

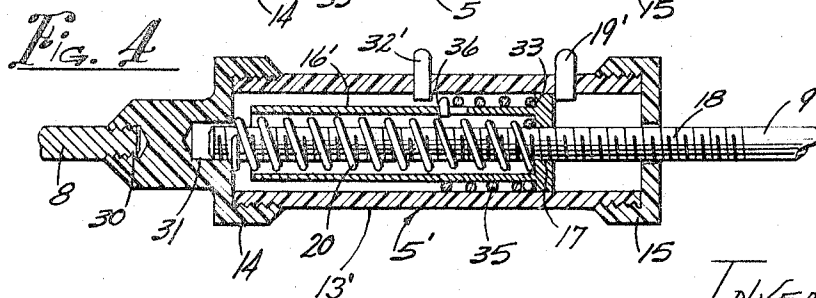
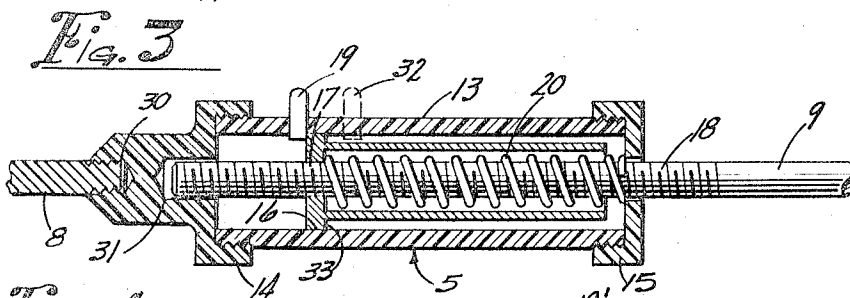
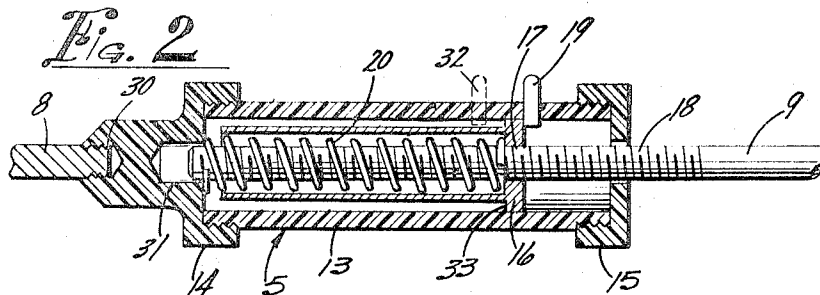
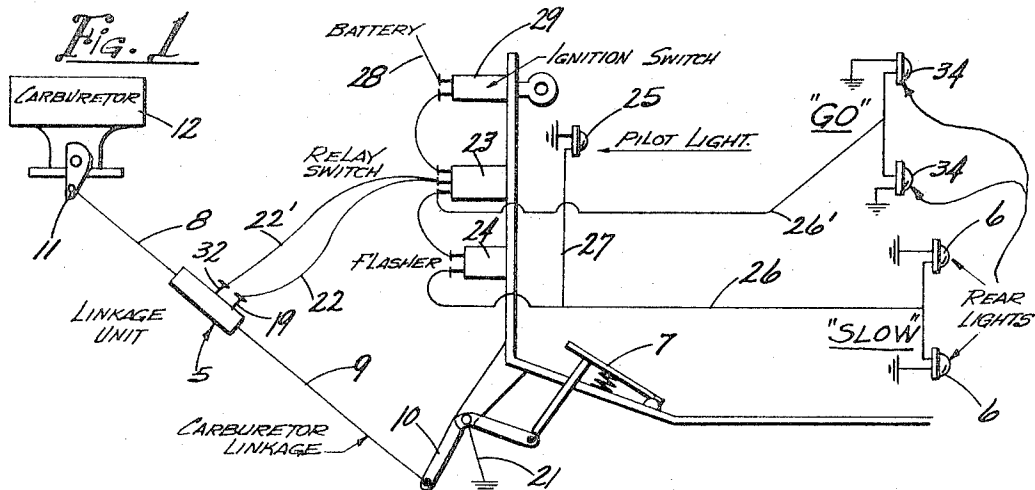
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VEHICLE CAUTION SIGNAL LIGHTS

