

March 13, 1945.

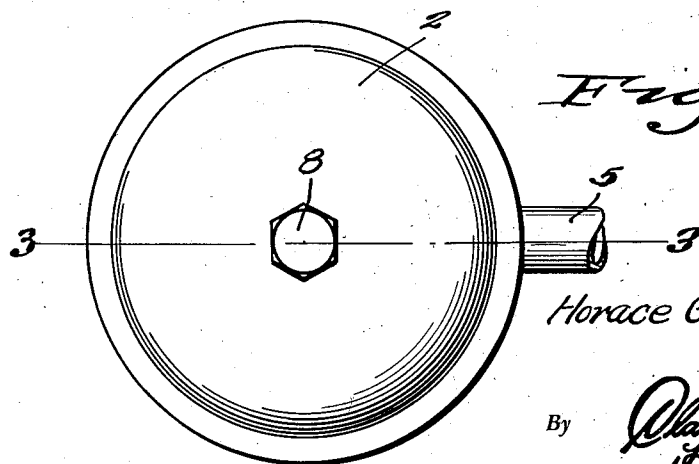
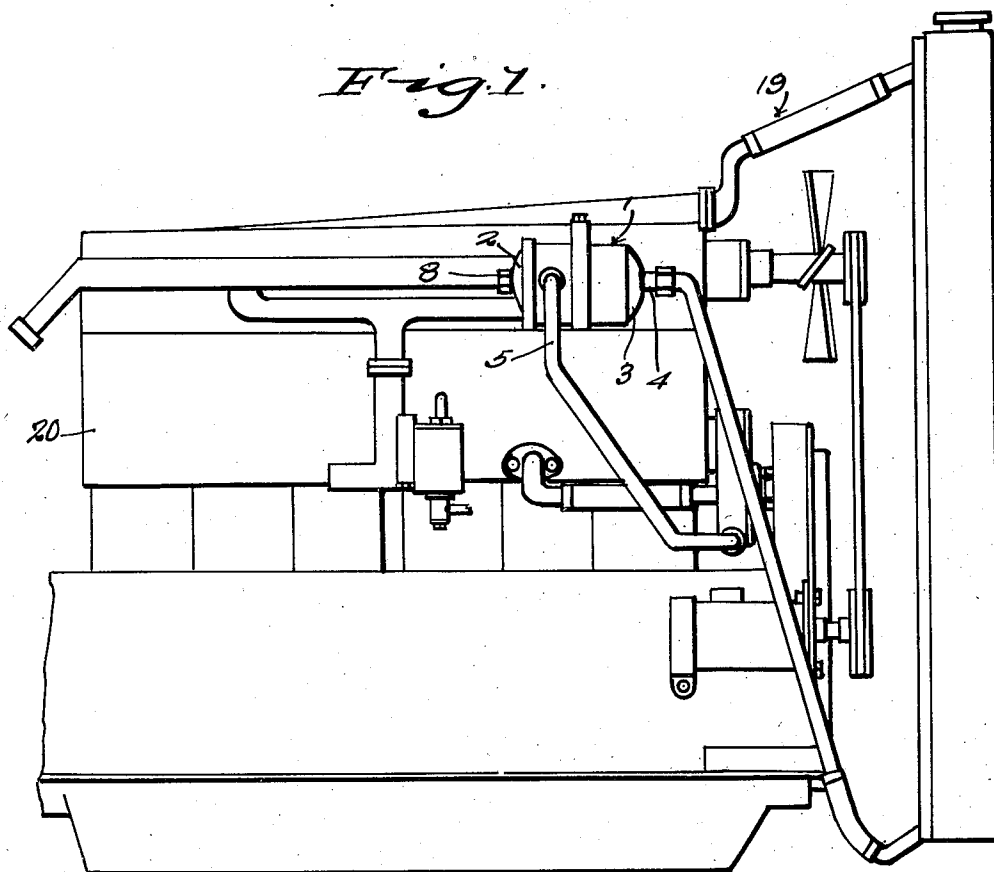
H. G. HUBERT

2,371,444

WATER CONDITIONER

Filed April 7, 1943

2 Sheets-Sheet 1



Inventor

Horace Grayson Hubert

By

Clarence W. Brien
and Harvey B. Jacobson
Attorneys

March 13, 1945.

