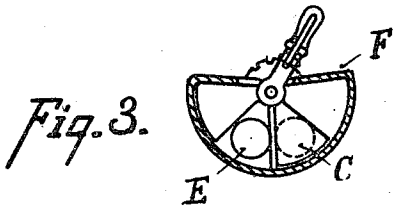
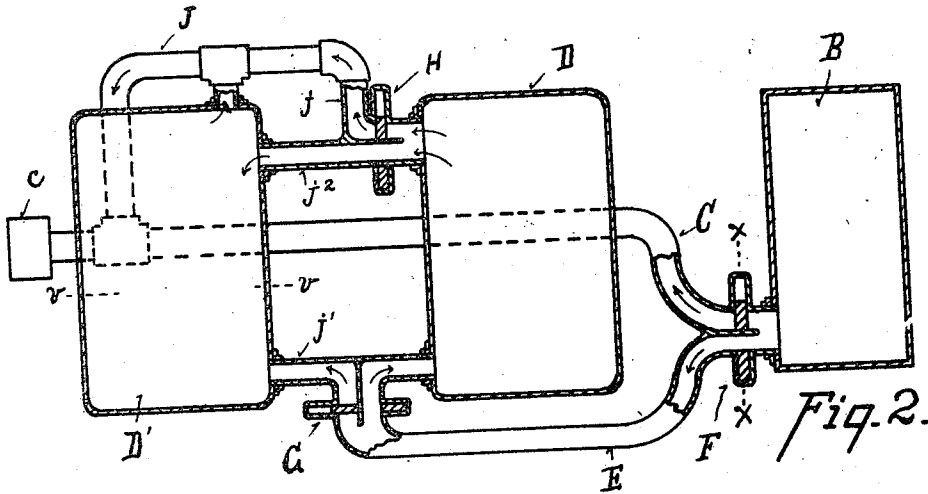
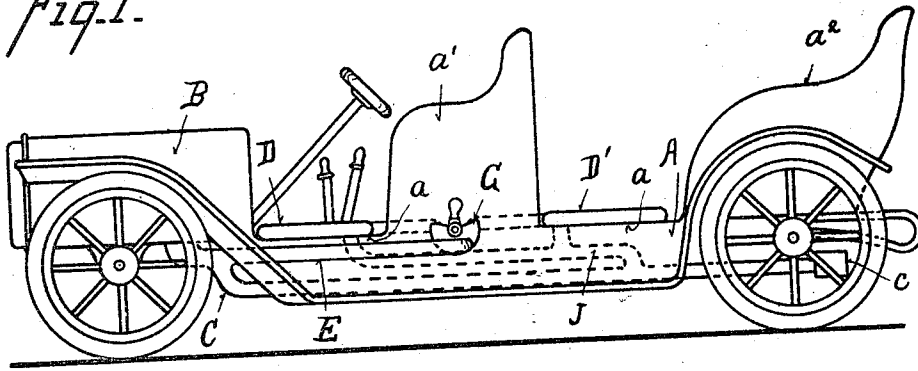


996,699.

Fig. 1.



Witnesses  
*Edwin Murray*  
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334

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Inventor

Attorney

# UNITED STATES PATENT OFFICE.

LEO A. BRIGEL, OF CINCINNATI, OHIO.

AUTOMOBILE-HEATER.

996,699.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed January 14, 1909. Serial No. 472,315.

To all whom it may concern:

Be it known that I, LEO A. BRIGEL, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Automobile-Heaters, of which the following is a specification.

My invention relates to improved means for heating automobiles.

One of its objects is to provide means whereby the heat from the engine exhaust may be utilized to keep the passengers comfortable during cold weather.

Another object is to provide simple and efficient mechanism for the above purpose, and efficient means for supplying, regulating and controlling the amount of heat as desired.

