

(No Model.)

J. H. PHILLIPS.
WATER HEATING FIRE GRATE.

No. 528,388.

Patented Oct. 30, 1894.

Fig. 1.

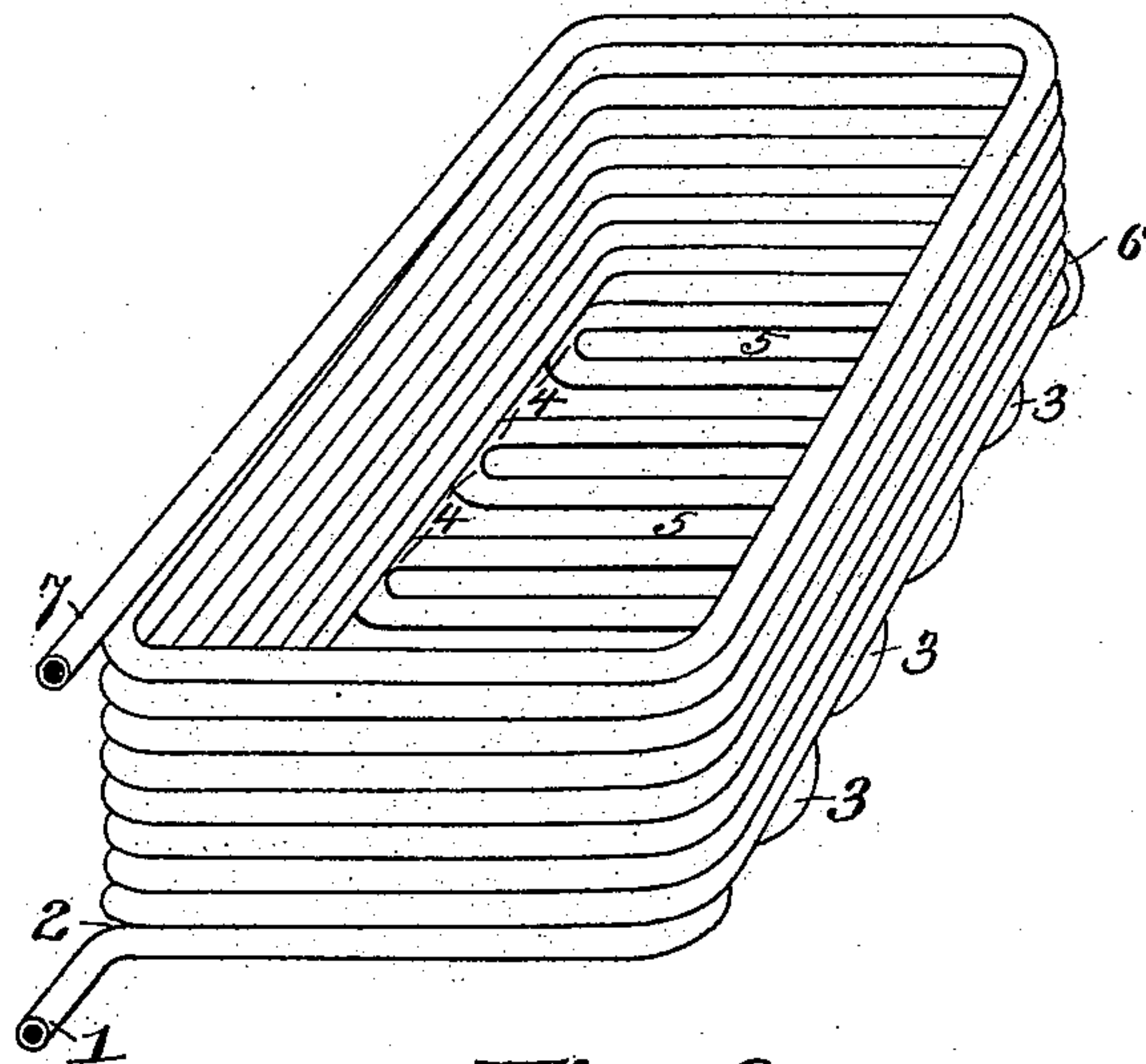


Fig. 2.

