Feb. 25, 1941. C. S. HOMSHER 2,232,822

SWITCH APPARATUS

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Fig. 1.

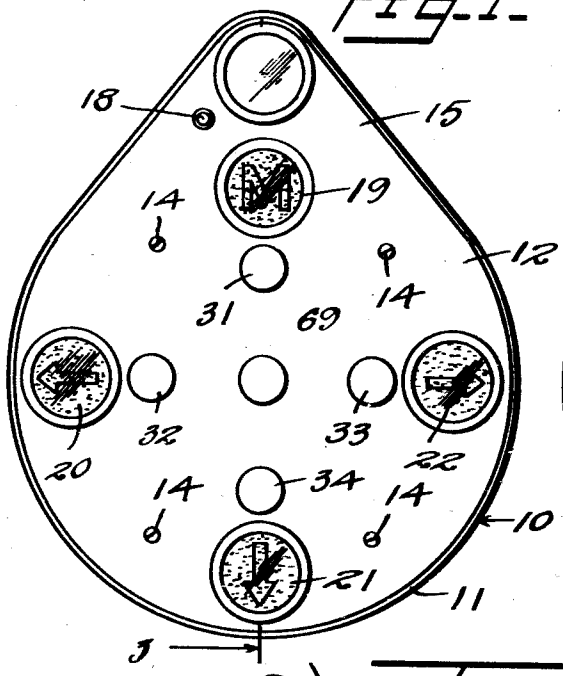


Fig. 2.

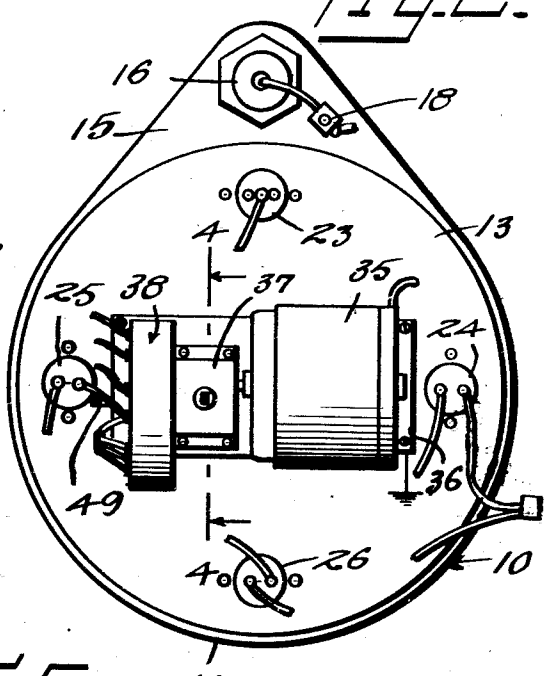


Fig. 6.

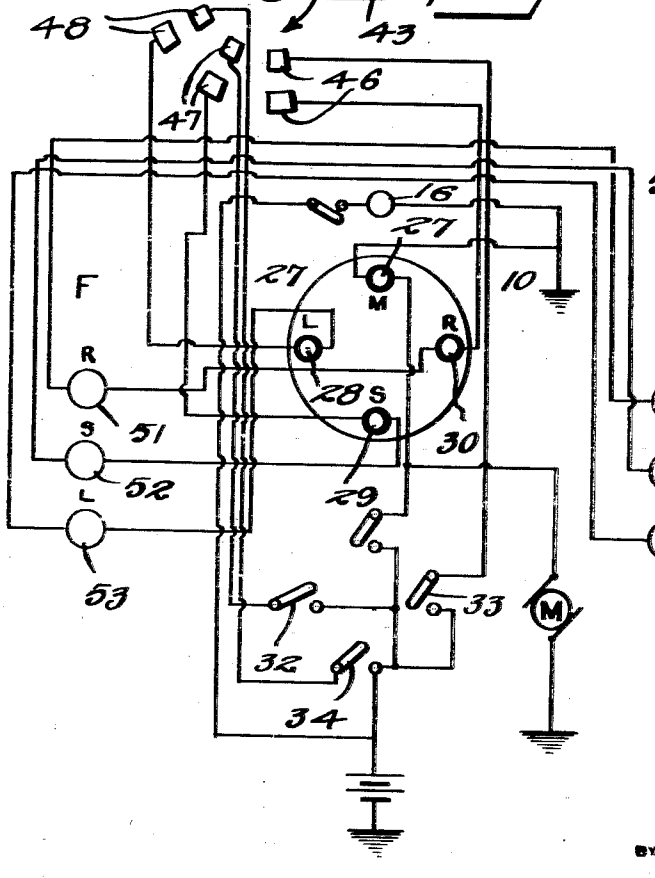
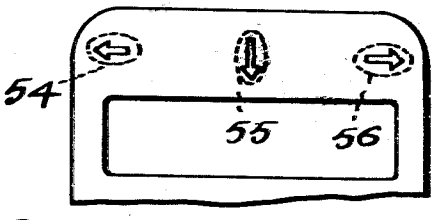


Fig. 7.



