

No. 682,989.

Patented Sept. 17, 1901.

C. P. HIGGINS.  
HEADER FOR SECTIONAL STEAM BOILERS.

(Application filed Jan. 2, 1901.)

(No Model.)

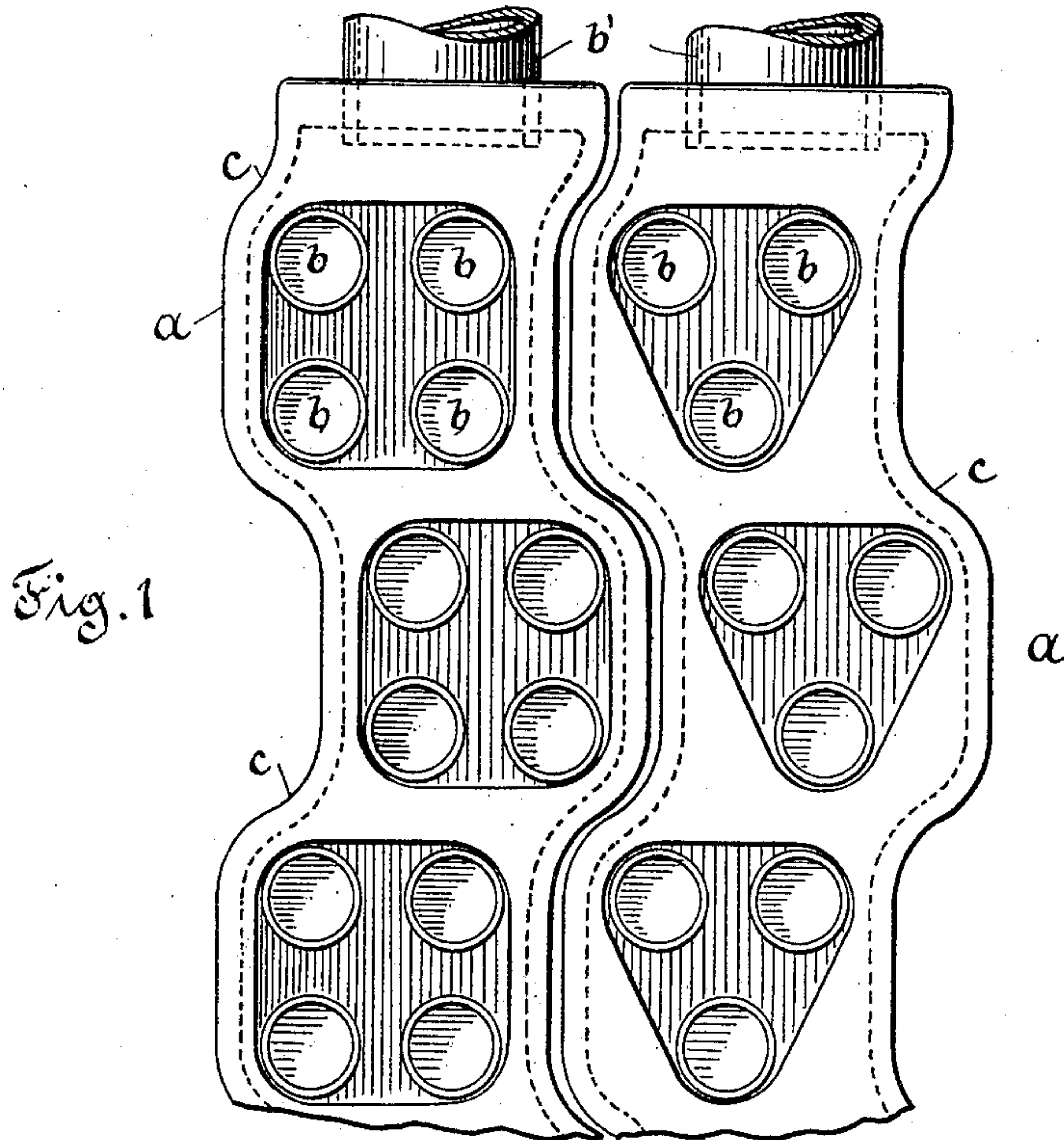


Fig. 2.

