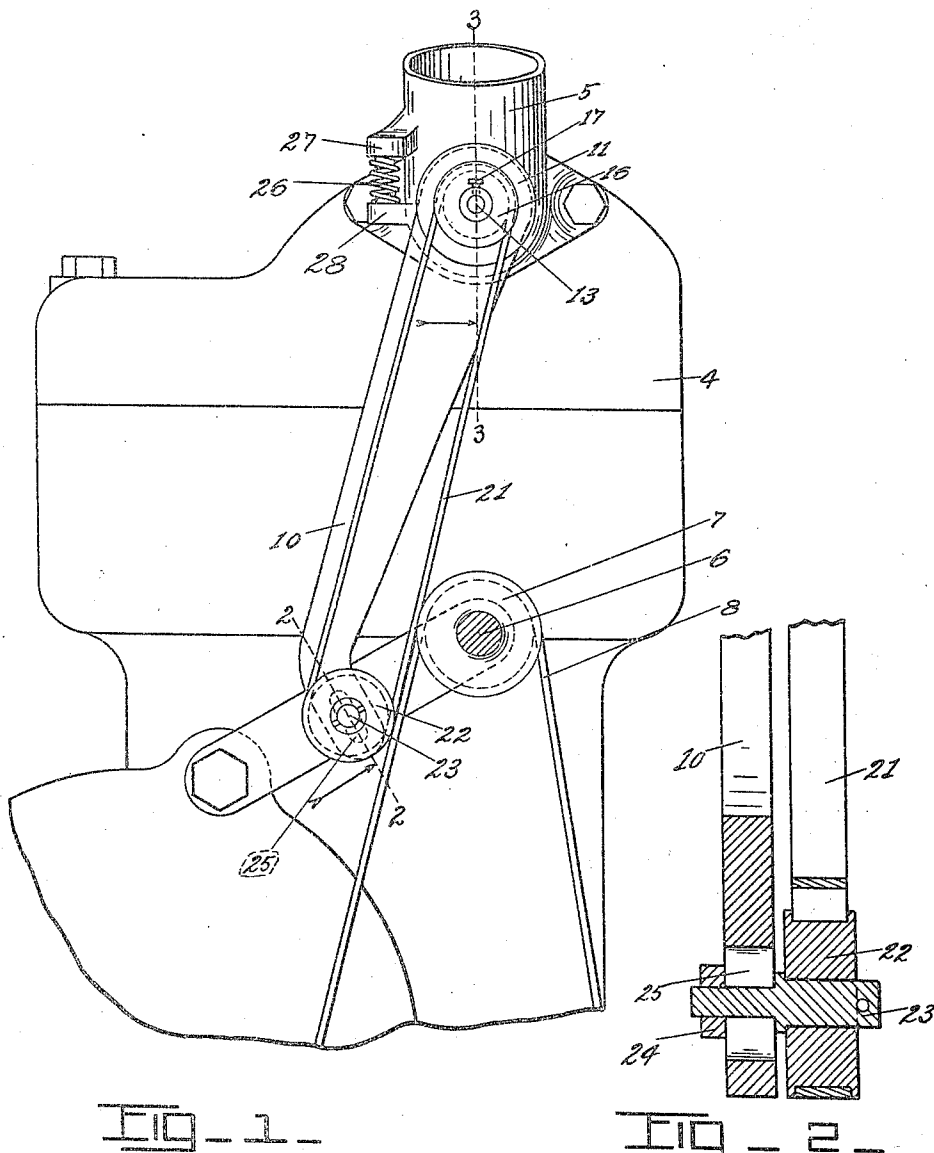


K. S. KNUTSON, DEC'D.
C. KNUTSON, ADMINISTRATOR.
WATER CIRCULATING DEVICE FOR GAS ENGINES.
APPLICATION FILED OCT. 26, 1920.

1,402,869.

Patented Jan. 10, 1922

2 SHEETS—SHEET 1.



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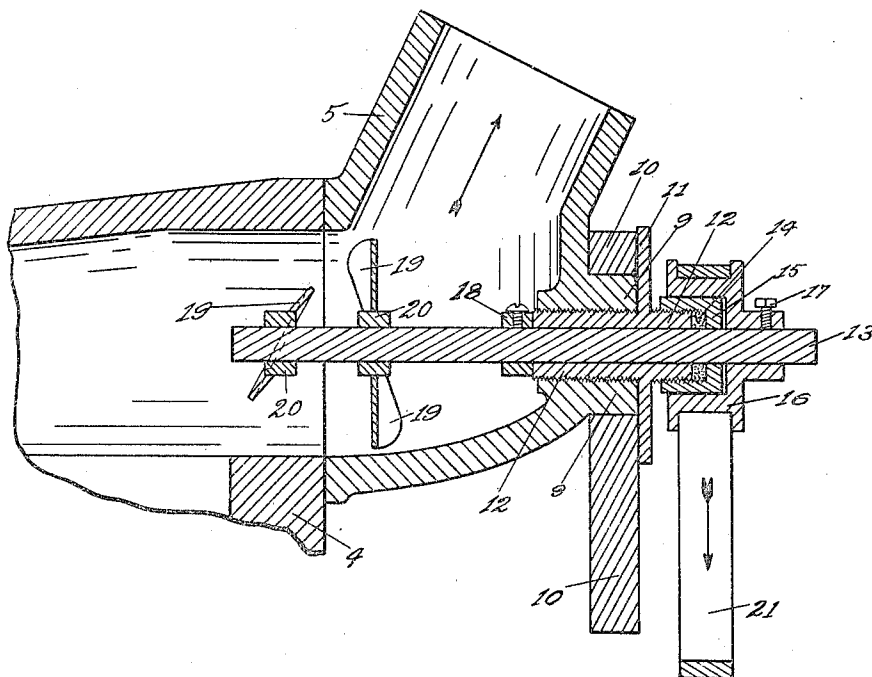


FIG. 3.

