

No. 847,547.

PATENTED MAR. 19, 1907.

C. F. BROWN.
MERCURY CONDENSER.
APPLICATION FILED APR. 10, 1906.

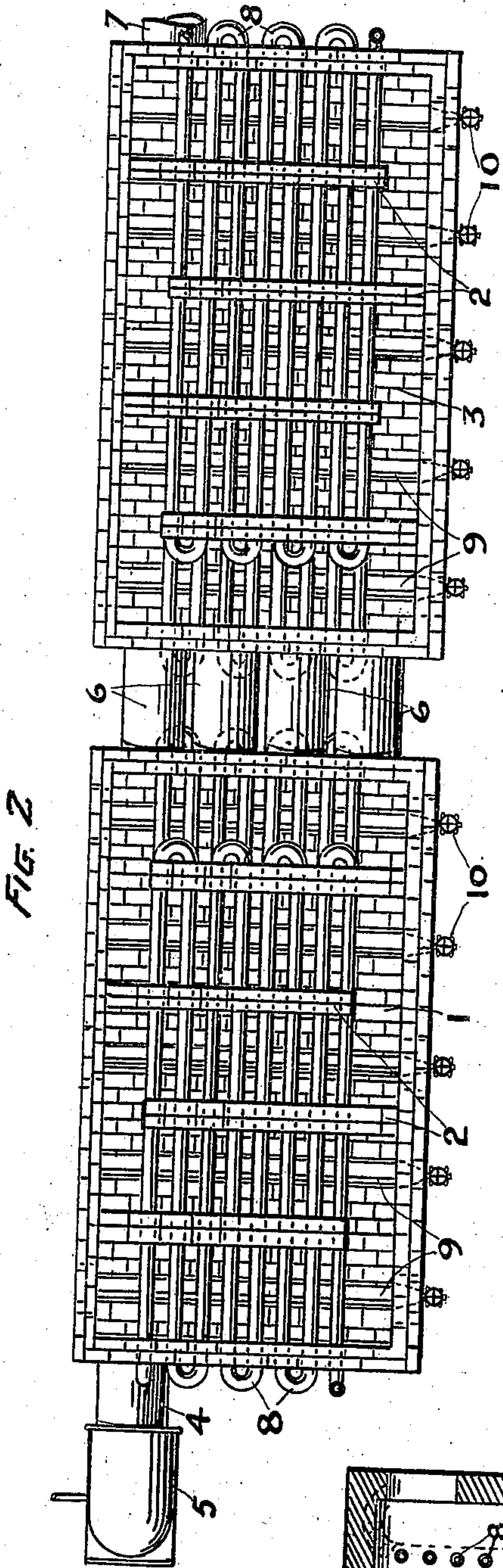


FIG. 2

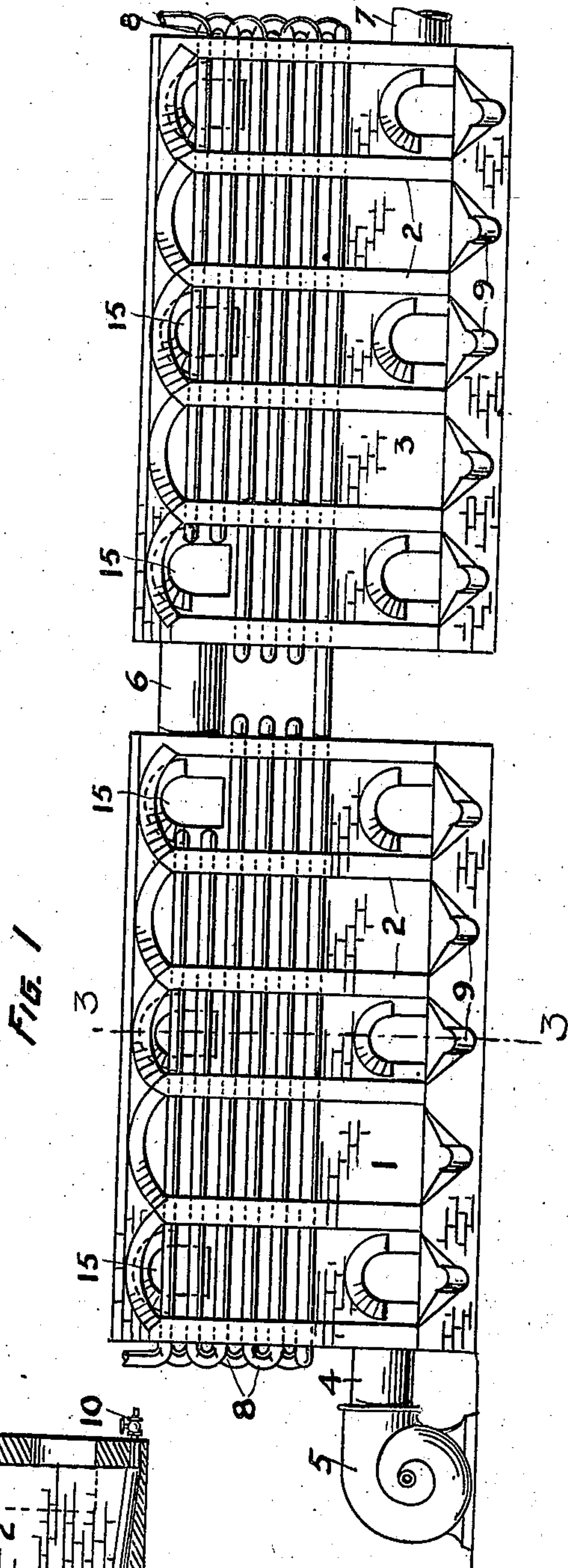


FIG. 1

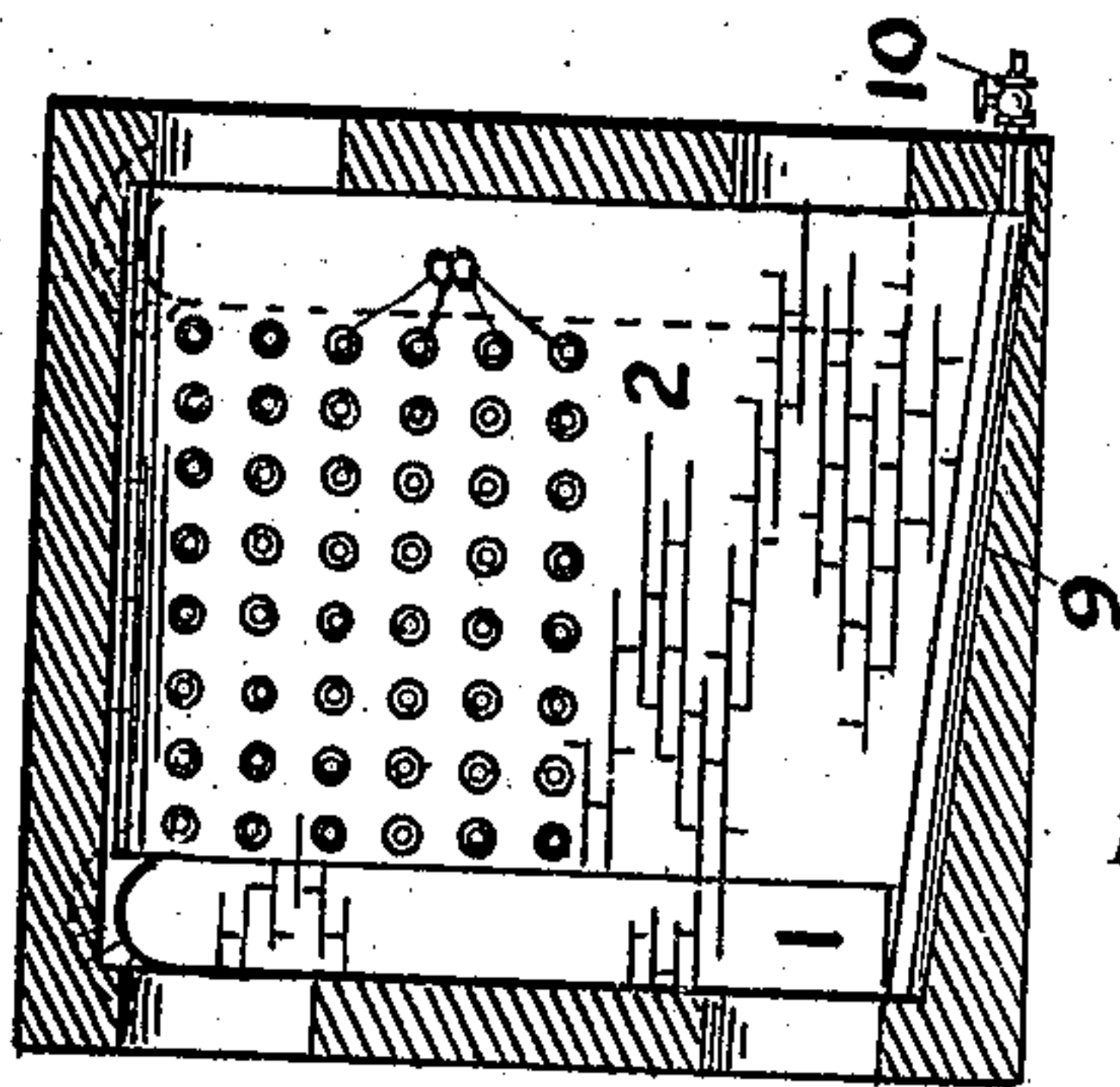


FIG. 3

WITNESSES:

Bessie Gofinkes
Leon Boillon

INVENTOR.

C. F. Brown

BY

J. M. Wright
ATTORNEY.

UNITED STATES PATENT OFFICE.

CONRAD F. BROWN, OF SAN JOSE, CALIFORNIA.

MERCURY-CONDENSER.

No. 847,547.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed April 10, 1906. Serial No. 310,894.

To all whom it may concern:

Be it known that I, CONRAD F. BROWN, a citizen of the United States, residing at San Jose, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Mercury-Condensers, of which the following is a specification.

This invention relates to improvements in mercury-condensers.

