

T. TANGNEY.  
RADIATOR.

No. 503,813.

Patented Aug. 22, 1893.

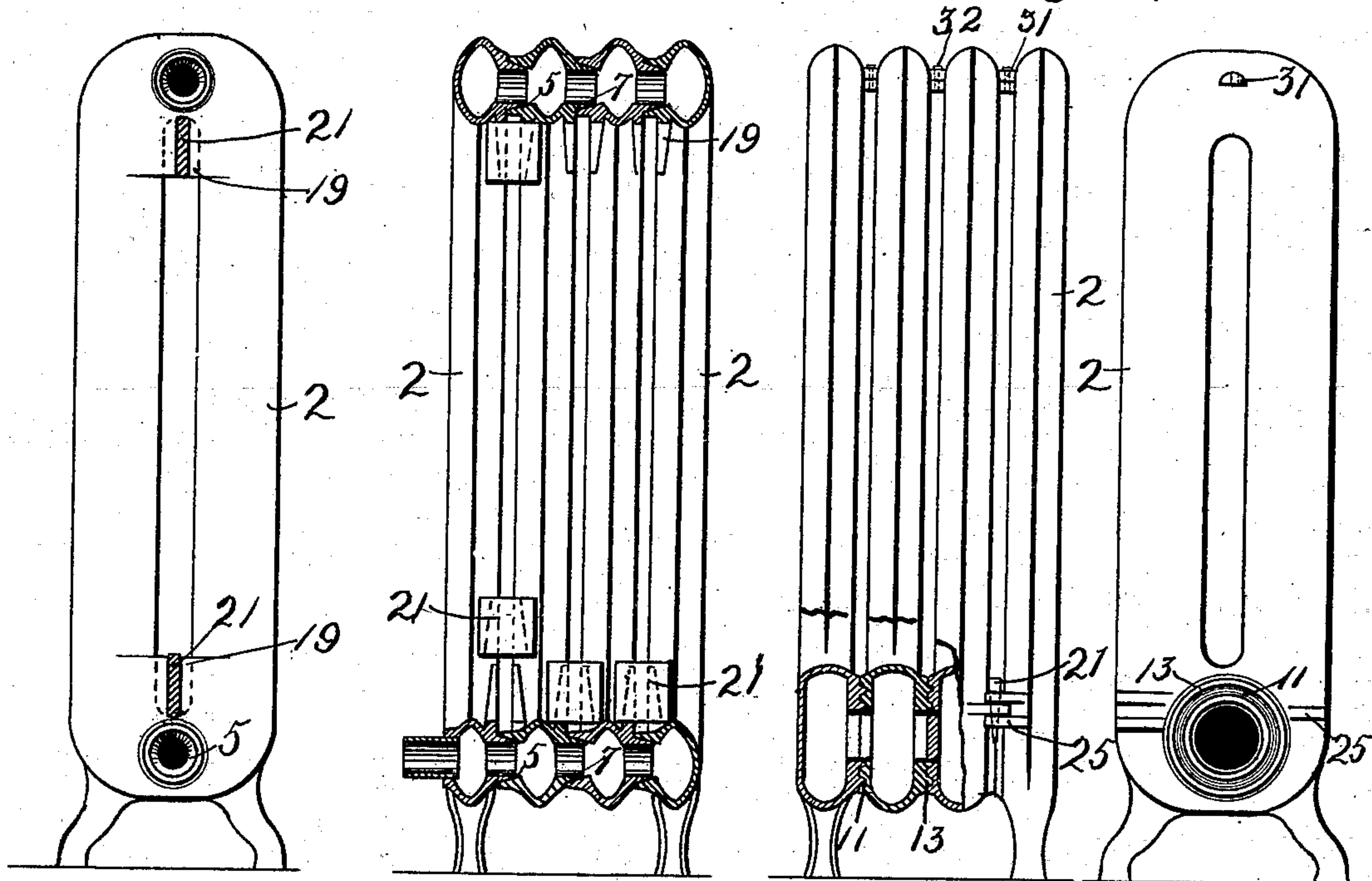


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

