Jan. 15, 1929.

1,699,172

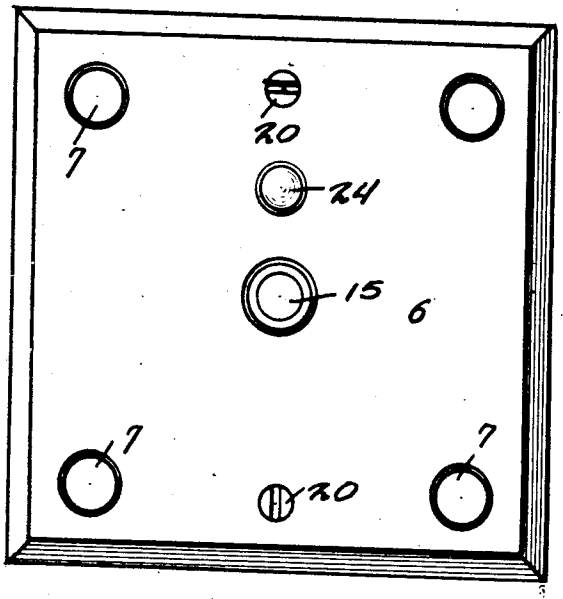
J. F. WEILAND

MULTIPLE SWITCH

Filed Jan. 4, 1926

2 Sheets-Sheet 1

Fig. 1.



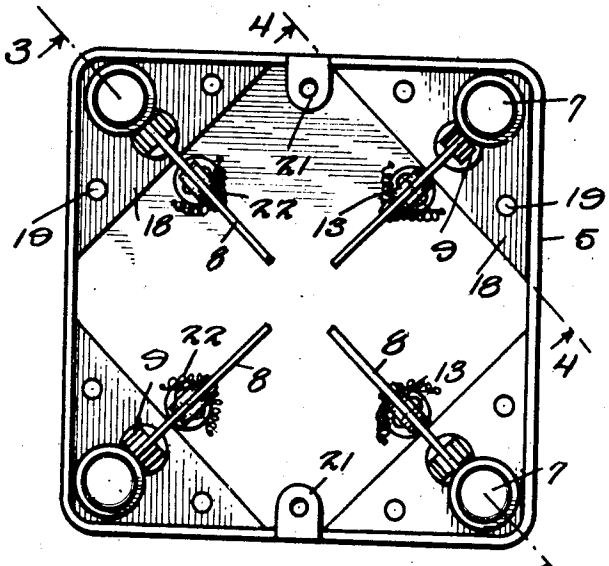


Fig. 2.

James F. Weiland INVENTOR.

BY Richard B. Owen

ATTORNEY.

Jan. 15, 1929.

J. F. WEILAND

1,699,172

MULTIPLE SWITCH

Filed Jan. 4, 1926

2 Sheets-Sheet 2

Fig. 3.

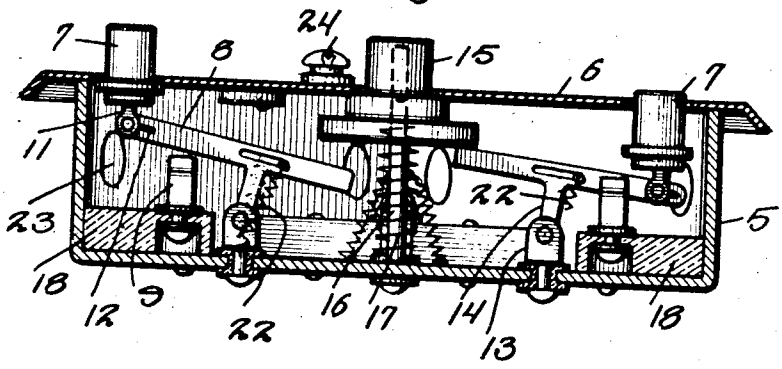
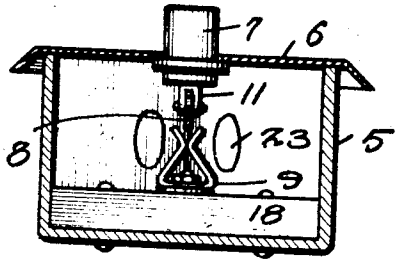


Fig. 4.



