

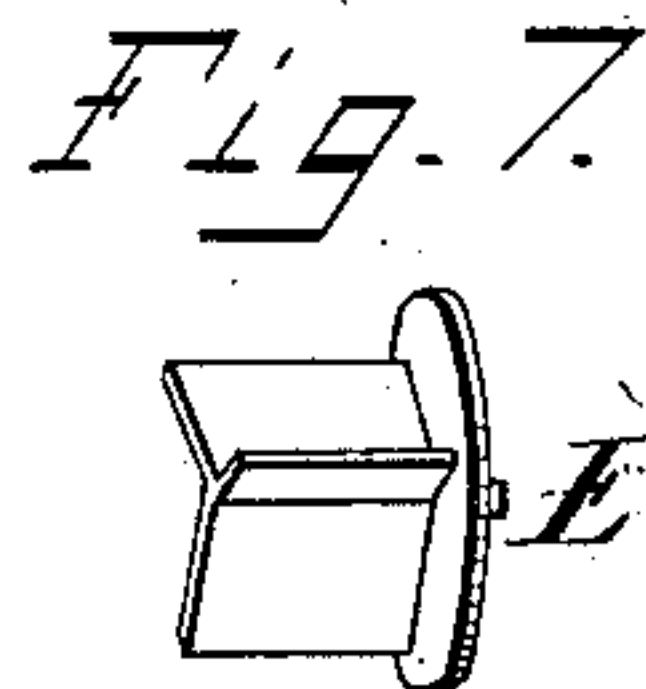
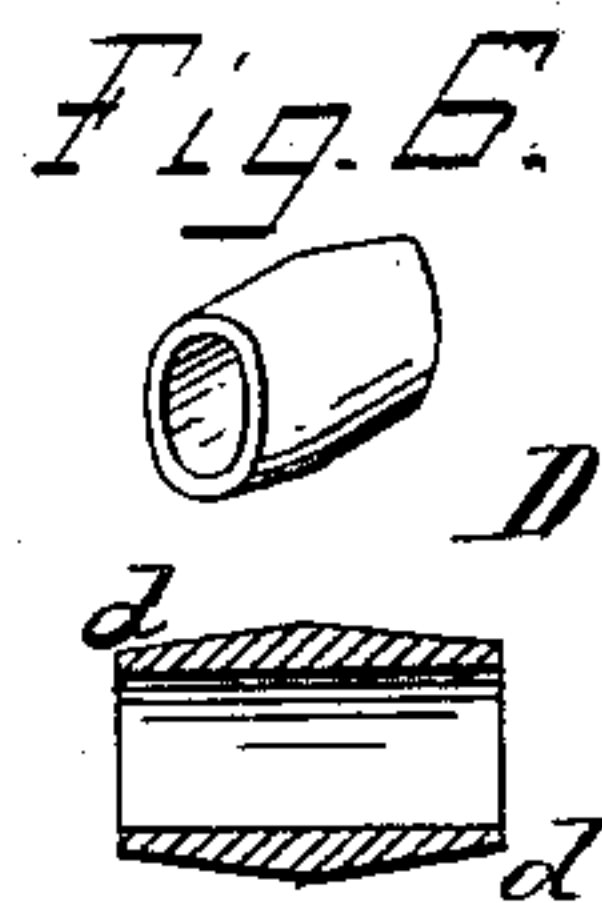