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UNITED STATES PATENT OFFICE.

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WATER-CIRCULATING DEVICE FOR GAS ENGINES.

1,402,869.

Specification of Letters Patent. Patented Jan. 10, 1922.

Application filed October 26, 1920. Serial No. 419,716.

To all whom it may concern:

Be it known that I, KNUTE S. KNUTSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Water-Circulating Devices for Gas Engines, of which the following is a specification.

This invention relates to improvements for gas engines and the main object is to provide a simple, efficient and practical device for mechanically circulating the water in the cooling system of the engine. Other objects will be disclosed in the course of the following specification and in the accompanying drawings, in which:

Fig. 1 is a front elevation of a gas engine equipped with my improved circulating mechanism.

Fig. 2 is an enlarged detail sectional view on the line 2—2 in Fig. 1.

Fig. 3 is an enlarged detail sectional view on the line 3—3 in Fig. 1.

Referring to the drawing by reference numerals 4 designates a well known type of gas engine having an elbow 5 up through which the water from the cooling jackets passes to the radiator (not shown). The radiator is cooled by a fan (also not shown) on a fan shaft 6 which is provided with a pulley 7 adapted to be driven by a fan belt 8.

The elbow 5 is provided with an integral extension 9 on which rotatably swings a lever arm 10. Said lever arm is retained in place by the wide flange 11 of a nipple 12 which is securely threaded concentrically into the extension 9. A shaft 13 is journaled to rotate concentrically in the nipple 12, a water-tight joint being effected by means of suitable packing 14 being held in place by a nut 15 screwed onto the outer end of the nipple 12. A pulley 16 is secured by a set screw 17 to the shaft 13, and which together with a collar 18 prevents the shaft 13 from moving longitudinally in its bearing. The inner end of the shaft 13 is provided with propellers 19. These propellers or propeller blades may all be secured to one collar if so desired, but it is found preferable to have a few on each of two collars 20 and placed in spaced and staggered relation, as shown in Fig. 3, as this arrangement will allow the water to circulate more freely

by convection when the engine is not running.

The pulley 16 is connected by a belt 21 to a second pulley 22 which is rotatably mounted on a spindle 23. The spindle 23 is adjustably secured by a nut 24 in a slot 25 in the lower end of the lever arm 10. An expanding coil spring 26 is positioned between a stud 27 on the elbow 5 and a projection 28 of the lever arm 10, and has for its purpose to push the pulley 22 against the fan belt 8. This not only keeps the fan belt 8 tight but also creates the friction which is necessary for causing the fan belt to actuate the belt 21.

With the device constructed and attached as above set forth it is obvious that when the engine is running the water in the cooling system will be thoroughly and efficiently circulated by means of the propeller fans 19, resulting in a faster cooling of the engine and a higher degree of efficiency therefrom.

It is understood that suitable modifications may be made in the form and structure of this device if such modifications come within the scope and spirit of the appended claims.

Having now therefore fully shown and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. A water circulating device for gas engines consisting of a coupling adapted to be inserted between the engine and the radiator thereof, a bearing member integral with and extending horizontally out from said coupling, a shaft journaled to rotate in said bearing member, propellers on the inner end and a pulley on the outer end of the shaft, a lever arm trunnioned with its upper end on said bearing member so as to swing concentrically with the shaft, a pulley mounted on the lower end of said lever arm, a belt passing over said pulleys, and spring means for pressing said belt against the fan belt of the engine.

2. A water circulating device for gas engines consisting of a shaft journaled in the engine and extending with its inner end into a water passageway of the engine, said shaft end having propellers thereon, a pulley mounted on the outer end of the shaft, a lever arm mounted to swing on a center cor-

- responding to the center of said pulley, a second pulley mounted on the swinging end of said lever arm, a belt passing over said pulleys, an integral stud extending out from the lever arm, a complementary stud fixed on the engine above the first mentioned stud, and a compression spring positioned between the stud for holding them in yieldingly spread position.
- 10 3. A water circulation device for gas engines consisting of a coupling adapted to be inserted between the engine and the radiator thereof, a bearing member integral with and extending out from said coupling, a nipple threaded into said coupling, a shaft jour- 15 naled in the nipple, a propeller on the inner end and a pulley on the outer end of the shaft; a lever arm trunnioned with its upper end on the bearing member so as to swing concentrically with the shaft, an integral 20 flange on the nipple adapted to retain the lever arm on the bearing member, a second pulley on the lower end of the lever arm, a belt passing over the pulleys, and means for yieldingly pressing said belt against the fan 25 belt of the engine.
- In testimony whereof I affix my signature.
KNUTE S. KNUTSON.