

932,113.

2 SHEETS—SHEET 1.



L. L. Simpson.
a H Opsahl.

Edward M. Field Jr.

By his Attorneys:
Williamson Merchand

E. M. FIELD, JR.
 FOOT WARMING RADIATOR FOR AUTOMOBILES.
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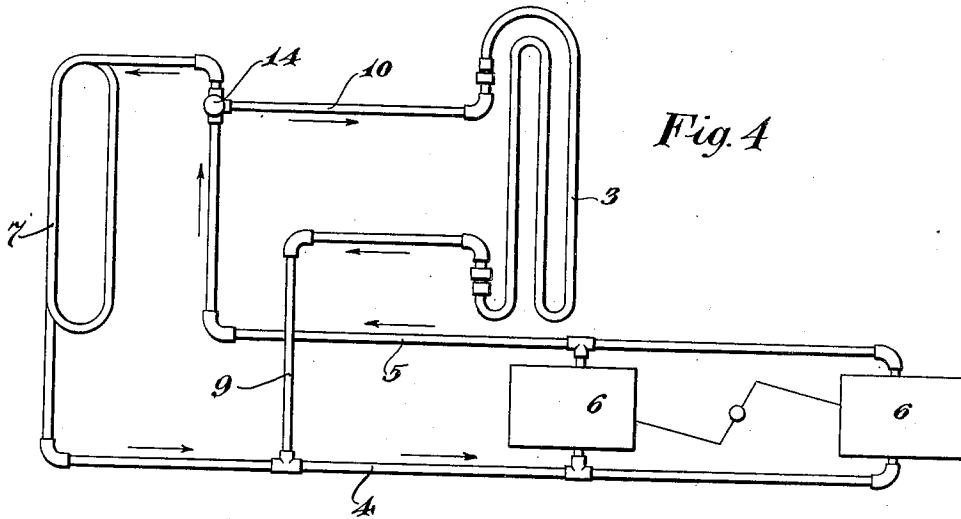


Fig. 4

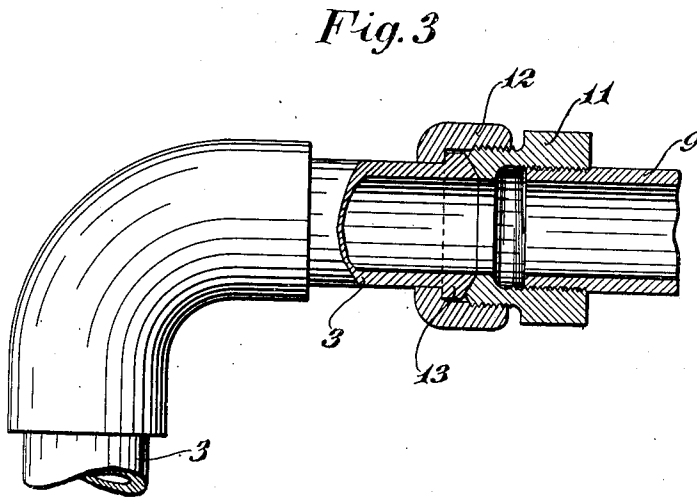


Fig. 3

Witnesses:

L. L. Simpson
 A. H. Osahl

Inventor:

Edward M. Field, Jr.
 By his Attorneys:
 Williamson Muehler

UNITED STATES PATENT OFFICE.

EDWARD M. FIELD, JR., OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO GEORGE C. ANDREWS, OF MINNEAPOLIS, MINNESOTA.

FOOT-WARMING RADIATOR FOR AUTOMOBILES.

932,113.

Specification of Letters Patent.

Patented Aug. 24, 1909.

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To all whom it may concern:

Be it known that I, EDWARD M. FIELD, Jr., a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Foot-Warming Radiators for Automobiles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved foot warming device for automobiles or other engine-propelled vehicles, and to this end it consists of the novel devices and combinations of devices herein-after described and defined in the claims.

In applying my invention to a vehicle employing a water-cooled explosive engine, I utilize the heat transmitted from the engine by such cooling water to supply the heat to the foot warmer, so that the foot warmer, in total or in part, is caused to serve as a heat radiator or cooling coil for the cooling water or liquid.

When the improved foot warmer is applied to a vehicle having an air cooled explosive engine, the hot exhaust products of combustion from the engine may be utilized to afford the heat required in said foot warmer. When the said foot warmer is applied to a vehicle driven by a steam engine the exhaust steam may be transmitted through the foot warmer, and the heat, usually wasted in the exhaust, there utilized.

The invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a view in side elevation, with some parts broken away and some parts sectioned, showing my improved foot warmer applied to an automobile of standard construction. Fig. 2 is a view partly in plan and partly in horizontal section, taken approximately on the line $x^2 x^2$ of Fig. 1. Fig. 3 is a detail partly in plan and partly in section, showing on an enlarged scale one of the swivel joints that connect the so-called radiator coil to the water circulating pipes; and Fig. 4 is a diagrammatic plan view, showing the manner of connecting the water circulating pipes of a pair of explosive engines to the ordinary

cooling coil and to the radiator coil of my improved attachment.

