J. A. KERNOHAN.

COMBINED COOLING AND CAR HEATING SYSTEM.

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1,282,590. Patented Oct. 22, 1918.

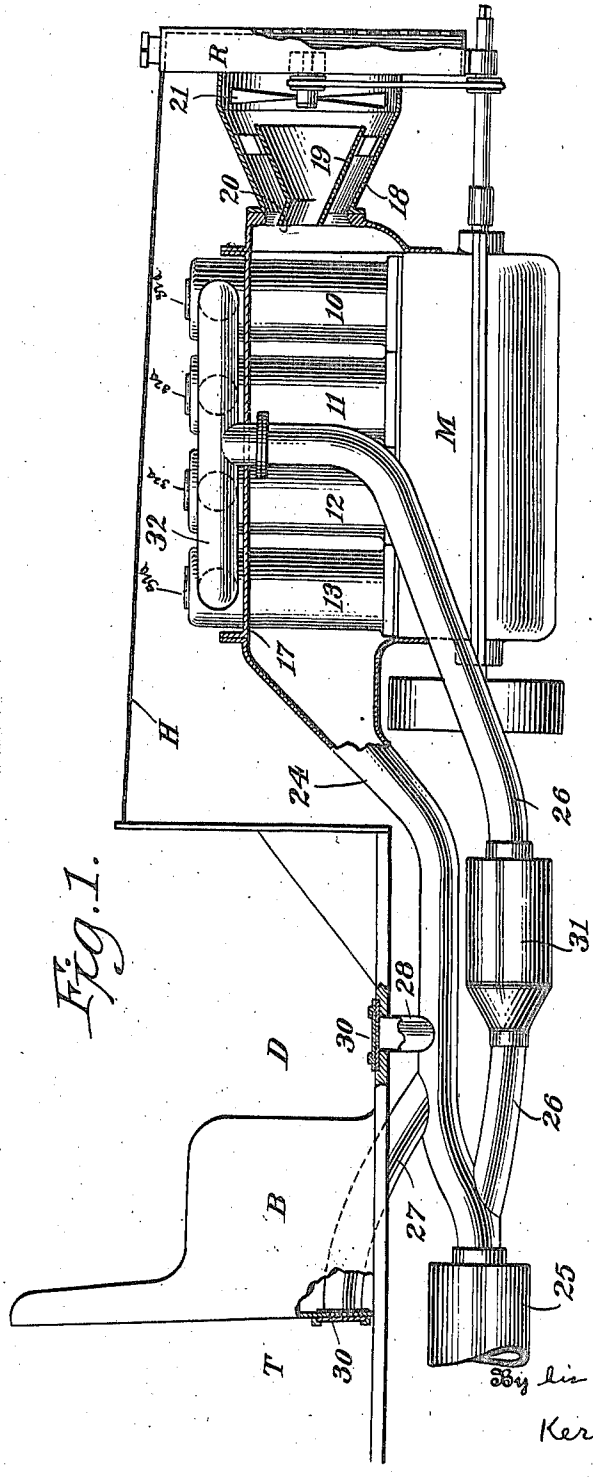


Fig. 1.

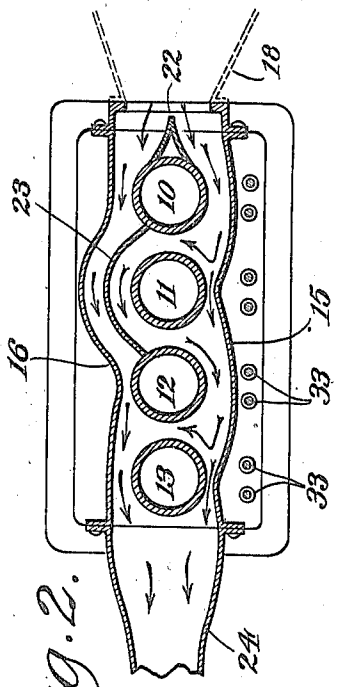


Fig. 2.

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UNITED STATES PATENT OFFICE.

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COMBINED COOLING AND CAR-HEATING SYSTEM.

1,282,590. Specification of Letters Patent. Patented Oct. 22, 1918.

Application filed June 16, 1917. Serial No. 175,132.

To all whom it may concern:

Be it known that I, JOHN A. KERNOHAN, a subject of the British Empire, residing at Saranac Lake, in the county of Franklin and State of New York, have invented certain new and useful Improvements in Combined Cooling and Car-Heating Systems, of which the following is a full, clear, and exact description.

This invention relates to certain new and useful improvements in cooling systems for automobile motors and more particularly to a combined cooling and car heating system. One object of the present invention resides in certain improvements in the manner of directing and drawing a current of air past the engine cylinders. Other objects reside in the provision of means for heating the car by means of the air which has been warmed in passing the engine cylinders.

In the drawings—

Figure 1 shows in elevation an automobile in which my improvements are incorporated.

Fig. 2 shows a detail cross sectional view of the motor and shows the paths of the air cooling currents.

