No. 874,038. PATENTED DEC. 17, 1907.

W. SHARP.

KNOBBLING FURNACE.

APPLICATION FILED FEB. 3, 1906.

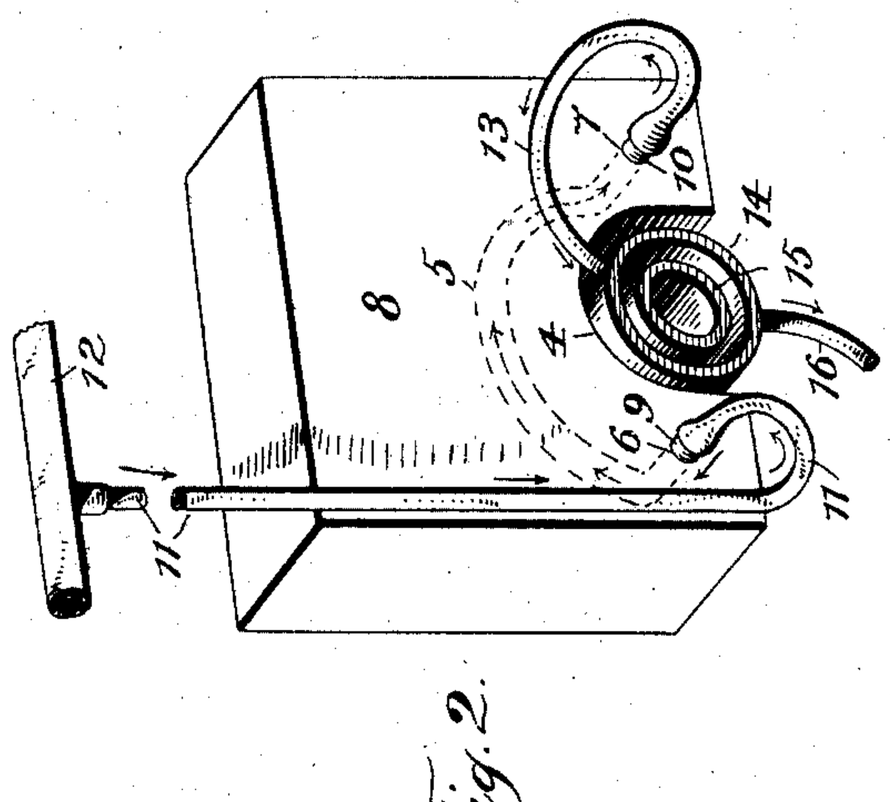

Fig. 2.

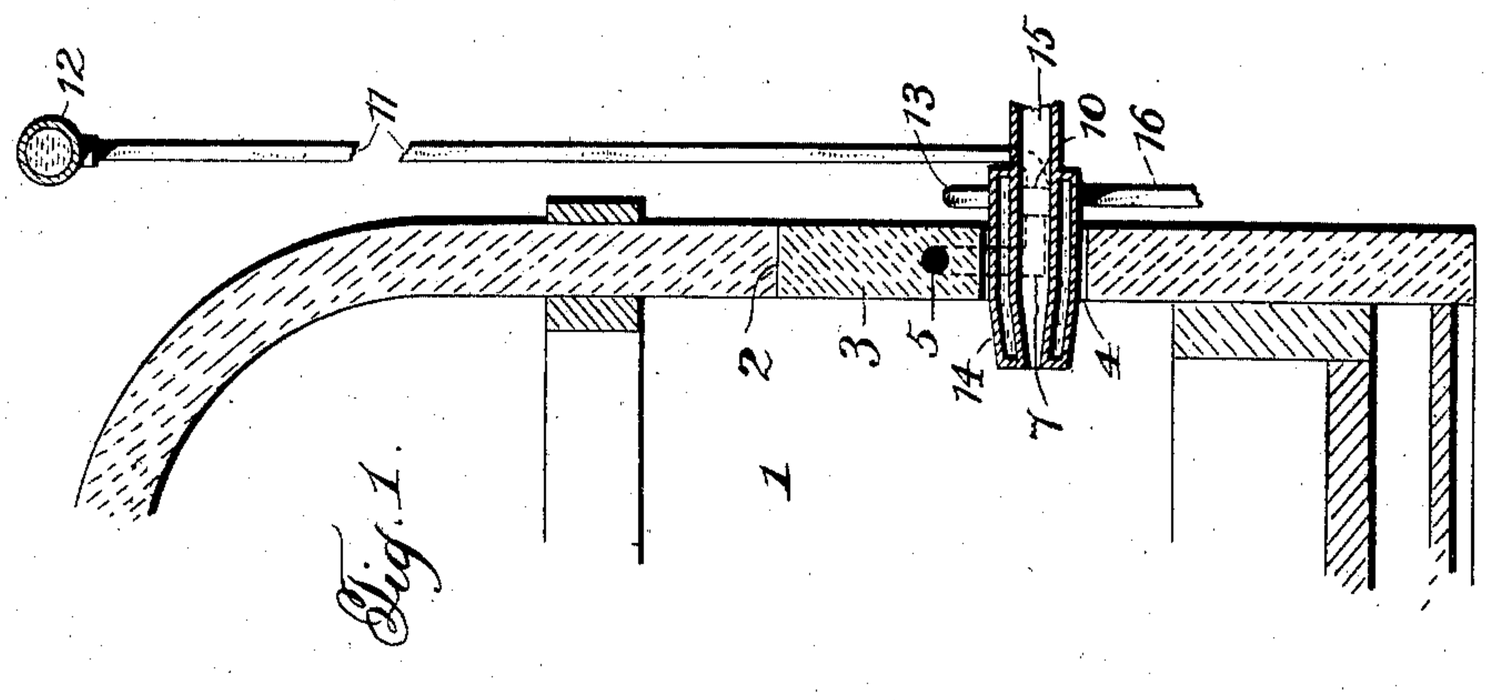

Fig. 1.

