

K. M. BOBLETT.
RADIATOR.

APPLICATION FILED JULY 12, 1911.

1,053,269.

Patented Feb. 18, 1913

2 SHEETS-SHEET 1.

Fig. 1

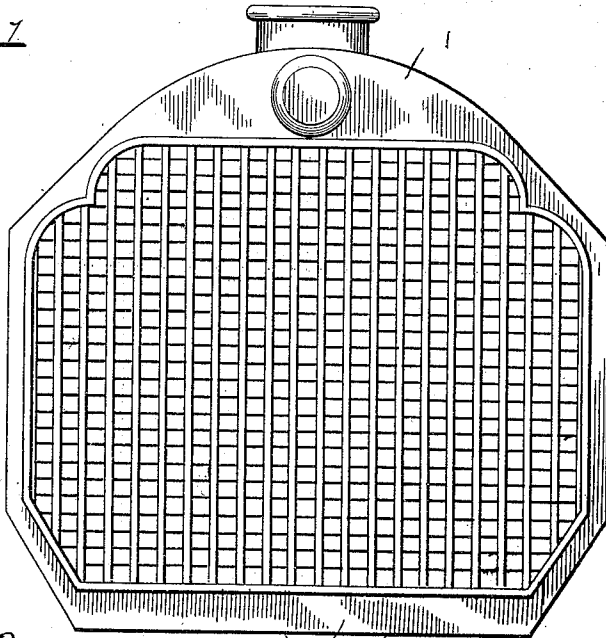


Fig. 2

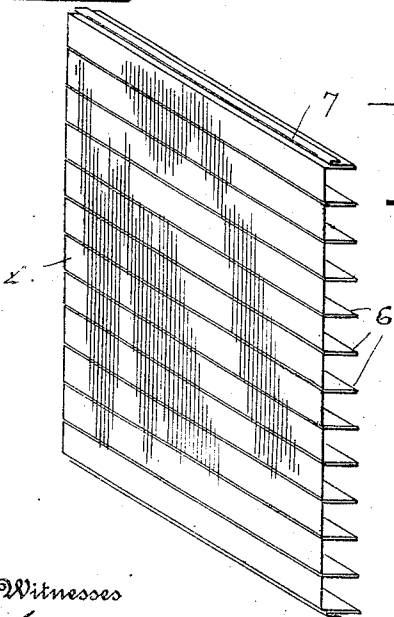


Fig. 3

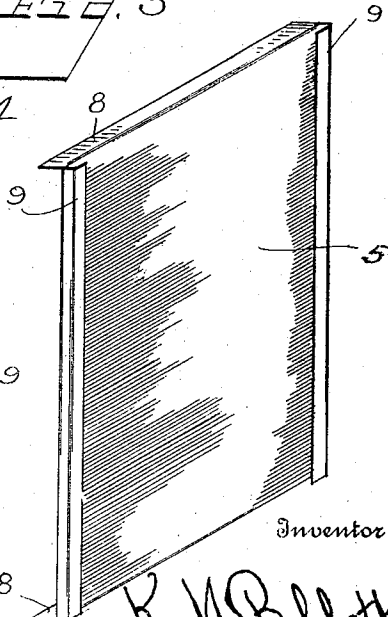
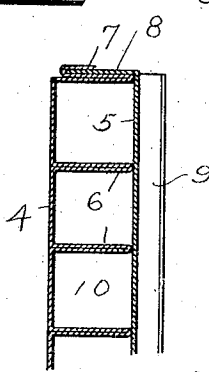


