

No. 741,845.

PATENTED OCT. 20, 1903.

D. SINCLAIR.
RADIATOR FOR HEATING BUILDINGS.

APPLICATION FILED JAN. 20, 1903.

NO MODEL.

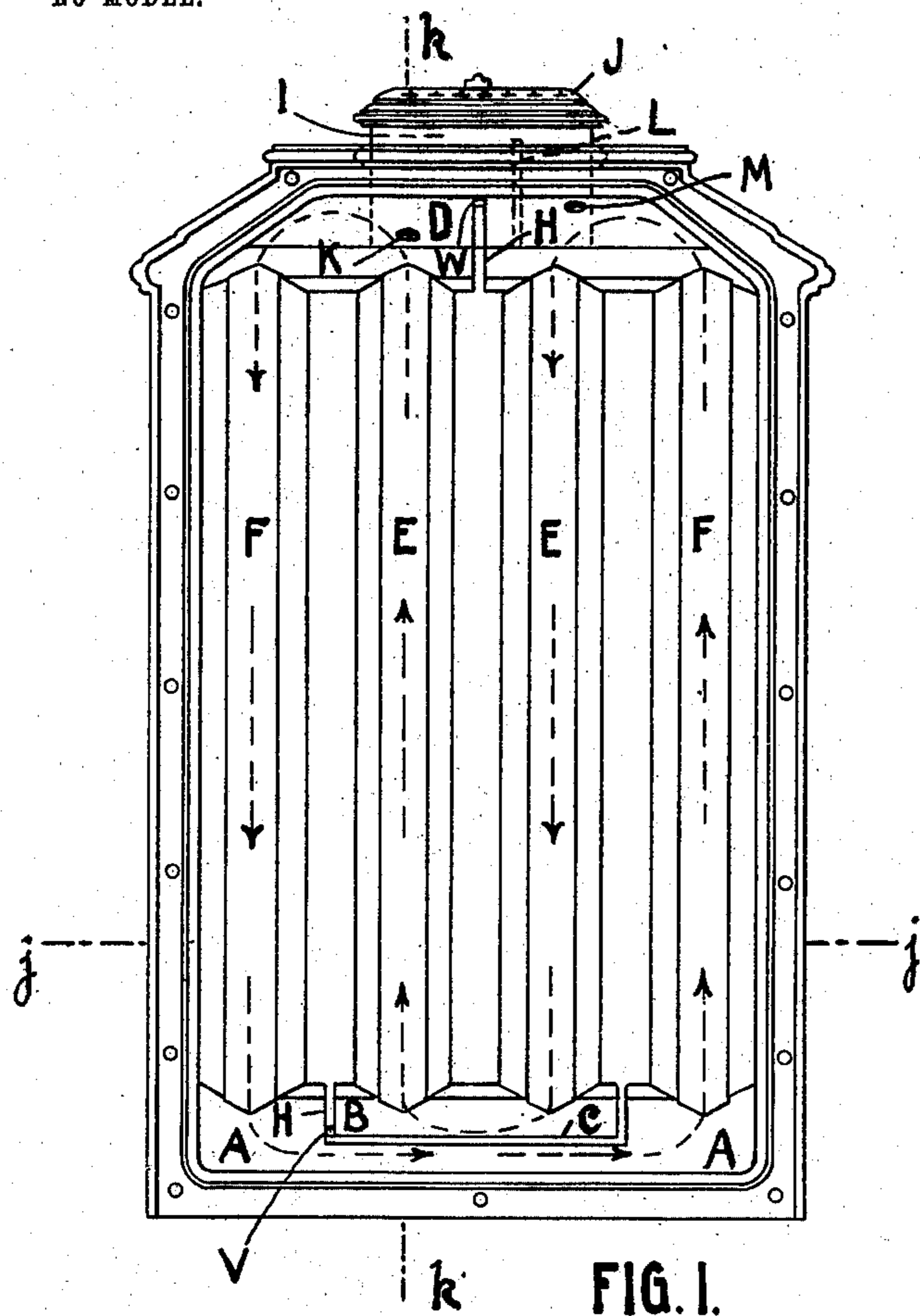


FIG. 1.

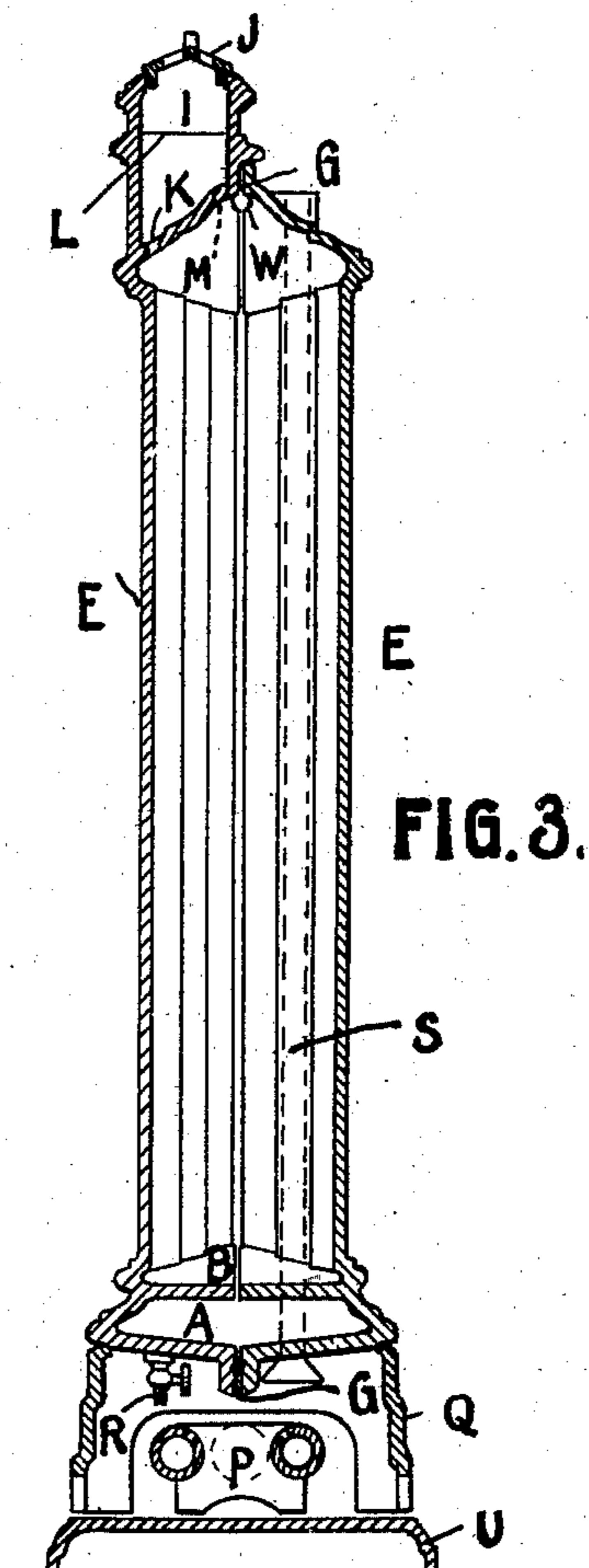


FIG. 3.

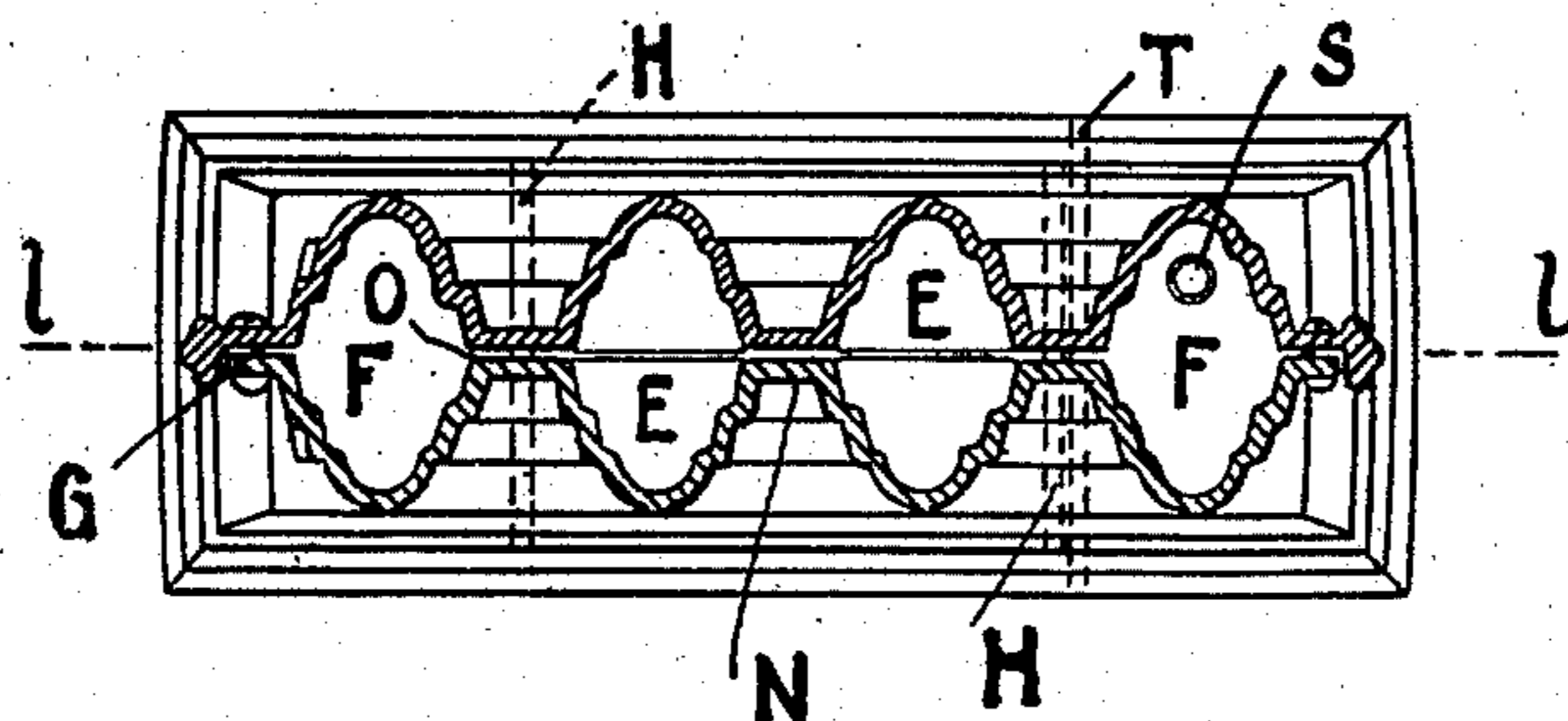


FIG. 2.

Witnesses

J. Green
W. P. Hammond

Inventor

Duncan Sinclair
by [Signature]
Attys

UNITED STATES PATENT OFFICE.

DUNCAN SINCLAIR, OF COALBROOKDALE, ENGLAND.

RADIATOR FOR HEATING BUILDINGS.

SPECIFICATION forming part of Letters Patent No. 741,845, dated October 20, 1903.

Application filed January 20, 1903. Serial No. 139,744. (No model.)

To all whom it may concern:

Be it known that I, DUNCAN SINCLAIR, manager of iron-works, a subject of the King of Great Britain, residing in Coalbrookdale, in the county of Salop, England, (whose full postal address is Woodbury, Coalbrookdale aforesaid,) have invented certain new and useful Improvements in or in Connection with Radiators for Heating Buildings, (for which application has been made in Great Britain, No. 25,339, dated November 18, 1902,) of which the following is a specification.

This invention relates to certain improvements in apparatus for heating buildings by means of steam, hot water, or other hot fluids.

In the accompanying drawings, Figure 1 is a vertical section on line *l l*; Fig. 2, a cross-section through the tubes on line *j j*; Fig. 3, a vertical section through the radiator and loose base on line *k k*.

My improved radiator is formed with a hollow base having two chambers A B therein, separated by a partition C, and above it at a suitable elevation a hollow chamber D. The upper chamber D and base-chambers A and B are connected together by means of a row or series of upright columns or chambers E and F, the outer columns F entering the lower chamber A of the base and the inner columns E, of whatever number, entering the upper chamber B of the base. The upright columns E and F are preferably of corrugated elliptical cross-section; but the actual shape is immaterial so long as it provides a large area for heat radiation.

My radiator is preferably made in halves, with flanges at top, sides, and base for holding it together, with woodite or other jointing material G between the flanges to make it a water-tight and steam-tight vessel, except at the reservoir, hereinafter described. The base and top chambers are provided with baffle-plates or transverse partitions H, alternating with each other and so arranged between the upright columns E and F as to direct the flow of hot water or other fluid and cause the bulk of the heating medium to take a circuitous flow through each column consecutively. In this manner the bulk of the heating medium takes a tortuous course in its passage through the apparatus.

On the top of one half of the radiator is

cast the reservoir I, with grated cover J and a hole K, communicating with the interior of the radiator.

L is a dividing-plate in the reservoir, which divides it into two parts. In the bottom of one part is an air-escape hole M, which is higher in position than the filling-hole K, so that all air may be exhausted when the vessel is full. This reservoir is used for taking up the increase in bulk of the hot water or other fluid due to expansion and also is the inlet by which the radiator is filled with water or other fluid when required. The upper chamber B in the base is formed by connecting the baffle-plates H in base by the web or partition C aforesaid. The radiator is made, except one or two fittings, such as studs and cocks, in two castings, each casting containing one-half of the columns E and F and one-half of the top and bottom chambers A B D in such a way that when the two castings are brought together and joined the columns and chambers make a complete vessel. The joints N between the columns where the halves of the chambers come together are not water-tight joints, but are open a little at O, so that while the bulk of the hot water or other fluid follows a serpentine course through the radiator by flowing upward and downward there is a certain movement of the hot-water or other fluid medium through these spaces and across the radiator, which accelerates the speed at which the radiator is heated without interfering with the circulating movement of the bulk. A gas-burner P or other similar appliance is placed underneath the radiator and within the loose base Q. Immediately above the burner P is one of the outside radiator-columns F, and when the burner is lighted this column acts as a circulating-boiler, the heated water or other fluid rising through the outside column F, descending through the adjacent one, E, then rising through the next, and so on, as indicated by the arrows, finally returning to be reheated through the bottom chamber A of the base to a point in the column over the gas-burner P. The radiator is thus an independent and self-contained radiator heated by circulating hot water. There is a drain-cock R, by which water or other fluid can be drained off from the radiator when desired, and an air or steam outlet M

aforesaid. The gas-burner may, if desired, be regulated automatically, the gas-tap being gradually opened and closed as the temperature of the water rises or falls from a point determined upon before making adjustment. A tube S passes through the radiator from top to bottom immediately over or adjacent to the gas-burner to carry off fumes and to aid in its passage through the tube to heat the water or other fluid. One, two, or more of these tubes may be used. It must be understood that this tube or tubes need not be fitted at all, if desired.

T is a plate forming the heating-chamber in which the gas-burner is placed; U, insulator-tray; V, a nick in the baffle-plate H for draining chamber B into the chamber A; W, a nick in upper baffle-plate for allowing air or steam to pass.

The construction of the two bottom chambers in the base renders the radiator a vessel in which hot water readily circulates. The invention obviates the use of an expensive installation of boiler, pipes, &c., in buildings and also allows the heating of bedrooms without expensive coal fires or objectionable gas or steam heaters. It is found in actual test that any little steam generated is condensed in the reservoir, and moisture is passed imperceptibly into the apartment at about the same rate as it is taken from the atmosphere by the gas-burner.

I declare that what I claim is—

1. In a radiator, the combination of a hollow base having two chambers therein, sepa-

rated by a partition, a hollow chamber at a suitable elevation above it and a row or series of hollow upright columns connecting the top and bottom chambers together, the outer columns entering the lower chamber of the base, and the inner the upper chamber thereof, substantially as described.

2. An independent self-contained radiator, composed of top and bottom chambers, a row or series of hollow upright columns for connecting said chambers together, a gas-burner or like appliance placed immediately underneath one of the upright columns, baffle-plates and partitions so arranged in the upper and lower chambers respectively as to insure the fluid passing in opposite directions through the columns alternately and finally returning it to be reheated through the bottom chamber of the base to a point in the column over the gas-burner, narrow communicating spaces between the columns so arranged that while the bulk of the fluid follows a circuitous course, there is a certain movement of the heating medium through these spaces across the radiator, which accelerates the speed at which the radiator is heated, without interfering with the circulating movement of the bulk.

In witness whereof I have hereunto signed my name, this 6th day of January, 1903, in the presence of two subscribing witnesses.

DUNCAN SINCLAIR.

Witnesses:

ROBERT HENRY STEWART,
ARCHIBALD GEORGE BARLOW.