C. J. DE LAY.

SPEED REGULATOR FOR AUTOMOBILE FANS.

APPLICATION FILED JAN. 6, 1915.

1,192,995. Patented Aug. 1, 1916.

Fig. 1.

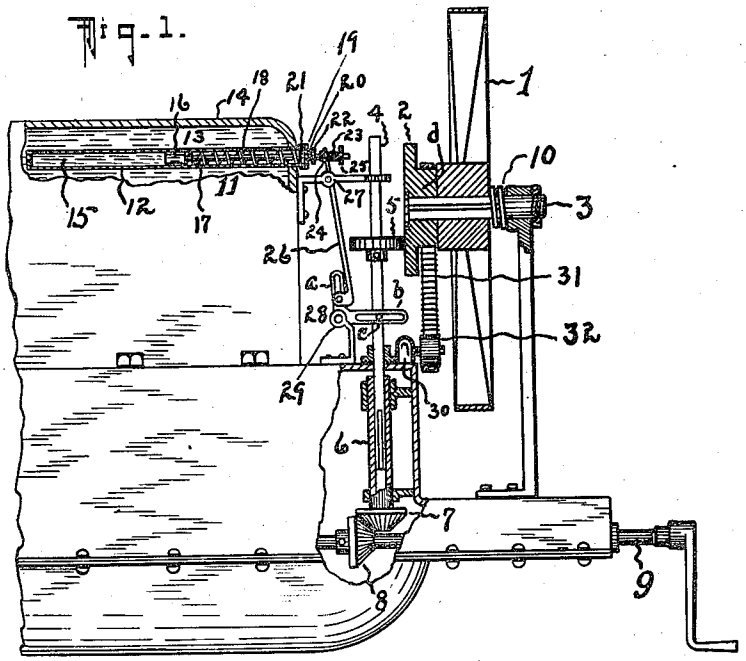


Fig. 2.

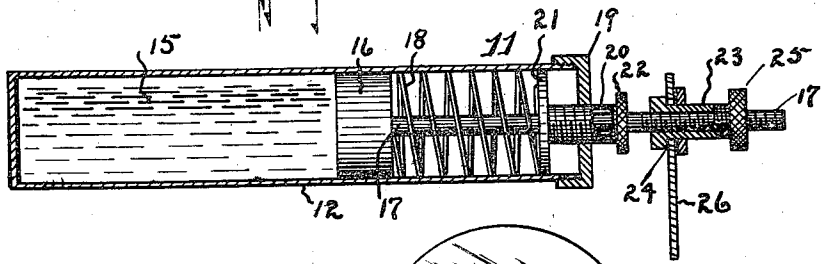
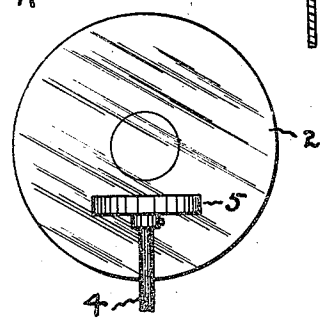


Fig. 3.



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SPEED-REGULATOR FOR AUTOMOBILE-FANS.

1,192,995. Specification of Letters Patent. Patented Aug. 1, 1916.

Application filed January 6, 1915. Serial No. 806.

To all whom it may concern:

Be it known that I, CHARLES J. DE LAY, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Speed-Regulators for Automobile-Fans, of which the following is a specification.

This invention relates to a speed regulator for automobile fans, and has for one of its objects to provide means which will operate automatically to increase the speed of the fan when the contents of the water jacket become unduly heated and to decrease the movement of the fan when the temperature is reduced.

The invention also has reference to automatic means for increasing or decreasing the speed of the oil pump for lubricating the cylinders of the engine.

With these objects in view the invention presents a novel construction, combination and arrangement of parts as described herein and claimed, and as illustrated in the drawing, wherein,—

Figure 1 is a view in side elevation showing a part of an engine and a fan for a radiator with the speed regulator applied, parts being broken away and in section. Fig. 2 is a view in longitudinal section of a tubular receptacle or thermostat, with adjustable devices. Fig. 3 is a view of a disk and friction wheel, to show relative position of parts.

