S. W. DYCKMAN.

RADIATOR.

APPLICATION FILED MAR. 22, 1919.

1,339,813. **Patented May 11, 1920.**

Fig. 1,

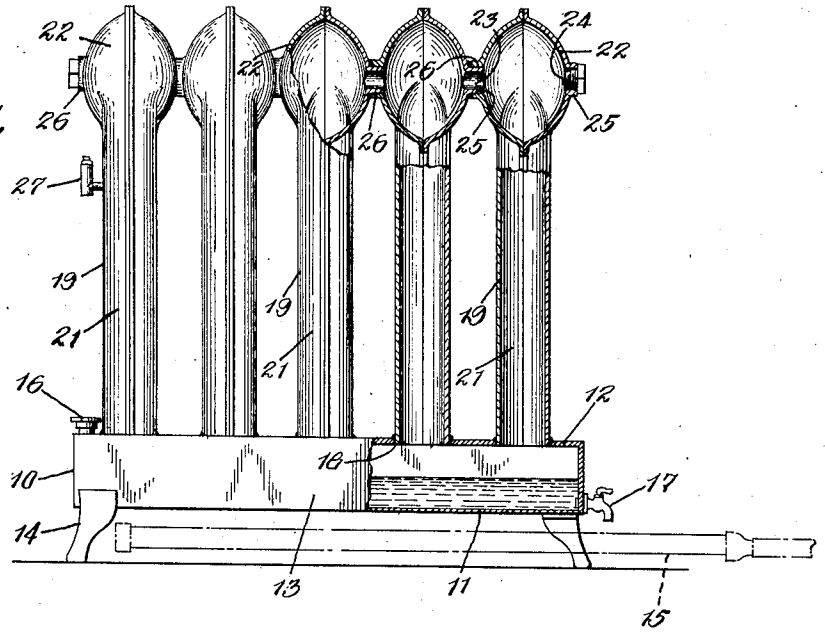


Fig. 2,

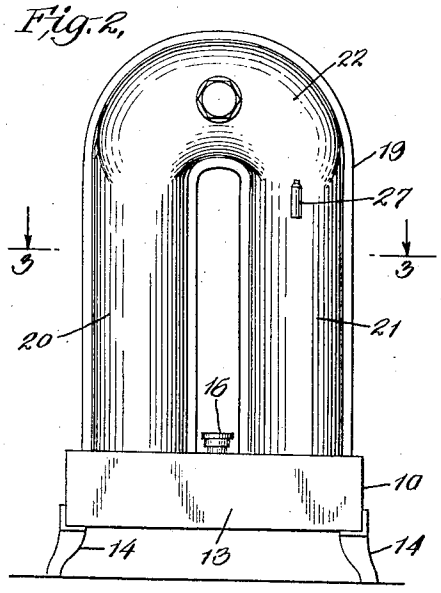
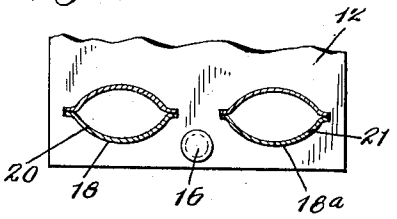


Fig. 3,



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STEPHEN W. DYCKMAN, OF NEW YORK, N. Y.

RADIATOR.

1,339,813. Specification of Letters Patent. Patented May 11, 1920.

Application filed March 22, 1919. Serial No. 284,429.

To all whom it may concern:

Be it known that I, STEPHEN W. DYCKMAN, a citizen of the United States, and a resident of New York, borough of Bronx, in the county of Bronx and State of New York, have invented a certain new and useful Improvement in Radiators, of which the following is a full, clear, and exact specification.

This invention relates more particularly to a class of apparatus for generating steam for heating purposes.

My invention has for its object primarily to provide a radiator of preferably a portable steam generating type whereby rooms of houses and compartments of other places not equipped with stoves and other heating apparatus may be effectually heated singly and which is of a form providing an unusual expanse of radiating surface. The invention resides in part in the construction as well as in the formation of the elements included in the apparatus which consists essentially of a vapor generating chamber, and protruding upwardly in spaced parallel arrangement from this chamber one or a number of hollow radiating elements, each of substantially the shape of an inverted U. Each element is preferably made of two corresponding halves of approximately semi-elliptic shapes in cross-section having their edges connected together, the interiors of the elements being in communication with the interior of the water chamber.

Another object of the invention is to provide means whereby the upper parts of the radiating elements are connected together as well as providing communication between the interior of the elements; and a further object of the invention is to provide a radiator of a simple and efficient construction which may be made in any desired size.

