

Aug. 29, 1933.

J. F. McINTIRE

1,924,952

RADIATOR CONSTRUCTION

Filed Jan. 3, 1933

2 Sheets-Sheet 1

FIG. 1.

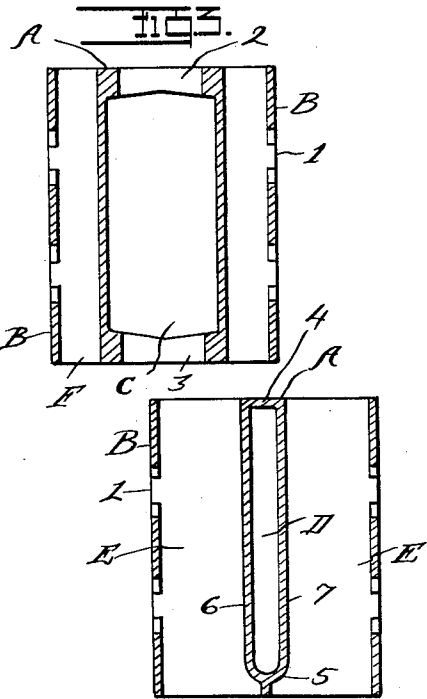
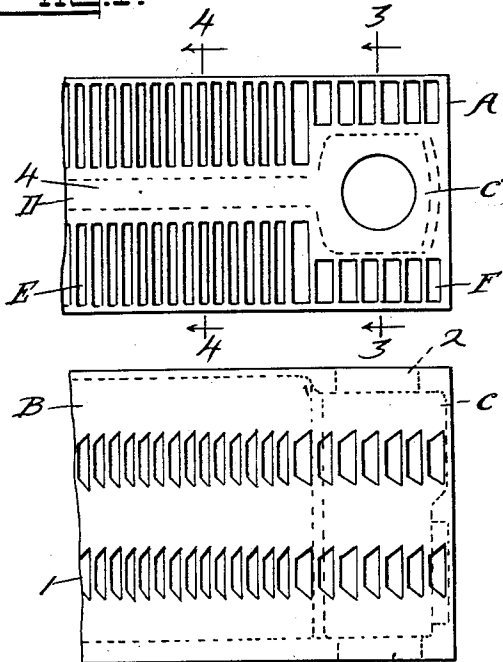


FIG. 2.

FIG. 4.

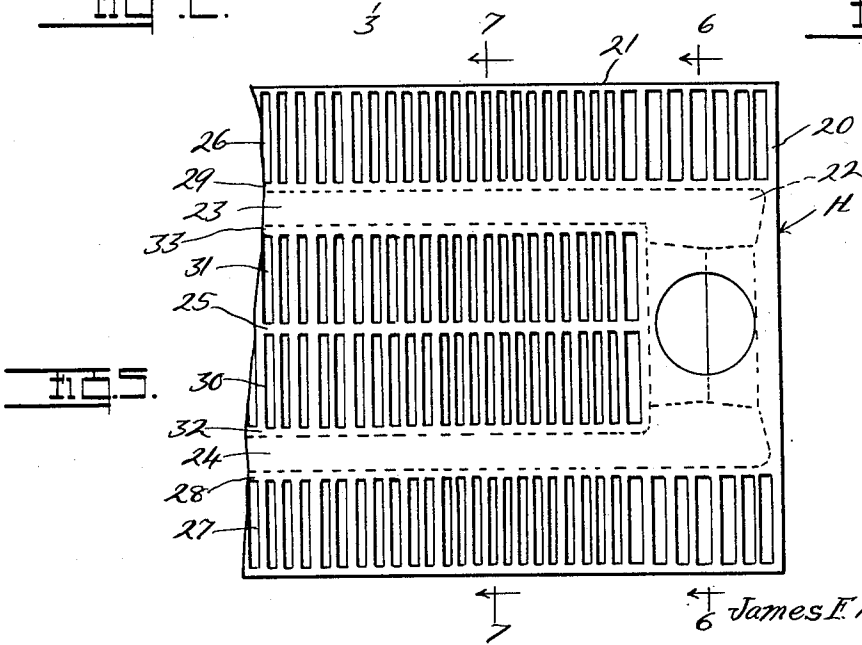


FIG. 5.

