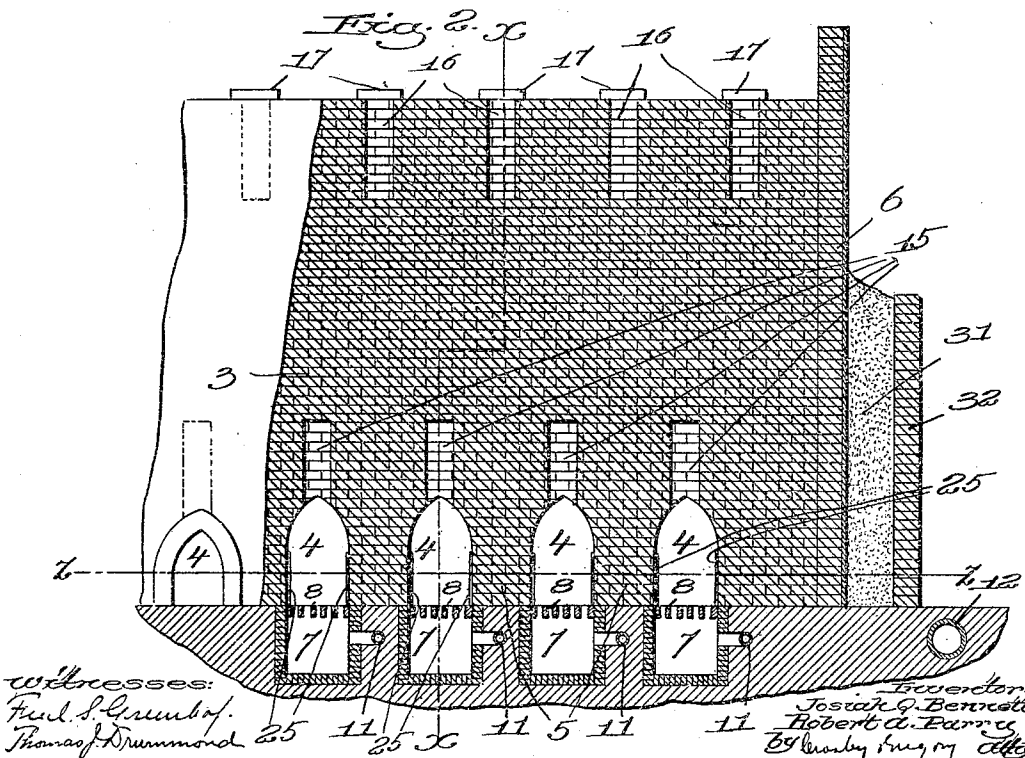
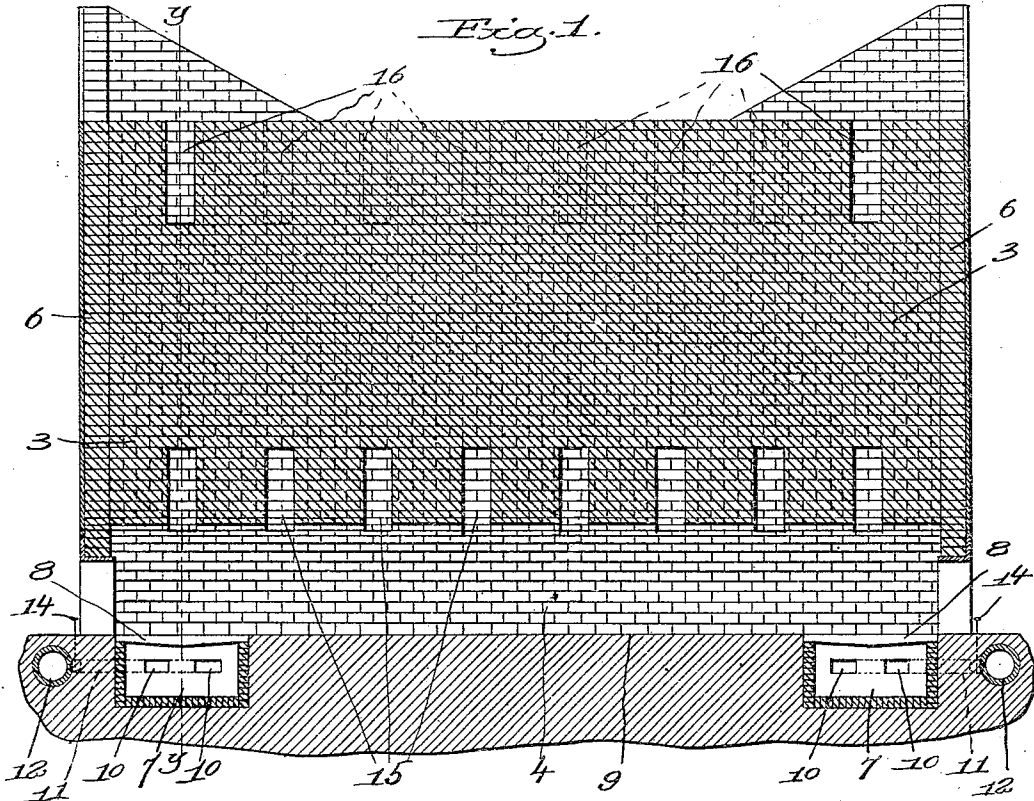


