R. M. ZARUCHA.

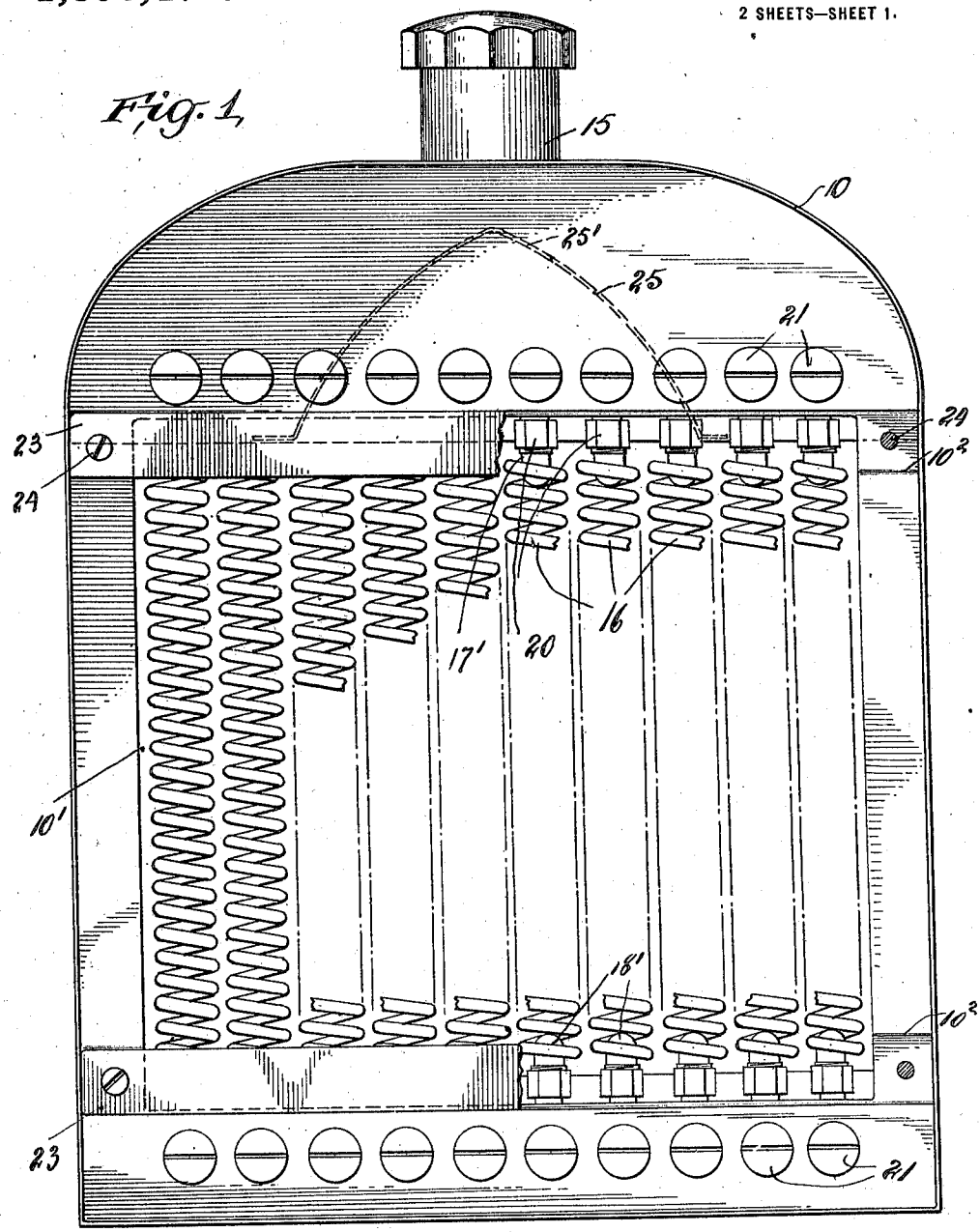
RADIATOR FOR MOTOR VEHICLES.

APPLICATION FILED JUNE 26, 1920.

