No. 733,183. PATENTED JULY 7, 1903.

C. F. GESSERT.

CONNECTION FOR RADIATOR SECTIONS.

NO MODEL. APPLICATION FILED NOV. 12, 1900.

2 SHEETS—SHEET 1.

Fig. 1.

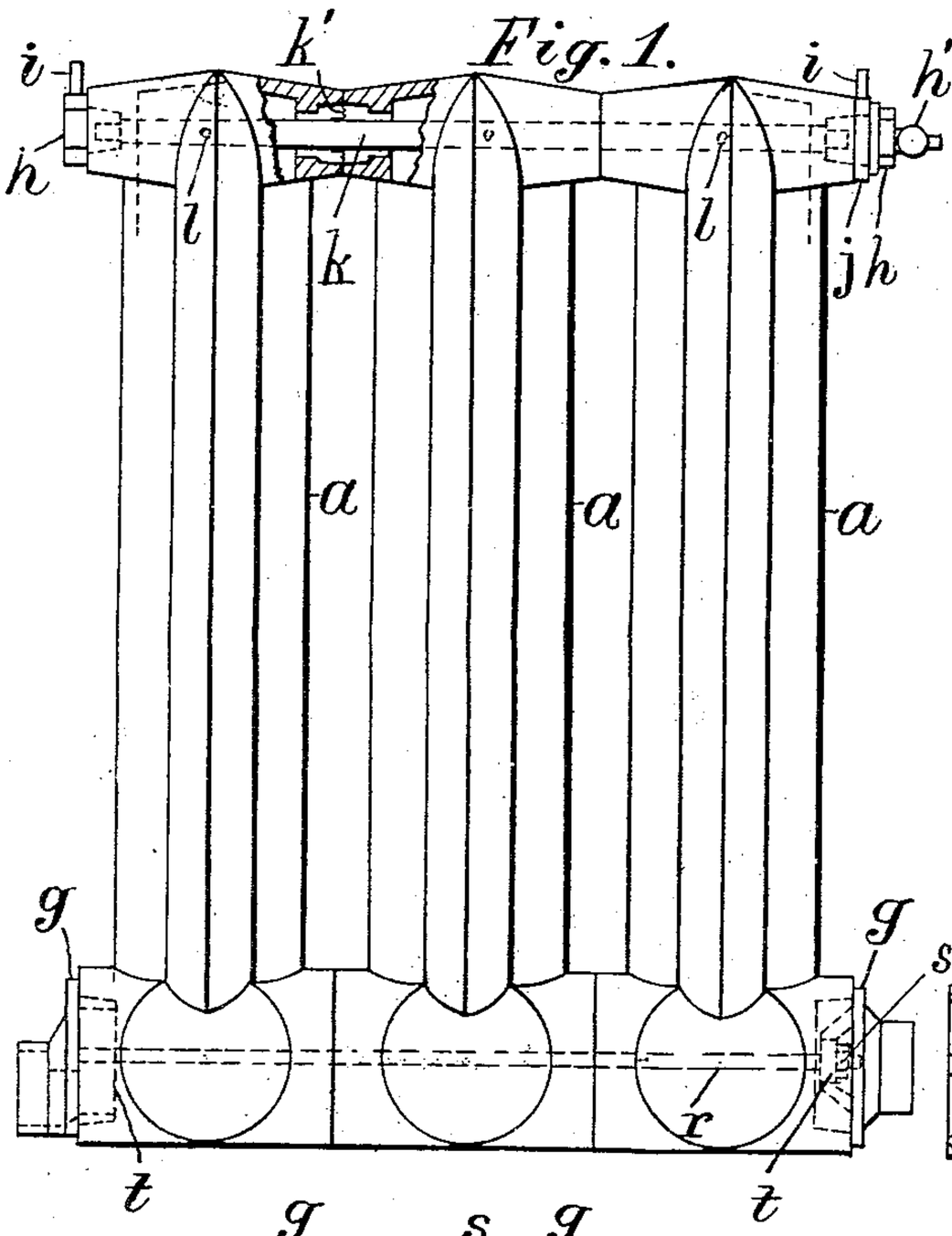


Fig. 2.

