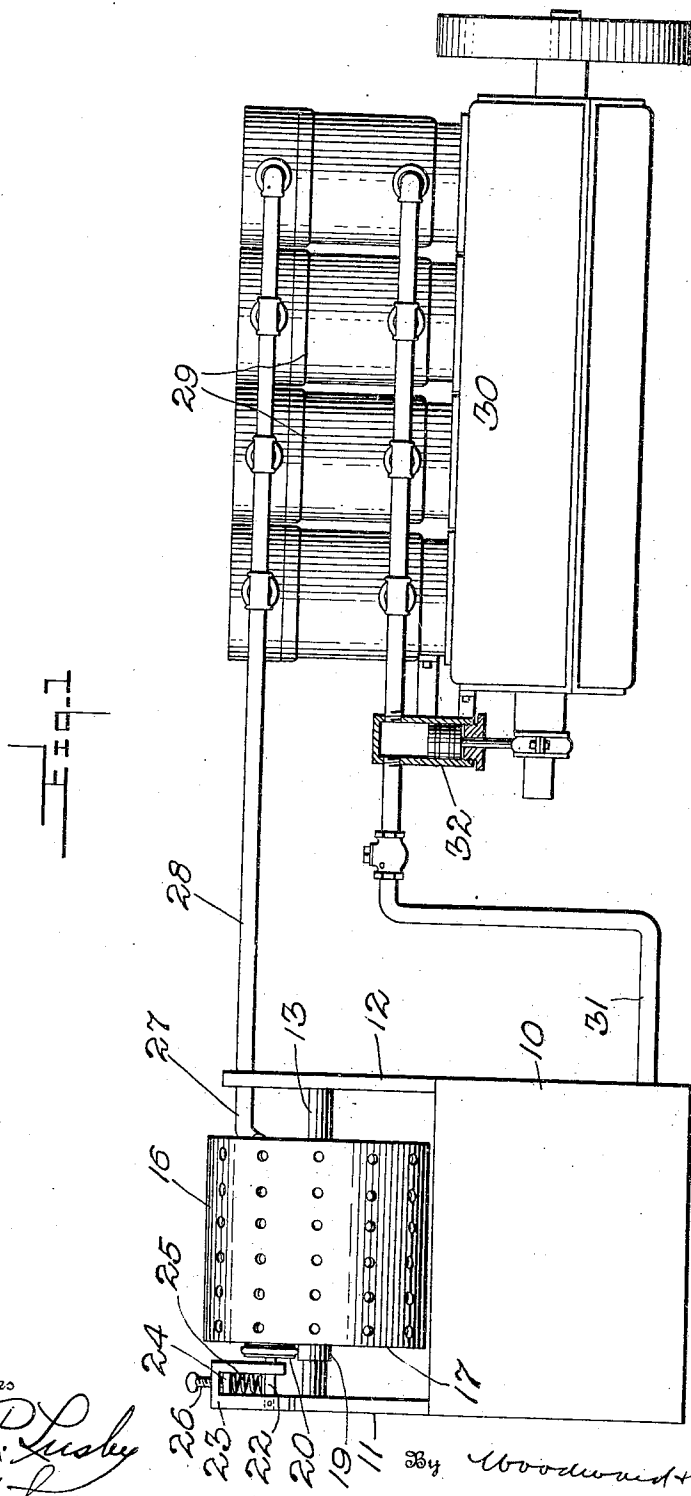


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COOLING SYSTEM.
APPLICATION FILED MAR. 6, 1909.

Patented Nov. 2, 1909.
3 SHEETS—SHEET 1.



