

No. 632,974.

Patented Sept. 12, 1899.

F. J. TRAVERS & C. H. SMITH.  
STEAM AND HOT WATER RADIATOR.

(Application filed Nov. 25, 1898.)

(No Model.)

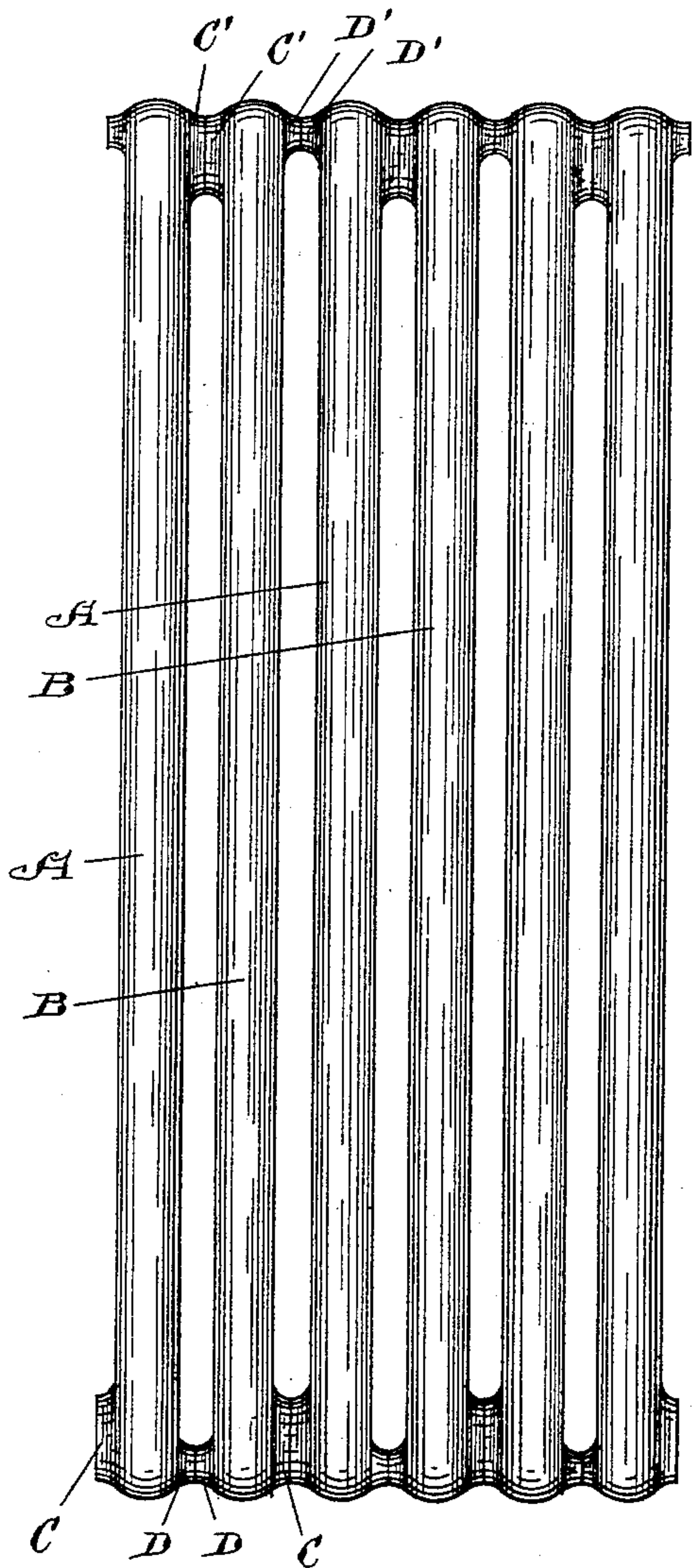


Fig. 1

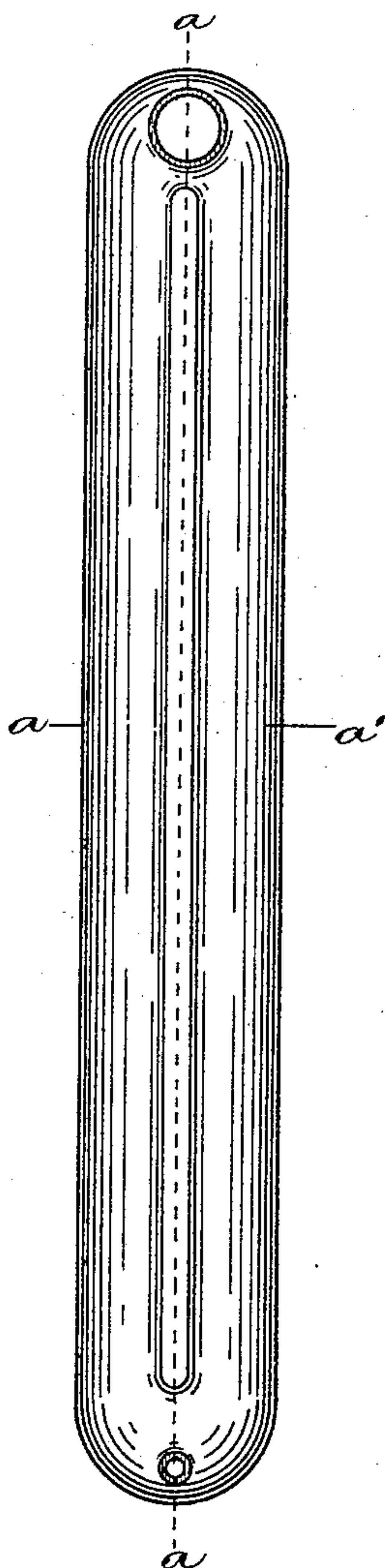


Fig. 2

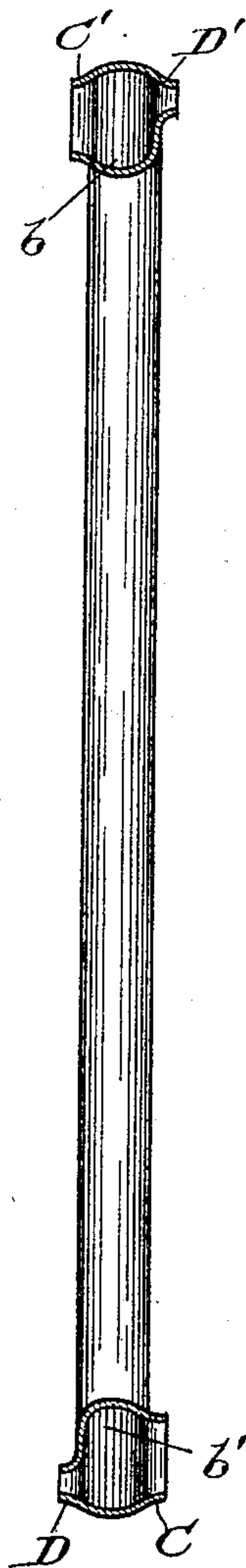


Fig. 3

Witnesses

J. E. Cannon  
E. Gleason

Inventors

F. J. Travers  
C. H. Smith  
by C. H. Nichols  
their attorney.



# UNITED STATES PATENT OFFICE.

FERGUS JAMES TRAVERS AND CHARLES H. SMITH, OF TORONTO, CANADA.

## STEAM AND HOT-WATER RADIATOR.

SPECIFICATION forming part of Letters Patent No. 632,974, dated September 12, 1899.

Application filed November 25, 1898. Serial No. 697,449. (No model.)

*To all whom it may concern:*

Be it known that we, FERGUS JAMES TRAVERS and CHARLES H. SMITH, of the city of Toronto, in the county of York and Province of Ontario, Canada, have invented certain new and useful Improvements in Steam and Hot-Water Radiators; and we hereby declare that the following is a full, clear, and exact description of the same.

