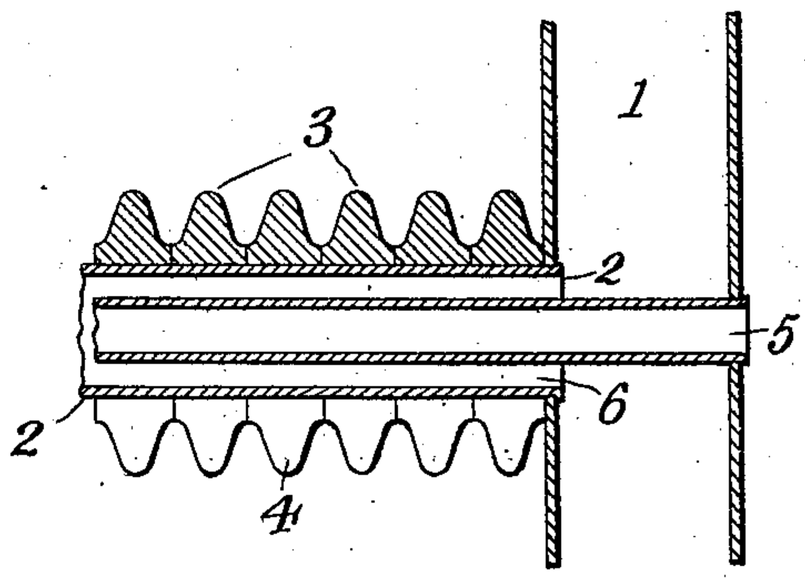
No. 744,323. PATENTED NOV. 17, 1903.

E. H. FOSTER.

TUBE FOR SUPERHEATERS.

APPLICATION FILED JUNE 25, 1903.

NO MODEL.



Witnesses:
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by Kerr, Page & Cooper, Atty's

No. 744,323. Patented November 17, 1903.

UNITED STATES PATENT OFFICE.

ERNEST H. FOSTER, OF NEW YORK, N. Y.

TUBE FOR SUPERHEATERS.

SPECIFICATION forming part of Letters Patent No. 744,323, dated November 17, 1903.

Application filed June 25, 1903. Serial No. 162,983. (No model.)

To all whom it may concern:

Be it known that I, ERNEST H. FOSTER, a citizen of the United States, residing at New York, county and State of New York, have invented certain new and useful Improvements in Tubes for Superheaters, of which the following is a specification, reference being had to the drawing accompanying and forming part of the same.

The invention which forms the subject of my present application relates to apparatus for heating or superheating steam or other gases or vapors, and pertains more particularly to the construction of the tubes through which the gases or vapors pass to be exposed to the heat. In this connection it is recognized that a superheater-tube should have strength, uniformity of metal, and smooth interior, the latter characteristic being desirable in order to reduce to a minimum the friction of the steam in passing therethrough. It is also desirable to expose as large a surface of metal to the heat as possible, for obvious reasons. To secure this advantage, it has been proposed to make the exterior of the tube corrugated. In this case the method usually employed for making such a pipe is by casting; but this is costly, and it is not practicable to make the pipe in the long lengths desired. To obviate this difficulty, I have devised my present invention, which possesses the combined advantages enumerated above.

To these ends it consists, broadly stated, of a tube having the desired strength surrounded by closely-fitting rings of cast or other metal.

It further consists in the novel features and combinations hereinafter described, and more particularly set forth in the claim.

Referring now to the drawing, which shows an embodiment of the invention in section, 1 is one of the headers to which the tubes are usually connected. The tube proper is indicated by 2 and is preferably made of iron or steel wrought or drawn into a pipe. It may be of any strength desired and secured to the headers in any convenient way. As shown, its interior is smooth, and therefore causes a minimum amount of friction with the passing vapor.

Surrounding the pipe and fitting the same snugly is a series of rings 3. These rings are preferably made of cast metal and may be split, as shown at 4. In order to secure a maximum amount of metal around the tube and to thoroughly protect the same, they should preferably be placed in contact with each other instead of spaced apart, and in such case they should be tapered in cross-section, as shown, to form the corrugations. It is obvious, of course, that the rings may be made in groups of several or any number, if desired, and they may be assembled on the foundation-tube before or after it is secured to one of the headers, whichever is most convenient under the circumstances. They may of course be easily removed when desired.

The rings may be described as "continuous," in the sense that each consists of a single part instead of a plurality of parts or sections. Splitting, when that construction is desired, does not affect the continuity of the ring in the sense in which the term is here used, as will be readily understood.

In the particular type of superheater illustrated a pipe or core 5 extends through the tube 2 from header to header and is open at the ends for the passage of the heated gases and products of combustion to which the apparatus is exposed. The steam is thus confined to the annular space 6 and is exposed to the heat on both sides.

It will now be seen that a tube constructed in accordance with my invention will possess the combined advantages enumerated above. The necessary strength is obtained by the foundation-tube 2, while the desired resistance to the deteriorating effect of heat and corrosion by the heated gases, rigidity of form, large heat-absorbing surface, and maximum amount of metal for storage of heat are secured by the inexpensive rings in contact with and surrounding the external surface of the body.

The invention is of course capable of va-

rious embodiments, and I therefore do not consider myself limited to the form herein specifically shown and described; but

What I claim is—

A tube for steam-superheaters, comprising a foundation-tube and a series of independent, continuous, cast-metal tapered rings, in contact with each other, and fitting snugly on the foundation-tube, substantially as described and for the purposes set forth.

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Witnesses:
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