Sept. 6, 1966 R. E. WIRSCHING 3,271,530

PUSHBUTTON SWITCH WITH LATCHING, LOCKOUT AND INDICATOR LAMP STRUCTURE

Filed Jan. 12, 1965 2 Sheets-Sheet 1

FIG. 1

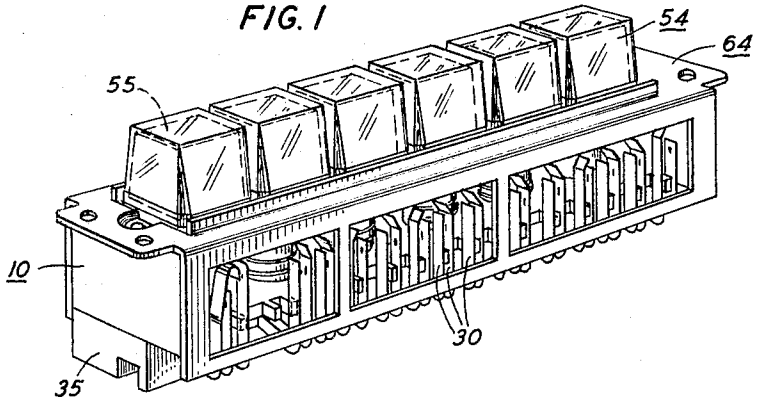
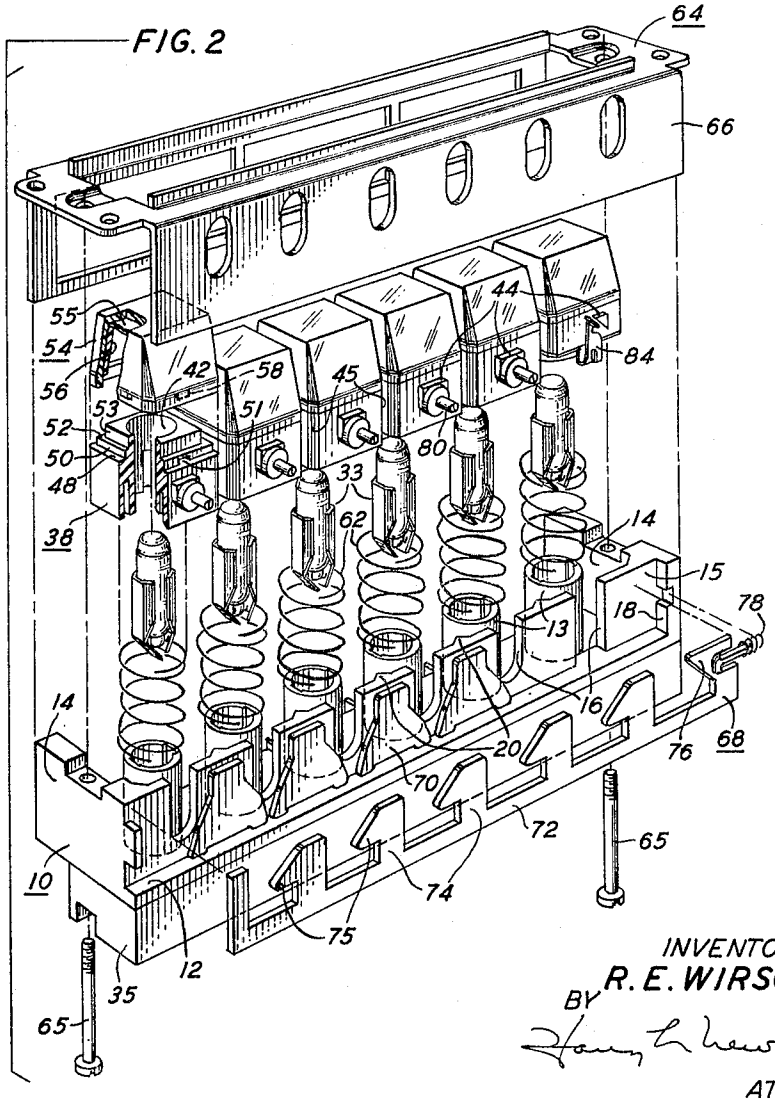


FIG. 2



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PUSHBUTTON SWITCH WITH LATCHING, LOCKOUT AND INDICATOR LAMP STRUCTURE

