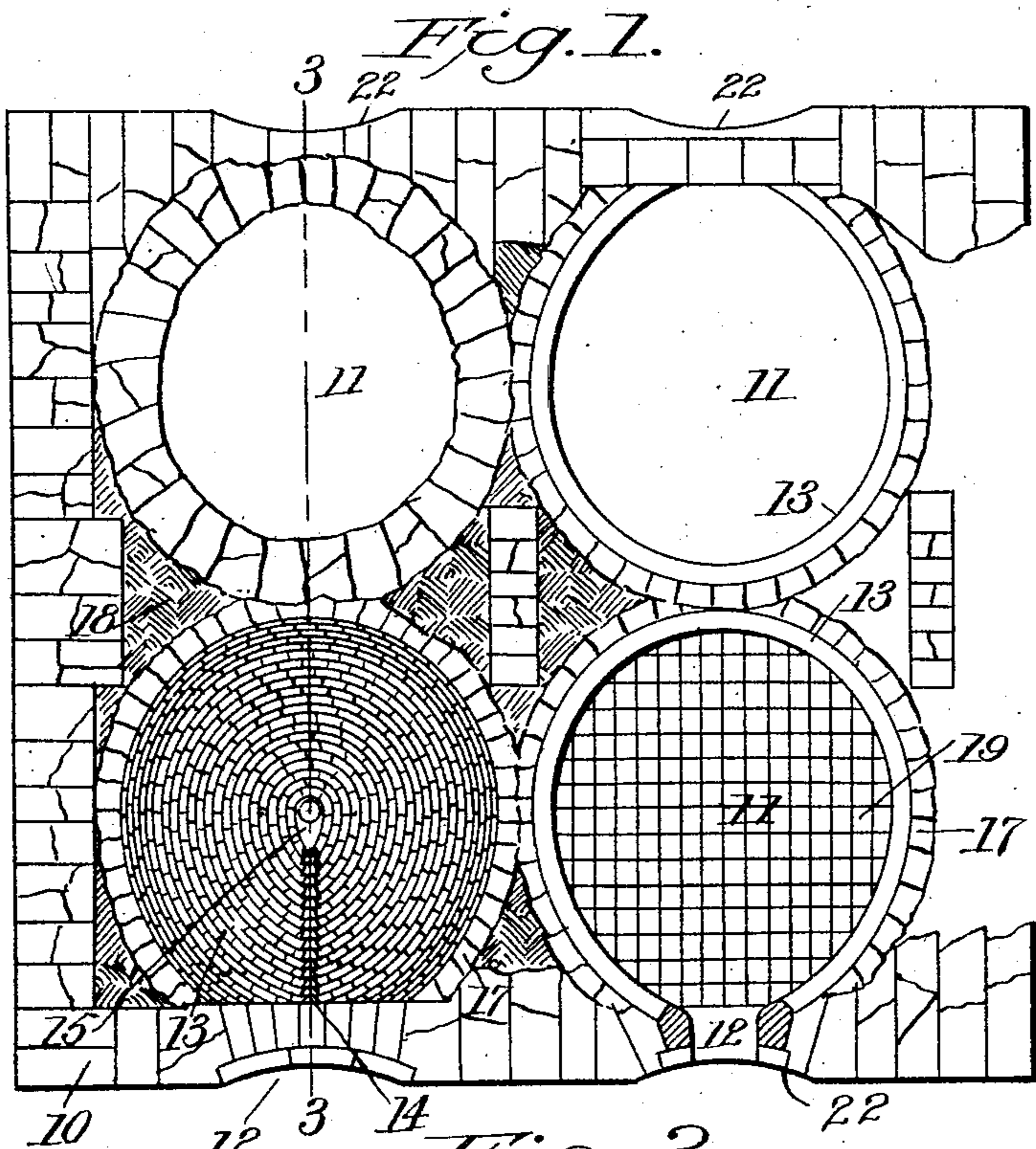


No. 814,621.

