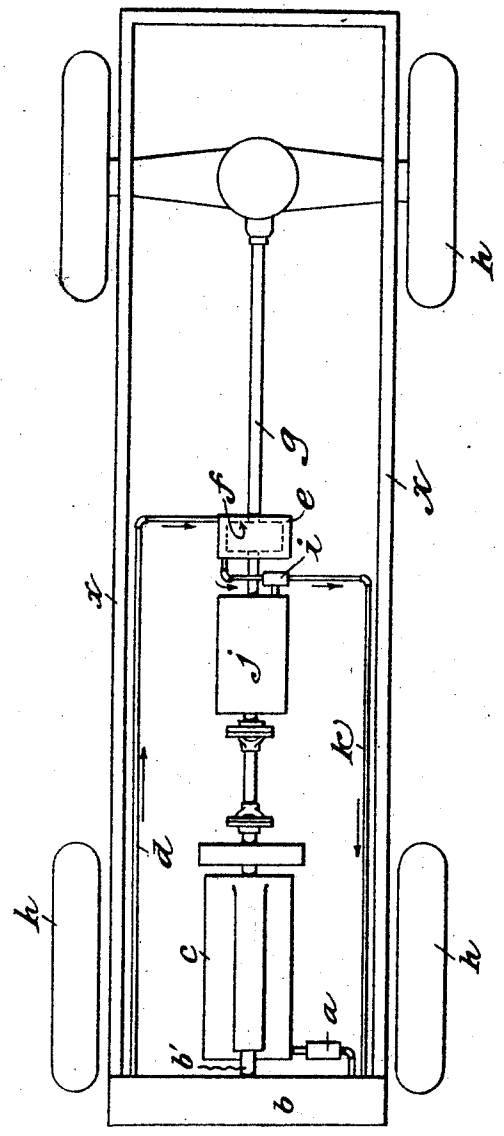
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COOLING SYSTEM

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UNITED STATES PATENT OFFICE.

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COOLING SYSTEM.

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When a self-propelled vehicle is driven up hill a great deal of heat is generated in the operation of the prime mover, which, in respect of a water cooled internal combustion engine as the prime mover is dissipated by the radiator. Going down hill the engine does practically no work, little heat is generated, and the temperature of the water in the radiator is greatly reduced. This fluctuation in the temperature of the water in the engine cooling system varies proportionately the temperature of the walls of the engine cylinders with the consequent disadvantages in operation inherent therein. The object of the present invention is the maintaining of the fluid in the cooling system and hence the walls of the engine cylinder at a temperature most conductive to efficient operation of the engine. To this end a radiator is provided to cool the engine and the radiator is also availed of to dissipate heat generated by the operation of braking devices so that the temperature of the water in the radiator will be maintained substantially constant first by the heat generated by the engine when subjected to load conditions and again by the heat generated by the braking devices when the engine is under no load. More particularly, cooling fluid, water, oil or the like, circulates through a radiator and engine jacket under the influence of the usual pump and the cooling fluid also circulates through the radiator and a jacket or jackets surrounding braking devices under the influence of another pump.

Another object of the invention resides in the method by which the foregoing results are attained. In its broadest aspects the method is one of governing temperature conditions in a plurality of units the major portions of whose work is not performed simultaneously and consists in circulating a cooling medium between such units and a heat interchanging device. In the specific embodiment illustrated herein the method is one of governing the operating temperatures of the engine and a brake or brakes by circulating a liquid between a radiator and the engine and brake means.

In order that the invention may be clearly understood and readily carried into effect the same will now be described with greater particularity in connection with the accompanying drawing illustrating somewhat diagrammatically one embodiment thereof wherein a water cooled brake on the propeller shaft is in circuit with the radiator cooling an internal combustion engine on a self-propelled vehicle.

A cooling fluid such as water, oil or the like is drawn by the usual pump a from a radiator b carried on the frame x of a self-propelled vehicle to the water jacket c of an internal combustion engine from whence it is returned to the radiator through a pipe b' in the customary manner. Water from the radiator b is also conducted by a pipe d to the water jacket e of braking devices. In the illustrated embodiment the braking devices comprise a brake f on the propeller shaft g. From the water jacket of the brake the cooling medium is drawn or propelled, as by a pump i, in this instance actuated from the change speed mechanism j, through pipe k back to the radiator.

Thus when the vehicle is being driven up a hill the operation of the engine will tend to raise the temperature of the water in the circulatory system whereof the radiator is designed to dissipate heat to a certain degree to maintain the walls of the engine cylinders at that temperature most conductive to efficient operation. When the vehicle is subsequently descending and the engine doing little work, the water in the circulatory system which would have a tendency ordinarily, to cool, is maintained at substantially the same desirable temperature by a heat interchange with the braking devices which are brought into action in the descent.

The invention is not to be deemed limited to the precise disposition of parts illustrated in the drawing nor to the manner of effecting the circulation of the cooling medium, but various modifications of the system as a whole or its application and the fluid therein will occur and are to be deemed within the scope of the invention so long as they maintain the effective operating temperature of the working units within effective ranges.

What I claim is:

In a motor vehicle having an internal combustion engine and a drive shaft, in combination, a cooling system for the engine comprising a radiator, a water-jacket surrounding the internal combustion engine, a

pump, connections between the radiator, the water-jacket and the pump whereby water may be circulated through the cooling system for the engine, braking devices for the vehicle, a water-jacket surrounding said braking devices, a second pump, said pump being driven by the drive shaft of the vehicle and independently of the operation of the engine, and connections between the radiator, the water-jacket for the braking devices and the second named pump, whereby the temperature of the cooling water in the radiator and the water-jacket for the engine is maintained substantially the same while the motor is under no load or not operating and at full load during operation of the vehicle.

This specification signed this 8th day of January A. D., 1926.

AUGUST H. LEIPERT.