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APPARATUS FOR PREVENTING THE BURSTING BY FREEZING OF RADIATORS FOR MOTOR CARS AND THE LIKE

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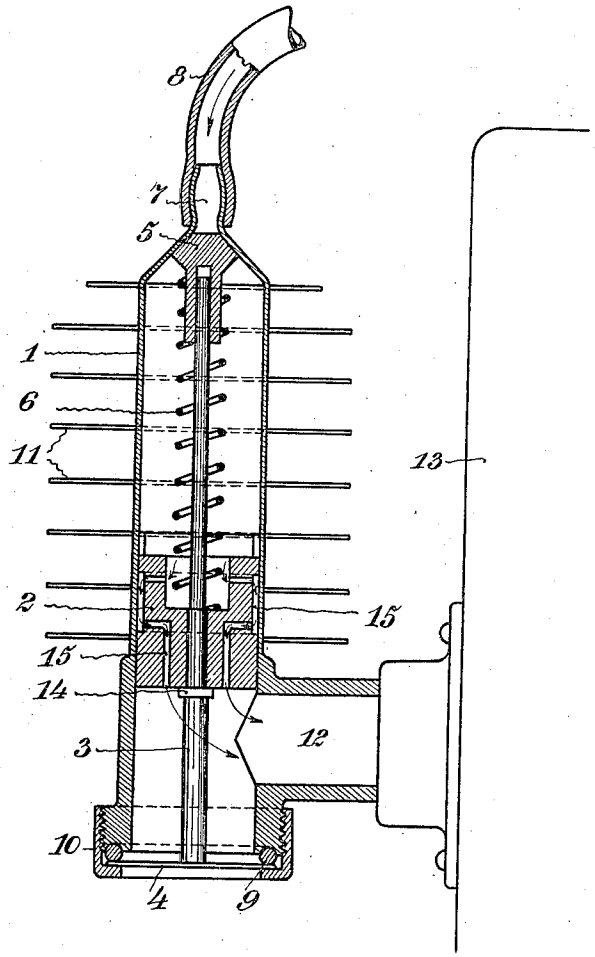

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By

Attorney.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR PREVENTING THE BURSTING BY FREEZING OF RADIATORS FOR MOTOR CARS AND THE LIKE.

Application filed April 13, 1922. Serial No. 552,323.

To all whom it may concern:

Be it known that I, GUSTAF EMIL JONSSON, a citizen of Sweden, and residing at Halmstad, in the Kingdom of Sweden, have invented certain new and useful Improvements in Apparatus for Preventing the Bursting by Freezing of Radiators for Motor Cars and the like, of which the following is a specification.

This invention relates to apparatus for preventing the bursting by freezing of radiators for motorcars and the like. A preferable form of the invention is illustrated in the accompanying drawing showing the apparatus in a vertical section.

The apparatus consists of a cylinder 1 and a movable plunger 2 arranged therein. A spindle 3 passes through the plunger, the one end of said spindle bearing upon a glass disk 4 which closes one end of the cylinder 1. A valve 5 longitudinally slidable on the opposite end of the spindle 3 is pressed against the conical end of the cylinder forming a seat for the valve by means of a helical spring 6 arranged between the valve and the plunger 2. The conical end of the cylinder is provided with a connection 7 for an india rubber tube 8 or the like. The glass disk 4 bears upon a rubber ring 9 arranged between the disk and the end of the cylinder, said disk being pressed against the ring and the cylinder by means of a threaded muff 10. The cylinder 1 is provided with radiating flanges 11 in order to increase the cooling surface, and between the plunger 2 and the glass disk 4 the cylinder is provided with a connecting piece 12 connecting the same with the radiator 13, the tube 8 being connected to the cooling water jacket of the radiator. The plunger 2 is directly fixed to the spindle 3 or for instance by means of a flange 14 fixed to the spindle in order to prevent the plunger from moving towards the end of the cylinder beyond a certain limit. The cylinder spaces on either side of the plunger communicate with each other through the channels 15 arranged in the plunger 2.

The operation of the apparatus is the following:

When the motor is running water passes from the water jackets through the tube 8, passing the valve 5 into the cylinder 1, which is kept warm thereby, and through the channels 15 of the plunger 2 and the connecting piece 12 into the radiator 13. In frosty weather when there is water in the radiator and the motor is not running, ice is formed first of all in the narrow channels 15 so that these are locked up and during continued ice formation in the upper part of the cylinder the plunger 2 will gradually be moved towards the glass disk 4 until the latter breaks, whereupon the water from the radiator may freely run away before the radiator has time to burst by freezing.

It is obvious that a great number of modifications of the apparatus as shown may be made within the scope of this invention. The main feature of the invention is a cylinder being passed by the water coming from the water jackets of the motor and a movable plunger arranged therein which is provided with narrow channels and so arranged, that first of all the frozen water in these channels closes up the same and then during continued freezing the plunger is displaced in such a way that a locking device consisting of brittle material will be broken, so that the water of the radiator may freely run away.

Preferably one part of the channels 15 is arranged on the outside of the plunger 2 which results in a quicker ice formation in the channels.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. Apparatus for preventing the bursting by freezing of radiators for motorcars and the like comprising a cylinder arranged in the cricuit of the cooling water of the radiator and fixed thereto by suitable means, a movable plunger arranged in the cylinder, a number of channels in said plunger and having such dimensions that when ice formation begins the water in these channels freezes before any other part of the water whereby the channels are closed up, said cylinder being so dimensioned that during continued ice formation the plunger is pressed down, a disk like member of easily breakable material arranged at the lower end of the cylinder and a spindle like extension fixed to said plunger for breaking the disk like member when the ice formation presses the plunger down, so that the water of the radiator may freely run away.

2. Apparatus for preventing the bursting by freezing of radiators for motorcars and the like comprising a cylinder arranged in

the circuit of the cooling water of the radiator and fixed thereto, a movable plunger arranged in the cylinder and provided with a number of channels, one part of said channels being arranged on the circumference of the plunger, a spindle like extension fixed to the plunger and a disk like member of easily breakable material in the path of movement of said spindle.

3. Apparatus for preventing the bursting by freezing of radiators for motorcars and the like comprising a cylinder arranged in the circuit of the cooling water of the radiator and fixed thereto, a number of radiating flanges provided at the outside of said cylinder, a movable plunger arranged in the cylinder and provided with a number of channels, a spindle like extension fixed to the plunger and a disk like member of easily breakable material in the path of movement of said spindle.

4. Apparatus for preventing the bursting by freezing of radiators for motorcars and the like comprising a cylinder arranged in the circuit of the cooling water of the radiator and fixed thereto, said cylinder having an upper conical end, a pipe like member connecting the lower part of the cylinder with the radiator, a tube like member connecting the upper end of the cylinder with the water jackets of the engine, a movable plunger arranged in the cylinder, a movable valve arranged inside the upper conical end of the cylinder, yielding means arranged between the plunger and said valve pressing the latter against the upper end of the cylinder, a number of channels in the plunger, a spindle like extension fixed to the plunger and a disk like member of easily breakable material in the path of movement of said spindle.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

GUSTAF EMIL JONSSON.

Witnesses:

TH. BRANZELL,

G. PETERSSON.