May 13, 1930. H. FOLKERTS ET AL 1,758,569

COMBINED WATER CIRCULATING PUMP AND THROTTLE CONTROL

Filed April 14, 1927 2 Sheets-Sheet 1

Fig. 1.

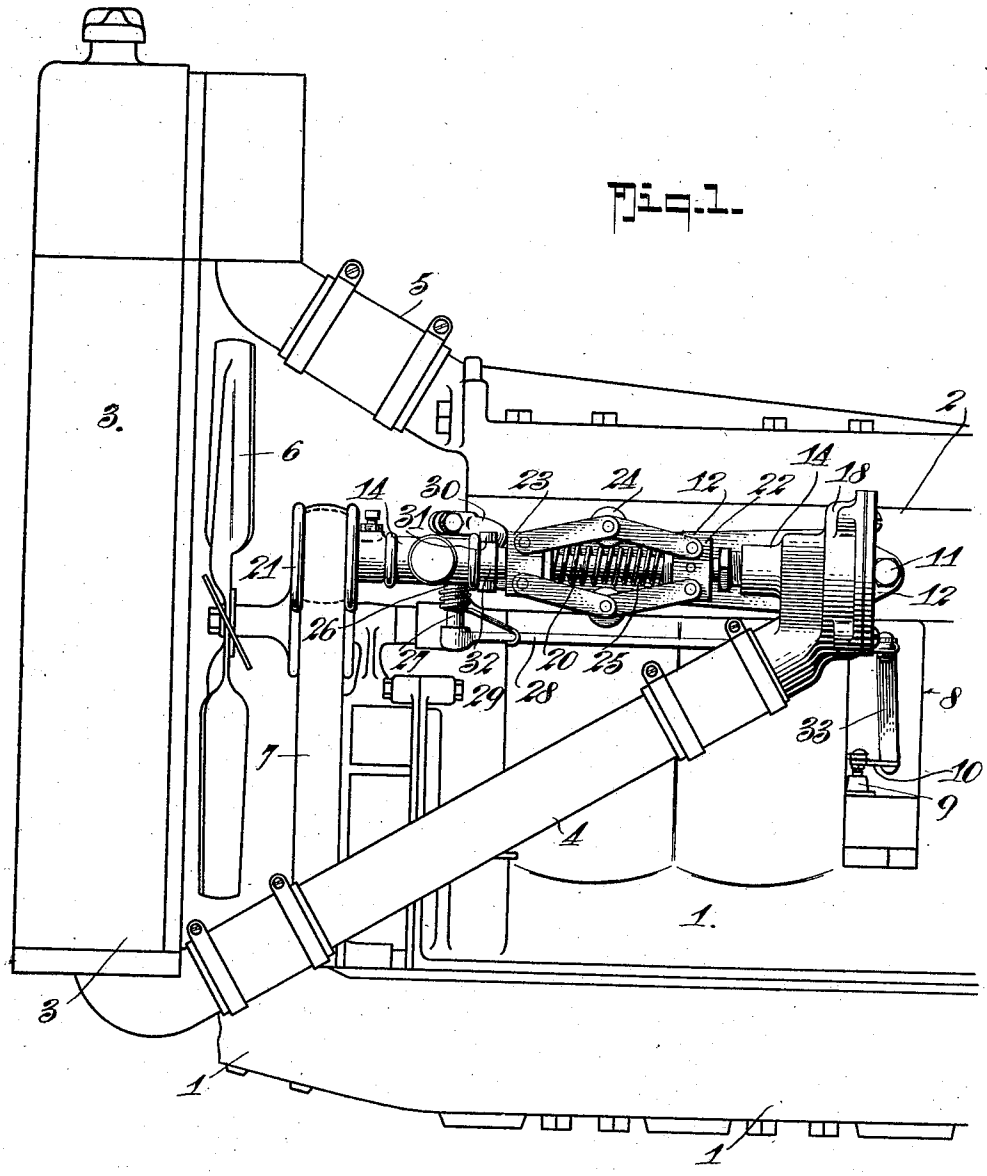
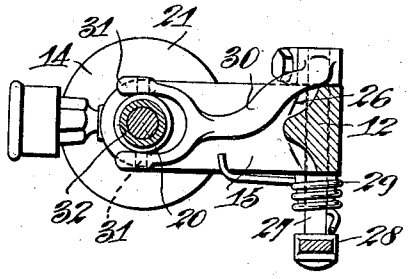


Fig. 2.