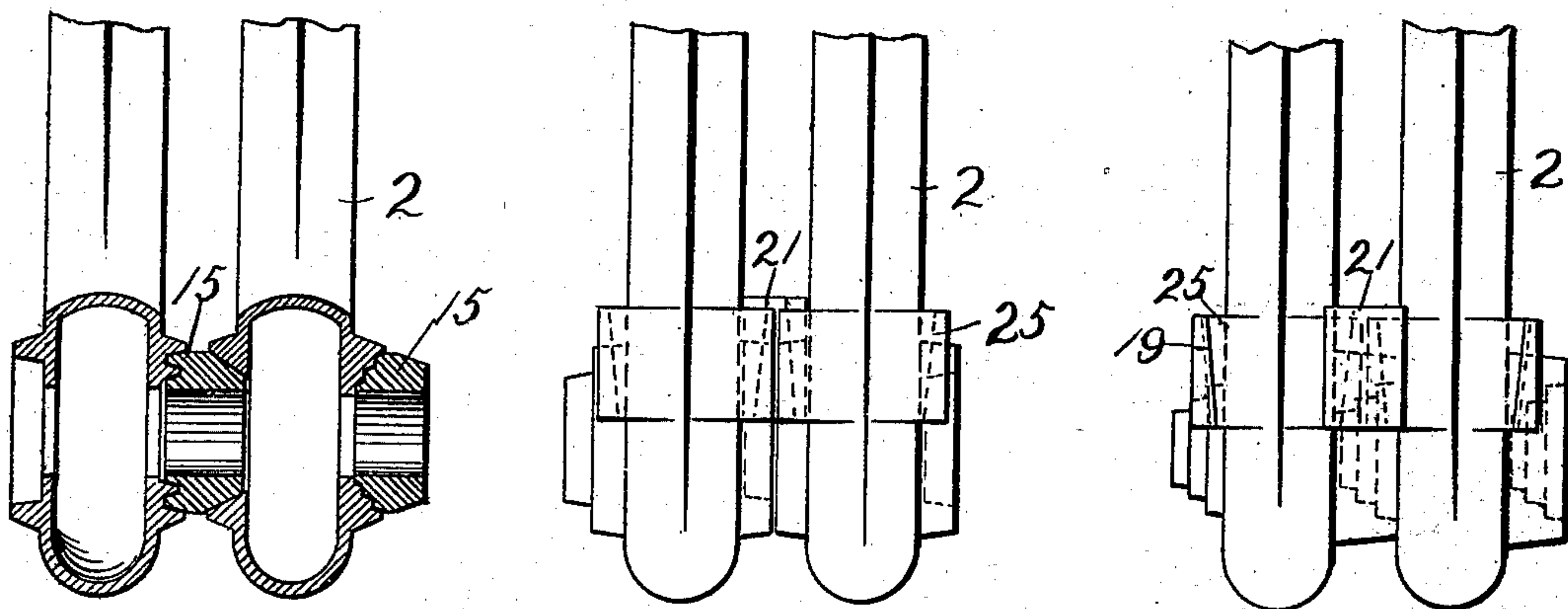


Fig. 5.

Fig. 6.

Fig. 7.

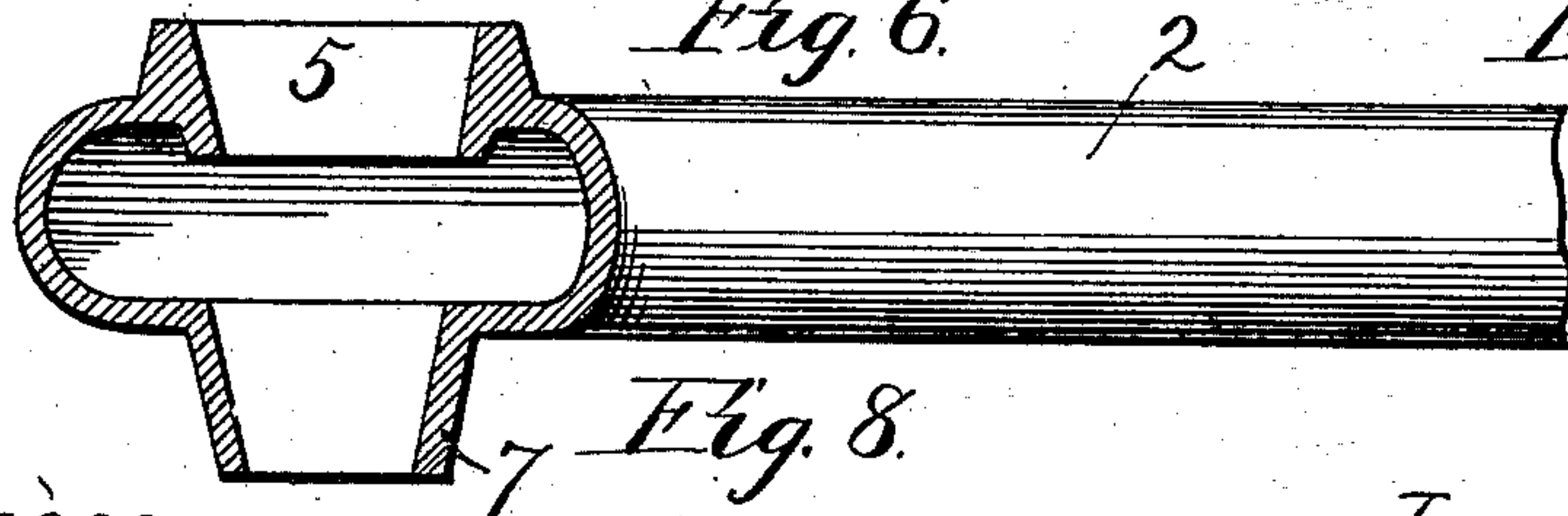


Fig. 8.