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Fig. 3.

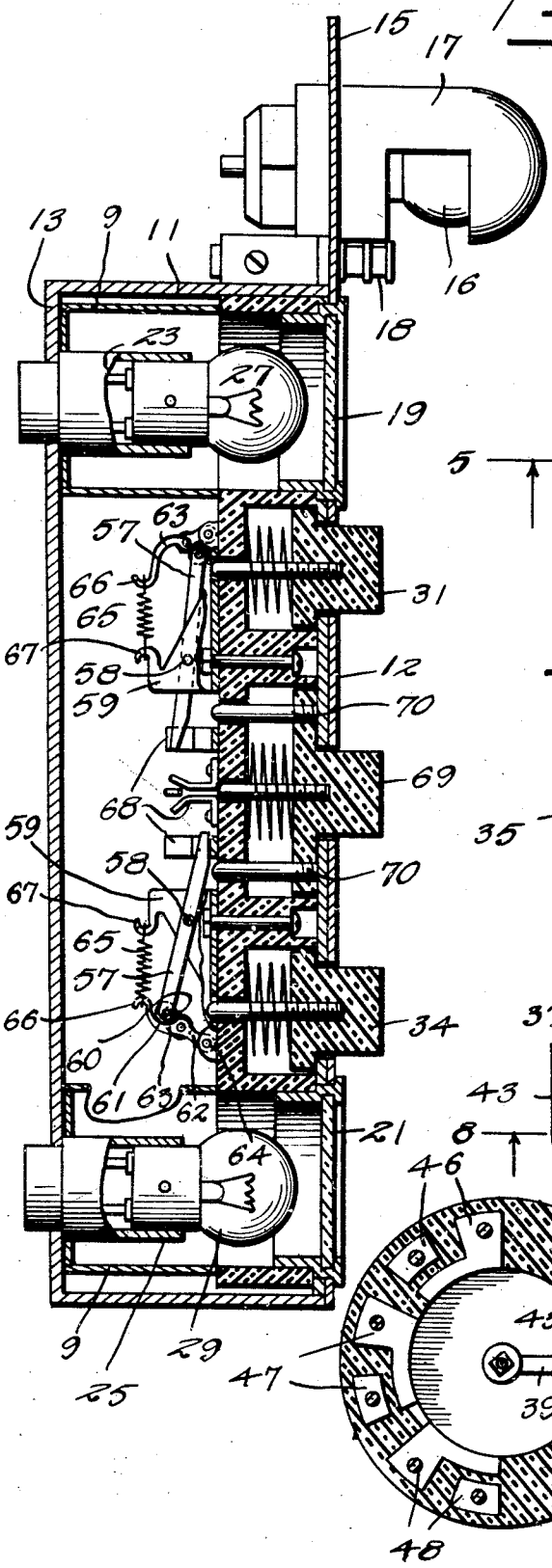


Fig. 4.

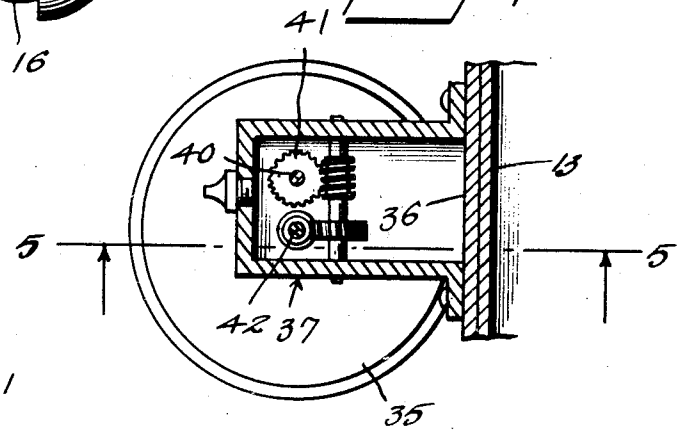


Fig. 5.

