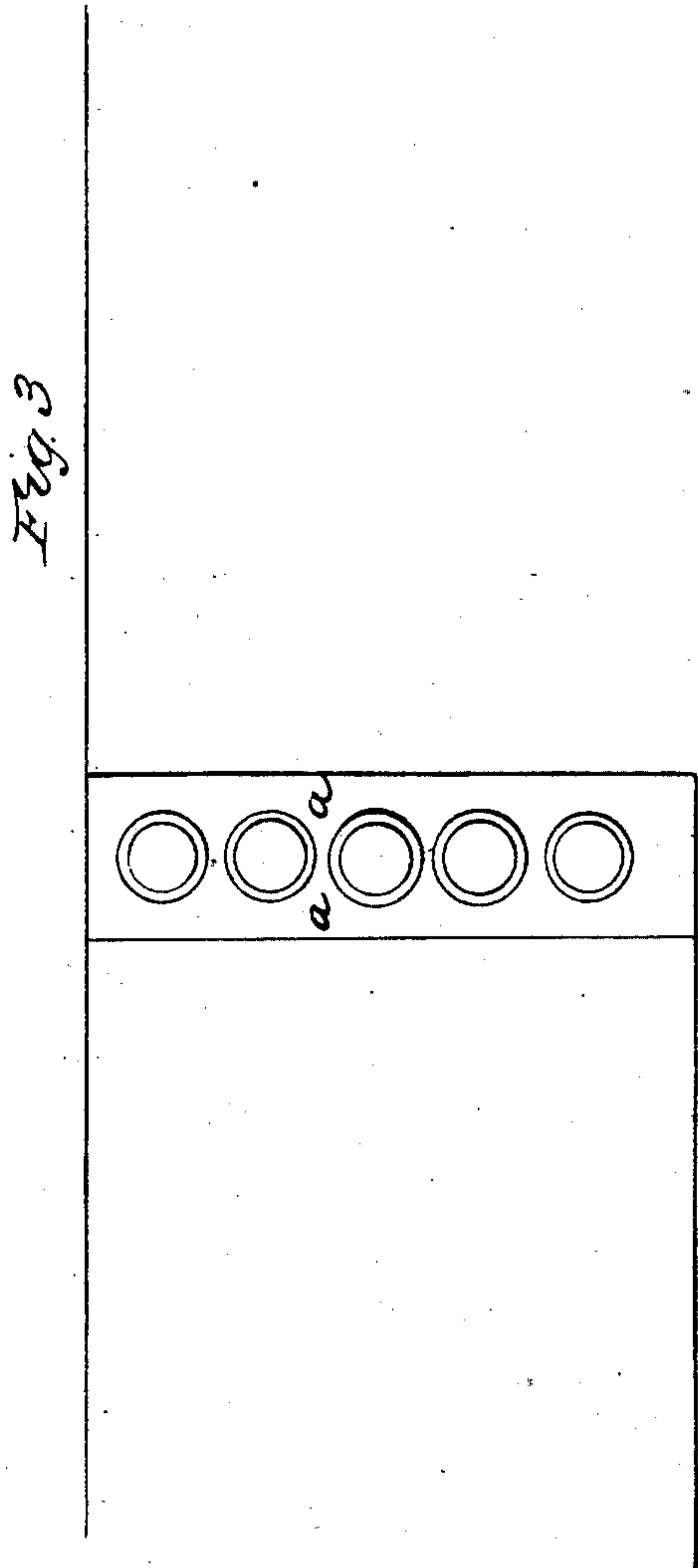
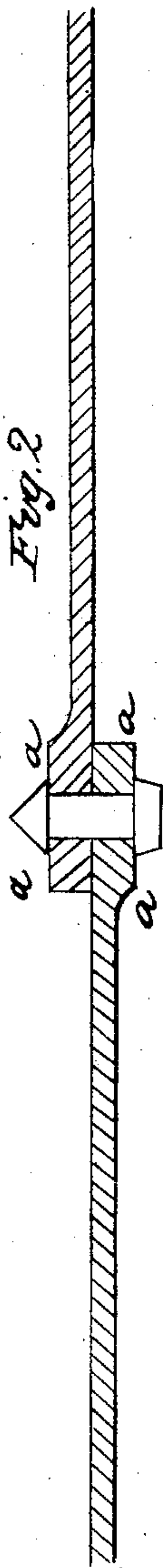
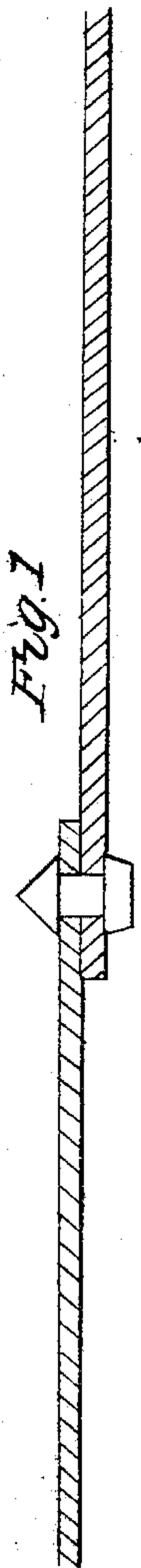


J. B. HENRY.  
Riveting Boiler Plates.

No. 26,846.

