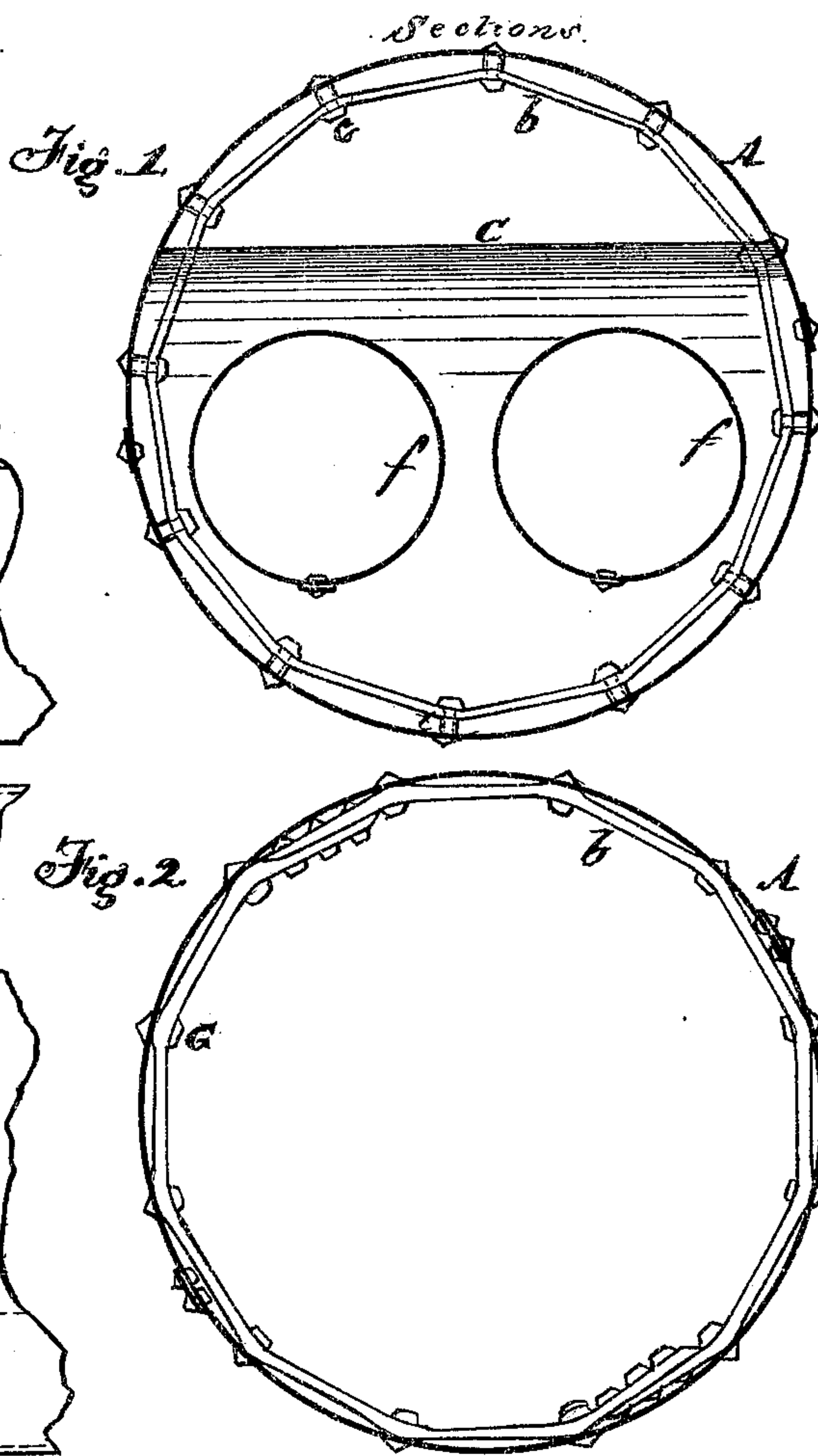
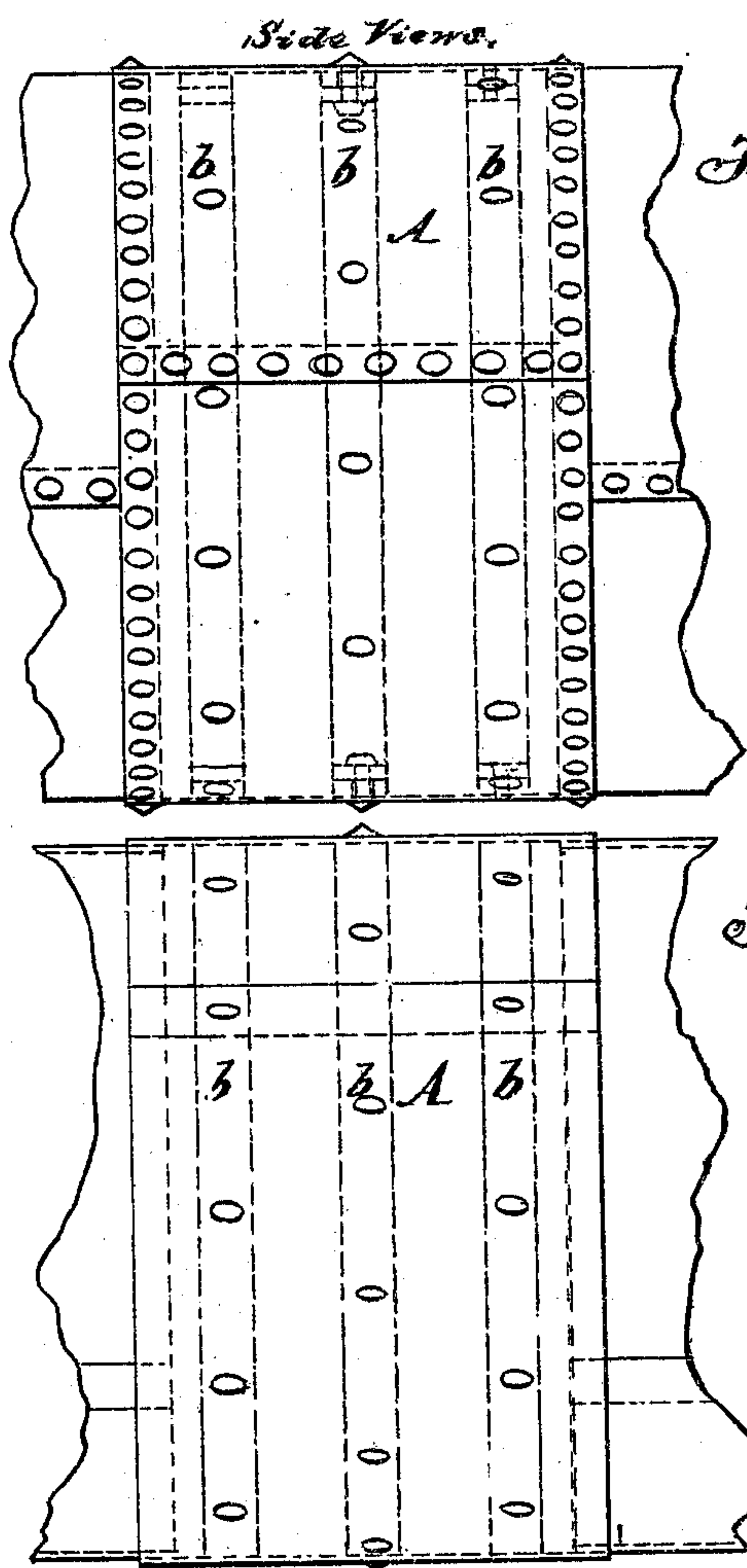


