T. E. MURRAY.

PROCESS OF MAKING HEADERS FOR WATER TUBE BOILERS.

APPLICATION FILED JAN. 12, 1918.

1,293,868.

Patented Feb. 11, 1919.

3 SHEETS—SHEET 1.

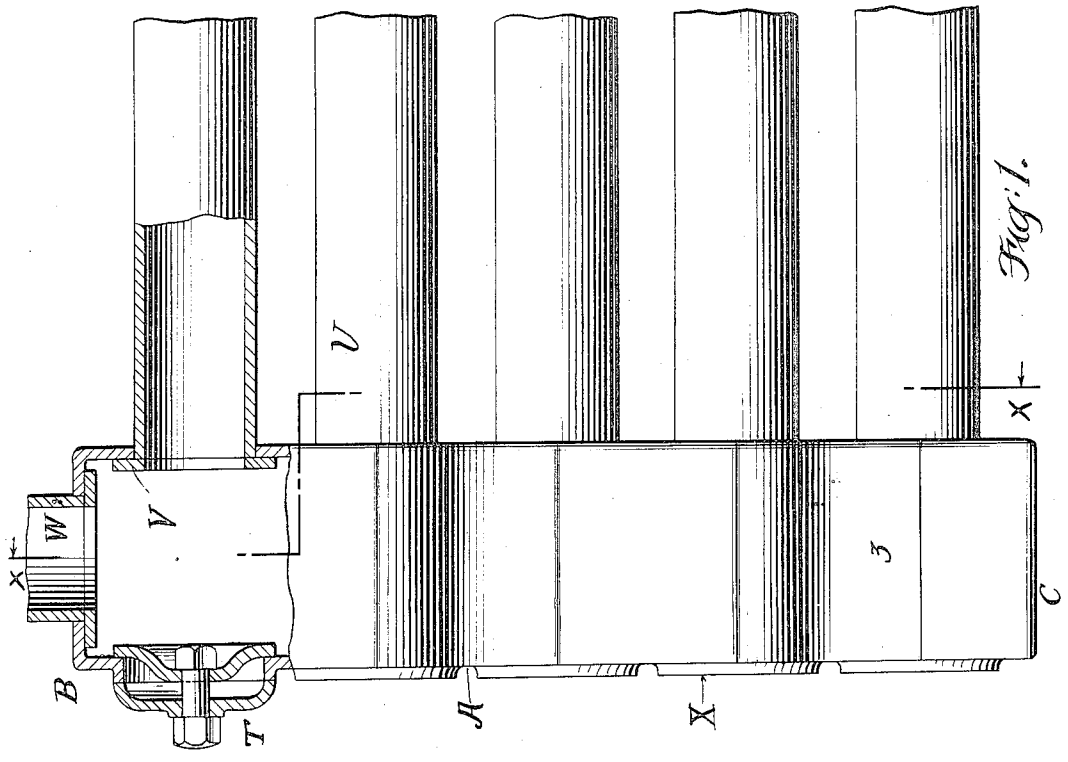


Fig. 1.

