

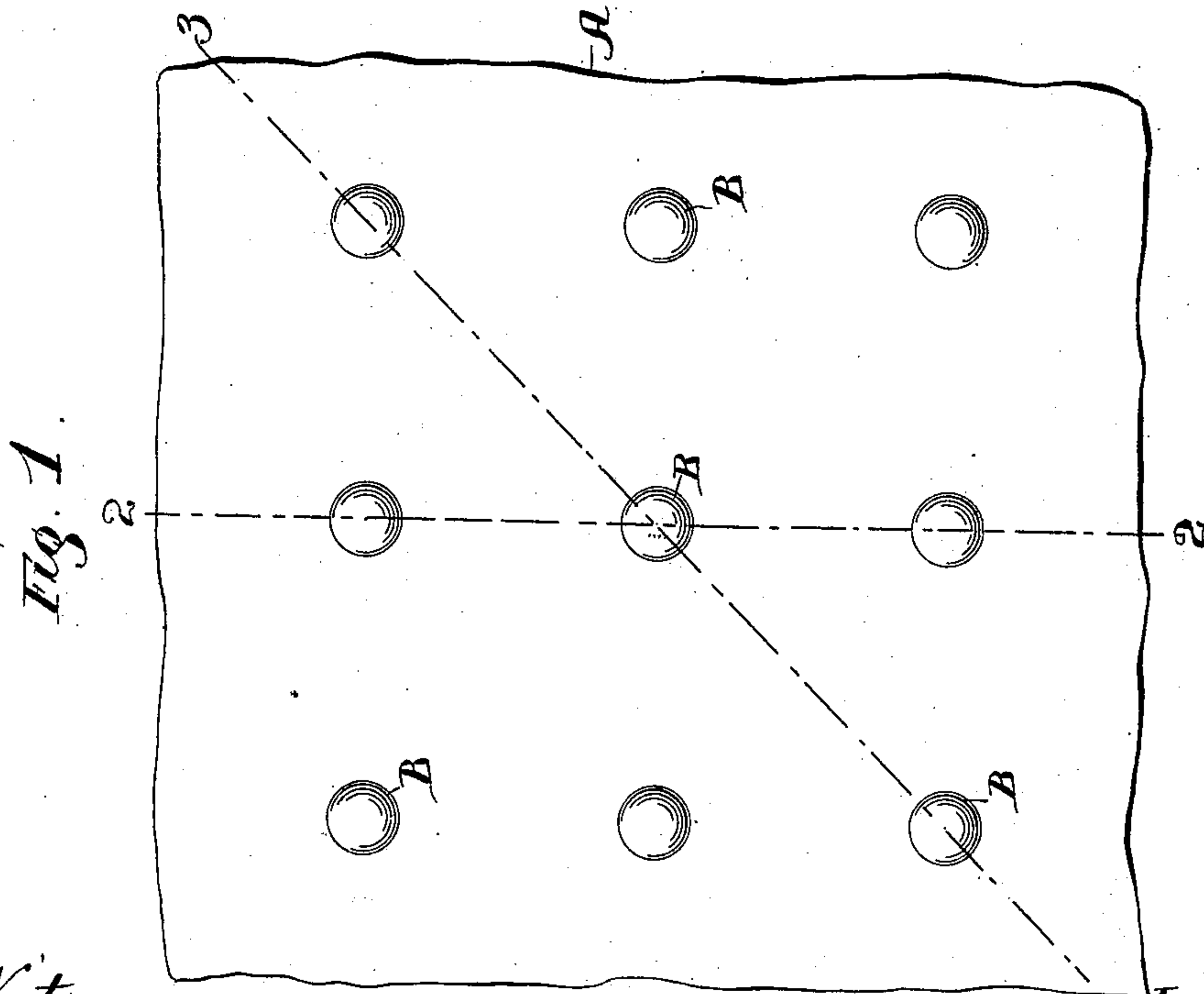
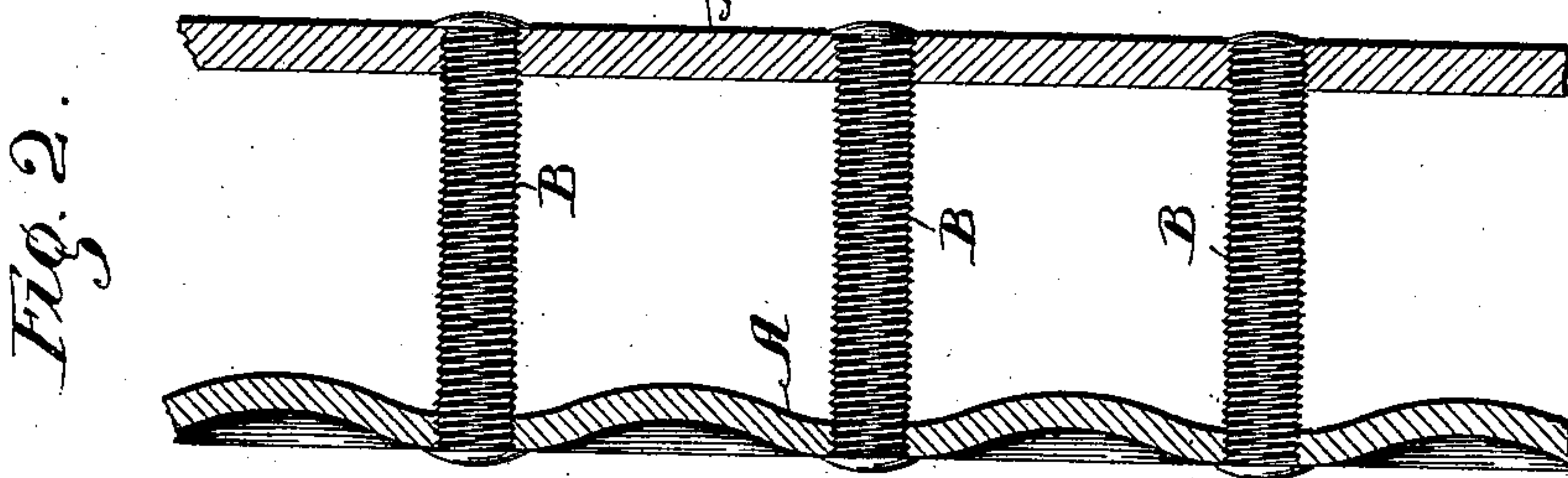
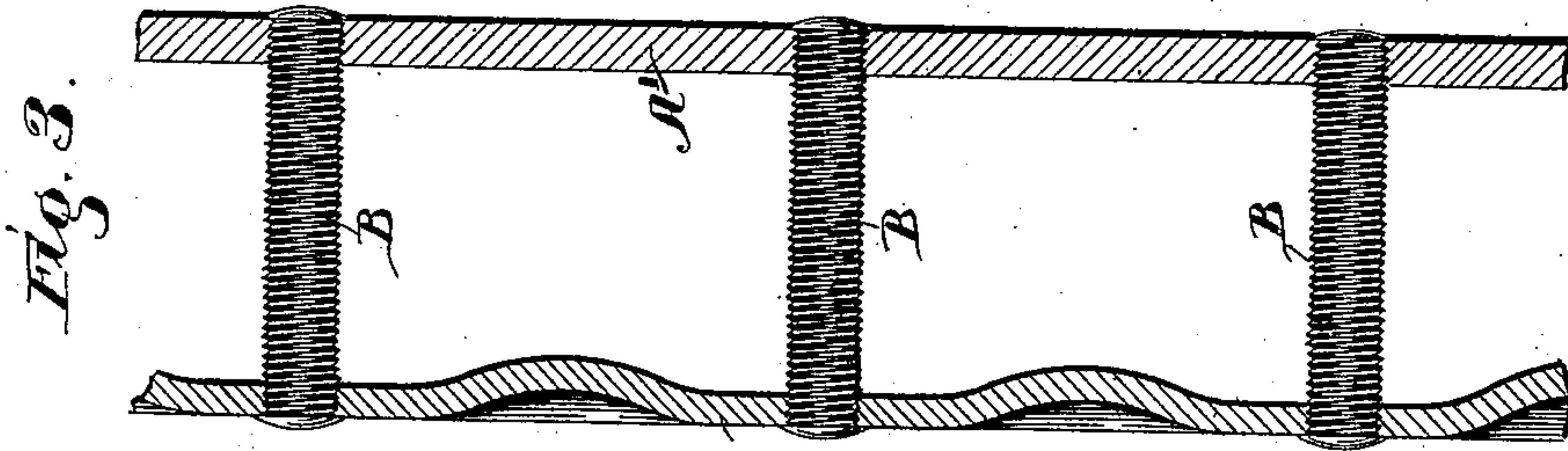
No. 620,168.

