

No. 753,031.

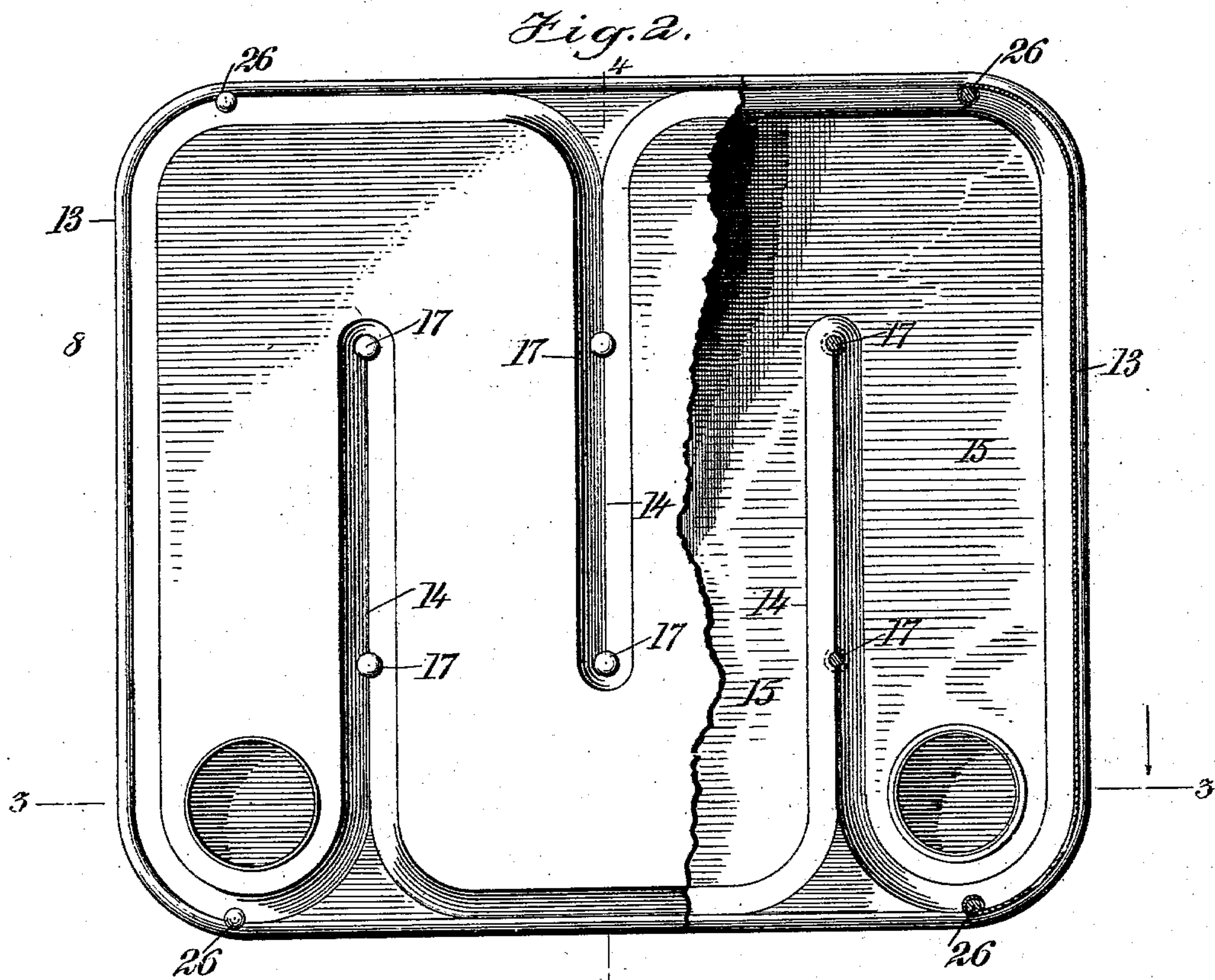
