is more equally distributed, whereby the bricks in all parts of the kiln are burned with uniformity, there being none overburned or underburned. Also by extending the furnace-chamber into the side walls the bricks adjacent to and in close proximity with said side walls will be properly burned.

The full nature of my invention will be un-

derstood from the accompanying drawings and the description of one form of device embodying my said invention.

In the drawings, Figure 1 is a horizontal section of a portion of a brick-kiln adjacent to one furnace-chamber thereof, showing a heat-conduit in dotted lines. Fig. 2 is a section on the line A A of Fig. 1, showing a portion of the side wall in elevation. Fig. 3 is a section on the line B B of Fig. 1. Fig. 4 is a cross-section on the line C C of Fig. 1. Fig. 5 is an elevation of a portion of the kiln, showing one end of the heat-conduit partially closed.

In detail, 1 represents the side walls of a brick-kiln, and 2 the arch forming the furnace-chamber. This may be made in the old-fashioned manner, and the bricks are built around and above it in open-work to permit the free passage of heat upward. Under said furnace-chamber I provide a heat-conduit 3 of a permanent character preferably embedded in the earth and formed, preferably, of fire-brick or tile, with outlets 4 at intervals in the upper side thereof, as shown in Fig. 1. The conduit extends under the side walls, as shown in Fig. 1, and the first outlet or opening is in the portion that thus extends under the side wall. Gas is supplied to said conduit from the gas-main 5 and mixer 6, that extends into the opening 7 in the side wall. In this manner gas and air are blown into the heat-conduit 3, where it is ignited, and the heat issues through the openings 4 into the furnace-chamber.

Means are provided for separately closing or partially closing the openings 4, so as to adjust the distribution of the heat more perfectly than would be done by the heat-conduit alone. The means shown for doing this are sliding plates 8, which are moved by rods from outside the kiln.

The furnace-chambers are extended by me about half-way through the side walls and over the outermost outlet 4 of the heat-conduit. Contracted openings 9 connect said furnace-chambers with the outside air. They are closed when desired. One end of the heat-conduit is partially closed also by means of brick, as is shown at 10 in Fig. 5, or other-

wise in order to regulate the draft and drive the heat close to either end or to the center, as may be desired.

One of the chief features of my invention consists in the system of cross-firing which it permits. At both ends of the heating-conduit there are gas-supply pipes for furnishing heat or flame to said conduit, and both ends of said conduit are arranged to be partially closed, as shown in Fig. 5, or wholly open, as shown in Figs. 3 and 4. When desired to direct the main body of the heat to one end, the supply of gas through the pipe at that end is considerably diminished, and the opening into that end of the heating-conduit is likewise diminished or partially closed, as shown in Fig. 5, and the gas-supply at the front end of said conduit may be increased. Then, as stated, the main body of the heat goes toward the partially-closed end of the conduit, owing to the effect of the updraft through the bricks as laid in the kiln and to the partial closure of the opening of the heating-conduit. In this manner either end may be subjected to an unusual heat for as long a period as desired. In order to direct the main body of the heat toward the center of the kiln, both ends of the heating-conduit are left open, and the gas-supply to each end is the same. In this way it is seen that additional heat can be readily directed to either end or to the middle, as the quick and successful burning of the bricks may require.

I do not wish to limit my invention to the specific means I have herein shown for carrying it out.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with the furnace-chamber in a brick-kiln, of a heat-conduit in the bottom thereof throughout its entire length with outlets at intervals from said conduit into said furnace-chamber.

2. The combination with the furnace-chamber in a brick-kiln, of a heat-conduit embedded in the earth undersaid furnace-chamber throughout its entire length and provided at intervals with outlets therefrom into said chamber.

3. The combination with the side wall in a brick-kiln, of a furnace-chamber extending partially through the side wall, a heat-conduit in the bottom of said furnace-chamber with outlets at intervals therefrom into said furnace-chamber, one outlet being in said extended portion of the furnace-chamber.

4. The combination with the furnace-chamber in a brick-kiln, of a heat-conduit in the bottom thereof with outlets at intervals therefrom into said chamber, means for supplying gas and air to one end of said conduit, and means for partially closing the other end of the said conduit to create a draft there-through.

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named.

FRANK W. BUTTERWORTH.

Witnesses:

M. C. BUCK,
V. H. LOCKWOOD.