Inventor

James F. McIntire

W. H. ...
 Attorneys

Aug. 29, 1933.

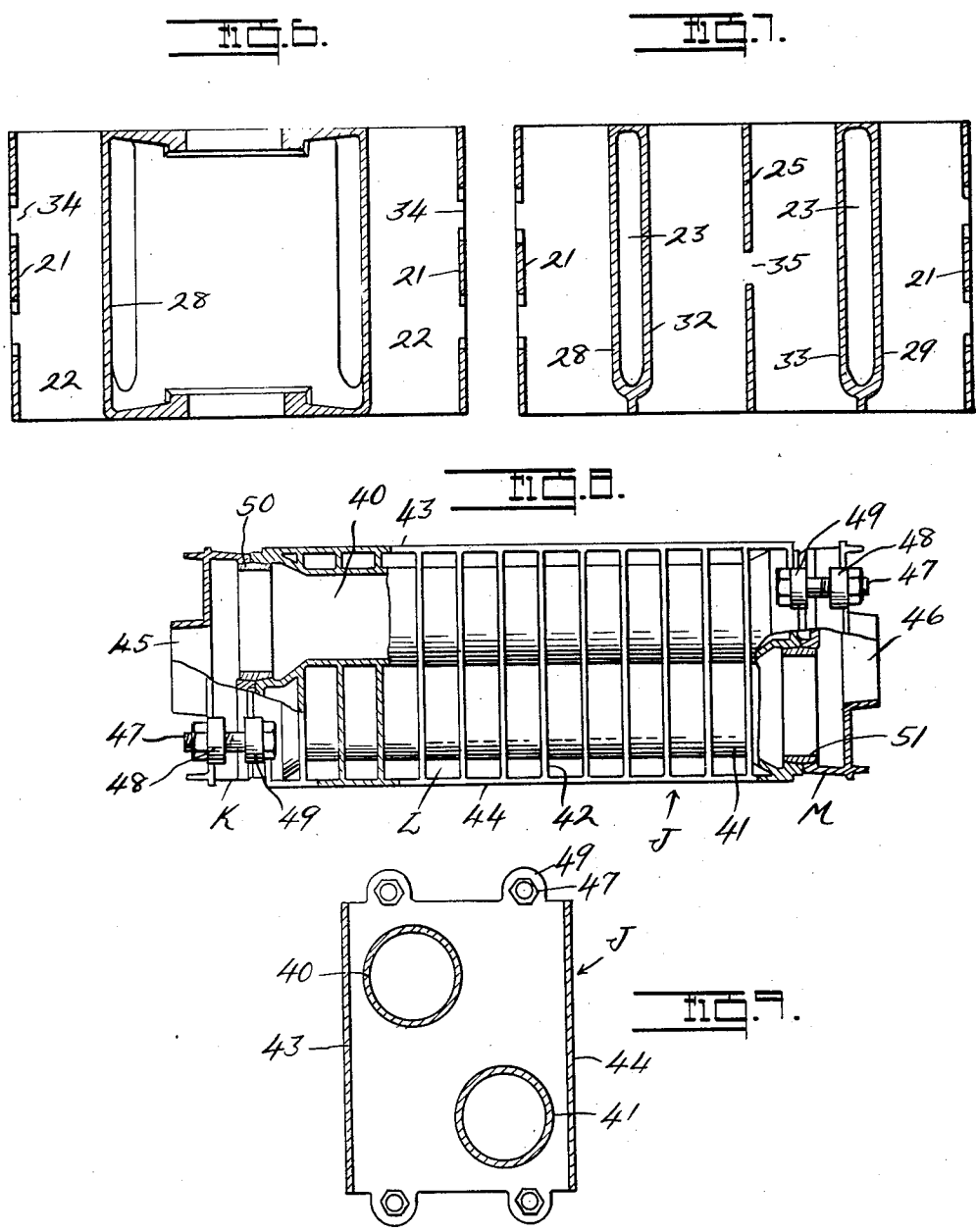
J. F. McINTIRE

1,924,952

RADIATOR CONSTRUCTION

Filed Jan. 3, 1933

2 Sheets-Sheet 2



Inventor
James F. McIntire

334
William H. Beck
Attorney

UNITED STATES PATENT OFFICE

1,924,952

RADIATOR CONSTRUCTION

James F. McIntire, Detroit, Mich., assignor to
United States Radiator Corporation, Detroit,
Mich., a corporation of New York

Application January 3, 1933. Serial No. 650,012

15 Claims. (Cl. 257—150)

This invention relates generally to radiators, and is a continuation in part of my application filed August 15, 1932 bearing Serial No. 628,950.

In the accompanying drawings:

5 Figure 1 is a side elevation of a radiator embodying my invention;

Figure 2 is a fragmentary top plan view of the construction illustrated in Figure 1;

10 Figure 3 is a sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a sectional view taken on the line 4—4 of Figure 1;

Figure 5 is a fragmentary top plan view of a slightly modified construction;

15 Figure 6 is a sectional view taken on the line 6—6 of Figure 5;

Figure 7 is a sectional view taken on the line 7—7 of Figure 5;

20 Figure 8 is a top plan view of another modification with parts broken away and in section;

Figure 9 is a vertical sectional view through the construction illustrated in Figure 8.

Referring now to the drawings, A are the end walls; B are the side walls; C are the headers; 25 D is the fluid-way; and E and F, respectively, are the fins of a radiator embodying my invention. As shown, the parts are integrally united and form a radiator that has a uniform cross sectional area throughout its length. Preferably the end walls A are flat and are relatively thick. The side walls B are thinner than the end walls and are terminally secured thereto at the upright edges thereof. Preferably such side walls B are provided at spaced points thereof with openings 1. 