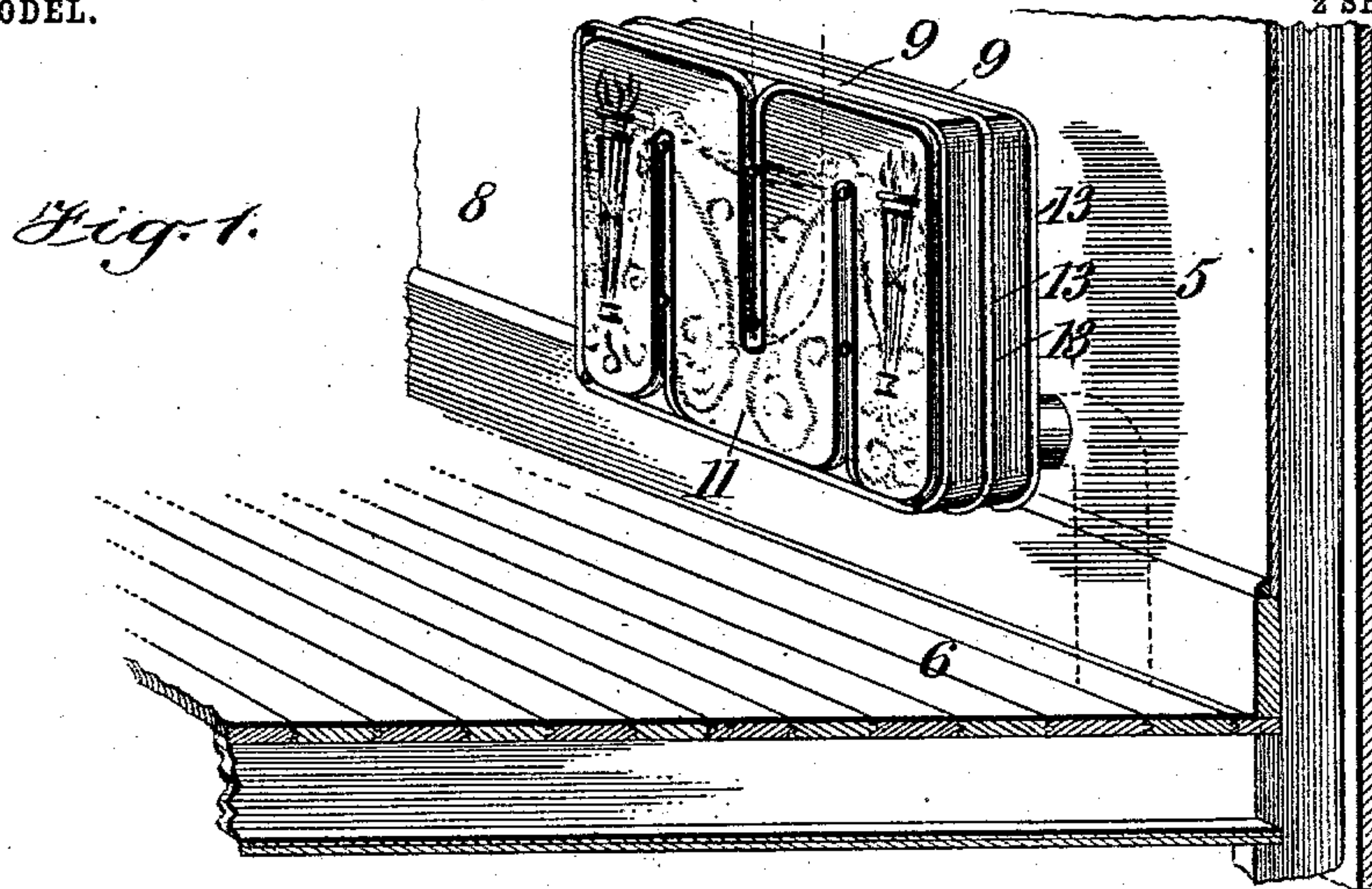
PATENTED FEB. 23, 1904.

