

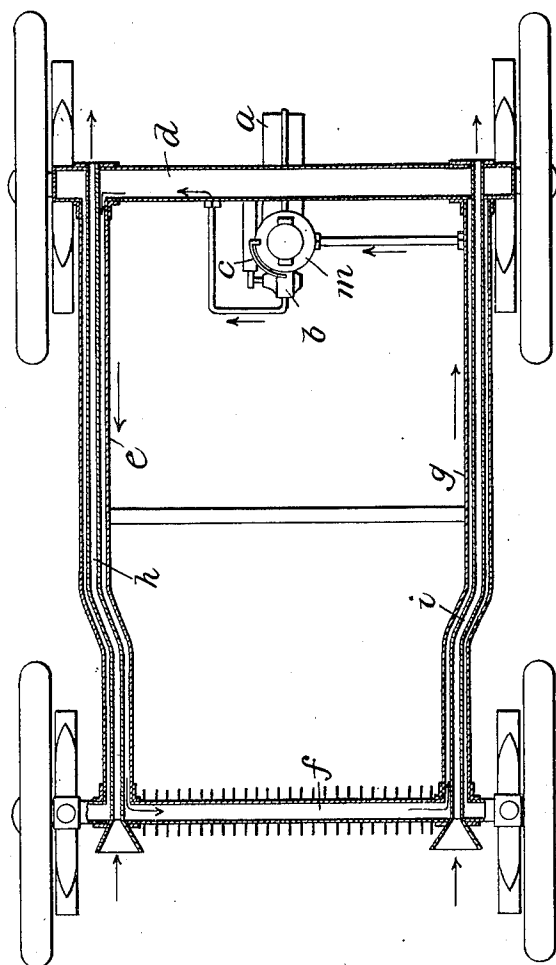
No. 657,684.

Patented Sept. 11, 1900.

A. E. VORREITER.
COOLING APPARATUS FOR MOTOR CARRIAGES.

(Application filed Apr. 16, 1900.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

ANSBERT EMIL VORREITER, OF AIX-LA-CHAPELLE, GERMANY.

COOLING APPARATUS FOR MOTOR-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 657,684, dated September 11, 1900.

Application filed April 16, 1900. Serial No. 13,160. (No model.)

To all whom it may concern:

Be it known that I, ANSBERT EMIL VORREITER, a subject of the King of Prussia, German Emperor, residing at Aix-la-Chapelle, Germany, have invented certain new and useful Improvements in Cooling Apparatus for Motor-Carriages, of which the following is a specification.

This invention relates to a device for lowering the temperature of the cooling-water in explosive-motors or of the steam in steam-motors. While the cooling devices hitherto used for this purpose were special apparatus requiring a special room and increased by their weight the load of the vehicle, the cooling apparatus forms in this invention at the same time the frame of the carriage.

The accompanying drawing shows in plan view a frame constructed according to this invention, the tubes representing the principal frame being represented in section.

In the drawing, *a* is the motor, arranged in the rear part of the carriage, which by friction actuates a rotary pump, sucking up the water at *c* and forcing it into the water-reservoir *d*, which forms at the same time the rear part of the frame. From the reservoir *d* the water flows in the direction indicated by the arrows into the branch pipe at the right hand *e* and from thence into the fore frame-pipe *f*, then into the branch pipe at the left hand *g*, whereupon the water flows back through the water-jacket of the cylinder *m* of the motor to the pump. On this long way the water gives off its heat to the outer atmosphere, with which the tubes are throughout in contact. In order to increase still considerably the transmission of heat, there are provided in the interior of the two branch pipes *e* and *g* two pipes *h* and *i*, and for facilitating the entrance of air they are provided with funnels. When the carriage is running, an

air-current is forced, in the direction indicated by the double arrows, through either of the pipes *h* and *i*, the direction of the air-current in the pipe *h* being contrary to that of the water, while the air-current in the pipe *i* has the same direction as the water. To increase still the cooling effect, all the pipes of the frame or a part of the pipes, such as pipe *f*, may be provided with cooling-ribs.

The cooling apparatus above described and designed in particular for being applied to motor-carriages offers, as compared with the apparatus at present in use, the advantage that it does not require a special room. Moreover, it does not present by its weight the inconveniences of a special cooling apparatus. A frame of motor-carriages of this kind may be used for several purposes, as the carriage-builder, owing to the deficiency of a special cooling apparatus occupying a large room, is not impeded in the disposition of the ensemble of the carriage. In consequence of the simple construction of the frame the carriage becomes considerably more elegant.

I claim—

In a motor-vehicle, a main frame comprising longitudinally-extending pipes *e*, *g*, and transverse pipes *d*, *f*, connected together to form a conduit for water, combined with the water-jacket of the motor-cylinder, a pump for circulating water through the water-jacket and said pipes, and open-ended air-pipes extending through the pipes *e* and *g* and intersecting the pipes *d* and *f*, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ANSBERT EMIL VORREITER.

Witnesses:

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