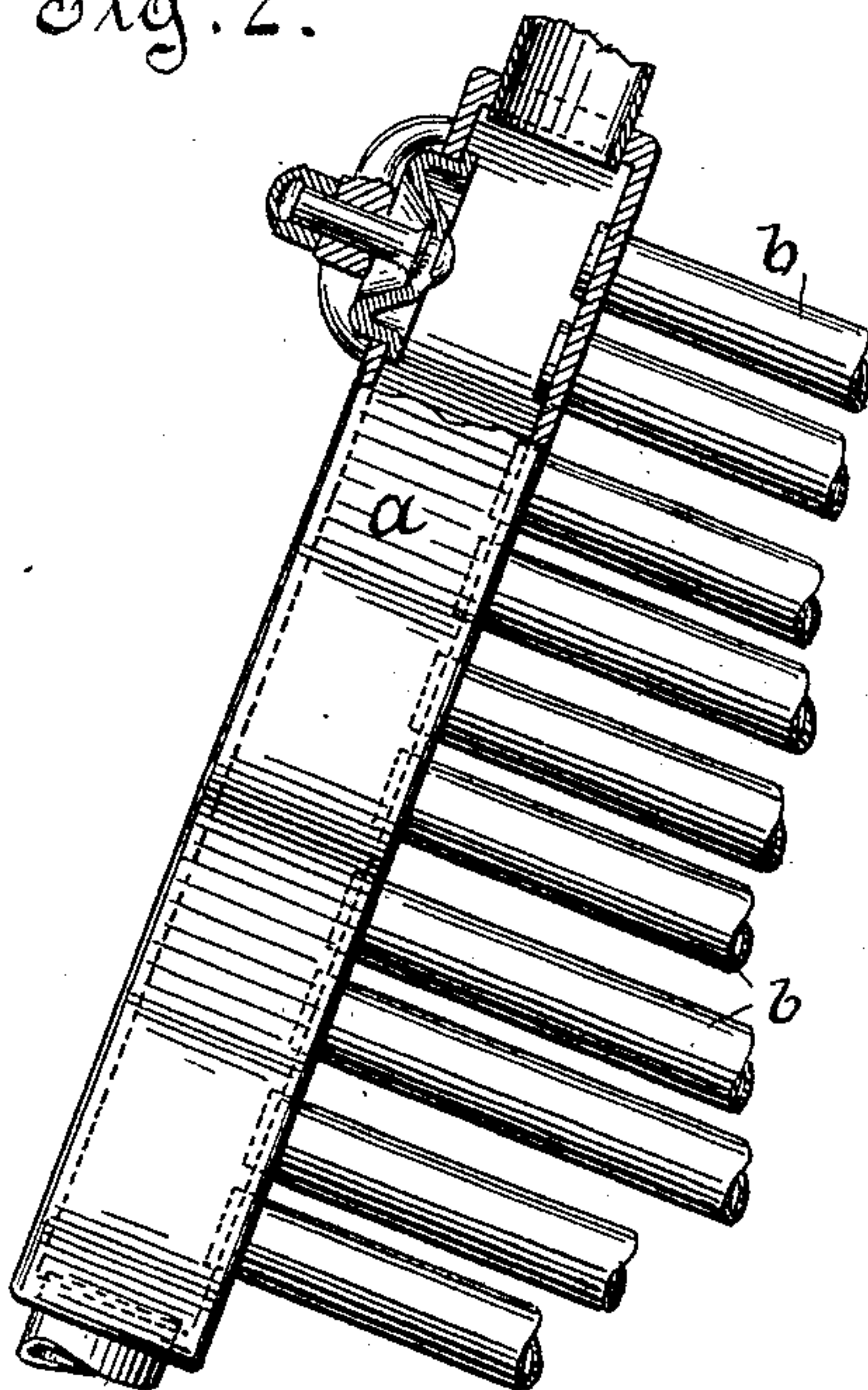