G. M. AYLSWORTH.
RADIATOR.

APPLICATION FILED APR. 4, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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2 SHEETS—SHEET 2.

Fig. 3.

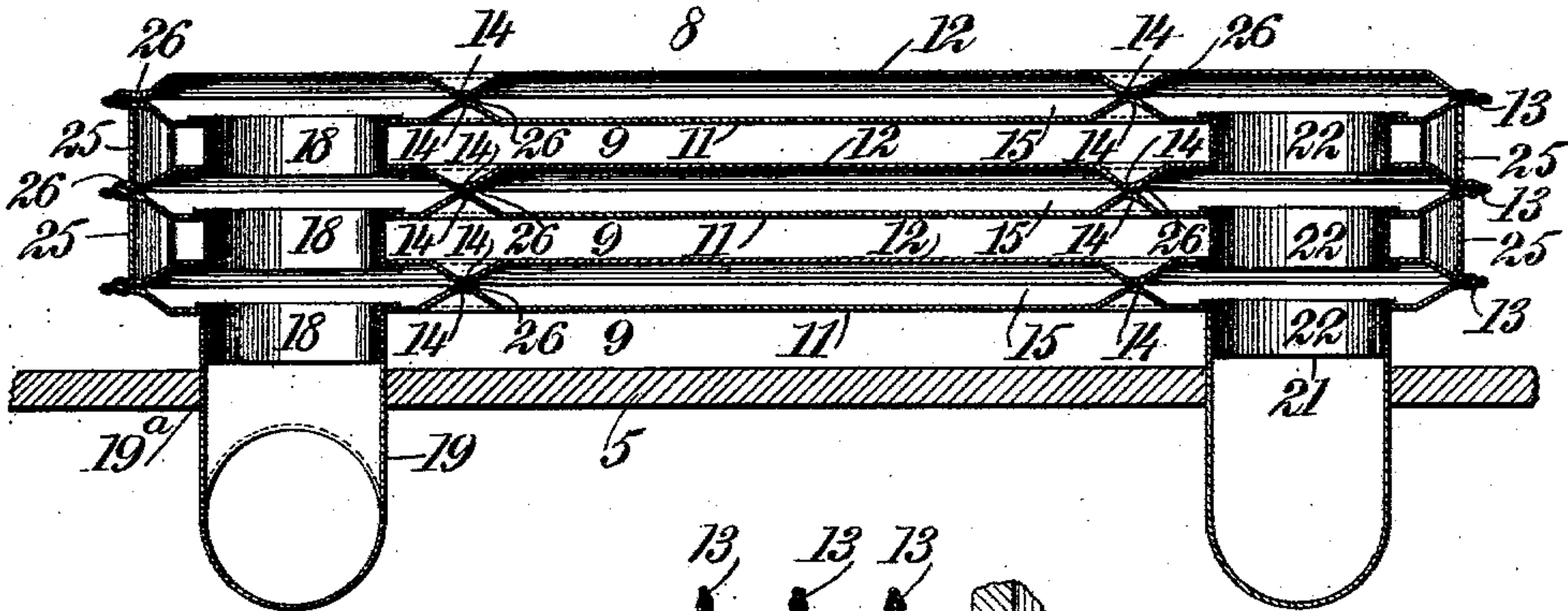


Fig. 4.

