Oct. 27, 1931. W. J. WADE 1,828,989

HEATING SYSTEM FOR AUTOMOBILES

Filed April 23, 1929 2 Sheets-Sheet 1

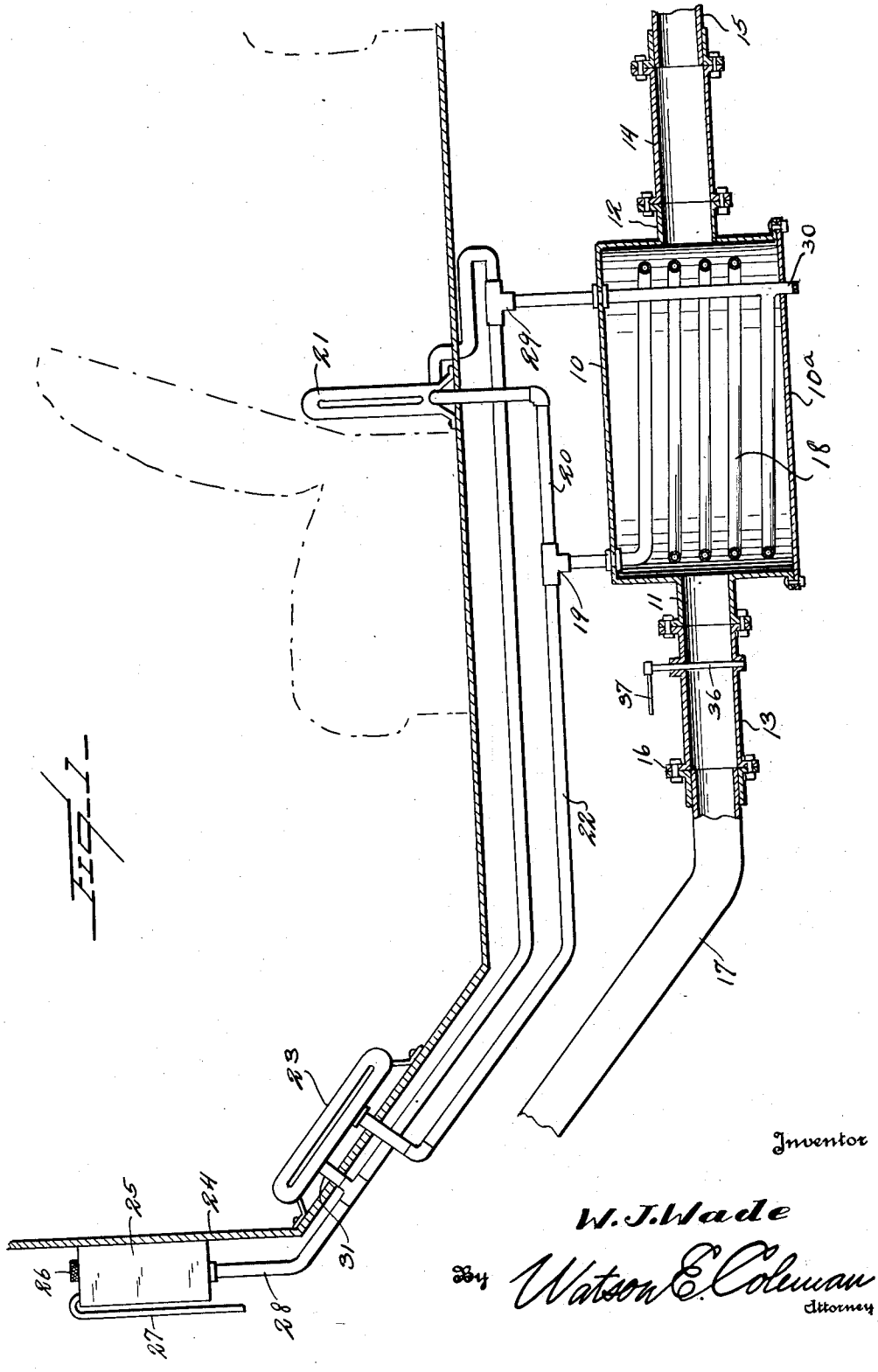


Fig. 1

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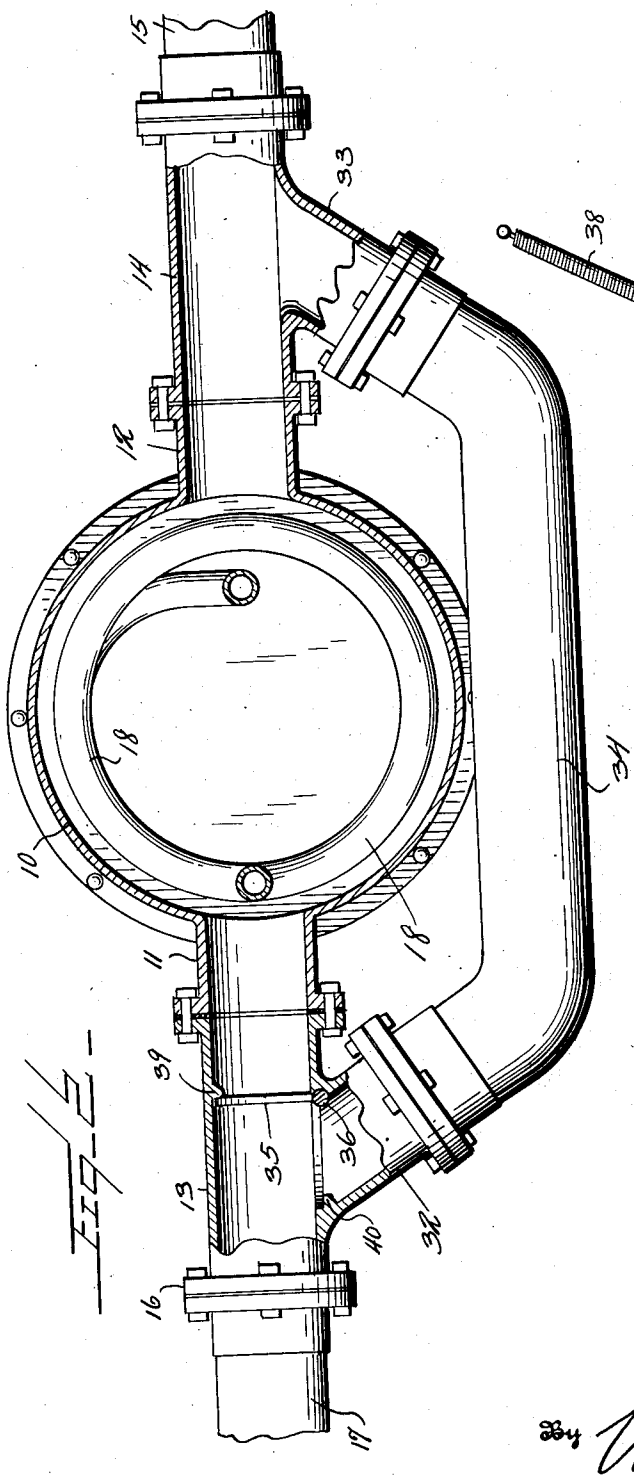


Fig. 1

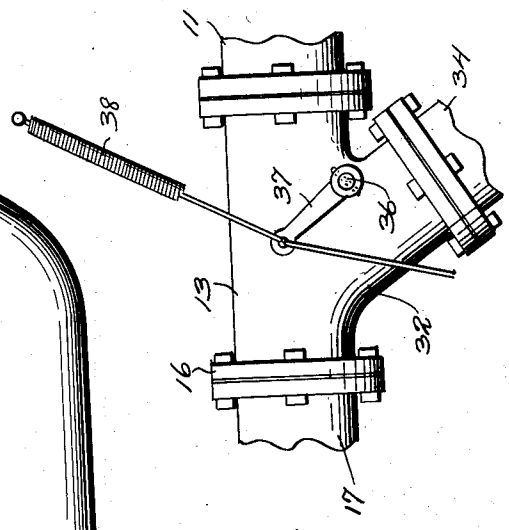


Fig. 3

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1,828,989

UNITED STATES PATENT OFFICE

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HEATING SYSTEM FOR AUTOMOBILES

Application filed April 23, 1929. Serial No. 357,584.

This invention relates to heaters for automobiles and particularly to those heaters in which the exhaust from the engine is used as a heating agent.

One of the objects of the invention is to provide a heater of this character in which the exhaust is used for heating water, this water being used in radiators disposed on the floor of the machine or at any other convenient point, thus doing away with all danger from the escape of carbon monoxide fumes which often have been deadly in their effects where the exhaust itself is used for the heating medium within the car.

A further object is to provide a construction of this character having a heating chamber wherein are disposed water heating coils and provide a pass having a valve so constructed that the exhaust may be discharged directly into the chamber containing the water heating coils or by-passed around said chamber.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal section of an automobile heater constructed in accordance with my invention;

Figure 2 is a horizontal section through the heating drum and through the exhaust pipe and by-pass;

Figure 3 is a top plan view of the inlet of the exhaust pipe showing the means whereby the valve is controlled.

