

No. 615,456.

Patented Dec. 6, 1898.

E. KERR.
BOSH PLATE FOR FURNACES.

(Application filed Mar. 4, 1898.)

(No Model.)

FIG. 1.

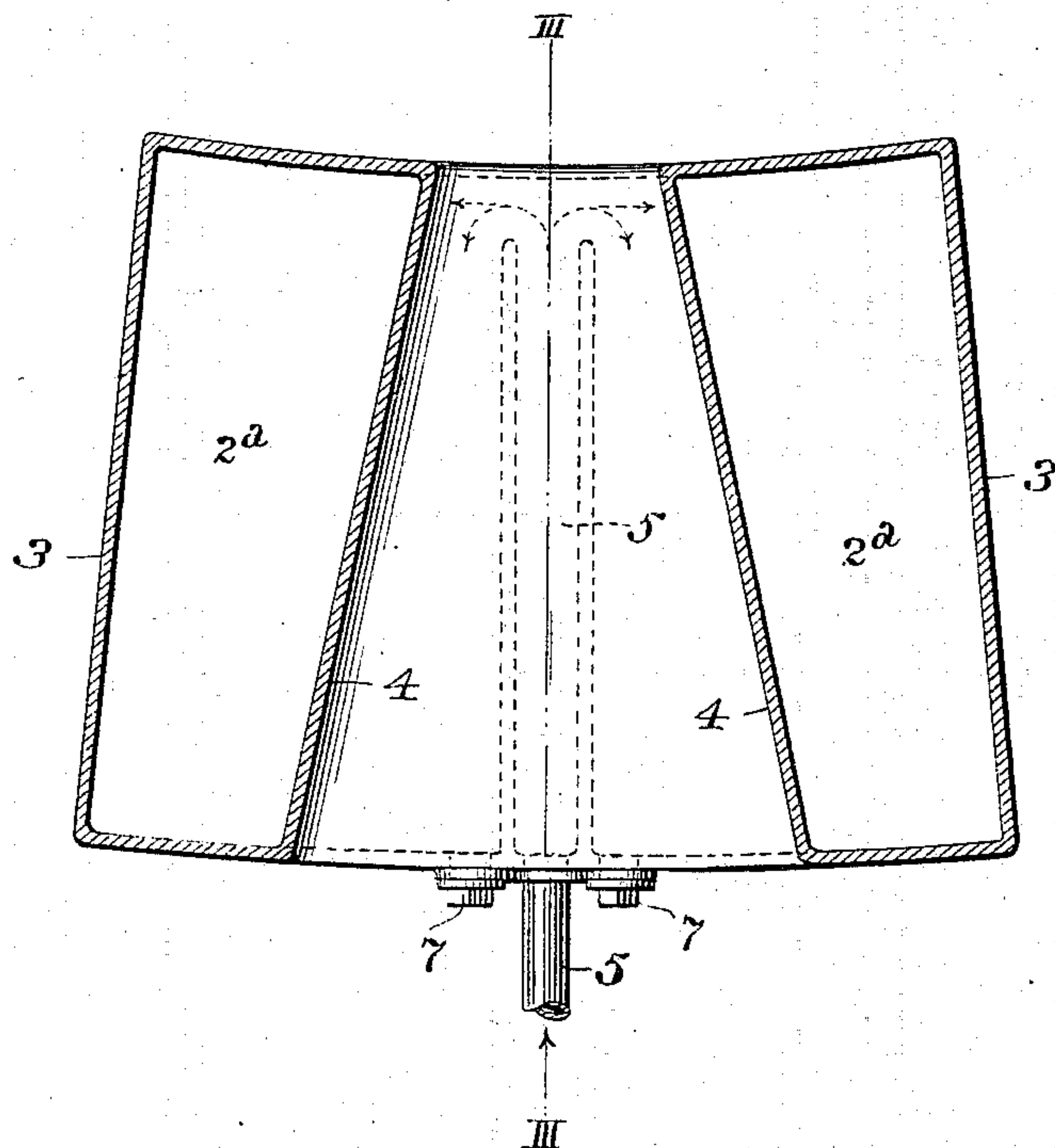


FIG. 2.