Fig. 4



Witnesses

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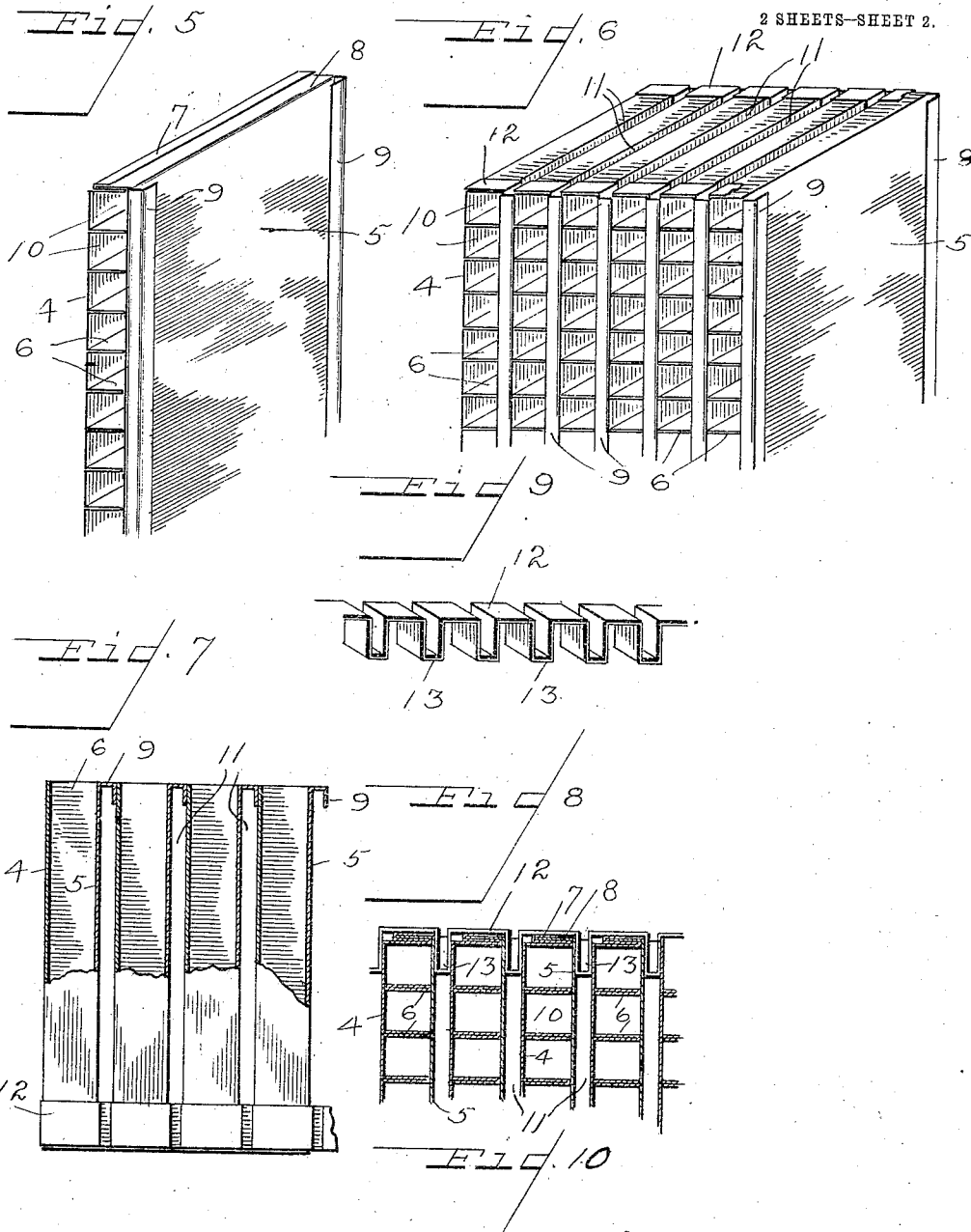
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Witnesses
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UNITED STATES PATENT OFFICE.

KINDERMAN M. BOBLETT, OF TOLEDO, OHIO.

RADIATOR.

1,053,269.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed July 12, 1911. Serial No. 638,057.

To all whom it may concern:

Be it known that I, KINDERMAN M. BOBLETT, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Radiators, of which the following is a specification.

My invention relates to fluid cooling apparatus, or condensers, and particularly to radiators for use in connection with explosive engines, and is especially adapted for automobile use. The invention however is not limited to such use but may be employed as a condenser in connection with steam engines, or in connection with refrigerating apparatus, or it may be employed as a radiator for heating purposes.

The object of the invention is to simplify the structure as well as the means and mode of operation of such devices whereby they will not only be cheapened in construction, but will be more efficient and economical in operation, and unlikely to get out of repair.

A further object is to provide an improved form of radiator which will present to the atmosphere a maximum amount of radiating surface, which will be staunch and compact, and which will comprise a plurality of identical units which are assembled to form radiators of different sizes or proportions.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention consists of the features of construction, the parts and combinations thereof, and the mode of operation or their equivalents, as hereinafter described and set forth in the claims.