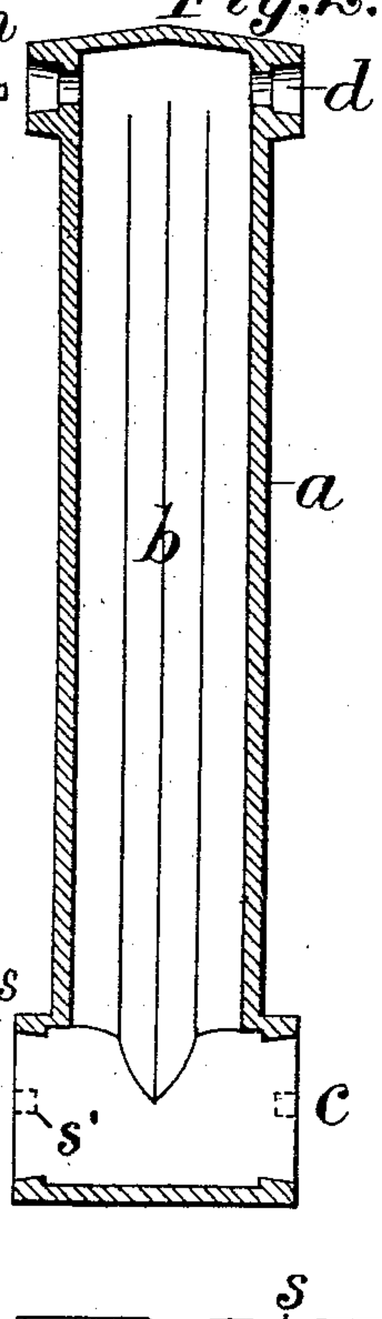


Fig. 3.

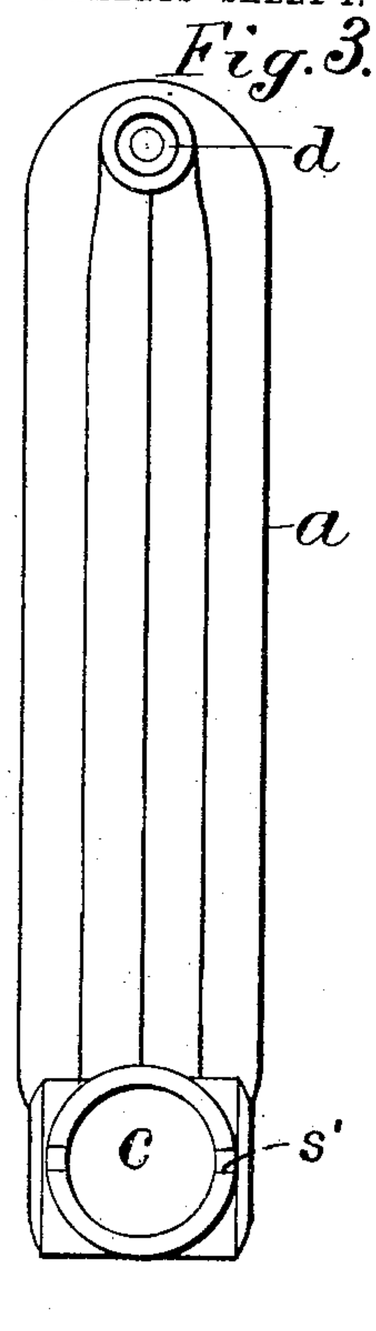


Fig. 4.

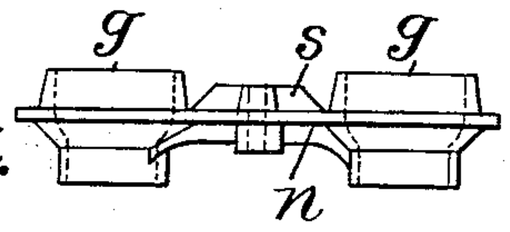


Fig. 6.

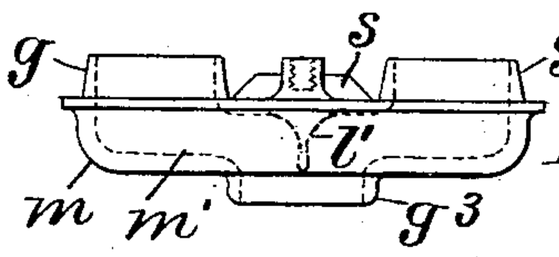


Fig. 5.