It further consists in certain details of form, combination and arrangement, all of which will be more fully set forth in the description accompanying the drawings, in which,

Figure 1 is a diagram in side elevation of an automobile with my improvements attached thereto. Fig. 2 is a diagram in top plan, showing the connection, arrangement and means for controlling the heat supply.

Fig. 3 is a section through one of the controlling valves on line  $x-x$  of Fig. 2.

In the accompanying drawings, A, represents the body of an automobile of ordinary construction.

B represents the engine or motor located at the forward end of the body, A, which motor may be either a combustion engine consuming gasoline or similar fuel, and exhausting a highly heated gas, or may be a steam engine exhausting steam.

C represents the usual engine exhaust pipe, which in combustion engines is usually provided with a muffler,  $c$ .

Resting on the floor,  $a$ , of the body in front of the respective seats,  $a'$ ,  $a''$ , I provide heaters, D, D', which are connected by means of a pipe, E, with the exhaust pipe, C. A valve, F, serves to either close the usual direct exit through the exhaust pipe, and to force the exhaust through one or more of the heaters, or when reversed to open the usual and direct exhaust and to cut off the passage through the heaters.

In order to provide for the passage of the heated exhaust through either of the heaters independently, or through both heaters, as

desired, I provide valves, G, H. The valve, G, is adapted to direct the exhaust as desired, into either heater, D, or D'. The valve, H, is adapted to direct the heated exhaust from heater, D, into heater, D' by pipe,  $j$ , and thence into a pipe, J, which leads to the exhaust pipe, C, or directly by a branch,  $j$ , into the pipe, J. Thus the exhaust may be conducted first into heater, D, and thence to pipe, J, to apply heat only to heater, D. The exhaust may be caused to traverse and heat both heaters, D, and D', or the exhaust may be admitted only to heater, D', through pipe,  $j$ , leaving heater, D, cold, or valve, F, may be employed to cut off the exhaust from both heaters, D, and D'.

The connections leading the exhaust to and from the heaters may be variously arranged to accommodate the heater and its connections to variations in automobiles of different styles and manufacture. I preferably arrange the supply or intake so that it may be as free from obstruction as possible.

The mechanism herein illustrated and described is capable of considerable modification without departing from the principle of my invention.

Having described my invention, what I claim is.

1. In a mechanism of the character described, a motor, a main motor exhaust conduit adapted to permit a direct escape of the motor exhaust, a branch conduit leading from said main exhaust conduit adapted to direct the motor exhaust to heaters, a valve adapted to direct the motor exhaust to said main conduit or to said branch conduit wholly or in part, a plurality of heaters in position to impart heat to the car occupants, a valve in said branch conduit adapted to direct the motor exhaust wholly or in part to either heater, separate conduits leading from said last named valve to each of said heaters, and independent exit conduits to lead the motor exhaust from the respective heaters.

2. In a mechanism of the character described, a motor having a motor exhaust passage through which the motor exhaust escapes from the motor under pressure, a plurality of heaters, a conduit leading from the exhaust passage of the motor to said respective heaters, a valve controlling admission of the exhaust to said conduit, a valve controlling the admission of exhaust from

said conduit to either of said heaters independently, a valve controlled conduit leading from one of said heaters to the other, and independent exit conduits leading from  
5 the respective heaters.

3. In a mechanism of the character described, a motor having a motor exhaust passage through which the motor exhaust escapes from the motor under pressure, a  
10 plurality of heaters, a branch conduit leading from the motor exhaust conduit to said respective heaters, a valve controlling the flow of exhaust to said branch conduit, a  
15 valve to control the relative quantity of exhaust admitted to the respective heater, a

conduit leading from the first of said heaters to the second, a branch from said last named conduit constituting an exit conduit for said first heater, a valve to control the relative flow from said first heater to its  
20 exit conduit and to the second heater, and an independent exit conduit from said second heater.

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

LEO A. BRIGEL.

Witnesses:

WALTER F. MURRAY,  
C. W. MILES.