C. S. PELTON.

AUTOMOBILE HEATER.

APPLICATION FILED MAR. 12, 1910.

996,130. Patented June 27, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

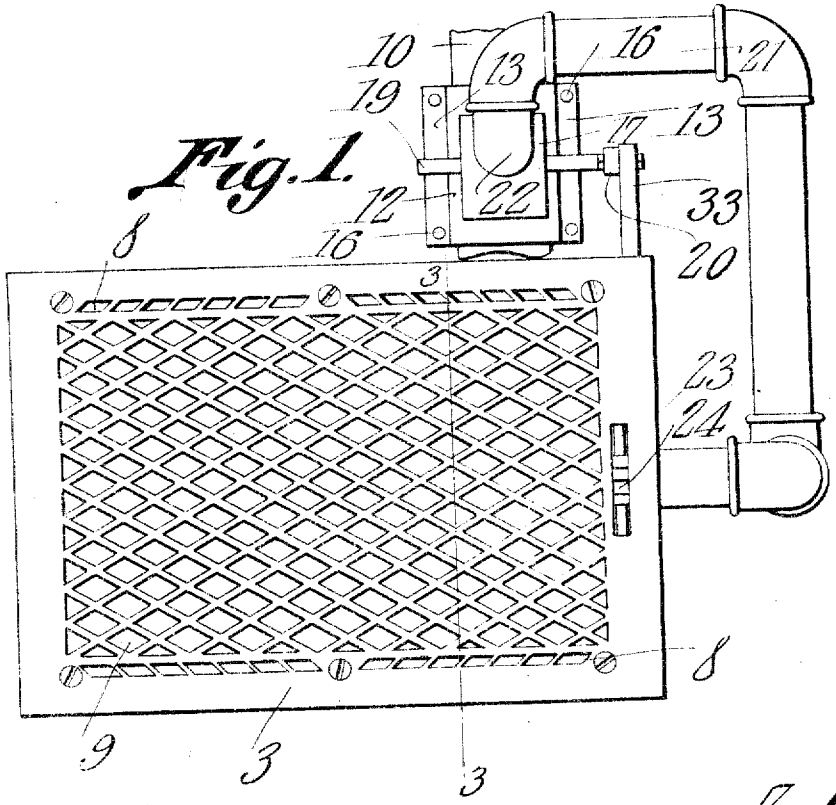
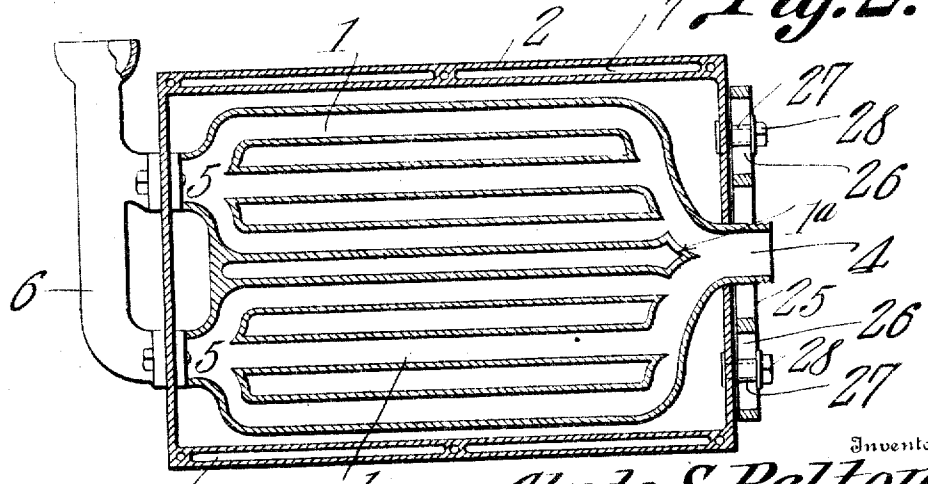


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

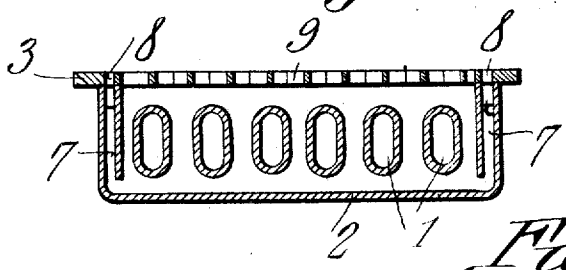

Fig. 7.