With these and other objects in view the invention will be hereinafter more particularly described with reference to the accompanying drawing forming a part of this specification in which similar characters of reference indicate corresponding parts in all the views, and will then be pointed out in the claim at the end of the description.

In the drawing, Figure 1 is a side elevation, partly in section, of one form of radiator embodying my invention.

Fig. 2 is an elevation of one end of the radiator, and

Fig. 3 is a section taken on the line 3—3 of Fig. 2.

The radiator has a vapor generating chamber or box 10 which is made of metal in any desired size, though the chamber shown is substantially rectangular to provide a bottom 11, a top 12 and a side wall 13. The chamber may be supported on a suitable number of legs 14, and under the chamber may be provided a burner, as 15, whereby the chamber may be heated by gas, oil or other preferred fuel. In the top 12 may be an inlet, as 16, to allow a quantity of water to be admitted in the chamber, and the chamber may be drained of its water by a nipple or outlet, as 17, being provided on the chamber.

At spaced intervals in the top 12 lengthwise of the chamber 10 are pairs of spaced openings, as 18 and 18ª, and the openings of each pair are disposed on alinement transversely of the chamber, while each pair of the openings are spaced apart at corresponding distances. Protruding upwardly from the water chamber in spaced parallel arrangement may be one or a number of hollow radiating elements, or sections or tubes 19 all of which are preferably of similar formations as well as being of like sizes. Each of the radiating elements 19 is of substantially the shape of an inverted U to provide two legs 20 and 21 and a bridging member 22, and this bridging member of each leg is preferably somewhat enlarged, as shown. The openings 18 and 18ª of the chamber 10 are approximately elliptic in shapes, and the legs 20 and 21 together with the bridging member 22 of each of the radiating elements are also elliptic in cross-section. Each of the radiating elements is preferably made of sheet metal formed of two halves each of substantially a semi-elliptic shape, and in constructing each of these elements the edges of its halves are welded together by the use of a welding flame or otherwise. I have discovered that by making the radiating elements of sheet metal they may be formed by a stamping process and by forming them of halves welded together the expense of construction compared with the ordinary types of radiators is

greatly lessened, besides the volume of heat radiated therefrom is greater than is obtained by the use of elements of this class when made of cast metal. The free ends of the legs of the U-shaped radiating elements are of sizes to fit snugly in the openings 18 and 18ª of the top of the chamber, and these joints of all of the legs with the chamber are also preferably welded together.

When more than one of the elliptic hollow U-shaped radiating elements 19 are employed in a single radiator communication is provided between the enlarged bridging members 22 of the elements, and the bridging members are also connected for connecting the elements together. This is accomplished by providing in the centers of the faces of the bridging member of each element openings, as 23 and 24, respectively, and projecting from the faces of each bridging member are collars or annular flanges 25 and 26 each of which surrounds the opening of the respective face of the member as well as being at the edge of the opening. The annular flange 26 of the bridging member of each of the radiating elements is of a diameter so that it closely fits over the annular flange 25 of the next adjacent radiating element, and these flanges are also welded together. In this manner the parts of the radiator are of very simple construction as well as being easily assembled, and by making the elements 19 of elliptic shapes a broad expanse of surface for radiating heat is provided. The openings 24 in the opposite faces of the radiating elements at the ends of the device may be closed by caps or nuts fitted in the annular flanges 25 and 26 respectively of these elements. In practice a sufficient quantity of water is provided in the chamber 10, and when heated the steam generated will pass into the legs and into the bridging members of the radiating elements as well as effectually circulating throughout all of the elements by flowing from one element to another through the communicating openings 23, and in order to allow air which may be in the radiator to be discharged I may provide on one of the radiating elements a well known type of air vent or valve, as 27.

In the foregoing description, I have embodied the preferred form of my invention, but I do not wish to be understood as limiting myself thereto, as I am aware that modifications may be made therein without departing from the principle or sacrificing any of the advantages of this invention, therefore I reserve to myself the right to make such changes as fairly fall within the scope thereof.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

In a radiator, the combination with a vapor generating chamber, of a plurality of hollow heat radiating elements, each of substantially the shape of an inverted U and all of the elements protruding upwardly from the water chamber in spaced parallel arrangement, the interior of said elements communicating with the interior of the chamber and the bridging members of all of the elements being enlarged, each of said elements in entirety being composed of two corresponding halves of approximately semi-elliptic shapes in cross-section having their edges connected together, and interfitting annular flanges connecting the enlarged members of the elements together as well as providing communication between the interior of the enlarged members of all of the elements.

This specification signed and witnessed this 19th day of March A. D. 1919.

STEPHEN W. DYCKMAN.

Witnesses:
J. FREDERICK CRYER,
D. KOEPER.