April 7, 1925. 1,532,405

C. C. HERBERT

WATER CIRCULATOR

Filed Feb. 10. 1923

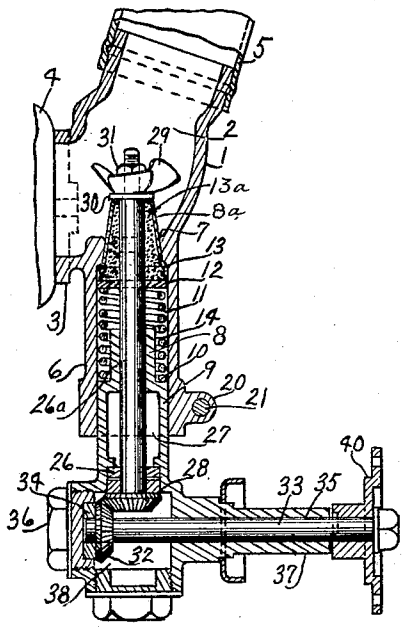


FIGURE 2

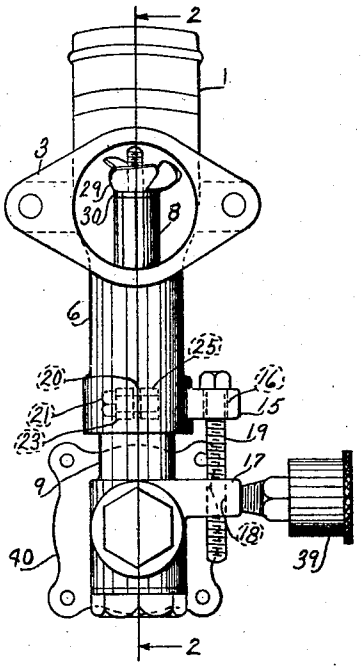


FIGURE 1

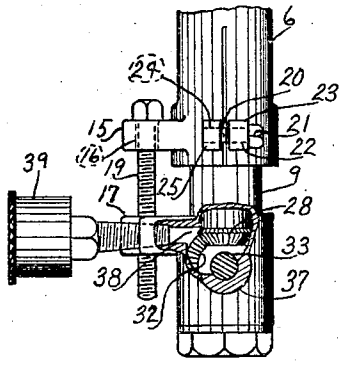


FIGURE 3

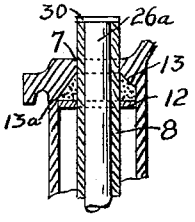


FIGURE 4

INVENTOR

Charles C. Herbert

John A. Naismith

BY

ATTORNEY

Patented Apr. 7, 1925. 1,532,405

UNITED STATES PATENT OFFICE.

CHARLES C. HERBERT, OF SAN JOSE, CALIFORNIA.

WATER CIRCULATOR.

Application filed February 10, 1923. Serial No. 618,343.

To all whom it may concern:

Be it known that I, CHARLES C. HERBERT, a citizen of the United States, and a resident of San Jose, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Water Circulators, of which the following is a specification.

This invention relates particularly to a device to be inserted in the water cooling system of an internal combustion engine on an automobile for the purpose of imparting a positive circulation of the water therein as well as operating a fan used in connection therewith.

It is one object of my invention to provide a device of the character indicated that permits the free flow of water and steam in an unobstructed path of travel from the engine to the radiator of the system.

It is another object to provide a device of the character indicated that is equipped with a pump in such a manner as to accelerate the speed of the water flowing from engine to radiator.

It is a still further object to provide a device of the character indicated wherein the pump driving mechanism is adjustable relative to the water conduit therethrough whereby the driving belt may be tightened at will without shifting the device as a whole relative to the engine.

It is a still further object of my invention to provide a device of the character hereinbefore set forth that will be simple in form and construction, economical to manufacture, highly efficient in its practical application and provided with a lubricating means so arranged as to properly lubricate moving parts without driving the lubricant into the water passage.

In the drawing:—

Figure 1 is a rear elevation of my improved pump.

Figure 2 is a section on 2—2 of Figure 1.

Figure 3 is a side elevation of a portion of the device, parts being broken away.

Figure 4 is a modified form of a portion of the invention.

Referring more particularly to the drawing, 1 indicates an element provided with a conduit 2 having a flange at 3 for attaching the same to an engine shown in part at 4 and fitted with a pipe shown in part at 5 leading to a radiator not shown.