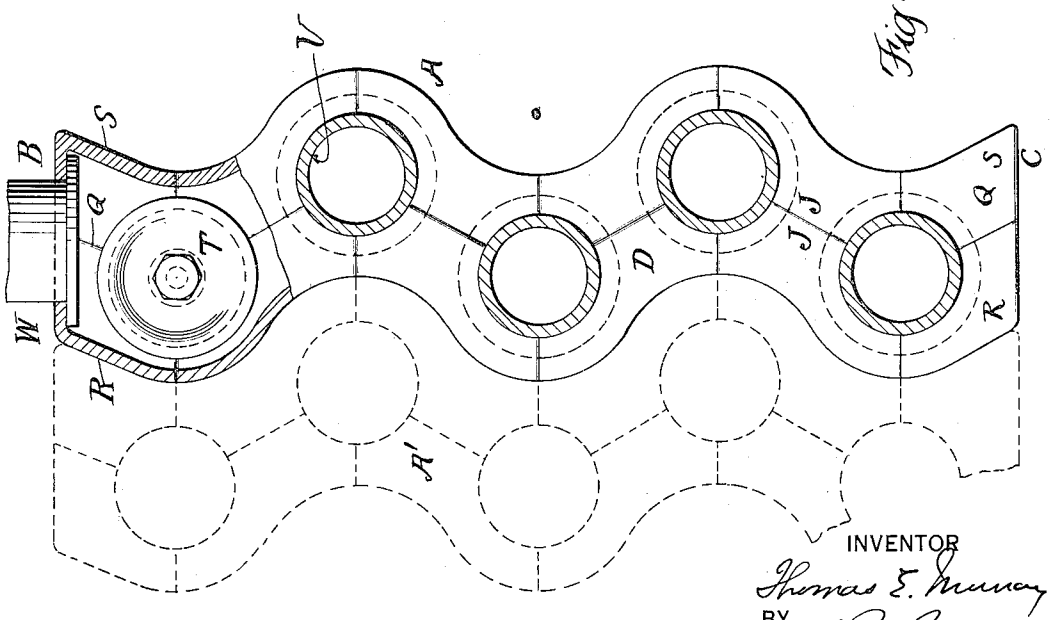


Fig. 2.

INVENTOR

Thomas E. Murray

BY

Paul Synnestvedt

ATTORNEY

T. E. MURRAY.

PROCESS OF MAKING HEADERS FOR WATER TUBE BOILERS.

APPLICATION FILED JAN. 12, 1918.

1,293,868.

Patented Feb. 11, 1919.

3 SHEETS—SHEET 2.

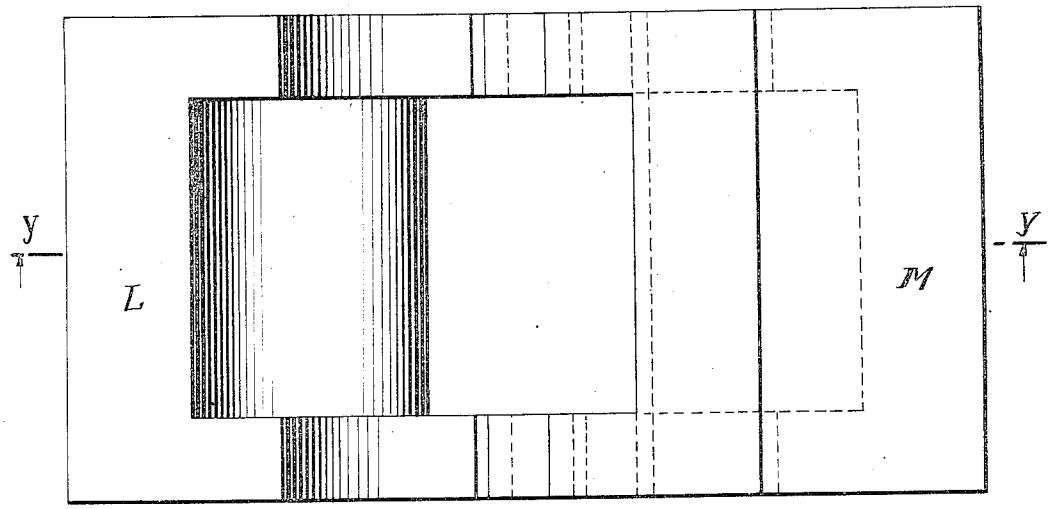


Fig: 5.

