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W. P. SENG

TELLTALE SWITCH

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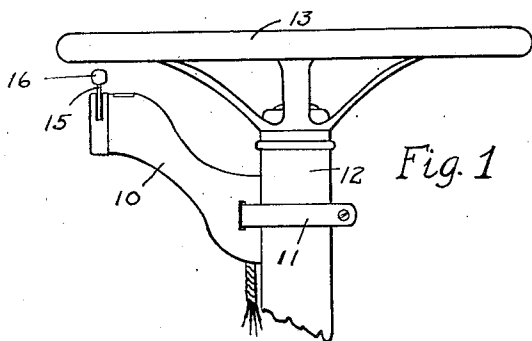
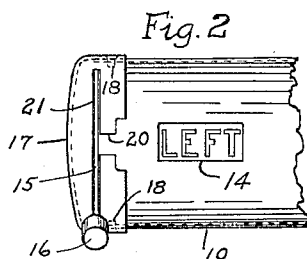
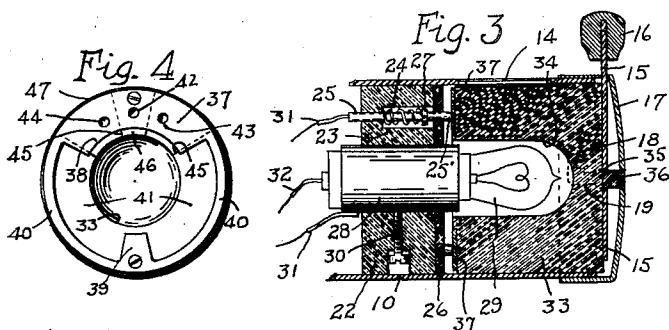
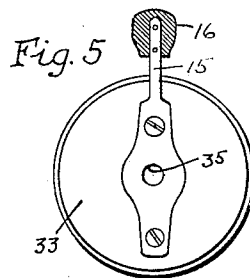


Fig. 6

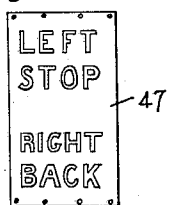


Fig. 7

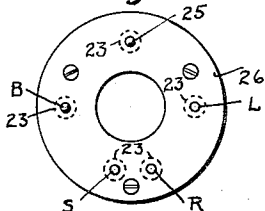
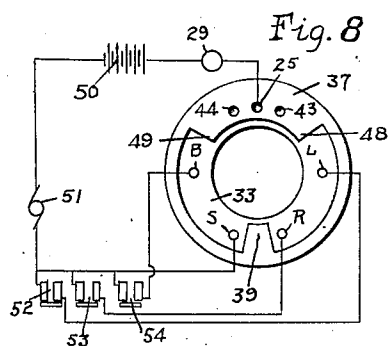


Fig. 9

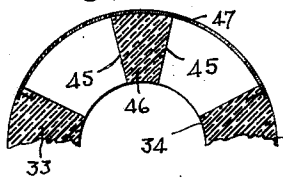
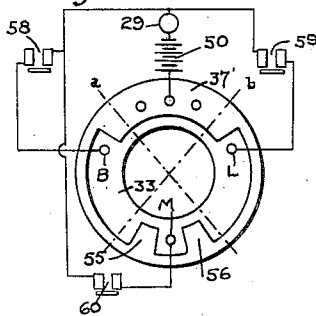


Fig. 10



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TELLTALE SWITCH.

Application filed April 24, 1920. Serial No. 376,378.

To all whom it may concern:

Be it known that I, WENDELIN P. SENG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in a Telltale Switch, of which the following is a specification.

This invention relates to a switch for automobiles and the like, which is designed and intended to control a selective rear or other signal, and to indicate to the driver or operator the selection that has been made. The principal object of the invention is to provide a new and improved switch of this kind which is conveniently placed adjacent the grip of the steering wheel where it is easily operable without removing the hand therefrom and so that the indicating signal of the switch is in clear view of the driver and easily observable. Another object of the invention is to provide a switch having a single operating part which may be conveniently moved to a plurality of controlling positions. Other objects will appear hereinafter. The novelty consists in the construction, combination and arrangement of the several parts.