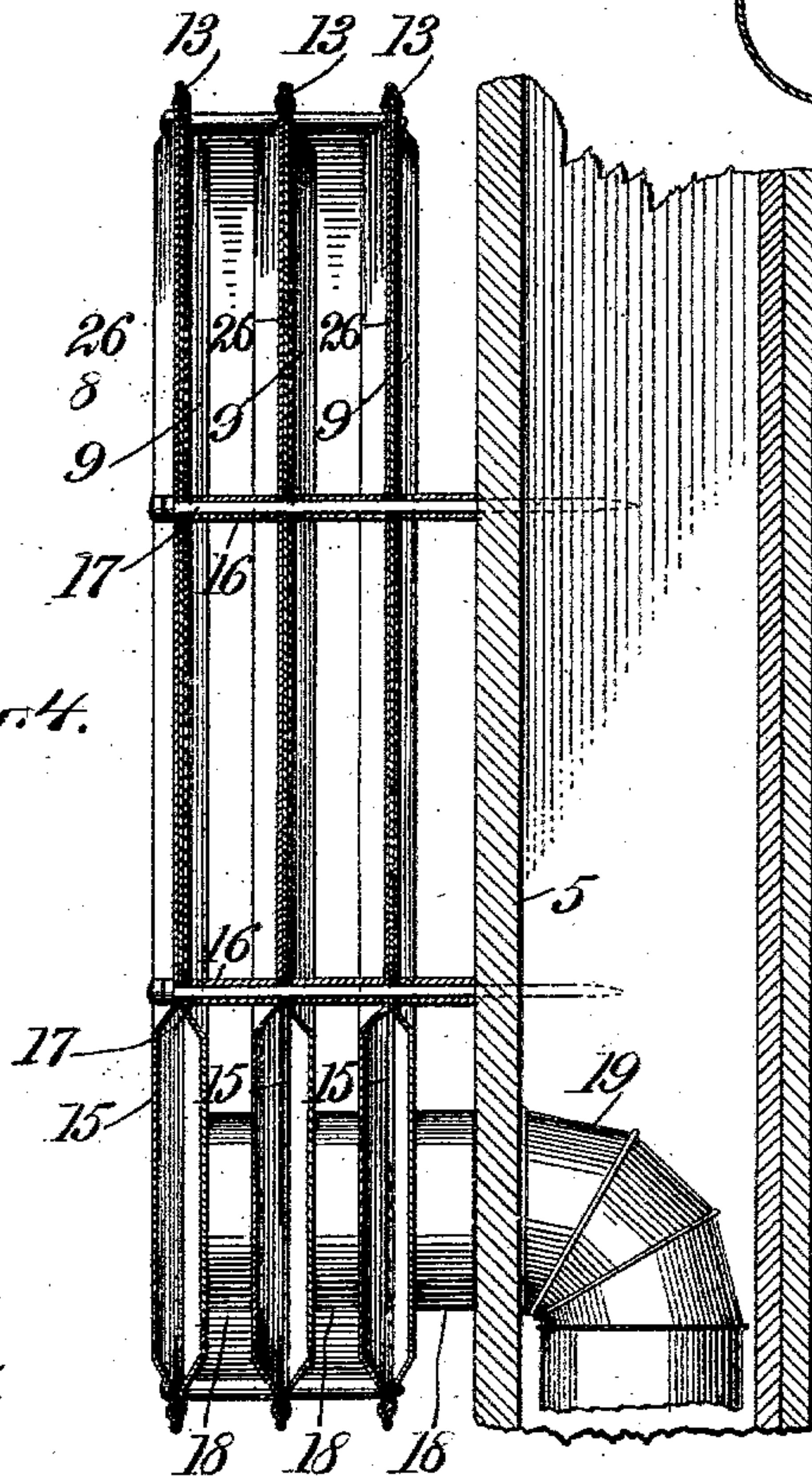
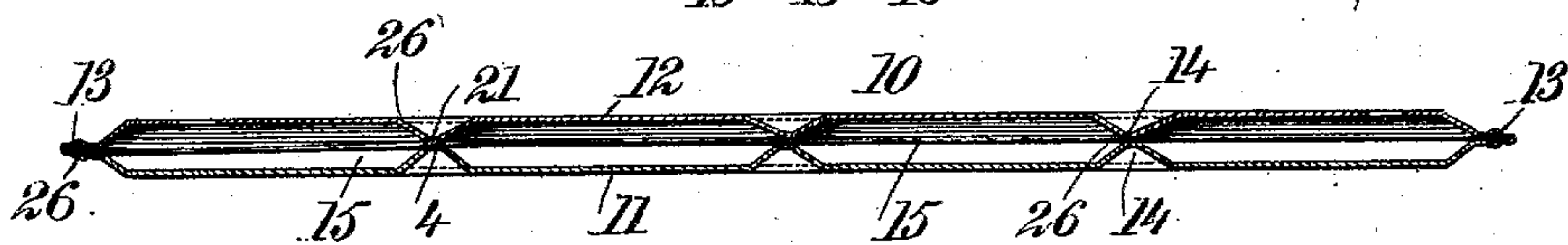


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE MILLER AYLSWORTH, OF COLLINGWOOD, CANADA.

RADIATOR.

SPECIFICATION forming part of Letters Patent No. 753,031, dated February 23, 1904.

Application filed April 4, 1903. Serial No. 151,052. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MILLER AYLSWORTH, a subject of the King of Great Britain, and a resident of Collingwood, in the Province of Ontario and Dominion of Canada, have invented new and useful Improvements in Radiators, of which the following is a full, clear, and exact description.

This invention relates to radiators; and it consists, substantially, in the improvements hereinafter particularly described and claimed.

The invention has reference more especially to the form or type of radiator shown and described in former Letters Patent of the United States granted to me on the 5th day of November, 1901, and numbered 686,190; and the principal object of the invention is to provide a structure of this kind which is effective and reliable for its purpose and one also which operates to promote the process of convection taking place within a room or other apartment in which the radiator may be located.

A further object of the invention is to simplify the construction of the radiator and to cheapen the cost of manufacture thereof and also to provide means whereby the elements or parts of the structure may be readily assembled together and securely mounted in position for use.

