Feb. 24, 1931. W. R. McKERLIE 1,794,193

SWITCH FOR THE CONTROL OF LIGHT SIGNALS

Filed March 5, 1928 2 Sheets-Sheet 1

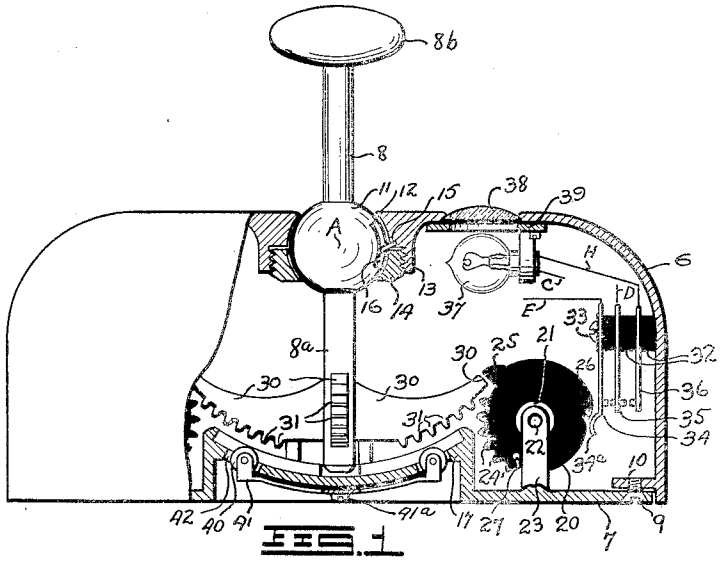


FIG. 1

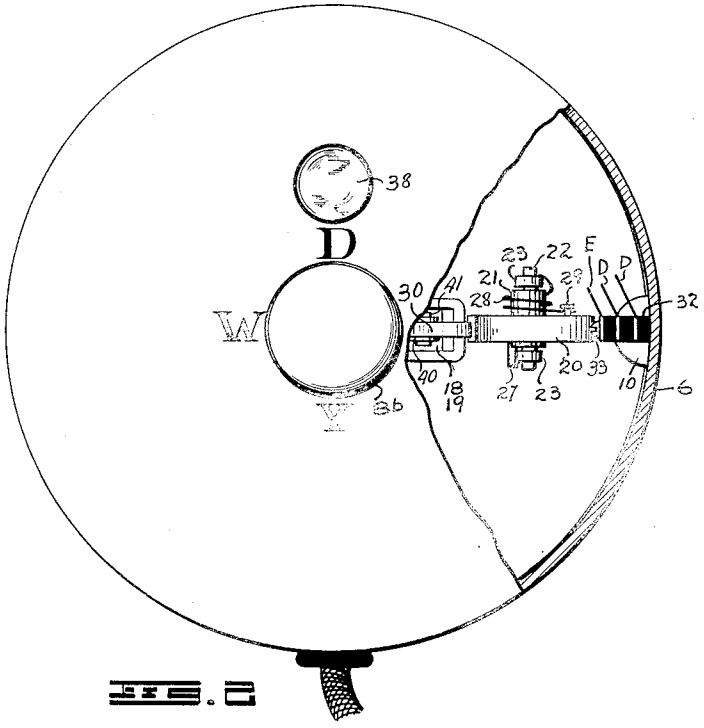


FIG. 2

INVENTOR
W. R. McKerlie
By Cairon & Cairon
ATTORNEYS

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SWITCH FOR THE CONTROL OF LIGHT SIGNALS

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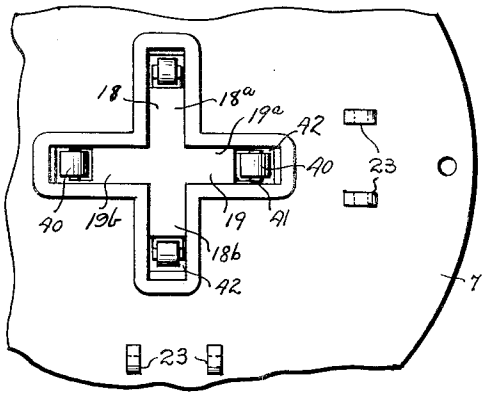


Fig. 3.