10 This invention relates to certain new and useful improvements in steam and hot-water radiators, and relates more particularly to the peculiar construction of the loops and the method of coupling them.

15 It has been found by experiment that in order to enable the radiator to perform its work successfully it is necessary to so arrange the leg of each loop that the heating agent will circulate from one end of the leg to the other before passing to the next loop or return-pipe. It has also been found that where the radiator-loops are coupled at both ends and a direct passage through the radiator is opposed to the flow-pipe the heating agent entering the first loop of the radiator will pass directly through the passage to the return-pipe, only a small percentage of the heating agent rising in the leg, thus preventing the utilization of the whole of the heat-units contained in the circulating heating agent.

20 The object of this invention is therefore to devise a radiator-loop which can be quickly, easily, and inexpensively coupled to the next adjacent loops and to so arrange its leg that the heating agent will be caused to flow from one end to the other before passing to the next successive loop or return-pipe; and the invention consists, essentially, of a radiator-loop consisting of a leg fitted at its lower end at one side with an inlet-port, and at its upper end at the opposite side with an outlet-port, and at both ends opposite the ports with a bolt hole or opening, as hereinafter more fully set forth and more particularly pointed out in the claims.

In the drawings, Figure 1 is a front elevation of a radiator. Fig. 2 is a side view of one of the loops. Fig. 3 is a vertical section on the line *a a*, Fig. 2.

50 Like letters of reference refer to like parts throughout the specification and drawings.

A represents one of the loops, and B the

next adjacent loop. Each of the loops A and B, as shown in the drawings, consists of two legs *a a'*, uniting at the bottom and top of the loop to form two chambers *b b'*, respectively. Communicating with the chamber *b* at one side of the loop is a port C, and communicating with the chamber *b'* at the opposite side of the loop is a port C'. Opposed to the opening C is a drainage-opening D of a diminutive size, and opposed to the opening C' is an air-vent D', corresponding in size with the drainage-opening D. The hub of each of the ports C C' is preferably faced to form a comparatively water tight joint.

When the loops are assembled, the port C of the end loop A is coupled to the flow-pipe, while the port C' of the loop A is opposed to the port C' of the loop B and the drainage-opening D of the loop A is opposed to the drainage-opening D of the loop B. The port C of the loop B is opposed to the port C of the next successive loop A, and the air-vent D' of the loop B is opposed to the air-vent D' of the next successive loop A.

The circulation of the heating agent is as follows: It passes through the port C into the loop A, up the legs *a a'* to the port C', through which it passes into the top of the loop B. It then descends through the legs *a a'* to the port C of the loop B, through which it passes into the bottom of the next successive loop A, rising through the loop A and passing into the top of the next successive loop B, and so on throughout the radiator.

It is possible to couple the loops of the radiator together by any of the usual means employed for that purpose, and it is also possible to use in the construction of the loops any suitable number of legs—that is, each loop may consist of one leg or any number of legs. By providing the drainage-openings at the bottom and the air-vents at the top of the loops the radiator is prevented from becoming air or water locked.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A radiator embracing in its construction a plurality of loops or sections, each consisting of a leg terminating at both ends in a chamber, a port communicating with the chamber at the bottom at one side of the loop, and a

port communicating with the chamber at the top at the opposite side of the loop, a drainage-opening opposed to the lower port, and an air-vent opposed to the upper port, substantially as specified.

2. A radiator consisting of a series of vertical radiator-sections, each section having communication with the adjoining sections at both top and bottom through a steam-supply port, and an opposed restricted port, the steam-supply port and the restricted port at

the top of the section being respectively opposite to the steam-supply port and the restricted port at the bottom of the section, substantially as specified.

Toronto, Canada, November 22, 1898.

FERGUS JAMES TRAVERS.  
CHARLES H. SMITH.

In presence of—

E. GLEASON,  
M. A. WESTWOOD.