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FIG. 3

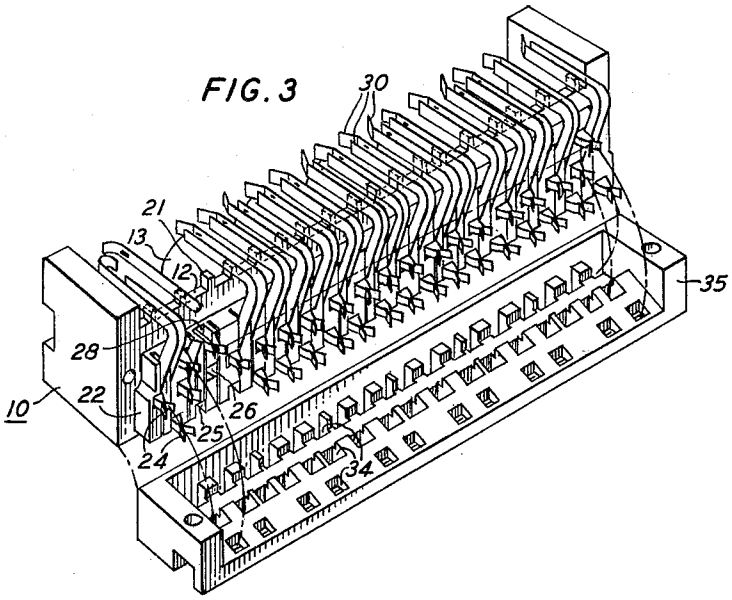


FIG. 4

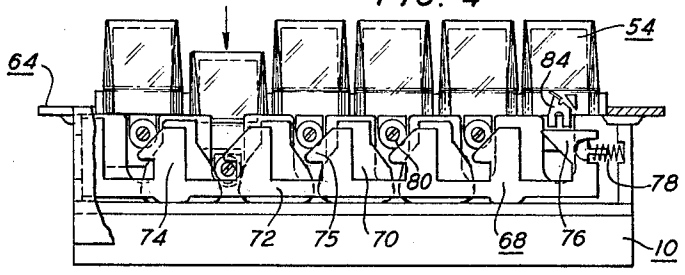


FIG. 5

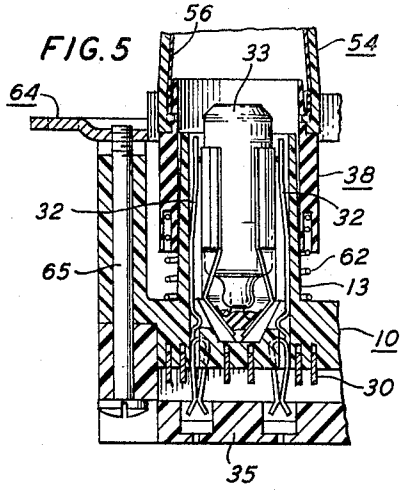
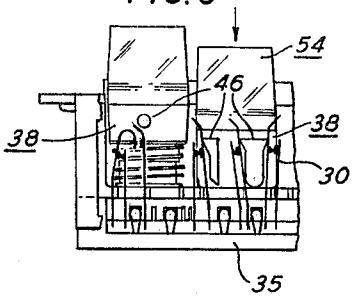


FIG. 6



United States Patent Office

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PUSHBUTTON SWITCH WITH LATCHING, LOCK-OUT AND INDICATOR LAMP STRUCTURE

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8 Claims. (Cl. 200—5)

This invention relates to mechanical circuit makers and breakers and particularly to pushbutton switches.

An object of this invention is to provide a compact pushbutton switch.

This and other objects of this invention are achieved in an illustrative embodiment thereof wherein the pushbutton switch comprises a base having a plurality of sleeves extending upwardly therefrom and a terminal block on the underside thereof. The terminal block has a plurality of spaced grooves and a plurality of first and second pockets therein. Each groove communicates with an individual first pocket, and an individual pair of second pockets communicates through the base with the interior of each sleeve.

A plurality of L-shaped contact springs are accommodated by the terminal block, a first leg of each contact spring having a socket portion and the second leg of each contact spring having a contact portion. The first leg of each contact spring is positioned in an individual groove in the terminal block with the socket portion of the contact spring located in the first pocket communicating with the groove, and when a contact spring is so positioned, the second leg thereof extends upwardly transverse to the base.

A plurality of I-shaped contact springs are also accommodated by the terminal block. Each I-shaped contact spring has a socket portion at one end thereof and a contact portion at the other end thereof, and each I-shaped contact spring is positioned with the socket portion thereof in an individual second pocket in the terminal block, and with the contact portion extending into the interior of the sleeve communicating with that second pocket.

