No. 877,575. PATENTED JAN. 28, 1908.

J. A. LIDVALL.

RADIATOR.

APPLICATION FILED JAN. 27, 1904.

Fig: 1.

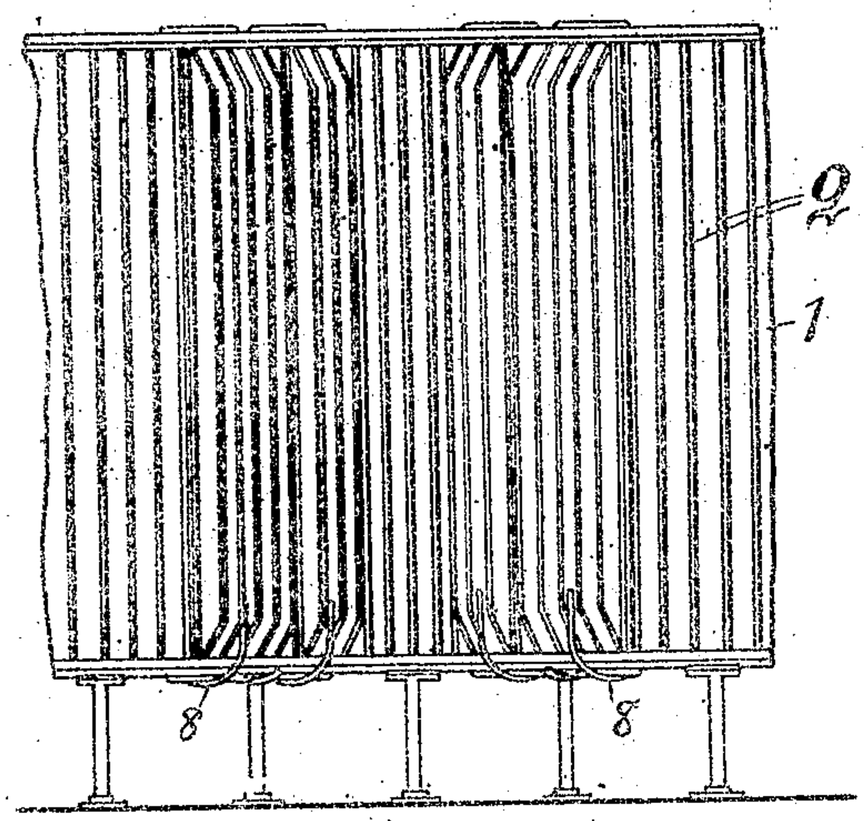


Fig: 2.

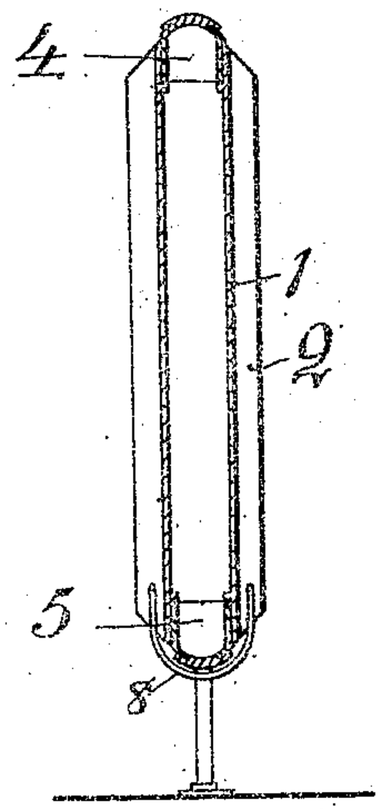


Fig: 3.

