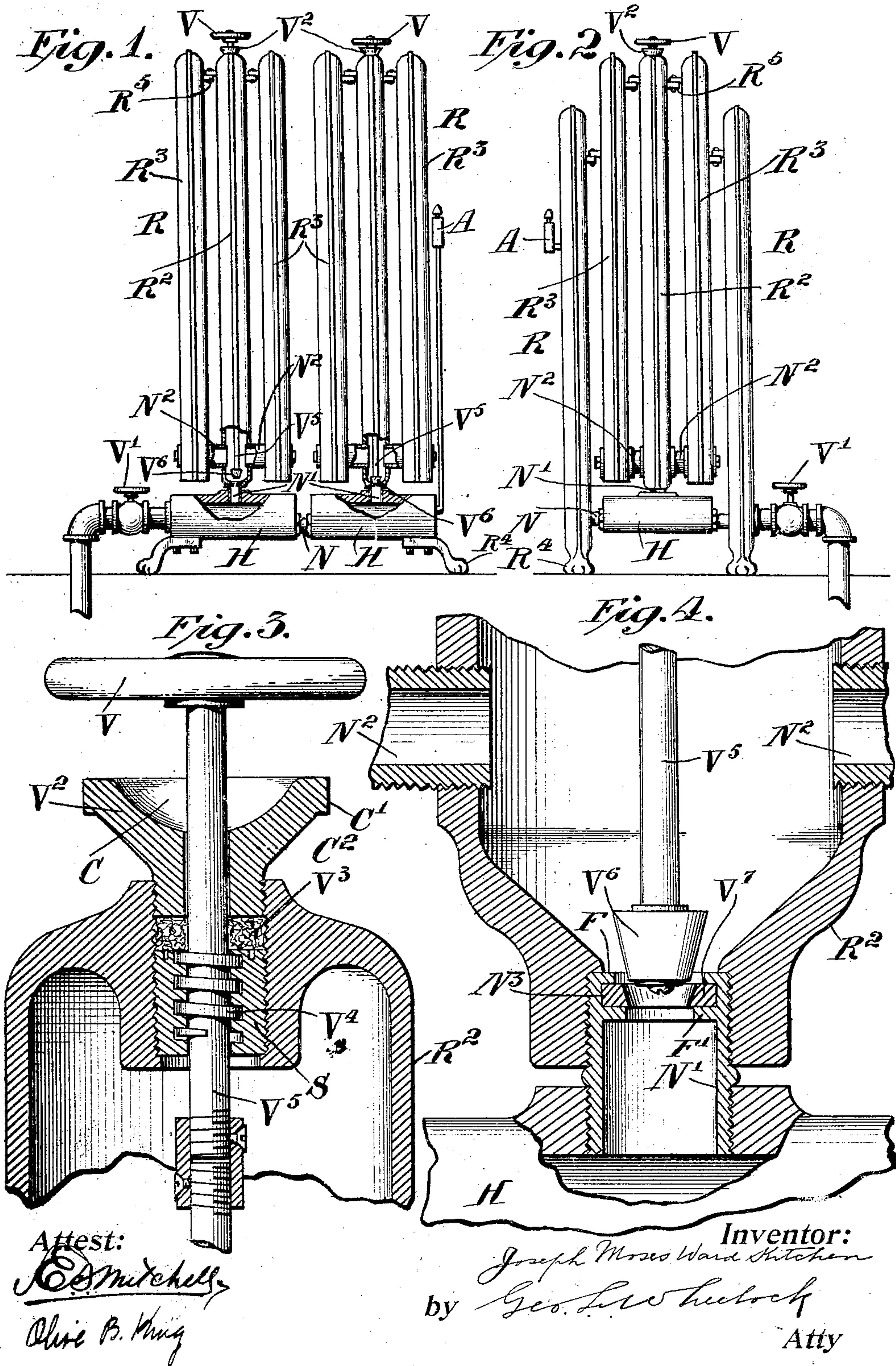


No. 883,808.

PATENTED APR. 7, 1908.

J. M. W. KITCHEN.  
SECTIONAL RADIATOR.  
APPLICATION FILED JAN. 15, 1907.





# UNITED STATES PATENT OFFICE.

JOSEPH MOSES WARD KITCHEN, OF EAST ORANGE, NEW JERSEY.

## SECTIONAL RADIATOR.

No. 883,808.

Specification of Letters Patent.

Patented April 7, 1908.

Application filed January 15, 1907. Serial No. 352,844.

*To all whom it may concern:*

Be it known that I, JOSEPH MOSES WARD KITCHEN, citizen of the United States, residing at East Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Sectional Radiators, of which the following is a specification.

