J. G. VINCENT.

PUMP FOR MOTOR VEHICLES.

APPLICATION FILED JAN. 11, 1919.

1,386,816.

Patented Aug. 9, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

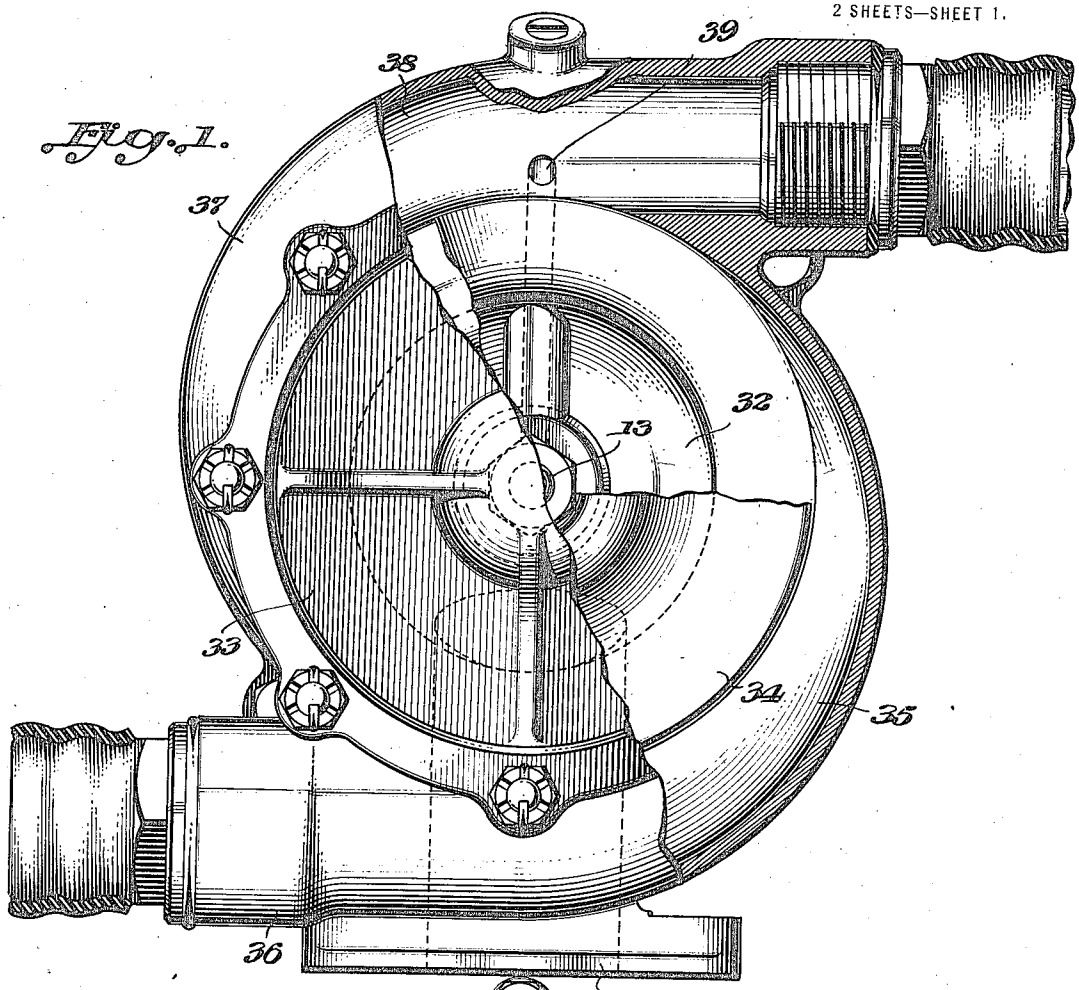
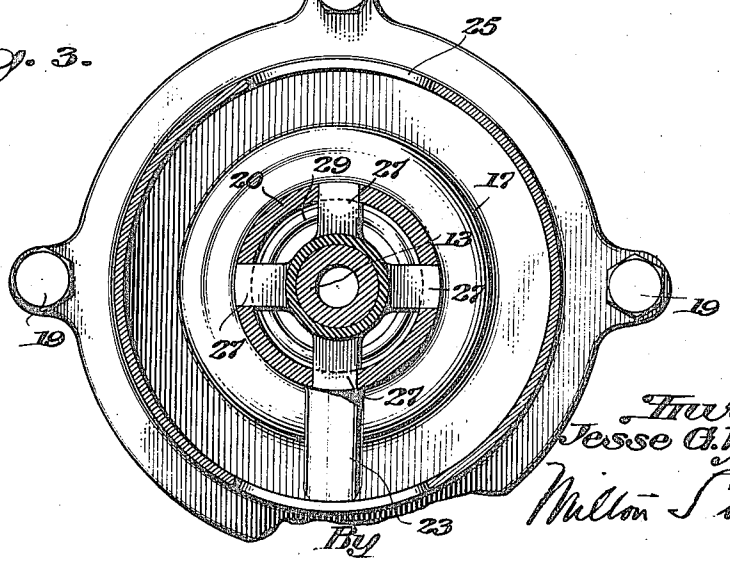


Fig. 3.