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VEHICLE CAUTION SIGNAL LIGHTS
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This invention relates to vehicle caution signal lights, and has for its principal object the provision of an easily installable switch as a link unit in the linkage between the accelerator pedal and the carburetor, so that while the pedal is depressed the caution lights remain off but the instant the driver lets up on the accelerator pedal, the switch closes a circuit through the caution lights to warn drivers of cars behind, to avoid collision when and if the brakes are thereafter suddenly applied, that being also signalled by the usual stop lights.

The improved switch of my invention installable in the carburetor linkage, as stated, is designed to be used interchangeably as a push type or pull type depending upon whether depression of the accelerator pedal exerts a push or pull on the carburetor butterfly arm through the intermediate linkage in which the switch is assembled, movement of a plunger in the cylindrical body of the switch with one of the link portions that is attached thereto being in one direction relative to a radially inwardly projecting signal light terminal in the one case and in the opposite direction in the other case, the cylindrical body of the switch being fixed with respect to the other of two coaxially aligned link portions between the butterfly arm of the carburetor and the bell-crank lever operated by the accelerator pedal. The plunger referred to has a threadedly adjustable connection with its associated link portion so that the overall length of the link connection between the butterfly arm and bell-crank can be adjusted to a nicety for positioning of the accelerator pedal in its released position, while a coiled compression spring caged inside the plunger between it and one end cap on the cylindrical body of the switch normally maintains the plunger in engagement with the terminal in the released position of the accelerator pedal in both the push and pull installations. Movement of the plunger may be limited by abutment with the end cap remote from the terminal or a second signal light terminal may be provided projecting inwardly from the cylindrical body of the switch in longitudinally spaced relation to the first terminal for engagement with an annular shoulder on the plunger. In the latter case, the second terminal is connected with a "go" signal light, usually green, to distinguish from the first mentioned caution light that is usually orange, thereby enabling signalling to drivers in the cars behind when the driver in the car ahead, after momentary deceleration, has switched again to acceleration. The signalling is much more positive and dramatic with this form of switch by virtue of the change from the green "go" light to the orange caution light, as, of course, motorists generally, through long years of experience with traffic signals using lights of these two colors for similar purposes, catch on quickly when first exposed to these new speed change signals on automobiles.

In a further modified form of switch, there is in addition to the plunger with the coiled compression spring inside it, as previously mentioned, a coiled compression spring surrounding the plunger and caged thereon against an annular shoulder and arranged to be compressed by engagement with the second terminal associated with the green "go" light to be certain of maintaining good contact throughout the long periods of depression of the accelerator pedal, thus eliminating any likelihood of the "go" light flickering on and off as might otherwise be the case in driving over rough roads. This modified form of

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switch, like the other switch first described, may be used interchangeably as a push or pull type link unit.

The invention is illustrated in the accompanying drawing, in which—

FIG. 1 is a more or less diagrammatic view showing how the novel switch of my invention is adapted to be installed in the carburetor linkage as a unit thereof, the view serving also as an electrical wiring diagram;

FIGS. 2 and 3 are longitudinal sections through the switch showing how the same may be used interchangeably as a push type, in FIG. 2, or as a pull type, in FIG. 3, and

FIG. 4 shows a modified form of switch also useable either way, but shown as for a push type carburetor linkage.

Similar reference numerals are applied to corresponding parts throughout these views.

