

E. S. ERICKSON.
CELLULAR RADIATOR.
APPLICATION FILED MAR. 20, 1916.

Patented Sept. 24, 1918.
2 SHEETS—SHEET 1.

1,279,527.

Fig. 1.

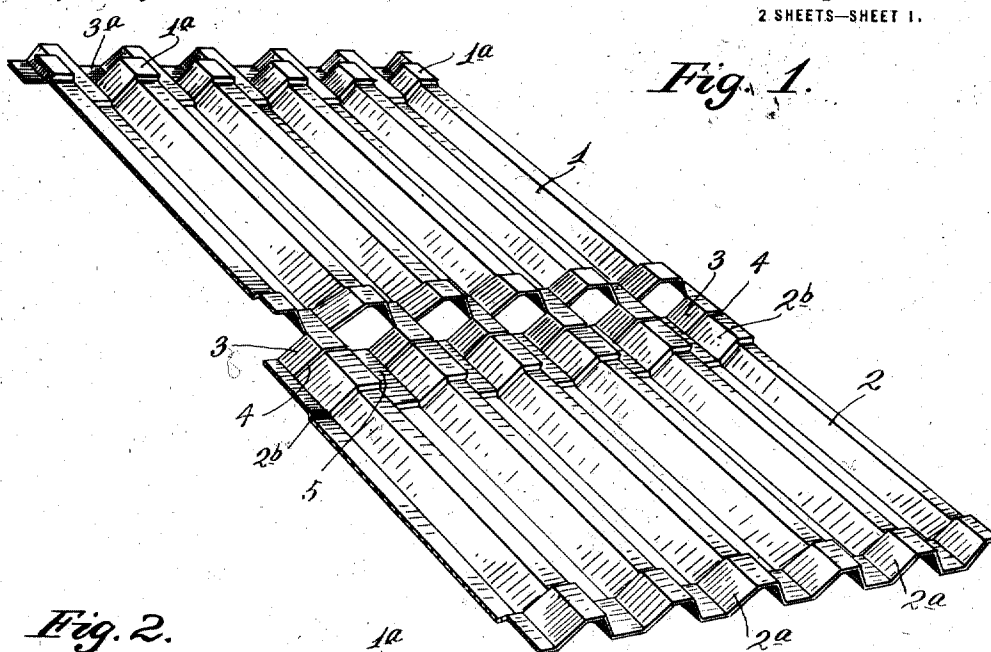
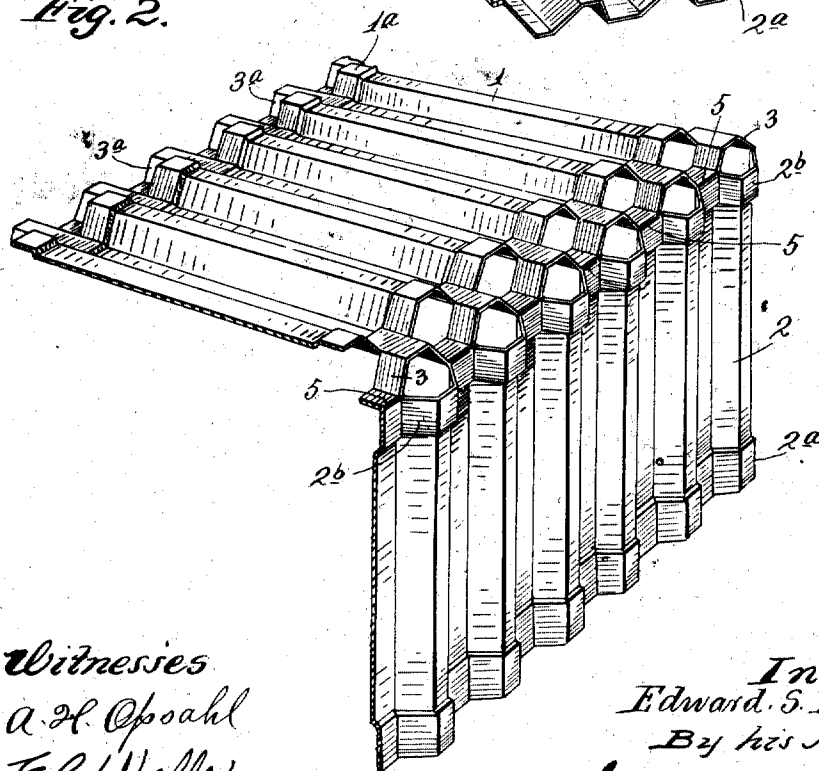


