

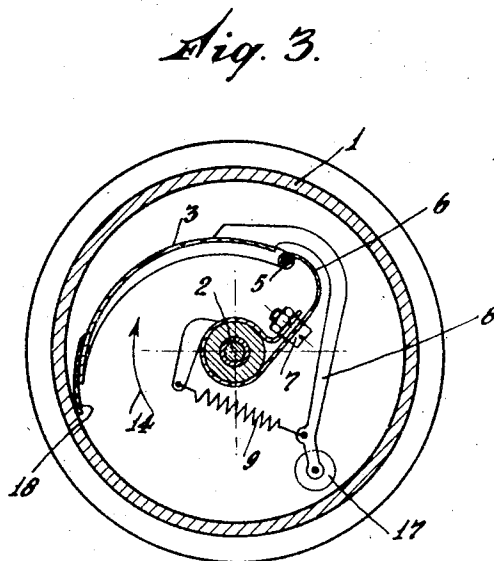
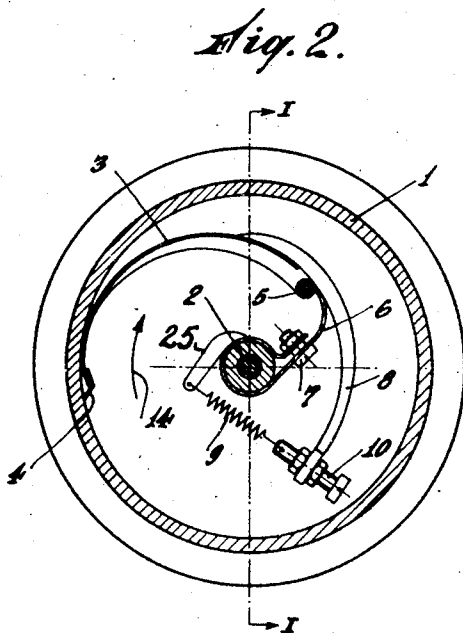
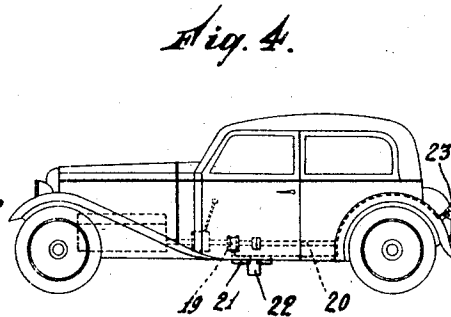
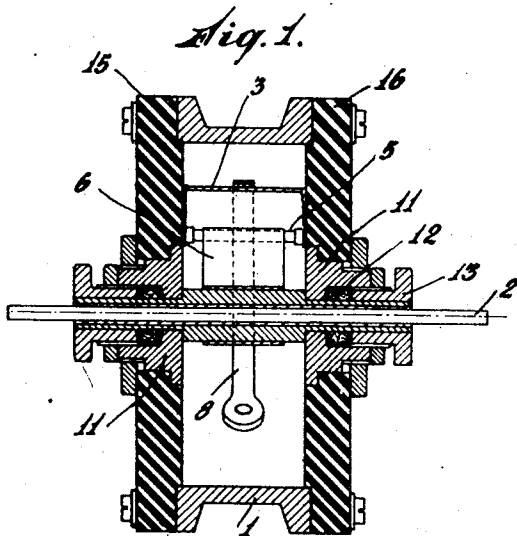
Oct. 7, 1947.

C. J. AANDEWIEL

2,428,589

ROTATING ELECTRIC LIQUID SWITCH

Filed June 22, 1937



Inventor:
C. J. Aandewiel,
By E. F. Hendroth
Atty

UNITED STATES PATENT OFFICE

2,428,589

ROTATING ELECTRIC LIQUID SWITCH

Cornelis Johan Aandewiel, Wassenaar, Netherlands, assignor to Firma Eerhard-Aandewiel, Wassenaar, Netherlands, a firm of the Netherlands

Application June 22, 1937, Serial No. 149,767
In the Netherlands October 17, 1936

Section 3, Public Law 690, August 8, 1946.
Patent expires October 17, 1956

5 Claims. (Cl. 200—52)

1

The invention relates to a rotating electric liquid switch, more particularly to a switch which is adapted to interrupt or to close a pair of contacts by means of the inertia of the liquid present.

The switch according to the invention may be used for numerous purposes and is particularly suitable for controlling the action of some rotating machine part. If, for example, the switch according to the invention is to serve in a warning device for signalling the rotation or the stopping of a rotatory machine part, e. g., a wheel or a shaft, the said switch is placed in a circuit comprising a power unit and a sound or a light signalling device. The switch may then be constructed so as to close a pair of contacts in such a signalling circuit, either when the shaft or the wheel stops its rotation, or when it starts to rotate. The switch according to the invention is particularly suitable for use as an automatic switching device for a parking or a stop signal apparatus for mechanically propelled vehicles such as, e. g., motor cars.

In the accompanying drawing some embodiments of the switch according to the invention are illustrated.

Fig. 1 is an axial section of the switching device through the line I—I in Fig. 2.

Fig. 2 is a section at right angles to the one according to Fig. 1.

Fig. 3 is a section corresponding to Fig. 2 of a second embodiment according to the invention.

Fig. 4 is an embodiment of the invention applied to a motor car.