In the accompanying drawing, Fig. 1 is a view in elevation showing this switch applied to the steering wheel of an automobile; Fig. 2 is a top view of a portion of the switch only; Fig. 3 is a sectional view; Fig. 4 shows the inner end of the removable plug; Fig. 5 is a view of the outer end of the plug; Fig. 6 is a development of the transparent material; Fig. 7 is a view showing the contacts inside of the switch housing; Fig. 8 is a diagrammatic view illustrating the connections from a switch of this kind to a selective signal system for which it is designed and intended; Fig. 9 is a sectional detail showing the lighting openings for the transparent material; and Fig. 10 is a diagrammatic view similar to Fig. 8 showing four contacts instead of five.

In this invention a visible indicator is provided in the switch housing adjacent the steering wheel for each change in position of the switch, to indicate unmistakably to the operator that a certain signal has been given at another point, as for example, at the rear of the automobile. If the signal is not given, the indicator will not be lighted, which will be immediately noticed by the driver or operator, so that he can make the proper repair or replacement.

In the preferred construction of this switch, a tubular switch housing 10 is attachable by means of a suitable band or strap 11 to a post 12 of a steering wheel 13. The housing is formed with a window or opening 14 at the top thereof which is clearly visible from the top through the steering wheel, and the switch has an operating arm 15 with a knob 16 at the end arranged close to the underside of the rim of wheel 13, so that it is within easy reach of the fingers of one hand of the operator or driver to be moved in either direction without taking this hand from the wheel.

A cap 17 is provided for the open end of the housing 10, and a bayonet joint connection is provided therefor which comprises pins 18 and slots 19. One side of the cap is formed with an opening 20 which communicates with a slot 21 extending in both directions therefrom so that the operating arm 15 of the switch can be rotated when the cap is in position over the end of the housing without moving the cap, the opening 20 being provided for positioning the cap with respect to the operating arm.

Within the housing a block 22 of insulating material is fixed thereto in which are a plurality of recesses 23 which are each adapted to contain a spring 24 which surrounds a contact pin 25 extending through the insulating block 22 and also through a covering plate 26 which is also formed of insulating material. The contact pins fit slidably in the block 22 and plate 26 and each of them is provided with a shoulder or washer 27 against which one end of the spring 24 is adapted to bear, tending to press the contact pin so that it protrudes beyond the outer face of the cover plate 26. At the center of the block 22 is a contact shell 28 for a miniature electric lamp 29, which is held in place by means of a screw 30. Connected to the shell 28 is a contact wire 31, and extending from the center thereof is another contact wire 32 for controlling the circuit of the lamp 29.

Attached to the controlling arm 15 is a plug 33 of insulating material which is insertable in the open end of the housing 10, and has a central recess 34 which fits over the miniature lamp 29. The arm 15 preferably extends across the entire face of the plug and may be formed with a central aperture 35 so that a bearing pin 36 attached to the inner side of the cap 17 may extend into

the aperture and form a bearing for this end of the plug upon which the plug may be turned.

At the opposite end of the plug 33 is a contact plate 37 which has a contact portion 38 at one side connected to an opposite contact point 39, by means of rims 40. This contact plate is set into the surface of the plug 33 so that the portions 41 thereof (see Fig. 4), stand out from the remainder of the plug flush with the outer surface of the contact plate. The contact portion 38 is preferably formed with a central depression or recess 42 and opposite corresponding recesses 43 and 44, each of which is adapted to receive the rounded end 25' of one of the contact pins 25, and to maintain the switch either in a central position when the end 25' engages the recess 42 and in a position at either side thereof when the plug 33 is moved so that the end 25' engages therein recess 33 or 34. The other contact pins 25 instead of being rounded at the ends, are preferably flat so that they bear upon the surfaces 41 of the plug 33 or upon the contact plate. There are four other contact making pins 25 in addition to the one with the rounded tip, arranged as shown in Fig. 7, and as indicated in Fig. 8, so that they will engage the contact plate 37 only at certain times. For convenience, these contact pins are designated as shown in Figs. 7 and 8, by letters B, S, R, and L, and when the movable plug 33 is in this central or neutral position, it will be observed by reference to Fig. 8 that no contact is made by them with the contact plate 37. The other pin 25, however, does make connection with the contact plate 37 at all times.