Referring to the drawing, and first more particularly to FIGS. 1 to 3, the reference numeral 5 designates generally the new and improved caution signal light switch of my invention controlling a pair of rear caution lights 6, so that the latter will go on whenever the accelerator pedal indicated at 7 is released for deceleration of the car. The switch 5 is illustrated as a unit connecting the link portions 8 and 9 of the carburetor linkage connecting the bell-crank 10 that is operated by the accelerator pedal 7 and the butterfly arm or lever 11 of the engine carburetor 12, whereby so long as the driver depresses the pedal 7 the caution lights 6 stay off but the instant he lets up on the pedal 7 for deceleration, the switch 5 closes a circuit through the caution lights 6 to signal the drivers of cars behind, to avoid a collision in the event the driver thereafter applies the brakes, that being signalled, of course, in the usual way by the flashing of stop lights (not shown).

The switch 5, as seen in FIGS. 2 and 3, comprises a tubular body 13 of insulation material, having caps 14 and 15 threaded on the opposite ends thereof that are also of insulation material, the body 13 having a hollow metallic plunger 16 slidable therein and threadedly adjustable, as indicated at 17, on the threaded end portion 18 of the rod or link 9. A metallic terminal 19 projects radially through a hole in the body 13, and a coiled compression spring 20 is caged inside the plunger 16 between one end wall thereof and the cap 14 to hold the plunger normally in contact with the terminal to complete an electrical circuit through the caution light 6 by virtue of the link portion 9 being grounded through the metallic bell-crank lever 10, as seen at 21, while the terminal 19 is flexibly connected electrically, as indicated at 22 in FIG. 1, through the relay 23 and flasher unit 24 to the rear caution lights 6 and also to a pilot light 25 on the instrument board, as indicated at 26 and 27, respectively. Electric current is supplied through the battery connection 28 and ignition switch 29, so that the caution lights 6 and pilot light 25 cannot be operated unless the ignition switch 29 is turned on. That eliminates drain on the battery as well as wear and tear on the lights in the event a child or other unauthorized person tampers with the accelerator pedal 7, when the car is standing idle.

In operation, a short length of the existing rod or link connection between the bell-crank lever 10 and the butterfly valve arm 11 can be cut out to enable inserting the switch 5 as a portion of the linkage between the two link portions 8 and 9, it being then necessary only to thread the spaced coaxially arranged end portions of the link portions 8 and 9 so as to connect portion 8 with cap 14, as at 30, and threadedly adjust the plunger 16 on link portion 9, as at 18. The small bore 31 in cap 14 serves as a guide for the inner end of link portion 9 to maintain coaxial relationship of the link portions 8 and 9 and avoid

any bind and resistance to free movement of plunger 16 with the pedal 7 in one direction and with the spring 20 in the opposite direction. The plunger 16 is threadably adjusted on the link portion 9 at 18 to position the accelerator pedal 7 correctly in its released position. The spring 20 will, of course, keep the plunger 16 held resiliently in contact with the terminal 19 to take up the lost-motion until the driver depresses the pedal 7, when, of course, the plunger 16 striking the cap 14 after a predetermined forward movement of link portion 9 causes the carburetor butterfly arm 11 to be moved by link portion 8 more or less, depending on how much the pedal 7 is depressed. If a second terminal like that indicated at 32 is provided in the body 13 in forwardly spaced relation to terminal 19, this will be engaged by the annular shoulder 33 on the plunger 16 and not only limit the forward movement of the plunger, in lieu of the cap 14 serving that function, but will cause two rear green "go" lights 34 to be turned on, these being connected up with the terminal 32 similarly as caution lights 6 are connected up with terminal 19, as seen at 22' and 26'.

In the event of a car having a pull linkage for its carburetor, it is a simple matter, as seen in FIG. 3, to reverse the body 13 and plunger 16 in relation to caps 14 and 15 so that the spring 20 bears on cap 15 to maintain the plunger 16 normally in a forward position in engagement with the terminal 19 to cause the caution lights 6 to be on as long as the accelerator pedal 7 remains released. The caution lights 6 go off the instant the driver depresses the pedal 7, and, if the additional "go" light terminal 32 is provided, the "go" lights 34 will be turned on automatically by reason of the engagement of the annular shoulder 33 with the terminal 32, as previously described. The switch 5, is, therefore, useable interchangeably with push or pull type carburetor linkage and it is a simple matter to adapt the switch 5 for use with either form of linkage.

