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H. VAN KEUREN ET AL  
AUTOMATIC DRAIN DEVICE

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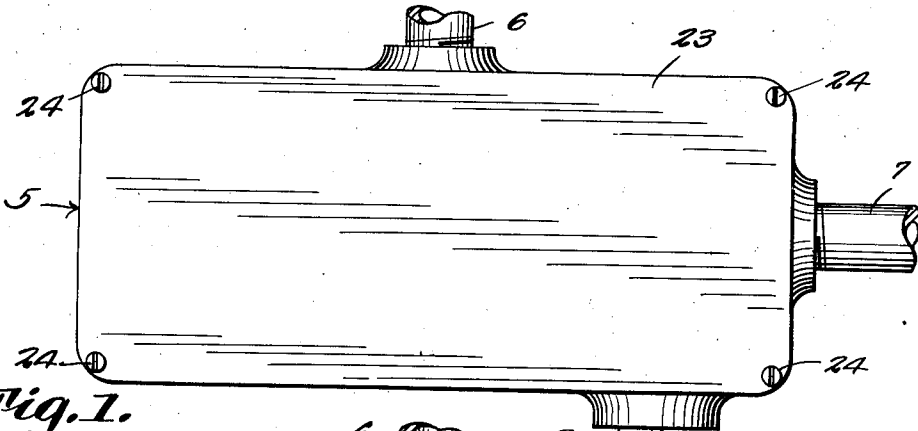


Fig. 1.

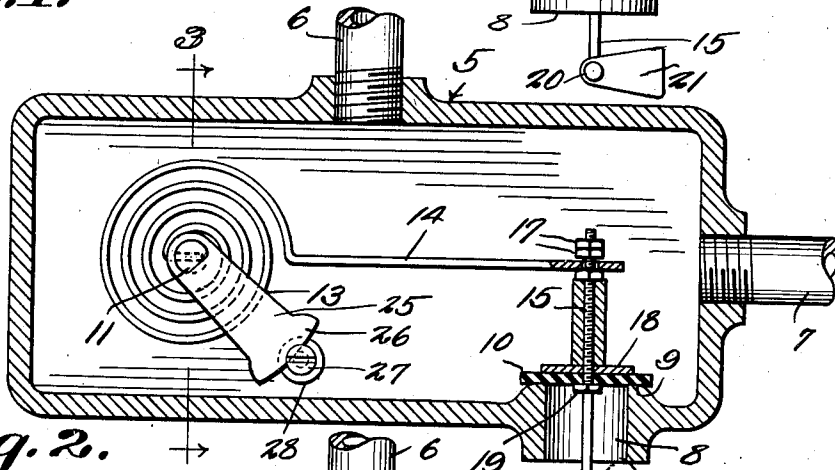


Fig. 2.

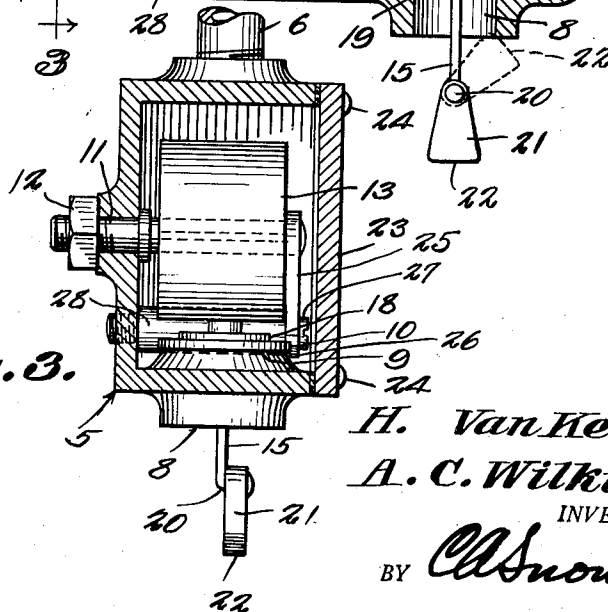


Fig. 3.

H. Van Keuren  
A. C. Wilkins  
INVENTORS.  
BY *Chas. Snow* Co.  
ATTORNEYS.

## UNITED STATES PATENT OFFICE

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## AUTOMATIC DRAIN DEVICE

Herbert Van Keuren and Archibald C. Wilkins,  
Kingstree, S. C.

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2 Claims. (Cl. 137—34.3)

This invention relates to an automatic drain device, designed primarily for use in the cooling systems of internal combustion engines, the primary object of the invention being to provide thermostatically controlled means for automatically releasing the water of the system when the temperature of the water of the systems approaches the freezing point or reaches a dangerously low degree.

An important object of the invention is to provide a device of this character which may be adjusted to operate when the water reaches a predetermined temperature, means being also provided for holding the discharge or drain opening of the device closed, should it be desired to use an anti-freeze solution in the cooling systems.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein described, may be made within the scope of what is claimed, without departing from the spirit of the invention.

