

J. W. FRANZ.  
 AUTOMOBILE RADIATOR.  
 APPLICATION FILED DEC. 26, 1918.

1,339,752.

Patented May 11, 1920.

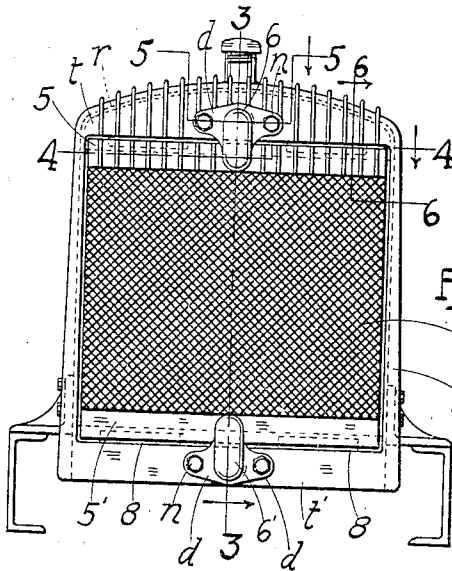


FIG. 1.

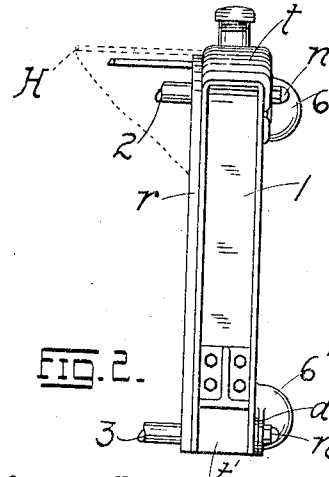


FIG. 2.

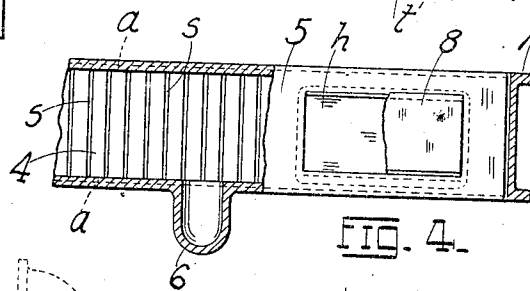


FIG. 3.

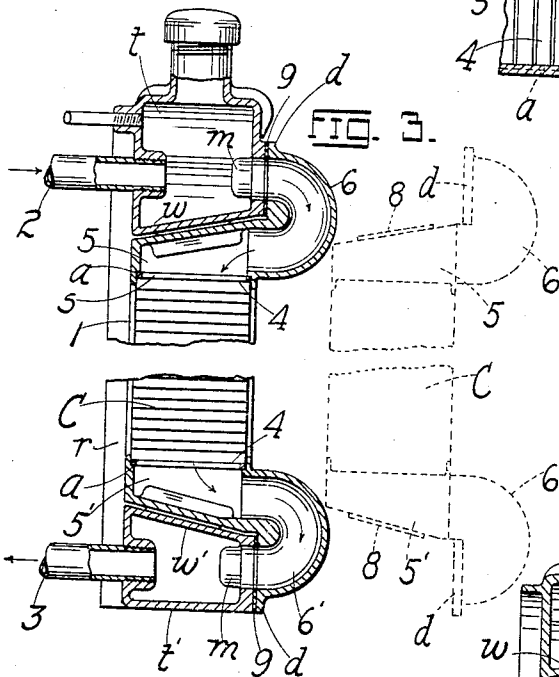


FIG. 4.

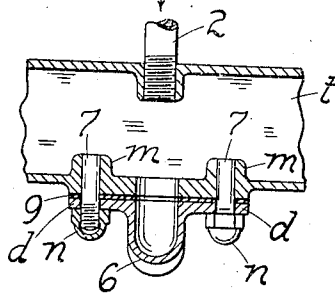


FIG. 5.

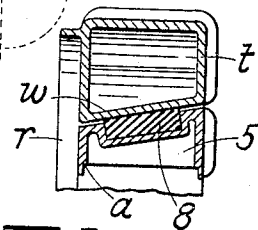


FIG. 6.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## AUTOMOBILE-RADIATOR.