JOHN HEBDEN.

Improvement in Strengthening Steam-Boilers.

No. 126,545.

Patented May 7, 1872.



Witnesses

Wm. J. Ewing.
John Winstanley



Inventor
John Hedden

UNITED STATES PATENT OFFICE.

JOHN HEBDEN, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN STRENGTHENING STEAM-BOILERS.

Specification forming part of Letters Patent No. 126,545, dated May 7, 1872.

Specification describing certain Improvements in Steam-Boilers, invented by JOHN HEBDEN, of Louisville, county of Jefferson, and State of Kentucky.

My invention relates to strengthening the cylindric shells of steam-boilers by riveting upon the insides thereof transverse bars of metal at suitable intervals along their entire length, and bending the strengthening-bars at the points of riveting only, so that such bars shall be straight from rivet to rivet; and my invention relates further to incasing each rivet with a thimble, which shall hold the angles of such bar at such distance from the inside of the shell as that neither sediment or incrustations of any sort will fill up the space between them, as the result of such filling up would be the overheating of the portions of the boiler adjacent to the rivets.

A boiler constructed according to this my invention, of given weight, form, and dimensions, will prove to be much stronger, safer, and cheaper than one of the same weight, form, and dimensions made without my improvements.

In the accompanying drawing, Figure 1 represents on the left a side view of a portion of a boiler, and on the right a cross-section of the same, the cylindric shell of which is to be used as a heating-surface, as in steamboats, and to drive stationary engines. Fig. 2 represents on the left a side view of a section, and on the right a cross-sectional view of a boiler, the cylindric shell of which is not to be used as a heating-surface, the strengthening-bars being on the inside.

In Fig. 1, A is the cylindric shell; *b*, the

strengthening-bar; C, the water-line; *ff*, the flues; *t*, the thimble; and G, the rivets.

In the boiler shown in Fig. 2 the thimbles are dispensed with, because the shell thereof is not to be used as a heating-surface; and, therefore, the danger of overheating of the parts adjacent to the rivets does not exist.

The bars *b b*, being wholly immersed in hot water, will become a few degrees hotter than the shell, which is in contact with the hot water on one side (the inside) only; and, of course, will be expanded by the heat a little more than the shell. Now, the making of the bars straight from rivet to rivet makes them shorter to meet that inequality of expansion, and, being shorter, they are made of less metal, and are, therefore, cheaper in construction than they would be if made in a true circle.

These bars, in either kind of boiler, may be made in one, two, or more pieces, as may be most expedient.

Claims.

What I claim as my invention is—

1. The steam-boiler A, having the bars *b* bent into the polygonal form and riveted, as shown in Figs. 1 and 2, constructed substantially as and for the purpose described.

2. The thimble *t*, in combination with the shell A and bar *b*, constructed and arranged substantially as shown and described, and for the purpose set forth.

JOHN HEBDEN.

Witnesses:

WM. T. EWING,
JOHN WINSTANDLEY.