30 The headers C are substantially rectangular in shape and are vertically disposed upon the inner sides of the end walls A in spaced relation to the side walls B. Preferably openings 2 and 3, respectively, are provided in the headers C for the reception of suitable piping (not shown). The fluid-way D extends between the headers C and is disposed substantially midway between and in substantially parallel relation to the side walls B. The top wall 4 of said fluid-way is flat while the 35 bottom wall 5 thereof is substantially Y-shape in cross section. The side walls 6 and 7, respectively, of the fluid-way are parallel to each other and to the side walls B. The fins E are located between the headers C and project laterally from the sides 6 and 7 of the fluid-way to the side walls B, while the fins F are located upon and project laterally from opposite sides of the headers C to the side walls B. Preferably the fins E and F are relatively thin and are closely spaced in parallel relation to the end walls A. In this connection it

will be noted that the fins are upon the opposite sides of the openings 1 and that the latter are arranged in vertically spaced rows extending longitudinally of the radiator. It will also be noted that the upper edges of the end walls A, 60 side walls B, fins E and F, upper wall 4 of the fluid-way and the upper ends of the headers C are substantially flush and that the lower edges, walls and ends of said parts are also substantially flush. Thus a very compact and uniform construction is 65 provided.

Thus from the foregoing description it will be readily apparent that I have provided an extremely efficient and practical radiator wherein the maximum of heat radiation is provided. The 70 heat from the fluid-way D and headers C will be transferred by the fins E and F to the air flowing upwardly through the radiator with the result that such air will be effectively and thoroughly heated. In this connection it will be noted that 75 any suitable means such as four legs (not shown) may be utilized at opposite ends of the radiator casting for supporting the same when in use. Moreover, such a radiator may be readily installed either within or upon the outer side of 80 a wall and may be concealed or covered by any suitable means which will provide for the circulation of cold air below and of the heated air above the radiator. One form of enclosure is illustrated in my application filed July 30, 1932, 85 bearing Serial No. 626,526.