1,393,479. Patented Oct. 11, 1921.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

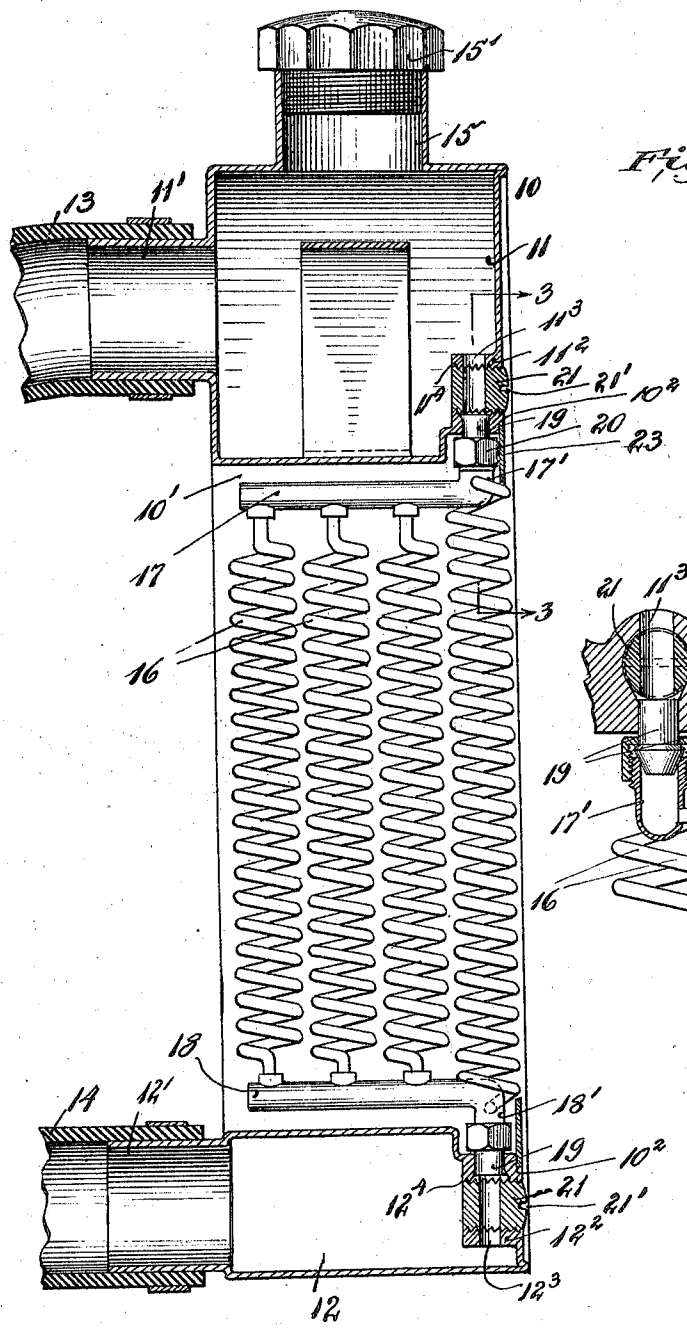
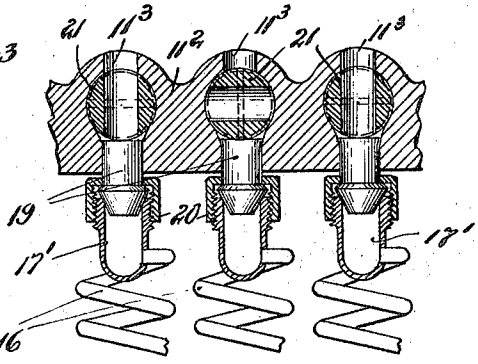


Fig. 3.



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UNITED STATES PATENT OFFICE.

ROBERT M. ZARUCHA, OF WATERBURY, CONNECTICUT.

RADIATOR FOR MOTOR-VEHICLES.

1,393,479. Specification of Letters Patent. Patented Oct. 11, 1921.

Application filed June 26, 1920. Serial No. 391,992.

To all whom it may concern:

Be it known that I, ROBERT M. ZARUCHA, a citizen of Germany, residing at Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Radiators for Motor-Vehicles, of which the following is a specification.

The present invention relates to radiators for motor vehicles and has for its principal object to provide a radiator whose cooling effect will be greatly enhanced.

Another object of this invention is to provide a construction in which the water will circulate through individual independently controlled tubes whereby in case of leakage occurring in any one of the tubes, the defective tube can be shut off leaving the radiator intact.

A still further object is to detachably join the water tubes to the tanks or chambers of the radiator in order to facilitate repairs and permit defective tubes to be easily and quickly replaced by new ones.

A still further object of this invention is to impart a certain resiliency to the radiator in order to lessen its liability of cracking or breaking as a result of shocks occurring in case of collision or when the machine runs over bumps.

With these and other objects in view, my invention substantially consists in the novel construction, combination and arrangement of parts which will be hereinafter more fully described and defined in the appended claims.

In the accompanying drawing which forms part of this specification and in which similar reference characters denote corresponding parts, Figure 1 is a front elevation of my new radiator; Fig. 2 is a vertical secton thereof and Fig. 3 is an enlarged vertical section on line 3—3 of Fig. 2.