Witnesses

G. E. Purple  
J. E. Jones

Inventor

Thomas Tangney  
By Paul M. Munn His Atty.

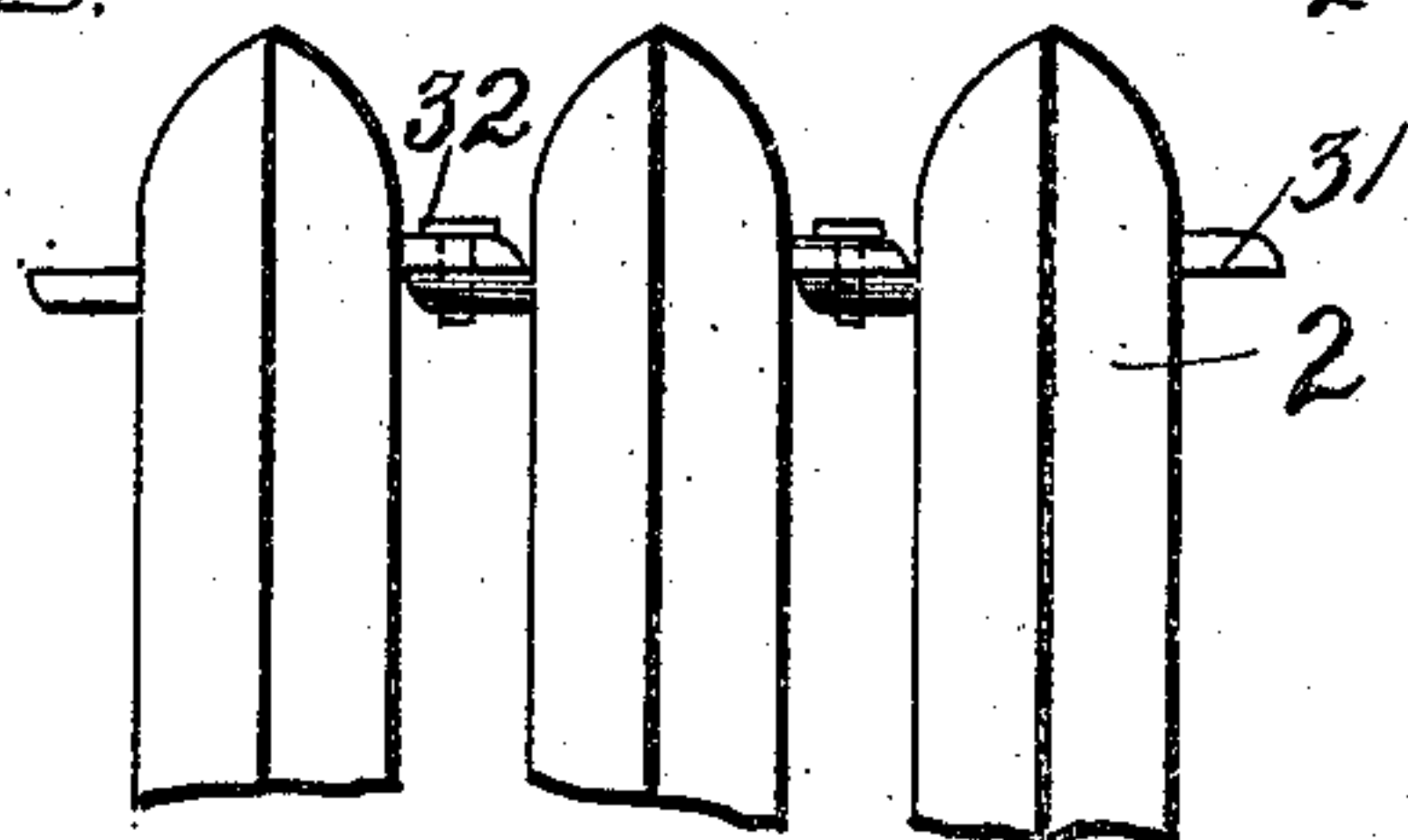
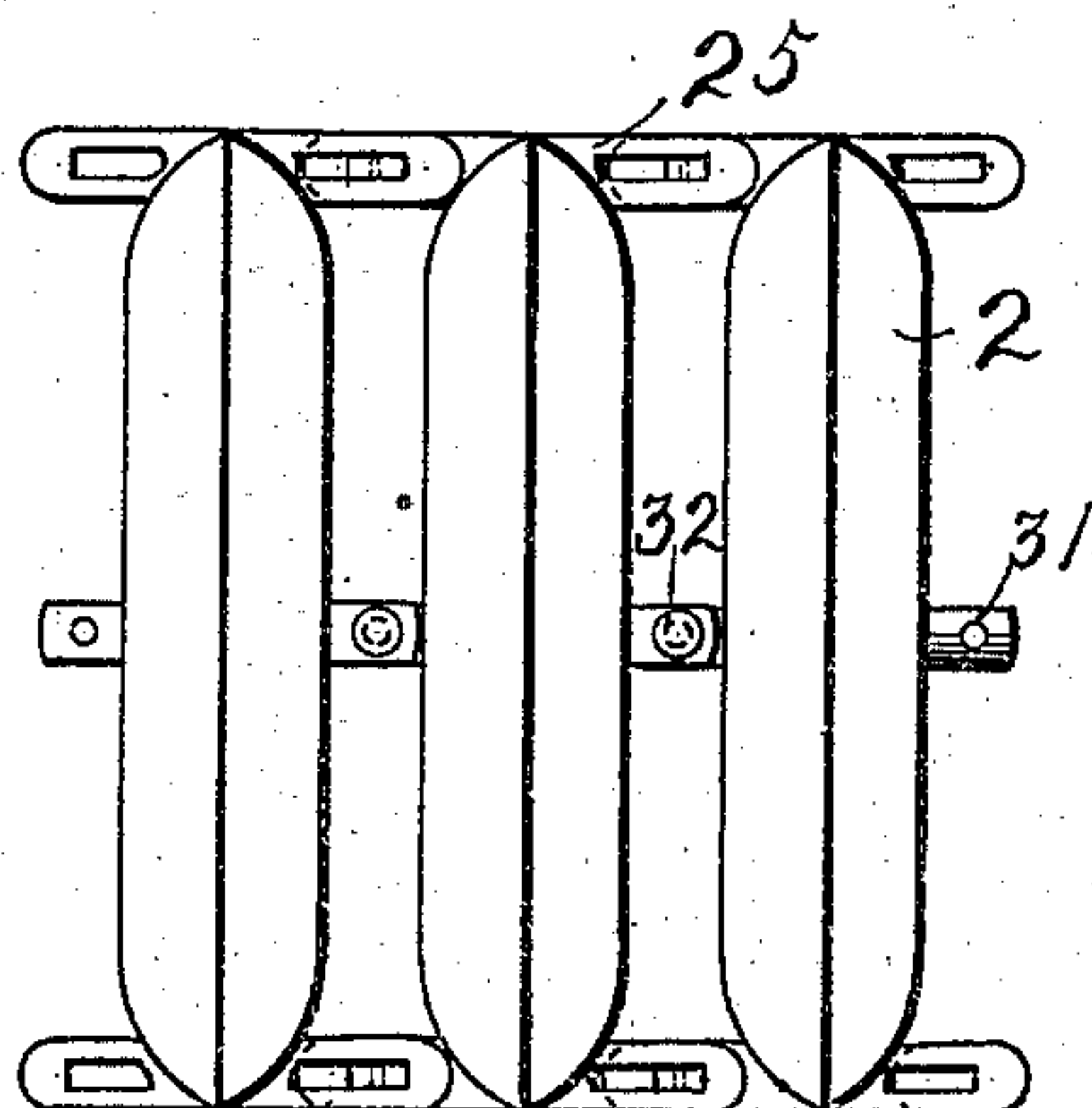