Intermediate the ends of the plug 33 it is formed with radiating openings 45 separated by a partition 46, the peripheral edge of which is about the width of the window 14 in the housing 10. Covering these openings 45 is a thin piece of material 47, a portion of which may be made transparent so that the light from the lamp may be observed through it and through the window 14 when the plug is turned to the proper position. This material 47 is marked, as shown in Fig. 6, to indicate corresponding positions of the plug 33 and of the contact making pins.

In operation it will be seen, by reference to Fig. 8, that the movement of the plug 33 to the first position on either side of the central or neutral position will cause the contact pin 25 to engage in the stop recess 43 or 44 and will cause the contact point 39 to be engaged by the corresponding contact pin S or R. The plug 33 may also be rotated a further amount in either direction, but it is limited by the engagement of the arm 15 with the corresponding end of the slot 21. In this case, however, the contacts L and B will be engaged by the adjacent

ends 48 and 49 respectively of the contact portion 37. In any case, the plug 33 will be rotated to such position that the contact which is made by the contact pins and the plate 37 will be properly indicated through the opening 14 in the housing, and if the proper circuit connection is made, the lamp 29 will be lighted.

Of course, after the proper circuit connections have once been made, the operator will know that something is wrong if the light does not appear through the housing window 14, as soon as the switch is turned to any position except neutral.

As indicated in Fig. 8, the lamp 29 is connected in series with upper contact 25 and battery 50 when a circuit is closed through any one of the other contacts B, S, R, or L. As these contacts are arranged, the movement of the switch plug 33 in either direction from its central position will cause the contact point 39 to be brought into engagement with contact pin S or R; a further movement in the same direction will cause the contact L or B respectively to engage with the contact portion 48 or 49 of the contact plate 37. In circuit with the battery 50 is an electric responsive device 51 such as a motor which is energized through one of the contacts as S, and a different circuit is closed through the lamp 29, the battery 50, device 51, and one of the electro-responsive devices 52, 53 and 54 when the contacts R, L, and B are respectively engaged. From this it is obvious that a switch of this kind may be used for closing a number of different connections for different signalling devices, and the connections shown in Fig. 8 particularly adapt this switch to be used in connection with a vehicle signal, such as that shown by Patent No. 1,080,589 of December 9th, 1913, granted to E. B. and G. E. Roedding for vehicle signal.

A modification of this switch, or at least the contact part of it, is shown in Fig. 10, in which the contact plate 38' is provided with two projecting tongues 55 and 56 instead of the single tongue 39, and a single contact M is provided in place of the two contacts S and R as indicated in Fig. 8. The contacts B and L are also arranged so that they make contact respectively with the corresponding portion of the contact plate 37' at the time contact M engages with tongues 55 or 56. Upon the further movement of the contact plug 33 in either direction from its first position, the contact M slides from the tongue 56 or 55 leaving only the contact L or B in connection with the plate 37'. With this arrangement an electromagnet 60 is energized each time a circuit is closed through the contact M, and one of the directional electromagnets 58 or 59 is closed through contact B or L. As soon as the switch plug 33 is moved to

the limiting position in either direction, as indicated by dotted lines *a* and *b*, the contact *M* ceases to make connection with the contact plate 37 leaving only the directional magnet 58 or 59 in circuit. In this case the electromagnet 60 is a stop magnet which permits the mechanism controlled by the directional magnets 58 or 59 to continue operation in the selected direction when the magnet 60 is deenergized.

The magnet connections shown in Figs. 8 and 10, simply illustrate the application of the switch, and other variations may be made in the circuit connections without departing from the spirit and scope of the invention. The controlling arm 15 may be moved to any one of the several positions, where it will remain until manually moved to some other position. The arm may be moved from one position to any other without stopping at the neutral position. The switch plug 33 and the contact plate 37 may be easily removed at any time by simply disengaging the cap 17 from its bayonet connection, and drawing the plug 33 outwardly. The contact pins will not be disarranged, the lamp 29 will remain in position or may be easily removed, and in returning the plug 33, the operation is simply reversed, and all the parts are in their proper position for immediate operation.

