Nov. 13, 1923. 1,474,260

A. J. HEIN

PUMP

Filed April 18, 1922

Fig. 1.

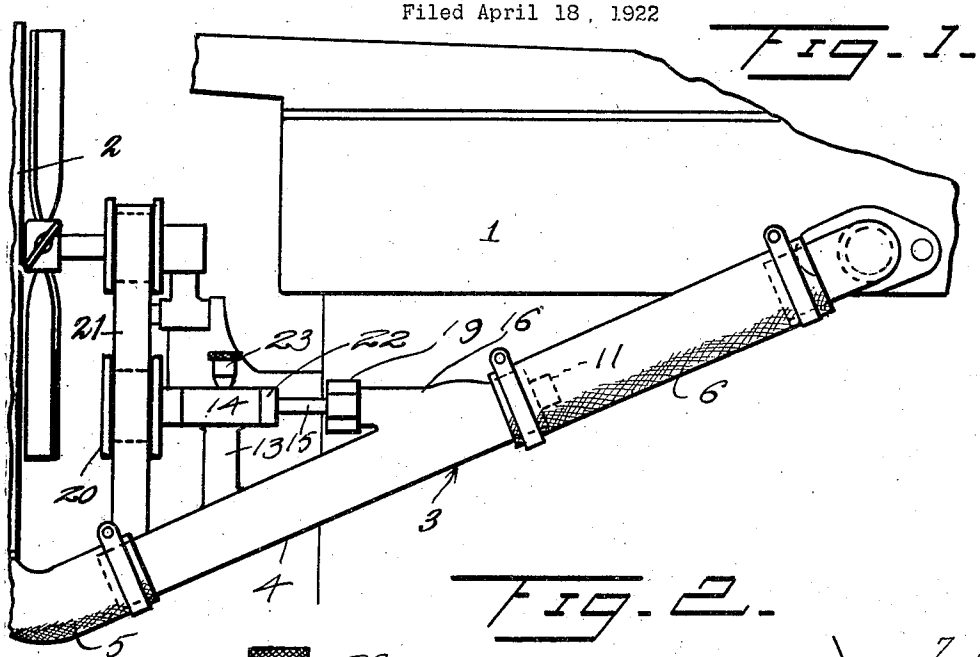


Fig. 2.

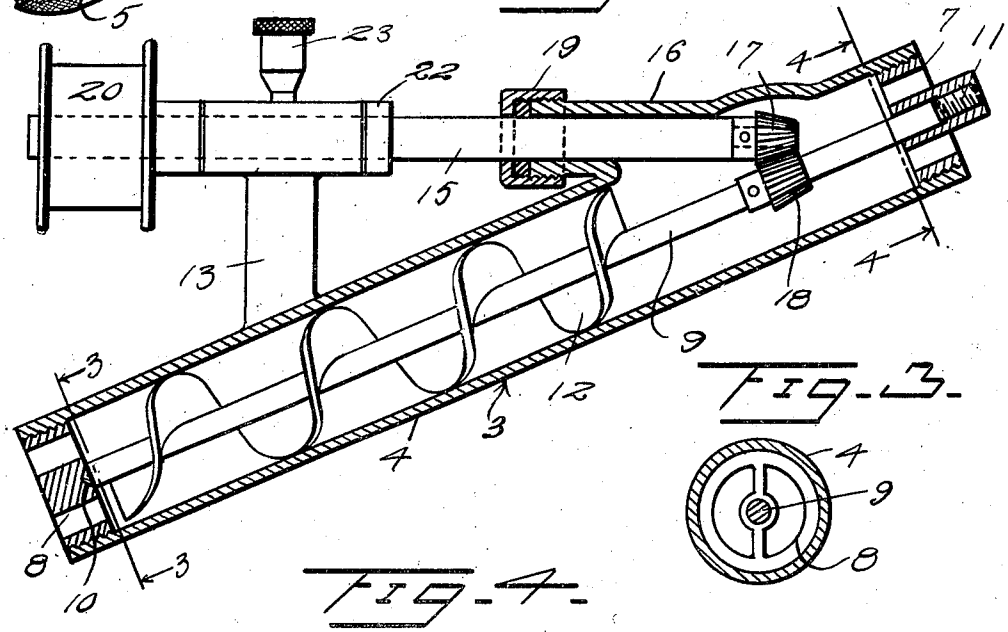
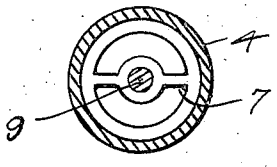


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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PUMP.

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To all whom it may concern:

Be it known that I, ADOLPH J. HEIN, a citizen of the United States, residing at Sioux City, in the county of Woodbury and State of Iowa, have invented certain new and useful Improvements in Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in pumps especially adapted for application to a well known type of internal combustion engine now used in automobiles for circulating the water in the cooling or water jacket thereof, and has for its primary object the provision of a device of the above stated character which may be easily and quickly applied without changing the parts or construction of the engine and when applied will prevent the engine from overheating in hot weather and prevent freezing of the water in cold weather during the operation of the engine.

Another object of this invention is the provision of a pump of the above stated character which will be simple, durable and efficient, and which may be manufactured and sold at a comparatively low cost.