In Figures 5 to 7, inclusive, I have illustrated a slight modification wherein a radiator H of the double fluid-way type is provided with end walls 20, side walls 21 terminally secured to the 90 end walls at the upright outer edges thereof, headers 22 upon the inner sides of the end walls, fluid-ways 23 and 24, respectively, extending between the headers 22 and disposed in parallel relation to the side walls 21, a partition 25 extend- 95 ing between the headers 22 substantially midway between and in parallel relation to the fluid-ways 23 and 24, fins 26 and 27, respectively, projecting laterally from the outer walls 28 and 29, respectively, of the fluid-ways to the side walls 21, and 100 fins 30 and 31, respectively, projecting laterally from the inner walls 32 and 33, respectively of the fluid-ways to the partition 25. Both the side walls 21 and partition 25 have openings 34 and 35, respectively, therein at spaced points longitudinally thereof. As shown, the openings 34 in the 105 side walls are arranged in vertically spaced rows while the openings 35 in the partition are in a single row, preferably located substantially midway of the upper and lower edges of said partition. 110

In Figures 8 and 9 I have illustrated another modification wherein the radiator J is formed of three cast metal sections K, L and M, respectively, that are suitably secured together. In this construction the section L forms the body of the radiator and is provided throughout its length with two fluid-ways 40 and 41, respectively, laterally projecting fins 42, and the parallel side walls 43 and 44, respectively. However, in this instance the fluid-ways 40 and 41 are preferably staggered as shown between the side walls so that the air in flowing upwardly is compelled to follow a somewhat circuitous path. The end sections K and M, respectively, constitute the headers for the fluid-ways 40 and 41 and are provided with suitable openings 45 and 46, respectively, for the reception of the piping (not shown). Any suitable means such as the bolts 47 engaging the laterally projecting lugs 48 and 49, respectively, upon the sections may be used for holding the sections K, L and M in assembled relation. Likewise any suitable means such as the gaskets 50 and 51, respectively, may be used between the adjacent ends of the sections to insure fluid-tight connections.

What I claim as my invention is:

1. A radiator having upright substantially parallel side walls, upright end walls extending between and forming with said side walls a substantially rectangular enclosure, headers within and rigid with said enclosure, fluid-ways also within said enclosure and connected to said headers, a partition between said fluid-ways and connected to said headers, and fins projecting laterally from opposite sides of said fluid-ways, certain of said fins being connected to said enclosure and others being connected to said partition.

2. A radiator having substantially parallel fluid-ways, headers at opposite ends of and connected to said fluid-ways, a partition extending between said headers, and fins projecting laterally from opposite sides of said fluid-ways, certain of said fins being connected to said partition.

3. A radiator casting having substantially parallel side walls, substantially parallel fluid-ways between said side walls, a partition between said fluid-ways, and connection between said parts including fins projecting laterally from opposite sides of said fluid-ways, certain of said fins being connected to said side walls, and other being connected to said partition.

4. A radiator casting having upright substantially parallel side walls, upright end walls extending between and forming with said side walls a substantially rectangular enclosure, headers within said enclosure and provided with means whereby they may be connected to a fluid circulatory system, substantially parallel elongated fluid-ways extending between and terminally connected to the headers, the width of each fluid-way being less than the height thereof, and substantially parallel fins projecting laterally from opposite sides of said fluid-ways, the height of each of said fins being substantially equal to the height of said fluid-ways.

5. A radiator casting having upright substantially parallel side walls, upright end walls extending between and forming with said side walls a substantially rectangular enclosure, and substantially parallel elongated fluid-ways extending between and terminally connected to the end walls, the height of said fluid-ways being substantially equal to the height of the side walls, and the width of each fluid-way being less than the height thereof.

6. A radiator casting having upright substantially parallel side walls, upright end walls extending between and forming with said side walls a substantially rectangular enclosure, headers within said enclosure and provided with means whereby they may be connected to a fluid circulatory system, substantially parallel elongated fluid-ways extending between and terminally connected to the headers, the depth of each fluid-way being substantially equal to the depth of one of the walls aforesaid, the width of each fluid-way being materially less than the depth thereof, and fins projecting laterally from opposite sides of the fluid-ways, the depth of each of said fins being substantially equal to the depth of each fluid-way.