The present practice in condensing the vapors of mercury after roasting the ores is to provide large galleries or series of chambers through which the mercury-vapor is drawn by means of a pump. These chambers are formed of great extent, and the cost of them is proportionately great; and it is the object of the present invention to provide a construction by which this initial cost and the space required by the works can be greatly reduced.

A further object of the construction is to render it no longer necessary for the workmen to enter the chambers to remove the mercury; and a further object is to effect the condensation more perfectly and to avoid the loss of mercury-vapor, which escapes into the air with the constructions at present in use.

In the accompanying drawing, Figure 1 is a broken longitudinal vertical section of the apparatus. Fig. 2 is a broken horizontal section. Fig. 3 is a cross-section on the line 3 3 of Fig. 1.

Referring to the drawing, 1 represents a chamber, preferably of rectangular form, having extending transversely across the interior thereof a series of partitions 2, each extending from the bottom to the top of the chamber, alternately from opposite sides of the chamber, but not extending completely to the other side. A second such chamber 3 is provided, and, if necessary, more than two or a series of such chambers may be used, the number depending upon the number of furnaces which are connected to the condensing apparatus. The mercury-vapor from the furnace or furnaces enters the first of these chambers by a conduit 4, being positively forced thereinto by means of a pump 5, interposed between the condensing-chamber and furnace or furnaces. Said vapor passes into the first compartment formed between the end wall of the condenser and the first partition and then passes by a tortuous path through the other compartments in succession. It then passes, by means of conduits 6, of which there may be any suitable

