This invention relates to heat transfer devices and particularly sectional radiators for cooling internal combustion engines.

Radiator core sections are usually cut from large integral blocks of core stock, which consist of a plurality of spaced rows of water tubes and superimposed radiator fins. The blocks are cut up into individual core sections by severing the fins between selected adjacent rows of water tubes.

In order to produce a radiator of predetermined width it has frequently been necessary to sever the fins close to one of the rows of water tubes, and in this event it becomes necessary to cut off and discard that row of tubes for when the fins are cut too close to the tubes the latter are not sufficiently supported, nor do the edges of the fins extend far enough in advance of the tubes to allow soldering of the side plates thereon.

The main objects of this invention are to provide an improved radiator construction and method of making the same for avoiding the necessity of cutting the fins of radiator core stock so close to the water tubes thereof as to require recutting of the core stock and discarding one row of water tubes, to provide an improved side plate for radiator cores for facilitating soldering of the edges of the radiator fins thereto and to provide a series of individual core sections in which side plates of adjacent sections bear resiliently upon each other.

In the accompanying drawings I have illustrated a specific embodiment of my invention, in which:

Fig. 1 is a front elevation of a sectional radiator showing the core sections mounted therein.
Fig. 2 is a perspective view of a completed core section.
Fig. 3 is a fragmentary top plan of a block of radiator core stock.
Fig. 4 is a fragmentary perspective of an improved side plate.
Fig. 5 is a fragmentary top plan of adjacent core sections.
Fig. 6 is a fragmentary section taken on the line 6-6 of Fig. 5.

In the form shown, individual core sections 1 are cut from a block of core stock 2, having water tubes 3 and superimposed fins 4 therein. Formerly it has been necessary to cut through the fins 4 along the dotted lines 5—5 illustrated in Fig. 3, in order to obtain core sections of sufficient width to produce a radiator of predetermined dimensions and to expose the cut edges of the fins for facilitating soldering of ordinary channel-shaped side plates thereto. As a result of the close proximity of the cut indicated by line 5—5, to the next adjacent row of water tubes this row was not properly supported nor did the cut edges of the fins extend far enough in advance of the tubes to allow soldering of an ordinary channel-shaped side plate to the edges of the fin. To remove this difficulty one row of water tubes was cut off along line 6—6 of Fig. 3 and discarded, causing waste of time, labor and material.

In the present invention the fins of the block of core stock are severed substantially midway between two selected rows of water tubes and improved sideplates 7 are secured to the cut edges of the fins 4 by solder or other suitable means.

The side plates 7 comprise sheet material plates having sunken intermediate portions 8 and protruding lateral edge portions 9 and 10. The lateral extremities 11 and 12 of the side plates are formed substantially perpendicular to the planes of the sunken intermediate portions 8 to provide flanges for engaging the front and rear edges of the fins 4. The laterally extending ribs 13 and 14 are formed on the outer side of the plate 7, intermediate the ends thereof. The ribs 13 and 14 protrude outwardly substantially as far as the lateral edges 9 and 10, and the ribs of one plate register with and bear resiliently upon the ribs of the next adjacent plate, as illustrated in Fig. 6 for retaining the intermediate portions of the plates in spaced relation and resisting relative vibration of adjacent core sections.

When the integral block of core stock is cut along dotted line 15—15 of Fig. 3 in accordance with the method of construction defined above, the cut edges of the fins in each core section formed, extend far enough in
advance of the adjacent rows of water tubes to allow soldering of the sunken portions of the sideplates to the edges of the fins. The protruding lateral edge portions of the plates space adjacent sections apart and provide resilient bearing surfaces between the adjacent core sections. Then the rows of tubes in the core stock are spaced further apart than those in the illustrated form, the extent to which the ribs and lateral edge portions of the plate protrude in advance of the sunken intermediate portions may be varied as desired for producing a radiator of predetermined width.

When the core sections 1 are completed they may be detachably mounted in a radiator frame 16, as shown in Fig. 1, by means of the apertured headers 17, soldered to the ends of the cross section and bolts 18 threaded in apertures in the frame 16. Although but one specific embodiment of this invention has been herein shown and described, it will be understood that details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined by the following claims:

I claim:

1. In a radiator construction, a radiator core comprising spaced rows of water tubes and superimposed fins, side plates on the core having sunken intermediate portions and protruding longitudinal edge portions, the intermediate portions being soldered to the edges of the fins.

2. In radiator construction, a plurality of radiator cores, placed adjacent each comprising spaced rows of water tubes and superimposed fins, side plates on each core having sunken intermediate portions soldered to the edges of the fins and projecting lateral edges on each side plate for spacing the cores apart to produce a radiator of predetermined width.

3. In radiator construction, side plates for radiator cores to be placed adjacent comprising channelled members having sunken intermediate portions and projecting longitudinal edge portions for spacing adjacent cores apart, and laterally extending ribs intermediate the ends of such side plates for resisting relative vibration of the cores.

4. A radiator section comprising spaced rows of water tubes and superimposed fins, the ends of said fins projecting beyond the outer rows of the spaced water tubes a distance approximately one-half the distance between the fixed tubes in the same plane, plates fixed to said fin projections, said plates having projections adapted to bear against projections on adjacent radiator sections.

5. In a sectional radiator, a plurality of radiator core sections, each comprising side plates, and a plurality of ring-shaped bearing surfaces arranged longitudinally on each side plate, the bearing surfaces of each side plate being registered with the corresponding bearing surfaces of adjacent side plates.

6. In a sectional radiator, a plurality of radiator core sections, each comprising water tubes and radiator fins, side plates on said core sections enclosing the sides thereof, and bearing surfaces stamped outwardly from the material of said side plates, each comprising a protruding ring having continuous inner and outer peripheries for resisting compression.

7. In a sectional radiator, a radiator frame, a plurality of core sections mounted in said frame, and means between adjacent core sections comprising pairs of plates having substantially O-shaped protruding portions thereon in registration with each other for resiliently resisting compression of said core sections and protecting the core sections.

8. In a sectional radiator comprising a frame, a plurality of radiator core sections, each having side plates comprising sheet metal, substantially resilient bearing members formed on the outer sides of said side plates, comprising protruding areas of the material thereof the plates having offset edges located within the perimeter of said plates, and means for securing said core sections to said frame in compressed relation with the bearing surfaces of each side plate registered with and bearing upon the bearing surfaces of an adjacent plate.

Signed at Chicago this sixth day of November 1923.

FRED M. YOUNG.