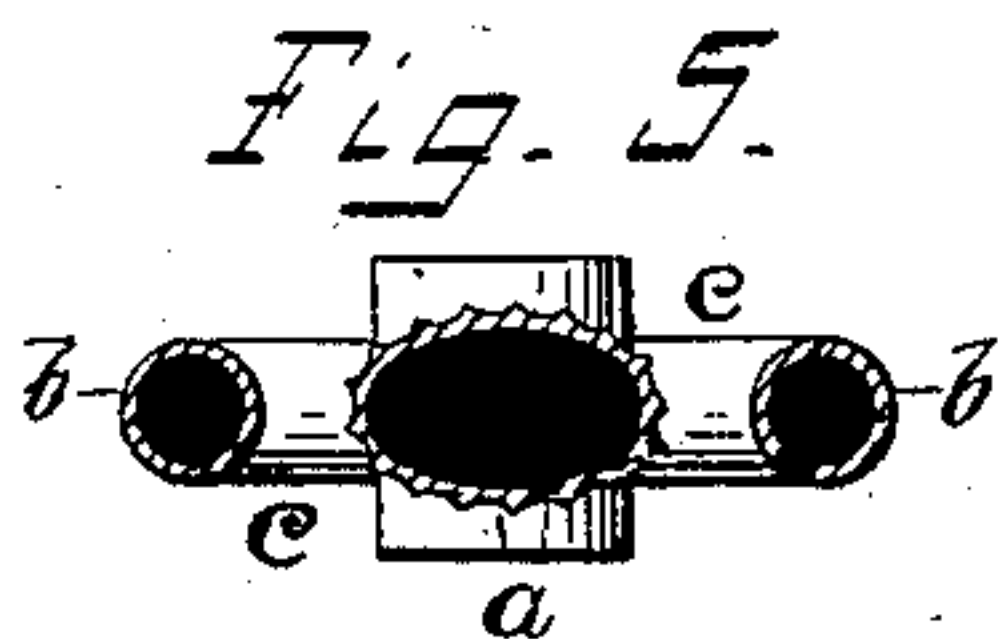
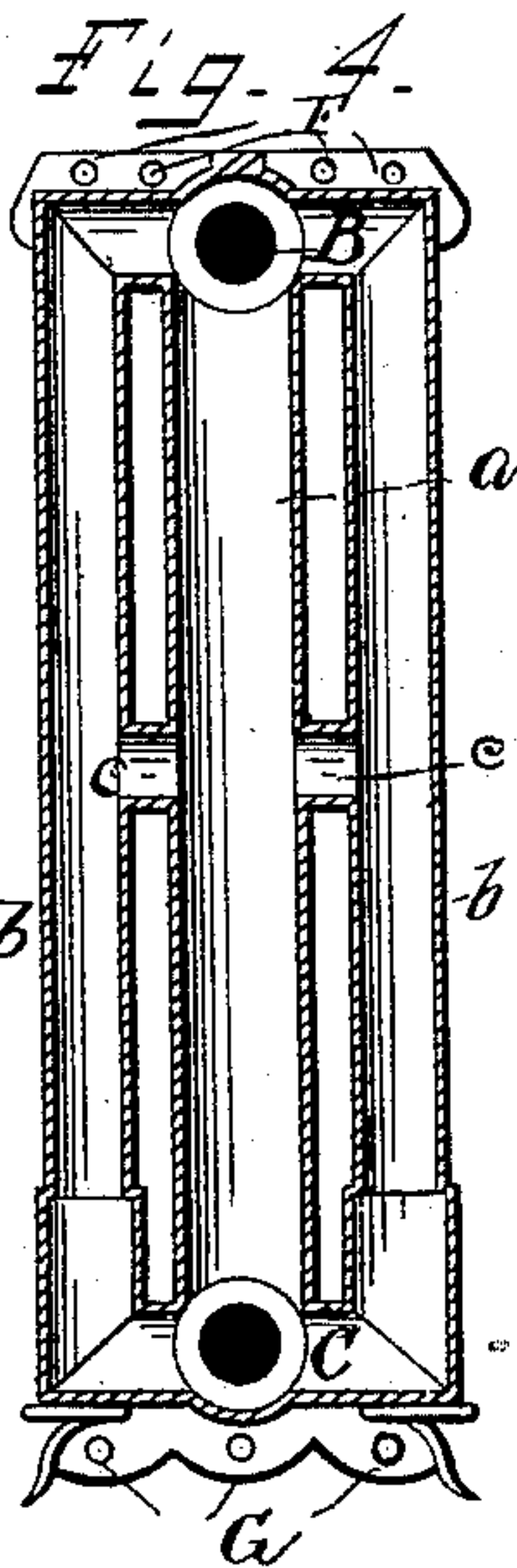