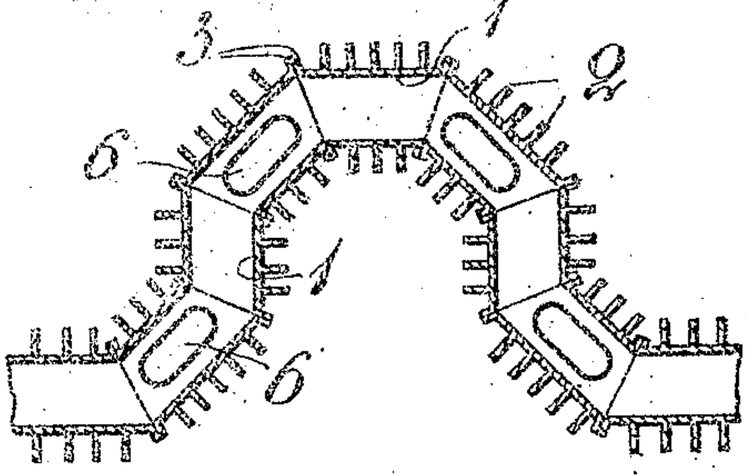


Fig: 4.

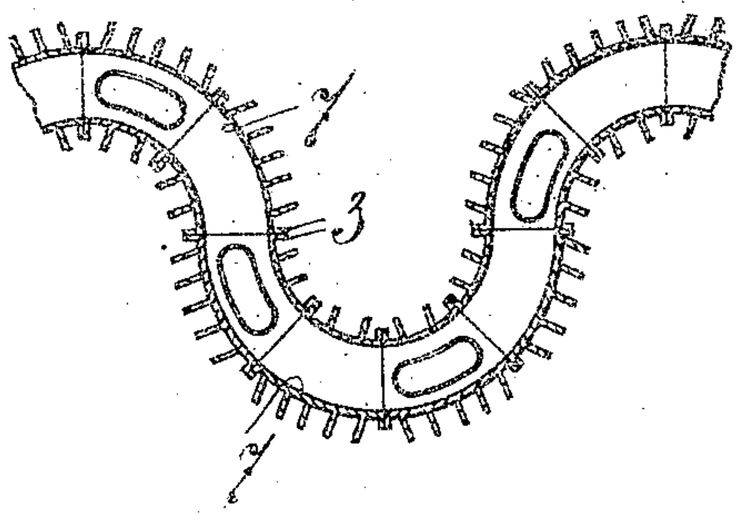


Fig: 5.

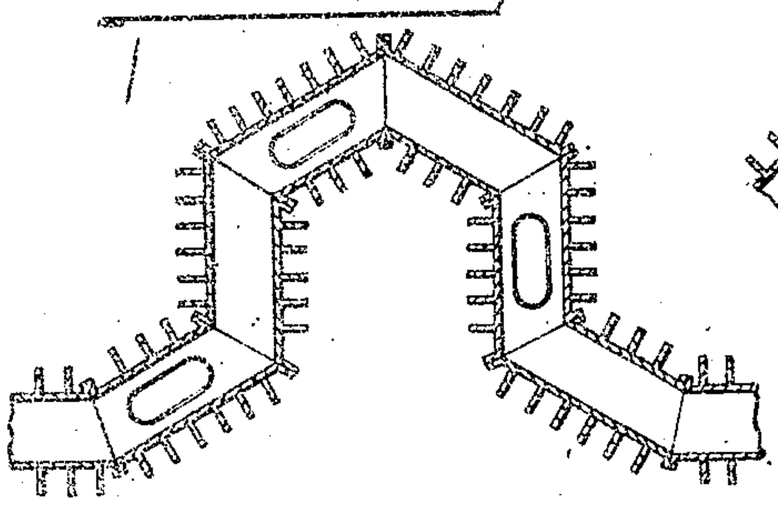
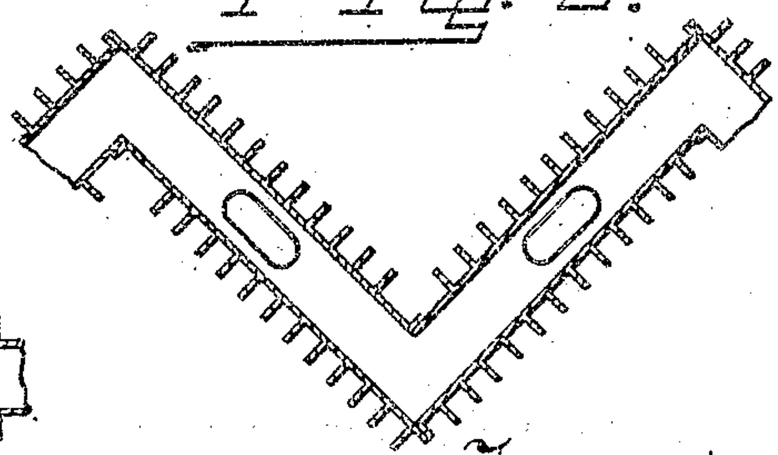


Fig: 6.