H. G. HUBERT

2,371,444

WATER CONDITIONER

Filed April 7, 1943

2 Sheets-Sheet 2

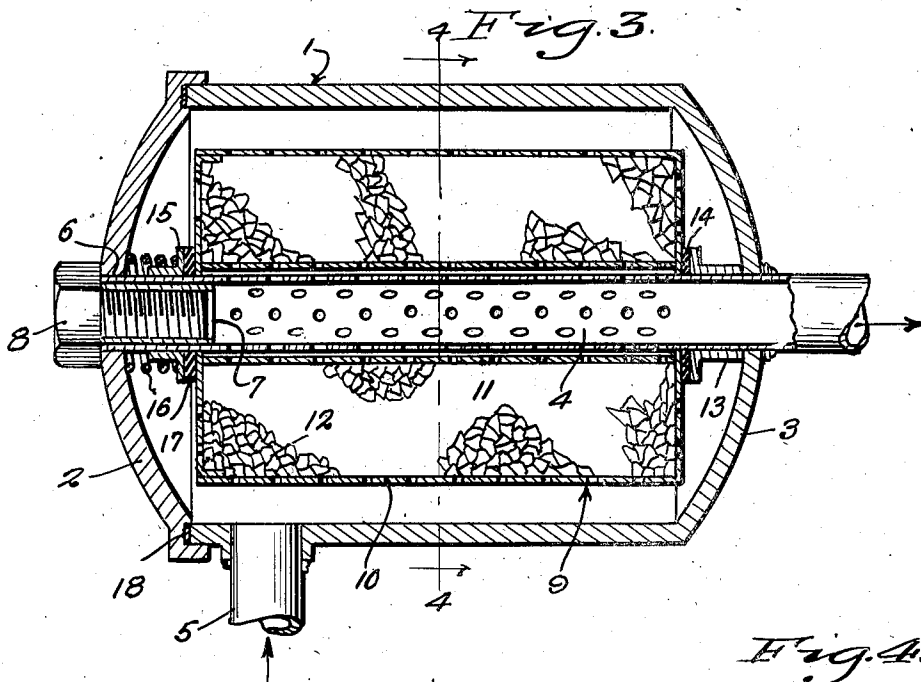
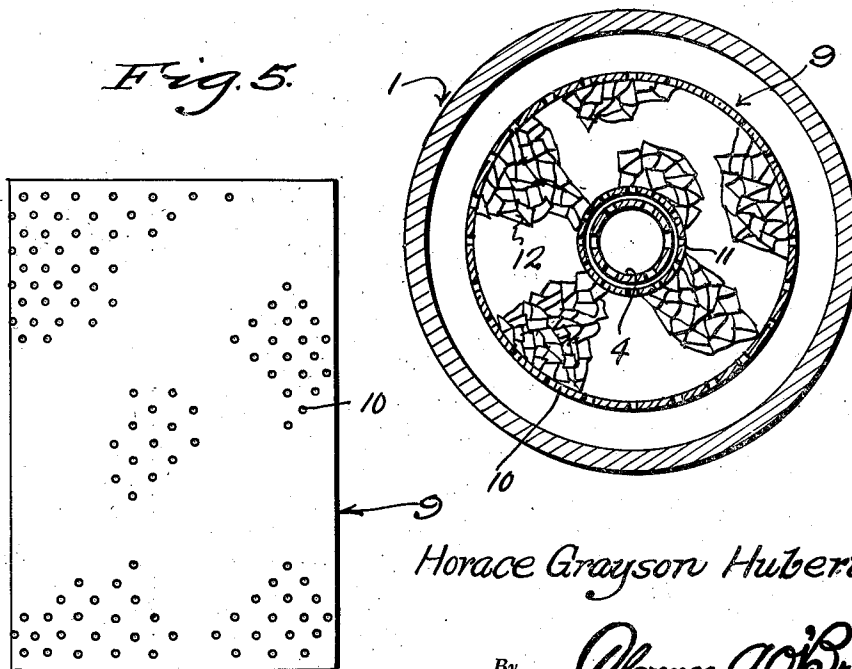


Fig. 4.



Inventor

Horace Grayson Hubert

By

Clarence A. O'Brien
and Harvey B. Jacobson
Attorneys

UNITED STATES PATENT OFFICE

2,371,444

WATER CONDITIONER

Horace Grayson Hubert, Carlsbad, N. Mex.