7. In a radiator, a casting having upright substantially parallel side walls, elongated fluid-ways arranged side by side between said side walls, means for connecting said fluid-ways to a fluid circulatory system, the depth of each fluid-way being substantially equal to the depth of one of said side walls, the width of each fluid-way being less than one half the depth thereof, and connections between said fluid-ways and side walls including fins projecting laterally from opposite sides of the fluid-ways, the depth of each of said fins being substantially equal to the depth of each fluid-way.

8. In a radiator, a casting having upright substantially parallel side walls of uniform height, elongated fluid-ways between and substantially parallel to said side walls, the depth of each fluid-way being substantially equal to the height of said side walls, the width of each fluid-way being less than one half the depth thereof, and connections between said fluid-ways and side walls including fins projecting laterally from opposite sides of the fluid-ways, the depth of each of said fins being substantially equal to the depth of each fluid-way, whereby the upper and lower edges of said fins, fluid-ways and side walls are substantially flush.

9. A radiator casting having end and side walls, headers upon the inner sides of said end walls, fluid-ways extending between and terminally connected to said headers, fins projecting from the fluid-ways and headers to said side walls, a partition between said fluid-ways, and fins projecting from opposite sides of said partition to said fluid-ways.

10. A radiator casting having end and side walls, headers upon the inner sides of said end walls, fluid-ways extending between and terminally secured to said headers, and a partition disposed between said fluid-ways and terminally secured to said headers.

11. A radiator having end and side walls secured together and forming a substantially rectangular enclosure, headers upon the inner sides of said end walls, a partition extending between and terminally secured to said headers, said partition being provided substantially midway of its upper and lower edges with openings, and said side walls being provided with vertically spaced longitudinally extending rows of openings, a fluid-way extending between and terminally secured to said headers at points between the partition and one of said side walls, and connections between the fluid-way and enclosure including fins projecting laterally from said fluid-way to said partition and side wall.

12. A radiator casting having end and side walls secured together and forming a substantially rectangular enclosure, a partition within

<p>the enclosure and rigid therewith, a fluid-way between the partition and one of the side walls of the enclosure, and connections between the fluid-way and enclosure including substantially parallel fins projecting laterally from opposite sides of the fluid-way to said partition and side wall.</p>	<p>14. A radiator casting having upright side walls, upright end walls extending between and forming with said side walls a substantially rectangular enclosure, headers projecting from the end walls in spaced relation to the side walls, fluidways extending between and forming with said headers a second substantially rectangular enclosure, and means for transferring heat from the second mentioned enclosure to the first mentioned enclosure.</p>	<p>80</p>
<p>13. A radiator casting having upright side walls, upright end walls extending between and forming with said side walls a substantially rectangular enclosure, two substantially parallel fluidways within and extending longitudinally of said enclosure, headers at opposite ends and disposed between said fluidways, said headers projecting from said end walls in spaced relation to the side walls, and means for dissipating heat from said headers and fluidways including fins projecting laterally from opposite sides of said headers to said side walls, and fins projecting laterally from opposite sides of said fluidways.</p>	<p>15. A radiator casting having a pair of laterally spaced fluidways, headers connected to and forming with said fluidways a substantially rectangular enclosure, a second enclosure about the first, and means for transferring heat from the first mentioned enclosure to the second mentioned enclosure including fins extending between and terminally connected to the side walls of the first and second mentioned enclosures.</p>	<p>85</p>
	<p>JAMES F. McINTIRE.</p>	<p>95</p>
<p>25</p>		<p>100</p>
<p>30</p>		<p>105</p>
<p>35</p>		<p>110</p>
<p>40</p>		<p>115</p>
<p>45</p>		<p>120</p>
<p>50</p>		<p>125</p>
<p>55</p>		<p>130</p>
<p>60</p>		<p>135</p>
<p>65</p>		<p>140</p>
<p>70</p>		<p>145</p>
<p>75</p>		<p>150</p>