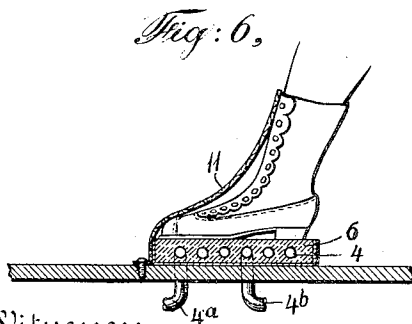
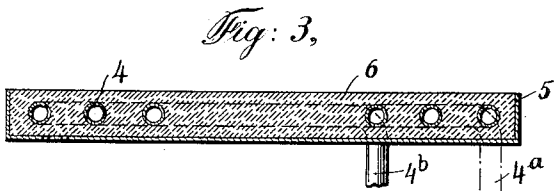
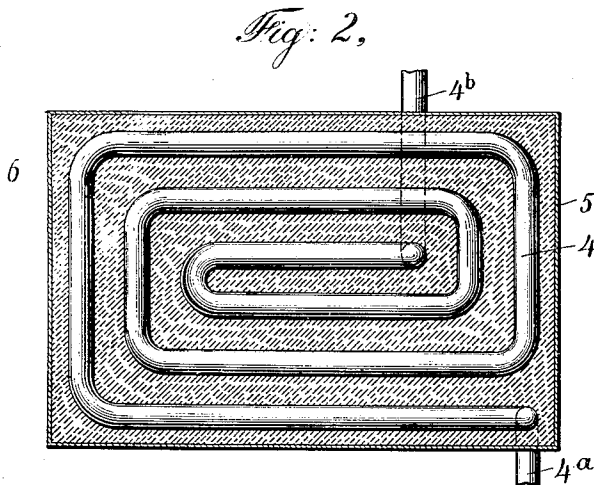
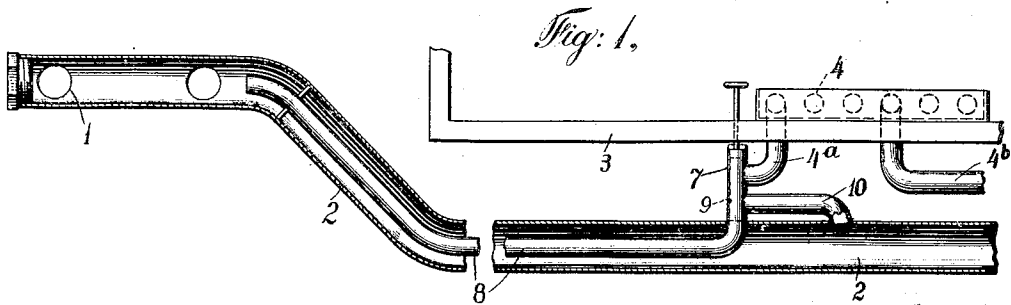


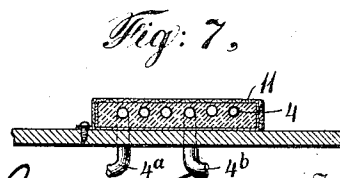
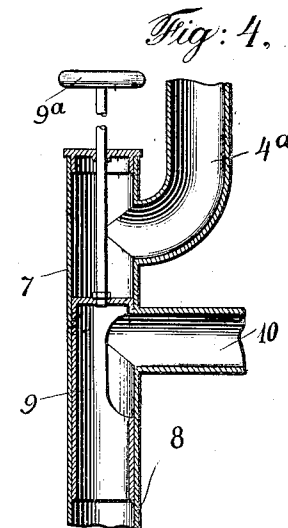
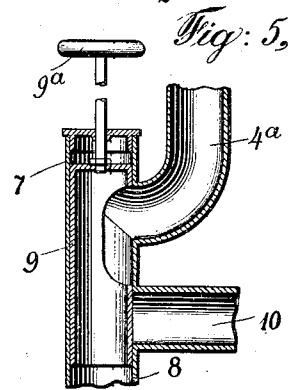
G. RUFFIER.
 APPARATUS FOR HEATING AUTOMOBILES.
 APPLICATION FILED MAR. 17, 1909.

1,041,879.

Patented Oct. 22, 1912.



Witnesses:
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UNITED STATES PATENT OFFICE.

GASTON RUFFIER, OF NEW YORK, N. Y.

APPARATUS FOR HEATING AUTOMOBILES.

1,041,879.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed March 17, 1909. Serial No. 483,929.

To all whom it may concern:

Be it known that I, GASTON RUFFIER, a citizen of the Republic of France, residing at No. 28 West Twentieth street, in the city, county, and State of New York, have invented certain new and useful Improvements in Apparatus for Heating Automobiles, of which the following is a full, true, and concise specification.

This invention is a heater or foot-warmer for automobiles, of the type wherein the exhaust gases of the propelling engine are utilized as the source of heat, and the invention resides in the combination, relative position and construction of the heater and its supply connections, whereby the exhaust gases are used before they are cooled by expansion or radiation and without disturbing the effective operation of the engine, and whereby certain other advantages, hereinafter explained, or made apparent, are obtained.