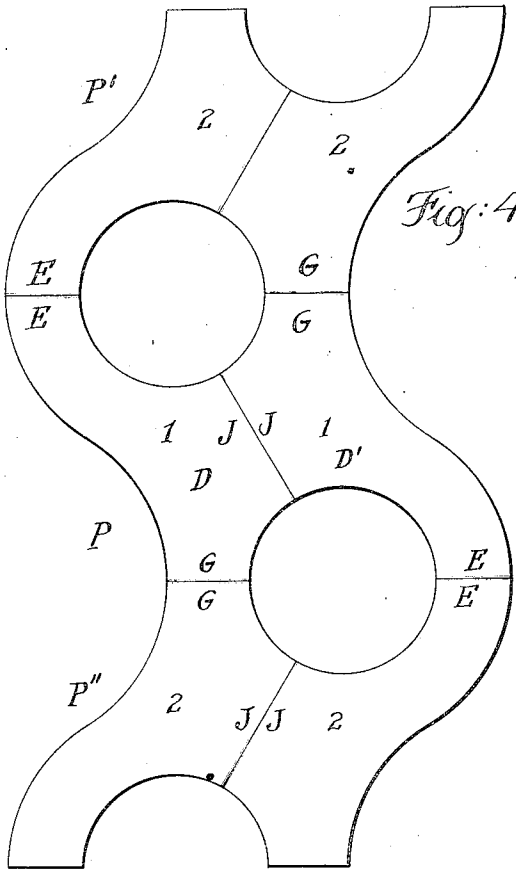


Fig: 4.

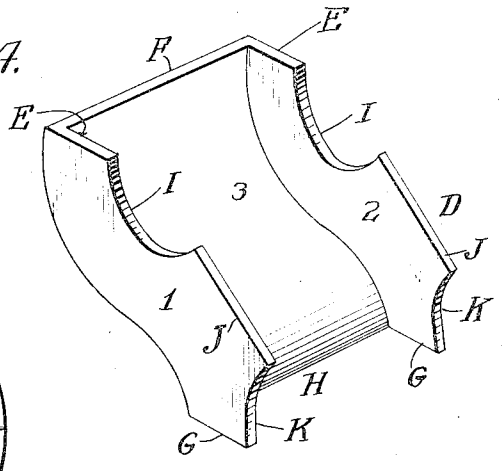


Fig: 3.

INVENTOR

Thomas E. Murray

BY

Paul Bryan

HIS ATTORNEY

T. E. MURRAY.

PROCESS OF MAKING HEADERS FOR WATER TUBE BOILERS.

APPLICATION FILED JAN. 12, 1918.

1,293,868.

Patented Feb. 11, 1919

3 SHEETS—SHEET 3.

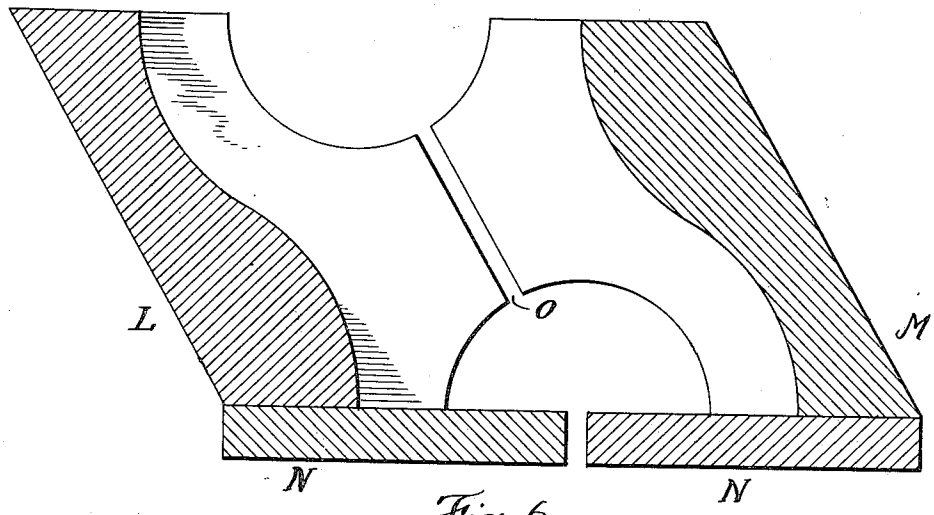


Fig. 6.