Referring now to the drawing, numeral 1 indicates a fan generally used for cooling the radiator (not shown) of an automobile, and it is obvious that in extreme cold weather it is not generally necessary that the fan should be rotated at a high degree of speed and such speed is often a disadvantage; and in warm weather it is well known that the contents of the water jacket for the engine cylinders often become unduly heated and that a rapid movement for the fan is then required.

To provide a suitable degree of rotation for the fan, certain devices are employed, consisting in part of a disk 2, said disk and fan being keyed and slidable on the horizontal shaft 3. At 4 is indicated an operating shaft disposed at right angles to shaft 3 and which carries a contact wheel 5 frictionally engaging the face of disk 2.

At 6 is indicated a sleeve provided with a bevel pinion 7 which engages the bevel pinion 8 of the engine shaft 9, being slidably mounted and keyed or splined in the sleeve. As thus described the sleeve, together with shaft 4, will rotate at a speed corresponding to that of the engine shaft, and by means of the spring 10 bearing on the hub of the fan, the disk and fan will be adequately pressed inwardly upon shaft 3, the disk being pressed against said wheel so that a rotatable movement of said disk and fan will be imparted by said contact. It is obvious that if wheel 5 engages near the periphery of the disk that the rotation of the fan will be comparatively slow regardless of the degree of rotation of the engine shaft, and if the shaft 4 is moved longitudinally to dispose wheel 5 near the axis of the disk, the rotatable movement of the fan will be increased.

In order that the wheel 5 may have a movement toward the axis of the disk or outwardly of said axis, a thermostat 11 is employed, preferably consisting of the tubular receptacle 12 mounted in the water jacket or chamber 13 of the casing 14 for the engine cylinders where it will be exposed to the temperature of the circulating liquid or contents of said chamber. The tube is partly filled with mercury 15 or other suitable expansible element, and a piston 16 with piston rod 17 works therein, a spring 18 being also employed and disposed in the tube to normally resist said expansion. Threaded in the head 19 of the tube is a sleeve 20 provided with a buffer 21 engaging one end of spring 18, the opposite end of said spring engaging the piston, and by use of the thumb piece 22 the sleeve may be rotated for adjusting the tension of the spring. At 23 is a second sleeve threaded on the piston rod near its outer end, this sleeve being provided with an annular groove 24; and by use of the thumb piece 25 this sleeve may be adjusted longitudinally of the piston rod. At 26 is indicated a lever having its upper end loosely mounted in the groove 24. By expansion of the mercury due to the heat of the water jacket and contents, the piston will be moved outwardly with sufficient force to compress the spring and to swing the lever 26 which is fulcrumed between its ends as indicated at 27, the inner end of said lever being mounted on arm *a* of the rock lever 28 fulcrumed on a suitable bracket 29, the arm *b* of said rock lever being engaged by the pin or lug *c* of the shaft 4.

From the description, operation will be readily understood, it being necessary only to state that, by use of the adjustable devices mentioned, the swinging movements of the lever 26 may be under control for causing a vertical movement of shaft 4 for disposing the contact wheel 5 nearer to or farther from the axis of disk 2, and by means of this control the fan may be rotated at a suitable speed, independent of the speed of the engine shaft, for regulating the degree of the temperature of the contents of the water jacket.

At 30 is indicated an oil pump. The hub of the disk provides a chain sprocket *d*. A chain, indicated at 31 is mounted upon the chain sprocket *d* and upon the chain sprocket 32, the shaft of the latter being adapted to actuate the oil pump, it being understood that any suitable pipe (not shown) connects said pump with the engine cylinders. In the operation of this pump, which supplies oil to the cylinders, the quantity thus supplied should at all times be in proportion to the degree of heat or temperature of the water jacket, and not in proportion to the rotation or speed of the engine shaft, and the automatic means already described provides an automatic control for said supply of oil.

What I claim and desire to secure by Letters Patent is,—

In combination with the engine shaft and water jacket of the engine, a fan arranged for rotation and provided axially with a disk, a shaft disposed at right angles to the axis of the fan and provided with a second disk normally in engagement with the first named disk, a sleeve rotatable by the engine shaft and splined on the vertical shaft, a rock lever in engagement with the vertical shaft for moving the second disk radially of the first named disk by its swinging movements, a tubular receptacle in the water jacket, a piston within the receptacle, an expansive element in the receptacle for moving the piston in an opposite direction, and a second rock lever movable by the piston for causing swinging movements of the first named rock lever.

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

CHARLES J. DE LAY.

Witnesses:

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