Referring to the drawings more in detail, 10 denotes the cast iron frame of the radiator which may be made of any of the usual shapes and sizes to fit different types and sizes of motor vehicles and which, as usually, is fixed in vertical position in front of the motor or of the fan (not shown). This frame is formed on top and bottom with water tanks or chambers 11 and 12 respectively while the space 10′ intermediate these tanks is open both in the front and back. The tanks 11, 12 are formed at the rear with tubular projections 11′, 12′ which by hoses 13, 14 are adapted to be connected to similar tubular projections leading from the cooling mantle of the motor. (Not shown.) The tank 11 is provided with the usual filling opening 15 adapted to be normally closed by the stoppers 15′. The two tanks 11, 12 are adapted to communicate with one another and through a system of tubes 16 each preferably made in form of a comparatively closely wound coil. The tubes 16 are arranged parallel to one another and vertically in the open space 10′ of the frame 10 and are connected in sets, so that each set is adapted to form a unit. To this end each unit is composed of two vertically superposed tubes, 17, 18 extending horizontally and transversely through the open space 10′ of the frame 10, and to which a plurality of the coils 16 are suitably and communicatively fixed. The rear ends of these tubes 17, 18 are closed while the front ends thereof are bent to form vertical elbows 17′, 18′ the extreme ends of which are screw threaded. These elbows extend toward the respective tanks 11, 12. From the bottom of the tank 17 and the top of the tank 18 project a plurality of nozzles 19 to which the elbows 17′, 18′ of the tubes 17, 18 are to be tightly connected by nuts 20 loosely mounted on the nozzles 19 and adapted to screw on the threaded portions of the elbows 17′, 18′. The nozzles 19 are fixed in beam shaped enlargements 11^2, 12^2 extending longitudinally along the lower and upper parts of the front walls of the chambers 11, 12 respectively. These enlargements have each a row of vertical bores 11^3, 12^3 leading into the nozzles 19 and through which the respective chambers 11, 12 are adapted to communicate with the coils 16. Each of the passages 11^3, 12^3 is controlled by a valve 21, which in the present example, is shown as a one way plug or cock. The plugs are screw threaded and work in threaded bores 11^4, 12^4 extending transversely through the enlargements 11^2, 12^2 from the front wall of the frame. The front or head faces of said plugs are notched as at 21′ for the insertion of a screw driver.

The number of sets of coils 16 used depends upon the size of the motor vehicle. In the present example ten sets of such coils are shown, each set comprising four parallel coils fixed to the tubes 17, 18 and forming

thereof a unit. Each unit can be easily and quickly removed for purposes of repairs or to be replaced by a new unit. In case of a defect in any one of such units, the water circulation therethrough may be shut off by turning the cocks 21 into closed position, while the remaining units continue the circulation. In operation, the water poured into the tank 11 will first flow down through the several sets of coils 16 into the tank 12. From the tank 12 the water will flow through the cooling mantle of the engine and return into the tank 11. The circulation then repeats itself.

In order to conceal the joints of the coils and thereby lend the radiator a neat appearance, detachable metal strips 23 are provided which extend over the outer face of the frame along the longitudinal upper and lower edges of the free space thereof. The ends of these strips are countersunk in grooves 10^2 provided in the side walls of the frame and are fixed in position by screws 24. These strips normally cover the upper and lower ends of the coils and are removed only when a unit is to be removed.

In the tank 11 an angular baffle plate 25 is provided which in its apex has an opening 25′.

What I claim and desire to secure by Letters Patent is:

1. In a radiator for motor vehicles, a pair of superposed tanks each formed in front with an inwardly projecting rib having a number of independently controllable circulation passages, nozzles projecting outwardly from said passages, a corresponding number of circulation units, each composed of two superposed horizontal tubes the rear ends of which are closed and the front ends are open and removably joined to said nozzles, and a plurality of coils extending between and communicating with each superposed pair of said horizontal tubes.

2. In a radiator for motor vehicles, a pair of superposed tanks each formed in front with an inwardly projecting rib having a number of circulation passages, nozzles projecting outwardly from said passages, a corresponding number of circulation units, each composed of two superposed horizontal tubes the rear ends of which are closed and the front ends are open and removably joined to said nozzles and a plurality of coils extending between and communicating with each superposed pair of said horizontal tubes, and a valve for each of said passages.

3. In a radiator for motor vehicles, a pair of superposed tanks each formed in front with a number of circulation passages, the mouths of the passages in the upper tank being at an elevation from the bottom of the tank, nozzles projecting outwardly from said passages, a plurality of circulation units, each composed of two superposed elbow tubes removably fixed to said nozzles and closed at one end and a number of coils communicating with each pair of superposed elbow tubes.

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

ROBERT M. ZARUCHA.

Witnesses:
MAX G. ORDMANN,
JOSEPH T. MCMAHON.