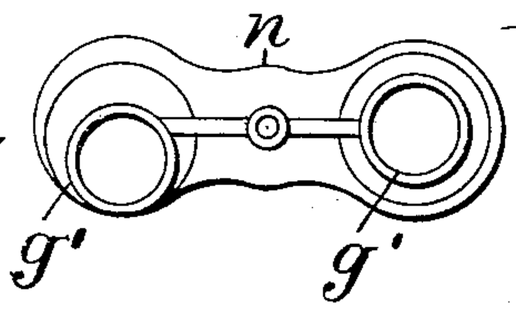


Fig. 1a.

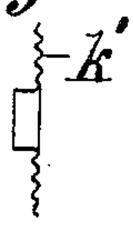
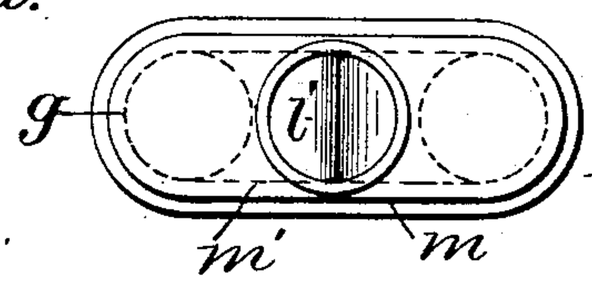


Fig. 7.



Attest:
L. Lee.
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Inventor.
Charles F. Gessert,
per Thomas S. Crane, Atty.

No. 733,183. PATENTED JULY 7, 1903.

C. F. GESSERT.

CONNECTION FOR RADIATOR SECTIONS.

APPLICATION FILED NOV. 12, 1900.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 8.