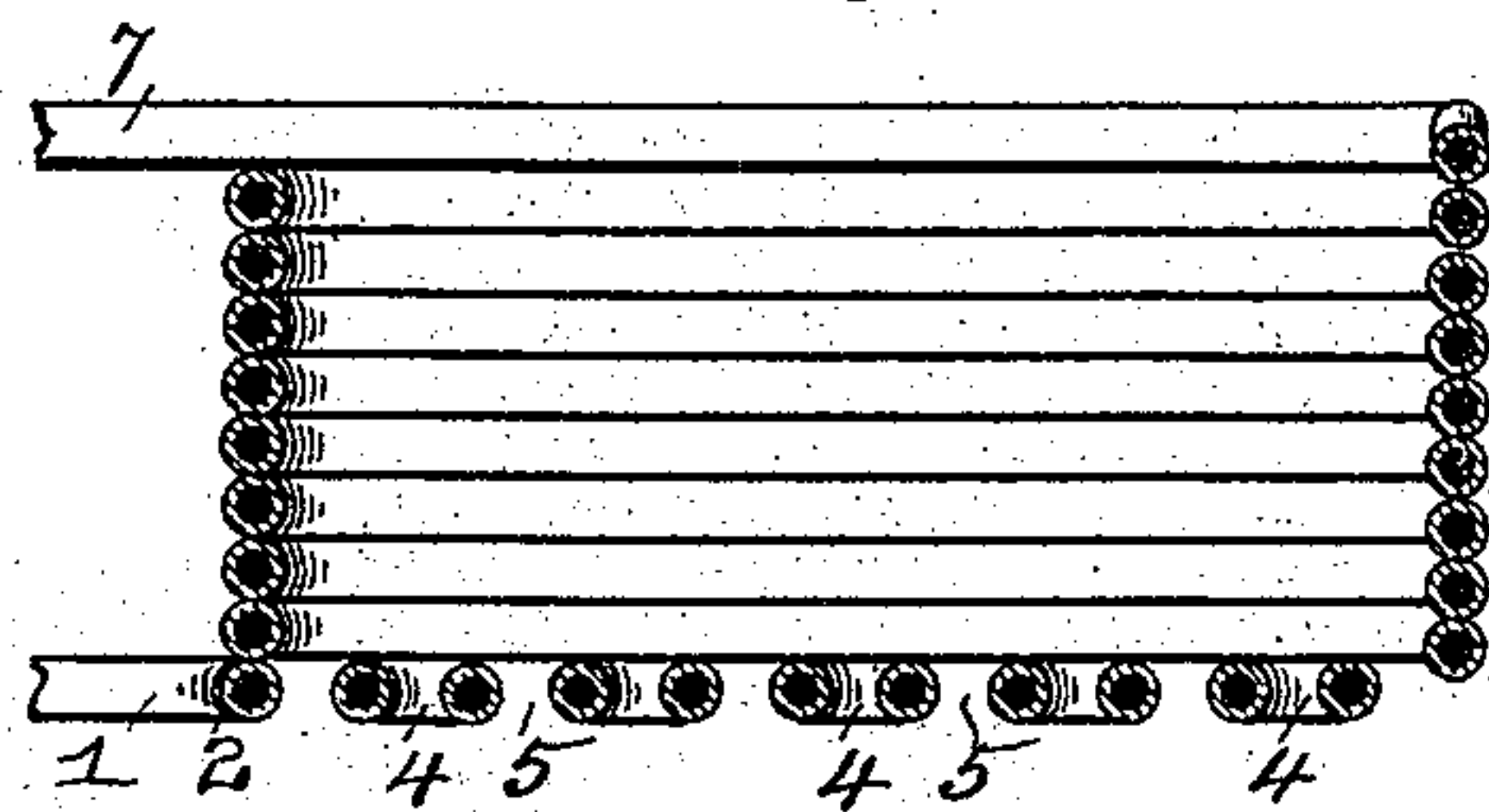
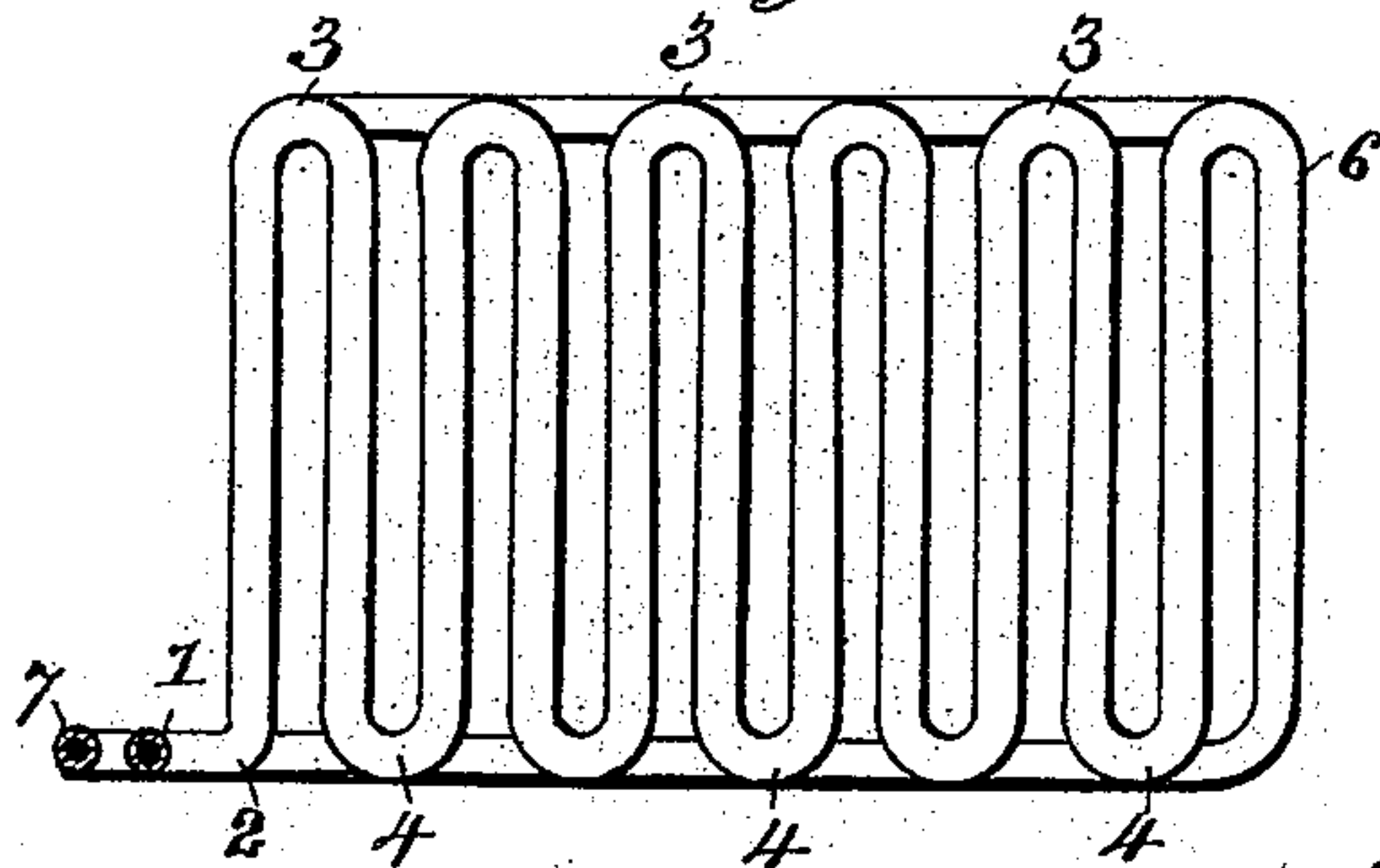


