April 25, 1933. D. LUMSDEN 1,906,072

OVERFLOW TRAP FOR AUTOMOBILE RADIATORS

Filed Dec. 22, 1930

Fig. 1.

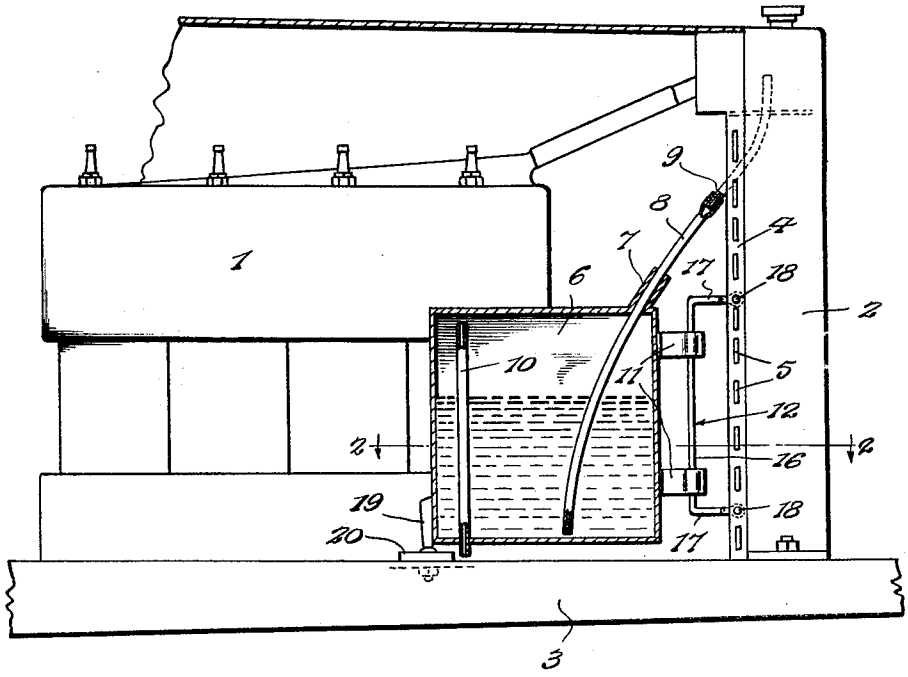


Fig. 3.

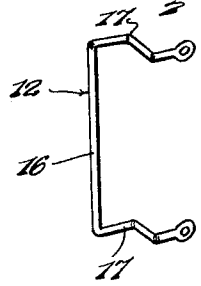
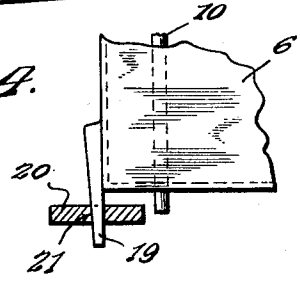


Fig. 2.

Fig. 4.



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UNITED STATES PATENT OFFICE

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OVERFLOW TRAP FOR AUTOMOBILE RADIATORS

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This invention relates to automobile accessories, and more particularly to an overflow trap by means of which water and anti-freezing solutions and vapors therefrom which escape from the overflow pipe of an automobile radiator may be caught or condensed and retained in said trap until partial or complete cooling of the radiator creates sufficient vacuum to cause the liquid to be drawn back into the radiator.

One object of the invention is to provide a device of this character which may be very easily applied and firmly held in its proper position at one side of the engine rearwardly of the radiator.

Another object of the invention is to permit a receptacle forming part of the apparatus to be selectively mounted either at the right or left hand side of the engine and to also so mount the device that when the hood is raised the receptacle may be released and swung out of the way, thereby permitting the engine to be easily cleaned or repaired.

Another object of the invention is to permit a receptacle forming part of the apparatus to be selectively mounted either at the right or left side of the engine by means of centrally located supports at each end of receptacle and to also so mount the receptacle that when the hood is raised, the receptacle may be easily and quickly removed to give easy access to the engine or permit liquid to be poured from the receptacle.

Another object of the invention is to make use of liquid in the apparatus as a means to condense any steam or vapor which may attempt to pass out through the overflow pipe, by discharging the steam or vapor under the surface of the liquid. This also prevents escape of any disagreeable odors arising from anti-freeze solutions.

Another object of the invention is to permit air within the receptacle to escape when fluid enters the same and also to permit air to enter the receptacle as the liquid is drawn back into the radiator and thereby prevent formation of a partial vacuum in the receptacle which would interfere with proper operation of the device.