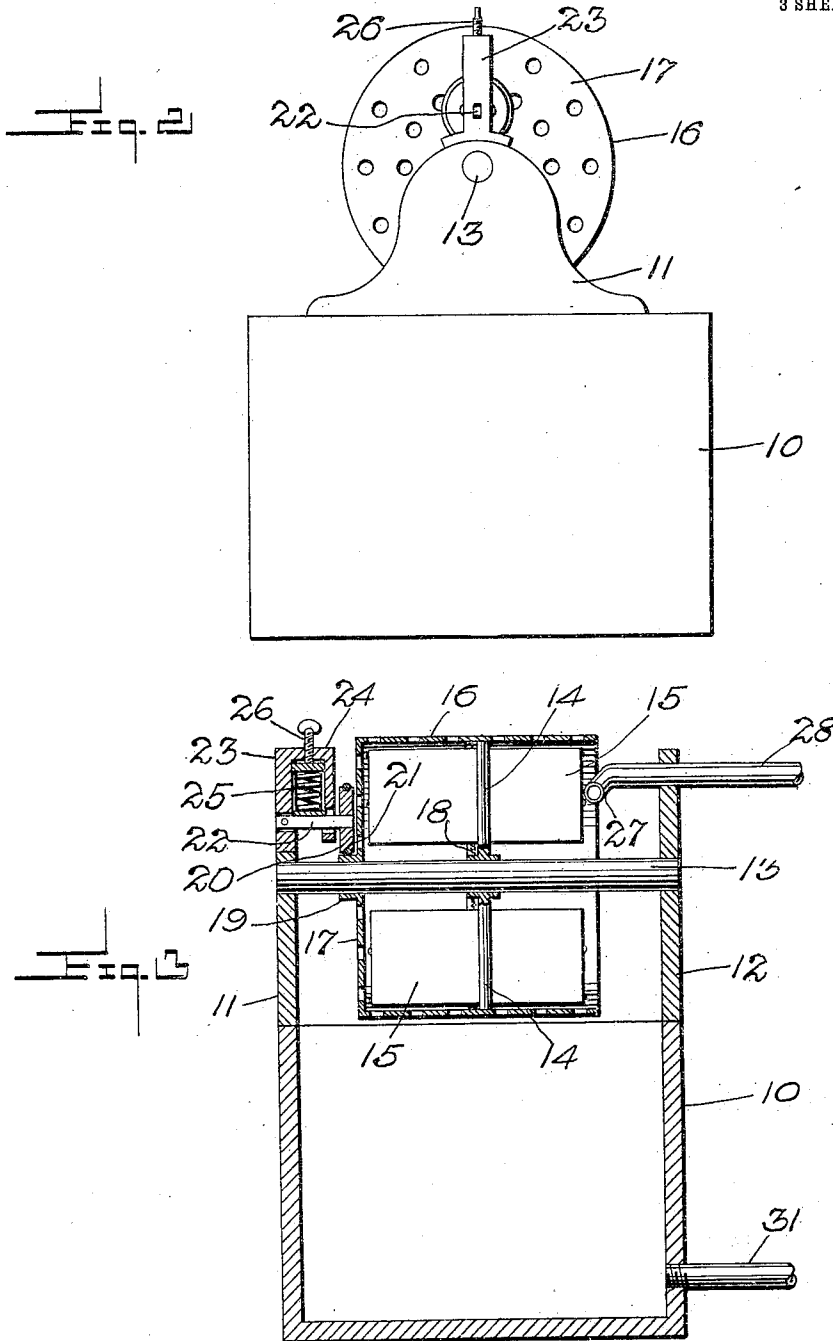
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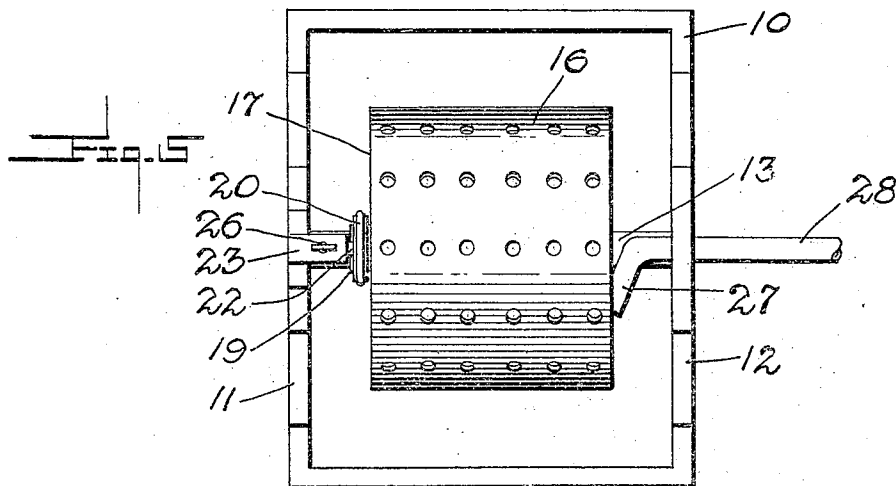
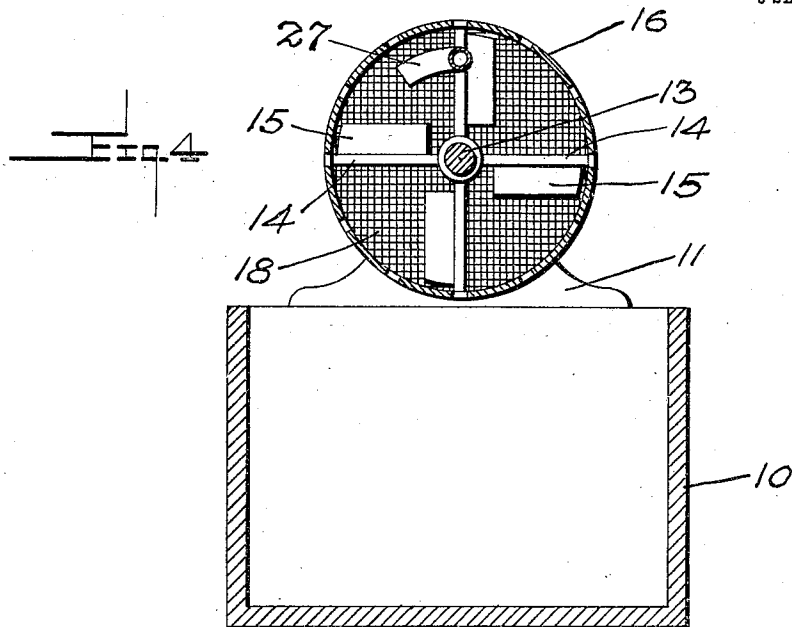
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UNITED STATES PATENT OFFICE.