A lamp is positioned within each sleeve in engagement with the contact portions of the I-shaped contact springs, and a pushbutton is disposed about each sleeve and movable along the length thereof, each pushbutton having means for interacting with the second legs of a plurality of L-shaped contact springs for closing the contacts thereof when the pushbutton is depressed.

A complete understanding of the invention and of these and other features and advantages thereof may be gained from consideration of the following detailed description taken in conjunction with the accompanying drawing wherein one embodiment of the invention is illustrated. It is to be expressly understood, however, that the drawing is for the purpose of illustration and description and is not to be construed as defining the limits of the invention.

In the drawing:

FIG. 1 is a front perspective view of a multipushbutton switch employing the present invention;

FIG. 2 is an exploded perspective view looking toward the rear of the switch;

FIG. 3 is a partially exploded perspective view showing the underside of the switch;

FIG. 4 is a rear view of the switch with parts broken away for greater clarity;

FIG. 5 is an enlarged sectional view of a portion of the switch; and

FIG. 6 is a front view of a portion of the switch showing one of the pushbuttons depressed.

Referring to the drawing and to FIGS. 1 and 2 in particular, one embodiment of the pushbutton switch of this invention includes a unitary dielectric housing **10** comprising a generally planar base **12** having a plurality of equally spaced sleeve portions **13** extending upwardly therefrom and generally normal thereto. The sleeve portions **13** are aligned in a row intermediate the front and rear edges of the base portion **12**.

A pair of side wall portions **14** and a rear wall portion **15** also extend upwardly from and generally normal to the base portion **12**. The side wall portions **14** extend along the side edges of the base portion **12** spaced from and generally transverse to the row of sleeve portions **13**, while the rear wall portion **15** extends along the rear edge of the base portion spaced from and generally parallel to the row of sleeve portions. The rear wall portion **15** has a plurality of equally spaced guide slots **16** therein extending normal to the base portion **12**, and each guide slot is in alignment with an individual sleeve portion **13**. In addition, the face of the rear wall portion **15** remote to the sleeve portions **13** is relieved to provide a rectangular recess **18**, while the face of the rear wall portion in juxtaposition with the sleeve portions has a plurality of spaced guide protrusions **20**. Each guide protrusion **20** extends normal to the base portion **12** and is located midway between a pair of sleeve portions **13**.

Turning now to FIG. 3, the housing **10** further includes a plurality of spaced stop portions **21** extending outwardly from the forward edge of the base portion **12** and a terminal block portion **22** situated on the underside of the base portion. The terminal block portion **22** has a plurality of spaced and generally parallel grooves **24** therein extending transverse to the front edge of the base portion **12**. The terminal block portion **22** also has three spaced parallel rows of pockets **25**, **26**, and **28** therein extending parallel to the front edge of the base portion **12**. Each pocket **25** and each pocket **26** communicates with an individual groove **24**, while a pair of pockets **28** communicates through the base portion **12** with the interior of each sleeve portion **13**.

A plurality of L-shaped contact springs **30** are accommodated by the grooves **24** and pockets **25** and **26** of the terminal block portion **22**. A first leg of each L-shaped contact spring **30** includes a socket portion while the second leg of each L-shaped contact spring includes a contact portion. The socket portions on some of the first legs are located at the very end of the leg and these socket portions are positioned in the pockets **25**, the legs themselves being positioned in the grooves **24** communicating with the pockets **25**. The socket portions on the other first legs are spaced from the ends of the legs, and these socket portions are positioned in the pockets **26**, the legs themselves being positioned in the grooves **24** communicating with the pockets **26**. The first legs are secured in place by being embedded in an epoxy potting compound (not shown), the potting compound filling a channel (not shown) that extends transverse to the grooves **24** between the pockets **25** and **26**.

With the first legs of the L-shaped contact spring **30** positioned as above, the contact springs are electrically insulated from one another and the second legs thereof extend upwardly transverse to the forward edge of the base portion **12**. Certain of the second legs are pretensioned against the stop portions **21** of the housing **10**, the stop portions serving to locate these second legs in a particular position. The other second legs are located by being pretensioned against one of these second legs or in a manner hereinafter described. The contact portions on the second legs are arranged to interact with the contact portions on adjacent second legs.