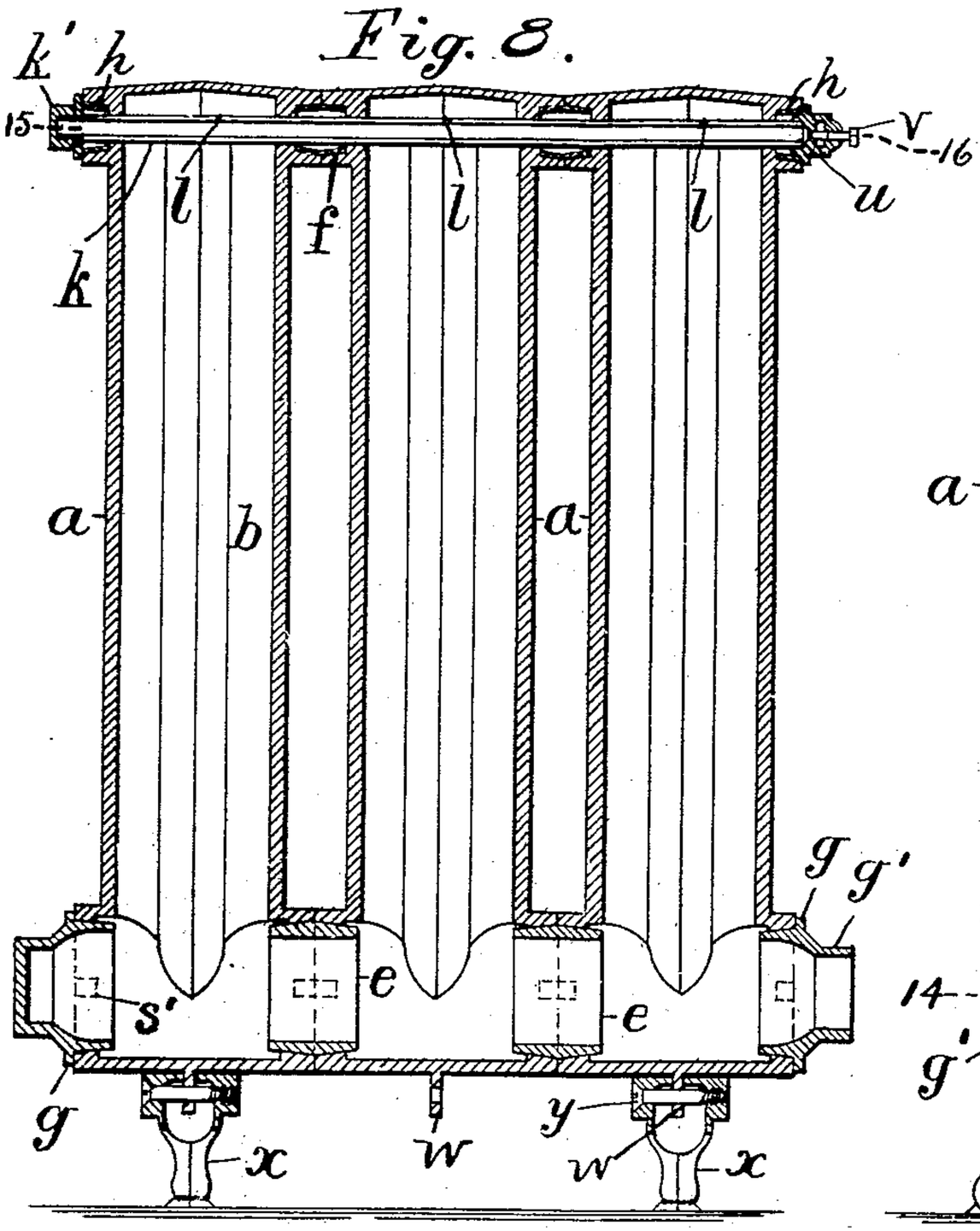


Fig. 9.

