Nov. 18, 1941. W. C. YOUNG 2,263,230

GRAVITY OPERATED SAFETY SWITCH

Filed March 14, 1940 2 Sheets-Sheet 1

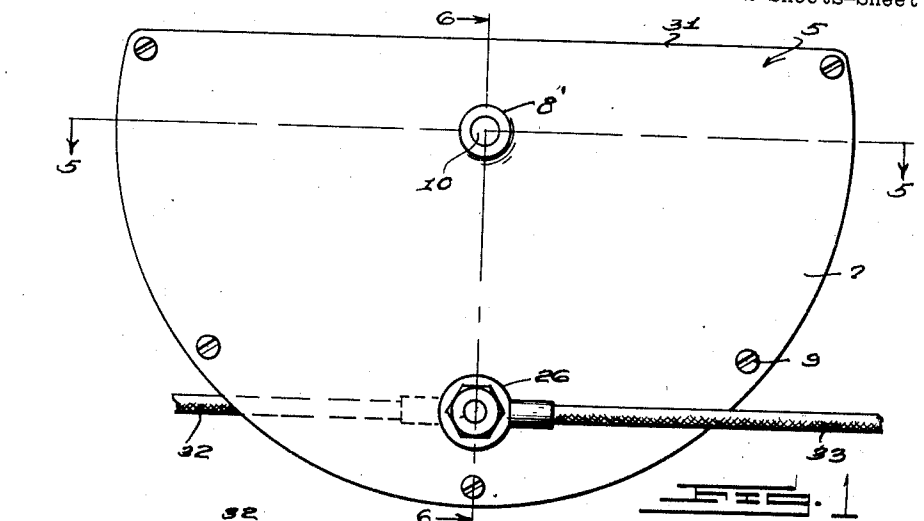


FIG. 1

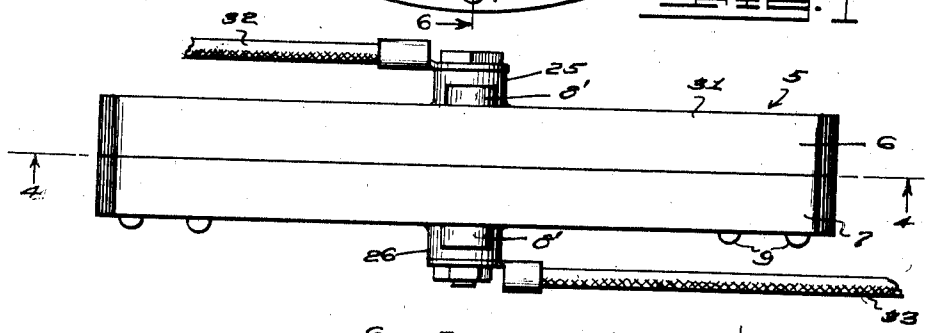


FIG. 2

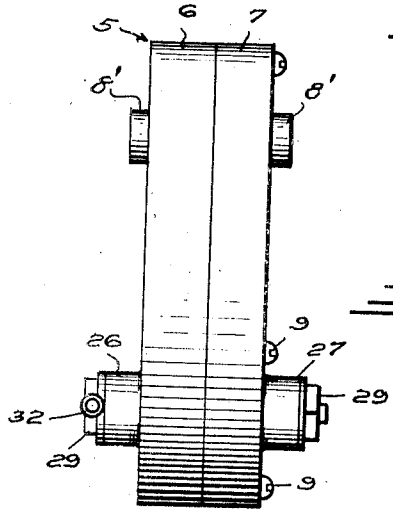


FIG. 3

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GRAVITY OPERATED SAFETY SWITCH