Referring also to FIGS. 5, in addition to the L-shaped contact springs **30**, the terminal block portion **22** of the housing **10** accommodates a plurality of I-shaped contact springs **32**. The I-shaped contact springs **32** have a socket portion at one end thereof and a contact portion at

the other end thereof, and they are positioned with the socket portions thereof in the pockets 28 and with the contact portions thereof extending into the holes of the sleeve portions 13 communicating with the pockets. When the I-shaped contact springs 32 are so positioned, they are electrically insulated from one another and from the L-shaped contact springs 30.

As mentioned above, a pair of pockets 28 communicates with the interior of each sleeve portion 13 of the housing 10, and hence the housing is adapted to have the contact portions of a pair of I-shaped contact springs 32 extend into the interior of each sleeve portion. The contact portions on each such pair of I-shaped contact springs 32 are adapted to engage the contacts of a lamp 33 inserted into the sleeve portion 13, the lamp having a slide type base and a cylindrical bulb. The contacts of the lamp 33 deflect the contact portions of the I-shaped contact springs 32 outwardly when the lamp is inserted into the sleeve portion 13, the frictional engagement between the contacts and the contact portions serving to provide a good electrical contact therebetween and hold the lamp in place.

As shown in FIGS. 3 and 5, both the L-shaped contact springs 30 and the I-shaped contact springs 32 have the lower ends of the socket portions thereof received by pockets 34 in a dielectric terminal plate 35 that is mounted to the underside of the housing 10. Each pocket 34 communicates with an aperture 36 that extends through the terminal plate transverse to the plane thereof, the apertures being located in alignment with the socket portions of the contact springs 30 and 32. The pockets 34 serve to protect the socket portions while the apertures 36 serve to guide plugs (not shown) into electrical engagement with the socket portions. The socket portions of both the contact springs 30 and 32 comprise, as shown in FIG. 5 for the contact springs 32, inverted U-shaped elements, the legs of which converge toward a point adjacent to the end thereof and then diverge. The socket portions are adapted to accommodate blade type plugs.

Referring again to FIG. 2, a generally rectangular plunger 38 is disposed about each sleeve portion 13 of the housing 10. Each plunger 38 has a central aperture 42 extending longitudinally therethrough that has substantially the same configuration as the outside surface of the sleeve portion 13 about which it is disposed. In addition, each plunger has a raised guide portion 44 and a pair of relieved guide portions 45 on one side thereof, and each plunger is positioned on a sleeve portion 13 so that the raised and relieved guide portions of the plunger respectively engage the guide slot 16 and guide protrusions 20 associated with the sleeve portion about which the plunger is disposed. These elements interact to permit each plunger 38 to move up and down along the length of the sleeve portion 13 about which it is disposed, but prevent the plunger from rotating about the sleeve portion.

On the side of each plunger 38 opposite to that having the raised guide portion 44, there is a raised cam portion 46, shown in FIG. 6, and when a plunger is properly positioned on a sleeve portion 13, the raised cam portion extends into juxtaposition with the second legs of the L-shaped contact springs 30. As stated above, the second legs of some of the L-shaped contact springs 30 are pretensioned against the stop portions 21 of the housing 10, while others are pretensioned against these second legs. The rest of the second legs are pretensioned against the raised cam portions 46 of the plungers 38. The raised cam portions 46 interact with these latter second legs to deflect the contact portions thereon into and out of engagement with the contact portions on adjacent contact springs.

Turning again to FIG. 2, the upper end of each plunger 38 is relieved to provide a rectangular shoulder portion 48 having a rectangular pedestal portion 50 extending upwardly therefrom. The pedestal portion 50 has a recessed portion 51 at the lower end thereof, a ledge portion 52 in the middle, and a crown portion 53 at the upper end thereof, and a transparent prismatic button 54 mounts thereover. Each button 54 is hollow and open at the bottom, and a card 55 and an open ended hollow insert 56 are positioned therein. The cards 55 are translucent and of the same size as the top inside surface of the buttons 54, and they are adapted to be placed against the top inside surface and have upward facing indicia inscribed thereon. The inserts 56 are open ended hollow members that conform to the inside surfaces of the walls of the buttons 54. In addition, the inserts are either translucent or opaque and may be colored.

When a button 54 is positioned on its associated plunger 38, the insert 56 fits over the crown portion 53 and rests on the ledge portion 52, while the button fits over the entire pedestal portion 50 and rests on the shoulder portion 48. Inwardly extending protrusions 58 at the lower end of the button 54 fit into the recessed portion 51 in the pedestal portion 50 of the plunger 38 to secure the button to the plunger. With a button 54 so positioned on a plunger 38 and the plunger positioned over a sleeve portion 13 of the housing 10, light from a lamp 33 positioned within the sleeve portion is transmitted through the top of the button, whereby the card 55 and the indicia thereon are illuminated.