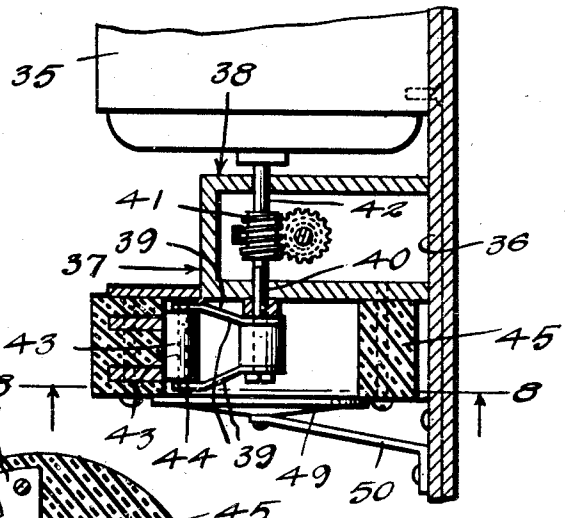


Fig. 8.

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SWITCH APPARATUS

Carl S. Homsher, Denver, Colo.

Application October 20, 1937, Serial No. 170,108

1 Claim. (Cl. 200—69)

This invention relates to switch apparatus and has for an object to provide a novel compact assembly of switches, telltale lamps and a flasher unit, which may be mounted within convenient reach of a driver and may be manipulated to flash a predetermined signal lamp, located preferably on the body of the motor vehicle near the roof, or on an airplane at the end of the wings, or on a boat or steamship, to indicate an intended change of direction or an intended stop or landing.

A further object is to provide apparatus of this character which will be formed of a few strong simple and durable parts, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claim without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings forming part of this specification,

Figure 1 is a front elevation of the switch apparatus showing the push buttons, telltale lamp and flasher indicating windows, and lamp for illuminating the front of the instrument casing.

Figure 2 is a rear elevation of the control instrument and showing the flasher unit mounted on the back of the rear cover, and showing the rear ends of the telltale lamp sockets.

Figure 3 is an enlarged longitudinal sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a detail cross sectional view of the reduction gear mechanism taken on the line 4—4 of Figure 2.

Figure 5 is a detail longitudinal sectional view taken on the line 5—5 of Figure 4 and showing the electric motor, the reduction gear mechanism, and the flasher switch mechanism.

Figure 6 is a diagrammatic view showing the electrical connections of the signal lamps, telltale lamps, and flasher switch contacts.

Figure 7 is a fragmentary rear elevation showing direction arrows for the signal lamps located near the roof of a motor vehicle.

Figure 8 is an enlarged cross sectional view taken on the line 8—8 of Figure 5 showing the flasher switch contacts in side elevation.

Referring now to the drawings in which like characters of reference designate similar parts in the various views, 10 designates an instrument casing comprising a cylindrical wall 11, a front wall 12, and a rear cover 13 which is removably secured in place by bolts 14. The front wall is provided with a substantially triangular projection 15 upon the front face of which is mounted a lamp bulb 16 for illuminating the push buttons of the hereinafter described switches. A slotted shade 17 of conventional type is mounted over the bulb to conceal the bulb from the driver's eyes. A push button switch 18 is mounted on the extension above the casing for controlling the lamp bulb circuit.

Preferably four circular windows 19, 20, 21 and 22 are formed in the front wall of the casing, two of these windows, namely, 19 and 21, being located on a vertical median line of the casing, the window 19 displaying the letter M indicative of a motor circuit hereinafter described. The windows 20 and 22 are located on a horizontal median line of the casing and display respectively an arrow pointing left, and an arrow pointing right. The window 21 displays an arrow pointing downward indicating a stop.

Mounted on the inner face of the back cover 13, and in cylindrical casings 9, are a plurality of lamp sockets 23, 24, 25 and 26 to receive respectively telltale lamps 27, 28, 29 and 30, best shown in Figure 6. The telltale lamps are mounted in respective circuits controlled by respective push button switches 31, 32, 33 and 34, best shown in Figures 1 and 3. The telltale lamps are located back of their respective windows 19, 20, 21 and 22 and illuminate these windows simultaneously with the energizing of selected ones of the signal lamps and since the signal lamps are connected in series with their respective telltale lamps should one of the latter fail to glow the driver will know that the telltale lamp or respective signal lamp is not of good working order. The motor telltale lamp is connected in parallel with the motor so that it only acts as a pilot light and does not flash.

Mounted on the rear face of the back cover 13 is an electric motor 35 which is secured to a base 36 sufficient in length to mount a reduction gear mechanism 37 and a flasher switch 38.