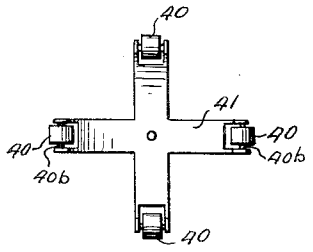


Fig. 4

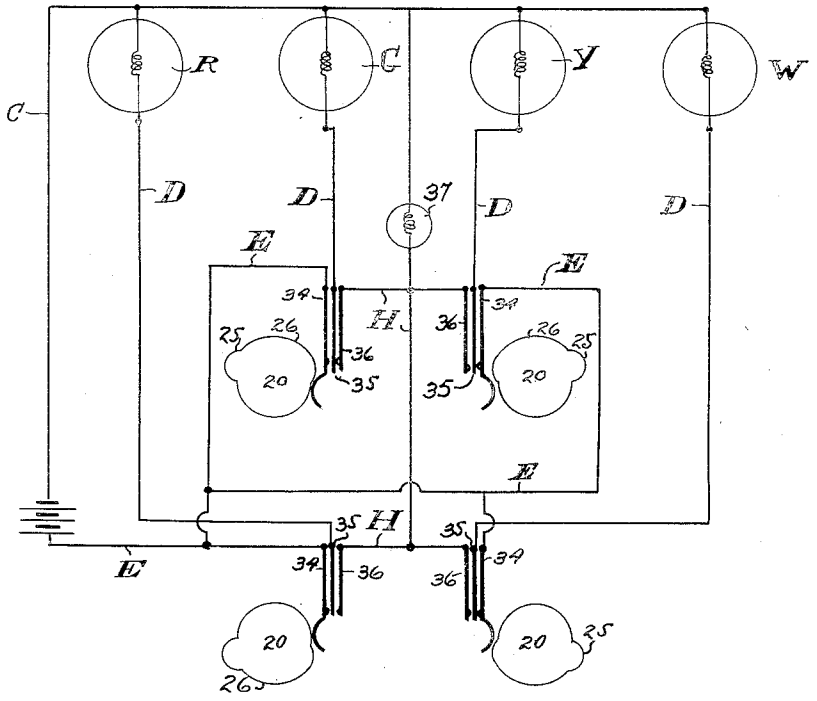


Fig. 5

INVENTOR
W. R. Mc Kerlie
By Cameron & Cameron
Attorneys.

Patented Feb. 24, 1931

1,794,193

UNITED STATES PATENT OFFICE

WILLIAM R. McKERLIE, OF REGINA, SASKATCHEWAN, CANADA

SWITCH FOR THE CONTROL OF LIGHT SIGNALS

Application filed March 5, 1928. Serial No. 259,146.

The present invention relates to a control switch for the operation of electric light signals such as used in connection with automobiles and like vehicles, the main object consisting in the provision of a device capable of operating a number of individual signal lights by means of a single lever.

A second object is to provide a device which will operate individual light signals in such a manner that only one signal can be operated at one time.

A further object consists in the provision of a device for the control of light signals which, after operating the desired signal for the required length of time, will automatically return to normal position.

A still further object consists in the provision of a device of the class mentioned capable of retaining any desired signal in operation indefinitely when so desired.

Further objects and advantages will become apparent in the description which follows, to which drawings have been appended, and in which—

Figure 1 is a side elevation of the device, part of which is shown in section in order to exhibit the inside parts thereof;

Figure 2 is a top view of the device partly broken away to show part of the mechanism;

Figure 3 is a top view of a portion of the bottom of the device;

Figure 4 is a top view of the lever-retaining spring; and

Figure 5 is a diagram showing the various circuits between the control switch and the light signals.

Similar characters of reference refer to similar parts throughout the views.

The device consists of three main parts,—a casing 6, a bottom or base 7 therefor, and an operating lever 8. The base 7 is fastened to the casing 6 by means of screws 9 passing therethrough, which are threaded in small lugs 10 integral with the casing. The lever has a substantially central ball portion 11, which is seated in a spherical bearing 12 at the center top of the casing so as to hold the lever in a downward position. The bearing 12 has a circular downward extension 13 threaded as shown to receive a spherical gland 14 which when screwed in place will hold the ball portion 11 of the lever properly seated, allowing the same to play in any direction on an axis A. As the lever is intended to operate in a longitudinal manner with respect to the casing and not to rotate latitudinally thereof, means to prevent rotation are provided consisting of a small pin 15 inserted in the casing engaging in a small circumferential groove 16 in the ball. In the present instance the lever is required to be moved from a center in four directions, each being 90° from the other. In order to lead the lever in such directions, a guide integral with the base is provided. It consists of a raised portion 17 concentric with A, having two grooves 18 and 19 crossing each other at 90°, forming individual guides 18^a, 18^b, 19^a and 19^b. The length of the portion 8^a of lever 8 below ball 11 is such that it will bear between the guides, passing near the bottom thereof without touching the same.