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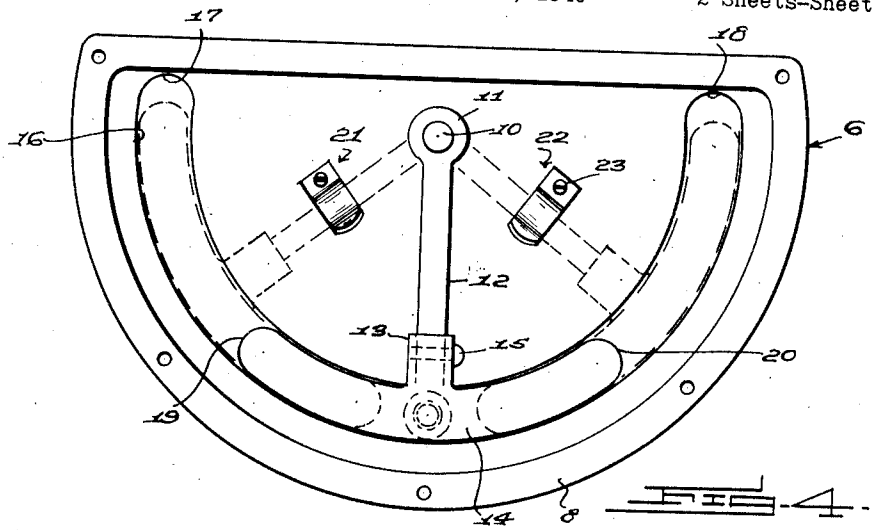


FIG. 4.

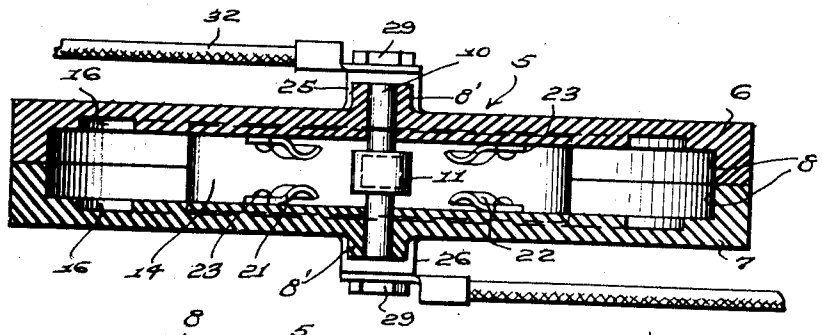


FIG. 5.

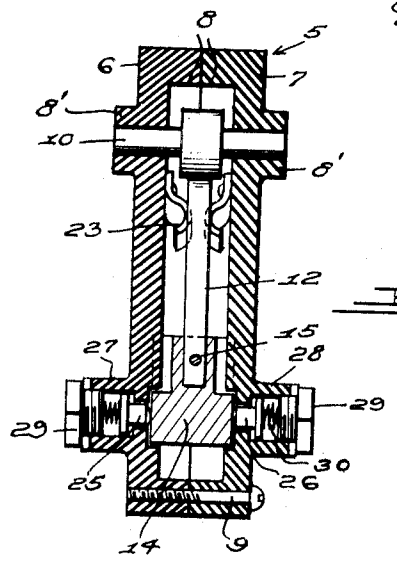


FIG. 6.

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2,263,230

UNITED STATES PATENT OFFICE

2,263,230

GRAVITY OPERATED SAFETY SWITCH

Walter C. Young, Alamosa, Colo.

Application March 14, 1940, Serial No. 323,996

1 Claim. (Cl. 200—52)

My invention relates to improvements in a safety switch operated by gravity, and an important object of the invention is to provide a simplified and more efficient device of this character which is especially adapted for incorporation in the ignition circuit of an automotive vehicle to act to cut-off the ignition to prevent fire whenever the vehicle is tilted to a dangerous angle as frequently occurs in accidents.

Other important objects and advantages of my invention will be apparent from a reading of the following description and the appended drawings showing a preferred embodiment of the invention for illustrative purposes.

In the drawings:

Figure 1 is a side elevational view of the embodiment.

Figure 2 is a top plan view of Figure 1.

Figure 3 is an end elevational view.

Figure 4 is an elevational view taken approximately on the line 4—4 of Figure 2 and showing the laterally inward side of one of the sections of the casing and showing the pendulum in different positions in phantom lines.

Figure 5 is a horizontal sectional view taken through Figure 1 approximately on the line 5—5 and looking downwardly in the direction of the arrows.

Figure 6 is a transverse vertical sectional view taken through Figure 1 approximately on the line 6—6 and looking toward the right in the direction of the arrows.