Referring to the drawing:

Figure 1 is an elevational view of a device constructed in accordance with the invention.

Figure 2 is a longitudinal sectional view through the device.

Figure 3 is a sectional view taken on line 3—3 of Figure 2.

Referring to the drawing in detail, the device comprises a body portion indicated generally by the reference character 5, and while the body portion in the present showing is rectangular in formation, it is to be understood that the general construction of the body portion may be changed to meet various requirements, without departing from the spirit of the invention.

The reference character 6 designates a pipe that extends into the top of the body portion, at a point intermediate the ends thereof, while the numeral 7 designates a pipe that extends into one end of the body portion. In connecting the device in the cooling system of an internal combustion engine, either of the pipes 6 or 7 may be connected with the cooling system, the other pipe or opening being closed. Should it be desired, both pipes may be connected with the cooling system to allow a circulation of water through the body portion.

Formed in the bottom of the body portion is an outlet or drain opening 8 which is provided

with a valve seat 9 at the upper end of the opening, to be engaged by the valve disk 10, which normally holds the opening 8 closed.

One wall of the body portion 5 is provided with a threaded opening in which the arm 11 is positioned, the arm being formed with a threaded extension to screw through the said threaded opening where it accommodates the nut 12, holding the arm in position. This arm 11 provides a support for the coil 13 which is constructed of bimetal commonly used in the construction of thermostats, and as shown, this coil 13 is provided with an extension 14 that extends to a position directly over the outlet or drain opening 8, where it is provided with an opening for the reception of the bolt 15 which is secured thereto, by means of the nuts 17 positioned on the threaded end of the threaded bolt 15. This bolt also extends through the valve disk 10, and through the metallic disk 18 that backs up the valve disk 10 insuring a close contact of the valve disk 10 and its seat, to cut off the flow of water through the opening 8. A nut indicated at 19 is mounted on the bolt 15, and bears against the lower surface of the valve disk 10.

This bolt 15 is of a length to extend an appreciable distance below the discharge end of the opening 8, where it is formed with a right angled end 20 on which the latch 21 is pivotally mounted. This latch 21 is substantially triangular in formation, the wide surface or end 22 thereof being designed to contact with the body portion 5 at a point adjacent to the outlet opening 8, when the latch member is moved to the dotted line position shown by Figure 2 of the drawing, thereby holding the valve 10 to its seat at all times, against the action of the thermostat or coil 13.

Secured to the inner end of the arm 11, is a lever 25, which has a wide end 26 disposed adjacent to the screw 27, that screws into a threaded opening in the inner end of the bolt 28, the head of the screw adapted to engage the lever, securing the lever in various positions of adjustment. Thus it will be seen that by moving the lever 25, the thermostat may be adjusted, regulating the operation of the valve.

From the foregoing it will be seen that due to the construction shown and described, we have provided an automatically controlled device for positioning in the pipe-line or drain of the usual cooling system of an internal combustion engine, and that because of the construction, the water in the body portion will control the action of the thermostat. When the water in

the system cools to a degree approaching the freezing point, the thermostat will be caused to move, opening the valve 10, whereupon the water of the cooling system will drain into the body portion 5, through pipes 6 or 7, from where the water will pass through the drain opening 8 clearing the system of cooling water.

A cover plate indicated by the reference character 23 is removably held on the body portion 5, by means of the screws 24, to the end that ready access may be had to the interior of the body portion to repair or adjust the elements thereof.

What is claimed is:

1. A device for controlling the cooling liquid of an internal combustion engine, comprising a body portion, pipes connected with the body portion and adapted to be connected in the cooling system whereby cooling liquid of the system flows into said body portion, said body having a drain opening in the bottom thereof, a valve normally closing the drain opening, a thermostat comprising a member sensitive to heat and cold mounted in the body portion, a bolt connecting the valve to said thermostat, said bolt extending through said drain opening, and a latch on said bolt and

adapted to engage the body portion to hold the valve closed against the action of the thermostat.

2. A device for controlling the cooling liquid of an internal combustion engine, comprising a body portion, pipes connected with the body portion and adapted to be connected in the cooling system whereby cooling liquid of the system flows into said body portion, said body portion having a drain opening in the bottom thereof, a valve normally closing the drain opening, a rod extending through the valve and through the drain opening, the lower end of the rod terminating an appreciable distance below the drain opening, a pivoted member mounted on the lower end of the rod and adapted to swing upwardly to engage the body portion and restrict upward movement of the valve, a thermostat mounted within the body portion, one end of the thermostat being connected with the valve, and said thermostat adapted to operate to open the valve when the latch member is moved to disengage the body portion.

HERBERT VAN KEUREN.  
ARCHIBALD C. WILKINS.