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UNITED STATES PATENT OFFICE.

JOHAN AUGUST LIDVALL, OF GEFLE, SWEDEN.

RADIATOR.

No. 877,575. Specification of Letters Patent. Patented Jan. 28, 1908.

Application filed January 27, 1904. Serial No. 190,791.

To all whom it may concern:

Be it known that I, JOHAN AUGUST LIDVALL, a subject of the King of Sweden, and resident of Gefle, Sweden, have invented new and useful Improvements in Radiators, of which the following is a specification, reference being had to the drawing accompanying and forming a part hereof.

This invention relates to improvements in radiators for heating purposes having vertical flanges or ribs on their outer sides.

The object of the invention is to provide radiators of such construction that the horizontal section of the same, while using only some few patterns, may be changed at will so as to suit different localities.

The invention consists in that the side-walls of the radiators, the horizontal cross-section of which is in well known manner wave-shaped, zigzag-shaped or the like, are composed of a number of separate pieces which may be flat or curved, the said side-walls being connected to cover- and bottom-pieces the shape of which corresponds to the horizontal section of the radiator.

In the accompanying drawing I have shown some radiators embodying my invention.

Figure 1 shows a side-elevation of a radiator, Fig. 2 a vertical section and Fig. 3 a horizontal section of the same. Figs. 4, 5 and 6 show horizontal sections of parts of radiators of different shapes.

Referring to Figs. 1, 2, and 3, the side-walls of the radiator are composed of rectangular, flat pieces 1, which in well-known manner are provided with flanges or ribs 2 on the one side. At the adjacent edges the said pieces 1 may be provided with flanges 3 or the like for connecting together the same by means of screws, rivets, or the like (not shown). The cover and bottom pieces 4 and 5 (Fig. 2) may, suitably, be of curved cross-section and are in any convenient manner secured to the side-walls 1. Some of the said pieces 4 and 5 may be provided with soot-holes and doors 6, the latter being at the bottom of the radiator and held in position by means of yokes 8 secured to the ribs 2 in any convenient manner.

Referring to Fig. 4, the pieces 7 constituting the sides of the radiator are curved in such manner that the radiator obtains wave-shaped horizontal cross-section. In order to facilitate the forming and casting of the said pieces 7, all the flanges except those serving to connect the several pieces together are made parallel to each other.

Figs. 5 and 6 show each a constructional form of radiators, the side-walls of which are composed of flat pieces as in Figs. 1–3.

Obviously I do not limit myself exactly to the constructional forms shown in the drawing, in as much as the radiators when composed of flat or curved side pieces of comparatively small extension in horizontal direction may obtain any desired shape in horizontal section without varying the shape of the said side-pieces as will be easily understood by those skilled in the art to which this invention appertains.

The radiators constructed in accordance with my present invention may suitably be connected to the connecting pipes, or the like, in such manner that the heating agent will flow into the same at the upper part of the one end and flow out at the lower part of the other end. On account of the zigzag-shaped, wave-shaped, or similar horizontal section the improved radiators are comparatively elastic in longitudinal direction and may therefore be made of large extension in the said direction without any danger of the connections between the radiators and the conductors being broken.

Having now particularly described my invention and in what manner the same may be performed, what I claim as new and desire to secure by Letters Patent is:

In a radiator, the combination of side-walls formed of sections of a great height in comparison with the length thereof, said sections being connected together in such a manner as to form a passage of a tortuous horizontal section, and cover- and bottom-pieces of a shape corresponding to the horizontal section of the radiator, said pieces being secured to the side-walls, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHAN AUGUST LIDVALL.

Witnesses:

NILS NILSSON,

ERNST SPORRONZ.