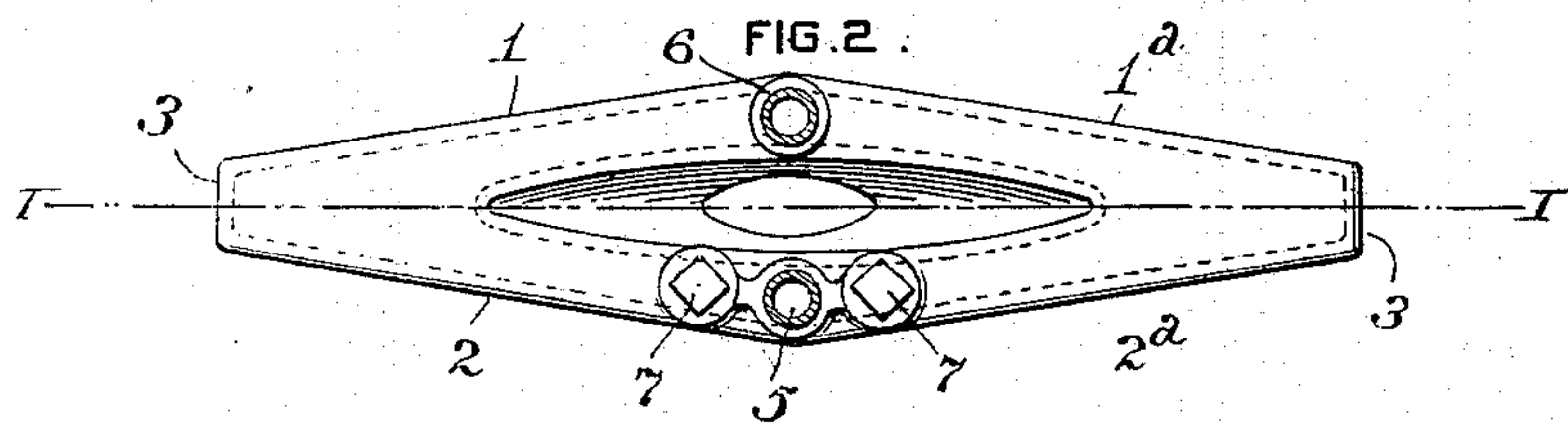
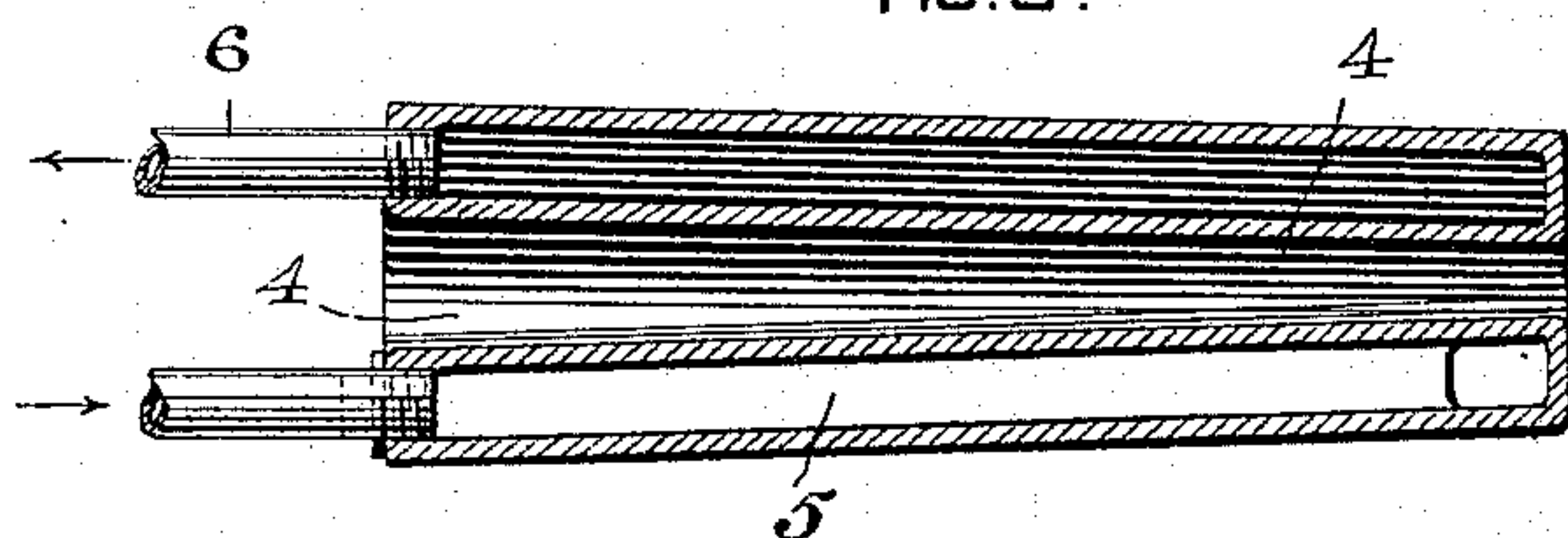


FIG. 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

EDWARD KERR, OF PITTSBURG, PENNSYLVANIA.

BOSH-PLATE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 615,456, dated December 6, 1898.

Application filed March 4, 1898. Serial No. 672,519. (No model.)

To all whom it may concern:

Be it known that I, EDWARD KERR, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Bosh-Plates for Furnaces, of which improvements the following is a specification.

The invention described herein relates to certain improvements in bosh-plates for blast-furnaces. These plates, which are incorporated in the walls of a blast-furnace in order to protect the bosh portion thereof, are generally made of such an external contour as to require special shapes of bricks to form the recesses for their reception, thereby adding considerably to the cost of erection and repairs.