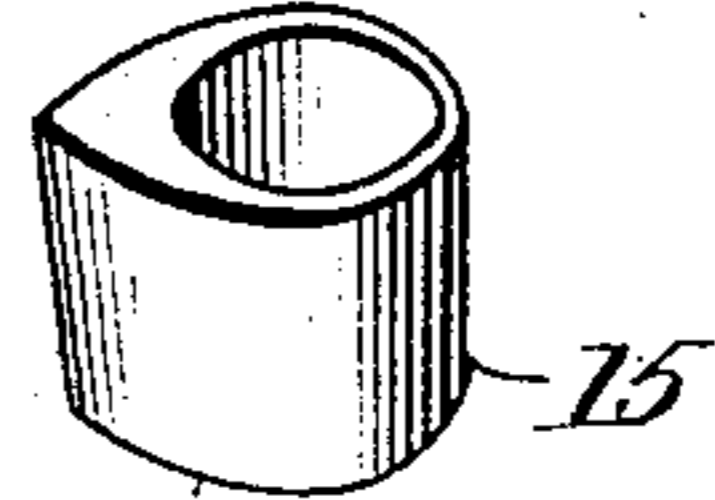
PATENTED MAR. 6, 1906.

G. PIERBONI & P. BUFANO.  
COKE OVEN.

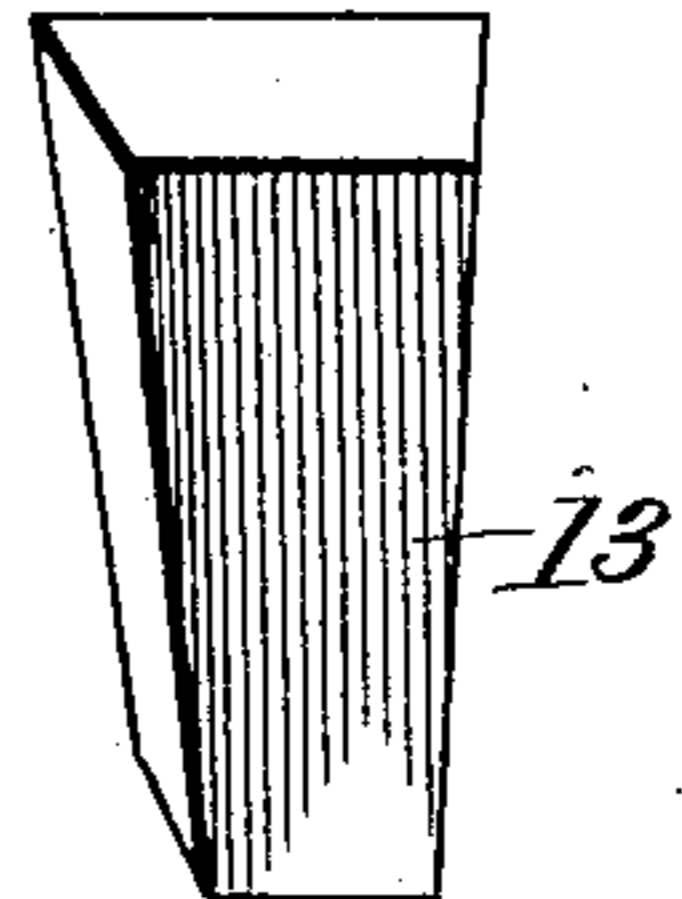
APPLICATION FILED OCT. 14, 1905.



