May 25, 1926. 1,585,806

R. WATSON

RUNNING TIME ATTACHMENT FOR AUTOMOBILE CLOCKS

Filed July 15, 1924

Fig. 1.

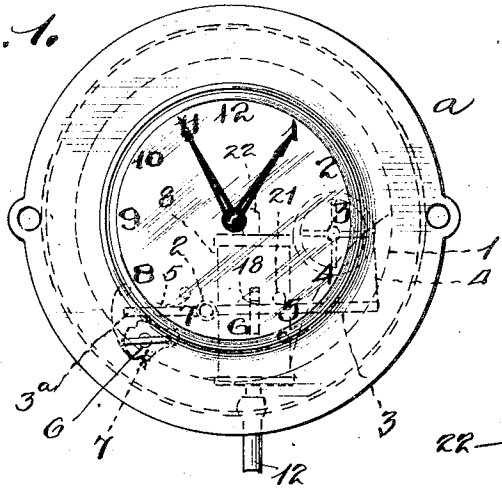


Fig. 4.

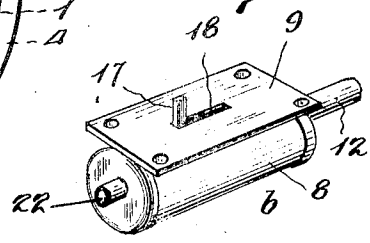


Fig. 2.

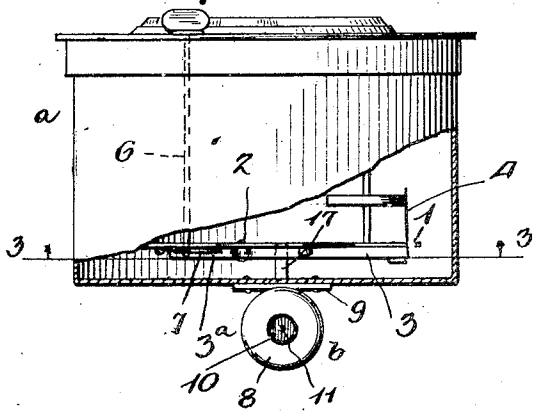
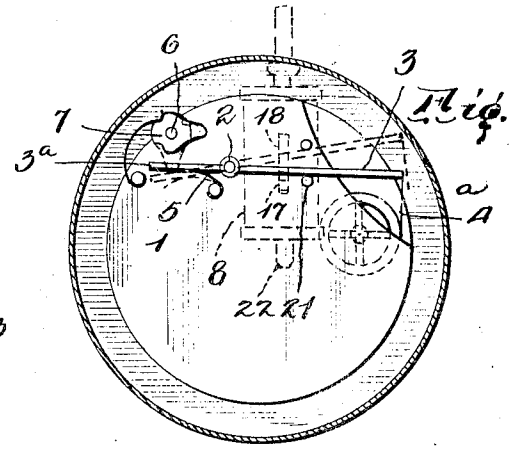


Fig. 3.



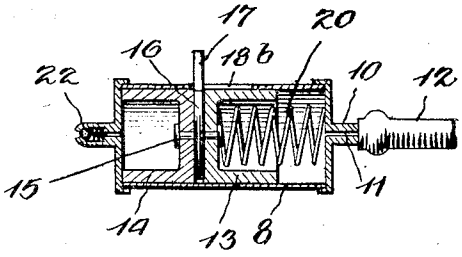


Fig. 6.

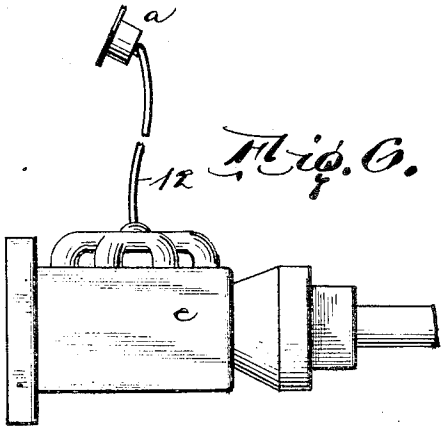


Fig. 5.

Inventor

Robert Watson

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UNITED STATES PATENT OFFICE.

ROBERT WATSON, OF SILVER SPRING, MARYLAND.

RUNNING-TIME ATTACHMENT FOR AUTOMOBILE CLOCKS.

Application filed July 15, 1924. Serial No. 726,195.

This invention relates to improvements in automobile clocks, whereby the clock may be used either to indicate the time of day, or to register the time in which the engine is in operation, as desired. For all practical purposes, with pleasure vehicles driven by their owners, the running time of the engine is approximately the running time of the vehicle, as the owners of vehicles are not in the habit of permitting them to idle needlessly.

In the accompanying drawing,

Fig. 1 is a front view of an automobile clock with my improvements shown therein in dotted lines;

Fig. 2 is a side elevation of the clock, partly in section, showing my improvements;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a perspective view of the suction-actuated device for releasing the brake;

Fig. 5 is a longitudinal central section through said device; and,

Fig. 6 is a diagrammatic view, on a small scale, illustrating the connection of the clock to an internal combustion engine.