Referring in detail to the drawings, the numeral 5 generally designates the casing of the switch, which is substantially semi-circular in side elevation and composed of two similar substantially semi-circular sections 6 and 7, respectively, of Bakelite or other similarly suitable insulating material. The said sections have peripheral laterally inwardly projecting flanges 8 which are registered when the sections are assembled by the bolts 9 which traverse these flanges at intervals as indicated. The outer face of each section has an axial tubular projection 8′ which affords additional bearing for the opposite ends of the pendulum shaft 10 which turns freely therein and has fixed on the middle thereof a collar 11 from which projects radially a squared reduced pendant arm 12. The lower end of the arm 12 enters a conforming socket 13 projecting radially inwardly from a segmental pendulum weight 14. A pin 15 traverses the socket and the arm 12 to lock the pendulum weight in position on the arm to swing on the axis of the shaft 10 along the grooves 16 cut in the inner faces of the sections 6 and 7. The said grooves have rounded opposite ends 17 and 18, respectively, to conformably receive and stop the opposite ends 19 and 20, respectively, of the pendulum or inertia weight 14, in opposite extreme positions of the pendulum.

Spaced at an angle of 90° apart and at distances about 45° from the opposite ends of the path of the pendulum are opposed pairs of spring retaining fingers 21 and 22, respectively, each pair consisting of two oppositely arranged spring detents mounted at their radially outward ends by screws 23 to the inner face of the corresponding one of the casing sections, and in a position to be engaged by the shank 12 of the pendulum in an extreme operated position of the pendulum. The radially inward ends of the fingers are bent laterally inwardly to frictionally engage opposite sides of the pendulum shank and thereby hold and prevent the pendulum from returning from an operated position to an intermediate perpendicular ignition circuit restoring position, until reset by hand.

As shown in Figure 6 of the drawings the inertia or pendulum weight 14 is substantially rectangular in cross section and has its opposite sides in sliding engagement with contacts 25 and 26, respectively, which are slidably confined in tubular extensions 27 and 28, respectively, on the lower middle of the casing sections 6 and 7. These extensions have tensioning nuts 29 threaded therein to act as binding posts for the wires 32 and 32 and to give the desired compression to the contact springs 30 which press the contacts into engagement with the sides of the inertia weight.

The length of the inertia weight 14 is so proportioned that with the casing 5 supported on the vehicle with the flat top 31 of the casing 5 substantially horizontal, the weight will be engaged with and bridge both of the contacts during all swings of the pendulum incident to normal and safe operation of the vehicle so as to maintain the ignition circuit (not shown) of the vehicle closed and operative, but to swing beyond such engagement with the contacts whenever the vehicle is tilted to a dangerous angle and thereby break the ignition circuit. In moving in either direction into circuit breaking position, the arm 12 of the pendulum will engage between the corresponding one of the pairs of spring detents and be held thereby.

Although I have shown and described herein a preferred embodiment of my invention, I do wish to limit the invention to the details thereof,

except as may be required by the scope of the subjoined claim.

Having described the invention, what is claimed as new is:

A safety switch comprising a vertical casing consisting of a pair of facing side walls, a horizontal shaft mounted on and extending between said side walls, a pendulum arm carried by said shaft to swing along and between said side walls, said pendulum arm comprising a weighted arcuate conductive element on its lower end, said arcuate conductive element being arranged substantially concentrically with respect to said horizontal shaft, said side walls having arcuate grooves therein and the arcuate element having projecting side portions extending into the grooves, substantially aligned insulated contacts mounted on the respective side walls and extending into the grooves and engaging the opposite sides of said conductive element whereby said contacts are bridged in a perpendicular position of said pendulum arm, said arcuate conductive element being arranged to disengage from said contacts in an extreme displacement of said pendulum arm from the perpendicular position, spring clips on said casing, said spring clips being positioned to accept and hold an intermediate part of the arm of said pendulum when the pendulum is in either one of its positions of extreme displacement to either side of the perpendicular position, said spring clips each comprising a pair of convergent spring fingers between which said pendulum arm enters.

WALTER C. YOUNG.