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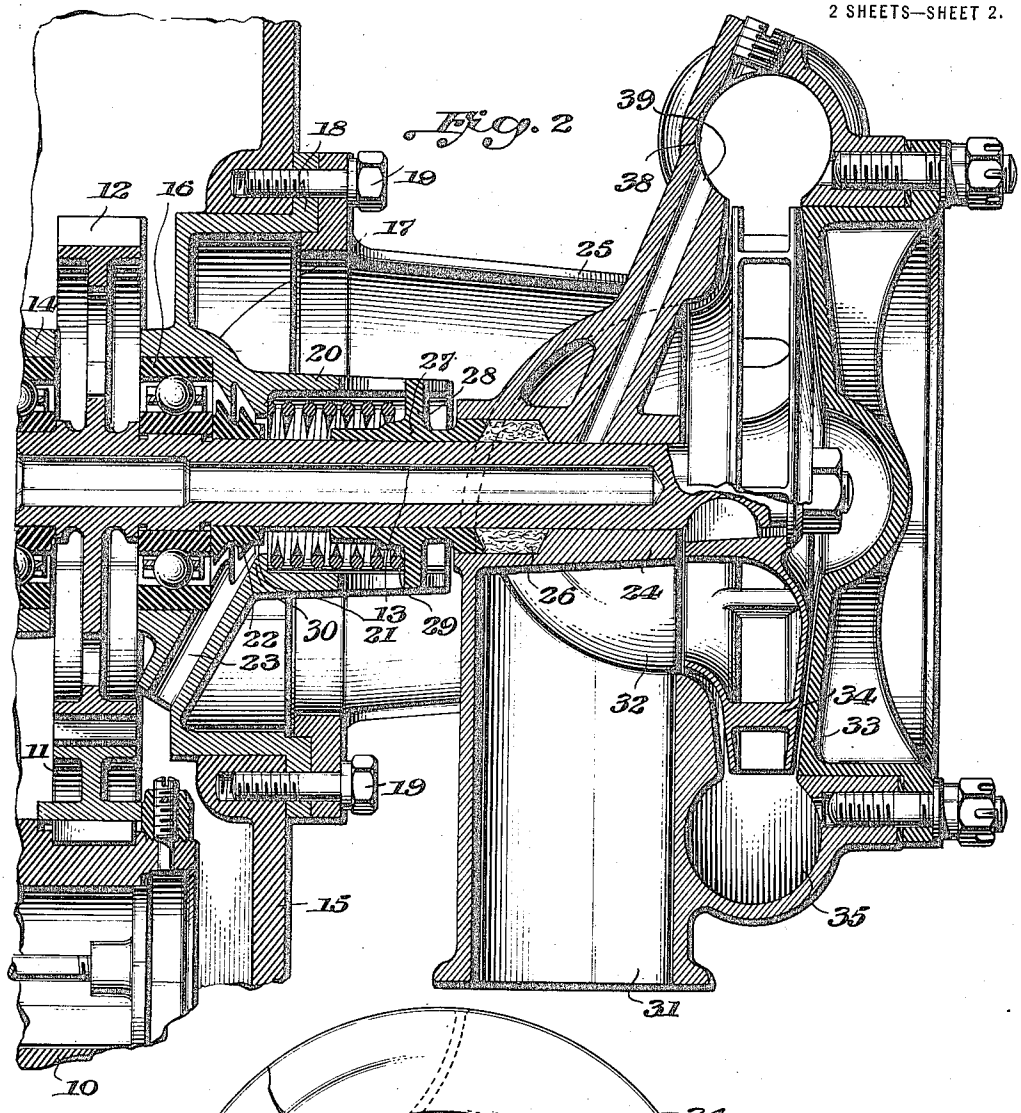


Fig. 2.

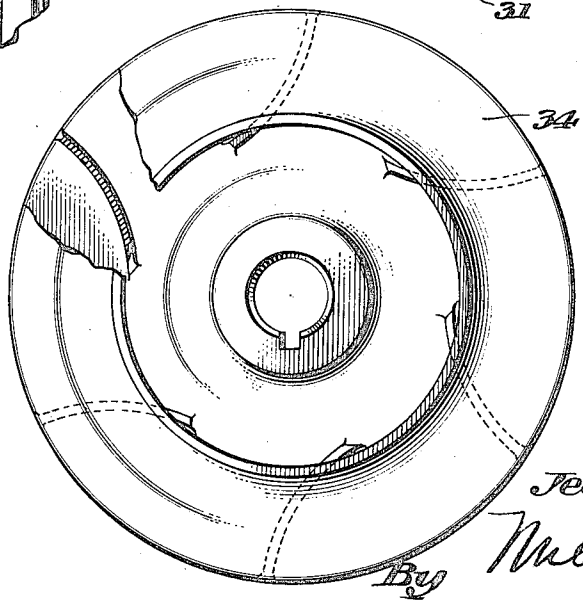


Fig. 4.

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UNITED STATES PATENT OFFICE.