Witnesses:
Jas. E. Hutchinson
Geo. D. Riley.

Inventor:
William Sharp,
By Henry D. Phillips Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM SHARP, OF McKEESPORT, PENNSYLVANIA.

KNOBBLING-FURNACE.

No. 874,038. Specification of Letters Patent. Patented Dec. 17, 1907.

Application filed February 3, 1906. Serial No. 299,310.

To all whom it may concern:

Be it known that I, WILLIAM SHARP, a citizen of the United States, residing at 408 Sixth street, McKeesport, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Knobbling-Furnaces, of which the following is a specification.

This invention relates to knobbling or bloomery furnaces. Furnaces of this type are provided with what are known in the art as merit plates arranged in the side walls thereof and provided with openings for the twyers. Owing to the position of these plates in the furnace walls and their close proximity to the twyers, they are subjected to an intense heat and the character of plate commonly employed soon crumbles and becomes unfit for use.

The main object of the present invention is to so improve the construction of such plates that they can better withstand the injurious effect of the intense heat to which they are subjected and thus prolong their time of usefulness.

To this end a convenient embodiment of the invention comprises the construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims hereto appended.

In the drawings, Figure 1 is a view of a knobbling furnace equipped with my improved form of merit plate. Fig. 2 is a detail view of the merit plate.

Referring to the drawings in detail, wherein like reference characters designate corresponding parts throughout the several views, 1 designates a knobbling furnace provided with the usual openings 2 in the side walls thereof for the reception of the merit plates.

3 designates my improved form of merit plate, which is substantially flat and rectangular in shape and is provided with the usual semi-circular twyer opening 4 at the base thereof. The plate 3, (which is adapted to be removably fitted in one of the openings 2 and which when so placed forms a part of the furnace wall) is formed with an interior channel 5 curved to conform to the twyer opening around which it extends to opposite sides thereof and communicates with openings 6 and 7 leading to the front face 8 of said plate. The channel 5 is provided in order that water may be caused to circulate through the plate 3, whereby the same will be cooled and the injurious action of the heat on said plate will be retarded, thus prolonging its life. With this idea in view, nipples 9 and 10 are fitted in the openings 6 and 7 and to the nipple 9 is connected one end of a flexible conduit 11, the other end of which is connected with a water main 12, the water passing from the main through the conduit 11 and thence through the channel 5 to the opening 7 from which it is conveyed by a flexible conduit 13 to any suitable waste but the water after passing through the channel 5 is preferably further employed as a cooling medium by connecting the conduit 13 with the water jacket 14 of the adjacent twyer 15, from which it is run off through a conduit 16. This latter arrangement is particularly to be desired as the amount of pipe and the number of connections are lessened, thus decreasing the liability of leakage, the amount of time necessary to connect up the water system, and obviating the disadvantages to the workman arising from employing a multiplicity of pipes around the merit plate. A further advantage is attained by employing the flexible conduits as the merit plates may be removed from the openings in the furnace wall and the twyers adjusted in or removed from the twyer openings in order to clear the same of adhering cinders or clinkers without making a break in the system, so that the water supply does not have to be cut off.

It will be understood that various changes in the construction and arrangement of parts hereinbefore described may be made without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim is:—

In combination with a knobbling furnace, having an opening in one of its walls for the reception of a merit plate, a merit plate formed complementary to said opening for insertion thereinto and withdrawal therefrom, said merit plate having a conduit formed in the interior thereof adjacent to a twyer opening therethrough, said conduit having forwardly directed extensions opening to the exterior of the merit plate, a double walled twyer having a chamber between the walls thereof closed at its ends and having an inlet and an outlet opening, said twyer being formed for insertion into and withdrawal from the twyer opening in the merit plate, a fixed water supply pipe, an elongated flexible pipe connection connected to and forming a passage from said fixed supply

pipe to one of the forwardly opening extensions of the conduit in the interior of the merit plate, an elongated flexible pipe connection connected to and forming a passage between the other of said forwardly directed extensions of said conduit and the inlet opening of the chamber surrounding the twyer, and a discharge pipe leading from the outlet opening of said chamber, said flexible pipe connections being of a length greater than the normal distance between the parts with which they communicate, whereby the merit plate and twyer may be adjusted relative to the fixed supply pipe, and the twyer and merit plate adjusted relative to each other while maintaining a continuous communicating passage from said supply pipe through the merit plate and twyer to the discharge pipe leading from the twyer.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM SHARP.

Witnesses:

WILLIAM A. NELSON,

ROBT. G. KINNEY.