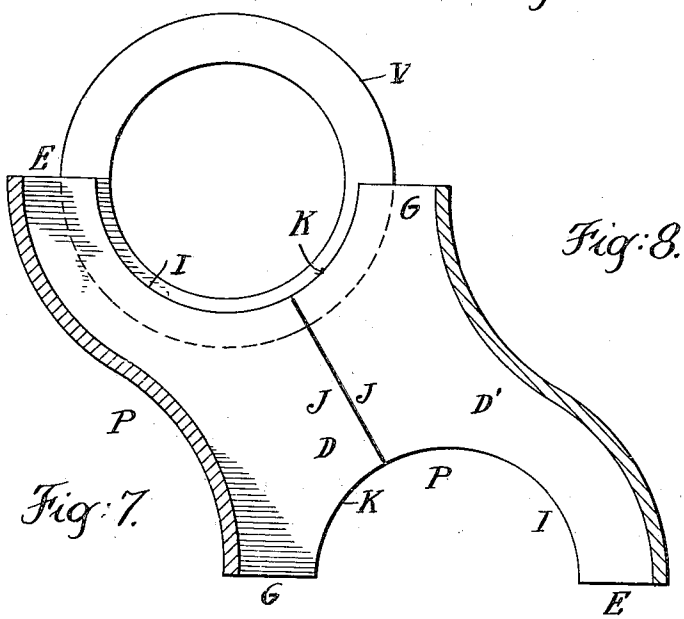


Fig. 7.

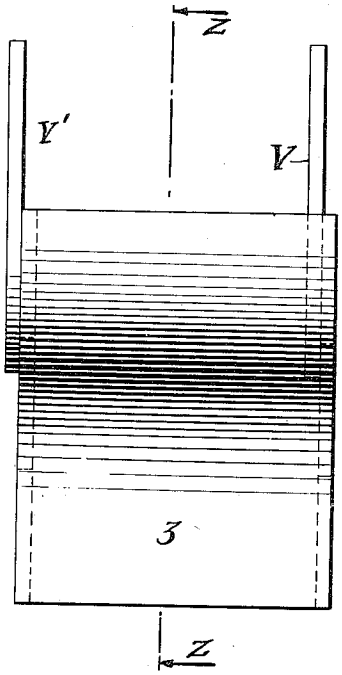


Fig. 8.

INVENTOR

Thomas E. Murray

BY Paul Lemmon

his ATTORNEY

UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, OF NEW YORK, N. Y.

PROCESS OF MAKING HEADERS FOR WATER-TUBE BOILERS.

1,293,868. Specification of Letters Patent. Patented Feb. 11, 1919.

Application filed January 12, 1918. Serial No. 211,691.

To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Processes of Making Headers for Water-Tube Boilers, of which the following is a specification.

The invention relates to processes of making headers for water tube boilers, having openings receiving the ends of the tubes, and more particularly to that type of header of quadrangular cross section, wherein two opposed walls are of sinuous or serpentine form.

The object is to cheapen and simplify the construction of the header. To this end, I form the body portion of the header (thus excluding the caps closing the ends thereof) of a plurality of identically shaped units, each unit comprising two flat side walls and a connecting wall having suitable recesses to form the tube openings, as hereinafter explained. Said units may be made in quantities by stamping, pressing, striking up or casting the metal. Any two of these units are electrically welded together to form a transverse section or fractional portion of the header, and any desired number of said sections or fractional portions may be electrically welded together to produce the desired body portion.

My invention consists in the process of making or assembling said units and sections to form the header.

In the accompanying drawings—

Figure 1 is a side elevation of a header constructed in accordance with my invention, showing the boiler tubes in place, the upper portion of the header being broken away and in section to exhibit interior construction. Fig. 2 is a section on the line x, x of Fig. 1. Fig. 3 is a perspective view of one of the unit half sections. Fig. 4 is a side elevation of a portion of the header, showing the welded joints. Fig. 5 is a plan view of the electrodes, wherein the half sections are disposed during welding. Fig. 6 is a section on the line y, y of Fig. 5. Fig. 7 shows a complete header section in section on the line z, z of Fig. 8, with one of the shouldered rings in position. Fig. 8 is an edge view of said header section, showing two of said rings in place.

Similar letters and numbers of reference indicate like parts.

