H. EVANS.

FOOT WARMER FOR MOTOR CARS.

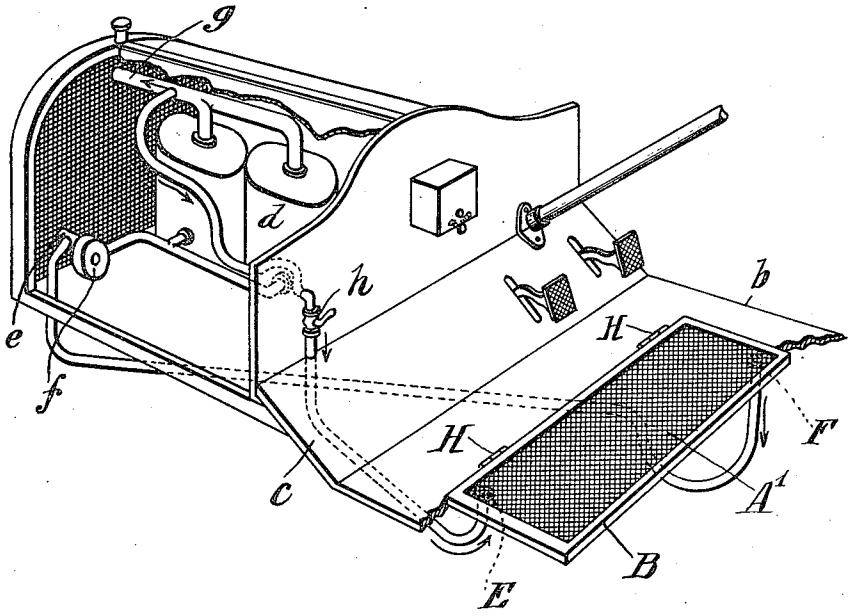
APPLICATION FILED APR. 11, 1908.

1,069,683.

Patented Aug. 12, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



Attest:

C. D. Mitchell

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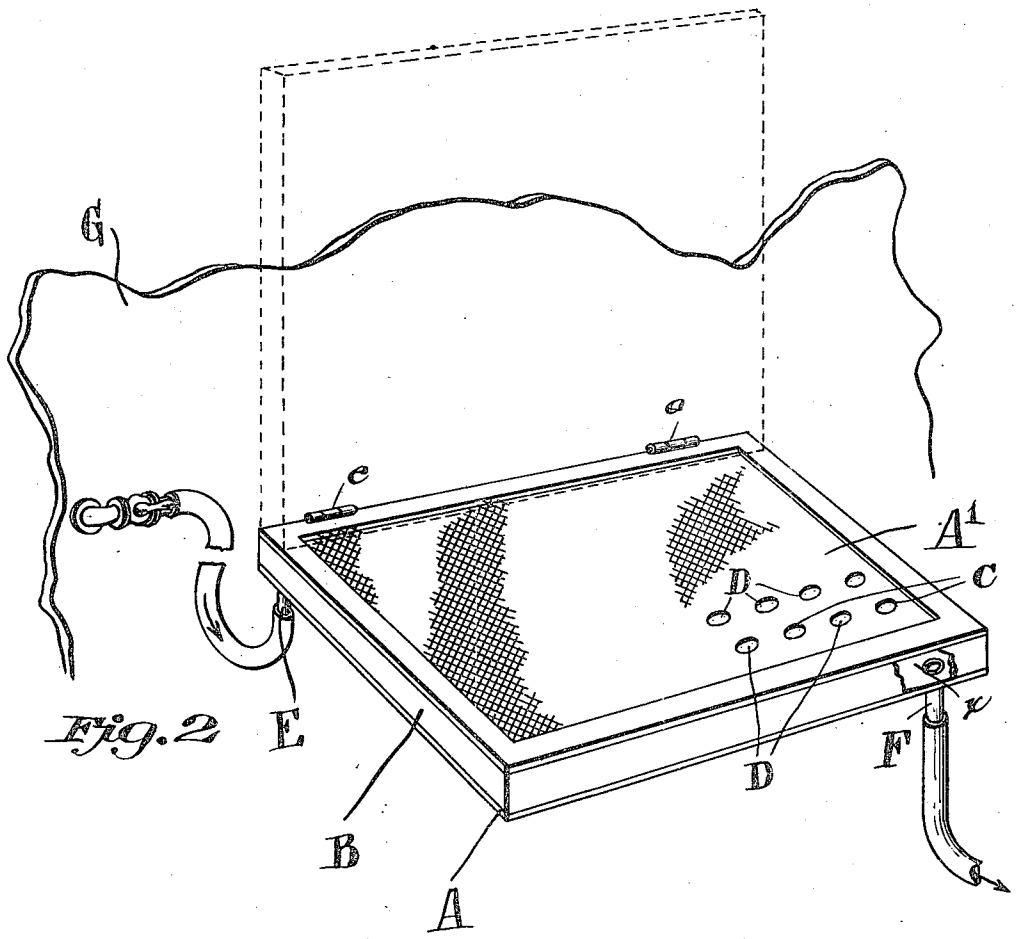
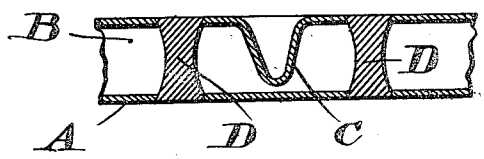