The above and additional objects are attained by means substantially such as are indicated in the accompanying drawings, in which—

Figure 1 is a view in perspective, showing my improved radiator as mounted in operative position for use within a room or apartment. Fig. 2 is an enlarged inner side view of the radiator, partly broken out, so as to more clearly indicate the construction and organization thereof. Fig. 3 is a horizontal sectional view taken about on the line 3 3 of Fig. 2. Fig. 4 is an enlarged vertical sectional view taken on the line 4 4 of Fig. 2; and Fig. 5 is substantially a similar view to Fig. 3, illustrating a modification in the construction of the radiator.

Preliminarily to a more detailed description it may be stated that in the forms or embodiments of my improvements herein shown I employ a radiator comprising either a plural-

ity of communicating sections or a single section only; but in either case the construction of the radiator is such that the flow therethrough of the heating medium employed is continuously "baffled" or retarded throughout the entire inner area thereof, thereby rendering more perfect and effective the process of convection proceeding from the use of the structure. The radiator is otherwise specially constructed, and I provide means for overcoming the unpleasant crackling sounds frequently produced in structures of this general class by friction between parts of the same and resulting usually from unequal expansion and contraction of said parts, more especially at the joints thereof. I may construct the radiator of one or more sections, and I provide special means for securing the said sections together, said means also constituting a support for the radiator from the side of a partition or wall, for instance, as will hereinafter fully appear. The heating agent or medium employed may be either hot air, hot water, or steam, (preferably the former,) and is admitted to the radiator through an opening in the inner side thereof at one end, the same finding its exit through a similar opening, also preferably in the same side at the other end. Intermediate these openings the construction is such that the heating agent or medium is compelled to follow a defined path therefor in thin sheets or streams differing both in form and dimensions from the form and dimensions possessed thereby at the point of entry thereof to the radiator, the result being that the heat of such agent or medium is given off much more rapidly and effectively than would otherwise be the case.

Specific reference being had to the accompanying drawings by the designating characters marked thereon, 5 represents an ordinary partition or wall of a room or other apartment, and 6 the floor of such room, while my improved radiator is designated as an entirety at 8. The said radiator may comprise either a plurality of separate sections 9 or a single section 10, (see Fig. 5;) but in either case each section is constructed of two reversely-disposed plates or sheets 11 and 12, of metal, which are each struck up into the desired shape by means of the same die, or, if hot water or steam is em-

ployed for the heating medium, said plates may be made of cast metal, as is apparent. In the present instance each plate is formed all around with a border-flange 13, and intermediate the vertical edges of each plate the same is set inwardly a suitable distance from the upper and lower edges thereof, respectively, thus forming alternating inwardly-projecting ribs or flanges 14, which match each other and fit together closely in the formation from end to end of the radiator of continuous transversely-constricted conduits 15. To aid in holding the two plates of each section together, I preferably bend or turn one of the border-flanges 13 over the other, as shown, and to support a number of sections rigidly in their desired relation to each other I connect the said sections at different points by means of sleeves or tubes 16, fastened in openings therefor in the vertical ribs or flanges 14, (see Fig. 4,) and passing through each of said sleeves or tubes from the outer face of the radiator is a headed pin or bolt 17, which is of a length sufficient to pass through the partition or wall 5, as shown. In this way the entire structure, which, as is apparent, is comparatively light in weight, may be supported in position at any desired height from the floor, thereby providing an air-space beneath the structure without the employment of supporting legs or feet therefor, and it will be noted that the inner ends of the said sleeves or tubes 16 project sufficiently beyond the innermost face of the inner section of the radiator to provide ample space between the latter and the wall for the free circulation of air, which is of course heated in a manner well understood.

