March 19, 1935. P. B. WEIS 1,994,551

APPARATUS FOR THE TREATMENT OF THE COOLING MEDIUM FOR INTERNAL COMBUSTION ENGINES

Filed April 7, 1933

Fig. 1

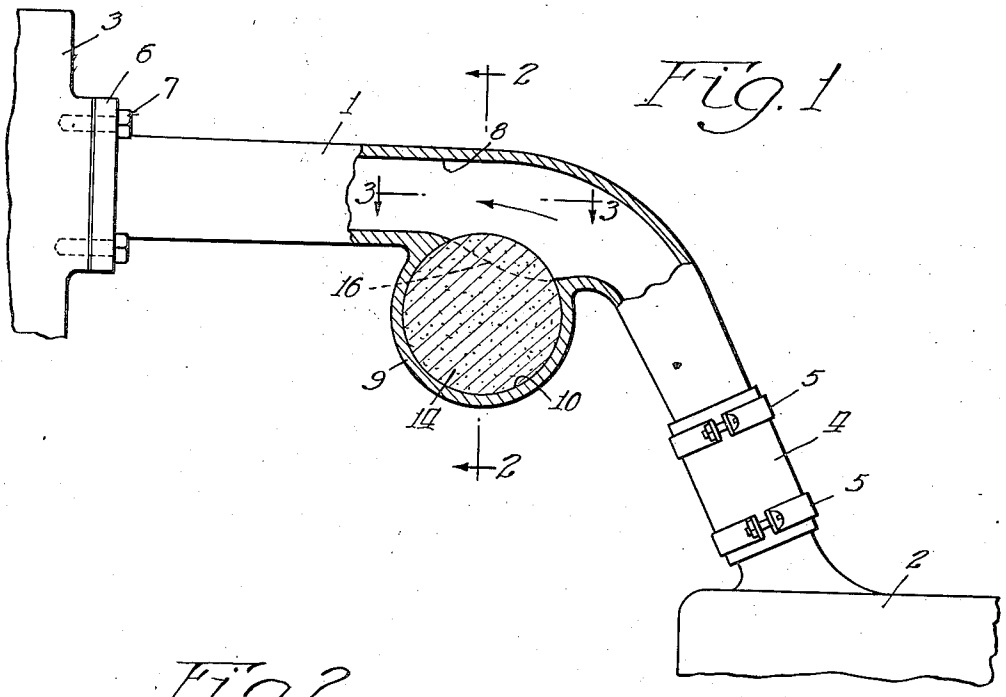


Fig. 2

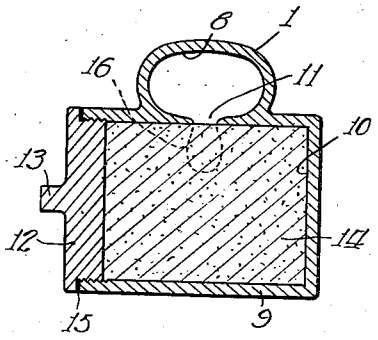
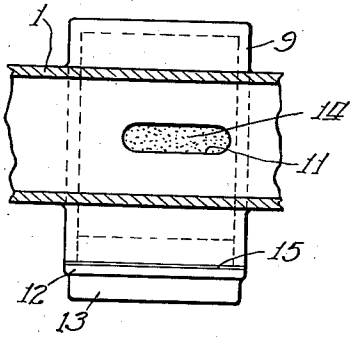


Fig. 3



Witness:
V. Silfander

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Patented Mar. 19, 1935 1,994,551

UNITED STATES PATENT OFFICE

1,994,551

APPARATUS FOR THE TREATMENT OF THE COOLING MEDIUM FOR INTERNAL COMBUSTION ENGINES

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Application April 7, 1933, Serial No. 664,998

4 Claims. (Cl. 210—36)

My invention relates to a device designed for use in connection with cooling systems for internal combustion engines employed as a motive power for various kinds of vehicles.

The invention has among its objects the production of a device of the kind described suitable for installation in the cooling system between the engine and the radiator, either as standard equipment or as an accessory which may be applied to any installation.

The invention has particularly as an object the production of a device in which there is contained a cake, block or brick of suitable material with which the cooling medium will contact and be thereby chemically treated or softened. In the apparatus described the chemical or softening agent is in the form of a brick or moulded refill cartridge which may be inserted in the device and when used up be renewed by the insertion of a new brick, it being understood that the particular chemical employed is such as to be most satisfactory for the particular fluid to be treated. The construction of the device is such that it tends to discourage the use of any but predetermined materials, thereby preventing the substitution of unsuitable material in the device.

The invention has among its further objects the production of a device of the kind described which is simple, compact, durable, efficient, inexpensive, easily installed, easily recharged and satisfactory for use wherever found applicable.

Many other objects and advantages of the construction herein shown and described will be obvious to those skilled in the art from the disclosure herein given.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawing, wherein like reference characters indicate like or corresponding parts:

Fig. 1 is a view in elevation, partly in section, illustrating the device as installed between the radiator and an internal combustion engine;

Fig. 2 is a sectional view taken substantially on line 2—2 of Fig. 1; and

Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 1.