In the accompanying drawings forming a part of this specification, Figure 1 represents in side elevation a form of heating apparatus constructed according to my invention, together with so much of the ordinary automobile exhaust pipe as will be necessary to indicate the principle and operation thereof; Figs. 2 and 3 are respectively horizontal and vertical sections through the heater on an enlarged scale; Figs. 4 and 5 are enlarged sectional details of the controlling valve mechanism indicating two extreme adjustments thereof; Figs. 6 and 7 are cross-sections of a form of heater of this invention more specially adapted for use with open automobile bodies.

Referring to Fig. 1, the exhaust ports of the propelling engines of the automobile are marked 1, and the exhaust pipe which conducts the gases from said ports to the rear of the vehicle, underneath the floor 3 thereof, in the usual manner, is marked 2. The heater 4 is located within the automobile body preferably upon the floor 3, and consists of any suitable construction which will provide a free but tortuous passage for the hot gases. The heater is preferably formed as a flat coil of piping and is contained within a casing 5 and embedded in a body of fireproof heat-conducting material 6 therein, such as sand or cement. The inlet connection of the coil, marked 4^a, is connected through a two-way valve mechanism 7 with a pipe 8, through which the gases for

the heater are derived from the engine. This pipe extends toward the engines in parallel relation to the main exhaust pipe, and is so arranged that the heat from said pipe, or the gases therein, will serve to heat the exterior of the supply pipe. Preferably the supply pipe is contained within the exhaust pipe and is completely surrounded and insulated by the gases therein. The said pipe extends well forward within the exhaust pipe and preferably into close proximity to the exhaust ports 1, so that the exhaust gases it receives are taken while they are hottest. The length of the supply pipe 8 that is within the exhaust pipe will be determined by the distance from the engine at which the heater is installed, and by the degree of heat required, as will also the relative diameters of the two pipes which may advantageously be as 1 to 3 for the ordinary exhaust pipe.

The two-way valve mechanism 7, shown more clearly in Figs. 4 and 5, is of the slide-valve type, and comprises a hollow sliding valve member 9, operable by means of a vertical rod and handle 9^a which extends upwardly through the floor of the car at one side of the heater, and is held in an adjustable position by means of the friction of the slide-valve, or by any other suitable agency. In its position shown in Fig. 5, the hot gases from the supply pipe 8 are directed into the inlet 4^a of the heater coil, and, in the adjustment of Fig. 4, they are directed into a lateral port or passage 10 which leads rearwardly, joining the main exhaust pipe, in the nature of a by-pass with respect to the heater. Intermediate positions of adjustment will allow the gas to divide, part passing through the heater and its outlet 4^b, and part through the by-pass 10, thereby providing regulation of the temperature of the heater, but in either extreme adjustment, and in all intermediate adjustments of the valve, a continuously open passage is provided for the escape of the exhaust gases, so that the presence of the supply pipe within the exhaust pipe does not constitute an appreciable obstruction to the normal flow of gases therein, nor affect the operation or efficiency of the engine. The heater outlet 4^b may extend to the rear of the car, providing escape for the discharged gases at about the same point where the main exhaust passage terminates. The forward end of the interior gas supply pipe opens to-

ward the exhaust ports of the engine, so that the expansive movement of the exhaust gas will serve to propel it into and through the pipe while the heat of such gases will be conserved by the surrounding or adjacent layer of gases in the main exhaust pipe.

In Figs. 6 and 7 the heater consisting of a flat coil of pipe embedded in a block of concrete or similar material, is provided with a removable heat-insulating covering 11 of carpet or the like, this being flexibly connected at the side of the heater so as to fall over and cover the same when not in use, but allowing the occupant of the car to thrust his feet underneath it and upon the heater. At such times as the engine is not running, and the car not occupied, the heat insulating covering serves to maintain the temperature of the heater so that it will be immediately available for further use.

I claim as my invention the following:

1. The combination with an internal combustion propelling engine of a self-impelled conveyance, having one or more exhaust ports and a main exhaust pipe leading therefrom, of a gas conducting heater, a gas-supply pipe adapted to receive and conduct a

portion of the exhaust gases to said heater, said supply pipe being located within and co-extensive with said main exhaust pipe between the heater and the engine and means for controlling the said heater independently of the flow of gases in said main exhaust pipe.

2. A heating apparatus for automobiles, comprising in combination with the main exhaust passage of the propelling engine, a gas-receiving supply pipe located within said passage and provided with connections affording a continuous escape of the gases received therein, a heater constituting one of said connections, a by-pass to said heater constituting another of said connections, and a controlling valve operative to deflect all the gas supplied by said pipe into one or the other or both of the said connections.

In testimony whereof, I have signed my name to the specification in the presence of two subscribing witnesses.

GASTON RUFFIER.

Witnesses:

H. G. KIMBALL,
CLIFFORD H. KLOS.