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

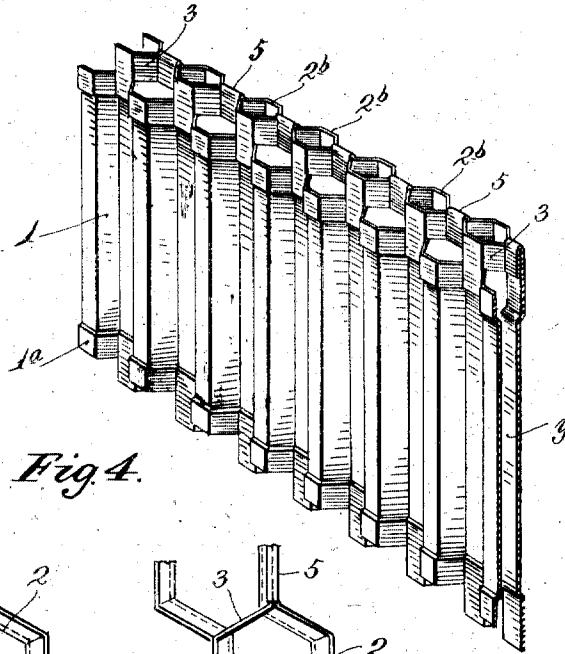


Fig. 4.

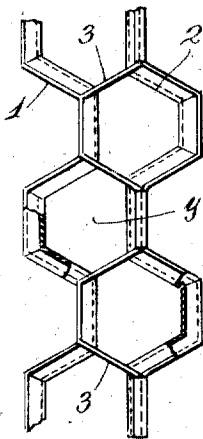
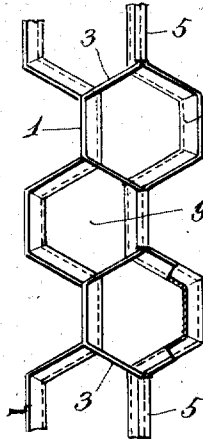
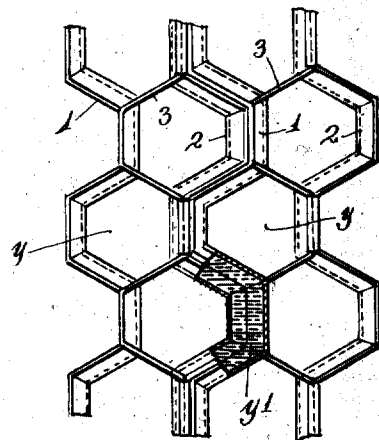


Fig. 5.



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CELLULAR RADIATOR

1,279,527.

Specification of Letters Patent.

Patented Sept. 24, 1918.

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To all whom it may concern:

Be it known that I, EDWARD S. ERICKSON, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Cellular Radiators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to so-called cellular radiators, such as extensively used in connection with automobiles including explosive engines, and is in the nature of an improvement on or modification of the radiator disclosed and broadly claimed in my Patent No. 1,233,765, of date July 17, 1917, and entitled "Cellular radiator." Generally stated, the invention consists of the novel construction and combination of parts hereinafter described and defined in the claims.

The improved radiator is illustrated in the accompanying drawings wherein like characters indicate like parts throughout the several views. Referring to the drawings:

Figure 1 is a perspective view showing one of the radiator plates as it appears after having first been stamped to form;

Fig. 2 is a view of the parts shown in Fig. 1 with the plates bent about half way to a position in which the two parts thereof form a radiator unit with a zigzag air channel between them;

Fig. 3 shows the plate illustrated in Figs. 1 and 2 folded together to form a radiator unit;

Fig. 4 is a front elevation showing two radiator sections separated from each other but adapted to be put together to form a zigzag water channel between the adjacent plates of the two units; and

Fig. 5 is a view corresponding to Fig. 4, but showing the two units connected to form the zigzag water channel between the connected plates of the two units.

The general arrangement and operation of cellular radiators, as applied to automobiles and analogous uses, are well understood, and for the purposes of this case, it need only be stated that a desired number of units will be assembled, as illustrated in Fig. 5, to form the complete radiator core with the

zigzag water channels connected at their upper and lower ends, respectively, to upper and lower water chambers of the water circulating system.