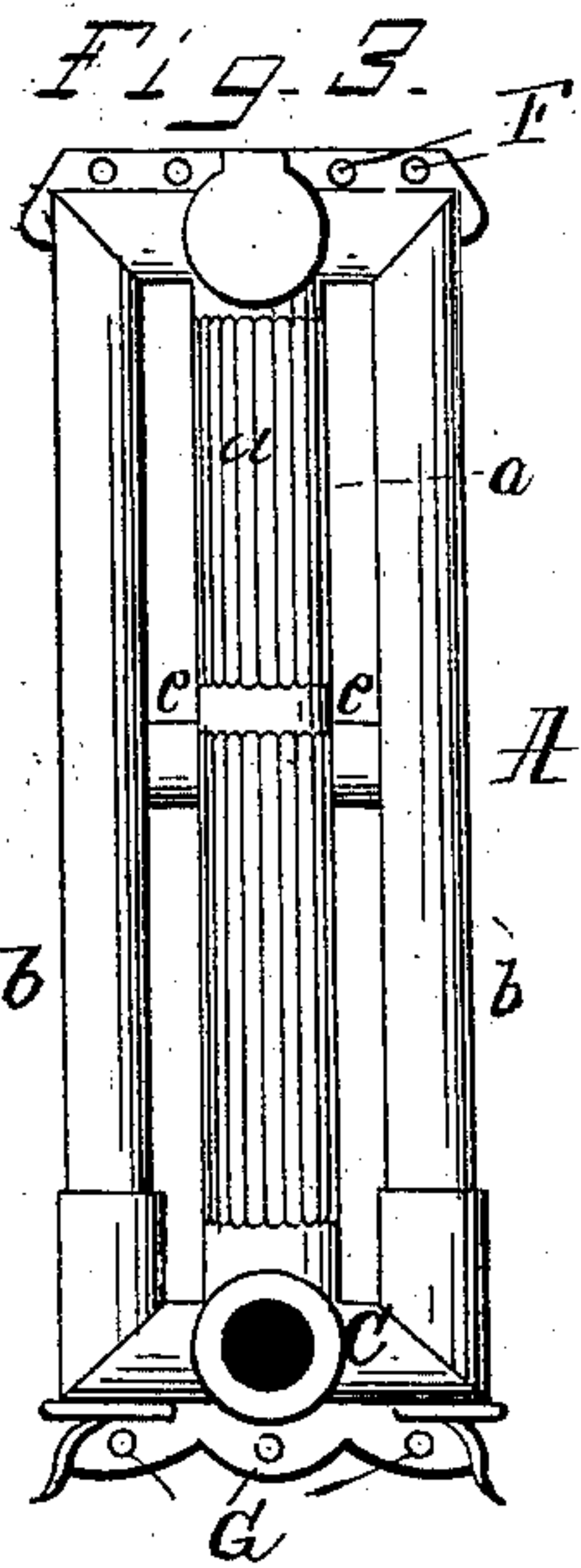
