

No. 619,109.

Patented Feb. 7, 1899.

H. L. WILSON.
BOILER BRACE.

(Application filed June 30, 1898.)

(No Model.)

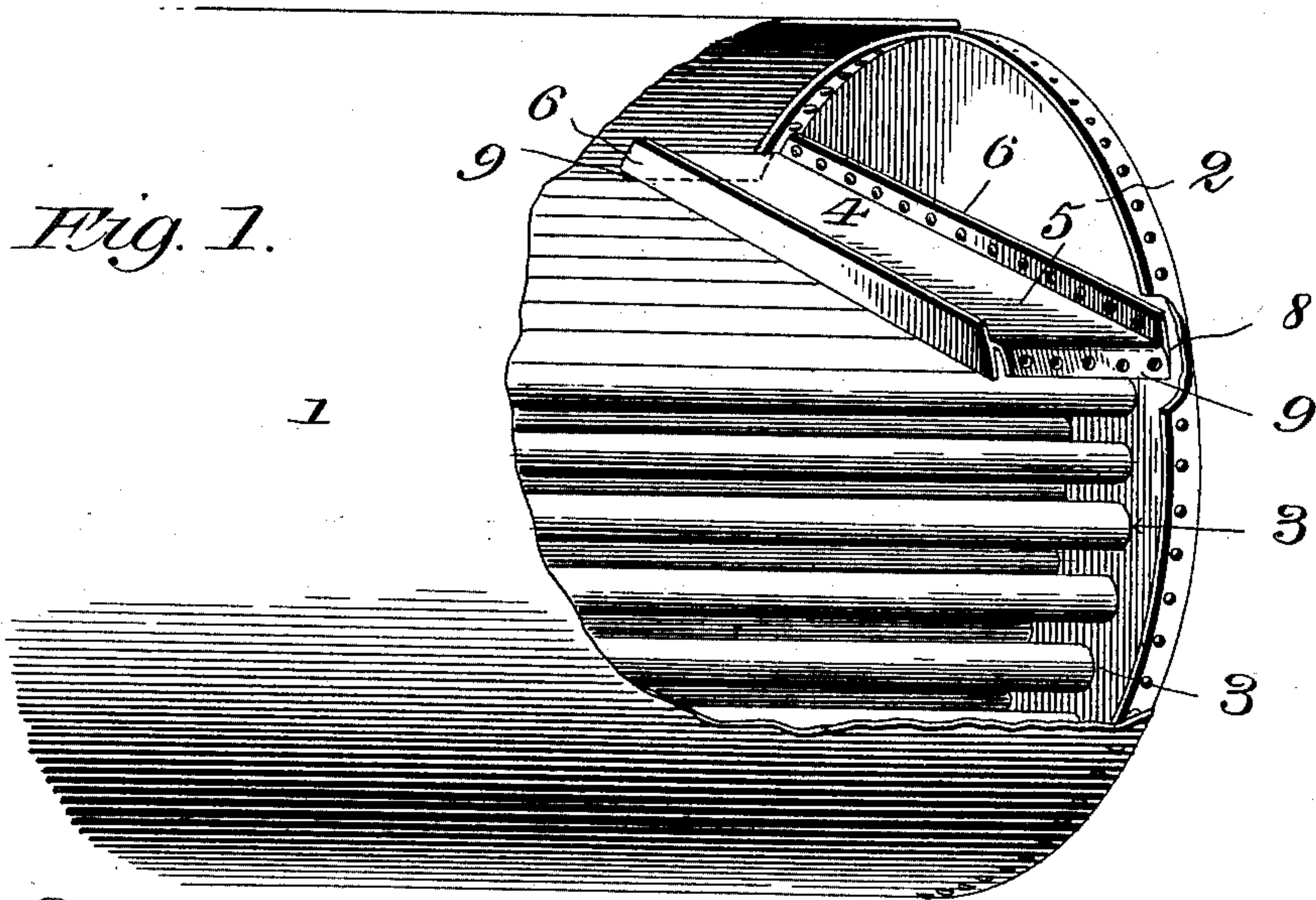


Fig. 2.