LAWRENCE L. BOGUE, OF EAST ORWELL, OHIO.

COOLING SYSTEM.

938,814.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed March 6, 1909. Serial No. 481,625.

To all whom it may concern:

Be it known that I, LAWRENCE L. BOGUE, a citizen of the United States, residing at East Orwell, in the county of Ashtabula and State of Ohio, have invented certain new and useful Improvements in Cooling Systems, of which the following is a specification.

This invention relates to internal combustion engines and refers particularly to a cooling system employed in connection with the same.

An object of this invention is the provision of a novel cooling system which is adapted to cool the water used in the same more rapidly than systems heretofore employed.

Another object of this invention is the provision of a device for cooling water which may be applied to systems of common formation and one which may be conveniently carried about in vehicles and the like where it is to be employed.

A further object of this invention is the provision of an attachment to a cooling system of this nature which is of simple construction thereby comprising but few parts and producing a device which is strong, durable and reliable so as to form a device which is practical and efficient.

The invention has for a still further object the provision of a device of this nature which is of simple and convenient construction so that the same may be easily and economically manufactured.

Other objects and advantages will be apparent from the following description and it will be understood that changes in the specific structure shown and described may be made within the scope of the claims without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a side elevation of an engine having the cooling system applied thereto, Fig. 2 is a detailed end elevation of the attachment, Fig. 3 is a vertical longitudinal section through the attachment, Fig. 4 is a transverse section through the same, Fig. 5 is a top plan view of the device.

Referring to the drawings, 10 designates a receptacle which may be of any desired formation but which is preferably rectangular as disclosed in the drawings and which

is provided upon the upper end with two brackets 11 and 12 disposed in parallel and support a rotary shaft 13 transversely of the receptacle 10. The shaft 13 is provided with a plurality of radially extended arms 14 which are positioned intermediately thereof and which are provided with a plurality of wings 15 of concave formation for the reception of water impinged thereagainst for the purpose of rotating the shaft 13. Each of the arms 14 is provided with one of the wings 15 which are positioned upon one side of each of the arms 14 to impart rotation to the shaft 13 which is uniform and in one direction. The arms 14 carry upon their outer extremities a drum 16 which is provided with a closed end 17 adjacent the outer bracket 11. The drum 16 and the end 17 are each provided with a plurality of perforations through which water is adapted to pass during the rotation of the drum. A screen 18 which is of circular formation is disposed intermediately of the drum 16 and is adapted to separate the same into two compartments, the arms 14 and wings 15 being positioned in the compartments the wings extending from the open to the closed end of the drum.