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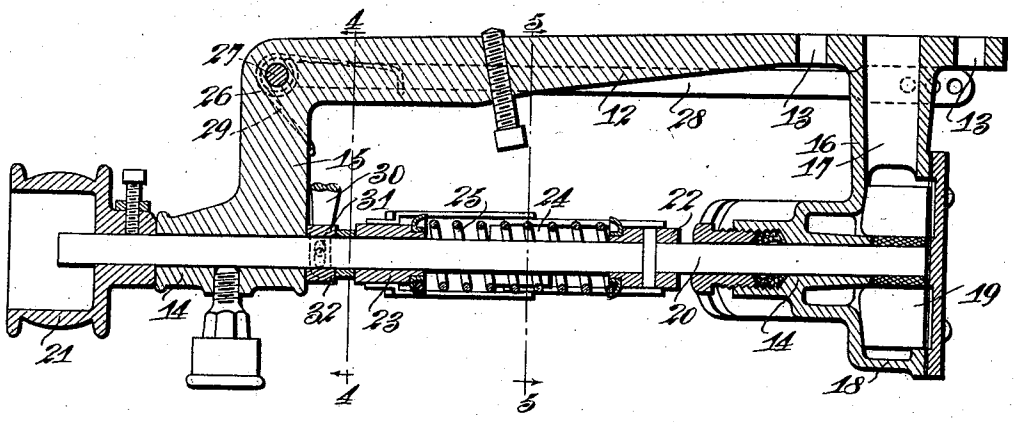


Fig. 2.

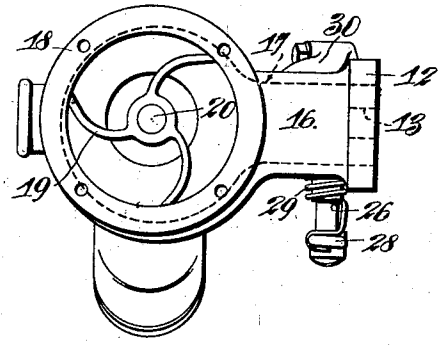


Fig. 3.

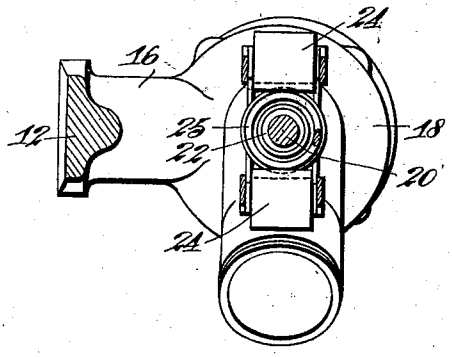


Fig. 5.

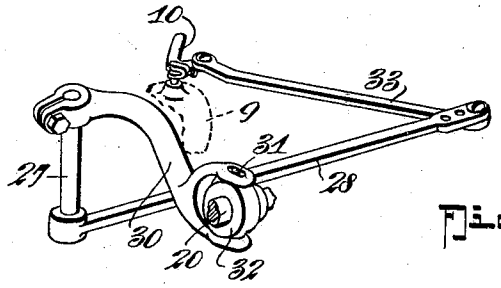


Fig. 6.

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UNITED STATES PATENT OFFICE

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COMBINED WATER-CIRCULATING PUMP AND THROTTLE CONTROL

Application filed April 14, 1927. Serial No. 183,805.

The invention primarily has for its object to provide a simple, compact, and economically manufactured combined water circulating pump and throttle control for model T Ford motors mountable as a simple attachment and without modification or addition of special parts over those comprising the standard motor equipment.

In its more detailed nature the invention resides in the provision of a simple attachment of the character stated comprising a bracket, bearing hangers projecting from the bracket, one being hollow to communicate with the block inlet of the water jacketing, said bracket being mountable by use of the usual screws that hold the water flow head against the said engine block inlet, bearings carried by the hangers, a pump housing carried by the hollow standard, a shaft rotatable in the bearings, a pulley on one shaft end adapted to be rotated by engagement with the engine fan belt, a pump impeller on the other shaft end and in the housing, a governor device on the shaft, and crank and arm devices carried by the bracket and connected with the carbureter throttle valve and adapted to be actuated by the governor controlled by the speed of the engine to actuate the throttle valve.

With the above and other objects in view that will hereinafter appear, the invention further resides in the novel details of construction, combination and arrangement of parts, all of which will be first fully described, then be particularly pointed out in the appended claim, reference being had to the accompanying drawings, in which:—

Figure 1 is a side elevation illustrating the application of the invention.

Figure 2 is a central longitudinal section of the device taken horizontally.

Figure 3 is an end view of the device looking at the pump impeller, the housing cap being removed.

Figure 4 is a cross section taken on the line 4—4 on Figure 2.

Figure 5 is a cross section taken on the line 5—5 on Figure 4.

Figure 6 is a diagrammatic perspective view illustrating the connection of the operating arm with the carbureter throttle valve.

In the drawings in which like numerals of reference indicate like parts in all of the figures, 1 generally designates the internal combustion engine upon which the invention is mounted as an attachment, 2 the usual water jacketing equipment thereof, and 3 the radiator which, together with the water jacketing and the flow and return connections 4 and 5, form the usual thermo-siphon cooling system.