The object of my invention is to provide for conveniently varying the amount of radiating surface brought into action in radiators; and to secure compactness in form in such a radiator, convenience in manipulation, and effectiveness and convenience in assembling the several parts in manufacturing. This radiator allows for the continuous maintenance of steam pressure in the system with which the radiator is connected, and yet provides for an immediate, positive introduction of desired amounts of steam to each part of the radiator's sections.

The form of invention herein claimed is of special value for the assembling of the laterally compressed radiator-coils now in almost general use.

In the drawings which show two forms of my invention:—Figure 1, is a view in elevation showing parts broken away of a sectional radiator embodying my invention. Fig. 2, is a view in elevation of a form of radiator which indicates how a part of the coils of an old radiator may be used in constructing a radiator embodying my invention. Fig. 3, is a sectional view of the upper part of one of the central coils of one section of my sectional radiator. Fig. 4, is a sectional view of the lower part of the coil shown in Fig. 3.

R represents my sectional radiator. Each section comprises a horizontally disposed base-member H having means N for connection with other sections; such means being exemplified by screw-nipples. Provision is made at the center of the upper surface of the base-member H, which is chambered to contain steam for connection with a vertically disposed central loop or coil R<sup>2</sup>, the base-member and coil being joined with a screw-nipple N<sup>1</sup>, or other coupling, containing a valve N<sup>3</sup>, which permits the entrance of, or prevents steam from rising into the vertically disposed coils. This valve is manipulated by means of a long valve stem V<sup>5</sup> extending through the interior of the coil R<sup>2</sup>, and up through the top of the coils. Near the top of the coil R<sup>2</sup> is a compression screw V<sup>4</sup> which is connected through its stem with a hand wheel V, located above the coil R<sup>2</sup>.

A steam packing V<sup>3</sup> in the stuffing box C<sup>2</sup> is forced into intimate contact with the valve-stem V<sup>5</sup> by the combined gland-nut and catch-cup V<sup>2</sup>, the upper concavity C of which retains any small amount of water leaking past the valve-stem V<sup>5</sup>.

C<sup>1</sup> is a wrench rim.

The screw-nipple N<sup>1</sup> has a valve seat V<sup>7</sup> made by expanding a leaden ring into the space between the retaining flanges F and F<sup>1</sup>, thus furnishing an accurately fitting seat for the valve plug or head V<sup>6</sup>. Screw-nipples N<sup>2</sup> allow for the lateral addition of as many coils as may be desired on both sides of the central coil R<sup>2</sup>, all of which are controlled by the single special valve mechanism shown at the bottom of the central coil R<sup>2</sup>.

This form of structure provides for the presence of as many sections in the radiator as may be desired, and for any amount of radiating surface in any of the sections. Preferably, the length of the horizontally disposed chambered base-member H is of the same horizontal extent as that of the assembled coils in one section. In assembling the sectional radiator, the vertically disposed coils are first screwed together; then these joined coils, are attached to the base-member H by means of the screw-nipple N<sup>1</sup>; and finally, the completed sections are screwed together, forming the entire radiator R.

It will be noted that the lower parts of the vertically disposed coils R<sup>2</sup> and R<sup>3</sup> and their connecting screw-nipples N<sup>2</sup> form for each section a horizontally disposed secondary or upper steam main lying at a plane above that of the base-member but having its longitudinal axis parallel to its base-member. This secondary main is an essential feature in my invention.

It will be observed from a study of the position of the several valves that any desired portion of the radiating surface of the device here shown may be brought into action, or that steam may be shut off entirely from the whole radiator.

If the valve V<sup>1</sup> is closed, steam is shut off from the entire radiator; or by closing or opening one or more of the valves, steam may be allowed to enter the lower base sections alone, or to also enter one or more of the vertically disposed sections.

It is understood in all cases that there are air valves A properly located to automatically permit the escape of air accumulated in the several sections. In some cases an air



valve would be connected with each section, while in other as A in Fig. 2, one air valve will provide for the escape of air from all the sections.

5 R<sup>4</sup> in Figs. 1 and 2 are feet for maintaining the radiator in a vertical position. The radiator part and the feet may be cast integral; or feet may be bolted to the base-member H.

10 R<sup>5</sup> is means for maintaining the interiorly located coils in vertical alinement.

I draw attention to the fact that this form of invention provides for exceptional facility in the effective and economical assembling of the several parts of the radiator into a very  
15 compact form through screw-nipple connections; the combined structure occupying small space and providing for the convenient manipulation of the device in varying the radiating area to meet the needs consequent  
20 upon atmospheric changes.