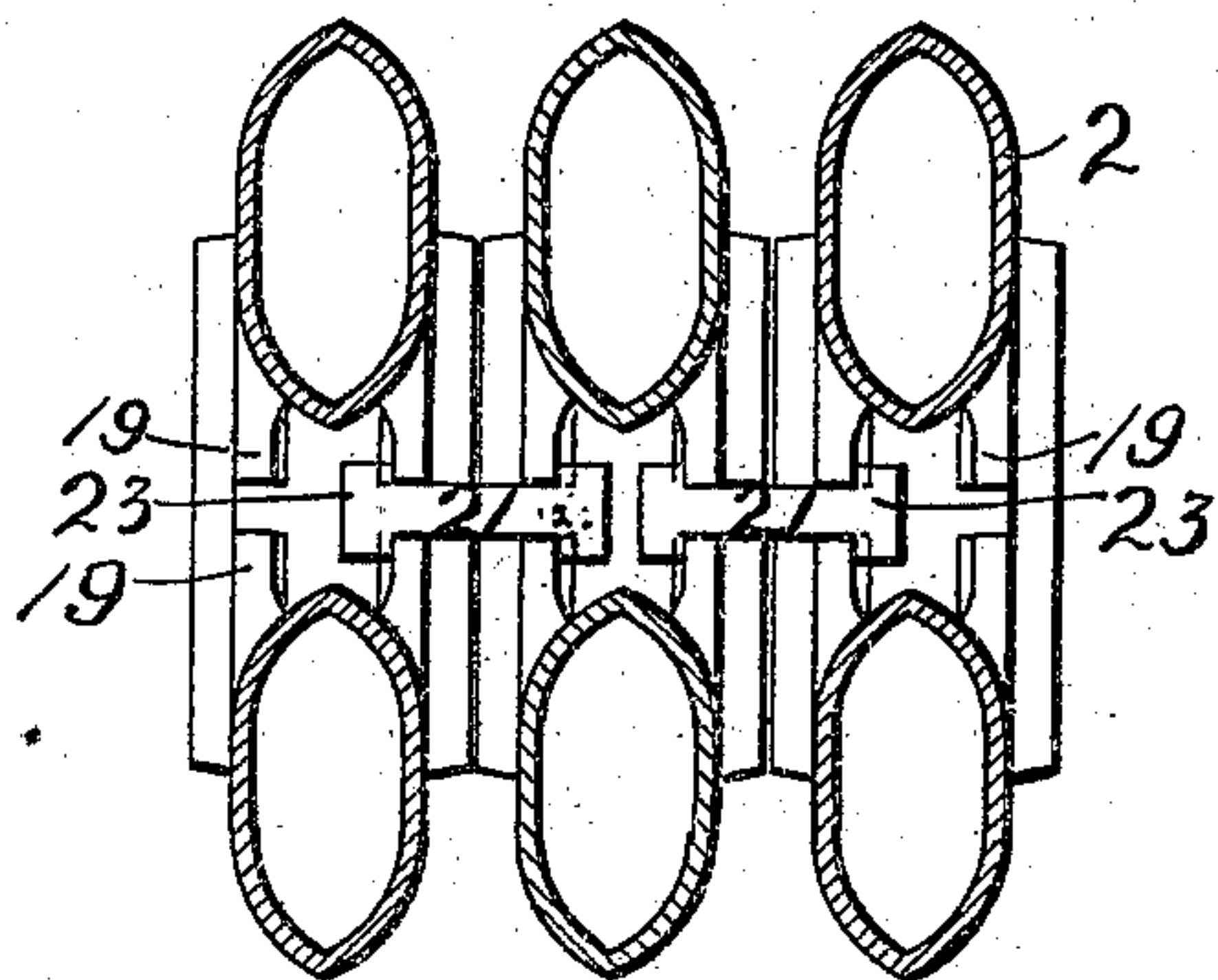
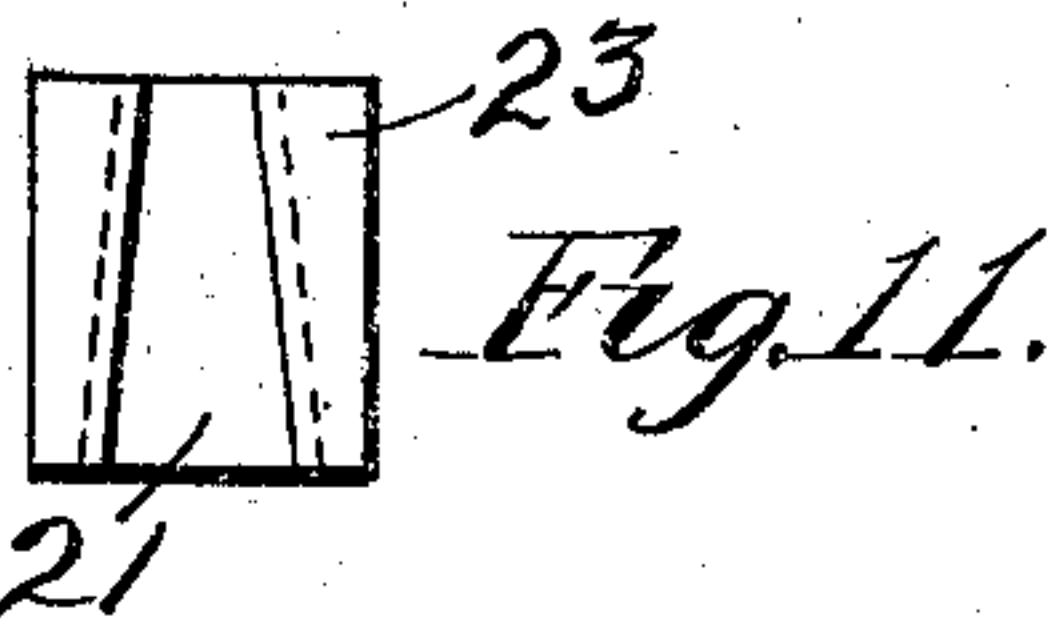