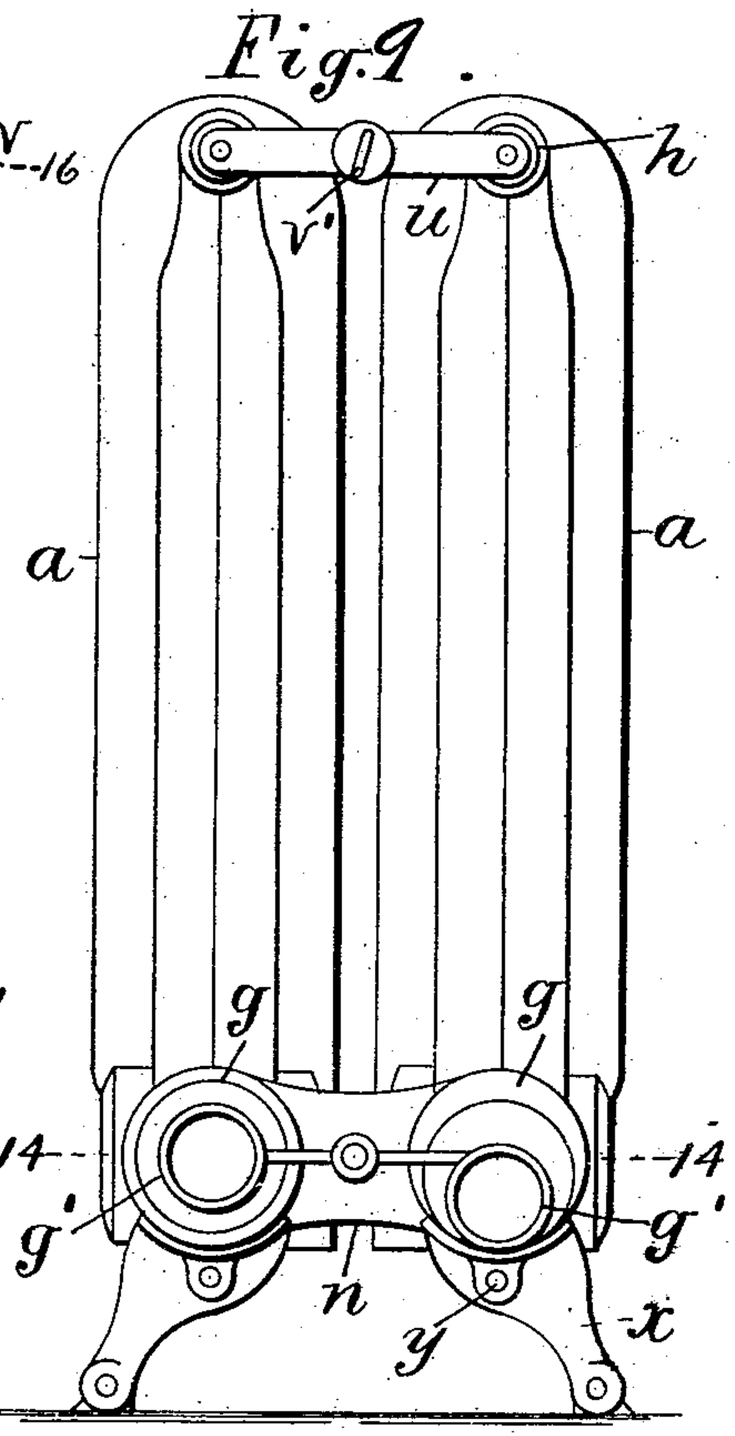
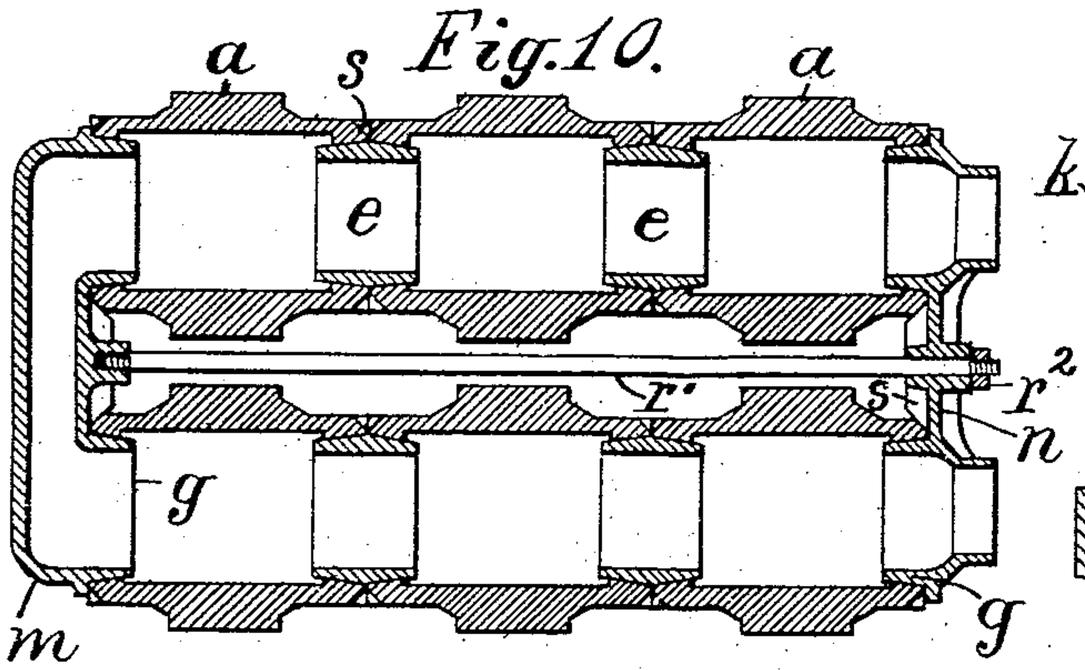


Fig. 10.