The numeral 1 indicates the body of an automobile of standard construction, the same having the customary removable floor section 2 in front of the seat. In a very large number of these automobiles the explosive engine which is carried by the running gear (not shown) is located under the vehicle body directly below the removable floor section 2, and ready access, for the purpose of adjustments or repairs, may be had to the engine, when said floor section 2 is removed. In applying my improved foot warming device to an automobile of this character, the foot warming radiator coil 3 is preferably made with manifolds arranged to lie flatwise and in close engagement with the upper surface of the displaceable floor section 2, and the ends of this radiator coil are connected to the water circulating pipes 4—5 that lead, respectively, to and from the water jacketing chambers of the engines 6, of which latter, as shown in Fig. 4, there are two. The numeral 7 indicates the customary cooling coil, usually arranged in the hooded front end of the vehicle body 1, and through which the cooling water, in the customary arrangement, is circulated. The numeral 8 indicates the usual steering rod of the machine and which is capable of the customary forward pivotal movement.

One of the principal features of my invention consists in connecting the foot warming radiator coil 3 in such manner that it may be raised or moved into an inoperative position and thereby permit of the removal of the floor section 2, whenever it is desired to obtain access to the engine located below the said floor section. The said radiator coil may be thus connected through swivel joints, articulated metal joints, or flexible hose connections which do not require a separation or disconnection between the coil and its circulating pipes, but which permit the required movement of the said coil to and from operative position. The best arrangement, however, is shown in the drawings, and consists in connecting the ends of the coil 3 by liquid-tight swivel joints to branch pipes 9 and 10 of the circulating pipes 4 and 5, respectively. These swivel joints, as shown, are formed by threaded collars 11 and 12. The collars 11 have threaded engagement with the ends of the cooperating branch pipes 9 and 10 and

have ground seats at their ends that engage ground seats formed on the shouldered ends 13 of the said coil 3. The collars 12, which are clamping collars, have screw-threaded engagement with the cooperating collars 11 and work pivotally on the shouldered ends 13 of the said pipe coil, all as best shown in Fig. 3. The two swivel joints thus formed are axially alined so that the pipe coil 3 may be readily turned upward into the position shown by dotted lines in Fig. 1, it being necessary, of course, to first force the jointed steering rod 8 forward. This connection, as is evident, while it always maintains a liquid-tight joint, permits the radiator coil to be quickly turned upward into an inoperative position and to be again turned backward into an operative position.

At the junction of the pipe 5 with the branch 10 is a three-way valve 14 of the usual or any suitable construction, and by means of which, at will, the circulation of the water may be directed onward through the said pipe 5 and usual cooling coil 7 back to the engines, or may be cut off from said coil 7 and directed through the branch pipe 10, through the warming radiator coil 3, branch pipe 9 and pipe 4 back to the engines.

By setting the three-way valve 14 in an intermediate position, part of the heated cooling water may be directed through the coil 3, and part thereof through the coil 7, so that a variation of temperature of the said foot warming coil 3 is made possible, to thereby adapt the same to different conditions of the weather.

I believe it to be broadly new to provide a foot warming or similar heating coil or radiator which is capable of movements to and from operative positions without disconnection from the circulating pipes which supply the heating medium thereto, and desire to claim this feature broadly.

It is, of course, evident that when the so-

called foot warming device above described is to be applied to a vehicle having two or more seats, a suitable radiator may be placed just in front of each seat.

The expression "heat medium circulating pipes" is herein used in a broad sense to include pipes that control the circulation of a cooling liquid, or a pipe through which the exhaust from an explosive engine or a steam engine is directed.

What I claim is:

1. The combination with a vehicle having a propelling engine and heat medium circulating pipes extending to and from said engine, the body of said vehicle having a displaceable floor section in front of its seat, of a foot warming radiator coil or manifold pipe section normally located immediately above the said displaceable floor section and connected to said circulating pipes, by means permitting said radiator to be moved to and from operative position, while connected to said circulating pipes, substantially as described.

2. The combination with a vehicle having a propelling engine and circulating pipes for the cooling water or fluid, including a primary cooling coil or radiator and branch circulating pipes, the body of said vehicle having a displaceable floor section in front of its seat, of a three-way valve located at the junction of one of said branch pipes to one of the main circulating pipes, and a foot warming coil or radiator connected to said branch pipes by means permitting said latter radiator to be moved to and from operative position while connected to said branch pipes, substantially as described.

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

EDWARD M. FIELD, JR.

Witnesses:

H. D. KILGORE,

F. D. MERCHANT.