J. Q. BENNETT & R. A. PARRY.
METHOD OF BURNING BRICK.
APPLICATION FILED JULY 1, 1908.

956,620.

Patented May 3, 1910.

2 SHEETS—SHEET 1.

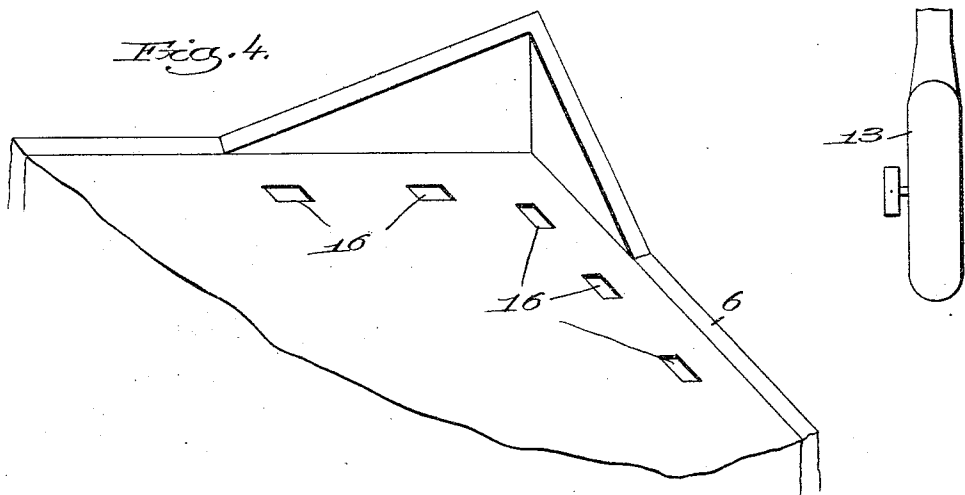
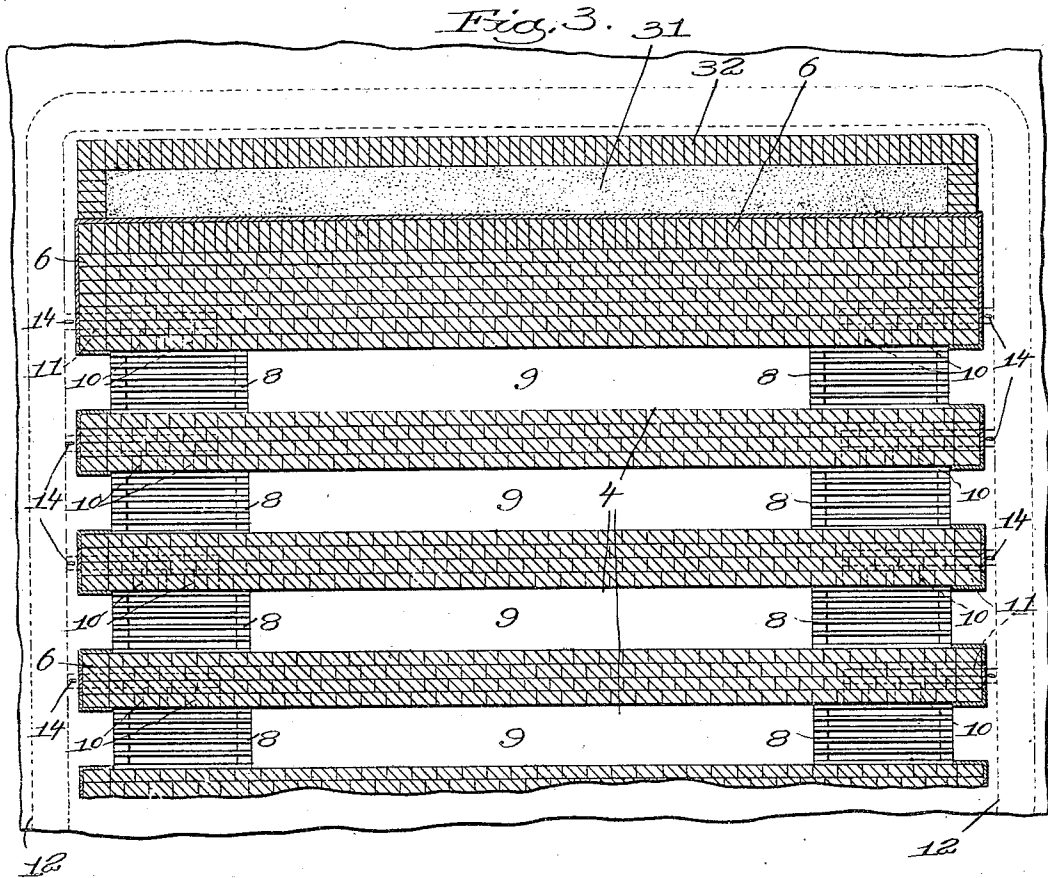