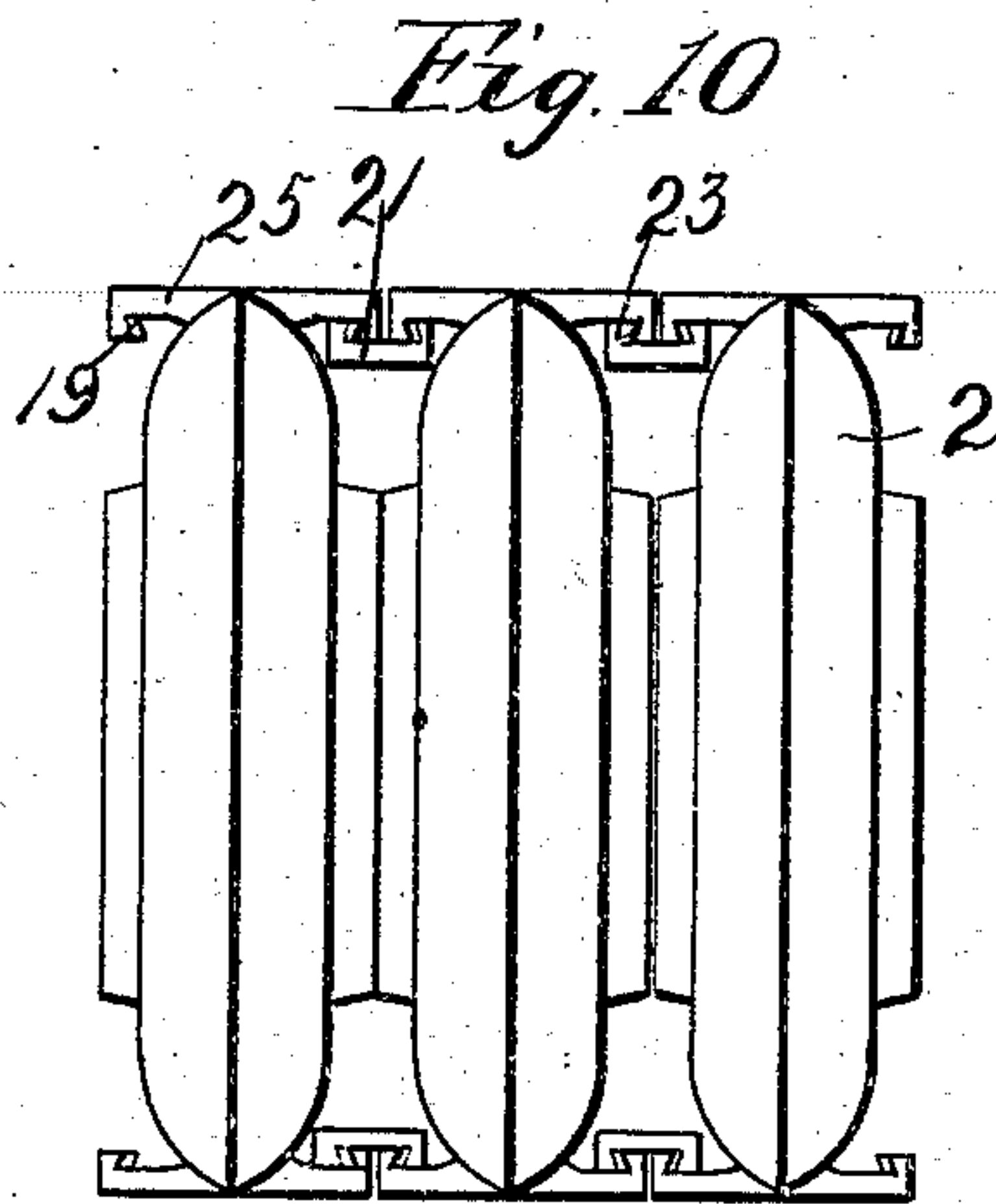
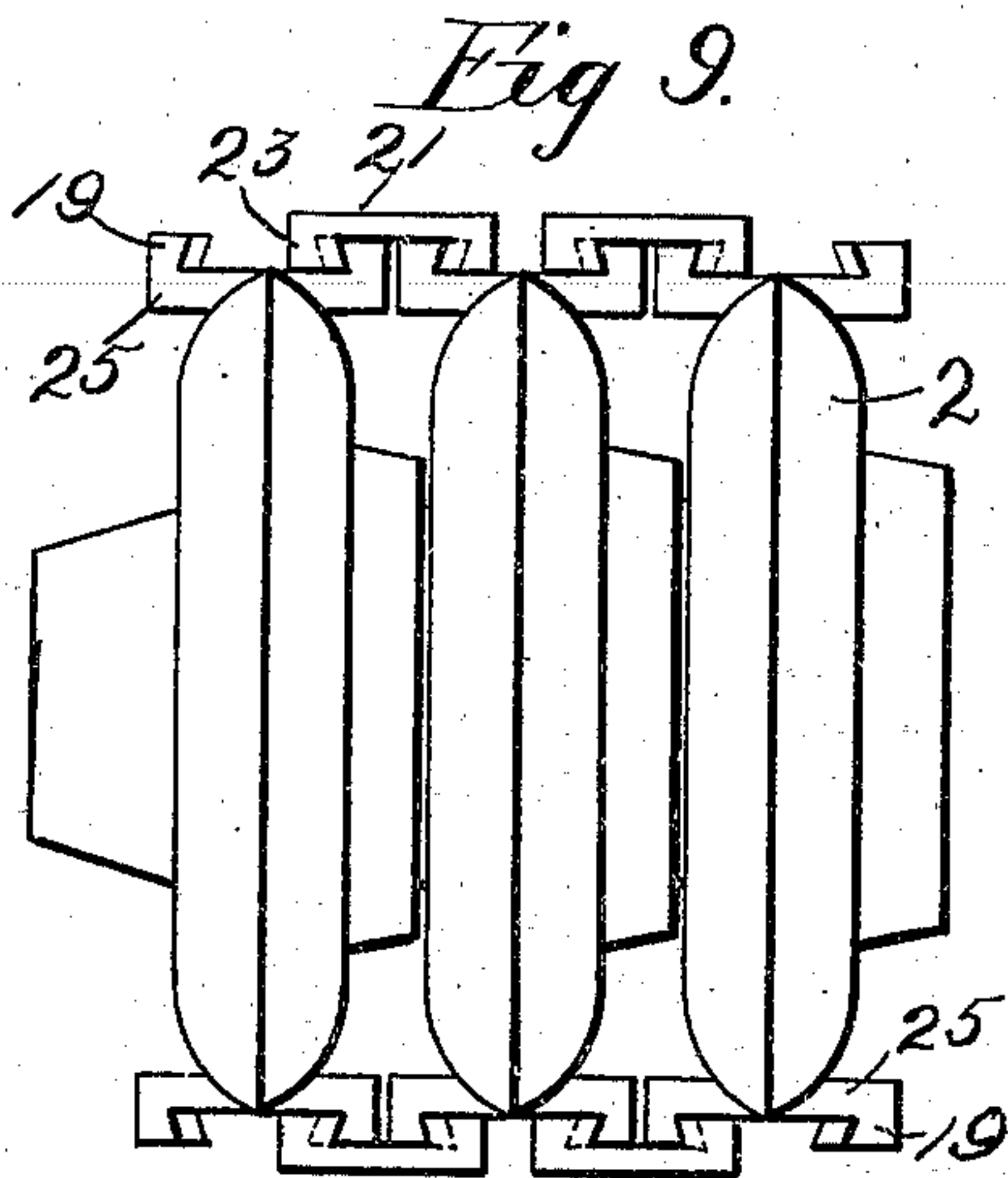
(No Model.)