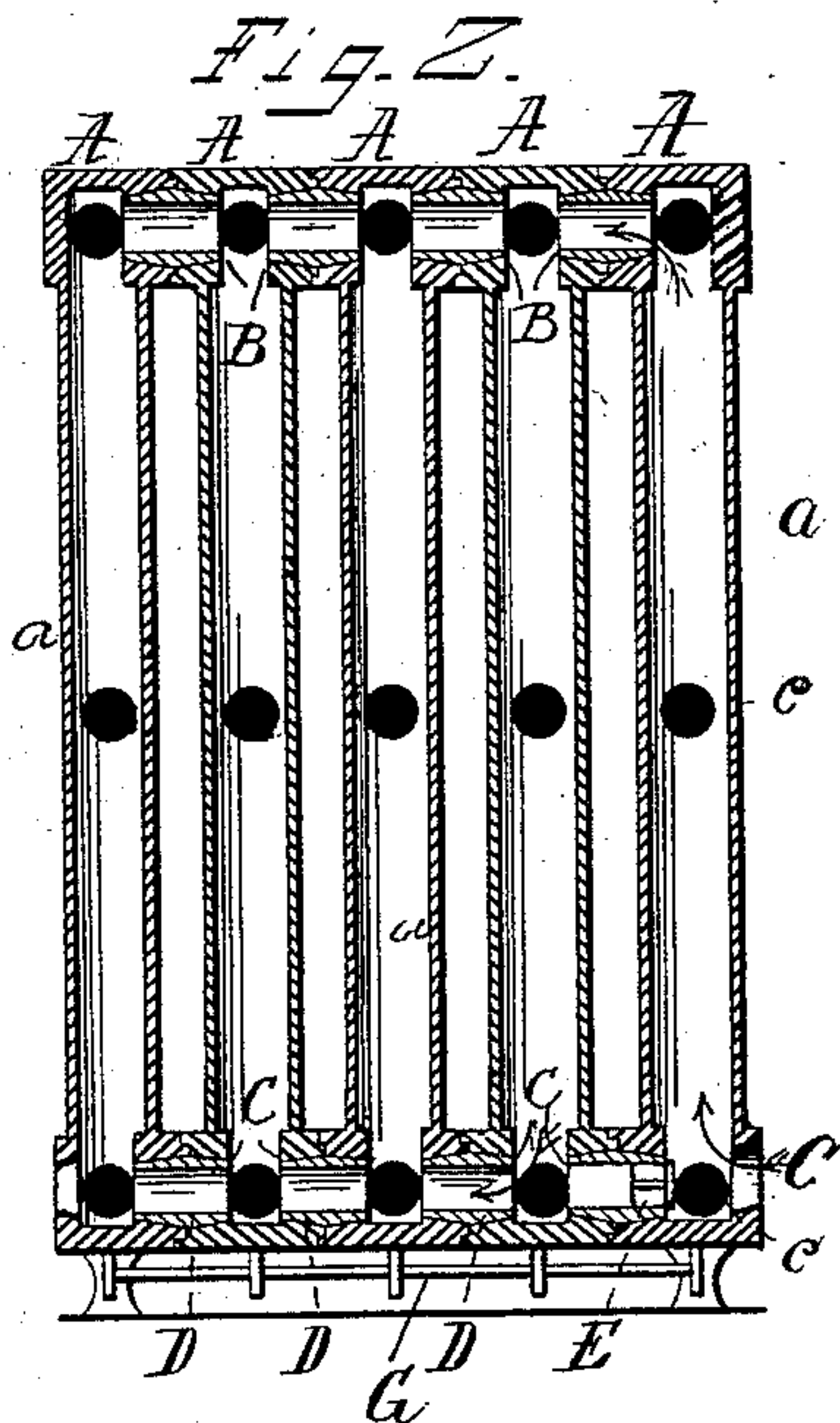
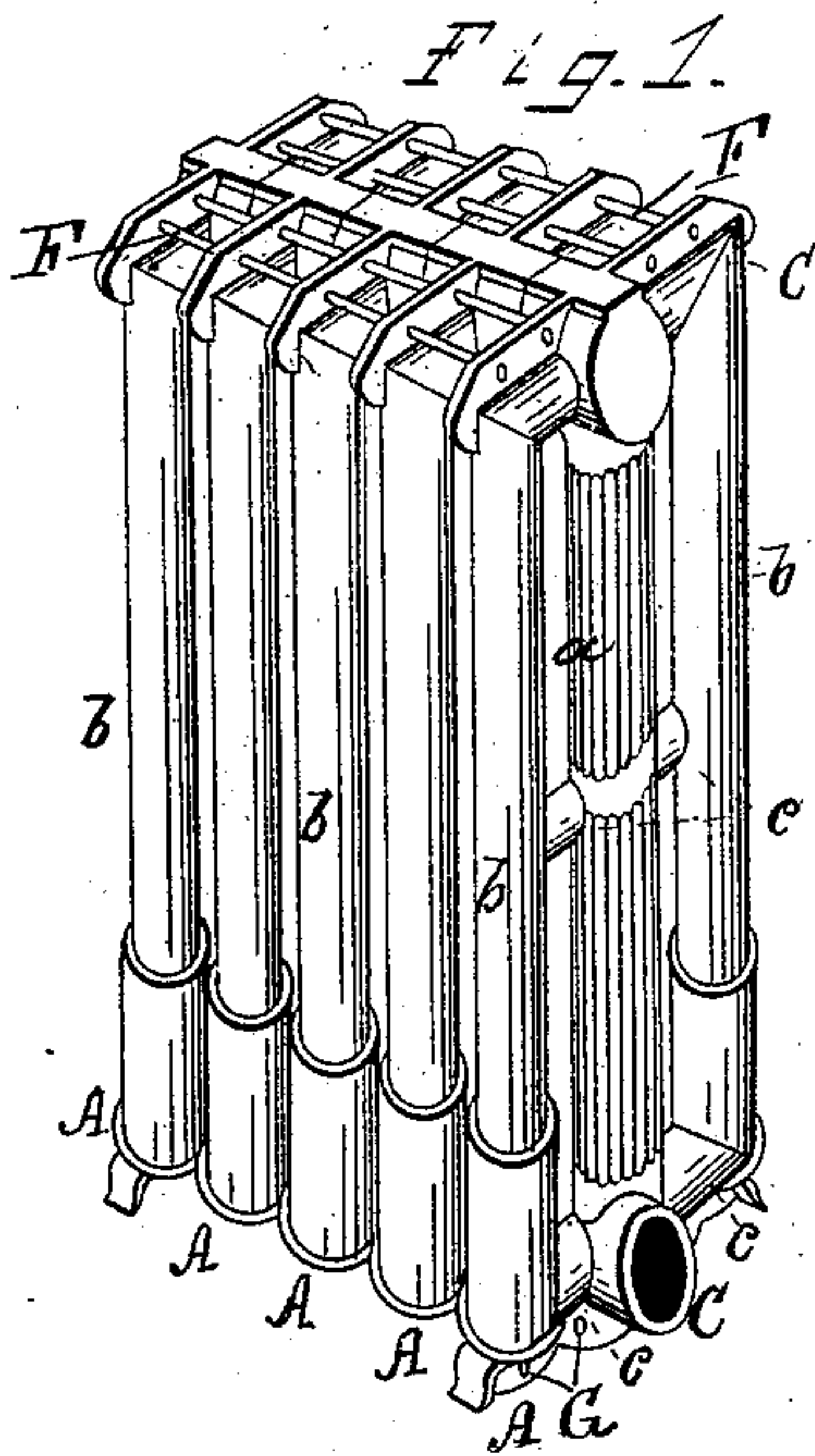
(No Model.)