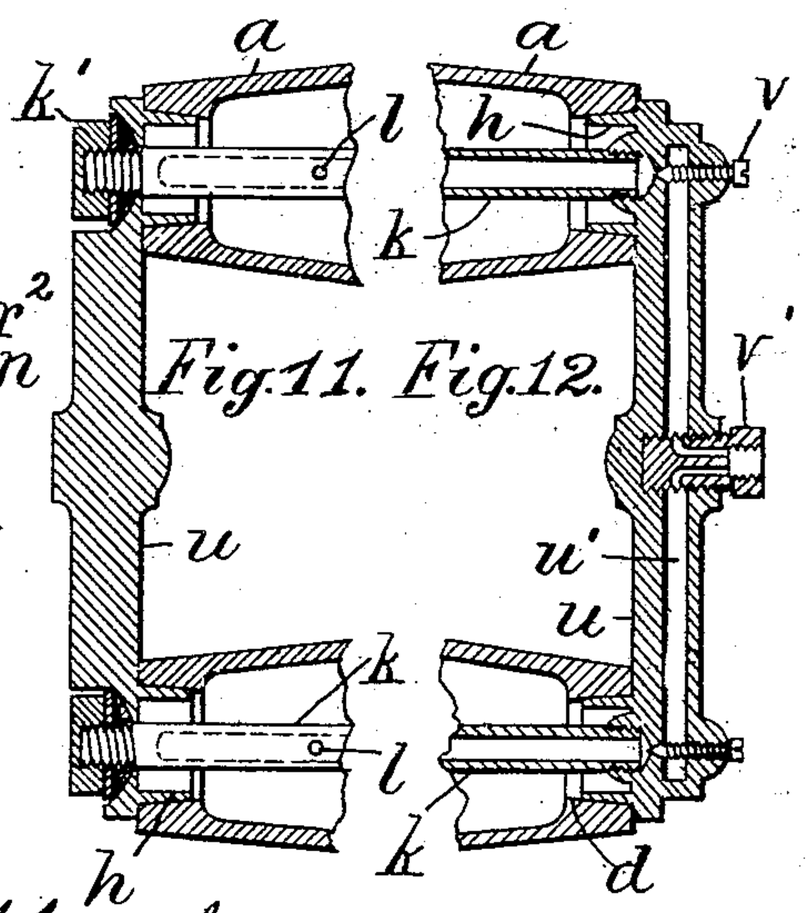


Fig. 11. Fig. 12.

Fig. 13

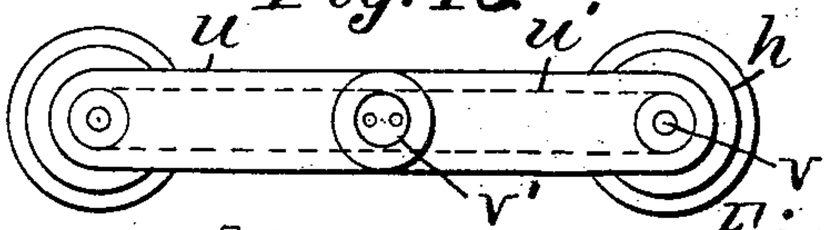
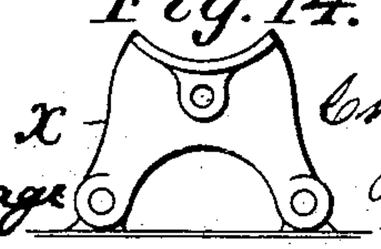


Fig. 14.



Attest:
L. Lee.
Walter H. Talmage.

Inventor.
Charles F. Gessert, per.
Thos. S. Crane, Atty.

No. 733,183. Patented July 7, 1903.

UNITED STATES PATENT OFFICE.

CHARLES F. GESSERT, OF BROOKLYN, NEW YORK, ASSIGNOR TO C. F. GESSERT COMPANY, A CORPORATION OF NEW JERSEY.

CONNECTION FOR RADIATOR-SECTIONS.

SPECIFICATION forming part of Letters Patent No. 733,183, dated July 7, 1903.

Application filed November 12, 1900. Serial No. 36,161. (No model.)

To all whom it may concern:

Be it known that I, CHARLES F. GESSERT, a citizen of the United States, whose residence is Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Connections for Radiator-Sections, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to furnish an improved means of providing steam and water connections to radiators in which the sections are connected by slip-nipples.

The invention is especially applicable to multiple-row radiators, and furnishes an improved means of connecting the rows with the steam, water, or air valves, whether the radiators be constructed for use in the single-pipe or double-pipe system.

Heretofore slip-nipples have been used to form the joints between the adjacent faces of radiator-sections, and in the present invention I use slip-nipples of elastic character integral with bridges to furnish the necessary connections from the radiator-sections to the inlet and outlet of the radiator.

By my invention all the sections of the radiator may be made identical and provided with lateral tapering openings, the pipe connections to the end sections being formed with precisely the same kind of joints as the slip-nipple connections between the sections themselves. The units are shown of cruciform cross-section in the illustration.