Referring to the drawings, Figure 1 is a front elevation of the assembled radiator. Figs. 2 and 3 are detail perspective views of the two members or half units which are united to form a single radiator unit, showing the exterior thereof. Fig. 4 is a transverse vertical sectional view of the assembled unit. Fig. 5 is a perspective view of a portion of the assembled unit. Fig. 6 is a perspective view of a plurality of the units assembled to form a radiator body. Fig. 7 is a plan view partly broken away of a plurality of units assembled into a radiator body. Fig. 8 is a transverse vertical sectional view of the same. Fig. 9 is a detail perspective view of a spacer member hereinafter described. Fig. 10 is a detail

sectional view disclosing three different shapes of conduit walls whereby the design or appearance of the finished radiator may be varied.

Like parts are indicated by similar characters of reference throughout the several views.

The radiator forming the subject matter hereof is of the cellular type, presenting a front surface of pleasing appearance divided into a multitude of geometrical figures of equal shape and proportion. The radiator comprises a frame having in the upper portion thereof a receiving chamber 1, and in the lower portion a dispensing chamber 2 connected with the receiving chamber by a plurality of conduits through which the water passes from the chamber 1 to the chamber 2. These conduits may be either continuous from one chamber to the other as shown in the drawings, or they may be of short length and arranged in tiers separated by intervening water spaces or auxiliary chambers common to all the conduits of the tier in the common and well known manner.

The conduits are formed by arranging a plurality of similar units side by side but separated from each other to form intermediate water spaces or conduits. The units which are all identical in construction comprise two parts or members 4 and 5, shown in detail in Figs. 2 and 3, each formed from a single sheet of material. The portion of member 4 is formed from a continuous strip of material folded upon itself at regular intervals to form a series of plaits or reverse bends 6 projecting laterally at right angles from the general plane or web of the member. The folds 6 may be compressed tightly throughout as shown in the drawings, or they may be spread or opened intermediate their ends, and compressed only at their extremities, thereby forming blind passages or *culs de sac*. The web of the member from which the plaits project is substantially straight or flat throughout.

The terminal fold of the member 4 is folded again upon itself as shown at 7 forming a fold of triple thickness within which the offset or projecting edge 8 of the opposite member is engaged to form a uniting seam. The opposite unit part or member 5 is formed from a single sheet of metal, the opposite ends of which are bent at right angles to the main plane thereof as shown

at 8—8, to engage with the terminal folds of the member 4. The opposite lateral edges of the member 5 are bent in a direction opposite to that in which the extremities 8—8 extend, to form inward projecting right angle or L-shaped flanges 9—9, on the exterior side of the member 5. The unit parts or members 4 and 5 are united by introducing the projecting ends 8—8 of the member 5 within the terminal folds 7 of the member 4, with the inward projecting folds or plaits 6 of the member 4 projecting into proximity to the web of the member 5 as shown in Figs. 4, 5, 6 and 8, thereby forming a plurality of rectangular air passages 10 separated by the folds or plaits 6, in which relation the portions or members 4 and 5 are united.

In constructing the radiator, a plurality of the radiator units formed as above described are arranged side by side as shown in Figs. 6, 7 and 8, with the side 5 of one unit adjacent to the side 4 of the succeeding unit, but separated therefrom by the contact of the marginal flanges 9—9 projecting from the side member 5 engaging the side member 4 of the next succeeding unit to which they are united by soldering or other means. The projecting flanges 9—9 separating the adjacent sides of succeeding units form intermediate vertical water spaces or conduits 11 connecting the chambers 1 and 2. In the event that the folds or plaits 6 have been opened intermediate their length the blind passages or *culs de sac* thus formed will communicate with said vertical conduits 11. By reference to the drawings it will be seen that the several vertical water passages or conduits thus formed are each separate from and independent of the others, and that the several conduits are separated by series of intervening air passages 10. Likewise each vertical series of air spaces, that is the air spaces of each unit, are separate and independent of every other vertical series of air spaces, and each air space of each series is independent of every other air space of the same series, although the latter is not essential. After the several units have been arranged side by side, separated by the lateral flanges 9—9, a spacer member 12, shown in detail in Fig. 9 is applied to the top and bottom of the assembled radiator body or core adjacent to the front and rear edges thereof as shown in Fig. 6. The spacer member 12 comprises a strip of material bent upon itself throughout a series of reverse bends or corrugations, the pendant portions or bights 13 of which are inserted within the water spaces or conduits 11 adjacent to the marginal flanges 9—9 which form the front and rear walls of the conduits. After the units and spacers have been assembled into the complete radiator body or core, they are united into one struc-