Fig. 3.



Witnesses:

Josh N. Blackwood
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UNITED STATES PATENT OFFICE.

JOHN H. PHILLIPS, OF POTTSVILLE, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO GEORGE H. GERBER, OF SAME PLACE.

WATER-HEATING FIRE-GRATE.

SPECIFICATION forming part of Letters Patent No. 528,388, dated October 30, 1894.

Application filed May 8, 1894. Serial No. 510,436. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. PHILLIPS, a citizen of the United States, residing at Pottsville, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Water-Heating Fire-Grates, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a water-heating fire-grate for use in stoves, ranges, &c.

One of the objects of my invention is the production of a hollow fire-grate constructed in such manner as to permit the circulation therein of water delivered by a supply pipe, whereby the heat in the grate is utilized to heat water for domestic and heating purposes.

Another object of my invention is to so construct the grate as to avoid the necessity of lining the fire-chamber of the stove or range with fire-brick.

The invention will first be described in connection with the accompanying drawings, and then pointed out in the claim.

Figure 1 of the drawings is a perspective view of a grate constructed according to my invention. Fig. 2 is a longitudinal section of same. Fig. 3 is a plan view of same.

I construct my grate entirely of metal pipe of any desired area in cross-section, preferably using but a single length. First the bottom or base is formed by bending the pipe at an approximate right angle a short distance from one end, as at 2, the projecting portion allowing of the attachment thereto of a feed-pipe leading from the water-supply and serving as the inlet. After thus bending the pipe I carry it forward the distance of the required width of grate, and make a return bend, as at 3, carrying the pipe rearward parallel with and on the same plane as the other straight portion, but separated slightly therefrom, and then form another return bend at 4, and again carry the pipe forward in the same manner as before mentioned, continuing these opera-

tions until the grate-bottom is of the desired length, and leaving continuous open spaces 5 between the parallel portions of the pipe to afford draft to the fire, and also to admit of thorough raking of the fire in the grate. When the bottom has been thus formed I bend the pipe slightly upward above the plane of the base, as at 6, and coil it on top of the outer edges of the base to form the walls, these coils being laid one on top of another and close together until the grate is of sufficient height, when the end 7 of the pipe, which is the outlet, is made to project far enough to make connection with a pipe for delivering the heated water to the hot-water cylinder or to radiators.

It will be evident that my grate can be made of a number of pipes instead of a single one, as these can be united at the bends by ordinary return-bend couplings; but these must be of the same diameter as the pipes, in order that those pipes forming the walls may lie close together.

By making the walls of the grate close instead of open I not only get increased heating-surface, but I also render the use of fire-bricks in the stove or range unnecessary, as while water is circulating through the grate the stove cannot be warped or otherwise injured by the fire.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

An oblong water-heating fire-grate adapted for use in a stove or range, constructed wholly of metal pipe, said grate comprising a base having transverse parallel open spaces extending its full width, and close vertical walls formed by coiling the pipe in close order over the edges of the base.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. PHILLIPS.

Witnesses:

GEORGE H. GERBER,
AUGUST KNECHT.