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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSIAH Q. BENNETT AND ROBERT A. PARRY, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNORS TO BOSTON BRICK COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

METHOD OF BURNING BRICK.

956,620.

Specification of Letters Patent.

Patented May 3, 1910.

Application filed July 1, 1908. Serial No. 441,300.

To all whom it may concern:

Be it known that we, JOSIAH Q. BENNETT and ROBERT A. PARRY, citizens of the United States, and residents of Cambridge, county of Middlesex, State of Massachusetts, have invented an Improvement in Methods of Burning Brick, of which the following description, in connection with the accompanying drawing, is a specification, like figures on the drawing representing like parts.

This invention has for its object to provide a novel method for burning brick by means of which coal can be used as the fuel without danger of discoloring or "whitewashing" the brick.

In burning a brick kiln successfully, it is essential that the brick should not only be burned hard, but that it should be burned in such a way that it will have a good color, that is, a dark red color. It is now customary to use wood entirely as the fuel for burning brick, but owing to the increasing scarcity and high price of wood, it is a matter of importance to be able to successfully substitute some other fuel for wood. It has heretofore been proposed to use coal as a complete or partial substitute for wood but so far as we are aware all previous attempts to substitute coal for wood have been unsuccessful because of the impossibility of getting the required good color in the bricks when coal is used. We have, however, devised a process of burning brick by which it is possible to use coal as a complete or partial substitute for wood as the fuel and yet obtain brick of as good quality, both as regards color and hardness, as it is possible to obtain with wood as fuel.

In order to carry out our process we build the kiln with the usual arches and place grates at the ends of the arches, said grates being preferably on a level with the floors of the arches. The grates are arranged for burning coal thereon under a forced draft and the space between the grates is arranged for burning wood in the usual manner.

In carrying out our process we burn anthracite coal on the grates and wood in the center of the arches during the first part of the burning process or while the kiln is "clearing" as it is termed, (this expression being commonly used to designate that part of the burning process during which the

green bricks are drying and the water-smoke is being driven off therefrom), and after the kiln has cleared, we burn bituminous or soft coal under a forced draft during the further burning process or "settling" of the kiln, as the final burning is commonly called.

The kiln is so set that with the forced draft arrangement, it is possible to place the heat at any portion of the kiln desired, and therefore the kiln may be evenly burned. By using the hard or anthracite coal for the clearing process and bituminous or soft coal for the settling process, we have found that the kiln can be burned so as to produce bricks of the desired dark red color and without danger of whitewashing any of the bricks, and bricks of the desired hardness can also be produced. The expense of burning, however, is materially reduced by using coal in this way as a partial substitute for wood.