Fig. 2

Fig. 3.



Attest:

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UNITED STATES PATENT OFFICE.

HENRY EVANS, OF FOREST ROW, ENGLAND.

FOOT-WARMER FOR MOTOR-CARS.

1,069,683. Specification of Letters Patent. Patented Aug. 12, 1913.

Application filed April 11, 1908. Serial No. 426,452.

To all whom it may concern:

Be it known that I, HENRY EVANS, a subject of the King of the United Kingdom of Great Britain and Ireland, residing at Forest Row, Sussex, England, have invented a certain new and useful Foot-Warmer for Motor-Cars, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to foot warmers for motor cars, and more particularly to a type thereof adapted to be heated from the circulating water system.

The main object of the invention is to provide a foot warmer which will be so compact as to occupy only approximately the same space as the ordinary rubber mats now commonly used.

A further object is to provide a foot warmer containing a water circulation space so obstructed as to insure that diffusion of the heated water necessary to secure a substantially uniform temperature throughout.

A still further object is to provide a foot warmer wherein the heated water may be excluded therefrom when it is not desired to use same.

A still further object is to provide a foot warmer so connected with the circulating water system of the car, and so secured in place as to permit the warmer to be turned up against the dash board or other part of the car body if desired.

A still further object is to provide a foot warmer which in addition to radiating heat for the purpose of warming the feet of the occupant of the car, will aid in cooling the circulating water and serve to indicate to the occupant the condition of the water circulation system. And a still further object is to provide a foot warmer for motor cars which will be simple in construction and capable of being readily and conveniently applied to any car employing a water cooled engine and not readily obstructed.

The invention consists in the novel features of construction and combination of parts hereinafter set forth and described and more particularly pointed out in the claims hereto appended.

Referring to the drawings:—Figure 1 is a perspective view of a portion of a motor car showing my invention applied thereto; Fig. 2 is a detailed view of a foot warmer embodying my invention on a larger scale, portions thereof being broken away to show the interior arrangement thereof, and Fig. 3 is a fragmentary cross section showing the arrangement of indentations and studs.

Like letters refer to like parts in both of said views.

In the embodiment of my invention shown in the accompanying drawings I have shown a flooring *b* forwardly of the seat, not shown, and a dash board *c*. Forwardly of the dash board *c* is shown conventionally, an internal combustion engine *d*, the cylinders of which are provided with an ordinary water-cooled jacket, the water being discharged into the jacket of each cylinder through the delivery pipe *e*, and being withdrawn therefrom by the pump *f* through the out-take pipe *g*. This general arrangement is that now commonly found in motor vehicles, and is shown in the accompanying drawings merely for the purpose of disclosing one application of the invention. The details of the arrangement or design of the motor car are immaterial to my invention, it being merely necessary that a water cooled engine be used in combination with my improved heater.