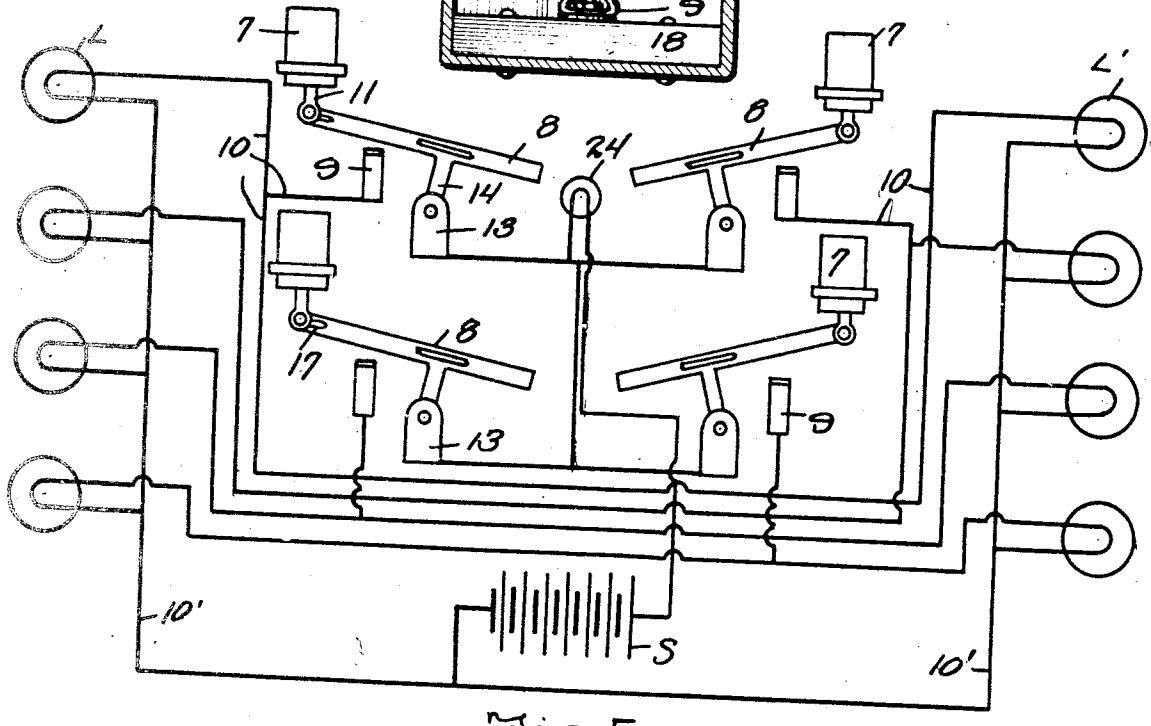


Fig. 5.

INVENTOR.

James F. Weiland

BY

Richard B. Owen

ATTORNEY.

Witnesses

C. C. Chrichman Jr.

F. Stanley Bond

Patented Jan. 15, 1929. 1,699,172

UNITED STATES PATENT OFFICE.

JAMES F. WEILAND, OF OTTER CREEK, IOWA.

MULTIPLE SWITCH.

Application filed January 4, 1926. Serial No. 79,231.

This invention relates to multiple switches, and has for its main object to provide a compact multiple switch of novel construction that is equipped with an efficient means for operating the controlling elements of the switch.

Another object of my invention is to provide a multiple switch that comprises a plurality of controlling elements, and a device that is adapted to be operated so as to restore the operative controlling element or elements to its or their normal position or positions.

A further object is to provide a multiple switch of the above kind which is simple and durable in construction as well as efficient in operation.