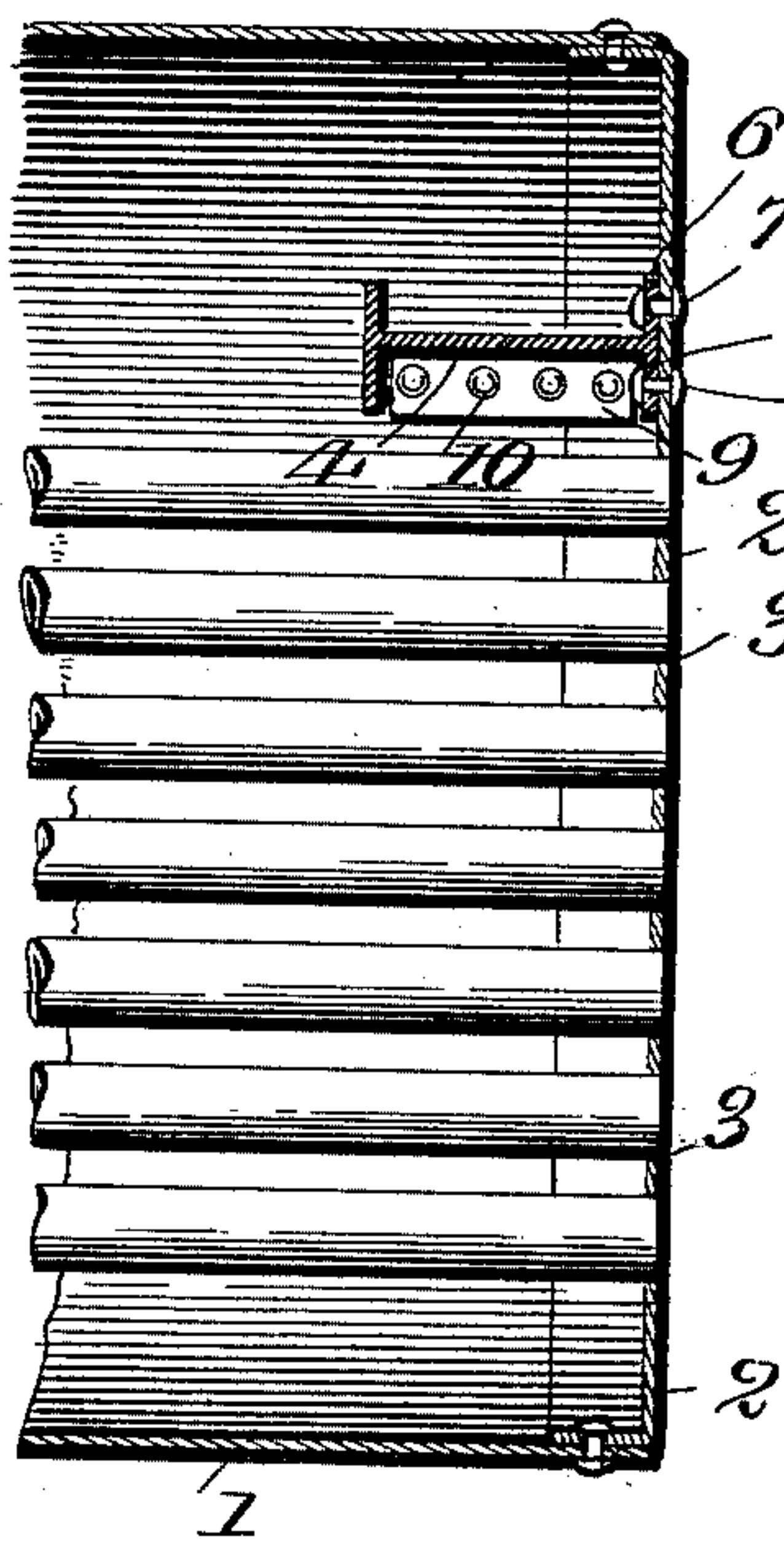


Fig. 3.