number, into the second condensing-chamber of the series, and so on, so that by the time the gases have passed through all the chambers the mercury-vapors have been condensed, and nothing but waste gases from the furnaces emerge by the terminal conduit 7. Moreover, the large number of conduits in passing from one chamber to the other assists in cooling the vapors. To effect this rapid condensation, there is provided in each chamber a coil of water-pipe 8, said coil being arranged in successive layers, each layer containing a number of turns of the coil. These pipes pass through the partitions 2, which form the compartments of the condensers, and also through the ends of the chamber, except that the upper two layers of the coil do not extend to the end of the chamber with which the conduits 6 connect, the object of this being to provide sufficient space for the free passage of the gases into and out of said conduits 6. By the provision of the cold-water pipes in coils presenting a large extent of coiled surface in contact with the mercury-vapors condensation of said vapors takes place very rapidly, especially as the vapors are compelled to flow in a tortuous path across or transversely to the direction of the pipes, thus impinging against the cooled surface of said pipes many times in succession in their passage from one end to the other of the chamber. To obtain the best results with the least expenditure of piping, these pipes are placed at the top of the chamber to which the hottest vapors ascend. The mercury thus condensed from said vapors drops to the bottom of the several compartments and thence into troughs 9, sloping down from one side of the chamber to the other, from which the mercury can be drawn off at intervals through suitably-controlled outlets 10.

Heretofore in mercury-condensers as used in the art, so far as my knowledge extends, the interior of said condensers has been made of ordinary brickwork. This brick, being porous, absorbs the mercury-vapors in a very remarkable degree, said vapors condensing in the form of small particles of liquid mercury in the interior of the brick, the first condensation then leaving the brick in substantially its original porous condition for the absorption of more vapors, so that eventually the brickwork is saturated to a great depth with liquid mercury, involving a great loss, which can only be recovered by tearing down the apparatus and redistilling the mercury,

the expense of which is so great that it has been preferred to lose the mercury in this manner. In my invention the interior of the condenser and all parts which come in contact with the mercury-vapors are formed with a glazed surface, preventing the penetration by the mercury-vapors, and thus saving the above loss.

In the condensation of the mercury minute particles adhere to all of the interior surfaces, and in order to recover these particles there are provided at the top of the sides of the chamber, on each side of each partition, apertures 15, closed when the condenser is in use, which apertures can be opened and a hose inserted therethrough and directed to all the parts of the interior to wash down the liquid mercury adhering to said surfaces. This may be done at comparatively long intervals. It is for this purpose that the condensing-pipes are located at some distance from the sides of the condenser, so that the water can be given an opportunity to thoroughly wash the interior.

The advantage of making the condensing apparatus in a series of separate chambers connected by conduits is that it facilitates access to the chambers in case of the necessity for repairs.

I claim—

1. In an apparatus of the character described, the combination of a chamber having transverse walls extending alternately from opposite sides only partly across the chamber to form a tortuous path, and a tortuous coil of water-pipe in the upper portion of the chamber extending transversely through said walls in succession, substantially as described.

2. In an apparatus of the character described, the combination of a chamber having transverse walls extending alternately

from opposite sides only partly across the chamber to form a tortuous path, and a tortuous coil of water-pipe in successive layers extending transversely through said walls in succession in the upper portion of the chamber, substantially as described.

3. In an apparatus of the character described, a series of chambers each having transverse walls extending alternately from opposite sides only partly across the chamber to form a tortuous path, and a tortuous coil of water-pipe, in the upper portion of the chamber extending transversely through said walls in succession, and connections for the gases between adjacent chambers of the series, substantially as described.

4. In an apparatus of the character described, the combination of a chamber having transverse wall extending alternately from opposite sides only partly across the chamber to form a tortuous path, the bottoms of the compartments formed by the partition having transverse sloping troughs, and a coil of water-pipe in the upper portion of the chamber, substantially as described.

5. In an apparatus of the character described, the combination of a chamber having transverse walls extending alternately from opposite sides only partly across the chamber to form a tortuous path, the side walls of the chambers having windows with movable doors for admitting hose to the interior of the chambers, and a coil of water-pipe in the upper portion of the chamber, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CONRAD F. BROWN.

Witnesses:

H. J. DOUGHERTY,
T. R. DOUGHERTY.