The usual fan is indicated at 6 and the same is driven in the usual manner by the fan belt 7.

In the illustration a Ford model T motor is illustrated and as the cylinders of this type of motor are cast in spaced pairs, 8 indicates the space between the cylinder pairs which serves a function later to be described. The carbureter is indicated at 9 and 10 indicates the usual throttle control lever or crank.

It is to be understood that our invention is in the nature of an attachment which may be readily and conveniently attached to the engine without reconstruction or change of any of the motor units, it being only necessary to remove the usual water intake head which is secured to the motor side by the usual machine screws 11 and mount our attachment as a substitute for that head, using the same screws.

In the foregoing description all of the elements referred to are common equipment and per se form no part of our invention.

In the practical development of our invention we provide a mounting bracket 12 having holes 13 to receive the securing screws 11 by which the bracket may be screwed upon the motor as above described.

A pair of bearings 14 are provided and are spaced from and carried upon the bracket by the bearing standards 15 and 16, the latter being hollow as at 17 to communicate with the water jacketing of the motor.

The hollow standard 16 is enlarged as at 18 to form a housing for the pump impeller 19 having curved impeller blades and being mounted on one end of a shaft 20 which is rotatable in the bearings 14.

Upon the other end of the shaft 20 and in position for being engaged by the fan belt 7, is mounted a pulley 21 and by this means rotation is imparted to the shaft and the impeller mounted thereon.

A governor is mounted upon the shaft 20 between the bearings 14 and includes a fixed block 22 pin secured to the shaft and a slide block 23, the said blocks being link connected and suitably weighted as at 24 in the usual manner. The usual slide block return and resistance spring is also provided and is indicated at 25.

At the juncture of the standard 15 and the main bracket portion 12 the bracket is provided with a bearing 26 to rockably receive the shaft 27 upon one end of which is secured a crank arm 28. It will be observed by reference to Figures 1 and 2 of the drawings that the crank arm is of a length for extending back to a point beside the motor block space 7 for a purpose later to be described, and a coil spring 29 is coiled about the bearing end and has one end thereof in engagement with the bracket and the other end thereof in engagement with the arm to hold the arm to a normal position also hereinafter described in detail.

Upon the other end of the shaft 27 is mounted a bifurcated arm 30 connected as at 31 with a sleeve 32 slidable on the shaft 20 and normally held against the slide block 23 by the said coil spring 29.

In practice the free end of the arm 28 is link connected as at 33 to the throttle valve controlling crank 10 so that when the arm 28 is rocked it will impart its movement to the said crank 10 and effect adjustment of the throttle valve.

In operation, the shaft 20 being rotated by the pulley and belt connections 21 and 7, will cause rotation of the impeller 19 and cause forced circulation of the cooling water through the water jacketing, the radiator and the flow and return connections 2, 3, 4 and 5 respectively.

The motor is, of course, started in the usual manner by the use of the ignition switch and starting crank, the sleeve 32 and coil spring equipment 29 rendering possible this independent movement. When the motor is in operation the movement of the throttle valve to control passage of mixture to the motor is automatically controlled by the governor mounted on the shaft 20. As the shaft rotates the weights of the governor are thrown outwardly by centrifugal force contracting the slide block 23 and causing the bifurcated arm 30 to rock and in turn set up a rocking motion of the crank arm 28, which rocking motion is transmitted through the link connection 33 to the throttle valve crank 10. The link 33 passes through the motor space 8.

In the foregoing description we have disclosed a simple and efficient combined water circulating pump and throttle control device mountable as a compact attachment to the conventional form of motor without the necessity of boring special holes or costly substitution of parts and which efficiently serves its purpose not only of forcefully circulating the cooling water but also in automatically governing the action of the carbureter throttle valve.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the novel details of construction, the manner of use and the advantages of our invention will be readily apparent to those skilled in the art to which it relates.

What we claim is:

A device of the character described comprising a bracket mountable as an attachment upon an internal combustion engine having a carbureter and a throttle valve to control its output and water jacketing and a fan on a shaft driven from said motor, spaced standards projecting from the bracket and supporting bearings, a pump shaft rotatable in the bearings, a pulley on one end of the pump shaft and adapted to be rotatably associated with the fan shaft of the motor, a pump on the other end of the pump shaft to force water circulation through the jacketing, a governor on said pump shaft between the bearings comprising a fixed block secured on said pump shaft, a slide block on said pump shaft, weighted links connecting the blocks, a spring tending to separate the blocks, a rocker shaft rockably mounted on said bracket, a rocker arm on one end of said rocker shaft and link-connected to the carbureter throttle valve, and a crank on the other end of said rocker shaft and connected to move with the slide block of the governor for the purposes specified.

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