Referring to FIG. 4, the switch 5' illustrated here is the same as that shown in FIGS. 2 and 3 and is convertible from push to pull type, and vice versa in a similar way. In this construction, the terminals 19' and 32' are more widely spaced so that a coiled compression spring 35, that is caged on the plunger 16' between the annular shoulder 33 and a slot 36 into which one end of the spring 35 is inserted, is arranged to be brought into engagement with the terminal 32' the instant the driver depresses the accelerator pedal 7 even slightly, and this spring is arranged to be compressed further with further depression of the accelerator pedal 7, so that there is no danger of the "go" lights 34 flickering by reason of unsteady contact between the plunger 16' and the terminal 32', as for example, due to running on a rough road. In other words, whereas the other construction of FIGS. 2 and 3 affords resilient contact only for the caution lights 6 and positive contact for the "go" lights 34, the construction of FIG. 4 gives resilient contact for both the caution lights 6 and the "go" lights 34.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. An electric switch for use in a linkage which comprises first and second link portions disposed in spaced coaxial relationship, said switch comprising an elongated tubular housing rigidly connected at its one end to the first link portion and having the second link portion extending into the other end thereof and movable axially with respect thereto to a limited extent, a hollow elongated plunger reciprocable in said switch housing and secured to said second link portion inside said housing to thereby positively limit the axial movement of said second link portion in one direction relative to said housing and said first link portion, an elongated coiled compression

spring disposed in said plunger and caged between it and one end of said housing to urge said plunger in the opposite direction with said second link portion, and an electric terminal on said switch housing engageable by said plunger for circuit closing purposes while limiting its movement in the last mentioned direction under action of said spring.

2. An electric switch as set forth in claim 1, including a second electrical terminal on said switch housing spaced longitudinally of said switch housing with respect to said first terminal and arranged to engage a portion of said plunger for another circuit closing operation while limiting movement thereof in the opposite direction against the action of said spring.

3. A switch as set forth in claim 1, wherein the plunger is threadably adjustable on the second link portion longitudinally relative thereto to vary the overall length of the linkage defined by said first and second link portions.

4. A switch as set forth in claim 1, wherein the said switch housing includes a guide thereon for the inner end of the second link portion independently of said plunger.

5. A switch as set forth in claim 1, wherein the said switch housing comprises an elongated tubular body carrying the electric terminal and detachably connected at its opposite ends to caps closing the opposite ends of said tubular body being disconnectable from said caps and reversible end for end along with the plunger and coiled compression spring relative to the caps and the links, whereby in changing from a pull-type linkage to a push-type linkage, or vice versa, the electric terminal on said tubular body is shifted to the opposite end of the switch housing upon reversal of said tubular body.

6. An electric switch as set forth in claim 1, including a second electric terminal on said switch housing spaced longitudinally of said switch housing with respect to said first terminal and arranged to engage a portion of said plunger for another circuit closing operation while limiting movement thereof in the opposite direction against the action of said spring, said switch housing comprising an elongated tubular body carrying the electric terminals and detachably connected at its opposite ends to caps closing the opposite ends of said tubular body, said tubular body being disconnectable from said caps and reversible end for end along with the plunger and coiled compression spring relative to the caps and the links, whereby in changing from a pull-type linkage to a push-type linkage, or vice versa, the electric terminals on said tubular body are shifted to the opposite end of the switch housing upon reversal of said tubular body.

7. An electric switch as set forth in claim 1, including a second electric terminal on said switch housing spaced longitudinally of said switch housing with respect to said first terminal and arranged to engage a portion of said plunger for another circuit closing operation while limiting movement thereof in the opposite direction against the action of said spring, the switch including a second coiled compression spring surrounding and caged on a portion of said plunger between the two electric terminals and arranged to engage the second terminal resiliently when the plunger is moved in the direction of it and away from the first terminal, whereby the first mentioned coiled compression spring provides resilient engagement between said plunger and the first terminal, while the second mentioned coiled compression spring provides resilient contact with the second terminal upon movement of the plunger in the opposite direction against the action of the first compression spring.