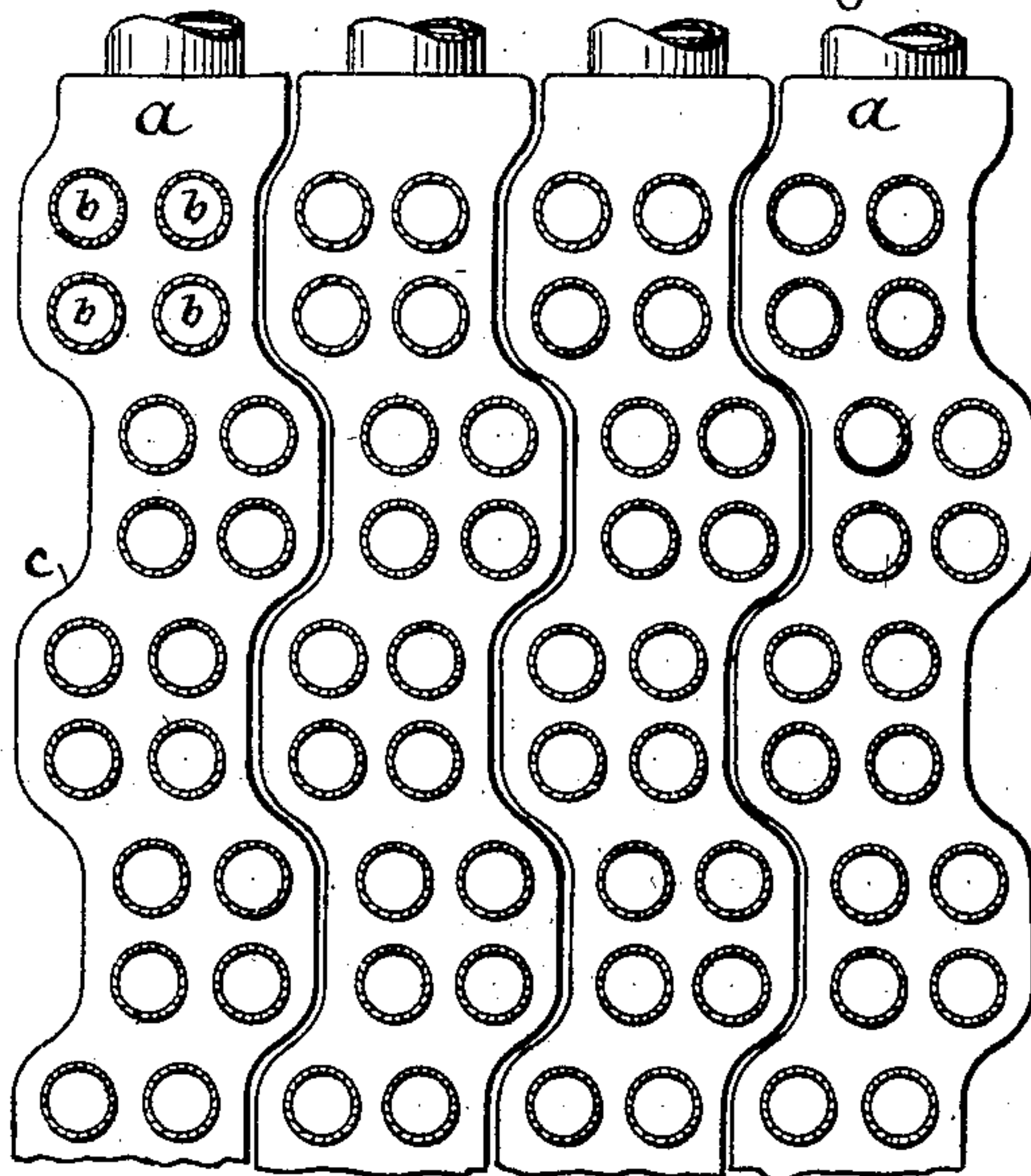


