IGNITION CUTOFF SWITCH

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Figs. 1-3

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APPARATUS FOR INTERRUPTING THE IGNITION CIRCUIT OF AN INTERNAL COMBUSTION ENGINE IN THE EVENT THAT THE SPRING, WHICH OPPOSES THE FOOT PRESSURE ON THE THROTTLE, BREAKS.

A SWITCH IN THE IGNITION CIRCUIT IS MAINTAINED CLOSELY BY THE SPRING WHICH OPPOSES FOOT PRESSURE. HOWEVER, A SECOND SPRING WHICH IS NATURALLY OVERCOME BY THE FORCE OF THE FOOT PRESSURE OPPOSING SPRING BREAKS.

THE PRESENT INVENTION RELATES TO A SAFETY CUTOFF DEVICE TO BE USED TO RENDER AN ENGINE INOPERABLE WHEN THE CONTROL MECHANISM FAILS. MORE SPECIFICALLY, THE INVENTION RELATES TO A SAFETY SWITCH THAT IS ADAPTED TO BE USED IN THE IGNITION SYSTEM OF AN ENGINE, WHICH SWITCH IS ACTUATED BY THE THROTTLE CONTROL MECHANISM.

THE SAFETY SWITCH OF THIS INVENTION IS ADAPTED TO BE USED IN THE IGNITION CIRCUIT OF AN ENGINE OF THE TYPE THAT INCLUDES A THROTTLE CONTROL MECHANISM THAT IS BIASED TO THE CLOSED POSITION. THE SWITCH ESSENTIALLY COMPRISSES A MOVABLE, ELECTRICAL CONDUCTIVE CONTACT, IN SERIES IN THE IGNITION CIRCUIT. THE CONTACT IS CONNECTED WITH AN ELECTRICALLY INSULATED FROM THE CONTROL MECHANISM BIASING ELEMENT AND IS BIASED TO THE IGNITION CIRCUIT CLOSED POSITION BY THE ELEMENT. THE CONTACT IS BIASED TO THE CIRCUIT OPEN POSITION WHEN THE CONTROL MECHANISM BIASING ELEMENT BECOMES INOPERATIVE.

OTHER FEATURES AND THE ADVANTAGES OF THE PRESENT INVENTION WILL BE APPARENT FROM THE FOLLOWING DESCRIPTION, REFERENCE BEING HAD TO THE ACCOMPANYING DRAWINGS, IN WHICH A PREFERRED EMBODIMENT OF THE INVENTION IS ILLUSTRATED.

FIG. 1 IS A Diagrammatic View of the Carburetor and a Portion of the Ignition Circuit of an Internal Combustion Engine, Including the Switch of this Invention, the Switch Being Shown in Section.

FIG. 2 IS A Sectional View of the Switch Shown in FIG. 1, the Switch Being Shown with the Throttle Control Biasing Element Being Inoperative and the Switch Open; and

FIG. 3 IS Another Sectional View of the Switch Shown in FIG. 1, the Switch Being Shown in the Located Closed Position.

REMARKS MORE IN DETAIL TO THE DRAWING, AND MORE PARTICULARLY TO FIG. 1, A CONVENTIONAL AUTOMOBILE CARBURETOR IS SHOWN AT 11. THE CONTROL ARM 13 IS PILOTED MOUNTED BETWEEN 15 AND IS ACTUATED BY A CONTROL ROD 17 THAT IS OPERATED FROM THE AUTOMOBILE ACCELERATOR PEDAL (NOT SHOWN).

THE CONTROL ARM 13 IS BIASED INTO THE THROTTLE CLOSED POSITION BY A TENSION SPRING 19. WHEN THE ACCELERATOR PEDAL IS DEPRESSED, THE CONTROL ROD 17 MOVES TO THE RIGHT AS SHOWN IN FIG. 1. THE CONTROL ARM 13 IS MOVED COUNTERCLOCKWISE AND THE ENGINE (NOT SHOWN) IS ACCELERATED. IT IS NOTED THAT THE ACCELERATOR CONTROL MECHANISM OF MANY AUTOMOBILES IS DESIGNED SUCH THAT WHEN THE SPRING 19 IS DISCONNECTED OR THE ACCELERATOR PEDAL (NOT SHOWN) DEPRESSES TO THE FLOORBOARD OF THE AUTOMOBILE, THEN MOVING THE CONTROL ROD 17 TO THE RIGHT, AS SHOWN IN FIG. 1, AND ACCELERATING THE ENGINE.


UNDER NORMAL CONDITIONS, THE SPRING 53 IS IN THE POSITION SHOWN IN FIG. 1.

THE HOUSING, INCLUDING THE CONTACTS, THE SPRING 45, SHAFT 41 AND MANUALLY LATCHING SPRING 53, FORM AN ASSEMBLY WHICH CAN BE SOLD AS SUCH AND WHICH IS READILY ATTACHED TO THE ENGINE.


FROM THE ABOVE, IT WILL BE APPARENT THAT THE SWITCH OF THIS INVENTION PROVIDES AN EXTREMELY IMPORTANT SAFETY FEATURE AND A CONVENIENT MEANS FOR PREVENTING RUNAWAY AUTOMOBILES.

CLAIMS:

1. APPARATUS FOR INTERRUPTING THE IGNITION CIRCUIT IN AN ENGINE OF THE TYPE THAT INCLUDES A THROTTLE CONTROL MECHANISM, WHICH MECHANISM INCLUDES A BIASING ELEMENT, NORMALIY URGING THE THROTTLE TOWARD CLOSED POSITION, AND WHICH APPARATUS COMPRISES IN COMBINATION:
   (A) A Switch Including a Moveable Electrical Contact in Series with the Ignition Circuit and Insulatedly
3. Connected to the throttle control mechanism element for biasing the contact to close the circuit;

(B) means for biasing the contact and opening the circuit when the control mechanism biasing element becomes inoperative;

(C) means fixedly supporting the contact and biasing means as an assembly on the engine, said assembly including

(1) manually controlled means for moving and retaining the contact in circuit closing position.

2. Apparatus as defined in claim 1, characterized in that the manually controlled means yieldingly urges the movable contact into circuit closing position.

3. Apparatus as defined in claim 1, characterized in that the manually controlled means renders the biasing means ineffective.

4. A system comprising in combination:

(A) an engine ignition circuit including:

(1) an electrical switch in series in the circuit and including

(a) a stationary contact;

(b) a movable contact for opening and closing the circuit;

(c) means biasing the movable contact into the open position;

(B) an engine throttle control mechanism including

(1) a biasing element for biasing the mechanism to the throttle closed position;

(C) means for operatively connecting the switch movable contact to the throttle control mechanism biasing element, said biasing element being in opposition to the biasing means and having a biasing value sufficient to overcome the effects of the biasing means for maintaining the switch closed when the throttle control biasing element is operative, said biasing means opening the switch when said biasing element is inoperative;

(D) manually controlled means for rendering the biasing means in effective by moving the movable contact into engagement with the stationary contact and retaining said contacts in engagement.

5. A system as defined in claim 4, characterized in that the manually controlled means yieldingly urges the movable contact into engagement with the stationary contact.

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