Figure 1 is a view partially in side elevation and partially in vertical section showing the improved overflow trap in position for use,

Fig. 2 is a view taken along the line 2—2 of Fig. 1, with the engine omitted,

Fig. 3 is a perspective view of the bracket upon which the overflow trap is mounted, and

Fig. 4 is an enlarged fragmentary view showing the manner in which the overflow trap is held in an operative position.

In Fig. 1 there has been shown a portion of an automobile and in this figure the numeral 1 indicates an engine of conventional construction having the usual radiator 2, lower side portions of which are secured to the chassis bars 3. At each side the radiator is provided with a strip 4 which is preferably a portion of the side wall of the radiator, but it will be understood that these strips may be formed separate from the radiator and suitably secured thereto. Openings 5 are formed in each strip in spaced relation to each other longitudinally thereof. It is customary to fill the radiator during cold weather with water having an anti-freezing solution mixed therewith in order to prevent freezing and it is necessary that the water in the radiator and water jacket of the motor contain a certain percent of the anti-freezing solution if it is to be strong enough to prevent freezing at determined low temperatures. When the anti-freezing solution is first poured into the radiator, the proper quantity is present. When the automobile is in operation, the water and anti-freezing solution often become overheated and either boil out of the

radiator through the overflow pipe or are converted into steam which passes out through the overflow pipe. This necessitates refilling the radiator and as clear water is usually poured into the radiator to refill it the percentage of anti-freezeing solution with respect to the water is gradually reduced until there is not sufficient anti-freezing solution to prevent the water from freezing if the automobile is left standing overnight or for a sufficient period of time during the day. Therefore, the water in the radiator will freeze and the automobile owner will not be warned that there is not sufficient anti-freezing solution in the radiator until the freezing takes place.

In order to overcome this danger of freezing due to loss of the anti-freezing solution, I have provided a tank or receptacle 6 which is preferably rectangular in shape as shown in Figs. 1 and 2. This receptacle is to be disposed at one side of the motor back of the radiator and at its forward end is formed with a neck 7 which extends upwardly at a forward incline. Through this neck extends a rubber hose or tube 8 of sufficient length to have its inner end terminate close to the bottom of the receptacle when its upper or outer end is attached to the overflow pipe 9 leading from the top of the radiator. It is through this pipe 9 that the water and anti-freezing solution and vapors therefrom escape when overheating causes the water to boil or at least expand to such an extent that it may flow into the upper inner end of the pipe. Ordinarily the water and anti-freezing solution and vapors therefrom flow through the overflow pipe and down on to the ground, but since the tube 8 is connected with the outer end of the overflow pipe any water and anti-freezing solution and vapors therefrom flowing through this pipe will pass through the tube into the receptacle where it will be held. A vent pipe 10 is provided so that air may pass into and out of the tank or receptacle and this vent pipe is disposed vertically with its lower end projecting through the bottom of the tank and its upper end terminating near the top of the tank.

In order to mount the tank in the position shown in Figs. 1 and 2 or at the other side of the motor there has been provided clamping brackets 11 which project from the front end of the tank midway the width thereof in vertical spaced relation to each other and are to engage a bracket 12 carried by the adjacent strip 4 of the radiator. Each of the clamps 11 is formed as shown in Fig. 2 and consists of a pair of strips 13. These strips are formed of resilient sheet metal and have their inner ends bent to form feet 14 which are brazed or otherwise firmly secured against the front wall of the tank. The free end portions of the two strips are bent to form jaws 15 adapted to engage about the vertically extending rod 16 of the bracket 12, thereby releasably holding the tank in engagement with the rod 16 of the bracket and also permitting the tank to be shifted vertically and swung about the rod. Upper and lower arms 17 project from ends of the rod 16 and at their free ends are formed with openings so that the bracket 12 may be firmly secured to the adjacent strip 4 by bolts 18 which are passed through selected openings 5 of the strip 4 or through openings formed through the strip between certain of the openings 5 in order to mount the bracket 12 in its proper position as shown in Fig. 1. When the tank is in use, it must be secured in the position shown in Figs. 1 and 2 and prevented from swinging transversely. Therefore, I have provided an anchoring pin or finger 19 which is secured against the rear wall of the tank midway the width thereof in a vertical position and projects downwardly therefrom. A seat or bracket consisting of a flat strip of strong metal is firmly secured against the chassis bar rearwardly of the radiator and this bracket projects inwardly from the chassis bar and is formed with an opening 21 of sufficient diameter to receive the lower end portion of the pin or finger 19. It should be noted that the pin or finger tapers towards its lower end and therefore when the pin is engaged in the opening 21 a wedging action will take place which will firmly secure the pin in the opening and prevent the pin from slipping out of the opening due to jolts received when an automobile is traveling over a rough road.