In more detail in the drawings—

M is a motor having cylinders 10, 11, 12 and 13. These cylinders may be provided with cooling fans, if desired. B is the body of the car having a driver's compartment D and a tonneau T. H is a hood and R is a grating at the front of the hood which is shaped in semblance of the usual water radiator. Carried by the base of the motor and projecting upwardly therefrom are two sheet metal plates 15, 16, having a sinuous contour, as clearly shown in Fig. 2. A top plate 17 is secured to and bridges the side plates and is also secured to the cylinders 10, 11, 12 and 13. Plates 15, 16 and 17 form a chamber about the engine cylinders. The front of this chamber carries two concentric funnels 18 and 19, the inner funnel having a tube extending rearwardly and upwardly, as shown at 20. Within the forward end of funnel 18 is a fan 21 which is revolubly supported upon a bracket carried by the screen structure. The fan is suitably driven by a belt which is rotated by the engine crank shaft. At the front of the first cylinder 10 is a baffle 22 which prevents the air currents from impinging directly upon the forward portion of the first cylinder. I also provide a curved baffle plate 23 which extends from the side of cylinder 10 to the side of cylinder 12. This baffle serves to direct a portion of the cool air current directly from the front of the casing to the rear cylinders 12 and 14. I have found that the concentric funnels introduce decided advantages in the proper cooling of the cylinders as they make the air currents set up by the fan more uniform in the intensity of flow at different places. The baffles 22 and 23 also coöperate to uniformly cool the various cylinders instead of cooling the forward cylinder more than the rear cylinder as has been the case with previous constructions. Fastened to the rear of the casing formed by the crank case and plates 15, 16 and 17, is a duct 24 which extends downwardly under the floor boards of the car and terminates finally at an ejector 25 at the end of a muffler pipe 26. The exhaust gases emitted from the muffler by means of the ejector exert a considerable suction upon the cooling air and thereby aid the fan in cooling the engine.

Car heating devices.

Connected with duct 24 are branch ducts 27 and 28 which extend to the tonneau T and the driver's compartment D, respectively. These ducts terminate at suitable registers 30 which may be opened or closed at will to control the entrance of heated air to the driving compartment or tonneau.

For convenience in illustration I have shown duct 24 as being restricted in area. It will be understood that this duct will be of suitable size to conduct the cooling air out of the chamber without back pressure. The duct may also pass directly through the dash to the tonneau with a depending branch leading to the ejector.

The muffler pipe 26 is provided with a muffler 31 and leads to a manifold 32 which it will be noted is above plate 17. Parts 32^a are the cylinder heads making them readily removable without removing the plate 17. As shown in Fig. 2, the valve push rods 33 are without the air casing. The feature of having these parts without the air cooling casing I consider desirable since it eliminates the possibility of oil or exhaust fumes commingling with the cooling air.

Such a mixture of noxious fumes and air is undesirable when the air is to be used for heating purposes.

It will be understood that my invention may be modified in various ways as will occur to those skilled in the art.

I claim:

1. In an air cooled engine for automobiles, the combination with a plurality of cylinders longitudinally disposed within the hood, of a casing surrounding the same, a pair of concentric cones the rear ends of which open into the casing, the tube of the inner cone extending and opening upwardly, and means for forcing a blast of air into the cones, which direct the same uniformly into the casing and around the cylinders.

2. In an air cooled engine for automobiles, the combination with a series of longitudinally disposed cylinders within the hood, a casing surrounding the same, having an air inlet opening in front for cooling air and an outlet in the rear for the egress of air, and baffle plates within the casing forming passages for the air, one of said passages including all the cylinders, and the other being adapted to divert a portion of the received air from the front cylinders and directly upon those in the rear.

3. In a device of the class described, in combination, a plurality of longitudinally disposed cylinders, a longitudinally disposed sinuous casing inclosing the same, a curved baffle in said casing adapted to direct cooling air to the rear cylinders without permitting the air to contact with the intervening cylinders, the aforesaid sinuous curvature of the casing being also adapted to coöperate to direct the passage of air through the chamber and about the cylinders.

4. In a device of the class described, in combination, a plurality of longitudinally disposed cylinders, a longitudinally disposed sinuous casing inclosing the same, a curved baffle in said casing adapted to direct cooling air to the rear cylinders without permitting the air to contact with the intervening cylinders, the aforesaid sinuous curvature of the casing being also adapted to coöperate to direct the passage of air through the chamber and about the cylinders, and a pair of concentrically disposed cone-shaped members associated with the front of the casing and being adapted to direct the air into the same.

5. In a device of the class described, in combination, a plurality of longitudinally disposed cylinders, a longitudinally disposed sinuous casing inclosing the same, a curved baffle in said casing adapted to direct cooling air to the rear cylinders without permitting the air to contact with the intervening cylinders, the aforesaid sinuous curvature of the casing being also adapted to coöperate to direct the passage of air through the chamber and about the cylinders, and a pair of concentrically disposed cone-shaped members associated with the front of the casing and being adapted to direct the air into the same, the inner of said cones having an upwardly directed outlet opening to direct a portion of the air upwardly.

6. In an air cooling system for automobile engines, the combination with a plurality of cylinders within the hood, a casing surrounding the same, a pair of concentric cones for directing received air through the casing, a rotary fan for delivering an air blast into the cones, a duct leading from the rear of the casing for carrying off the warmed air, an injector located in the rear part of said duct, and a muffler pipe associated with the ejector and leading the exhaust gases from the engine thereto for setting up a suction to assist in withdrawing the warmed air from the system.

In testimony whereof I affix my signature.

JOHN A. KERNOHAN.