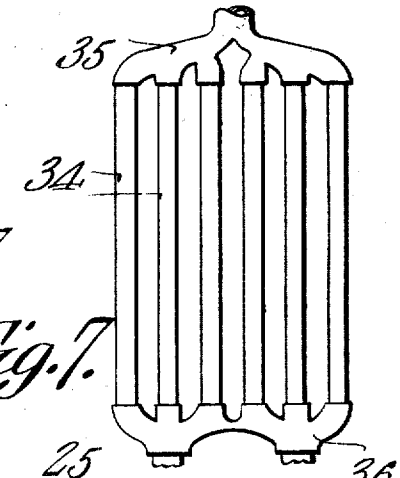

Fig. 4.

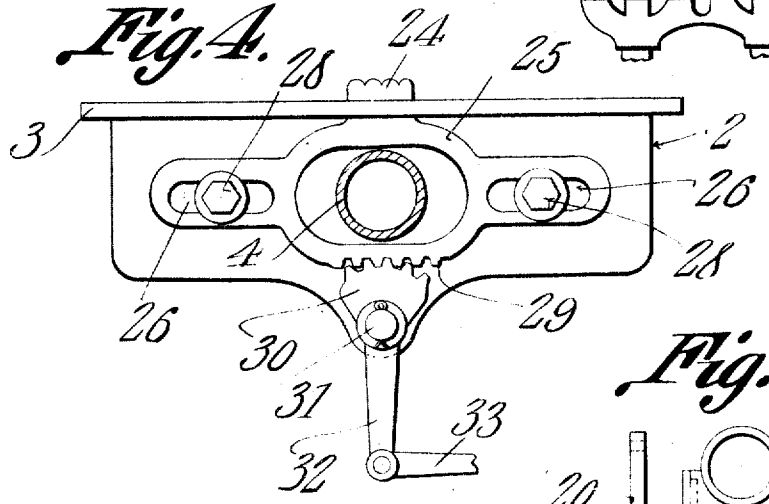

Fig. 6.

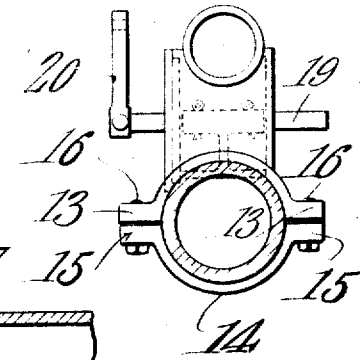

Fig. 5.

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UNITED STATES PATENT OFFICE.

CLYDE S. PELTON, OF AKRON, OHIO.

AUTOMOBILE-HEATER.

996,130. Specification of Letters Patent. Patented June 27, 1911.

Application filed March 12, 1910. Serial No. 548,863.

To all whom it may concern:

Be it known that I, CLYDE S. PELTON, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented a new and useful Automobile-Heater, of which the following is a specification.

This invention relates to heaters for automobiles in which the heating medium is the exhaust of the engine, and it is the object of the invention to provide a heater of this kind which can be readily installed in the car without modifying the structure thereof, or changing the arrangement of the exhaust pipe of the engine.

A further object of the invention is to provide a radiator which, while being of great heating efficiency, will operate on the principle of a muffler to render the discharge of the gases from the motor substantially noiseless.

These objects are obtained by a combination and arrangement of parts to be hereinafter described and claimed, the same being illustrated in the accompanying drawings, in which drawings,

Figure 1 is a plan view of the radiator. Fig. 2 is a horizontal section thereof. Fig. 3 is a transverse section on the line 3—3 of Fig. 1. Fig. 4 is an end view of the radiator. Fig. 5 is a sectional view of the valve to be hereinafter described. Fig. 6 is an end view of the valve. Fig. 7 is a plan view showing a slightly modified form of radiator structure.

