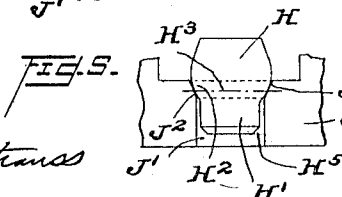
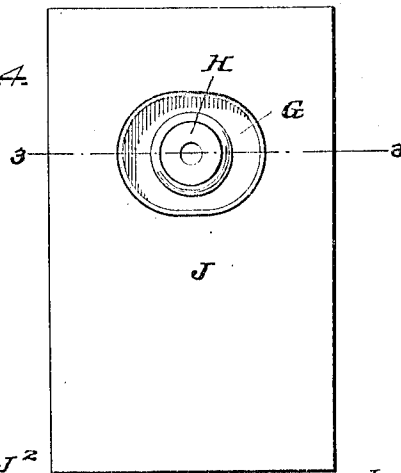
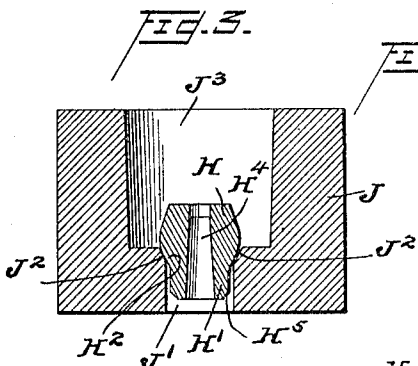
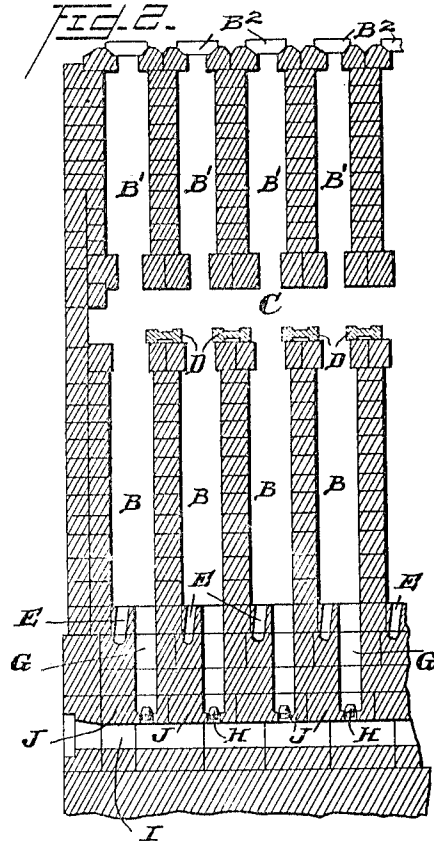
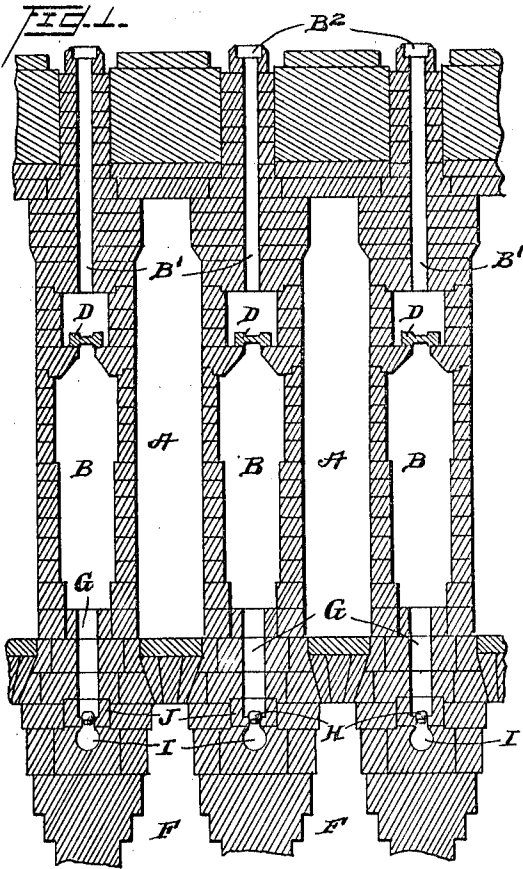


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 NOZZLE AND NOZZLE MOUNTING.
 APPLICATION FILED SEPT. 26, 1917.