In order to properly describe the method, we have illustrated in the drawings one type of brick kiln adapted to carry out the method, but we wish it understood that the character of kiln herein illustrated is not essential to the carrying out of the process as the process might be practiced on brick kilns constructed otherwise than as shown herein.

Figure 1 of the drawings is a vertical section through a brick kiln constructed to be burned by our improved process, said section being taken on substantially the line $x-x$, Fig. 2; Fig. 2 is a vertical sectional view of one end of a kiln on substantially the line $y-y$, Fig. 1; Fig. 3 is a horizontal section through one end of a kiln on substantially the line $z-z$, Fig. 2; Fig. 4 is a detail of one corner of the kiln at the top.

In building the kiln, the mass of bricks to be burned is built up to form the arches 4 and benches 5 as usual, and the outside walls of the kiln are protected by the usual scoving 6. At each end of each arch there is formed an ash pit 7 over which is placed a grate 8, said grates preferably being on substantially the level of the floor 9 of the arch.

Part of our process consists in burning coal on the grates and wood in the portion of the arches between the grates, and in order to get the proper results it is essential that

the coal be burned with a forced draft. The kiln herein shown is designed to produce such forced draft, and for this purpose each ash pit has opening into it one or more air inlet apertures 10 which connect with ducts 11 that in turn communicate with the conduit 12. The conduit 12 is shown as extending around three sides of the kiln, and the ducts 11 are shown as placed beneath the benches 5. These conduits lead to a blower 13 or other suitable mechanism for forcing air into the ash pits through the conduits and ducts. Each duct is preferably provided with a damper 14 so that the amount of air which is admitted to each ash pit can be regulated.

The kiln is shown as having a plurality of flues 15 formed therein leading upwardly from the crown of each arch, said flues being formed in the bricks when the kiln is built up from the latter. These flues extend up through ten to twenty courses of brick, and they act as a means for rapidly conducting the heat from the arches into the body of the brick. The kiln is also formed with what we have termed "chimneys" which are flues or openings 16 formed when the kiln is built. These chimneys 16 are situated around the outer edge of the kiln and are open at the top of the kiln and extend down through ten to twenty courses as desired. These chimneys are normally closed by covers 17. In burning a kiln the first step is to drive off the water-smoke, this step being called clearing the kiln. After the water-smoke is driven off the kiln is fired for the purpose of burning the bricks and giving them the desired dark red color.

In carrying out our process we use anthracite or hard coal on the grates and wood in the center of the arches for clearing the kiln and then use bituminous or soft coal on the grates and wood in the center for the subsequent process of settling the kiln. The burning of hard coal with the forced draft during the initial step or clearing of the kiln furnishes heat of the proper temperature and character to dry the bricks and drive off the water-smoke without, however, any liability of discoloring or whitewashing the bricks. The settling of the kiln or final burning requires a much greater temperature than the initial process of clearing the kiln, and after the kiln is cleared, we burn

bituminous coal on the grates under a forced draft and wood in the center thus securing the desired high temperature for the settling process. The whitewashing of the bricks, whenever it occurs, occurs during the clearing process and by using an anthracite or hard coal for this clearing process, it is possible to accomplish it without discoloring or whitewashing any of the brick. The use of the anthracite coal during the clearing process and the bituminous coal during the settling process permits us to complete the burning of the kiln with coal and at a greatly reduced expense without danger of spoiling any brick by discoloration of the same. We find that the use of wood with the coal assists materially in giving the desired dark red color to the bricks.

In order to carry the heat into the corners of the kiln and into the heads near the top, we place coal screenings, coke, or some other similar fuel in the chimneys during the last part of the settling process. At this time all the bricks in the kiln are thoroughly heated up and when the chimneys are filled with such fuel it immediately becomes ignited thus furnishing the necessary heat at the top of the heads and around the outside of the kiln at the top to properly burn the brick at this point.

The principal feature of our invention resides in using hard or anthracite coal under a forced draft for the clearing process and then using bituminous coal under forced draft for the settling process.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:—

The process of burning brick which consists in clearing the kiln by burning anthracite coal under forced draft at the ends of the arches and wood in the center of the arches and then settling the kiln by burning bituminous coal under forced draft at the ends of the arches and wood in the center of the arches.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

JOSIAH Q. BENNETT.
ROBERT A. PARRY.

Witnesses:

LOUIS C. SMITH,
THOMAS J. DRUMMOND.