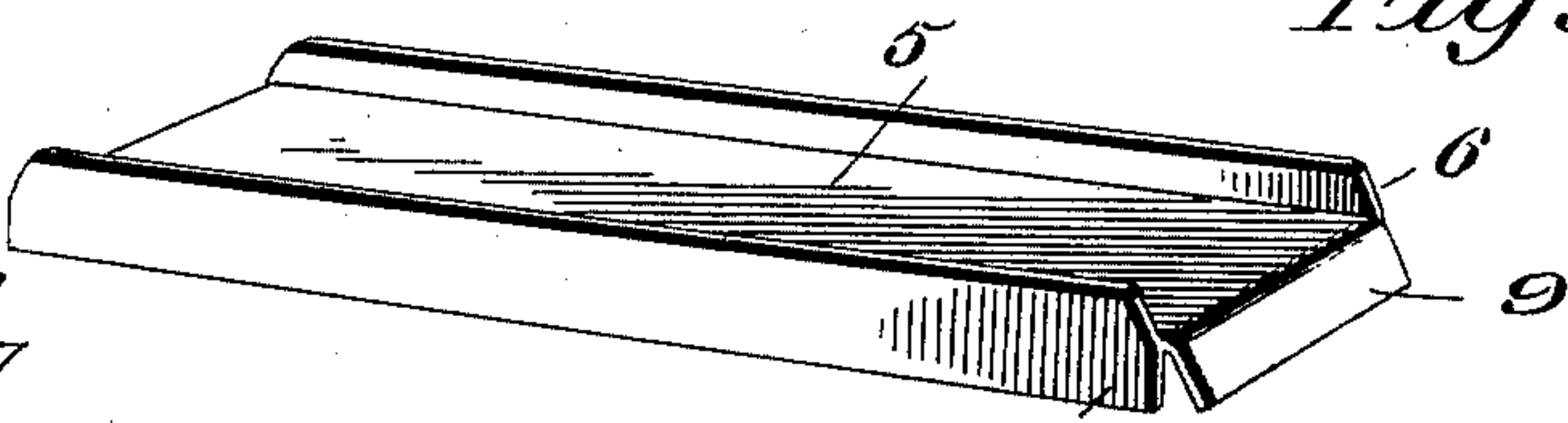


Fig. 4.

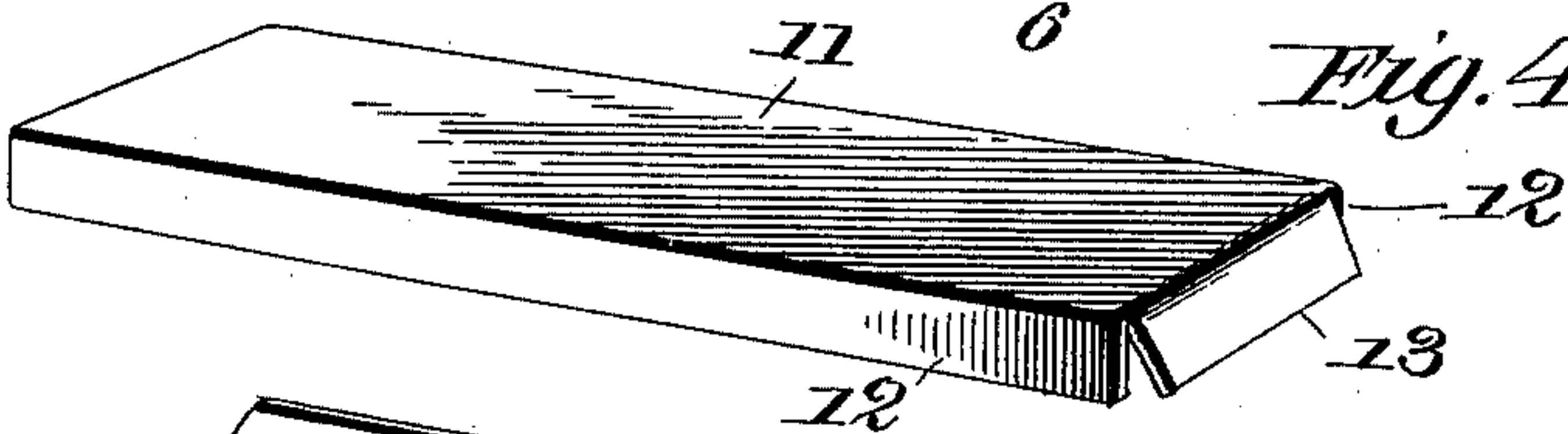


Fig. 5.