Patented Jan'y 17, 1860.



Witnesses  
*Joseph H. Hove*  
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# UNITED STATES PATENT OFFICE.

JAMES BUCHANAN HENRY, OF NEW YORK, N. Y.

## METHOD OF RIVETING BOILER-PLATES.

Specification of Letters Patent No. 26,846, dated January 17, 1860.

*To all whom it may concern:*

Be it known that I, JAMES BUCHANAN HENRY, of the city, county, and State of New York, have invented a new and useful  
5 Improvement in Steam-Boilers and other Structures and Apparatus Composed of Metal Plates United by Riveting; and I do hereby declare that the following is a full, clear, and exact description of the  
10 same, reference being had to the accompanying drawings and forming part of this specification, in which—

Figure 1, is a sectional view of a riveted joint as usually constructed in steam boilers.  
15 Fig. 2, is a similar view of a joint constructed according to my invention. Fig. 3, is a face view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

20 Actual experiments with boilers having riveted joints of the usual kind, that is to say, with the marginal portions of the plates which contain the rivet-holes, of the same thickness as the rest of the plates, that if  
25 the strength of the plates, is assumed to be 100, the strength of the joints, if secured by a single row of rivets, is about 56, and if secured by a double row, about 70. Now as the strength of a boiler is to be measured by  
30 the strength of its weakest part, it is evident that a boiler with such joints can only bear with safety 56/100 or 70/100 of the pressure it could bear if the joints were of the full strength of the plates and hence that a large  
35 porportion of the metal now used in boilers is useless and that the same strength might be obtained with plates of very much less thickness, if the riveted portions could be made as strong as every other portion. By  
40 the use of so much thinner plates, a great saving in the cost of all boilers would be effected, but this advantage is of trifling importance compared with that which would result to steam navigation, from the im-  
45 mense saving in the weight of iron. The latter advantage would be very great in ocean navigation, as it would enable more coal or freight to be carried, but would be still greater in the navigation of shallow  
50 rivers where boats of the lightest draft are required. The saving of weight will also be of immense importance to rail-roads on account of the saving in wear and tear of the track, and in fact it will have more or  
55 less importance in all boilers of locomotive

or portable character, as the boilers of steam fire-engines, steam-plows and portable steam-engines; and in iron ships, gasometers, and other structures or apparatus formed of iron plates united by riveting, the advantages of  
60 thus reducing the thickness of the plates will be almost or quite as great as in steam-boilers.

The object of my invention is to make the joints of boilers and other structures or ap-  
65 paratus, composed of metal plates united by riveting, as strong as the rest of the plates and to this end my invention consists in the use of plates with marginal portions which are to form the laps of the joints and re-  
70 ceive the rivets of a sufficiently greater thickness than the rest of the plates to compensate for the weakening effect of the rivet holes when said plates are so lapped that the same rivet passes through both plates in forming  
75 a joint. This increase of thickness may be produced in the rolling of the plates, and should extend about two and a quarter inches from the edges, when the plates are to be united by a single row of rivets, or  
80 four inches when they are to be united in double rows. The sides of the plates which come together, should be flush as shown in Fig. 2, and the extra thickness on the opposite side, as by this distribution the nearest  
85 approach to an even surface of the exterior of the boiler, or other structure or apparatus will be preserved. I propose always to make the thicker marginal portions *a, a*, of the plates about double the thickness of the  
90 other portions so as to insure at least the same strength at the joints as in the other portions of the plate.

I am aware that boiler plates have had an increased thickness given to them at their  
95 edges as seen in the English patent of Wm. Fairbairn No. 9409, but in this construction the intervention of a third plate is necessarily used in joining them.

What I claim therefore as my invention 100 and desire to secure by Letters Patent, is—

The use of plates with an increased thickness imparted to their edges when said plates are so lapped that the same rivet passes through both plates, substantially as 105 described.

JAMES BUCHANAN HENRY.

Witnesses:

JOSEPH W. HOWE,  
JOHN RAYMOND.