The switch according to the invention comprises a drum or jacket 1 made of electrically conducting material, which drum is sealed airtight and liquid-tight by two covers 15, 16 of an insulating material mounted on a rotative spindle 2. The interior of the jacket or drum 1 is filled with a suitable insulating liquid, preferably oil, while in the drum there is also provided a blade shaped member 3 having a width that is entirely or partially equal to the axial length of the interior wall of the drum 1. This blade 3 at one end is provided with a contact 4, while its other end is pivotally mounted at 5 in a holder 6, held fast to the spindle 2 by means of a bolt 7 and cooperating nut. A sickle-shaped member 8 is connected to the blade 3 and subjected to the action of a draw-spring 9. The tension of the spring 9 may be controlled by means of a set screw 10. The other end of the draw-spring 9 is connected to a member 25 fixed to the shaft 2. The spindle 2 is constructed loosely rotatable

2

in the drum 1 and for this reason the supports 11 are provided with gaskets 12 which are held in place by nuts 13.

The switching device functions as follows:

5 The spindle 2 of the switch is coupled with the machine part to be controlled, e. g., with a rotating shaft, in such a way that the said spindle 2 will rotate in the direction of the arrow 14 in Fig. 2. Because of the fact that the drum 1 is stationary and is filled with oil, the blade 3 with the contact 4 will be urged away from the interior wall of the drum 1 by the said oil, against the action of the spring 9, as long as the spindle 2 is rotating. If the wall of the drum 1 and the contact 4 form two contacts in a signalling circuit, said circuit will remain interrupted, as long as the spindle 2, that is to say the machine part to be controlled continues rotating. As soon, however, as this is the case no longer, the blade 3 will be urged against the wall of the drum 1 by the spring 9, so that a contact is made, where-
10 by the signalling circuit is closed.

It has been found that even at a very slow rate of rotation of the spindle 2 the blade 3 will be urged away from the wall of the drum 1, if a resilient material is used for the blade 3 or if a suitable tension is selected for the spring 9. The switch according to the invention has the advantage that there will not be any wearing of the parts, since the mechanism is functioning in oil and in an airtight space, so that there is no burning out of the contacts and also since the contact is only urged against the drum 1 when the mechanism is at a stand still, so that the contact does not drag against the drum.
15 30 35

It is self-evident that the switch may also be constructed in such a way that the contact is closed if the spindle 2 starts to rotate and interrupted when the spindle 2 is stopped. An embodiment of this nature is illustrated in Fig. 3. In this figure the parts likewise illustrated in Fig. 2 are provided with like reference numerals. In this embodiment the contact 4 is replaced by a plate 18 of some insulating material, e. g., fibre, while the member 8 is provided with a small metal roller 17 which when the spindle 2 is rotating, is urged against the wall of the drum 1, so that the contact is closed, since the oil urges the plate 18 away from the said wall.
40 45 50

Fig. 4 represents a motor car in which the switch 19 is arranged on the driving shaft 20. The drum 1 is connected by means of a wire 21 with the battery 22, which battery at the same time is connected with a stopping or parking signal light 23. This light starts to burn, as soon as the car comes

3

to a stop and it is extinguished as soon as the shaft 20 starts to rotate.

It is also possible, of course, to arrange more than one blade 3 side by side on the spindle, which blades, contingently, may co-operate with outer rings which are insulated with regard to each other and together constitute the drum 1. In this manner it will become possible to use the apparatus for the control of several circuits or for starting a three-phase motor when the spindle 2 has stopped or started to rotate, respectively.

I claim:

1. Rotating electric liquid switch comprising a drum filled with an insulating liquid and having a wall made of an electricity conducting material which forms one contact of the switch, and a spindle rotatably and centrally located in the said drum on which is mounted a blade-shaped member, a second switch contact controlled by said blade-shaped member, which blade-shaped member during rotation due to the inertia operation of said liquid controls the operation of the switch.

2. Switch according to claim 1 in which the second switch contact is spring-loaded in such a way that when the spindle stops rotating the said contact will rest against the interior wall of the electricity conducting drum which forms the first contact of the switch, whereas when the spindle is rotating the said second contact is urged away from the said wall against the action of the spring, by the liquid.

3. Rotating electric liquid switch comprising a drum filled with an insulating liquid and having a wall made of an electricity conducting material which forms one contact of the switch, and a spindle rotatably and centrally located in the said drum on which is mounted a blade-shaped member provided with the second switch contact, which blade-shaped member during rotation due to the inertia operation of said liquid will bring the second switch contact into or out of

4

touch with the first-mentioned contact, said second switch contact being spring-loaded in such a way that when the spindle stops rotating the said contact will rest against the interior wall of the electricity conducting drum which forms the first contact of the switch, whereas when the spindle is rotating the said second contact is urged away from the said wall against the action of the spring, by the liquid, the action of said spring being such that the contacts are closed when the spindle is at a standstill and are interrupted when the spindle is rotating.

4. A rotating electric liquid switch comprising a drum filled with an insulating liquid and having a wall made of electrical conductive material which forms one contact of the switch, a spindle rotatably and centrally located in said drum, a blade-shaped member in said drum provided with an insulating plate resting against said wall and a rotatable contact roller controlled by said blade-shaped member designed to contact said wall upon rotation of said spindle.

5. A switch as set forth in claim 1 in which the rotatable spindle carries a plurality of blade-shaped members insulated from each other, which blade-shaped members are co-acting with a corresponding number of electricity conducting rings insulated from each other and together forming the drum wall.

CORNELIS JOHAN AANDEWIEL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
997,465	Mies	July 11, 1911
1,177,548	Southwick	Mar. 29, 1916
1,201,564	Daniel	Oct. 17, 1916
1,574,370	Curtiss	Feb. 23, 1926
1,994,626	Townsend	Mar. 19, 1935