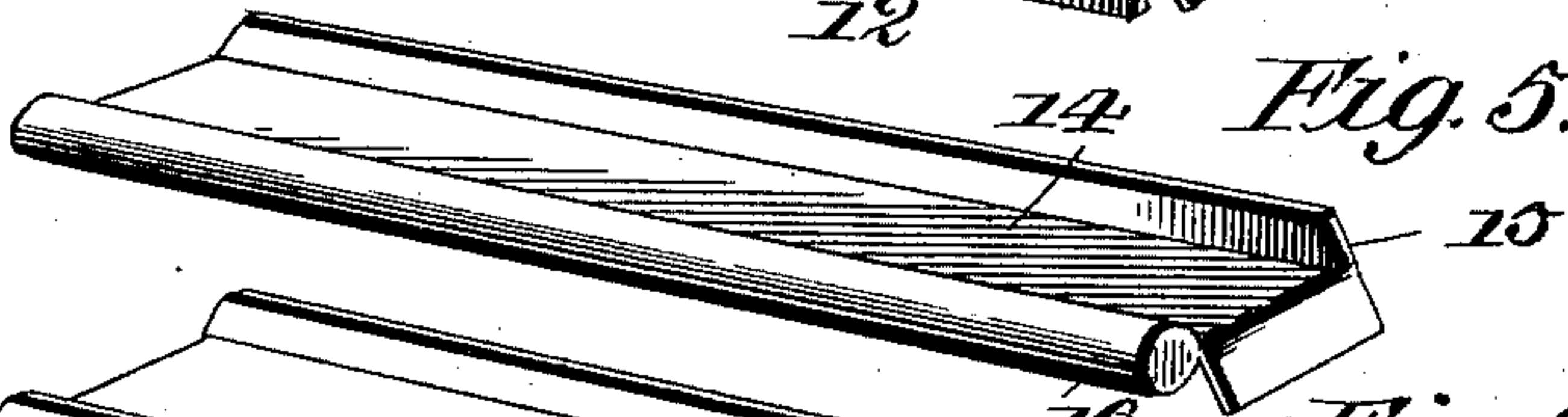
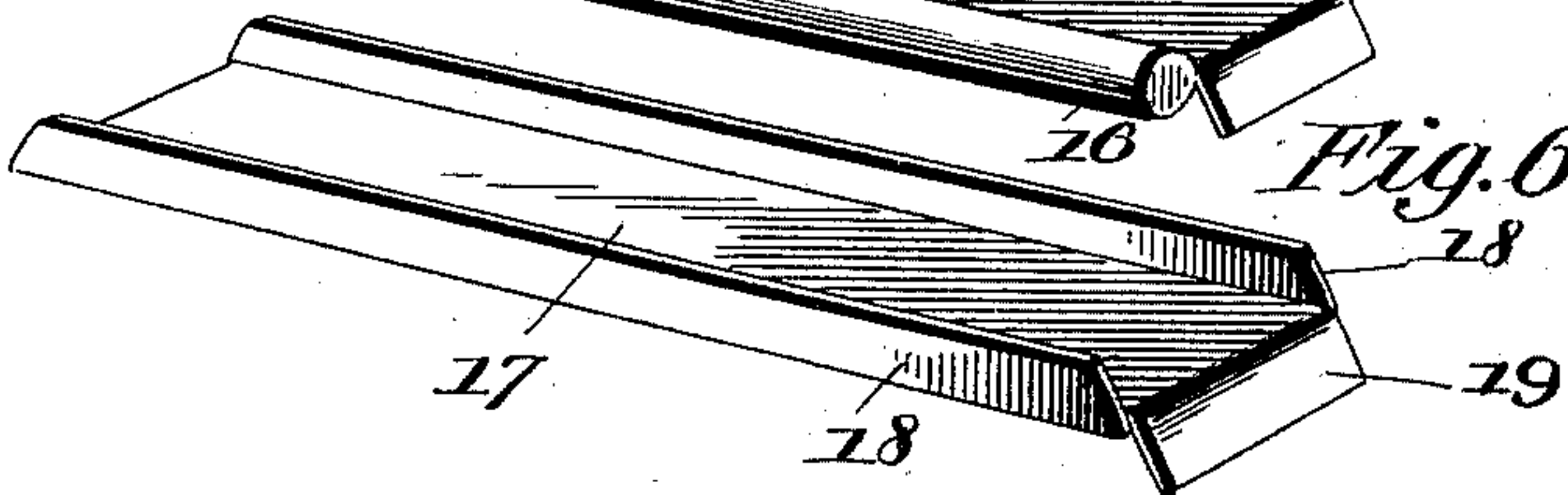


Fig. 6.



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

HARRY L. WILSON, OF ERIE, PENNSYLVANIA.

BOILER-BRACE.

SPECIFICATION forming part of Letters Patent No. 619,109, dated February 7, 1899.

Application filed June 30, 1898. Serial No. 684,864. (No model.)

To all whom it may concern:

Be it known that I, HARRY L. WILSON, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Boiler-Braces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to boiler-braces, and has for its object to provide improved means for bracing the shell and head of a boiler relatively to each other, whereby the boiler is rendered stronger and safer and the flues relieved of the major portion of their strain.

The improved brace contemplated in this invention is designed to take the place of the old-style crow-foot braces and through-and-through brace-rods and may be constructed either from an I-beam, channel-beam, deck-beam, angle-bar, or boiler-plate.