Referring to the drawing, *a* indicates an automobile clock having any desired clock movement, the details of the movement, with the exception of the balance wheel, being omitted from the drawing. Below the rear plate 1 of the clock movement and pivotally connected to said plate at 2 is a brake lever 3, having at one end a wire 4, adapted to lightly engage the balance wheel in one position of the lever. Levers of this character are well known in clocks for starting the balance wheels; but the lever is usually held out of engagement with the balance wheel by a spring and is pressed into engagement with the wheel and then released to start the clock. In the present invention, the lever is normally pressed in the opposite direction by a spring 5, which causes the wire 4 to be normally held in engagement with the balance wheel, preventing movement of the clock mechanism. A rod 6 extends downwardly through the clock casing and has at its lower end a cam 7, which may be turned by the rod into position to engage the shorter end 3^a of the brake lever and rock the lever, in opposition to the spring 5, so as to move the wire 4 out of engagement with the balance wheel. As long as the cam is left in this position, shown in dotted lines in Fig. 3, the clock will operate in the ordinary way to tell the time of day.

In order to utilize the clock for indicating the running time of the engine, the cam 7 is turned to the position indicated in Fig. 1, in dotted lines, and in full lines in Fig. 3, so that the brake will be normally held in engagement with the balance wheel by the spring 5, and the suction-controlled device *b*, secured to the back of the clock casing, will then move the brake lever out of engagement with the balance wheel when the engine is running and will release the lever so that it may be returned to braking position by the spring 5 when the engine stops. As shown in the drawing, this device comprises a metal cylinder 8, secured to a flat plate 9, by which the cylinder is fastened to the back of the casing, and at one end of the cylinder is a nipple 10, having a restricted passageway 11, which nipple, in practice, is connected to the intake pipe of an internal combustion engine *e*, by tubing 12. Within the cylinder is a plunger comprising two hollow cylinders of graphite 13 and 14, each having a closed end and these closed ends being suitably connected together as by a small bolt or rivet 15. A metal disk 16 is clamped between the heads of the graphite cylinders, and a metal pin 17 projects from this disk, through a short slot 18, which extends longitudinally of the cylinder at its central portion. This slot also extends through the plate 9, and when the plate is attached to the clock casing, the pin 17 projects through a slot in the casing and upwardly within the casing to a point where it may engage the side of the brake lever. A spring 20, within the cylinder 8, normally presses the plunger away from the end of the cylinder to which the nipple 10 is attached, and when the cylinder is in position on the clock and the engine is stopped, the pin 17 is out of engagement with the lever, which latter rests against a stop 21. When the engine is started, the plunger is pulled toward the nipple and the pin 17 then engages the brake lever and moves it, in opposition to the spring 5, to a position where the wire 4 is out of engagement with the balance wheel. This movement of the wire 4 will start the balance wheel and the clock will continue to run as long as the engine

runs. When the engine stops, the plunger will be returned by the spring 20 to its normal position and the pin 17 will be carried away from the brake lever and the wire on said lever will engage the balance wheel and stop the clock.

The part 14 of the plunger is provided merely as a retarding means to resist the return of the plunger when the vacuum in the opposite end of the cylinder momentarily lowers, as occurs under some running conditions of the engine. It is desirable to permit the plunger to move freely in response to the suction of the engine and therefore a check valve 22 is provided at the end of the cylinder in which the part 14 of the plunger is arranged. When the part 14 is drawn backward, the air enters freely through the nipple 22 into the end of the cylinder occupied by said part; but upon the return of the plunger by the spring 20, this air is retained by the check valve and can only pass out by slow leakage around the plunger or through said check valve.

In operation, when the clock is used for time keeping, the cam 7 will be turned into position to hold the brake lever out of engagement with the balance wheel. In this position, the pin 17 cannot engage the brake lever and therefore the clock will operate as an ordinary time keeper. When it is desired to use the clock for indicating elapsed time, the clock hands will both be set to the 12-hour mark on the clock dial and the cam 7 will be turned out of engagement with the brake lever. When the engine is started the suction-controlled device will then move the brake lever out of engagement with the balance wheel and the clock will operate as long as the engine runs. The hour and minute hands will then register the running time of the engine. Each time the engine stops, the suction device will release the brake lever and the latter will move into position to engage the balance wheel and stop the clock. Thus, the clock hands will operate only when the engine is running and will indicate the actual running time of the engine.

What I claim is:

1. In an automobile clock, a brake normally stopping the clock, means for automatically holding the brake in released position while the automobile to which the clock is applied is in operation, and manually operable means for holding the brake in released position, when desired.

2. In a clock, a brake normally stopping the clock, means adapted to be operated by the suction of an internal combustion engine for releasing the brake and holding it in the released position while the engine is running, and manually operable means for locking said brake in the released position, when desired.

3. In a clock, a brake lever normally engaging the balance wheel, a cylinder adapted to be connected to the intake of an internal combustion engine, a plunger within the cylinder and having a part adapted to engage and move the brake to released position when the engine is started, and manually operable means for locking the lever in released position, when desired.

4. A device of the nature disclosed comprising in combination with an engine, a clock mechanism, means responsive to pressure variations in the engine for controlling the actuation of the clock mechanism, and a manually operative element for rendering the clock controlling means ineffective and permitting the clock to function regardless of the stopping and starting of the engine.

In testimony whereof I hereunto affix my signature.

ROBERT WATSON.