I claim:

1. In a switch, a housing, a member fixed therein, with spring pressed contact makers projecting from the face thereof, a switch member movable therein, means for operating the movable member, and a cap removably connected with the housing having a bearing projection which engages the outer end of the said movable member and presses the opposite end thereof against the spring pressed contact members, when the cap is attached to the housing.

2. In a switch, a housing, a pair of switch members, one fixed and the other movable therein, spring pressed contact means at the adjacent ends of the members, an arm for operating the movable member, a cap having a removable connection with the end of the housing with a slot therein to permit the movement of the arm, and with a bearing pin at its end to engage the central portion of the outer end of the said movable member, and thereby to hold the two members in engagement when the cap is on the housing, and to permit the removal of the movable member and its arm with the cap when the latter is removed from the housing.

3. In a switch of the class described, a plurality of spring pressed contacts, and a rotatable contact member having a contact portion with which one of the spring pressed contacts is in engagement at all

positions of the movable member, and an opposite contacting projection which is moved into engagement with certain of the spring pressed contacts when the contact member is moved a predetermined distance in either direction from its central position, the other contacts being so arranged that upon a predetermined movement of the movable member in either direction, one of them engages the first named contact portion.

4. In a switch of the class described, a plurality of spring pressed contacts, and a rotatable member having a contact plate at one end thereof with a long contact portion and an opposite shorter contact portion connected by a rim of conducting material, the member being cut away to receive the plate so that the end of the member is flush with the face of the plate, all but one of the spring pressed contacts normally engaging the end of the movable member, and engaging with the said contacting portions depending upon the direction of movement of the said movable member from a central position.

5. In a switch of the class described, a plurality of spring pressed contacts, and a rotatably movable contact member, having a contact plate which is continuously engaged by one of the spring pressed contacts, and an opposite connected contact member which is movable when the member is rotated in either direction from its position into engagement with certain of the contacts, and two other contacts of which one is engaged by the first named contacting portion when the member is moved a predetermined amount from its central position in either direction.

6. In a switch, the combination with a relatively fixed insulating member and spring pressed contacts projecting from the face thereof, of an electric lamp also protruding beyond the said face, and a movable contact member having a recess in which the lamp is insertable, and with window openings extending from the recess to the periphery of the member, a transparent piece of material covering the openings, and a contact member at the end of the movable member adapted to be engaged by the spring pressed contacts and by such connection to close a circuit through the lamp for each different position in which the movable member is set.

7. In a switch, a fixed housing having a window aperture at one side thereof, an insulating block fixed in the housing, a plurality of spring pressed contacts protruding from the face of the block, an electric lamp also extending beyond the face of the block, a movable member insertable in the housing having a recess in which the lamp is received, and with radiating openings

from the said recess to the periphery thereof, a contact plate at the inner end of the block adapted to make different connections with the spring pressed contacts when the removable member is rotated, transparent material covering the radiating openings opposite the window in the housing, means for rotating the movable member, and a removable cap for pressing the contact plate and the removable plug member against the spring pressed contacts.

8. In a switch, a pair of members, one fixed and the other relatively rotatable, a plurality of spring pressed contacts protruding from the fixed member, a contact plate carried by the movable member adapted to be engaged by the spring pressed contacts, one of the contacts having a rounded end, and the contact plate, being provided with a plurality of rounded depressions for engaging the rounded contact end and for holding the movable member in a plurality of predetermined positions, in combination with a housing having a removable cap for normal pressing the movable member and the contact plate against the spring pressed contacts, and an operating member extend-

ing through an opening in the cap and permitting the rotation of the movable member therein.

9. In a switch, a pair of members, one fixed and the other relatively movable, a plurality of spring pressed contacts projecting from the face of one of the members, a contact plate carried by the other member having a portion adapted to make continuous engagement with one of the spring pressed contacts, the other contacts being engaged by the contact plate upon the relative movement of the members, an electric lamp carried by one of the members and enclosed between them, the movable member having a recess for receiving the lamp and radiating openings therefrom covered by transparent indicating material, the lamp being in series with the continuously engaged contact so that whenever one of the other contacts is engaged by the contact plate, the member will be lighted in accordance with the different positions thereby and this may be observed through the indicating transparent material.

WENDELIN P. SENG.