Since the present device is intended to operate four signals, four switches are provided, one being mounted at the end of each individual guide. These consist of a disc 20 of insulation, having a hub 21, as shown, through which a small shaft 22 passes. The disc is supported by means of posts 23 integral with the base, having bearings for the shaft, and is provided with teeth 24 on a portion of its circumference, a stop 25, a raised cam portion 26 and a stop pin 27. Each disc is further provided with a coil spring 28 around its hub 21, one end of which is attached to the disc by means of a pin 29, its other end engaging one of the posts 23, as shown.

Operating means between the lever 8 and the discs 20 consists of integral curved extensions 30 on portion 8^a of the lever, as shown. These curved extensions carry teeth 31 set in an arc concentric with A and so arranged as to mesh with teeth 24 of the disc. The springs 28 give a rotation to the discs, tending to return the lever to its central perpendicular position until it is stopped by pin 27 resting against post 23, when stop 25 resting close to end 30^a of extensions 30 will hold the lever in such position. This will keep

the lower end 8^a of the lever at the meeting point of the grooves so that by manipulating the same by means of its hand knob 8^b, it can be forced in any desired guide, setting the disc at the rear of said guide into rotation due to engagement of the teeth on the lever extension with those on the disc. The cam portion of the disc, which is concentric with shaft 22 but has a longer radius than the remaining part of the disc, serves to operate contacts on rotation thereof. These contacts are mounted and insulated from the casing by means of insulation spacers 32 and a screw 33, as shown. There are three contacts,—the first, numbered 34, resting close to the disc and having a small curved extension 34^a in order to properly engage with the cam portion 26. The second contact 35 is positioned back of contact 34 so that it will press the latter, which in turn will press against the third contact 36. A similar set of contacts is placed back of each disc. The four contacts 34 are connected with the source of current. Each contact 35 is connected with an individual signal light; and all contacts 36 are connected with a pilot light 37 mounted on the inside top of the casing, as shown, directly above which an aperture is provided in the casing and in which a small lens 38, preferably coloured, is set and held therein by a ring 39 suitably fastened to the casing.

The spherical means used as a fulcrum for the lever is considered to be the more simple; but other means, known as universal joints, and consisting mainly of a lever mounted on a cross member, may be substituted therefor if desired.

It will be seen from the foregoing that when the lever is forced in any of the four directions in which it is capable of travelling, it will rotate one of the discs and be subjected to being thrown back towards its center or perpendicular position due to the action of the spring on said disc. In some cases, however, when it is desired to retain the lever in advanced position in order to keep the contacts together without holding the lever, checking means are provided, consisting of small rollers 40 held by a spring 41 and protruding through apertures 42 in the portion 17 of the bottom. These rollers are positioned directly in the path of the lower end of the lever and sufficiently at the end of each guideway so that should the lever be pressed to the limit, it will rest behind the roller 40 and be held in that position by action of the spring 41. It will be easily released therefrom by a slight pull applied to knob 8^b of the lever, after which it will automatically return to its normal central position. It will be noticed that for compactness all four rollers 40 are held by one spring 41 in the shape of a cross. The ends of this spring are shaped to each embrace a roller, held thereto by a pin 40^b as shown in Figure 4. The cross spring is held to the underside of the raised portion 17 by means of a single screw 41^a.

In use, assuming that signal lights of various colours, such as red, green, yellow and white, indicated by R, G, Y and W respectively in Figure 5, represent individual meanings, a source of current consisting of a wire C will be connected to one contact of each light, as shown, one of the other contacts of said light being each connected to one of the contact bars 35 by means of wires D. The other pole of the source of current, consisting of a wire E, will be connected to all contact bars 34, and the source C will also be connected to one end of pilot light 37, the other end of said light being connected to all contact bars 36 by means of wires H. The casing may be provided with marks such as letters corresponding to the color of the signal lights placed in line with the guide on the opposite side of the casing, under which is the contact connected to the corresponding light.