1,274,487.

Patented Aug. 6, 1918.



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LOUIS WILPUTTE, OF NEW ROCHELLE, NEW YORK.

NOZZLE AND NOZZLE-MOUNTING.

1,274,487.

Specification of Letters Patent.

Patented Aug. 6, 1918.

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To all whom it may concern:

Be it known that I, LOUIS WILPUTTE, a subject of the King of Great Britain, and a resident of New Rochelle, county of Westchester, in the State of New York, have invented certain new and useful Improvements in Nozzles and Nozzle-Mountings, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

The object of my present invention is to provide an improved nozzle and nozzle mounting construction. My improved nozzle is especially devised and adapted for use as a burner nozzle in retort coke ovens of the vertical flue type.

In coke ovens of this type a burner nozzle construction has heretofore been employed in which the nozzle proper is formed with a conical lower end which is received in a conical upper end portion of the gas outlet from the so-called "gas gun" or gas supply conduit. Both the gas gun and burner nozzle are subjected to high temperatures and in practice must be made out of refractory earthenware or fire brick material. Trouble has been experienced with the arrangements heretofore employed because of the difficulty in renewing or reseating the nozzles as is necessary from time to time after the oven structure has been heated up. With the elongated taper joint between the nozzle and its seat in the prior construction initially made tight enough to prevent leakage, there is a marked tendency for the nozzle to become so cemented in its seat, after any appreciable period of use, as to make the removal of the nozzle very difficult, particularly under the difficult conditions attending the removal of the nozzle when the oven is heated up. Not infrequently a nozzle is broken in removing it or freeing it from carbon deposits and fragments adhere to the seat thus adding to the difficulty in properly seating a new nozzle, even though the seat were initially smooth and symmetrical, which is not usually the case. These difficulties are practically eliminated with the improved nozzle arrangement devised by me.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed hereto and forming a part of this specification. For a better understanding of the

invention, however, and of the advantages possessed by it, reference should be had to the accompanying drawings and descriptive matter in which I have illustrated and described a preferred embodiment of my invention.

Of the drawings:

Figure 1 is a partial sectional elevation of a coke oven in which my improved nozzle arrangement is employed.

Fig. 2 is a partial section of the oven taken at right angles to Fig. 1.

Fig. 3 is a section taken on the line 3—3 of Fig. 4.

Fig. 4 is a plan view of a nozzle seat tile and nozzle seated therein, and

Fig. 5 is a diagrammatic elevation on a larger scale than Figs. 3 and 4 illustrating the nozzle seating.

In the drawings I have illustrated the use of my improved nozzle arrangement in a retort coke oven in which the horizontally elongated coking chambers A are separated by heating walls provided with vertical heating flues B connected at their upper ends by a horizontal passage C; communication between the upper end of the flues B and the horizontal passage C being regulable by means of the slide brick or dampers D. Air inlet passages E lead to the lower end of the different flues B from regenerator chambers F beneath the coking chamber A, and gas supply channels G lead into the lower ends of the various flues B from the gas supply conduit or gas gun I. The distribution of gas from the gas gun among the various flues B supplied by it, is regulated by means of removable gas burner nozzles H inserted in the lower ends of the channels G. The gas nozzles H may be cleaned and renewed from time to time as the conditions of operation make necessary by means of rods passed down into the flues B and passages D from the top of the oven through passages B' formed in the upper portion of the oven structure in alinement with the flue passages B and normally closed at their upper ends by the covers B². Aside from the special features hereinafter referred to, pertaining to the shape and formation of the nozzles H and their seats, the oven construction above described is well known and in extensive use.