With these and other objects in view, as will become more apparent as the description proceeds, the invention consists in certain novel features of construction, combination and arrangement of parts as will be herein after more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which:

Figure 1 is a fragmentary side elevation, illustrating an engine and a radiator therefor with my invention applied thereto,

Figure 2 is a longitudinal sectional view, illustrating the pump,

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

Figure 4 is a similar view taken on the line 4—4 of Figure 2.

Referring in detail to the drawing, the numeral 1 indicates an internal combustion engine now used in an automobile commercially known as the Ford, and is equipped with a radiator 2 for the purpose of cooling the water which is employed for cooling the engine by circulating through the water jacket of the latter. By actual practice it has been found that the water during hot weather does not cool sufficiently owing to the fact that no circulating medium is provided. The water circulates from the radiator to the engine and from the latter back to the radiator by a thermosyphon system and in cold weather such a system readily freezes, owing to the cold air being drawn through the radiator rapidly and the extremely slow circulation of the water, while in the summertime the water does not circulate fast enough to become cool. To overcome the above stated disadvantages, I have provided a water circulating pump 3 consisting of a cylinder 4 which has one end connected to the bottom of the radiator by a hose 5 while its other end is connected to the water jacket of the engine by a hose 6. The ends of the cylinder are internally screw threaded to receive spiders 7 and 8 to rotatably support a pump shaft 9. The spider 8 is provided with a journal 10 to receive the tapered lower end of the shaft 9, while the spider 7 is provided with an adjustable journal 11 whereby the end play may be taken out of the shaft if desired. A spiral 12 is formed on the shaft and operates in the lower portion of the cylinder for the purpose of forcing the water from the lower end of the cylinder towards the upper end and into the water jacket of the engine. A standard 13 is formed on the cylinder and carries a horizontal bearing or journal 14 in which is journaled a shaft 15. The shaft 15 enters the cylinder 4 by way of a neck 16 and carries a bevel gear 17 meshing with a bevel gear 18 secured to the shaft 9, whereby the rotation of the shaft 15 will cause the pump shaft 9 to rotate for the purpose of forcing the water from the radiator into the jacket of the engine. A stuffing box or gland 19 is provided on the neck 16 for the purpose of preventing water escaping from the neck or the cylinder about the shaft 15. The other end of the shaft 15 carries a pulley 20 over which the fan belt 21 of the engine is trained so that the rotation of the fan belt from the crank shaft of the engine will cause a rotation of the shaft 15 and the rotation of the latter rotates the pump shaft. An adjusting nut 22 is located on the shaft 15 adjacent the journal or bearing 14 for the purpose of taking up the end play of the shaft 15 when desired. A lubricating

cup 23 is carried by the journal or bearing 14 to furnish the same with lubricant.

From the foregoing description taken in connection with the accompanying drawing, it will be noted that a device has been provided which can be easily and quickly applied to the cooling system of an engine without altering the construction thereof and which will efficiently operate under all conditions for the purpose of effectively circulating the water through the water jacket of the engine and back to the radiator for cooling. Also it is to be noted that the water may pass through the cylinder 4 with the least amount of obstruction owing to the construction of the supports or bearings for the ends of the pump shaft 9.

While I have shown and described the preferred embodiment of my invention, it will be understood that minor changes in construction, combination and arrangement of parts may be made without departing from the spirit and scope of the invention as claimed.

Having thus described my invention, what I claim is:

1. A pump comprising a cylinder adapted for connection in the water circulating system of an engine, pumping means within the cylinder, a shaft, means to journal said shaft on the cylinder above and at an acute angle to the major portion of the same and in angular relation to the axis thereof, means whereby said shaft may be disposed in driving relation to means driven by the engine, and a driving connection between said shaft and the pumping means.

2. A pump comprising a cylinder adapted for connection in the water circulating system of an engine, pumping means in said cylinder, a shaft angularly disposed with respect to the axis of the cylinder, a driving connection between said shaft and said pumping means, a neck extending from the cylinder and journaling said shaft, a power-receiving element on said shaft for engagement with a part driven by the engine, and a bearing for said shaft extending from the cylinder intermediate said neck and power-receiving member.

3. A pump comprising a cylinder having connection with a radiator and water jacket of an engine, a spiral element journaled in said cylinder, a standard carried by said cylinder, a shaft journaled in said standard, means connecting said shaft to the spiral element, and a pulley secured to the shaft and having the fan belt of the engine trained thereover.

4. A pump comprising a cylinder, a shaft journaled in said cylinder, a spiral formed on said shaft, a neck formed on said cylinder, a standard carried by said cylinder, a shaft journaled in the standard and extending into the neck, means connecting the first and second named shafts, a pulley secured to the second shaft and adapted to have the fan belt of an engine trained thereover.

5. A device of the character set forth comprising a cylinder, spiders located in the ends of the cylinder, a pump shaft journaled in said spiders and capable of adjustment in one of said spiders to take up the end play therein, a spiral carried by said shaft, and means for rotating shaft by an engine.

In testimony whereof I affix my signature in presence of two witnesses.

ADOLPH J. HEIN.

Witnesses:
W. B. FOSSBURG,
J. V. GIBBONS.