J. R. REED.

RADIATOR.

No. 347,127.

Patented Aug. 10, 1886.



WITNESSES
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RADIATOR.

SPECIFICATION forming part of Letters Patent No. 347,127, dated August 10, 1886.

Application filed February 16, 1886. Serial No. 192,133. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. REED, a citizen of the United States, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Radiators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improvement in radiators employed for warming buildings, particularly that form of radiator known in the trade as the "Upright Sectional Pipe-Radiator;" and my said invention consists in certain details of construction and arrangement of the same, as will be shortly hereinafter described, and embraced in the claims, whereby the sections of the radiator may be rapidly and securely united together without the use of screw-threads or packing. The sections are simple in construction, and by means of their shape are rendered stronger and with a greater amount of heating-surface in a given space than has heretofore been attainable, and a positive circulation of the warming medium, be it steam, air, or water, whichever may be used, is caused through all parts of the structure.

In upright sectional pipe-radiators the pipes are, so far as I am aware, of the same shape or form in cross-section, and arranged in groups of twos, and in these, as also most all other radiators, the sections are united to each other by a screw-joint, with packing; or, where a simple slip-joint is made, as in a previous patent granted me April 26, 1876, of which the present invention is an improvement, the union of the two sections was effected by forming a threadless tapering projection or nipple upon one side of the section, which was received into a tapering hole made in the opposite section, a tapering hole being formed in one side of each section and a projection upon the opposite side; but in that case, owing to the projection being integral with the body of the section, the manufacture of the radiator was rendered difficult and costly.

This invention, therefore, has for its object the overcoming of this defect and objection, and this is accomplished by forming each sec-

tion the same upon both sides—that is, with a tapering hole in each side at both top and bottom, and uniting them by a separate threadless nipple, made separate and detachable from the sections of the radiator, and driven partially into the hole in one section, and then the two sections pressed or driven together, which unites them securely together. The advantage attained by forming these nipples separate from and not as integral with the radiator-sections is in the ease and cheapness of manufacture, as compared with turning a tapered shouldered nipple upon the section itself, as in the patent hereinbefore referred to, and, in addition to this, the nipples being removable, they can be readily replaced when broken or injured, and the radiator-section still continued in use, which would not be the case in the event of a breakage of the nipple when made integral with and directly upon said section.

For a better comprehension of the details of my invention, reference must now be had to the accompanying drawings, in which—

Figure 1 represents a view in perspective of an upright sectional pipe-radiator constructed according to my invention, and Fig. 2 a vertical central sectional elevation of the same. Fig. 3 represents a face view of one of the sections of the radiator; Fig. 4, a vertical transverse sectional elevation, and Fig. 5 a cross-sectional plan view of the same. Fig. 6 is a detached view, on an enlarged scale, of the detachable threadless nipple for effecting the union between the sections of the radiator; and Fig. 7 is a similar view of the removable cap for closing one of the lower openings of the sections to divert the heating-current as it enters the radiator.