Figure 1 is a side elevation of a radiator. Fig. 1^a is a section of the diaphragm k'. Fig. 2 shows one of the sections divided longitudinally. Fig. 3 is an end view of one of the sections. Fig. 4 is an edge view, and Fig. 5 shows the outer side of a bridge for the pipe connections with both connections at one end. Figs. 6 and 7 show an edge view and outside view of a tubular bridge for double-pipe connections for use in cases where feed and return connections are at opposite ends of the radiator. Fig. 8 is a longitudinal section on the center line of one of the rows of sections shown in Fig. 9, which view is an end elevation of the radiator. Fig. 10 is a horizontal section on line 14 14 in Fig. 9. Figs. 11 and 12 show plans in section at the opposite ends of the radiator, taken on line 15 16 in Fig. 8; and Fig. 13 is an outside view of the air-venting bridge. Fig. 14 shows an interchangeable radiator-foot.

Figs. 2 and 3 show one of the unit-sections a, which is formed with a simple or undivided tube b and provided with lateral openings c at the bottom and lateral openings d at the top. The openings are shown of taper form to receive a slip-nipple, as indicated at e in the bottom of the sections in Fig. 8 and at f in the top of the same sections. The sections may be held together by extending tie-rods through the sections, as shown at the top of the radiator, or between the sections through bridges at the ends of the group, which is illustrated at the bottom of the radiator in Figs. 8 to 10.

To combine two or more separate rows in a radiator, I form the slip-nipples for the end openings integral with the bridges, which may, if desired, be formed with a passage to join the lower ends of the rows. Fig. 6 shows such a bridge m, having a transverse passage m', connecting the two slip-nipples g and provided with an outlet-nozzle g^3. A deflector l' is formed in the passage at the center of the nozzle g^3 to direct the fluid which flows in the passage to or from such outlet.

Figs. 4 and 5 show the bridge formed with a solid tie n, integral with the slip-nipples g, which are provided, respectively, with the threaded inlet and outlet nozzles g', adapted for a radiator with feed and return at one end.

Figs. 8 and 10 show the tubular bridge m at the left-hand end of the radiator and the bridge having the tie n at the right-hand end of the radiator and a tension-rod r', attached to the middle of the tubular bridge and extended through the center of the bar n to receive a nut r^2, which presses the bridges and all the sections together and holds the slip-nipples in the end openings of the rows. The bar r' thus holds the sections together without passing through the interior of the same. A rib s may be formed upon each of the bridges, (integral with the slip-nipples,) which fits notches s' in the faces of the sections and operates to hold the rows of sections upright

and parallel to one another and at the same level. To make the sections interchangeable, the faces of all the sections may be provided with the notches s' at the edges of the lateral openings c, as shown in Figs. 2 and 3, and the rib s is thus adapted to fit into any of the sections which may be used upon the end of the row.

The construction shown in Fig. 10 is adapted for use in what is termed the "double-pipe" system of radiators, in which both the inlet and outlet are at the same end of the radiator, and the construction with the tubular bridge m permits the fluid to be forced positively from the inlet through both rows of sections to reach the outlet. Where the two-pipe system with inlet and outlet at opposite ends is used, the tubular bridge shown in Fig. 6 would be employed instead of that shown in Fig. 10. The vent-tubes k in the top of each row serve as tie-rods for the sections and may be provided, as shown in Fig. 1, with separate cocks h', or they may be connected with a tubular bridge u (shown in Fig. 12) and both discharge from a single vent. The tube may operate in such case to discharge the air separately from each section by providing a diaphragm or collar at the top of the section fitted snugly to the tube. Such a diaphragm k^4 is shown in Fig. 1^a and in Fig. 1, forming the joint between the heads of the sections, with a central hole fitted to the tie-rod, while in Fig. 8 (where the joint is formed with slip-nipples) collars are shown in the heads of the sections to fit the tubular tie-rod.

In either construction the communication between the sections is cut off and the air escapes through holes l formed in the tie-rod, one in each section.

In Fig. 1 the tie-rod is shown with fittings h screwed upon the ends to close the end openings of the sections, and a cock h' is shown to vent the air, while studs i are shown upon the fittings to hold a cover in place upon the radiator, if required. In Figs. 8, 9, 11, and 12 the vent-tubes are connected by bridges u, both formed of the same pattern to present a uniform appearance, but only one of them made with the transverse passage n', connected with both of the air-tubes. The tubes are tapped into one of the bridges and secured at the opposite end by nuts k', and valves v are applied to the ends of the separate tubes, where they discharge in the passage u'.