When this device is in use, the bracket 12 is secured to the strip 4 at the selected side of the radiator and the tank attached to the bracket by engaging the jaws of the clamps 11 about the vertically extending rod 16 of the bracket 12. The tank is then disposed longitudinally of the chassis bar in order to locate the proper position for the bracket or seat 20 and this bracket is then applied to the chassis bar and riveted or otherwise firmly secured to the chassis bar. The overflow pipe 9 ordinarily extends downwardly to a point below or near the lower end of the radiator but when this device is in use, the overflow pipe will be cut off until only a short portion projects rearwardly from the radiator and the upper or outer end of the rubber hose or tube 8 is secured about the outer end of the overflow pipe.

The cap of the radiator has practically an air tight engagement with the filling neck and water, anti-freezing solution and vapors therefrom escape through the overflow pipe in case expansion takes place due to overheating. It is to be remembered that both water and air expand but air expands more than water. In case the water and anti-

freezing solution in the radiator should boil or become overheated to such an extent that expansion causes it to flow through the overflow pipe 9, this mixture of water and anti-freezing fluid and vapors therefrom pass through the hose 8 and into the tank 6 where it will be retained instead of dropping upon the ground and being lost. During the summer the tank is filled with water as a reserve supply but in winter the tank is only about half filled with water and anti-freezing solution. When the automobile is brought to a stop, or the temperature of the water in the radiator is reduced by any other cause such as by traveling over a high mountain while making a trip, the reduced temperature causes the liquid and air in the radiator to contract, thereby creating sufficient vacuum in the upper portion in the radiator to create a suction through the overflow pipe 9 and tube or hose 8. This suction will cause liquid in the tank to be drawn back into the radiator until the suction ceases. It will thus be seen that the water and anti-freezing solution will be returned to the radiator instead of it being necessary to refill the radiator and danger of freezing due to gradual reduction of the anti-freezing solution in the radiator will be prevented.

The tank, during warm weather, will also serve as a trap for steam escaping from the radiator, and since this steam will condense in the tank and be drawn back into the radiator, there will be no danger of damage to the motor due to the water boiling out in a locality where a fresh supply of water is not available, such as a desert country.

When it is necessary to repair or clean the motor, the tank may be shifted upwardly after the hood has been raised and as soon as the pin or finger 19 has been lifted out of the opening 21 the tank may be swung outwardly about the rod 16 of the bracket 12 where it will be out of the way or it may be entirely disconnected by drawing the tank away from the bracket in order to release the clamps from the rod 16 and pulling the hose out of the tank.

I have, therefore provided an accessory for an automobile which will serve to prevent loss of anti-freezing solution and may also serve as a carrier for a reserve supply of plain water or water having anti-freezing solution mixed therewith.

What is claimed is:

1. In combination with a motor vehicle including a chassis, a radiator supported by the chassis, and provided with an overflow pipe, a bracket secured to said radiator at one side thereof and including a vertically disposed rod, a receptacle disposed rearwardly of the radiator at the side thereof carrying said bracket, hinges extending forwardly from said receptacle and engaged about the rod of said bracket to mount the receptacle for swinging movement and means to releasably secure the receptacle in a set position.

2. In combination with a motor vehicle including a chassis having side bars, a radiator supported by said chassis and provided with an overflow pipe, and a motor disposed rearwardly of said radiator between the said bars of the chassis, a bracket carried by said radiator at one side thereof and projecting rearwardly from the radiator and including a vertically extending rod, a receptacle disposed back of said radiator at the side thereof carrying said bracket and disposed between the motor and the adjacent side bar of the chassis, clamps extending forwardly from said receptacle and engaged about the vertical rod of said bracket to mount the receptacle for swinging movement towards and away from the motor and permit the receptacle to be shifted vertically, a tube connected with the overflow pipe of said radiator and extending into said receptacle, a seat carried to the adjacent side bar of the chassis and projecting inwardly therefrom and an anchor carried by said receptacle to engage said seat and releasably secure the receptacle in a set position, the anchor being movable into and out of engagement with the seat by shifting the receptacle vertically upon said bracket.