For the purpose of inducing a steady rotation of the drum 16 during the operation of the device, the shaft 13 is provided with a sleeve 19 which is secured thereon adjacent the outer face of the end 17 and against which is adapted to engage a friction roller 20. The roller 20 is provided with a peripheral groove 21 in which is positioned a resilient ring which is preferably formed of rubber. The friction roller 20 is loosely mounted upon the end of an arm 22 which is pivotally engaged at its inner extremity to a U-shaped bracket 23, extended upwardly from the bracket 11 in such position as to close the lower extremity of the same. The U-shaped bracket 23 is provided interiorly with vertically disposed grooves in which is mounted a block 24 for slidable engagement therein and which carries a spring 25 which is engaged at its lower extremity upon the upper edge of the arm 22 for the purpose of normally depressing the same under the tension of the spring 25. The block 24 carries upon its upper face a swiveled thumb screw 26 which is passed through the upper end of the bracket 23 in threaded engagement therewith for the purpose of adjusting the block 24. The bracket 12 is upwardly extended

beyond the shaft 13 for the purpose of supporting a nozzle 27 which is formed upon the extremity of a return pipe 28 which is extended from the jackets 29 of an internal combustion engine 30. The nozzle 27 is so positioned upon the bracket 12 as to direct the open end thereof against the wings 15 at an angle inclined to the direction of rotation of the drum 16 in order to impart a motion to the drum 16. The receptacle 10 is provided with a feed pipe 31 which is extended from the lower end thereof to the lower end of the jackets 29 and serves the purpose of conducting the cool water from the tank or receptacle 10 to the jackets 29. For the purpose of effecting a circulation of water through the pipes 28 and 31 a pump 32 of common formation is disposed upon the engine 30 and produces a circulation in the cooling system in the usual manner.

The operation of the device is as follows: When the engine 30 is set in motion the pump 32 is caused to draw water from the receptacle 10 and to force the same into the jackets 29. The water is then forced from the jackets 29 through the pipe 28 to the nozzle 27 where it is directed against the concaved faces of the wings 15 and collected therein when it causes the rotation of the drum 16 by reason of the weight together with the force of impact. It then falls to the bottom of the drum 16 and passes through the perforations formed therein. During the rotation of the drum 16 the water is caused to spread over the inner surface of the drum and to thereby cause the radiation of heat therefrom which has been previously absorbed in the jackets 29. As the water strikes the wings 15 a large amount of the same is deflected and caused to strike against the screen 18 through which it is passed and conveyed to the inner end of the drum 16 against the closed end 17. As the screen 18 breaks the impact from the force of the water the same is caused to drop into the lower end of the drum 16 and to pass through the perforations therein. The water passes from the drum 16 into the receptacle 10 where it is again fed to the engine 30 through the pipe 31. The friction roller 20 is employed for the purpose of preventing the racing of the drum 16 during

the passage of water therethrough and the frictional engagement of the roller 20 with the sleeve 19 is regulated by means of the spring 25 through the medium of the block 24 and thumb screw 26. When the thumb screw 26 is fed downwardly the block 24 is carried therewith and caused to compress the spring 25 thereby increasing the tension of the same upon the upper edge of the arm 22.

It will be understood that if desired, the wings may be extended through only a part of the length of the drum, this being a mechanical change which it is not deemed essential to illustrate.

What is claimed is:—

1. A device of the class described comprising a tank, a shaft mounted across the upper end of said tank, arms radially extended from said shaft intermediately thereof, a perforated drum mounted upon the extremities of said arms, wings carried by said arms at the sides thereof, a screen intermediately disposed in said drum, a perforated end in said drum, a jacketed motor, a pump connected with the motor, a pipe extended from the bottom of said tank to the pump of an engine and a pipe led from the motor jackets to a point within said drum to direct water against said wings.

2. A water cooling device comprising a tank, a drum rotatably disposed above said tank adapted to receive water from an engine jacket, wings disposed in said drum to rotate the same by the action of the water therein, a sleeve carried by said drum at one end thereof, an arm pivotally carried by said tank, a friction roller mounted upon the extremity of said arm for engagement with said sleeve, a bracket extended over said arm, an adjustable sliding block mounted in said bracket and a spring disposed in said bracket beneath said block for engagement with said arm to depress said roller against said sleeve.

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

LAWRENCE L. BOGUE.

Witnesses:

S. E. HALL,
SARAH C. HALL,