Other objects will appear as the nature of the invention is better understood, and the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings, wherein like reference characters indicate corresponding parts throughout the several views,

Figure 1 is a top plan view of a multiple switch constructed in accordance with the present invention;

Figure 2 is a view similar to Figure 1 with the cover plate of the switch removed;

Figure 3 is a section taken upon line 3—3 of Figure 2;

Figure 4 is a section taken upon line 4—4 of Figure 2; and

Figure 5 is a diagrammatic view illustrating the manner of wiring the switch in the circuits of a traffic signalling device for motor vehicles.

Referring to the drawings, which illustrate a switch constructed in accordance with my invention that is particularly designed for use on an automobile for governing the operation of a traffic signalling device provided with indicators or signals that are electrically operated, 5 designates the housing or casing, preferably in the form of a rectangular pan, which is provided at its top with a cover plate 6 in which the controlling elements of the switch are mounted. The switch herein shown is provided with four electric controlling elements, each of which governs an independent electrical circuit, such, for example, as circuits in which independently-operated signals are arranged.

The selective controlling elements of the switch preferably consists of four push buttons 7, each of which is operatively connected to a switch lever 8, or other suitable form of electrical connector that cooperates with a contact 9 to which one wire 10 of an electric circuit leads, as shown in Figure 5, the switch lever 8 being provided at its outer end with a portion that engages its cooperating contact when the push button 7 to which the switch lever is connected is depressed. The push buttons 7 are slidably mounted in the cover plate 6 of the switch housing, and each push button is provided with a depending arm 11 that is slidably and pivotally connected to the switch lever with which the push button cooperates, the lower end of the arm 11 preferably having a pin which passes through an elongated slot 12 in the switch lever. The push buttons 7 are arranged concentric with relation to the center of the switch housing as shown in Figure 1, and the switch levers 9 are arranged at right angles to each other and in such a manner that the inner ends of said levers will terminate at approximately the center of the switch housing while the outer ends of said levers terminate at the corners of the switch housing. Intermediate the corners and the center of the switch housing are four vertically disposed posts 13, and rigid with and depending from the switch levers 8 intermediate the ends of the latter are arms 14 which are pivoted on the posts 13.

The switch embodies a re-setting element, preferably in the form of a push button 15 that is arranged at the center of the cover plate 6 of the switch housing and which is adapted to be depressed so as to restore the push button or buttons 7 that is or are operative, to an inoperative position. The push button or re-setting element 15 is preferably guided by means of a post 16 fixed to and projecting upwardly from the center of the bottom wall of the housing 5, and the re-setting element or push button 15 is further normally yieldingly held in raised position by means of a helical tension spring 17 which surrounds the post 16 between the bottom wall of the housing 5 and the bottom of the push button 15. The contacts 9 are preferably mounted upon triangular plates 18 of insulating material rigidly secured as by riveting or the like as at 19 upon the bottom of and within the casing or housing 5. The posts 13 are preferably riveted in openings provided in the bottom of the housing 5 at the inner edges of the insulating plates 18, and the cover plate 6 is held in po-

sition by means of screws 20 which pass through the cover plate and are threaded into inwardly projecting ears 21 rigid with the upper portion of the housing.

The switch is provided with means for quickly snapping the switch levers 8 into their operative and inoperative positions and for preventing them from moving accidentally out of the position to which they have been moved. This means preferably consists in a pair of helical tension springs 22 attached at their lower ends to the bottom of the housing 5 at opposite sides of each post 13 and connected at their other ends to the ends of the axle of a roller 22ª movable in a longitudinal elongated slot provided in the intermediate portion of the adjacent switch lever 8 at the point where the associated arm 14 joins said switch lever 8. In this way a past-center device is provided for each switch lever which performs the function mentioned. In other words, when a push button 7 is depressed its attached switch lever 8 is swung so that its outer end moves toward the cooperating contact 9 and the lever assumes an outwardly inclined position whereby the associated springs 22 cause the rollers to pass outwardly of a vertical plane intersecting the pivotal connection of the arm 14 of said switch lever with the associated post 13, and whereupon the switch lever 8 is given a final swinging movement to circuit closing position by means of the springs 22 in an expeditious and efficient manner. Similarly, should any of the switch levers 8 be in a circuit closing position as shown with respect to one of the switch levers in Figure 3, depression of the push button or controlling element 15 will effect swinging of said switch lever or levers 8 so as to cause disengagement of the outer end or ends thereof from the associated contacts 9 until the associated springs 22 cause the associated roller or rollers to pass inwardly of the pivot center on the post or posts 13, whereupon the switch lever or levers are then given a quick final movement to inwardly inclined open position by such associated springs.