3. A device for trapping and storing liquid overflowing from a radiator comprising a receptacle, a bracket adapted to be secured to a radiator and project rearwardly therefrom, the bracket having a portion constituting a vertically extending rod, hinge members extending forwardly from said receptacle to engage about the rod of said bracket and mount the receptacle for swinging in a horizontal plane and vertical shifting movement along the rod, a tube entering said receptacle, the outer end of the tube being engageable with an overflow pipe of a radiator, a plate adapted to be secured to a side bar of a vehicle chassis, the plate being formed with an opening, and a stem extending downwardly from said receptacle to engage in the opening of said plate and releasably secure the receptacle in a set position.

4. A device for trapping and storing fluid overflowing from a radiator, said device comprising a receptacle, a flexible tube extending from said receptacle for connection with the overflow pipe of a radiator, clamps extending from the receptacle, a mounting bracket adapted to be secured adjacent one side of the radiator and having a portion constituting a vertical rod, the clamp being engageable about said rod to releasably connect said receptacle therewith and mount the receptacle for swinging movement in a horizontal plane and vertical shifting move-

ment, a seat adapted to be secured to a side bar of a chassis and project inwardly therefrom, and an anchor carried by said receptacle to engage said seat and releasably secure the receptacle in a set position, the anchor being movable into and out of engagement with said seat by shifting the receptacle vertically upon the rod of said bracket.

5. A device for trapping and storing fluid overflowing from a radiator comprising a receptacle, a mounting bracket, hinges extending forwardly from said receptacle and releasably engaged with said bracket to mount the receptacle for swinging movement in a horizontal plane and vertical shifting movement, a flexible tube extending from said receptacle for engagement with an overflow pipe of a radiator, a vent tube in said receptacle open at its upper end and having its lower end extending through the bottom of the receptacle, a plate adapted to be secured to a side bar of a chassis and formed with an opening, and a stem extended downwardly from said receptacle to engage through the opening of the plate and secure the receptacle in a set position, said stem being tapered downwardly to cause wedging fit when the stem is engaged in the opening.

6. A device for trapping and storing fluid overflowing from a radiator comprising a receptacle, a tube extending from said receptacle for engagement with an overflow pipe of a radiator and having its inner end terminating adjacent the bottom of the receptacle, a mounting bracket including a portion constituting a vertically extending rod when the bracket is in place, hinges extending from said receptacle to engage the vertical rod of said bracket and hingedly mounted to said receptacle, the hinges being frictionally held in engagement with the rod and readily detachable therefrom, and means to releasably secure said receptacle in a set position relative to the chassis and motor of a vehicle.

7. In combination with a vehicle having a chassis, a radiator having an overflow pipe, a motor back of the radiator, and a hood for said motor, a receptacle mounted for movement from a position within the hood back of the radiator to an extended position out of the hood at one side of the chassis, and a tube connected to the overflow pipe and extending into said receptacle.

8. In combination with a vehicle having a chassis, a radiator having an overflow pipe, a motor back of the radiator, and a hood for said motor, a receptacle normally disposed within the hood back of the radiator at one side of said motor, a tube leading from the overflow pipe into said receptacle, and means to mount said receptacle for swinging movement transversely of the chassis from a position within the hood to a position outside the hood beyond one side of the chassis.

9. In combination with a vehicle having a chassis, a radiator having an overflow pipe, a motor back of the radiator, and a hood for said motor, a receptacle normally disposed within the hood back of the radiator at one side of said motor, a tube leading from the overflow pipe into said receptacle, a mounting back of said radiator at one side of the chassis, and means to pivotally and detachably connect said receptacle with said mounting and permit the receptacle to be swung from a position within the hood to a position externally thereof beyond the chassis and bodily detached from the mounting.

10. In combination with a vehicle having a chassis, a radiator having an overflow pipe, a motor back of the radiator, and a hood for said motor, a receptacle normally disposed within the hood back of the radiator at one side of said motor, a tube leading from the overflow pipe into said receptacle, a mounting back of said radiator at one side of the chassis including a vertically extending rod, means to movably mount said receptacle pivotally and slidably engaged with the rod, and an anchor carried by said receptacle and moved into and out of engagement with a keeper carried by the chassis by sliding the receptacle vertically upon the rod.

In testimony whereof I affix my signature.

DAVID LUMSDEN.