The conduits 15 of the several sections of the radiator are in communication with each other by means of intermediate pipe-sections 18, fitted to openings therefor in the plates or sheets 11 and 12, said pipe-sections being preferably substantially in line with an inlet-pipe 19 for the heating agent or medium, said pipe passing through an opening 19^a therefor in the partition or wall 5 and being preferably shown herein as leading upwardly within a flue or chamber 20. Said inlet-pipe enters the radiator from the inner side thereof, preferably at or near one lower corner, and leading from the same side of the structure at or near the opposite lower corner is an exit-pipe 21 for the heating agent, the said conduits 15 of the several sections of the radiator being likewise in communication with each other at this part of the structure by similar intermediate pipe-sections 22, which are substantially in line with said exit-pipe, as shown. It will thus be seen that each radiator-section is provided with independent inlet and exit pipes for the heating agent, and it will also be seen that the number of said sections may be increased or reduced, as may be desired. Inasmuch as the distance between the sides of each of the said conduits 15 is considerably less in

one direction than the diametric distance between the sides of the inlet-opening for each section, it is apparent that the heating agent on its entrance to either conduit is converted from a substantially circular column or mass into a thin sheet or stream, and in virtue of such change of form the said heating agent is caused to become more or less compressed, as it were, and thus is the heat thereof caused to be given off more rapidly, and on reaching the exit of each conduit the heating agent again expands, as it were, as is apparent, the operation being thus carried on continuously, with the tendency to facilitate or promote the process of convection within the room or other apartment, as is also apparent.

Intermediate the adjacent faces of the radiator-sections at near the ends I rigidly connect or unite said sections vertically by means of sheet-metal strips or plates 25, (see Figs. 2, 3, and 4,) said strips serving to strengthen the structure, and they also serve to direct a quantity of heated air about the sides of the radiator-sections, thus also aiding the convection process. These strips or plates are secured in position by means of rods 26 passing through the border-flanges, (see Fig. 2,) or in any other suitable way.

In order to overcome any tendency of the parts of the radiator to give out objectionable sounds or noises produced by rapid changes of temperature of such parts and which usually occur at the joints, where a frictional rubbing together of the parts takes place, I interpose between the meeting surfaces of the said parts strips 26, of asbestos or the like, which, beside answering the purpose mentioned and being non-destructible by heat, also form an effective packing for all the different joints, as is apparent.

In the foregoing reference to the inlet and exit openings for the heating agent another reason is of course seen for locating such openings at one side of the structure instead of at the ends thereof, since otherwise the desired difference of form and dimensions of these openings could not be had. Moreover, in this way the inlet and exit pipes are almost entirely concealed from view, as is apparent.

While I have herein shown the conduits 15 each as following an irregular or serpentine course, it will be understood that my present invention is intended to apply to other forms as well.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A radiator, comprising a plurality of sections, each formed of reversely-disposed duplicate plates having inwardly-projecting meeting ribs extending alternately from the upper and lower edges and forming a circuitous passage for the heating agent, the innermost section being provided with inlet and exit openings near the opposite lower corners, and pipe-sections connecting the radiator-sections

tions, said pipe-sections being in alinement with the inlet and exit openings of the innermost radiator-section, as set forth.

2. A radiator constructed of reversely-disposed duplicate plates united all around at the edges and having inwardly-projecting bends extending alternately from the upper and lower edges thereof, forming inwardly-projecting internal meeting ribs, thereby constituting a conduit for the passage therethrough of a heating agent, and means for securing the structure to the side of a wall or similar support.

3. A radiator constructed of reversely-disposed duplicate plates united all around at the edges, and formed alternately from the upper and lower edges thereof with inwardly-projecting meeting ribs, thereby constituting a conduit for the passage therethrough of a heating agent, and bolts or pins passing through said flanges for securing the structure to the side of a wall or other support.

4. A radiator comprising a plurality of sections each constructed with a conduit having a circuitous passage for the flow therethrough of a heating agent, each conduit being provided with an inlet and an exit opening for such agent, means connecting corresponding openings of the sections, and means for securing the structure to the side of a wall or

similar support, said conduits also being each of constricted dimensions transversely with reference to the diametric distance between the sides of each of said openings and the connecting means therefor.

5. A radiator, comprising a plurality of sections each formed of reversely-disposed duplicate plates having border-flanges secured together, each section having inwardly-projecting bends extending alternately from the upper and lower edges and forming internal meeting ribs, bolts passing through the ribs of the several sections, and plates secured between the marginal flanges of the sections.

6. A radiator formed of sections each having inwardly-projecting meeting ribs extending alternately from the upper and lower edges, said ribs being provided with openings, bolts passing through the openings of the ribs and having their inner ends projecting beyond the innermost section, and sleeves on the bolts between the sections and on the projecting ends of the bolts.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE MILLER AYLSWORTH.

Witnesses:

ROBT. BURDETT,
W. CAMPIN.