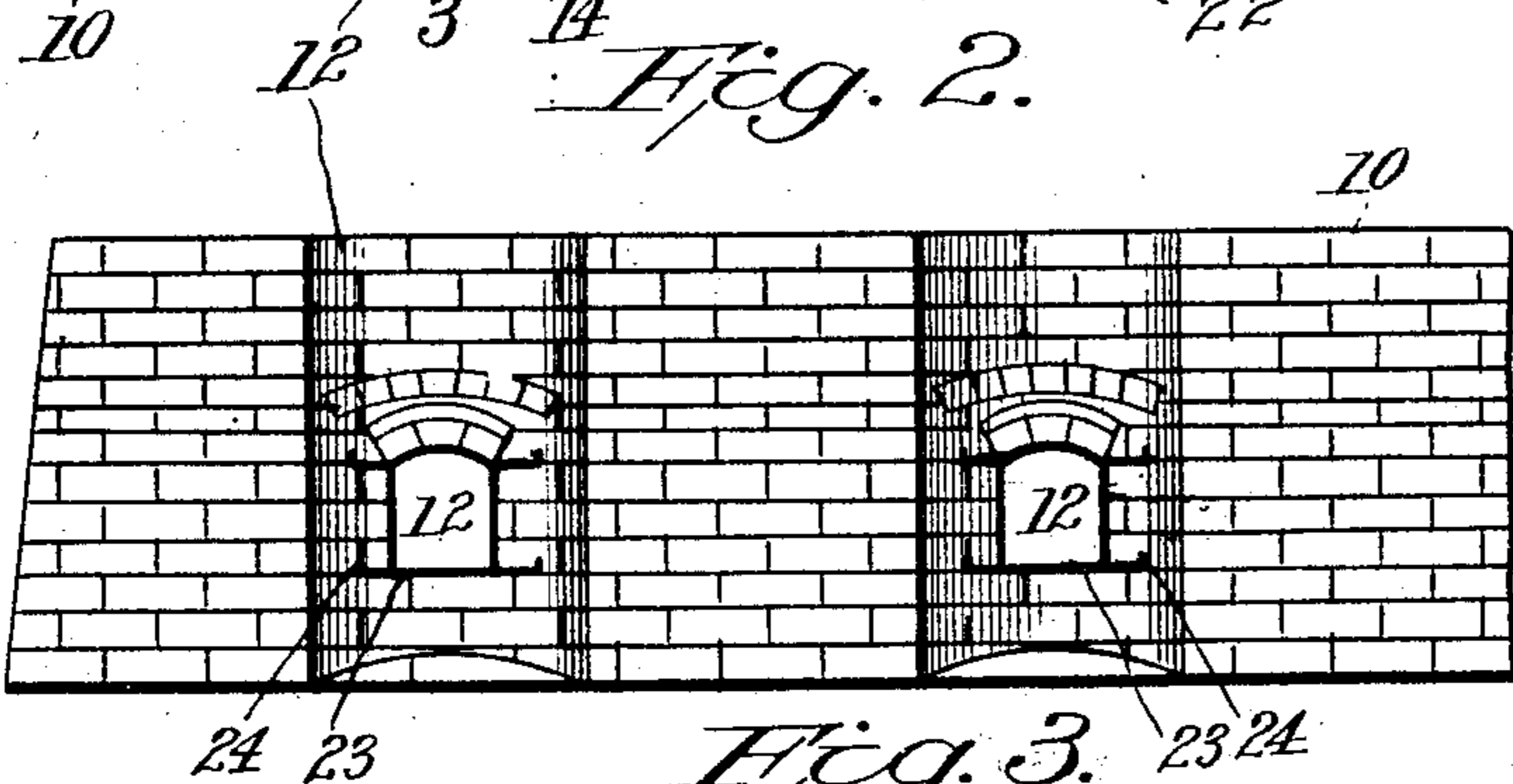
