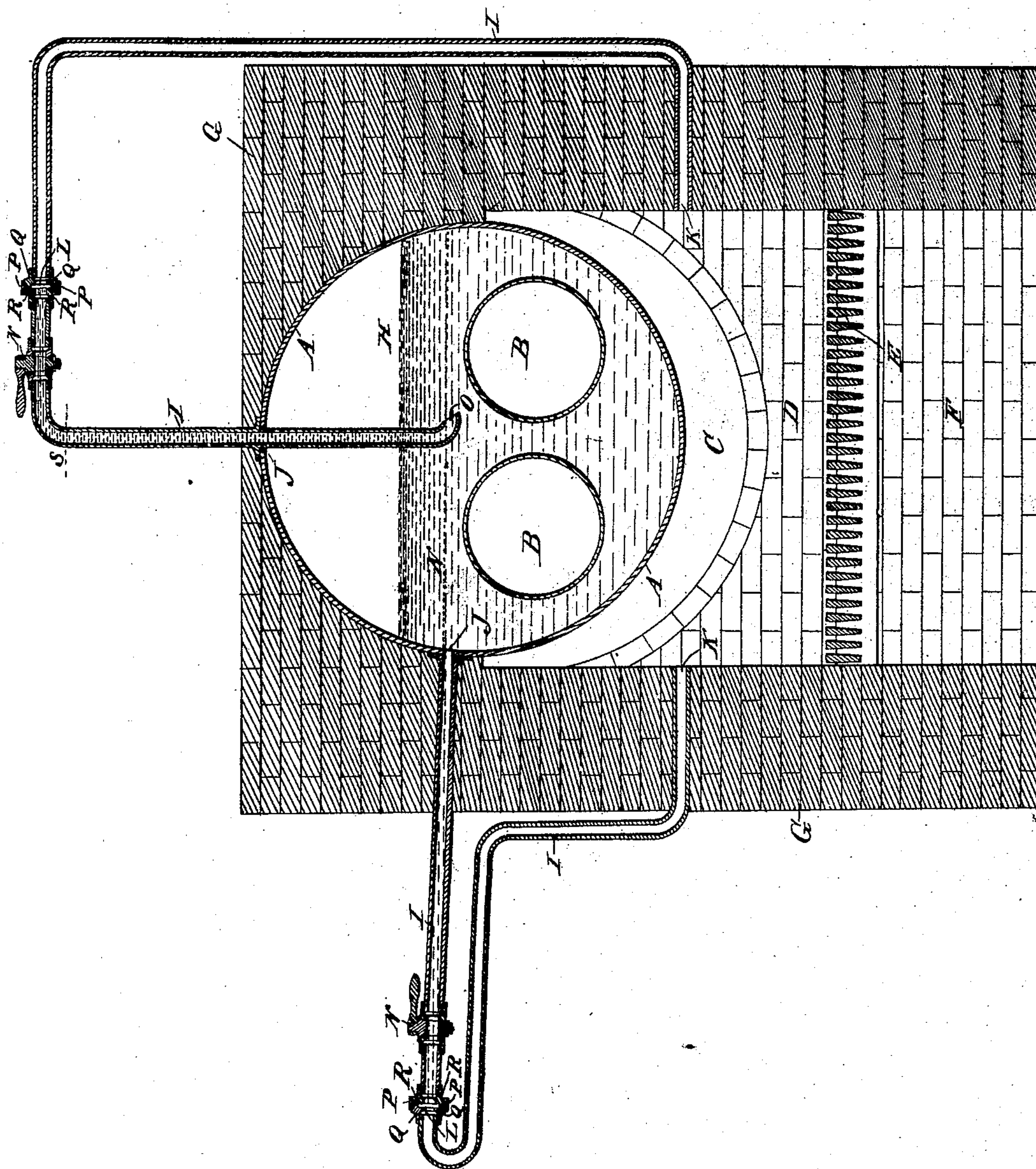


W. BURNETT & J. ABSTERDAM.

Fusible Disk for Steam Boilers.

No. 10,573.

Patented Feb. 28, 1854.



UNITED STATES PATENT OFFICE.

JOHN ABSTERDAM AND WILLIAM BURNETT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN THE USE OF FUSIBLE DISKS IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **10,573**, dated February 28, 1854.

To all whom it may concern:

Be it known that we, JOHN ABSTERDAM and WILLIAM BURNETT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Mode of Preventing the Overheating and Bursting of Steam-Boilers in Certain Cases; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing, and to letters of reference marked thereon.

The nature of our invention consists in inserting in a steam-boiler at a point below the proper water-line and above all the heating-surfaces a pipe which at a suitable distance from said boiler is stopped up by a plate of fusible metal or other fusible compound, it being so arranged that by freely exposing said pipe to the atmosphere the water contained therein shall have its temperature so far reduced by radiation as to preserve in a solid state a fusible metal that will be easily melted by the temperature of the steam in the boiler when the water-level shall have fallen so low as to admit said steam into said pipe. When the plate of fusible metal shall have been thus melted, the steam issuing from said pipe may be conducted into the furnace, as represented in the drawing, for the purpose of extinguishing the fire therein, or may be used to give notice by alarm that the water has become too low in the boiler.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation, reference being had to the accompanying drawing, which is a transverse sectional elevation of a common cylindrical steam-boiler with two internal flues and set in brick-work in the usual manner.

The drawing also represents two applications of our invention to said boiler, one being applied to the top and the other to the side thereof.

A A represents the boiler; B B, two internal return-flues, and C flue under boiler leading from the furnace D.

E E represents grate-bars; F, ash-pit, and G G brick-work setting as commonly employed.

H represents the proper water-line.

The pipe I I, which has one of its ends inserted in the boiler at J and the other open-

ing into the furnace at K, is stopped up by a plate or plug L, of fusible alloy, said alloy being so compounded as to melt with the temperature of steam of atmospheric pressure and consequently with steam of all higher pressures.

The operation of our invention is as follows: When the water in the boiler is at the proper height, as shown at H, the pressure of the steam on the surface thereof will force the water up into the pipe I I as far as the plate of fusible metal L, which will prevent its further egression, the distance of said plate of fusible metal from said boiler being such that by a free exposition of the intermediate pipe to the atmosphere the water contained therein shall have its temperature so far reduced by radiation as to preserve said plate of fusible metal from being melted; but when the water-level in the boiler shall fall below the mouth of the pipe or dotted line shown at N the comparatively cool water in the pipe will run from it into the boiler, and the steam above the surface of the water will enter said pipe and will melt said plate of fusible metal, allowing the steam to pass through the pipe issuing from the end K into the furnace and extinguishing the fire therein.

The cock M is used to stop the communication with the boiler, so that the plug or plate may be renewed, and also in case of the said plug or plate having been fused to stop the flow of steam into the furnace when the fire therein shall have been sufficiently extinguished.

Our invention as applied to the side of a boiler has that part of the pipe containing the plate of fusible metal a little elevated above the point of insertion in the boiler for the purpose of facilitating the running of the water out of the pipe when the water-level shall have become too low in the boiler, and in its application to the top of a boiler the pipe must be extended down within said boiler, as shown in the drawing, so that the mouth of said pipe will have the same position with regard to the water and fire lines as if it had been inserted in the side of the boiler without said extension, as described. The vertical pipe is bent, as shown at O, so as to effectually prevent steam from entering said pipe except when the water is too low in the boiler. The fusible plate or plug L may