Fig. 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## HEADER FOR SECTIONAL STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 682,989, dated September 17, 1901.

Application filed January 2, 1901. Serial No. 41,890. (No model.)

*To all whom it may concern:*

Be it known that I, CAMPBELL P. HIGGINS, a citizen of the United States, residing at Roselle, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Headers for Sectional Steam-Generators, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to sectional steam-boilers in which a series of water-tubes are connected at their opposite ends to headers of serpentine or corrugated shape, which are arranged in line to form a group. The water-  
15 tubes are generally used in an inclined position and the connected headers either placed vertically or at right angles with the inclined tubes. The size of these headers is limited for convenience of manufacture, transportation, and use, varying in length in some instances, but of a predetermined width sufficient to insert at each offset or corrugation either a single tube of about four inches in  
20 diameter or a cluster of tubes of about two inches in diameter, leaving sufficient space surrounding the tubes for the passage of the products of combustion and clearance to avoid the accumulation of ashes and soot between them. In the insertion of the smaller tubes  
25 a cluster of three and four tubes have heretofore been placed at each offset or corrugation of the header; but the shape of the corrugation in the header prohibits the possibility of locating the tubes to obtain a desired relative arrangement and form the hand-  
30 hole aperture in the face of the header opposite each cluster of tubes, so that free and unobstructed access could be had to each and all of the tubes forming the cluster for purposes of inspection, cleaning, removal, or re-  
35 placing and leave sufficient margin on the face of the headers at the sides of the aperture to form a bearing for its plate or cover.

40 The object of the present invention is to construct a serpentine header with such shape of corrugations as will permit the insertion of a cluster of tubes of standard diameter at each corrugation or offset in a relative position to maintain their vertical staggered arrangement and also to maintain a proper  
45 distribution of space between and around the

same and also to provide a hand-hole in size to obtain free and direct access to all the tubes, leaving sufficient margin on the face of the headers to form a bearing for the hand-  
50 hole cover without departing from the size of header at present in use.

The invention consists in constructing the offsets or corrugations of the header with flattened sides and more abrupt curves, whereby  
55 such portion of the header approaches a parallelogrammic form, which provides for the arrangement of a cluster of tubes of standard diameter at each offset or corrugation with proper space between and surrounding the  
60 tubes, with a hand-hole through which free unobstructed access can be had to each tube of the cluster, and with sufficient surface on the face of the header at the sides of the hand-hole to form a bearing for the plate or cover.  
65

In the accompanying drawings, Figure 1 is a front or face view of a header embodying the new form of corrugation with the hand-hole covers removed and showing an end view of the disposition of the water-tubes; Fig. 2,  
70 a side elevation of the header, showing an end portion of the connected water-tubes; and Fig. 3, a cross-sectional view of the whole group of tubes, showing a vertical staggered arrangement of the tubes and a line of horizontal space between each vertical row throughout the entire width of the group.  
75

*a* is the header, and *b* the connected water-tubes. The tubes *b* are placed in clusters of three or four, as shown, and each corruga-  
80 tion or offset *c* is shaped to make room for such position of the tubes as will provide sufficient space surrounding the cluster and between the tubes and around the hand-hole aperture on the face of the header to form  
85 a bearing for its plate or cover. The form of the corrugations or offsets shown permits the use of a cluster of the greatest number of tubes of standard diameter possible to preserve a desired relative staggered arrange-  
90 ment vertically and obtain a horizontal line of space between each cluster and each vertical row of the tubes of the cluster extending throughout the whole width of the group, whereby a better inspection can be made  
95 among the tubes and cleaning devices can be more conveniently introduced and effectually  
100

operated. This form of corrugation or offset of the header also permits the construction of the hand-hole aperture in the face of the header opposite each cluster of such shape and  
5 size to obtain direct and free access to each tube of the cluster and to provide sufficient bearing on the sides of the aperture for the cover of the aperture.

What I claim, and desire to secure by Letters Patent, is—

10 A corrugated header for sectional steam-generators having each corrugation constructed with flattened sides to produce a parallelogrammic form, so that a cluster of water-tubes  
15 of maximum number and standard diameter

may be connected at each corrugation and provide for: sufficient space between and surrounding said tubes: a hand-hole aperture opposite the end of each cluster of tubes, through which full access can be had to each  
20 tube of the cluster: and, a seat or bearing surrounding the aperture for a cover or plate, as set forth.

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

CAMPBELL P. HIGGINS.

Witnesses:

WM. ZOUTLEIN,

JOSEPH F. JAQUITH.