1,339,752.

Specification of Letters Patent.

Patented May 11, 1920.

Application filed December 26, 1918. Serial No. 268,297.

*To all whom it may concern:*

Be it known that I, JOHN W. FRANZ, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Automobile-Radiators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

The present invention is directed to improvements in automobile radiators, the special object sought being to construct a radiator provided with a removable core which may be of any standard type and kept in stock, said core being made attachable to and detachable from a radiator tank section or frame permanently mounted on the car. As radiators are now generally constructed the core and tank section or frame are practically integral, and when occasion arises for the driver to work on the engine the entire radiator must be taken off to make room for the operator and permit access to the engine. Again, the provision of a detachable core makes it comparatively easy to repair leaks and make any other necessary repairs to either the outer frame or the core. Where the core is of the cellular or tubular type the cells or tubes preferably terminate in hollow heads which may be readily coupled to or uncoupled from the tanks of the radiator frame or outer section, and this without entailing any material loss of the water usually employed as the circulating cooling medium, and which often can not well be spared. The advantages of the invention will be fully apparent from the following detailed description in connection with the accompanying drawings in which—

Figure 1 represents a front elevation of the improved radiator; Fig. 2 is a side elevation thereof; Fig. 3 is a vertical middle section on the line 3—3 of Fig. 1; Fig. 4 is an enlarged horizontal section through the upper head of the core on the line 4—4 of Fig. 1, a part being broken away; Fig. 5 is a horizontal sectional detail through the upper tank of the outer frame on the line 5—5 of Fig. 1; and Fig. 6 is a vertical transverse sectional detail on the line 6—6 of Fig. 1.

Referring to the drawings, 1 represents an outer frame provided with upper and lower terminal hollow compartments or

tanks  $t$  and  $t'$  respectively, the upper tank serving as the intake and the lower tank as the discharge for the circulating cooling medium (water), the rear wall of the tank  $t$  being tapped by the feed or supply pipe 2 and the corresponding wall of the tank  $t'$  being tapped by the discharge pipe 3 leading from the engine as well understood in the art. The bottom wall  $w$  of the tank  $t$  and the upper wall  $w'$  of the tank  $t'$  are made sloping, the same converging rearwardly as shown (Fig. 3) to facilitate the mounting of the detachable core of the radiator. The core-body  $C$  is herein shown as of the conventional cellular type, the opposite open terminals of the circulating cells being provided with the usual slotted plates 4, the slots  $s$  whereof terminate near the opposite edges of the plates, the marginal imperforate portions of the plates bearing against the ledges or shoulders  $a$  formed respectively on the inner walls of the upper and lower hollow circulating heads 5 and 5' terminating the core-body and communicating with the passage-ways or cells thereof through the slits  $s$  as well understood in the art. The top and bottom walls of the core heads 5, 5', respectively are made sloping to conform to the pitch of the walls  $w, w'$  of the tanks  $t, t'$ , the front walls of the said heads having formed integrally therewith the hollow bends or goose necks 6, 6', respectively, the free upper or intake terminal of the bend 6 being insertible into an opening in the front wall of the tank  $t$ , and the free lower discharge terminal of the bend 6' being insertible into a corresponding opening of the front wall of the tank  $t'$ , the inner faces of said front walls on either side of the openings receiving the free terminals of the bends or goosenecks, being formed with hollow bosses  $m$  for receiving the screw studs 7, the said studs being driven into the bosses with a tight fit. The outer ends of the studs 7 are screw-threaded, the threaded portions being freely passed through openings in the side lobes or cheeks  $d$  formed integrally with the circulating bends or goosenecks 6, 6'.