It frequently happens in the operation of blast-furnaces that an arch is formed across the furnace, preventing down movement of the charge. In such cases resort must be had to a blowpipe to melt down the arch or the latter is broken down by blasting. In either case one or more holes must be formed through the wall of the furnace. As the arch usually occurs along or adjacent to the bosh portion of the furnace, one or more of the bosh-plates are removed and a hole punched through the furnace-lining back of the bosh-plates. The removal of the bosh-plates necessitates a break in the system of pipes connecting the plates with the water-supply and provision to be made for maintaining a supply of water to the plates not removed in order to prevent their injury by the heat of the walls.

The object of the present invention is to provide a bosh-plate of such shape that the recesses therefor may be formed of brick of the usual shape.

It is also an object of the invention to provide a bosh-plate with an opening there-through, so as to permit of the forming of an opening through the interior wall of the furnace and the insertion of a blowpipe or explosive charge without removing any of the plates.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a

part of this specification, Figure 1 is a sectional plan view of my improved bosh-plate. Fig. 2 is an end elevation of the same; and Fig. 3 is a sectional elevation, the plane of section being indicated by the line III III, Fig. 1.

In my improved bosh-plate the walls 1 1^a and 2 2^a, forming the upper and lower sides, are made plane or flat and are arranged at an angle to each other, the lines of junction of said plates lying in or approximately in a plane passing through the axis of the bosh-plate. The sides 1 2 and 1^a 2^a on each side of the lines of junction are inclined toward each other, as clearly shown in Fig. 2, and their outer edges connect with the vertical walls 3. As shown in Fig. 1, the outer ends of the upper and lower sides are wider than the inner ends, so that the vertical walls 3 are inclined toward each other. By reference to Fig. 3 it will be seen that the upper and lower sides incline toward each other from the outer toward the inner end of the bosh-plate. Within this external shell is formed a flattened frusto-conical shell or tube 4, whose ends connect and form a tight joint with the end walls, through which are formed openings corresponding with the open ends of the shell or tube.

A tube 5 is inserted or formed between the inner and outer shells and extends nearly to the rear end of the bosh-plate, as shown in Figs. 1 and 3. The outer end of this tube projects sufficiently far to permit of a water-supply pipe being attached thereto. The water escapes from the bosh-plate through the nozzle 6, which is connected to any suitable waste-pipe.

It is characteristic of my improved bosh-plate that all of its sides have an inclination from the outer toward its inner end and that the upper and lower sides incline toward each other from the middle of the bosh-plate. As all the sides of the bosh-plate are made plane or flat, the recesses formed in the walls of the furnace for their reception can be formed of the ordinary shape of brick. The sides of bosh-plate being inclined from the outer to the inner end, it would be nearly impossible to wedge it in the recess in the furnace-wall.

The opening or passage through the bosh-

plate permits of the insertion of tools to break an opening through the inner wall of the furnace for the insertion of a blowpipe or explosive charge to break down any arch formed in the furnace. After the arch has been broken down and the furnace resumed normal operation material can be passed through the opening for closing the opening in the inner wall of the furnace.

By reason of the inclination of the bottom walls 2 2^a toward the outer end of the bosh-plate and also toward a vertical median plane passing longitudinally through the bosh-plate all dirt and sediment will collect near the outer end of the bosh-plate and alongside of the inlet pipe or passage 5. The sediment thus collected can be blown out through two openings formed in the outer end of the bosh-plate on opposite sides of and adjacent to the inlet-passage. These openings are normally closed by screw-plugs 7. This construction will prevent the sediment from collecting at the inner ends or other highly-heated portions of the bosh.

I am aware that twyer boxes or plates have been formed with openings therethrough for the reception of the twyers; but bosh-plates, which are used for entirely different and distinct purposes, have heretofore been so constructed as to preclude any inspection of or operation on the walls of the furnace or its

charge in line with any of the bosh-plates without the bodily removal of such plates.

I claim herein as my invention—

1. A bosh-plate for furnaces having its bottom walls inclined from the outer to the inner end of the bosh-plate and from the edges toward a vertical plane passing through the axis of the bosh-plate, substantially as set forth.

2. A bosh-plate for furnaces having all of its walls made plane or flat and inclined from the outer to the inner end of the bosh-plate, and the upper and lower sides inclined toward each other from a vertical plane passing through the axis of the bosh-plate, substantially as set forth.

3. A bosh-plate for furnaces having an opening extending axially therethrough, substantially as set forth.

4. A bosh-plate consisting of inner and outer walls, forming between them a chamber for the reception of a cooling fluid, the inner walls constructed to form a passage or opening extending longitudinally through the bosh-plate, substantially as set forth.

In testimony whereof I have hereunto set my hand.

EDWARD KERR.

Witnesses:

F. E. GAITHER,
DARWIN S. WOLCOTT.