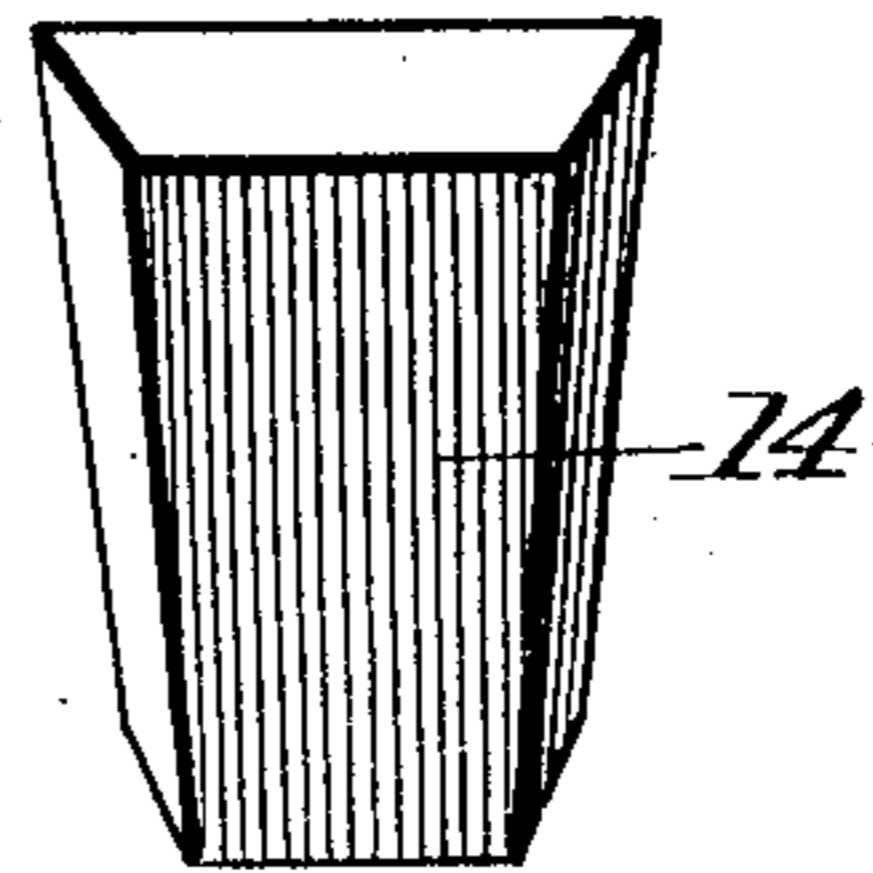
*Fig. 4.*