In operation, if a certain signal requiring the glowing of signal light R is desired momentarily, pressure of the hand on knob 8^b towards R will cause the lower end of lever 8 to enter the guide leading to the disc, which will operate the contacts, one of which is connected to the said light, causing the disc to rotate by engagement of the teeth, the cam portion forcing contact 34 against the contact 35, which in turn will be forced against the contact 36. This will simultaneously connect the source of current with the desired light and also with the pilot light so that it will at once show by the glow of the said pilot light that the signal is working. When the light has been "on" for the desired length of time, the lever may be released, when it will return to its central position by the action of spring 28 cutting off the source of current from the pilot and the signal light. If, however, it is desired to retain the said signal R for a certain length of time, pressure will be applied to the knob 8^b in a direction towards R as far as it will go, thereby causing the lower end of the lever to depress and pass over one of the rollers 40, which will become held between the said roller and the end of the guideway. This will cause, as previously explained, contacts to furnish current to the pilot light and the signal light R, which will remain on until the lever is released from the said roller by pressure applied to knob 8^b in the opposite direction to that originally given. The lever may be worked towards any other sign or letter on the casing, thereby operating the signal light which corresponds to the said sign or letter.

While I have described my invention strictly in accordance with the embodiment submitted in the drawings, it must be understood, however, that many changes may be made for various applications of the device

and to suit different requirements,—such as duplication of parts, as well as other minor variations,—which become necessary in the course of manufacture and as will fall within the spirit of the invention and the scope of the following claims.

I claim:

1. In a device of the class described, a casing, a lever fulcrumed in said casing, switches in said casing, consisting of an eccentrically formed rotary member adapted to operate contacts, and means between said lever and said member whereby the operation of said lever will cause said member to rotate, thereby operating said contacts, and spring means on said rotary member whereby it will return said lever on release thereof to a central position with respect to said switches.

2. In a device of the class described, a casing, a lever fulcrumed in said casing, switches in said casing, consisting of a rotary member adapted to operate contacts, means between said lever and said member whereby the operation of said lever will cause said member to rotate, thereby operating said contacts, spring means on said rotary member whereby it will return said lever on release thereof to a central position with respect to said switches, and means in said casing to direct said lever towards said switches.

3. In a device of the class described, a casing, a lever fulcrumed in said casing, switches in said casing, consisting of a rotary member adapted to operate contacts, means between said lever and said member whereby the operation of said lever will cause said member to rotate, thereby operating said contacts, spring means on said member whereby it will return said lever to a central position, and means in said casing to prevent free release of said lever, thereby holding said contacts in operated position.

4. In a device of the class described, a casing, a lever fulcrumed in said casing, switches in said casing, consisting of a rotary member adapted to operate contacts, means between said lever and said member whereby the operation of said lever will cause said member to rotate, thereby operating said contacts, means on said member whereby it will return said lever on release thereof to a central position with respect to said switches, means in said casing to direct said lever towards said switches, and means in said casing to prevent free release of said lever, thereby holding said contacts in operated position.

5. In a device of the class described, a casing, a lever fulcrumed therein, a series of switches around the lower end of said lever, comprising a member journaled in said casing, toothed extensions on said member, gear teeth at the lower end of said lever, spring means to impart rotation to said member, stop means to limit said rotation, a cam on said member, contacts adapted to operate by action of said cam, means whereby the operation of said lever will selectively engage one of said extensions with one of said members, rotating the same against the action of said spring, thereby forcing said cam on said contacts, spring means to retain said lever while said member is in said rotated position, the said first-mentioned spring causing the release of said contacts and the return of said lever to a central position.

6. In a switch of the class described, a casing, a lever fulcrumed in said casing, switches selected by the operation of said lever, said switches consisting of rotary members, gear means between said members and said lever, contacts dependent on the operation of said members, said contacts adapted to close a circuit with any selected signals, means to direct the said lever with respect to said switches, and checking means to hold said lever.

7. In a device of the class described, a casing, a switch lever fulcrumed in said casing so as to extend partly inside and outside thereof, segmental arms projecting from the inner end of said lever, rotary discs positioned to be rotated by said arms, and electrical contacts controlled by said discs.

8. In a device of the class described, a casing, a switch lever fulcrumed in said casing so as to partly extend inside and outside thereof, segmental arms positioned radially from the inner end of said lever, rotary discs positioned to be rotated by said arms, stop means on said discs to maintain the switch lever in normal position, and spring means on said discs to return said lever when the same is being released.

9. In a device of the class described, a casing, a lever fulcrumed in said casing, segmental arms projecting radially from the lower end of said lever, rotary discs adapted to engage with said segmental arms, means to guide said lever towards said rotary discs, means on said rotary discs to return said lever to normal position so that the joint action of said disc will normally hold said lever centrally thereof.

In testimony of the foregoing, I have hereto affixed my signature, this 27th day of February, 1928, at the city of Regina, in the Province of Saskatchewan, Canada.

WILLIAM R. McKERLIE.