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2 Sheets—Sheet 2.

No. 503,813.

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Witnesses  
G. E. Purple  
*[Signature]*

*Fig. 14.*

Inventor  
Thomas Tangney  
By Paul Merrin *His Atty.*



# UNITED STATES PATENT OFFICE.

THOMAS TANGNEY, OF SOUTH SUPERIOR, WISCONSIN.

## RADIATOR.

SPECIFICATION forming part of Letters Patent No. 503,813, dated August 22, 1893.

Application filed September 19, 1892. Serial No. 446,251. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS TANGNEY, of South Superior, in the county of Douglas, State of Wisconsin, have invented certain  
5 Improvements in Radiators, of which the following is a specification.

This invention relates to improvements in radiators designed for use in connection with steam or hot water heating, and the objects I  
10 have in view are to dispense entirely with the ordinary nipples and screw threaded connections, or screw threaded fastenings that are ordinarily used for securing the several sections of the radiator together, and therefore  
15 doing away with the extra work that such a construction necessitates—and to this end I provide a radiator consisting of separate sections that may be put together without any fitting or working of the parts and which may  
20 be used just as the castings are made.

The invention consists generally, in a radiator consisting of separate sections provided with clamping devices for securing them together, and with joints that may be fitted together by the use of ordinary packing.

In the accompanying drawings forming part of this specification: Figure 1 is an end elevation of a portion of the radiator constructed in accordance with my invention. Fig. 2 is  
30 a vertical section of the same. Fig. 3 is a side elevation showing a different form of joint and different coupling device, the lower portion of the radiator being in section. Fig. 4 is an end elevation of one of the sections shown in Fig. 3. Fig. 5 is a detailed section showing another form of joint. Figs. 6 and  
35 7 are details of two forms of clamping devices. Fig. 8 is a section of a portion of one loop of the radiator showing one construction of the joint. Figs. 9 and 10 are plan views of portions of the radiator showing the clamps applied thereto. Fig. 11 is a detail of one of the clamps. Fig. 12 is a plan section showing the arrangement of the interior clamp.  
45 Fig. 13 is a plan view of several sections of the radiator showing another form of clamp. Fig. 14 is a side elevation of the upper portion of the radiator shown in Fig. 13.