The valves may be regulated to vent either row of the radiator independently, the air from both escaping from a valve which would be applied in the center of the passage u'. A plug is shown at v with separated passages leading outwardly from the passage u', which prevent the two air-currents from clashing in their escape, and the outlet-valve would be screwed into such plug.

It is obvious that three or more rows of sections may be connected by similar bridges at the top and bottom, with a suitable number of integral slip-nipples on each bridge, and a multiple-row radiator thus produced with the same facility as a single-row radiator by the use of the interchangeable sections and the fittings I have described. The connection of the radiators at the top and bottom by bridges having such slip-nipples greatly simplifies the construction of the sections interchangeably and enables them to be connected in rows and groups with great ease and rapidity. By keeping bridges on hand adapted to form two-row and three-row radiators orders for such radiators, embracing any number of sections in each row, may be filled with the same promptness as orders for single-row radiators. It is obvious that the system greatly facilitates the enlarging of radiators where an increased capacity is required, as the fittings attached to the end section, whether a bridge or a single nozzle, may be readily removed and other sections applied to the end of the radiator and the fittings again restored to the end openings. In such case the only additional parts required would be tie-rods of suitable length to compensate for the change, and such compensation may also be effected by furnishing sections of tie-rods equal in length to one of the radiator-sections measured through the openings c and coupling such rod-sections to the one previously employed in the radiator. To facilitate the application of feet to support single and double row radiators, each radiator-section may be formed with a lug w upon the bottom, to which the feet x may be secured by means of a through-bolt y. One-sided feet, such as are shown in Fig. 9, would be provided for the multiple-row radiators, and a foot with two supports, as is usual, would be provided for single-row radiators. Such a foot is shown in Fig. 14.

Having thus set forth the nature of the invention, what is claimed herein is—

1. A radiator composed of two separate rows of identical sections having lateral tapering openings connected by slip-nipples, and bridges at the ends of the sections having yielding slip-nipples fitted without packing, to the end openings of the sections, one of the bridges having a solid bar joining such slip-nipples, passages extended through the bridges from such slip-nipples to furnish inlet and outlet to the sections, and a tie-rod arranged and operated to press the end nipples toward one another, substantially as herein set forth.

2. A radiator composed of two separate rows of identical sections having lateral tapering openings connected by slip-nipples, a bridge at one of the sections with integral yielding slip-nipples fitted elastically without packing, to the end openings, a transverse passage within the bridge for connecting the two rows of sections, a bridge with slip-nipples fitted to the opposite end openings, and a tie-rod arranged and operated to press the two bridges

toward one another, substantially as herein set forth.

3. A radiator composed of two separate rows of identical sections having lateral openings connected by slip-nipples, bridges at the ends of the sections provided with integral yielding slip-nipples fitted elastically without packing to the end openings of the rows, one of the bridges having threaded pipe-nozzles in line with the two nipples to form inlet and outlet connections through such nipples, the bridge having a solid bar joining such nozzles, and a tie-rod extended through such bar to press the bridges toward one another.

4. A radiator composed of two separate rows of identical sections having lateral tapering openings connected by slip-nipples, a bridge at one end of the sections with integral yielding slip-nipples fitted elastically to the end openings, with a transverse passage for connecting the two rows of sections, and a bridge at the other end of the sections with integral yielding slip-nipples fitted elastically to the end openings, and having threaded pipe-nozzles in line with the said slip-nipples, to form inlet and outlet connections through such nipples and a solid bar joining such nozzles, and a tie-rod extended through such bar to press the bridges toward one another.

5. A radiator composed of two separate rows of sections having lateral tapering openings connected by yielding slip-nipples and having notches in the faces of the sections, bridges at the opposite ends of the sections having integral yielding slip-nipples fitted to the end openings, threaded pipe-nozzles in connection with the slip-nipples upon one of said bridges to form inlet and outlet openings, the bridge having a solid bar joining such nozzles, and one of the bridges having ribs fitted to the notches in the end sections to hold the two rows of sections upright, and a tie-rod extended through such solid bar to press the bridges toward one another, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES F. GESSERT.

Witnesses:

L. LEE,

THOMAS S. CRANE.