What I claim as new is:

1. In a radiator section, the combination of (1) a horizontally disposed chambered base-member forming a steam conduit, said base-  
25 member comprising means at both of its ends adapted for connection and communication with other horizontally disposed base-members and having means intermediate between said ends for connection and communication  
30 with a superimposed part, (2) said superimposed part, said superimposed part comprising a plurality of vertically disposed coils or loops, (3) means for connecting and disconnecting and for furnishing communication  
35 between said vertically disposed coils or loops near the lower ends of said coils or loops, and (4) a single connection furnishing communication between said coils or loops and said intermediate connecting means in  
40 said base-member.

2. In a radiator section, the combination of (1) a horizontally disposed chambered base-member forming a steam conduit, said base-member comprising means at both its  
45 ends for connection with and communicating with other horizontally disposed base-members and having means intermediate between said ends for connecting and communicating with a plurality of connected superimposed,  
50 vertically disposed radiating coils or loops, (2) said plurality of vertically disposed coils or loops, said coils and loops being superimposed above said base-member, (3) means for connecting and for communication between  
55 said vertically disposed coils or loops at near the lower ends of said coils or loops, (4) a single coupling for connection and means of communication between said coils or loops and said intermediate connecting  
60 and communicating means in said base-member, and (5) a closure-valve in said named single coupling for connection and means of communication for controlling the entrance of steam from said base-member to the said  
65 named vertically disposed coils or loops.

3. In a sectional radiator, the combination of (1) horizontally disposed steam conveying base-members, said base-members being axially on the same plane and connected and communicating so as to form a continuous  
70 steam conduit to sections of superimposed vertically disposed section-groups of radiating coils or loops connecting with said base-members, (2) said section-groups of superimposed vertically disposed coils or loops,  
75 (3) means for controlling the admission of steam from said base-members to each of the section-groups connected therewith, said last named means being actuated by hand manipulation from a level at or above the top of  
80 said radiator, and (4) a valve for the combined control of the admission of steam to all of said base-members and said sections, the length of each of said base-members corresponding substantially, in horizontal length  
85 with the horizontal extent of each of said section-groups of the said radiating vertically disposed coils or loops when such coils or loops are connected or assembled into sections.  
90

4. In a sectional radiator, the combination of (1) a horizontally disposed steam conduit or base-member, said member having means at both ends for connecting and communicating with other base-members and having  
95 between its ends and on its superior surface means for connection and communication with a vertically rising radiating section, (2) a group of vertically disposed coils comprising means near their lower ends for connection  
100 and communication between said lower ends of said coils and forming a horizontally disposed part for the travel of steam, but lying in a plane above the plane occupied by said base-member, (3) means for communication and connection between said base-  
105 member and said group of coils at a point between the ends of the said named base-member, (4) a valve in said means for connecting and communicating for controlling the entrance of steam from said named base-member to said vertically rising group of radiating  
110 coils or loops, (5) means at a high level of said radiator for controlling said valve, and (6) means for controlling the entrance of steam  
115 to said base-member.

5. In a sectional radiator, the combination of (1) a horizontally disposed steam conduit or base-member, said member having means at both ends for connection and communication  
120 with other base-members and having intermediate between its ends and on its upper surface means for connection and communication with a vertically rising radiating section, (2) a group of coils comprising a horizontally disposed steam conduit lying in a  
125 plane above the plane occupied by the first named conduit or base-member, said coils rising vertically above said horizontally disposed conduit, (3) means for connection and  
130



communication between the said two named conduits at an intermediary point between the ends of the two said conduits, (4) a valve in said means for connection and communication for controlling the entrance of steam from said named base-member to said group of vertically rising radiating coils or loops, (5) means at a high level of said radiator for controlling said valve, and (6) means for controlling the entrance of steam to said base-member, said parts of said radiator being constructed to be assembled by screw-nipple connections, said base-member and said secondary conduit with its vertically rising coils or loops being of substantially the same horizontal extent to allow for the close approximation of a plurality of the sections of said radiator in assembling together the said named parts and in assembling the sections of said named radiator.

6. In a radiator section, the combination of (1) a horizontally disposed chambered base-member forming a steam conduit, said conduit having connection and means of communication at both ends and at a location intermediate between said ends, (2) a plurality of groups of upright circulating coils or loops, (3) means for connecting said coils or loops and for their communication at one horizontal plane near the lower ends of said coils but in a plane at a higher level than that of the said base-member, said coils and loops having no inter-communication at a level above the said first named plane, (4) a single connection and means of communication between an intermediate one of the said coils and loops and the interior of the chambered base-member, said last named single connection and means of communication comprising a valve for controlling the admission of steam to each of said groups of coils or loops, and (5) means at the top of said intermediate coil or loop connected with said valve for operating said valve.