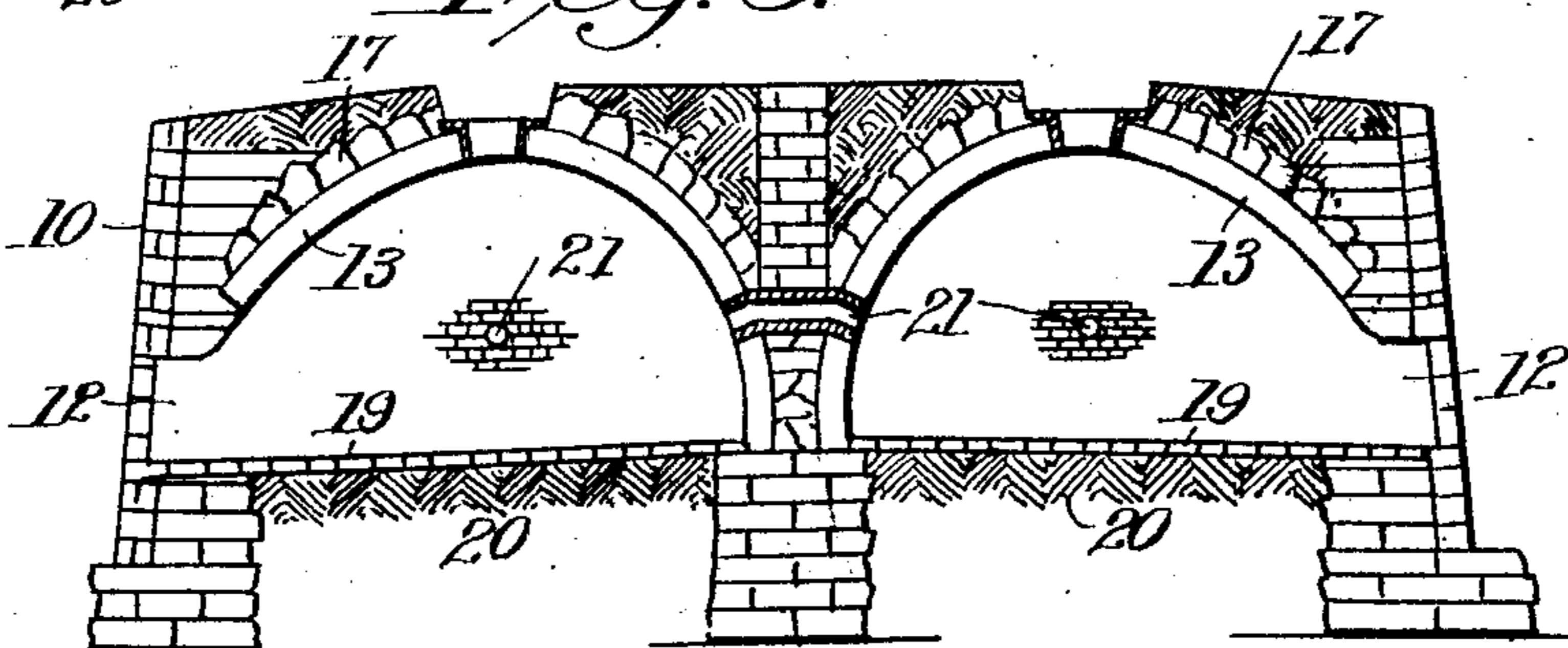
*Fig. 5.*



*Fig. 6.*



*Fig. 3.*



Inventor

Witnesses

C. H. Walker.  
Wm. S. Hodges

By

Wm. O. Cherry

Geremia Pierboni  
Pasquale Bufano.

Attorney

# UNITED STATES PATENT OFFICE.

GEREMIA PIERBONI AND PASQUALE BUFANO, OF CONNELLSVILLE,  
PENNSYLVANIA.

## COKE-OVEN.

No. 814,621.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed October 14, 1905. Serial No. 232,833.

*To all whom it may concern:*

Be it known that we, GEREMIA PIERBONI, a subject of the King of Italy, and PASQUALE BUFANO, a citizen of the United States, residing at Connellsville, in the county of Fayette and State of Pennsylvania, have invented new and useful Improvements in Coke-Ovens, of which the following is a specification.

This invention relates to certain new and useful improvements in coke-ovens.

The object of the invention is to produce an oven of this character of maximum strength and durability to withstand the intense heat as well as the strain of the gas explosions which constantly occur in the manufacture of coke.

A further object is to provide an oven of this character with a door so constructed as to resist the force of internal explosions and also to counteract whatever force which is found necessary to withdraw the coke from the oven.

In carrying out our invention we provide an oven which closely resembles the ordinary "beehive" type, but differs therefrom in that the same is made slightly ovoid in form as to its base-line. The arched wall of the oven is constructed of specially-formed brick, the whole being closed by a keystone of approximately ovoid form containing a circular eye. The fire-brick forming the interior of the oven is backed by a masonry wall fitting closely against the fire-brick, and said masonry wall is backed up and reinforced by filling in dirt, shale, and the like. In this manner the bricks are prevented from working loose or being blown from position by the explosions of gas, which so frequently occur in coke-ovens.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a battery of ovens made after our invention, the same being illustrated in various stages of completion. Fig. 2 is a front elevation. Fig. 3 is a transverse sectional view on line 3 3, Fig. 1. Figs. 4, 5, and 6 are details.

Referring to the drawings, 10 designates the front or surrounding wall of a battery of coke-ovens 11, said wall being provided with spaced-apart openings 12, adjacent which the doors of the ovens are located. Each

oven comprises an inner wall of fire-brick 13, provided with a threefold taper—i. e., tapered in three directions—(see Fig. 5) united with very thin mortar, whereby the bricks may be placed very closely together, the form of the brick being such that in the assembling thereof the arch of the oven is formed slightly ovoid as to its base-line. Each tier of the brick forming the inner wall of the oven is closed by a brick 14, (see Fig. 6,) which is also provided with a threefold taper and serves as a key to complete or close the tier, the horizontal taper of this latter brick being greater than the corresponding taper of brick 13. The top of the arch is closed by a fire-brick 15, (see Fig. 4,) approximately ovoid in form and provided with an eye or opening 16 to form an outlet for the products of combustion, as is usual in ovens of this type. The brick 15 is the chief keystone of the arch and affords great stability to the arch and in a great measure supports the weight of the latter.