JESSE G. VINCENT, OF DETROIT, MICHIGAN, ASSIGNOR TO PACKARD MOTOR CAR COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

PUMP FOR MOTOR-VEHICLES.

1,386,816. Specification of Letters Patent. Patented Aug. 9, 1921.

Application filed January 11, 1919. Serial No. 270,660.

To all whom it may concern:

Be it known that I, JESSE G. VINCENT, a citizen of the United States, and resident of Detroit, Wayne county, State of Michigan, have invented certain new and useful improvements in Pumps for Motor-Vehicles, of which the following is a specification.

This invention relates to motor vehicles, and particularly to centrifugal pumps adapted to form part of the water circulation system of a hydrocarbon motor for such vehicles.

One object of the invention is a pump adapted to deliver a supply of water through two outlets and particularly designed for delivering equal quantities of water from the radiator to two lines of cylinders such as are employed in a V-type motor.

With the above object and others in view, the invention is embodied in preferable form in the construction and arrangement hereinafter described and illustrated in the accompanying drawings.

In these drawings Figure 1 is an end view elevation, partly in section, of the pump;

Fig. 2 is a vertical section;

Fig. 3 is a vertical longitudinal section through the pump and its driving mechanism; and

Fig. 4 is an end elevation partly broken away of the pump impeller chamber.

The essential features of the invention are illustrated in connection with a special form of bearing and fluid excluding construction mounted between the driving mechanism and the pump but such arrangement forms no part of the present invention.

Referring to the drawings, 10 indicates a main shaft carrying a gear 11 adapted to drive a gear 12 fixed on a pump driving shaft 13. The shaft at one end is mounted in bearings 14 carried in a suitable housing in the casing 15 of the motor or other suitable driving element, the casing containing also the driving mechanism above described. The shaft also rotates in additional ball bearings 16 mounted in a fixed hub 17 secured to the casing 15 by means of a flange 18 and bolts 19. This hub has a laterally extended shell or sleeve 20 within which is mounted part of a construction preventing the escape of liquid from either the driving element or the pump. The member 20 is provided on its interior surface with annular projections 21 adapted to co-act with similar projections on a ring 22 carried by the shaft and which formations provide deflecting means for any oil that may pass from the roller bearings 16 into the casing extension 20. A passageway 23 leads from an opening opposite these oil diverting projections back into the motor casing. The other end of the shaft 13 is mounted in plain bearings 24 carried by the wall of a water receiving chamber of the pump which is mounted in a pump casing 25. In these plain bearings is adapted to be mounted an annular packing 26 of compressible material and which is adapted to prevent the passage of water from the pump along the shaft into the roller bearings at the other end. This packing is adapted to be compressed so as to maintain it in tight contact with the shaft by means of a sliding sleeve 27 which surrounds the shaft loosely but is held against rotation therewith by means of the engagement of radial projections 28 thereof with recesses in the fixed hub extension 20. A spring 29 bears at one end against the sliding sleeve so as to press the same against the compressible packing and the other end of the spring presses against the shoulder 30 formed along the hub extension 20.

Referring to the construction of the pump proper, 31 is an inlet pipe leading from any suitable source of supply and preferably from a radiator when the pump is used as part of the water circulation system of an internal combustion motor and which pipe as is usual in centrifugal pumps enters the water receiving chamber 32 axially of the pump. 33 indicates the impeller casing and 34 the impeller mounted therein. Leading from the impeller chamber is a spiral section 35 which terminates in a tangential delivery section 36 the outlet of which leads to any desired point, but in a water circulation system of a motor it is designed to lead to a conduit communicating with the jackets of one line of cylinders. Diametrically opposite the spiral section 35 and flared outwardly in an increasing cross section is a similar spiral section 37 which terminates in a tangential delivery section 38 projecting from the pump chamber in a direction diametrically opposite to that of the section 36 and which delivery section is preferably designed to deliver part of the water from

the pump chamber to a conduit leading to the water jackets of the second line of cylinders of a hydrocarbon motor.

Connecting one of the tangential sections such as 38 with the space around the shaft 13, is a channel 39 which is adapted to lead a small quantity of water back from the delivery pipe to the casing for the purpose of providing a lubricant for the latter in the plain bearings for the outer end of the shaft. The suction created by the impeller within the central pump chamber serves to draw the water from the outer pipe down through the channel against the shaft and back into the pump chamber.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:—

1. A centrifugal pump adapted for the cooling system of a V-type motor having a single inlet pipe and having a central chamber to which the water is delivered axially from said inlet pipe, a single impeller element in said pump and two diametrically opposite delivery pipes leading from the chamber of said impeller element.

2. A centrifugal pump for the cooling system of V-type motors, having a central receiving chamber, a single impeller chamber communicating with the receiving chamber, an impeller element mounted in said latter chamber, an inlet pipe extending radially from said chamber, and two delivery pipes extending tangentially from said impeller chamber and having spiral sections diminishing in cross-section as they approach the circumference of the impeller element.

In testimony whereof I affix my signature.

JESSE G. VINCENT.