Application April 7, 1943, Serial No. 482,159

1 Claim. (Cl. 210—24)

The present invention relates to new and useful improvements in conditioners particularly for the water in the cooling systems of internal combustion engines, and has for its primary object to provide, in a manner as hereinafter set forth, novel means for softening the water as it circulates through the system, whereby the formation of scale, clogging, et cetera, will be prevented.

Another important object of the invention is to provide a conditioner of the aforementioned character which is adapted to clean or filter the water in the cooling system.

Still another very important object of the invention is to provide a water conditioner of the character described embodying a novel construction, combination and arrangement whereby the softening and filtering unit may be expeditiously removed for replacement when desired.

Other objects of the invention are to provide a water conditioner of the character set forth which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, and which may be manufactured and installed at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in side elevation, showing a water conditioner constructed in accordance with the present invention, installed for operation on an internal combustion engine.

Figure 2 is an end view of the device.

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

Figure 4 is a sectional view, taken substantially on the line 4—4 of Figure 3.

Figure 5 is an elevational view of the removable cartridge or unit.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises a substantially cylindrical casing 1 of suitable material. A removable closure 2 is provided for the casing 1.

Mounted centrally in the casing 1 and extending through the closed end 3 thereof is a perforated outlet pipe 4. An intake pipe 5 communicates with the casing 1 at a point adjacent the closure 2. One end portion of the perforated pipe 4 is engaged in an opening 6 which is provided therefor in the closure 2. This end por-

tion of the pipe 4 has mounted therein a pressed fit internally threaded bushing or the like 7. A cap screw 8 is threaded into the bushing 7 for securing the closure 2 in position on the casing 1.

Removably mounted on the pipe 4 in the casing 1, but spaced from the walls thereof, is a unit or cartridge 9. The cartridge 9 includes a substantially cylindrical, perforated container 10 which is adapted to be slipped on the pipe 4. Toward this end, the container 10 has mounted longitudinally therein a perforated sleeve 11 which accommodates the pipe 4. The container 10 has therein a softening agent 12 such, for example, as zeolite.

A flanged spacer 13 is provided on the pipe 4 between one end of the cartridge 9 and the opposed wall 3 of the casing 1. A gasket 14 is provided between the flanged end of the spacer 13 and the container 10. A flanged follower 15 is slidably mounted on the pipe 4 between the closure 2 and the adjacent end of the container 10. A coil spring 16 has one end engaged with the flanged end of the follower 15 for yieldingly securing the cartridge 9 in position on the pipe 4. A gasket 17 is provided between the flanged end of the follower 15 and the adjacent end of the container 10. A gasket 18 is provided for the closure 2.

It is thought that the operation of the device will be readily apparent from a consideration of the foregoing. Briefly, the device is interposed in the usual water cooling system 19 of an internal combustion engine 20 substantially as shown in Figure 1 of the drawings. Water entering the casing 1 through the intake pipe 5 is forced through the perforated container 10, the agent 12 and the perforated sleeve 11 to the pipe 4 through which it returns to the cooling system. In this manner the water is softened and thoroughly cleaned. Access to the casing 1 may be expeditiously had by simply removing the cap screw 8 and the closure 2. Then, by removing the elements 15, 16 and 17, the cartridge 9 may be readily slipped off the perforated pipe 4 for replacement.

If desired, the device may be installed vertically or in any other position on the engine 20. When mounted vertically, the portion 3 of the casing 1 functions as a sediment chamber and sump. A removable drain plug may be provided in the casing 1.

It is believed that the many advantages of a water conditioner constructed in accordance with

the present invention will be readily understood, and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

A water conditioner comprising a casing for the reception of water and having an inlet opening at one side, said casing including a closure at one end and having an opening therein the end of the casing opposite from the closure also

having an opening aligned with the opening in the closure, a perforated outlet pipe mounted in the casing and positioned in said aligned openings, said pipe projecting outwardly from the end of the casing opposite from the closure, a bushing in the outlet pipe at its end adjacent the closure, a capscREW threadedly mounted in the bushing and engaged with the closure for securing said closure in position, and a water softening and cleaning cartridge removably mounted on the outlet pipe in the casing.

HORACE GRAYSON HUBERT.