In all of the drawings, 2 represents the loops  
50 or sections that are used to make up the radiator, said sections being preferably all alike and capable of being joined together so as to

make radiators of any desired size. These loops may be connected together both at the top and bottom, as shown in Figs. 1 and 2; or  
55 they may have a connection only at the bottom, as shown in Figs. 3 and 4.

I have shown several forms of joints between the radiator sections any one of which may be used. As shown in Figs. 1 and 2 I  
60 provide at one side of the radiator section a conical recess 5 and at the other side a conical projection 7, these projections and recesses on the adjoining sections fitting into each other as shown in Fig. 2. In Fig. 8 I  
65 have shown an enlarged detail with a similar form of projection and recess, except as here shown I have provided the recess with the longer bearing surface by extending it into the interior of the loop. The sections may  
70 be placed together with these projections and recesses in connection with each other and with any suitable packing material arranged between them; or in place of using the conical projection and recess, I may provide the  
75 annular grooves 11 and annular ribs 13, adapted to engage therewith, as shown in Fig. 3, and use a suitable packing therein; or I may use a shoulder projection adapted to fit into the shoulder recess as shown in Fig. 7; or I  
80 may use an intermediate coupling piece 15, and this coupling may be provided with annular grooves or shoulders to engage corresponding grooves or recesses in the radiator section, or it may have a conical end adapt-  
85 ed to engage a conical recess in the section, as shown in Fig. 5, the radiator section being placed together with suitable packing in the joints and being pressed firmly together by a suitable clamping device. They are then  
90 locked together by means of suitable keys. I prefer to arrange these keys in the interior of the loops as shown in Figs. 1, 2 and 12.

As here shown, each section is provided at each side and at the points near the top  
95 and bottom of the loop with the inclined ribs 19, having the narrow space between them, and a key 21 having the wedge shaped ends 23 is then forced into position between these ribs so as to firmly lock the sections together  
100 as indicated in Figs. 1, 2 and 12. Instead, however, of arranging these keys upon the interior of the sections, although I consider that the preferable form, I may provide the



radiator loops or sections with the projections 25 upon its sides, upon which the inclined lugs 19 are located. These lugs may be either upon the outside of the projections, as shown in Figs. 7 and 9, or upon the inside of the projections, as shown in Figs. 6 and 10—and in this instance the key 21 will be provided with the inclined lugs 23, adapted to engage the lugs 19 upon said projections 25, as shown in Figs. 6, 7, 9, and 10; or I may provide the sections with the slotted projections 25, as shown in Figs. 3 and 13, these projections lapping about each other when the sections are in position, as shown in said figures, and a key 21 in this instance being provided with inclined surfaces, and being driven through the slots in said projections, as shown in Fig. 3.

Where the radiator sections are provided with the joints or elbows both at the top and bottom, as shown in Figs. 1 and 2, the keys may be used also both at the top and bottom of the sections. Where the elbows are provided only at the bottom of the sections, I may provide at the top the overlapping lugs 31, as shown in Figs. 3, 4, 13, and 14, and provide the pins 32 for locking said projections together.

The coupling 5 when used may be formed of a different material from the sections themselves, or of the same material, and I consider that lead, copper or some other suitable soft metal would be desirable for this purpose. While I have shown this coupling having its opposite ends of different form, it will be understood that I prefer to use in any radiator a coupling the ends of which are alike, but any one of the various forms shown or any other suitable form may be used.

It will be seen that this radiator is very

simple in construction and that the sections may be put together without requiring any fitting, just as they are taken from the sand in casting. The inclined or wedge form of the clamps permits of more or less inequality in the castings and the ordinary packing that is used in the sections insures a tight joint without any special fitting of the parts. The sections are preferably firmly clamped together by means of a vise or other clamping device and after they are thus clamped together the clamps between the sections are put in place so as to hold them firmly in such position.

I claim as my invention—

1. The combination with the radiator sections provided with the elbows or joint sections adapted to engage each other and form a slip joint, and provided also with inclined lugs, of the locking keys provided with inclined surfaces adapted to engage the lugs on the sections and draw said sections together and hold them in their locked position, substantially as described.

2. The combination with the radiator loop sections provided with the joint sections adapted to engage each other and form a slip joint, of the lugs 19 arranged between the loops at each side of the section, and the keys provided with heads having inclined surfaces adapted to be arranged between said sections and to engage said lugs and thereby draw and lock said sections together, substantially as described.

In testimony whereof I have hereunto set my hand this 14th day of September, 1892.

THOMAS TANGNEY.

In presence of—

F. S. LYON,

C. G. HAWLEY.