Referring to the drawings, it will be seen that the radiator is composed of a series of pipes or tubes 1 inclosed in a casing 2 having a perforated cover or top plate 3 to permit escape of heat from the interior of the casing. The pipes branch off from a single pipe 4 entering the casing through one of its end walls, said pipe being connected to the exhaust conduit or pipe of the engine, as will be presently described. The other ends of the pipes 1 merge into two outlets 5, which are connected to an outlet manifold 6 mounted on the corresponding end wall of the casing, and to which manifold is connected a pipe which delivers the gases, after their passage through the pipes 1, to the atmosphere. The combined cross sectional area of the pipes 1 is greater than that of the inlet pipe 4, which permits an expansion and distribution of the gas or vapor, whereby the heat radiating area is increased. The pipes 1 are divided in two groups by a deflector 1^a which divides the incoming gas into two streams, one passing into one group of pipes, and the other into the other group. An outlet 5 is connected to each group. The gas is conducted from the pipes 1 in a practically continuous flow, without noise. Both groups of pipes or conduits 1 communicate with the outlet pipe or manifold 6. In reaching the point in the manifold 6 to which the outlet 5 nearer the discharge end of said manifold is connected, the gas discharged into the pipes 1 is broken up into a series of streams, each stream traveling a different distance in reaching said point than any other stream, with the result that the impulses from the engine are converted into a practically continuous stream by the time the gases reach such point. In the embodiment of my invention shown herein, six conduits 1 are provided, whereby each impulse is broken up into six streams in the body of the heater and directed in a substantially continuous stream through the outlet end of the manifold 6. Furthermore, the gas discharged into the heater is greatly expanded,—in the embodiment shown herein to some six volumes. This expansion of the exhaust gases in the heater and the conversion of the impulses into a continuous stream flowing through the outlet produces the same effect, as to silent operation, as a muffler.

In the side walls of the casing are air conduits 7 which register at their upper ends with perforations 8 in the plate 3, and open into the casing near its bottom. These conduits are provided for the purpose of supplying fresh air to the casing, the same passing through the perforations 8 into the conduits, and entering the casing near its bottom portion. This air circulates around the pipes 1, and escapes from the casing through perforations 9 in the plate 3, the air in its passage around the pipes 1 being heated if the exhaust gases are flowing through said pipes.

At 10 is indicated the exhaust pipe or conduit of the engine. At any convenient point, an opening 11 is made in this pipe, over which opening is placed a valve casing 12. This casing is a shell fitting that portion of the exhaust pipe in which the opening 11 is made, and having outstanding flanges 13 at its ends. The shell extends only partly around the exhaust pipe, and the remaining

portion of said pipe is encircled by two clamping members 14 shaped to fit said portion of the pipe, and having outstanding flanges 15 at their ends. These flanges 15 are located opposite the flanges 13. Bolts 16 passing through registering openings in the flanges 13 and 16 securely fasten the valve casing to the exhaust pipe. By constructing the valve casing, and mounting the same on the exhaust pipe as herein described, said casing can be applied at any point on the exhaust pipe, the opening 11 being made at the point where the valve is to be located, and it is not necessary to resort to expensive pipe cutting, threading or brazing.

The valve casing is provided with a cylindrical chamber 17 in which works a rotary valve 18 carried on a shaft 19 mounted for rotary movement in the end walls of the chamber, and projecting therefrom. To one of the projecting ends of the shaft is made fast an arm 20 for rocking said shaft, whereby the valve is operated. The valve is so constructed and located as to extend across an opening in the chamber 17 communicating with the interior of the exhaust pipe through the opening 11, and upon swinging the valve away from the first mentioned opening, the interior of the chamber 17 is placed in communication with the interior of the exhaust pipe and the exhaust gases are then permitted to pass into said chamber, from which they pass into a pipe 21 connected to the pipe 4. On the chamber 17 is a nipple 22 to which the pipe 21 is connected. The valve has a segmental shape, and when open it extends partly into the exhaust pipe, and deflects a portion of the exhaust gas into the chamber 17.