The header of preferred form is generally shown at A, and with the exception of the caps B and C, respectively at its upper and lower ends, is composed of unit half sections D, one of which is shown in Fig. 3. Said half sections are all alike, and may be made by striking up, stamping, pressing or casting the metal. Said unit half section has flat side walls 1, 2, which are alike in shape, disposed parallel one to the other and united by the curved wall 3. The edges E, E of the walls 1, 2, which are uppermost in Fig. 3, are in the same plane with the edge F of the wall 3. The edges G, G which are lowermost in Fig. 3 are in the same plane with the edge H of the wall 3. In the edges of walls 1, 2 are made arc-shaped recesses I, a straight portion J and shorter arc-shaped recesses K. Any two half sections, as D, D′, may be put together to form a complete transverse section or fractional portion of the header body—as generally shown in Fig. 7 at P. When the header is to be made in the sinuous or serpentine form shown in Figs. 2 and 4, said half sections are juxtaposed to form a section P, as follows: that is to say, the inclined straight edges J being placed in contact, the half section D′ is inverted with respect to section D, so that the edges G of one section lie in the same plane with the edges E of the other section, as shown in Fig. 7, and the curved recesses I, K in the edges of walls 1, 2 unite to form semi-circles.

I join together the half sections D, D′ at the meeting edges J by electrical welding, and preferably as follows: I provide two electrodes L, M, Figs. 5 and 6, between which is a gap O, preferably inclined and secured upon plates N, N. In one electrode, as L, is, formed a matrix, into which fits the half section D, Fig. 7, and in the other electrode, as M, there is also a matrix, into which fits the other half section D′. The lower edges G, E of the half sections rest upon the plates N, N. By moving the plates N, N toward one another, contact is established at the straight edges J of the half sections, and when the welding current is established, said edges are welded together, thus completing the whole section P.

I now join a series of sections P unitedly to form the header in the following way:

In Fig. 4, the section P stands as shown in Fig. 7. I take a precisely similar section P′

and invert it and place it as shown in Fig. 4, so that the edges E and G of section P′ respectively meet the edges E and G of section P, and I electrically weld said sections together at said edges, and at the edges of the walls intervening. The same rule is followed with respect to section P″. Or in other words, I build the header of section P, P′, etc., alternately reversed, and welded together at their meeting edges.

In the completed boiler, the headers are grouped together, with the outwardly curved portions of one header entering the inwardly curved portions of the next adjacent header, as shown in Fig. 2, where an adjacent header A′, dotted lines, is shown beside the header A.

To close the upper and lower ends of the header, I provide at said ends metal caps B, C, each cap being formed in two sections R, S, Fig. 2, electrically welded together at Q, and to the registering edges of the next adjacent header section. The upper cap B has an opening in which a steam pipe W may be secured. In the outer cap section R, I provide a man-hole and cover T, for access to the interior of the header. The boiler tubes U are inserted in the openings in one wall of the header, and may abut against a ring V of less diameter than the header opening, which ring is electrically welded to the inner side of the wall. The tube in turn may be electrically welded to said ring. I may use two of said rings, one (V) arranged inside the header, as described, and the other (V′) welded on the outside of the header, Figs. 7, 8. As these rings extend across the joint between successive header sections when assembled, they also serve, when welded to both of said sections, to increase the strength of said joint. Instead of using the removable cover T, I may close the openings in the outer wall of the header by plates X, Fig. 1, welded in place, the rings V′ then being omitted.

I claim:

1. The process of making the body portion of a boiler header having openings for the reception of tubes, which consists in, first, producing a number of like integral half sections, each section comprising side walls and a transverse wall joining said side walls, the said side and transverse walls having end edges E, F, E and G, H, G, and longitudinal edges having arc-shaped recesses I, K, with an intermediate straight portion J; second, placing the straight portion of one half section in contact with said straight portion of another half section; third, electrically welding said half sections at said edges J to produce a whole section, and fourth, electrically welding together a series of said sections at their exposed edges E, F, E and G, H, G.

2. The process as in claim 1, the second step further including the reversal of each alternate section, whereby the edges E, G of one section become respectively welded to the edges E, G of the next adjacent section to produce the sinuous shape shown in Fig. 4 of the drawings.

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

THOMAS E. MURRAY.

Witnesses:

GERTRUDE T. PORTER,

MAY T. MCGARRY.