As shown, the upper portion of the gas gun or gas supply conduit I, is formed by a row of tiles J. Each tile J is formed in

its upper side with a cavity J^3 , which communicates with and in fact forms the lower end of the channel G proper, and with a cylindrical port or passage J' leading from the chamber J^3 to the gas supply channel I . The upper portion of the channel J' is flared or made conical to form a seat J^2 for the corresponding nozzle H . The latter is made with a head or body portion and a reduced lower or spigot portion H' , which is loosely received in the cylindrical portion of the passage J' . The body of each nozzle H is formed with a spherical surface portion H^2 which is adapted to engage the conical seat surface J^2 of the nozzle seat tile J and from which the portion H' projects radially. Preferably I make this seat J^2 truly conical by grinding the seat before incorporating the tile in the oven structure, and when the nozzles made in the ordinary way are not smooth and symmetrical I also grind the spherical seat engaging surface portion H^2 .

With the construction described, as shown in Fig. 5, each nozzle H , and the conical seat surface J^2 of the corresponding seat tile are in contact practically only along the circular line H^3 . This line contact does not depend upon a setting of the nozzle H with the axis of the axial passage H^4 through the latter truly vertical. Any appreciable deviation from parallelism of the axis of the nozzle and the axis of the port J' is prevented by the co-action of the spigot portion H' of the nozzle with the peripheral wall of the port J' in the seat tile.

With the described construction the extent of the surface of contact of the nozzle and nozzle seat member is so small that there is little probability of a nozzle ever becoming so firmly cemented in its seat in ordinary use as to make it difficult of removal. After an old nozzle has been removed from its seat a new nozzle may be readily put in place, it being sufficient, or practically so, to drop the new nozzle into place to secure a sufficiently tight joint. Preferably the lower end of the tubular spigot portion of the nozzle is rounded off, as indicated at H^5 , to facilitate its insertion in the funnel like space formed by the port J' and the conical seat J^2 . The practical importance of my improvement will be appreciated when it is realized that renewals of nozzles must be made with comparative frequency and under very difficult conditions. The rods by which the nozzles are removed and put in place are exposed for a length of twelve or fourteen feet or so in the flues B and passage C to temperatures

well above 2,000 degrees F. In practice iron rods are employed to adjust the nozzles. These rods must be of small diameter to keep them light enough to handle, and become white hot and correspondingly flexible after a very short exposure to the flue temperatures. The difficulty of making renewals is further increased by the fact that the oven top is quite hot under some conditions and the glare makes it very difficult for the manipulator of the rod to see the gas nozzle at the bottom of the channel.

While in accordance with the provisions of the statutes I have illustrated and described the best form of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the form of my invention without departing from its spirit, and that some features of my invention may sometimes be used to advantage without a corresponding use of other features of the invention.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. As a new article of manufacture a coke oven burner nozzle of refractory earthenware comprising a body portion formed with a spherical seating surface and a centering portion projecting radially from said spherical surface.

2. A coke oven burner nozzle and mounting comprising in combination a seat member formed with a port outwardly flared to form a conical nozzle seat and a nozzle having a spherical seat engaging surface portion and a tubular portion projecting radially from said surface and loosely received in the restricted portion of said port.

3. A gas burner nozzle and mounting comprising in combination, a seat member of refractory earthenware formed with a port outwardly flared and ground to conical form at one end, and a nozzle having a seat engaging surface of spherical form, and having a tubular portion projecting radially from said surface and loosely received in the restricted portion of said port.

4. A coke oven burner nozzle and mounting comprising in combination a seat member of refractory earthenware formed with a port outwardly flared and ground to conical form at one end, and a nozzle having a seat engaging surface ground to spherical form, and having a tubular portion projecting radially from said surface and loosely received in the restricted portion of said port.

L. WILPUTTE.