Patented Feb. 28, 1899.

R. J. O'NEILL.  
STEAM BOILER.

(Application filed Aug. 22, 1898.)

(No Model.)



Witnesses:

Chas. O. Sherway,  
A. H. Nelson

Inventor:

Richard J. O'Neill  
by Miles, Green & Pitner,  
Attys.

# UNITED STATES PATENT OFFICE.

RICHARD J. O'NEILL, OF BLOOMINGTON, ILLINOIS, ASSIGNOR OF ONE-HALF  
TO ANDREW MCCORMICK, OF SAME PLACE.

## STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 620,168, dated February 28, 1899.

Application filed August 22, 1898. Serial No. 689,176. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD J. O'NEILL, a citizen of the United States of America, residing at Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Steam-Boilers, of which the following is a specification.

My invention relates to certain improvements in steam-boilers designed to strengthen the same and make them more durable under the great strain to which they are exposed.

The invention is illustrated in the drawings by means of a face view of a portion of a boiler-casing shown in Figure 1, and by means of two sections, one of which, Fig. 2, is cut in line 2 2 of Fig. 1, and the other, Fig. 3, is cut in line 3 3 of Fig. 1.

In the drawings, A represents the wall of the boiler which is subject to the heat of the fire, and A' the outside wall. The two are spaced apart by means of ordinary stay-bolts B. The space between these two walls is the steam and water space and the pressure is from within outward.

My invention consists in forming the wall A with depressions from the outside between the stay-bolts, so that it is convex upon the inside between said bolts. The effect of this is that the pressure from within tends to condense the wall instead of to stretch it, as in the case of an ordinary flat wall. Furthermore, by making the portions between the

stay-bolts convex inward the pressure tends to crowd the metal of the wall more tightly against the stay-bolts instead of drawing it away therefrom and to pinch the bolts more tightly the greater the pressure. This prevents not only the loosening of the stay-bolts, but also the bulging of the wall A, and greatly reduces the possibility of bursting.

I claim as new and desire to secure by Letters Patent—

1. In a steam-boiler the combination with the boiler-walls and a series of stay-bolts secured thereto in perforations therein, of a series of depressions from without inward formed in the boiler-wall between the stay-bolts; substantially as described.

2. In a boiler the combination with a series of stay-bolts, of a wall secured thereby having the portions between the bolts convex inward whereby the pressure from within outward tends to condense the metal and crowd the same against the stay-bolts; substantially as described.

In witness whereof I have hereunto set my hand, at Bloomington, in the county of McLean and State of Illinois, this 19th day of August, A. D. 1898.

RICHARD J. O'NEILL.

Witnesses:

J. H. CHISHOLM,  
WM. FLEMING.