The interior wall of the oven is surrounded by masonry backing 17, closely fitting against the fire-brick and built in with cement or mortar to make a solid wall. This masonry backing is in turn reinforced by a filling of dirt or shale, as indicated at 18. The floor 19 of the oven is slightly inclined from the rear to the front and is composed of ordinary fire-brick tiling of any preferred form. Said floor is built upon a solid foundation 20, especially prepared to resist weight and force. Each oven in a battery or series communicates with the next adjacent ovens by means of a bore or passage-way 21, whereby the gases and fumes in any one oven are always united by the flames in the adjoining ovens.

Adjacent the opening 12 of each oven the wall is concaved or arched horizontally at 22 with the front of the arch toward the interior of the oven, said arch being formed of fire-brick. The door of the oven consists of a metal frame 23, provided with hook-like projections 24, which are built into the wall to insure greater stability and the retention of the frame in position.

In operation the method of making coke in our improved oven is identical with the method followed in the operation of the well-known beehive type. It will be noted, however, that by arching the door of the oven horizontally toward the interior of the oven

whatever force that is found necessary in withdrawing the coke from the oven is counteracted and resistance is presented to the force of internal explosions. In this connection it will be observed that the front of the oven is the only place that is not tied into the arches of the oven on the interior because of the necessity of leaving a large aperture for the door, and the object of the front or horizontal arch is to support this weakest portion of the interior formation. Another advantage of our improved coke-oven lies in the approximately ovoid form thereof, whereby the oven possesses maximum strength and durability to withstand the intense heat as well as the strain of gas explosions during the manufacture of coke. By constructing the inner wall of fire-brick brought closely together the interior surface of the oven is burned into one homogeneous surface which is almost glassy in its smoothness and capable of withstanding the most intense heat or explosions.

We claim as our invention—

1. A coke-oven provided with an arched roof made up of a plurality of tiers, each tier being formed of a plurality of fire-brick each provided with a threefold taper, the ends of each tier being united by a fire-brick also provided with a threefold taper, the horizontal taper of the latter brick being greater than the corresponding taper of the former brick, whereby in the assembling of said bricks a roof of approximately ovoid form as to its base-line is obtained.

2. A coke-oven provided with an arched roof made up of a plurality of tiers, each tier being formed of a plurality of fire-brick each provided with a threefold taper, the ends of each tier being united by a fire-brick also provided with a threefold taper, the horizontal taper of the latter brick being greater than the corresponding taper of the former brick, whereby in assembling said bricks a roof of approximately ovoid form as

to its base-line is obtained, and a brick of approximately ovoid shape forming the top of the arch of said roof, said ovoid brick being provided with an opening forming the vent of the oven.

3. A coke-oven of ovoid form provided with an arched roof and an approximately ovoid-shaped brick located centrally of said roof and provided with an opening forming the vent of the oven.

4. A coke-oven provided with a door or opening, the wall adjacent said door or opening being provided with an inwardly-extended arched or curved portion.

5. A coke-oven of ovoid form provided with a door or opening, the wall adjacent said door or opening being provided with an inwardly-extended arched or curved portion.

6. A coke-oven of ovoid form provided with an arched roof, a centrally-located approximately ovoid eye-brick closing the top of the arch of said roof, said oven being provided with a door or opening, the wall adjacent said door or opening being provided with an inwardly-extended arched or curved portion.

7. A coke-oven of ovoid form provided with an arched roof constructed of a plurality of bricks of keystone form and arranged in tiers, a horizontally-tapered key-brick for closing each tier, and an approximately ovoid eye-brick closing the top of the arch of said roof, said oven being provided with a door or opening, the wall adjacent said door or opening being concaved or arched horizontally.

In testimony whereof we affix our signatures in presence of two subscribing witnesses.

GEREMIA PIERBONI.  
PASQUALE BUFANO.

Witnesses:

RICCIORDO DE ANGELIS,  
LESLIE A. HOWARD.