By referring to Figures 5, 6 and 8 it will be seen that the flasher switch comprises a pair of arms 39 which are fixed to the shaft 40 extending from a step-down gear mechanism designated in general by the numeral 41 which mechanism is connected with the motor shaft 42. A roller 43 is mounted on a shaft 44 secured to the

ends of the arms 39. The roller is formed of metal and constitutes a bridging switch contact to wipe over fixed switch contacts in the lamp circuits and flash a predetermined signal lamp and its associated pilot lamp when the driver pushes a respective push button to indicate an intended turn or stop.

As best shown in Figure 8 the flasher stationary contacts are substantially arcuate in contour and project through the inner periphery of an annular block 45 of insulation, which is mounted on the housing of the reduction gear mechanism, by screws 8, concentric with the shaft 40. In the present embodiment of the invention there are six stationary contacts arranged in pairs, each pair being connected in a respective lamp circuit and the pairs being designated respectively by the numerals 46, 47 and 48.

The insulating block 45 is provided with a cover 49 which is held in place by a spring arm 50, as best shown in Figure 5. The cover preferably is formed of insulating material.

During rotation of the arm 38 the roller 43 will bridge the pairs of stationary switch contacts successively and when the circuit of one pair of the switch contacts is closed by the driver pushing in the respective push button, the roller will close said circuit at the respective pair of switch contacts during each revolution and flash the signal lamps and the pilot lamps of that circuit once during each revolution.

The signal lamps are preferably arranged on the body of the vehicle near the roof, both at the front and the rear to indicate the driver's intention to approaching traffic as well as to following traffic. The signal lamps designated by the numerals 51, 52 and 53 and indicative "Right turn," "Stop" and "Left turn," shine through respective windows 54, 55 and 56, best shown in Figure 7. These windows display arrows indicating the direction of the turn, one of the arrows pointing directly downward and being indicative of the driver's intention to stop when illuminated.

The stem of each push button, as best shown in Figure 3, confronts one end of a respective knife switch 57 which is pivoted centrally as shown at 58 on an ear 59 that projects from the inner face of the front wall 12 of the casing. The opposite end of the knife switch is provided with a roller 60 which is selectively receivable in spaced notches 61 and 62 formed in a lever 63 that is pivoted as shown at 64 at one end, on the rear face of the front wall of the casing.

A helical spring 65 is hooked at the end over hooks 66 and 67 formed respectively on the lever 63 and on the ear 59 to hold the roller yieldably in either one of the notches. The stationary contact 68 of the knife switch is mounted on the rear wall of the casing and is of such length as to be engaged by the knife switch when the respective push button is pushed by the driver to close the circuit to a selected signal lamp and its respective telltale lamp.

For releasing the knife switches after each actuation a spring pressed push button 69, best shown in Figure 1, is centrally disposed on the front wall of the casing with respect to the other push buttons, 31 to 34 inclusive, and is provided with four stems 70 which confront the ends of the knife switches 57. When the push button 69 is pushed by the driver the stems 70 move toward the knife switches and dislodge any switch which has been previously set by the driver, including the motor switch.

In operation the driver first pushes the push button 31 to start the motor and insure the selected lamp circuit being alternately opened and closed at the flasher switch. He then presses the push button which corresponds to the turn intended to be made whereupon the respective turn signal lamps and the respective pilot lamp will be flashed. The driver may however push in both the motor switch and the desired signal switch simultaneously by using two fingers of the hand. In case the driver intends to make a stop the same procedure is followed except that the stop indicating push button is pushed in. After the turn has been completed the driver pushes in the central push button 69 and as previously stated the knife switch which has been set is dislodged to open the circuit at this point.

From the above description it is thought that the construction and operation of the invention is fully understood without further explanation.

What is claimed is:

In switch apparatus, a casing, a push button secured to the casing having a stem projecting from one wall of the casing, an ear on said wall terminating in a hook, a switch blade pivoted centrally on the ear and extending across the push button stem, a lever pivoted on the casing having spaced notches and terminating in a hook, a helical spring secured at the ends to the hooks of the ear and of the lever and holding the switch blade in open circuit position, a stationary switch contact extending from said wall of such length as to be engaged by one end of the switch blade when the push button is actuated, a roller on the other end of the switch blade engaged in one of the notches in the lever when the switch blade is in open circuit position and engaged in the other notch when the switch blade is in closed circuit position, a second push button secured to the casing having a stem projecting from said wall underneath that end of the switch blade engageable with the switch contact and adapted to dislodge the switch blade from said contact and dispose the switch blade in open circuit position.

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