Arranged upon the flooring *b* adjacent to the dash board *c*, is the heater proper, which consists of two parallel metallic plates A and A′, spaced apart sufficiently to permit the free circulation of water therebetween. The edges of the plates A, A′ are closed by a frame B, so connected to said plates as to make the inclosed casing thus formed water-tight.

While preferably the warmer is hinged adjacent to the dash board *c* by means of the hinges H, so as to permit the entire device to be folded up against the dash board and out of the way of the operator, the manner of application is immaterial to the invention, the sole requisite being that the device should be so positioned, or be capable of being so positioned as to permit the occupant of the car to place his or her feet thereupon.

To reinforce the top plate A′, as well as to increase the effective circulation within the heater, I provide the under plate A with a plurality of indentations C, which indentations extend into close proximity to the upper plate A′. To lend greater stability to the entire structure of the heater case, I connect the plates A and A′, by standards D, which standards may be secured by sol-

dering or riveting, or in any other desired manner, to both plates. The upper plate A′ is preferably scored to roughen the surface thereof to afford a better grip for the feet.

Arranged at divergently situated points on the under plate is an inlet nipple E and an outlet nipple F, by means of which water is circulated in the space between the top and bottom plates of the heater. The inlet opening E is placed in communication with the outtake *g* by a pipe system one portion of which, adjacent to the heater proper, is flexible so as to permit that movement of the heater necessary when it is hinged as described. The outlet nipple F is in communication through a pipe system with the delivery pipe *e* the connection being upon the suction side of the pump *f*, so as to cause this pump to draw water from both the water tank and the foot warmer casing, and deliver it to the cylinder jacket.

It will be observed by the foregoing description that the foot warmer receives water at a high temperature from the jackets surrounding the engine cylinders, and that this water is circulated by the same pump supplying water to said jacket. Hence not only are the heat units from the heated water utilized in warming the feet of the occupant of the car, but the circulating water through this radiation is cooled before being redelivered to the jackets thus increasing the effectiveness of the radiator to the extent of the water diverted therefrom to the foot warmer.

A portion of the pipe connection between the outlet F and the delivery pipe *e* adjacent to the pump may also be made flexible to admit of the movement of the warmer.

The minor details of construction of the warmer casing and its various connections, and of the manner of connecting same to the water circulating system of the car is immaterial to the invention and it is not my intention to limit the invention thereto.

In the pipe system between the inlet nipple E and the outtake-pipe of the water circulating system, I arrange a valve *h*, of any desired or approved type, so as to enable the occupant of the car to control the flow of heated water to the warmer.

The operation of the warmer described is apparent from the foregoing description, and the accompanying drawings, and a detailed description thereof will not be entered into. It will be observed, however, that the heat radiated from the warmer is a waste product and that the operation of the warmer is therefore inexpensive. Furthermore the operation of the warmer aids in maintaining the low temperature of the circulating water and serves as a guide by means of which the operator may determine whether or not the circulating system is operating properly as a lowering of the temperature of the heater will indicate an improper circulation of water.

Having described my invention, what I claim as new and desire to have protected by Letters Patent is:—

1. In a foot warmer for motor cars, the combination of a casing formed of parallel metallic plates spaced apart and having a frame adjacent to the edges thereof whereby a water-tight space is formed between said plates, one of said plates having therein a plurality of indentations extending into close proximity to the other to obstruct the flow of water therethrough and reinforcing said other plate, standards extending from one of said plates to the other, and means whereby said circulation space may be placed in communication with the water circulating system for the jacket of an internal combustion engine.

2. A foot warmer for motor cars comprising two metal plates, one of said plates being indented from the outside and the upper plate being scored to make a grip for the feet, both said plates having standards or vertical supports between them, a metal frame connecting the edges of said plates to form a shallow casing, inlet and outlet pipes, communicating with said casing, flexible tubes connecting said pipes with the water circulating system, means whereby the water can be cut off, and a hinged connection between said casing and the vehicle whereby it can be moved aside.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HENRY EVANS.

Witnesses:
ARTHUR DAVIS,
ARTHUR J. SMITH.