

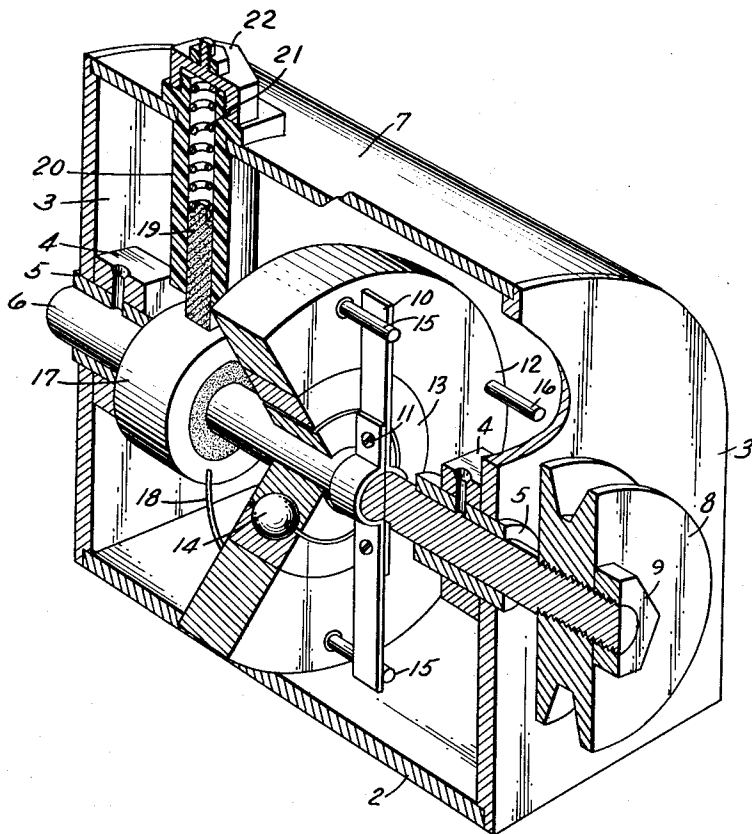
Dec. 27, 1960

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2,966,564

AUTOMATIC INERTIA-TYPE SWITCH MECHANISM

Filed Aug. 18, 1959



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AUTOMATIC INERTIA-TYPE SWITCH MECHANISM

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Filed Aug. 18, 1959, Ser. No. 834,529

2 Claims. (Cl. 200—61.46)

My invention relates to a new type of switch mechanism that will be of great value when used in connection with caution or warning lights to warn of deceleration of a mechanism and particularly to an inertia type switch mechanism to be used in connection with caution lights on the rear of a moving vehicle to warn of deceleration of the said vehicle, in which the inertia of a rapidly rotating flywheel closes an electrical contact when deceleration occurs and the flywheel tends to drive the shaft on which it is located.

With the advent of more, speedier cars and improved highways, more and more attention is being given to the problem of traffic safety. With moving vehicles travelling at high rates of speed on crowded highways, any deceleration on the part of one, without any warning to those following could cause trouble if the deceleration of the said vehicle was not immediately noticed by operators of the following vehicles.

An object of my invention is to provide an automatic switch mechanism that will automatically close the circuit of a caution light on the rear of a moving vehicle when that vehicle is decelerating.

Another object of my invention is to provide an automatic switch mechanism that will put the caution lights into operation without any conscious effort on the part of the operator of the decelerating vehicle.

Another further object of my invention is to provide an automatic switch mechanism, which, after having closed the circuit to a caution light system with deceleration of the moving vehicle, will again automatically break the circuit to the said lighting system as soon as steady motion is attained or accelerating motion is again resumed.

Another further object of my invention is to provide an automatic switch mechanism for caution lights on the rear of a moving that will automatically open and close the circuit to the said lights without any conscious effort on the part of the operator of the vehicle employing such lights at times when deceleration is sudden without the application of brakes which would close the circuit to the red stop lights.

In the accompanying drawing I show the novel features which I believe to be characteristic of my invention, both as to its manner of organization and mode of operation and which will be better understood from the following description when read in conjunction with the following drawing in which

The single figure shows an isometric view of a longitudinal section through the middle of the rotating shaft of the switch mechanism.

Referring now to the drawing in which the same reference numerals indicate the same elements, the base 2 serves as a support for the other parts and provides a suitable mounting piece for the device. The end housings 3 attached to the ends of the base 2 so as to be easily removed, have near their centers extensions 4 to provide more support for the bronze bushings 5 which provide bearing surfaces internally for the shaft 6, part

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of which is shown in section. The remainder of the housing, made of one piece 7, fits into a rabbet in the two sides and end pieces and is attached to the base so as to be easily removed.