Describing the construction illustrated, the lower core of the radiator is made up of a multiplicity of thin sheet metal plates (preferably brass) that are bent into zigzag form and adapted to be put together in pairs to form zigzag air channels or zigzag water tubes, as the case may be, but in the construction illustrated, are primarily assembled to form zigzag air channels, and the units assembled and connected to form the zigzag water tubes between the adjacent units, or in some instances, the arrangement may be reversed. As a feature of this invention, the zigzag plates for forming the radiator units are first stamped or pressed into form, as a single sheet, partly but not entirely separated on a proper bending line, and are then bent and folded together, or into parallel arrangement.

Referring first to Fig. 1, it will be noted that the metallic sheet is bent to form two zigzag or fluted plates 1-2; that the fluting or corrugations of the zigzag plates 1-2, in the vertical cross section of the radiator, follow zigzag lines forming adjacent surfaces at angles at 120 degrees; that the plate 2 is offset from the plate 1; and that the flat outer surfaces of the ridges of plate 2 are in the plane of the flat inner surfaces of the depressions in the plate 1. Stated in another way, the longitudinally aligned flutes or corrugations in the two plates 1 and 2 are reversely bulged so that at their abutting edges they outline hexagonal cellular formations. The angular outer edge of the plate 2 is laterally offset slightly, as indicated at 2^a for a purpose which will presently appear, and for a similar purpose, the angular inner edge portion of said plate 2 is correspondingly offset laterally at 2^b. The said angular offset portion 2^b is aligned with a like angular or zigzag spacing and alining web 3 from which it is severed by slits 4 that are cut through the three sides of the outpressed angular three raised sides of each flute, but are left integral at the alined bottom web portions, so that the said plates 1 and 2 are adapted to be bent and folded together at 5 (see Figs. 1 and 2). When the two plates 1 and 2 are folded together, the so-called spacing and alined webs

3 project beyond the adjacent edge of the plate 1 and therewith form hexagonal formations.

5 The outer edge of the plate 1, in a similar manner to the outer edge of the plate 2, is laterally offset at 1^a, and beyond these offsets, is formed with a zigzag spacing and aligning web 3^a.

10 The webs 3 and 3^a are severed from the plate 1, except at the bottoms of the angular depressions, and each web 3 is aligned with a corresponding web 3^a in a direction longitudinally of the corrugations of the plate.

15 When the two plates 1 and 2 are first pressed, as shown in Figs. 1 and 2, and then folded together, as shown in Fig. 3, the flat bottoms of the web 3^a of the plate 1 will be brought into contact with the flat bottoms of the angular edge portions 2^a of the plate 2, and the unsevered web which connects the angular edge portion 2^b of the plate 2 with the web 3 will be folded together flatwise, thus forming a so-called unit, one of which is shown in Fig. 3 and two of which are shown in Fig. 4. The unit thus formed will have a zigzag vertically extended air passage or channel *y*, and when the units are put together, as shown in Fig. 5, the connected plates thereof will form a zigzag water tube *y*¹. Of course, any desired number of these units may be put together, and when put together, the contacting portions of their edges will be united, preferably by solder, so as to seal the front and rear edges of the water tubes. The zigzag air channels will, of course, be open both at front and rear of the radiator core.

25 Obviously, with the above described construction, it is a very easy matter, first to properly connect the plates of the unit and then to connect the units, and no great skill or care is required to effect the proper assemblage and alinement of these plates. This, together with the fact that the plates

may be stamped at very small cost, affords a highly efficient radiator core that may be constructed at low cost.

Furthermore, the radiator core is given the appearance of a truly cellular structure in which the cells are hexagonal.

What I claim is:

1. A radiator unit made up of a single thin sheet of metal bent to form two plates with aligned corrugations bulged in reverse directions and united by a zigzag or corrugated spacing and aligning web partly severed from both plates, but integral therewith, the said two plates being folded together to form the unit.

2. A radiator unit made up of a single thin sheet of metal bent to form two plates with aligned corrugations bulged in reverse directions and united by a zigzag corrugated spacing and aligning web partly severed from both plates, but integral therewith, the said two plates being folded together and united to form the unit, the cross-sectional lines of said plates and web being angular and constituting the three walls of a hexagon.

3. A radiator core made up of a multiplicity of units, each unit being made up of a single thin sheet of metal bent to form two plates with aligned corrugations bulged in reverse directions and united by a zigzag or corrugated spacing and aligning web partly severed from both plates, but integral therewith, the said two plates being folded together to form the unit, the said unit affording a zigzag air tube, and the said units being united to form water channels therebetween.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD S. ERICKSON.

Witnesses:

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