The plate 3 projects a short distance beyond the side and end walls of the casing 2, and in the projecting portion of the plate, at one end of the casing, is a vertical slot 23, in which works a lug 24 rising from a yoke 25 mounted for sliding movement on the corresponding end wall of the casing. The yoke straddles the pipe 4, and has guide slots 26 at its ends through which pass rollers 27 mounted on studs 28 carried by and projecting from the end wall of the casing. The yoke is free to slide back and forth to the extent of the length of the slots 26. The lower edge of the yoke is formed into a rack 29 which is in mesh with a segmental gear 30 mounted for rotary movement on a stud 31 carried by the end wall of the casing. An arm 32 projects from the segmental gear, and is connected by a link 33 to the arm 20 of the valve shaft 19.

The yoke 25, and its associate parts herein described, are provided for operating the valve 18, which is done by sliding the yoke back and forth on its support. The lug 24 projects a sufficient distance from the top of the plate 3 so that it may be engaged by the foot or hand to operate the yoke. The sliding movement of the yoke, through the rack 29, swings the segmental gear 30 on the stud 31, and through the arm 32, link 33, and arm 20, rocks the shaft 19 and operates the valve 18. The extent to which the valve is opened governs the volume of the exhaust gases flowing into the pipes 1, and the degree of heat desired is therefore readily regulated by opening or closing the valve more or less. If it is desired to shut off the heat altogether, the valve will be entirely closed, whereupon the exhaust is cut off from the radiator, and passes directly to the muffler of the exhaust pipe 10.

In use, the radiator will be mounted in an opening made in the floor or wall of that portion of the car which is to be heated, the plate 3 extending flush with said floor or wall. It will not be necessary to alter or modify the structure of the car, the only change required being to make the opening to receive the radiator, and to apply the valve to the exhaust pipe at any convenient point thereon.

Although the invention is designed primarily for automobiles propelled by internal combustion engines, it may also be applied to steam propelled vehicles, and also applied for heating purposes wherever steam or hot gases are available.

Fig. 7 shows a slightly modified form of radiator structure, the same being designed to obtain a greater efficiency and also to make a more practicable construction. A series of copper tubes 34 extend between, and are connected at their ends to manifolds 35 and 36 respectively, the former being the inlet and the latter the outlet. Each manifold may be cast in a single piece. The manifold 35 has two branches, to each of which a group of tubes 34 is connected, so that the incoming gas is divided into two streams, one passing into one group of tubes, and the other into the other group. The outlet manifold 36 has an outlet for each group of tubes.

The connection between the valve and the radiator may be made by flexible pipes or tubes, in order that the radiator may be readily moved and its location changed if desired.

What is claimed is:

1. The combination, with an engine exhaust pipe, of a radiator comprising a plurality of radiator units communicating with the exhaust pipe, an outlet pipe common to said units, the radiator units being so arranged as to provide a series of ducts of varying length interposed between the radiator inlet and outlet, whereby the impulses from the engine are broken up and dis-

charged in a substantially continuous stream through the outlet.

2. The combination, with an engine exhaust pipe having a valve, of a radiator connected to said pipe through said valve, said radiator comprising a plurality of radiator units communicating at one end with the exhaust pipe, an outlet pipe common to the discharge ends of said units, the combined cross-sectional area of said units being greater than that of the radiator inlet and the said units being so arranged as to provide ducts of varying length interposed between the radiator inlet and outlet, whereby the impulses from the engine are broken up, expanded, and discharged in a substantially constant stream through the radiator outlet.

3. The combination, with an engine exhaust pipe, of a radiator comprising a plurality of groups of radiator units with an inlet common to said groups and communicating with the exhaust pipe, an outlet header communicating with the discharge ends of said groups, the radiator units being so arranged as to provide a series of ducts of varying length between the inlet and the discharge outlet, whereby the impulses from the engine are broken up and discharged in a substantially constant stream through the outlet.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CLYDE S. PELTON.

Witnesses:
MARY E. STROLE,
J. F. SOUREK.