Extending downwardly from element 1 is a tubular part 6 contracted at its upper end to form an orifice 7. At 8 is a sleeve having a lower portion 9 of larger diameter to engage the lower portion of part 6 and forming a shoulder 10, thereby forming with part 6 a chamber 11. The upper end of chamber 11 is closed off by means of a washer 12. At 8^a is a conical sheet-metal element pressed into orifice 7 and forming with washer 12 a chamber 13 filled with packing 13^a. Inserted between shoulder 10 and washer 12 is a spring 14 which exerts a pressure on sleeve 8 tending to force it downwardly and out of tubular part 6. Arranged on part 6 and extending laterally therefrom is a lug 15 having an orifice 16 therein. Sleeve 8 carries a similar lug 17 tapped as indicated at 18. At 19 is a bolt passing through orifice 16 and engaging tapped lug 17. This construction limits the outward movement of sleeve 8 under pressure from spring 14 and yet permits adjustment of the parts as occasion may require. Part 6 is split at 20 and the engagement of the part with sleeve 8 is adjusted by means of a bolt 21 passing through orifice 22 in lug 23 on one side of the split 20 and engaging the tapped part 24 of lug 25 on the other side of the split 20.

The lower end of part 9 of sleeve 8 is fitted with a bearing 26 thereby forming a chamber 27 therein. In bearing 26 is mounted a shaft 26^a carrying a bevel gear 28 at its lower end and a propeller 29 at its upper end, the latter being held in place by a washer 30 and nut 31 and occupying substantially the center of conduit 2.

Meshing with gear 28 is a bevel gear 32 mounted on shaft 33 revolving in bearings 34—35. Bearing 34 is mounted in a threaded closure 36, and bearing 35 is formed in a laterally extending arm 37. This construction forms a chamber 38 around gears 28—32, the same being filled with grease under pressure through grease cup 39. Shaft 33 carries a driving pulley and fan not shown, the same being mounted upon part 40 which is mounted upon shaft 33 to revolve therewith.

When the device is operatively mounted upon a machine and the shaft 33 is revolved through the usual belt and pulley connections to the crank shaft, the propeller is revolved through the medium of gears 32—28 and shaft 26^a, thereby "boosting" the water and steam flow and causing a

positive circulation of the same through the cooling system. These parts are so arranged that full advantage is taken of the natural tendency of heated water and steam to rise, the pump merely encouraging that tendency to secure the required rapidity of motion.

The chamber 38 being filled with grease under pressure, the revolving parts gradually permit the same to work through bearing 26 into chamber 27, this chamber in time becoming filled or at least partially so, so that sufficient lubricant finds its way into sleeve 8 around shaft 26ª to keep it properly lubricated. By this construction all working parts are thoroughly lubricated yet by providing chamber 27 the lubricant is fed around shaft 26ª in sleeve 8 without pressure and consequently no grease is forced into the circulating water.

If, during the operation of the device, the operating belt becomes loose it may be tightened up by merely forcing parts 8 to 40 upward against the outward pressure of spring 14 until the belt has been sufficiently tightened. The bolt 19 is then screwed up to hold the parts in their new positions. This adjustment is simple and effective and does not disturb the seal between the device and engine 4 as is now the case with known constructions, the spring 14 effectively keeping the packing 13ª tight.

In Figure 4 a modified construction is shown wherein the sleeve 8 extends through the orifice 7 and the packing 13ª contacts with the sleeve instead of the shaft as hereinbefore described.

It is to be understood, of course, that while I have herein disclosed one specific embodiment of my invention, changes in form, construction, materials and method of operation may be made within the scope of the appended claims.

I claim:—

1. A device of the character indicated comprising a body portion having a conduit passing therethrough, a propeller operatively mounted in said conduit, and driving connections thereto, resilient means for urging said driving connections apart from said body portion, and means for controlling the action of said resilient means.

2. A device of the character indicated comprising a body portion having a conduit passing therethrough, a tubular portion extending therefrom and communicating therewith, a sleeve slidably engaging said tubular portion and passing into said conduit, a resilient means inserted between said sleeve and body portion normally urging the same in opposite directions, means for limiting the action of said resilient means, and a shaft revolubly mounted in said sleeve and having a propeller mounted thereon.

3. A device of the character indicated comprising a body portion having a conduit passing therethrough, a tubular portion extending therefrom and having a restricted communication therewith, a sleeve slidably mounted therein and extending into said conduit, a shaft revolubly mounted in said sleeve, a grease chamber arranged in said sleeve about said shaft, a chamber arranged in said tubular portion encompassing a portion of said sleeve, a resilient element arranged in said second chamber to urge said tubular portion and sleeve in opposite directions, means for limiting the action of said resilient element, and a propeller mounted on said shaft in said conduit.

4. A device of the character indicated comprising a body portion having a conduit passing therethrough, a propeller revolubly and slidably mounted in said conduit, a driving shaft geared to said propeller at right angles thereto, and means for adjusting said propeller and driving shaft relative to said body portion.

CHARLES C. HERBERT.