On the threaded end of shaft 6 a short distance is of reduced diameter to provide a shoulder as a stop for the V-belt pulley 8 when nut 9 is screwed tightly against said pulley. Internal of the housing, on shaft 6 are the following parts: a contact arm 10 made of copper or brass of two parts clamped together around the said shaft by means of machine screws 11; a small flywheel 12 tightly secured internally to the outer race 13 of a ball bearing assembly 14, the inner race of which is tightly fitted on shaft 6, and bearing near its periphery on the side facing the contact arm, four pins of suitable length, spaced 90 degrees apart, with two opposite ones 15 insulated from the said flywheel to serve as contact points and the other two opposite ones 16 in contact with the said flywheel to serve as driving pins; and a cylindrical commutator 17 insulated from said shaft 6 yet rigidly fitted to it so as to rotate with it, with two flexible electrical connectors 18 from diametrically opposite points on the side of the said commutator to the two said contact pins 15.

Electrical contact with the rotating commutator 17 is made through a carbon brush 19 which slides in a non-conductor brush holder 20 and is held in sliding contact with the said commutator 17 by a small compression spring 21 which also serves to conduct the electrical current to the brass cap and terminal 22. A wire from terminal 22 would go to one contact point of the bulb of a caution light while another wire would continue the circuit from the other contact point of the said bulb to a "live" terminal of the fuse block. The circuit would be completed through the grounded base 2.

The operation of the switch mechanism is as follows: As long as the power source is driving the shaft 6, the contact arm will be in contact with the driving pins 16 and will rotate the flywheel 12 in a clockwise direction. Since pins 16 are not electrical contact pins, the electrical circuit remains broken and the caution lights will remain off. If the driving power source, the engine, decelerates, the inertia of the rotating flywheel forces the said flywheel forward, clockwise, until the contact pins 15 are brought into contact with the contact arm 10 thus closing the electrical circuit to the caution lights causing them to go on. As long as deceleration continues, the lights will remain; but, as soon as steady speed is maintained or acceleration begins, contact is broken, and the caution lights go off. The action is completely automatic, and requires no effort on the part of the operator. An automatic switch mechanism of this type used in connection with yellow caution lights on the rear of moving vehicles will be of great value in preventing rear-end collisions due to sudden deceleration without use of brakes.

While I have described and illustrated particular embodiments of my invention, modifications which are within the scope of my invention may occur to those skilled in the art; so I desire that it be understood, therefore, that all such modifications are included within the scope of the claims annexed to and forming a part of this application.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An inertia-type automatic switch mechanism, that will close an electric circuit to caution lights whenever deceleration of its driving source is taking place, comprising a suitable housing and mounting base for securing said device in operating position; a rotatable shaft, with bearings in the ends of the said housing, one end of which extends outside the end of the said housing

to accommodate a suitable belt pulley or other driving means; a flywheel mounted on the said shaft within the said housing with a ball bearing assembly between the said flywheel and the said shaft; a ring commutator on said rotatable shaft a short distance away from the said flywheel insulated from the said shaft yet firmly secured to said shaft so as to rotate with it; four metal pins or pegs through the said flywheel spaced 90 degrees apart near the periphery of the said flywheel with two of the said pegs, opposite each other, insulated from the said flywheel to serve as electrical contact points, and the other two in contact with the said flywheel to serve as driving pins; a contact arm of brass or other conductor metal attached firmly to and making good electrical contact with the said rotatable shaft on the side of the said flywheel away from the said commutator, the length of which is equal to or slightly less than the diameter of the said flywheel, so positioned that it will be in contact with the driving pins when the said rotatable shaft is turning the said flywheel and in contact with the said insulated contact pins when deceleration is taking place and the inertia of the said flywheel forces the said flywheel forward to tend to drive the said rotatable shaft; two flexible wire conductors from diametrically opposite points on the side of the said ring commutator to the adjacent ends of the two said contact points in the said

flywheel; a carbon brush in suitable non-conductor mount held in contact with said commutator by a compression spring which serves as electrical conductor between said carbon brush and brass terminal mounted on but insulated from the top of the said housing.

2. An automatic inertia-type switch mechanism as set forth in claim 1 for use in connection with a caution light or lights to warn of deceleration of the power source driving the said switch mechanism and particularly for use in connection with caution lights on the rear of moving vehicles, whose operation is dependent upon the inertia—not centrifugal force—of a rapidly rotating flywheel so positioned in the electrical circuit of the said vehicle that, as long as the power of the moving vehicle is driving the said flywheel, the circuit remains broken and the caution lights remain off; but as soon as the driving shaft decelerates, the inertia of the said rapidly rotating flywheel causes the said flywheel to move clockwise on the said ball bearing assembly and bring the said electrical contact pins in contact with said contact arm thereby closing the said electrical circuit and lighting the said caution lights.

References Cited in the file of this patent

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