A A represent the sections of which the radiator is composed, any number of which may be employed, and each of which is similar in construction, as I will now proceed to show.

Each section is composed of a single central vertically-arranged pipe or tube, *a*, and two outside cylindrical pipes, *b b*, arranged parallel with and a short distance from the central pipe and upon opposite sides thereof, as shown in Figs. 3 and 4. These pipes are connected to each other by short lateral pipes, as at *c*, situated at each extremity, as well as at the center of the section, and, as shown in Fig. 5,

the central pipe is quite large, of elliptical or oval shape, and fluted, while the outside pipes are small, plain, and cylindrical, the object of which will presently appear. Through the central portion of each side of the sections, at both top and bottom thereof, openings B C are made to form the necessary communication through the radiator, and these openings are, as shown in Fig. 2, made slightly tapering to receive the nipple D, by which the sections are united together in one stack. The holes at the top of the radiator-sections are made smaller than the ones at the bottom, and the nipples are made correspondingly. These nipples are, as shown in Fig. 6, entirely separate from the sections, and are made tapering at each end, as at *d*, and they are of such length that when in position the sections of the radiator at their top and bottom will be flush and close together, with only a very slight opening between the central pipes, as shown in Fig. 2, while the outside pipes are somewhat farther removed. This, therefore, will explain the object of forming the sections of a central large pipe of oval shape and two oppositely-placed cylindrical pipes of smaller diameter—that is, so that the parts will, while fitting together tight and close at the top and bottom, where the joint is made, be separate along their central portion, and thus a greater amount of heating-surface is obtained, so arranged that the air of the room can readily and freely come in contact with it, while occupying less room than if the pipes were all of the same diameter, and the central pipe being of oval shape permits of a larger tube being used without their abutting against each other, and the walls of the same may be quite thin, while still maintaining the requisite strength.

As before stated, all of the sections of the radiator are made alike, and with openings in the top and bottom thereof. In order, therefore, to close such opening or openings as may be necessary to give to the heating medium the proper direction of flow to cause it to circulate through all portions of the radiator, a removable cap or plug, E, Fig. 7, is used, which is made to fit within the said openings, and thereby close the same, as shown in Fig. 2.

To unite the sections together to form a radiator, the nipples D are first driven into the holes at the top and bottom of the sections upon one side only thereof, while the opposite holes remain open. The two sections are then placed together so that the ends of the nipples which project from one side of one section will enter the holes in the opposite section, when the said sections are pressed or driven together until the shoulders of the openings come flush together, when a tight

and secure joint and union of the parts is effected. This has generally been found all that was necessary to permanently secure the parts together; but to prevent the accidental displacement of the sections while shipping or handling, binding-rods which pass through flanges at the top and bottom of each section may be used, as at F G, Figs. 1 and 2.

The simplicity in construction of this radiator is manifest, and by reason of the form and arrangement of the pipes, while a large amount of heating-surface is obtained, the parts are not heavy or cumbersome, but, on the contrary, are light and strong, and present a pleasing appearance. The nipples and caps, being entirely separate from the sections, are easily made and fitted in position, and this portion of a radiator being the part usually first destroyed, they can be readily replaced, and without taking the entire sections apart, as would be necessary were screw-threaded nipples used; and, further, the joint at the top and bottom of the radiator-sections is the same, and no packing is found necessary.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent of the United States, is as follows, viz:

1. In an upright sectional radiator, the combination, with the sections composing the same, having openings therein for communication between the sections, of the separate and detachable cap E, for closing said openings, as described and shown, for the purposes specified.

2. The combination, in an upright sectional radiator, with the sections composing the same, each of which is formed at its top and bottom with tapered openings for communication between said sections, of the separate and detachable threadless nipples D, having tapered ends *d* and detachable cap E, substantially as described and shown, for the purpose specified.

3. The combination, in an upright sectional pipe-radiator, of the sections composing the same, each formed of a group of three pipes each, the central pipe of which is of larger diameter than the outside ones, and having an oval-shaped fluted surface, and having tapering openings therein at top and bottom, the separate nipples tapered at each end, and separate cap E, all constructed and arranged substantially as and for the purposes described and shown.

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

JOHN R. REED.

Witnesses:

H. W. ASHLEY,
A. B. CLARK.