Referring to these drawings, 10 designates a casing having a removable bottom plate 10*a* held in place by bolts or other suitable means. Extending from the forward and rear ends of this chamber 10 are the inlet and outlet pipe sections 11 and 12 flanged to fit against the pipe sections 13 and 14 respectively. The pipe section 14 is flanged to engage with an exhaust muffler pipe 15 of any usual or suitable construction, while the pipe section 13 is flanged at 16 to engage with a flange on the exhaust pipe 17 leading from the engine. It will be understood, of course, that these joints will be gasketed or otherwise formed so as to prevent any leakage of exhaust gases.

Disposed within the chamber 10 is a heating coil 18. One end of this heating coil extends upward through the top of the casing 10 and is connected to a T 19. A pipe 20 leads from this T up to the hot water radiator 21. A pipe 22 leads from this T upward and forward to a hot water radiator 23 shown as disposed upon the foot board just in back of the dash.

I, of course, do not wish to be limited to any particular construction and location of these radiators 21 and 23. I have shown the radiator 21 as being upright and the radiator 23 as being disposed parallel to the foot board, but I do not wish to be limited to this.

Mounted upon the dash 24 within the cowl or hood is an expansion tank 25 having a filling opening normally closed with a plug 26 and having a vent and overflow pipe 27. Leading from this expansion tank is a pipe 28 which connects with a T 29, one branch of which extends down into the chamber 10 and is connected to the inlet end of the coil 18 and is further extended down to form a drain outlet 30. The pipe 28 is also connected by a branch 31 to the coil 23.

The pipe section 13 is formed with a laterally extending branch 32 as shown in Figure 2 and the pipe section 14 is formed with a like branch 33. A pipe section 34 is disposed between the ends of these branches, the ends of the pipe section 34 and the ends of the branches being flanged so that this by-pass pipe section 34 may be connected to the branches 33 and 32 and provide a gas-tight joint. This constitutes a by-pass through which the exhaust gases may be carried in case it be not desired to use the heater.

Mounted within the pipe section 13 is a valve 35 which is mounted upon a spindle 36. This spindle extends out through the pipe section 13 and carries upon it the arm 37. This arm is connected to any suitable operating means, as for instance an operating rod, and to a spring 38. This swinging valve 35 is adapted to seat against the two shoulders 39 or 40 constituting valve seats. When the valve bears against the shoulders 39, the valve

will then divert the exhaust gases into and through the by-pass and out through the muffler.

When the valve is turned so as to seat against the shoulders 40, the exhaust gases will be prevented from passing through the muffler and will pass directly through the heating chamber 10 and so to the muffler. By adjusting the valve midway of the two seats, it is possible to control the amount of exhaust gases passing into the chamber 10 and thereby control the heat. The chamber 10 will preferably be round and preferably made of sheet iron, though not necessarily so. The bottom is removable to permit the removal of soot which may collect on the coils 18.

The rod which leads from the arm 37 will preferably extend to a foot lever or pedal mounted upon a ratchet push rod extending through the floor of the car so that the valve may be opened to permit the flow of the exhaust through the heating casing 10 against the action of the spring 38.

A heater constructed in accordance with my invention has many advantages over the ordinary heater. By using the flange joints between the pipe sections, the heater may be readily assembled and also in case of breakage, the parts can be repaired or replaced at very small cost.

The operation of the valve which controls the heating of the coils does not in any way interfere with the water circulation and the heat is not controlled by stopping the circulation of the water. Without a by-pass and with the water circulating system full of water, the heating coils are liable to burn and warp and cause leakage. The by-pass entirely prevents this, as when it is desired to reduce the heat, the passage of the exhaust gases is diverted entirely to the by-pass so that no heat is passing around the coils.

It will be noted that the coils and coil jacket are vertically disposed. This makes the heating of the water and the circulation of the water particularly good. The coil 18 may be readily repaired by removing the lower end of the chamber 10. This heater requires no soldering, welding or brazing, and thus may be readily repaired in small towns or villages where expert shop work is unavailable. This heater furthermore may be readily removed from a car in case a car is "traded in". The device can be run either in summer or winter without being disconnected as in summer the by-pass causes the exhaust to pass around the heater. At the same time the heater can be used at any moment.

Obviously I do not wish to be limited to the particular construction shown except as defined in the appended claim as this might be modified in many ways without departing from the spirit of the invention.

I claim:—

An automobile heater including a casing having a removable bottom wall, oppositely disposed flanged nipples formed as part of the casing and adapted to be connected in the length of an engine exhaust pipe, and a water heating coil disposed within the casing having its opposite ends extending out through the top of the casing and adapted to be connected to a radiator system, the radiator coil having a drainage portion extending downward through the removable bottom wall.

In testimony whereof I hereunto affix my signature.

WILLIAM J. WADE.