Referring to the drawing, 1 represents a suitable member constituting a conduit for the cooling medium flowing between the engine 2 and the radiator or cooling apparatus 3. The conduit is connected with or attached to the engine and radiator in any suitable manner. As shown, one end is more or less flexibly connected by a hose connector 4 and clamps 5—5 to the engine 2, while the opposite end is connected by the flange 6 and bolts 7 to the radiator. The member 1 is chambered as shown at 8 so as to afford the unobstructed passage of the medium through the member and is provided with a container 9 having a chamber 10 therein which communicates with the interior of the member 1 through the port or opening 11. As shown, the container is preferably arranged on the under side of the member 1 and is of sufficient size to contain a brick or cake 14 of a material that will chemically treat water passing over the opening 11 through the conduit 1. The container is provided with a removable closure 12, 13 being a projection for convenience in removing or applying the closure and 15 a gasket or washer for sealing the juncture of the closure and container. The container is made of a shape to receive the brick 14, the particular size and shape of the parts being more or less immaterial.

As the cooling medium passes from the engine to the radiator it passes over the port 11, a portion of the same contacting with the brick through the port or opening 11 and taking up the chemical, gradually wearing the brick away, as indicated for example at 16 in the dotted lines, until the whole brick is in solution or at least the greater portion thereof, after which the closure 12 may be removed and a new brick inserted.

Obviously, by use of the softener the water is maintained soft or satisfactory for use and the forming of scale in the radiator or in the engine is prevented. It is obvious that the chemical reagent may be of such material as is most suitable for the water of any particular locality, that is to say, in some locations it might be made of a desired composition, while for bricks for use in other parts of the country where the water is different, the formula for the brick might be such as to make it most satisfactory for that particular water. It is a comparatively simple matter to renew a brick and, being in brick formation, may be put up in packages of just the right amount to constitute a refill entirely filling the container. Likewise inferior bulk material is not easily substituted for the bricked material. It is preferred to mount the container below the conduit, so that there is no tendency for particles of the brick to drop into the conduit before going into solution.

The device is particularly satisfactory for use on busses, trucks, aeroplanes, etc., which may travel considerable distances and in which the

cooling medium is renewed from different sources of supply, some of which would ordinarily be unsatisfactory unless chemically treated. With the device it is not necessary to dismantle the equipment to remove the scale or the like, as having been once free from scale, either in new equipment or after scale has been removed by the agent, it is thereafter kept clean so that the cooling system is at all times operating with a maximum of efficiency.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing from the spirit of my invention; hence I do not wish to be understood as limiting myself to the exact form, construction, arrangement and combination of parts herein shown and described, or uses mentioned.

What I claim as new and desire to cover by Letters Patent is:

1. In an apparatus for dispensing a chemical for the treatment of the cooling medium of internal combustion engines and in combination, a member having an unobstructed conduit therethrough and provided with means for connecting the same in the cooling system intermediate the engine and radiator, said member provided with a container arranged at the underside thereof and communicating at its top with the conduit in said member, said container provided with an opening for filling the same, a cake of treatment material of a size to pass through said filler opening and moulded to fit the interior of said container, and a closure for said opening, the said material when initially inserted lying substantially tangentially to the bottom of the conduit and in contact with the cooling medium passing therethrough.

2. In an apparatus for dispensing a chemical for the treatment of the cooling medium of internal combustion engines and in combination, a member having an unobstructed conduit therethrough and provided with means for connecting the same in the cooling system intermediate the engine and radiator, said member provided with a container arranged transversely to and at the underside thereof, a small port provided in the top of said container so as to provide communication between said conduit and said container, said container provided with an opening for filling the same, a cake of treatment material of a size to pass through said filler opening and moulded to fit the interior of said container, and a closure for said opening, the said material when initially inserted being adapted to lie substantially tangential to the bottom of the conduit and in contact with the cooling medium passing therethrough.

3. In an apparatus for dispensing a chemical for the treatment of the cooling medium of internal combustion engines and in combination, a member provided with a bend intermediate its ends and having an unobstructed conduit therethrough and provided with means for connecting the same in the cooling system, said member provided with a container arranged at one side thereof adjacent said bend and communicating with said conduit, said container provided with an opening for filling the same, a treatment material of a character to pass through said opening and adjust itself to the interior of said container, and a closure for said opening, the said material when initially inserted being adapted to assume a position substantially tangential to the inner wall of the conduit at the bend and in contact with the cooling medium passing therethrough.

4. In an apparatus for dispensing a chemical for the treatment of the cooling medium of internal combustion engines and in combination, a member provided with a bend intermediate its ends and having an unobstructed conduit therethrough and provided with means for connecting the same in the cooling system intermediate the engine and radiator, said member provided with a container circular in cross section arranged transversely to and at the underside thereof adjacent said bend, a small elongated port provided in the top of said container so as to provide communication between said conduit and said container, said container provided with an opening at one end for filling the same, a cake of treatment material circular in cross section and of a size to pass through said filler opening and fit the interior of said container, and a closure for said opening, the said material when initially inserted being adapted to lie substantially tangential to the bottom of the conduit at the bend and in contact with the cooling medium passing therethrough.

PAUL B. WEIS.