7. In a sectional radiator, the combination of (1) a plurality of complete and separately valved sections, each section comprising a horizontally disposed base-member forming a steam conduit, a vertically disposed part comprising a plurality of circulating coils or loops joined near the lower ends of said coils by means for steam inter-communication for forming thereat and in connection with the lower ends of said coils a secondary horizontally disposed and superimposed steam conduit, and a valved means for connecting a central point of the lower end of said vertically disposed part with a central point of said base-member, (2) means for connecting the base-members and for their communication with each other for forming a horizontally disposed steam conduit having the same axis, said means of connection and communication, said base-members, and other parts, being constructed to allow for a

close approximation of the several parts into a compact form, (3) means for the escape of air from said sectional radiator, and (4) means for controlling from the steam main supplying said radiator the entrance of steam to the assembled sections.

8. In a radiator, the combination of (1) a base-member, (2) a vertically disposed radiating section superimposed above said base-member, (3) a communicating coupling between said base-member and said section, said coupling comprising means for controlling the passage of steam therethrough, (4) means for exercising said control, said means being carried upwardly through and out at the top of said section, (5) means for preventing the escape of steam at said top, and (6) means for catching and holding water of condensation from steam that may have leaked through the top of said section.

9. In a sectional radiator, the combination of (1) exterior coils having feet for maintaining a vertical position of said radiator, (2) one or more interior sections having a horizontally disposed base-member or steam conduit, and a group of connected coils comprising a secondary horizontally disposed steam conduit located at a higher level than said base-member, said secondary steam conduit and said base-member being joined by a valved connection at a point in the length of said base-member, (3) said valved connection, each group of said coils comprising vertically disposed coils rising from said secondary horizontally disposed steam conduit, said vertically disposed coils being only connected in the plane of said secondary steam conduit, (4) means for retaining in vertical alignment the coils of said interior sections, and (5) a valve for entirely shutting off entering steam from all parts of said sectional radiator.

10. In a radiator, the combination of (1) a base-member, (2) a superimposed radiator coil, and (3) a coupling joining communicatively said base-member and radiating coil, said coupling having interiorly a valve for controlling the passage of steam through said coupling, said valve being controlled from a level highly located above said valve through downward compression exerted at said high level, said coupling securing a closure of said valve through lateral pressure centrifugally exercised at the seat in said coupling.

11. A sectional radiator, each section comprising a horizontal base-member and vertical coils, the coils being connected together near the lower ends of said coils, and in connection with their lower ends, forming a secondary superimposed member over the base-member, one of the coils being connected with the base-member, and the base-members of adjacent sections being connected together, all of said connections being detach-



able and attachable and such as to establish communication between the parts connected, substantially as disclosed.

12. In a radiator, the combination of (1) a chambered base-member, (2) a vertically disposed coil section, (3) means for connection and communication between said base-member and said coil section, (4) a valve seat in said means for connection and communication, and (5) a valve closure plug, valve stem and means for controlling said valve from a level high in its relation to said coil section, said valve seat comprising a ductile and expansible metallic ring and means for maintaining said ring in position after its expansion, said combination having for its purpose the accurate adjustment of the closure parts of said valve after the assembling of the second and third elements of said combination.

13. In a sectional radiator, the combination of (1) a plurality of connected and communicating chambered base-members forming a horizontal steam conduit, (2) vertically disposed coils or loops assembled in a plurality of section-groups, each section-group comprising means of communication and connection between the coils and loops of that section and forming at a low level of each section-group a secondary horizontally disposed chambered steam conduit disposed in parallel with said first named conduit but at a higher level, and (3) a coupling compris-

ing a valve for connecting the two named conduits in each section of said radiator for inter-communication and for controlling the passage of steam between said first named conduits and said section-groups.

14. In a sectional radiator, the combination of (1) a plurality of connected and communicating chambered base-members forming a horizontal steam conduit, (2) vertically disposed coils or loops assembled in a plurality of sections, each section comprising means of communication and connection with the coils and loops of that section and forming at a low level of said section a secondary horizontally disposed chambered steam conduit disposed in parallel with said first named conduit but at a higher level, and (3) means, including a valve for connecting the two named conduits for inter-communication and for controlling the passage of steam between said first named conduit and said sections, said parts of said combination being constructed for assembling in close juxtaposition in all its parts through the use of screw nipples.

Signed at New York, N. Y. this 14th day of January 1907.

JOSEPH MOSES WARD KITCHEN.

Witnesses:

OLIVE B. KING,  
GEO. L. WHEELOCK.