Disposed on opposite sides of the center of each head 5, 5', of the core are pockets or depressions  $h$  which receive pads or blocks 8 of rubber or equivalent resilient material (a spring might be a full equivalent) acting as a shock absorber; and being yielding, it fa-

facilitates the insertion of the core body and  
 its heads into the outer frame 1. When the  
 parts are assembled, suitable blind nuts *n*  
 passed over the outer threaded ends of the  
 studs 7 clamp the core to the outer frame,  
 it being understood that the "core" herein  
 includes the core-body C and its heads 5, 5',  
 and as shown constitutes the removable or  
 detachable unit of the radiator. The outer  
 faces of the shock absorbers 8 (four being  
 shown in the present example, though I am  
 not to be restricted to any special number)  
 engage the sloping walls *w, w'*, of the tanks  
*t, t'*, of the outer frame and take up any  
 shocks incident to the travel of the vehicle.  
 Between the lobes *d* and the outer faces of  
 the tanks *t, t'*, are preferably interposed  
 suitable packing strips or gaskets 9 to pre-  
 vent leakage, the gaskets being of course  
 formed with openings registering with the  
 bores of the bends 6, 6', (Fig. 3).

Whenever it becomes necessary to detach  
 the core for any purpose, all that the driver  
 need do is to unscrew the nuts *n* (four of  
 them) when the entire unit C, 5, 5', includ-  
 ing the pads 8, 8, and goosenecks 6, 6', slips  
 off the studs 7 (see dotted position in Fig.  
 3) the open frame 1 affording access to the  
 working parts of the engine. To restore the  
 core, the same is reinserted into the frame,  
 the parts so fitting that while the core is be-  
 ing inserted, the openings in the lobes *d*  
 will register or come opposite the studs 7,  
 the latter passing freely through the open-  
 ings, after which the nuts *n* are placed back  
 on the studs clamping the parts together  
 and the radiator is again ready for service.  
 To prevent loss of any material quantity  
 of water as the core is being detached, the  
 bottom hole of the frame or that formed in  
 the tank *t'* to receive the free end of the  
 bend 6' may be plugged up with a cork or  
 block of wood or anything handy. It is of  
 course rare that the loss of the water can  
 cause serious inconvenience, water being  
 usually obtainable on the road. In the pres-  
 ent embodiment of my invention the ledge *r*  
 by which the forward end of the hood H is  
 supported is formed on the frame 1. In the  
 present embodiment of my invention I pro-  
 vide pockets or depressions *h* for preventing  
 displacement of the pads or shock absorbers  
 8 but obviously I am not to be restricted to  
 this specific construction. So too, any  
 equivalents of the construction here shown  
 for establishing circulation between the core

and the frame tanks are contemplated by  
 the present invention. Features shown but  
 not alluded to are well known in the art and  
 require no description in the present connec- 60  
 tion.

Having described my invention what I  
 claim is:

1. In a radiator, an outer frame provided  
 with water circulating compartments or 65  
 tanks, a detachable core inserted in and ex-  
 tending the width of the frame, water cir-  
 culating connections between the core and  
 compartments, and suitable shock absorbing  
 devices between the core and frame. 70

2. In a radiator, an outer frame provided  
 with top and bottom tanks, a core compris-  
 ing a body terminating in top and bottom  
 hollow heads extending substantially the  
 width of the frame and insertible into said 75  
 frame, the bottom and top walls of the top  
 and bottom tanks respectively being made  
 sloping and converging rearwardly, and the  
 corresponding walls of the heads of the core  
 being pitched to conform to the sloping 80  
 walls of the tanks, means for establishing  
 circulation between the frame tanks and  
 core heads through the front walls of the  
 tanks and heads respectively, pockets dis-  
 posed on the sloping walls of the core heads, 85  
 suitable shock absorbing elements mounted  
 in said pockets and engaging the sloping  
 walls of the tanks aforesaid, inlet means for  
 the circulating cooling medium formed in  
 the rear wall of the top tank, and outlet 90  
 means in the corresponding wall of the bot-  
 tom tank.

3. In a radiator, an outer frame provided  
 with top and bottom tanks, the bottom and  
 top walls respectively of which slope and 95  
 converge rearwardly, a core comprising a  
 body terminating in top and bottom hollow  
 heads insertible in said frame, the heads  
 having sloping and converging walls to con-  
 form to and engage the corresponding slop- 100  
 ing and converging walls of the tanks  
 aforesaid, and means for establishing cir-  
 culation between the frame tanks and core  
 heads through the front walls of the tanks  
 and heads respectively. 105

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

JOHN W. FRANZ.

Witnesses:

EMIL STAREK,  
 ELSE M. SIEGEL.