8. An electric switch as set forth in claim 1, including a second electric terminal on said switch housing spaced longitudinally of said switch housing with respect to said first terminal and arranged to engage a portion of said plunger for another circuit closing operation while limiting movement thereof in the opposite direction against

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the action of said spring, said plunger being threadedly adjustable on the second link portion longitudinally relative thereto.

9. An electric switch as set forth in claim 1, including a second electric terminal on said switch housing spaced longitudinally of said switch housing with respect to said first terminal and arranged to engage a portion of said plunger for another circuit closing operation while limiting movement thereof in the opposite direction against the action of said spring, said plunger being threadedly adjustable on the second link portion longitudinally relative thereto, and said switch housing including a guide thereon for the inner end of said second link portion independently of said plunger.

10. An electric switch as set forth in claim 1, including a second electric terminal on said switch housing spaced longitudinally of said switch housing with respect to said first terminal and arranged to engage a portion of said plunger for another circuit closing operation while limiting movement thereof in the opposite direction against the action of said spring, and said switch housing including a guide thereon for the inner end of said second link portion independently of said plunger.

11. An electric switch for use in a linkage which comprises first and second links disposed in spaced coaxial relationship, said switch comprising an elongated tubular body detachably connected at its opposite ends to caps closing the opposite ends of said tubular body, means whereby one of said caps is fixed to the end of the first link, the other cap having a center hole provided therein through which the end portion of the second link portion extends for endwise movement, switch mechanism in said tubular body detachably connected with the end portion of said second link portion to make contact with a terminal on said tubular body when said second link portion moves away from said first link portion and breaks contact with said terminal when said second link portion moves toward said first link portion, said tubular body being disconnectable from said caps and reversible end for end relative to said caps and link portions along with the switch mechanism which is disconnectable from the second link portion and connectable therewith again in reversed position, so that the electric terminal is shifted relative to the switch mechanism to have contact made when the second link portion moves toward the first link portion and contact broken when the second link portion moves away from the first link portion.

12. An electric switch as set forth in claim 11, including a second electric terminal on said tubular body in longitudinally spaced relation to the first terminal and arranged to have contact made therewith by said switch

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mechanism when the second link portion moves toward the first link portion, but, in the reversed position of the tubular body, arranged to have contact made therewith by said switch mechanism when the second link portion moves away from the first link portion.

13. A switch as set forth in claim 11, wherein said switch mechanism is threadedly adjustable on said second link portion longitudinally relative thereto.

14. A switch as set forth in claim 11, wherein the cap secured to said first link portion includes a guide thereon for the inner end of the second link portion to maintain coaxial relationship between said link portions independently of said switch mechanism.

15. An electric switch as set forth in claim 11, including a second electric terminal on said tubular body in longitudinally spaced relation to the first terminal and arranged to have contact made therewith by said switch mechanism when the second link portion moves toward the first link portion, but, in the reversed position of the tubular body, arranged to have contact made therewith by said switch mechanism when the second link portion moves away from the first link portion, said switch mechanism being threadedly adjustable on said second link portion longitudinally relative thereto.

16. An electric switch as set forth in claim 11, including a second electric terminal on said tubular body in longitudinally spaced relation to the first terminal and arranged to have contact made therewith by said switch mechanism when the second link portion moves toward the first link portion, but, in the reversed position of the tubular body, arranged to have contact made therewith by said switch mechanism when the second link portion moves away from the first link portion, the cap secured to said first link portion including a guide thereon for the inner end of the second link portion to maintain coaxial relationship between said link portions independent of said switch mechanism.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,336,450

August 15, 1967

Peter Rainer

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the heading to the printed specification, line 4, for "Kalam Szabo" read -- Kalman Szabo --.

Signed and sealed this 18th day of June 1968.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents