

March 22, 1932.

T. E. MURRAY

1,850,287

RADIATOR

Filed March 23, 1926

Fig. 1.

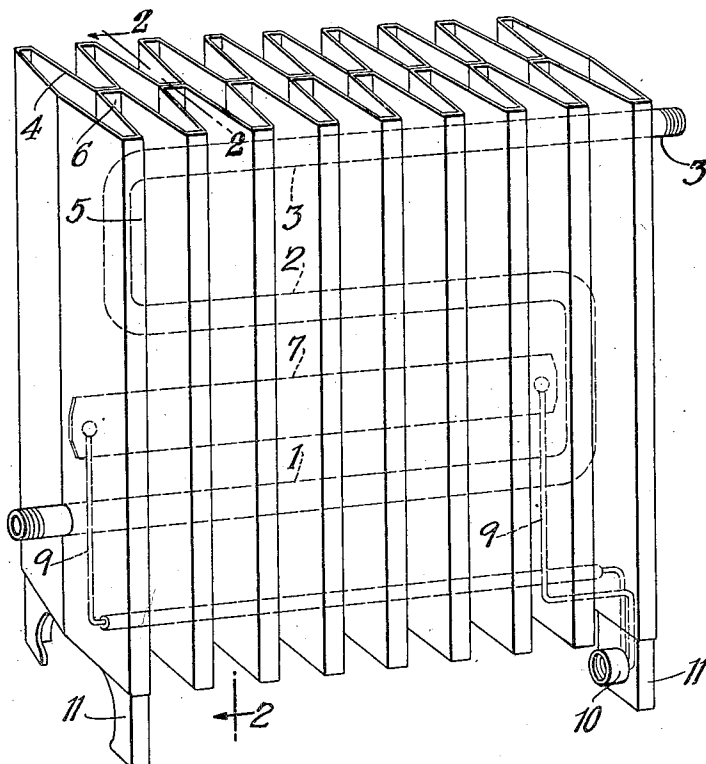


Fig. 2.

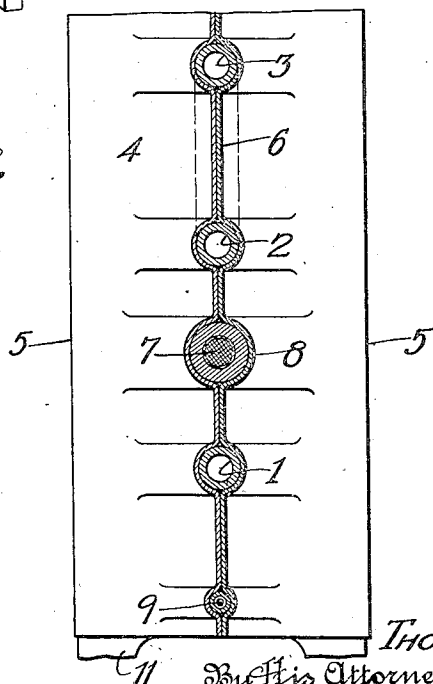
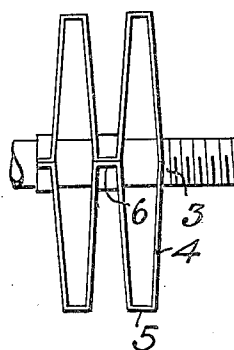


Fig. 3.



Inventor

THOMAS E. MURRAY.

By His Attorney

W. Anthony Mina

UNITED STATES PATENT OFFICE

THOMAS E. MURRAY, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO AMERICAN RADIATOR & STANDARD SANITARY CORPORATION, A CORPORATION
OF DELAWARE

RADIATOR

Application filed March 23, 1926. Serial No. 96,699.

The invention aims to provide an improvement in radiators by which they may be better and more quickly controlled and regulated than heretofore. The accompanying drawings illustrate an embodiment of the invention.

Fig. 1 is a perspective view of the complete radiator.

Fig. 2 is a transverse vertical section of the same on the plane indicated at 2—2, Fig. 1.

Fig. 3 is a plan of an end of Fig. 1.

The conduit for the heating medium comprises a pipe bent to form three horizontal lengths, 1, 2 and 3 respectively, to provide a continuous passage for the steam, hot water or other heating medium. The radiating structure is of sheet metal corrugated to form transverse inclined plates 4 connected at their outer and inner edges respectively by short longitudinal plates 5 and 6. The inner edges of the corrugations, formed by the plates, are secured or bonded closely to the pipe lengths 1, 2, 3, by heat and pressure; being thus soldered, brazed or welded to the pipes in the manner described in detail in the co-pending application of Murray and Hoffer, No. 91,023, filed February 27, 1926. The inner portions 6 of the corrugated plates are preferably brought together or nearly so and may be united directly to each other. These plates are exposed to the atmosphere on the outside, and their inner faces form vertical flues to facilitate circulation of the heated air. They may be made very thin and of considerable area and of copper or other metal of high conductivity. The securing of them directly to the pipes provides the necessary stiffness with the simplest construction. They take the heat so rapidly from the pipes that the heating element may be maintained at a very high temperature, and a high efficiency obtained.

With steam or hot water heating it is difficult to bring the radiators to a high temperature quickly, chiefly because of the delay in bringing up the temperature of a considerable body of water. To provide for quick heating I propose to supplement the pipes 1, 2, 3 with an electric heating element 7. This may be any resistance or other usual or suit-

able style of elongated heating element generally carrying a coil of resistant material. I propose to arrange this element parallel to the lengths of the pipe, between two such lengths as illustrated, or it may be below the lowest length of pipe; and to secure it to the inner edges of the corrugations by bending out the latter as at 8 (Fig. 2) to embrace the heating element, to which the plates are united in the same way as to the pipes. It thus increases the stiffness of the radiating structure and conveys its heat rapidly thereto. The wires 9 from its opposite ends are carried down to an electric socket 10 on one of the legs 11 of the radiator, for easy attachment to a base board socket. Or the electric heating element might be permanently connected to the house wiring with a switch interposed.

Now when a quick heat is desired the electric element can be heated to a high temperature in a few seconds and the discomfort avoided of waiting for the comparatively slow steam. Also in extremely cold weather the steam heat may be supplemented continuously by the electric heat. Generally heating by electricity is much more expensive than by steam. But with the emergency arrangement illustrated comparatively little electric current will be required, the radiating structure and pipes being designed for the usually required capacity when using steam alone.

The electric heating element can be brought to very high temperatures, and it is a problem usually to distribute the heat thereof sufficiently throughout a room. The present structure is particularly adapted to this use because of the good surface contact of the corrugated plates with the heating element, the large radiating surface and the flues which cause the air to carry off the heat very rapidly. In fact several such heating elements may be employed in a single radiator with great efficiency; and, where electric current is cheap, they may be used without the steam pipe.

An important feature of the construction is the making of the radiator in two separate parts; one, the continuous pipe in several lengths, carrying the pressure of the heating

medium and the other, serving only as a radiating structure, carrying no pressure, and, therefore, made so light and thin as to make it possible to lighten the entire radiator.

5 No claim is made herein to the electrically heated radiator except in combination with the other elements. The electric heater separately is covered in a divisional application No. 168,871 filed February 17, 1927.

10 Various modifications may be made by those skilled in the art without departing from the invention as defined in the following claims.

What I claim is:

15 1. A radiator including in combination a horizontally extending heating element comprising a narrow elongated conduit for a heating fluid, an elongated electric heating element in substantially the same vertical
20 plane and a radiating structure of extended area in intimate contact with the outsides of both said heating elements at different points in its height and projecting laterally and vertically beyond said heating elements.

25 2. A radiator including in combination a horizontally extending heating element comprising a narrow elongated conduit for a heating fluid, an elongated electric heating element in substantially the same vertical
30 plane and a radiating structure of extended area in intimate contact with the outsides of both said heating elements at different points in its height and projecting laterally and vertically beyond said heating elements, said
35 radiating structure comprising thin sheets corrugated in horizontal section so as to form vertical passages in which the air is heated and thereby circulated, the inner portions of the corrugated plates being bent to form
40 recesses along the lines of the heating elements and embracing said heating elements in said recesses.

3. A radiator including in combination a conduit for heating fluid, an electric heating
45 element in substantially the same vertical plane providing a supplementary source of heat and a radiating structure of extended area in intimate contact with the outside of said conduit and said electric heating element
50 and comprising a pair of corrugated sheets one at each side of the radiator with the corrugations registering with each other so as to form between them vertical flues closed in horizontal section for inducing a draft
55 and circulation of the heated air and to present at their outer faces vertical channels formed by their corrugations.

In witness whereof, I have hereunto signed my name.

60 THOMAS E. MURRAY.