ture by dipping or soldering which unites the terminal portions 7 and 8 of the unit members, the marginal flanges 9—9 of each unit with the succeeding unit and the spacers 12 in their adjusted position. The spacers 12 restrict the inlet and outlet orifices of the conduits 11 to a slight extent, affording a continuous and more extensive surface for soldering the core or radiator body within the frame or case. When the core or body is dipped to unite the several parts the solder will enter within the pendant portions of the spacers, but such portions 13 will prevent the solder from flowing down the conduits or water spaces 11.

Fig. 10 shows several different shapes into which the marginal flange may be formed thereby giving to the front and rear walls of the conduits different shapes whereby the general appearance of the radiator may be modified.

From the above description it will be apparent that there is thus produced a device of the character described possessing the particular features of advantage before enumerated as desirable but which obviously is susceptible of modification in its form, proportion, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has herein been described in language more or less specific as to certain structural features, it is to be understood that the invention is not limited to any specific details but that the means and mechanism herein shown and described comprise but one mode of putting the invention into effect and the invention is therefore claimed broadly in any of its possible forms of modifications within the scope of the appended claims.

Having thus described my invention I claim:

1. In a radiator unit, two substantially parallel side members comprising side walls of succeeding conduits connected one with the other at their ends corresponding to the inlet and outlet ends of the conduits but spaced apart, one of the wall members having formed therein a series of integral plaits projecting across the intervening space in a direction parallel with the connected extremities, the other wall-member having marginal side flanges projecting in a direction away from the plaited member of the unit, substantially as specified.

2. In a radiator, a series of radiator units each comprising a substantially plane side member and a plaited side member, said side members being adapted to form side walls of succeeding conduits, marginal end flanges on the plane member projecting laterally in one direction and marginal side flanges

thereon extending parallel with the direction of the conduit projecting laterally in the opposite direction, the plaited member and plane member being arranged side by side with the plaits of the plaited member projecting toward the plane member, the marginal side flanges of the plane member projecting away from the plaited member of the particular unit and engaging the plaited side member of the next succeeding unit of the series to form with said succeeding unit an intermediate conduit, substantially as specified.

3. In a radiator unit, two substantially parallel side walls, each of the side walls being adapted to form one side of separate conduits, said side walls of separate conduits being connected at their extremities corresponding to the inlet and outlet ends of such conduits, thereby inclosing an intermediate air space between the said side walls of succeeding conduits one of said side walls having laterally projecting flanges parallel with the direction of the conduit to be formed adapted to engage the opposite side wall of the next succeeding unit to complete one conduit, the other side wall being adapted to be engaged by the flanges of the opposite wall of the preceding unit to complete another conduit, substantially as specified.

4. In a radiator, a plurality of substantially parallel conduits, a spacer member comprising a strip of material bent upon itself throughout a meandrous formation to form a succession of alternately arranged U shaped bights, said spacer being arranged in

such relation with the conduits that the pendant U shaped bights will project intermediate the conduit walls while the portions of the strip intermediate the pendant bights will extend in a plane substantially flush with the extremities of the conduits forming an extended bearing surface for the attachment of the conduits, substantially as specified.

5. In a radiator, the combination with a chamber and a plurality of conduits communicating with the chamber, of an attachment member comprising a strip of material bent upon itself through a meandrous formation whereby portions of the strip will extend alternately parallel with the wall of the chamber and parallel with the walls of the conduits, thereby affording broad surfaces of attachment to the conduit walls and chamber, substantially as specified.

6. In a radiator, the combination with a chamber and a plurality of conduits communicating with the chamber of an attachment member comprising a strip of material arranged parallel with the wall of the chamber and having portions thereof extended angularly in a direction parallel with the walls of the conduits, said strip being attached alternately to the chamber wall and the conduit walls, substantially as specified.

In testimony whereof, I have hereunto set my hand this 7th day of July 1911.

KINDERMAN M. BOBLETT.

Witnesses:

B. A. EISCHEN,
W. F. ROHR.