From the above it will be seen that the present switch embodies a plurality of independently and selectively operable switch levers or contacts which are arranged in a group, and a restoring device 15 common to all of said contacts and operable for restoring any or all of the same to normal inoperative or circuit breaking position.

In Figure 5, the manner of connecting the switch to a plurality of independently operated signals is diagrammatically shown. In this illustration, each signal device embodies a pair of signal lamps L and L′ respectively adapted for being mounted at the front and rear ends of the vehicle. The feed sides of the signal lamps of each signal device are connected to separate ones of the contacts 9 by means of wiring as at 10, and all of the switch levers 8 are electrically connected together and to one side of a source of electricity illustrated at S, the return sides of all of the signal lamps being connected by wiring as at 10′ with the other side of the source of electricity. It is thus apparent that any desired pair of signal lamps may be readily rendered operative by depressing the proper push button, and should a different pair of signal lamps be thereafter desired operative, the same may be accomplished by depressing the necessary other push button 7, after the first mentioned push button and its switch lever have been returned to circuit breaking position by depression of the controlling element or push button 15. However, while the invention has been described as particularly useful in controlling a plurality of independently operable traffic signal devices, it is nevertheless to be understood that the invention is capable of general use for controlling any desired plurality of circuits embodying independently operable translating devices.

If desired, the housing 5 may be provided with a plurality of knock-out plugs 23 in the sides thereof for facilitating introduction of connectors into the housing for connection with the several connectors and contacts. A multiple switch of the construction above described, is compact, durable and efficient in operation, and may be manufactured cheaply.

It is believed that the construction and operation as well as the advantages of the present invention will be readily understood and appreciated by those skilled in the art, from the foregoing description.

The electrical connection between the levers 8 and the source of electricity S preferably includes a warning lamp 24 carried by a socket mounted in the face or cover plate 6, so that the lamp 24 will be lighted whenever a switch lever 8 is in circuit-closing position. In this way, the driver will be able to readily ascertain whether or not a set of signal lights are burning.

What I claim as new is:

1. A switch structure of the character described, comprising a plurality of switch blades grouped about and directed toward a central point, a supporting arm formed integral with each blade intermediate the ends thereof and pivotally mounted at its free end, each of said blades having a longitudinally extending slot therein one formed adjacent the inner end of an arm and the other formed at the outer end thereof, a control button adjacent the outer end of each arm having sliding pivotal connection in the adjacent arm slot, to permit vertical movement of the button upon the swinging of the blade, a main control button arranged over the inner ends of the blades, and a resilient control element associated with each blade and having sliding connection therewith in the slot adjacent the supporting arm, to im-

part a snap action to the movement of the blade, and contacts arranged for engagement by the blades when the same are in active position.

2. A switch structure of the character described, comprising a casing having a movable top plate, a plurality of switch blades within the casing and directed toward a central point, a supporting arm extending downwardly from each of said blades intermediate the ends thereof and having pivotal connection with the bottom of said casing, each of said blades having a longitudinally extending slot formed therethrough one adjacent the inner end of the supporting arm and the other at the outer end of the blade, a button associated with each blade and freely reciprocable through said cover plate, a sliding pivotal connection between the inner end of each button and the slot in the end of the adjacent blade, a central button arranged to engage the inner ends of the switch blades for simultaneously actuating all of the blades, a sliding element in the other slot of each blade, a spring member connecting each of said sliding elements with the casing to impart a snap action to the blades, and a contact arranged adjacent each of said blades for engagement with the same when in operative position.

In testimony whereof I affix my signature.

JAMES F. WEILAND.