The particular advantage of the invention resides in the fact that the improved brace or bridge is constructed in one piece and attached to both the head and shell of the boiler, so that the rivets along the head will be subjected only to tensile strain and those along the shell to a shearing strain.

The bridge or brace may of course be varied in depth and thickness, and consequently strength, according to the size of the boiler, and one or more bridges may be employed, as may be deemed necessary or expedient.

The invention consists in a boiler-brace embodying certain novel features and details of construction, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims.

In the drawings, Figure 1 is an interior perspective view of a portion of a boiler, looking toward one head thereof. Fig. 2 is a vertical transverse section through one end of the boiler, taken adjacent to the head and also extending through the brace, showing the manner of riveting the brace to the head and shell. Fig. 3 is a detail perspective view of a brace formed of an I-beam. Fig. 4 is a detail perspective view of a brace formed of channel-iron. Fig. 5 is a similar view showing the brace formed from a deck-beam. Fig.

6 is a similar view showing the brace formed of boiler-iron.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the drawings, 1 designates the portion of a boiler-shell adjacent to one end of the boiler, and 2 the head thereof, provided with the usual apertures 3 to receive the boiler-tubes. The head and shell are connected in the ordinary manner, and for the purpose of strengthening the boiler I provide a brace, (indicated at 4.) In Figs. 1, 2, and 3 this brace is shown as formed out of a section of I-beam, consisting of a web 5 and oppositely-projecting end flanges 6. The brace 4 is preferably located just above the boiler-tubes and extends horizontally across the inside of the boiler, with one of the flanges 6 bearing directly against the inner surface of the head through the entire length of the brace. Rivets 7 are passed through the oppositely-projecting portions of the flange and also through the head 2, thus securing the brace and head together at numerous intervals through the entire extent of their contact. The ends of the beam or brace are reversely chamfered, as indicated at 8, to conform to the inner contour of the shell, and the web 5 is extended at both ends to form flaps or ears 9, which are preferably bent downwardly in order to facilitate the application of rivets 10 thereto, the said rivets being passed through the flaps or ears forming the extensions of the web 5 and also through the boiler-shell.

From the foregoing description it will be seen that the boiler-head is secured firmly and rigidly to the brace throughout the entire length of the latter and that the brace is in turn secured at both ends to the boiler-shell. This provides an exceedingly strong and safe method of bracing a boiler, and, if deemed necessary, one or more additional braces may be employed or the free space above the brace can be dished outwardly, so as to throw it under tensile strain.

In Fig. 4 the brace is shown as formed from a section of channel-iron comprising a web 11 and flanges 12, one of which is riveted to the boiler-head. The web 11 is provided with extensions 13, similar to those on the I-beam

and which are intended to be secured to the boiler-shell in a similar manner.

5 In Fig. 5 the brace is illustrated as formed from a section of deck-beam comprising a web 14, a double flange 15, and a head 16. In this case also the double flange 15 is riveted to the boiler-head, while the ends of the web 14 are extended, bent at an angle, and bolted to the boiler-shell.

10 In Fig. 6 the brace is shown as formed from a piece of boiler-iron or sheet metal, (indicated at 17.) The longitudinal edges of the boiler-plate are bent at right angles to form flanges 18, one of which is riveted throughout its entire length to the boiler-head. The ends of
15 the boiler-plate are extended to form flanges 19, which are in turn riveted to the boiler-shell.

From the foregoing description it will be
20 seen that the brace or bridge is formed in one piece and attached to both the head and shell. The rivets across the head will be subjected only to tensile strain and those passing through the shell to a shearing strain.

25 The bridge or brace may of course be varied in depth and thickness, and consequently strength, according to the size of the boiler, and additional braces or bridges may be employed, if desired.

The improved brace is stronger and safer 30 than those in ordinary use and will relieve the boiler-flues of much of the strain to which they are now subjected.

Having thus described the invention, what is claimed as new, and desired to be secured 35 by Letters Patent, is—

1. A boiler-brace comprising one or more longitudinal flanges for attachment to the boiler-head, and end flanges for attachment to the boiler-shell, substantially as described. 40

2. The combination with the head and shell of a boiler, of a brace extending across the boiler and provided with a longitudinal flange which is secured along the boiler-head and with end flanges which are secured to the 45 boiler-shell, substantially as described.

3. A boiler-brace designed to extend across within a boiler and provided with a longitudinal flange for attachment to the head of a boiler and with angularly-disposed end flanges 50 or extensions for attachment to the boiler-shell, substantially as described.

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

HARRY L. WILSON.

Witnesses:

T. NOURSE ECHOLS,
WM. H. SMITH.