A helical compression spring 62 is disposed about each sleeve portion 13 of the housing 10 intermediate the plunger 38 associated with the sleeve portion and the base portion 12 of the housing, each spring acting to bias the associated plunger upwardly. When the plunger 38 is moved downward, the associated spring 62 is compressed either around a depending cylindrical portion of the plunger, as is the case with the plunger on the far right in FIG. 2, or in an annular slot in the plunger, as is the case with the plunger on the far left in FIG. 2. As a result, the downward movement of each plunger 38 is limited by the engagement of the underside thereof with the base portion 12 of the housing 10.

The upward movement of each plunger 38 is limited by a cover member 64 that is secured to the top of the housing 10, a pair of fasteners 65, which extend through the terminal plate 35 and the side walls 14 of the housing, being threaded into holes in the cover member. The top of the cover member 64 is provided with an elongated opening that is of a width to permit the buttons 54 to pass therethrough but not the raised guide portions 44 and the raised cam portions 46 (FIG. 6) of the plungers 38. Hence the upward movement of the plungers 38 is limited by the engagement of these raised portions with the underside of the cover member 64.

The cover member 64 includes a skirt portion 66 that depends in juxtaposition with the rear wall portion 15 of the housing 10 and is adapted to cooperate with the rear wall portion to retain a latch bar 68 and a plurality of lockouts 70 within the recess 18 in the rear wall portion. The latch bar 68 comprises an elongated bar portion 72 having a plurality of equally spaced upright portions 74 extending upwardly therefrom, the spacing between the upright portions corresponding to the spacing between the guide slots 16 in the rear wall portion 15. All but the left-hand and the right-hand upright portions 74, as viewed in FIG. 2, have a laterally extending nose portion 75, the upper surface of which is inclined and the lower surface of which is generally horizontal. The left-hand upright portion 74 has no nose portion, and the right-hand upright portion has an inverted nose portion 76, the upper surface of which is generally horizontal and the lower surface of which is inclined.

The latch bar 68 is somewhat smaller in length than the recess 18 in the rear wall portion 15, and is slidable along the bottom ledge of the recess. A helical compression spring 78 which is disposed about a finger portion extending laterally from the right-hand upright portion 74, is compressed between this upright portion and a notch in the right side ledge of the recess 18, and biases the latch bar 68 to the left. As a result, the latch bar 68 is normally positioned with the left-hand upright portion

74 in engagement with the left side ledge of the recess 18, and in this position, the nose portions 75 and 76 of the upright portions are, as shown in FIG. 4, in juxtaposition with the guide slots 16 in the rear wall portion 15.

In addition, in this position of the latch bar 68, each nose portion 75 underlies a pin member 80, a pin member being mounted in the raised guide portion 44 of each plunger 38 except the plunger on the far right, as viewed in FIG. 2. The pin members 80 each have a wide base and a narrow stem, and when one of the plungers 38 having a pin member mounted therein is depressed, the stem of the pin member engages the inclined surface of the nose portion 75, and deflects the latch bar 68 toward the right side ledge of the recess 18. The stem of the pin member 80 continues to deflect the latch bar 68 to the right until the stem moves past the end of the inclined surface of the nose portion 75. When this occurs, the spring 78 returns the latch bar 68 to its position against the left side ledge of the recess 18, and the horizontal surface of the nose portion 75 is moved over the pin, latching the plunger 38 in a downward position.

When a second plunger 38 having a pin member 80 mounted therein is subsequently depressed, the latch bar 68 is again deflected to the right, and when the pin member of the second plunger reaches the end of the inclined surface of the associated nose portion 75, the latch bar is deflected to a position wherein the pin of the first plunger is no longer beneath the horizontal surface of its associated nose portion. The spring 62 associated with the first plunger 38 thereupon moves the plunger to its upward position.

The plunger 38 on the far right, as viewed in FIG. 2, has instead of a pin member 80 a cantilever spring member 84 secured thereto. The free end of the spring member 84 extends in a generally vertical plane spaced from its associated plunger, the free end being deflectable in a generally horizontal plane. In addition, the free end terminates in an inclined triangular flange that normally overlies the nose portion 76 on the latch bar 68.

When this plunger 38 is depressed, the flange on the spring member 82 engages the horizontal surface of the nose portion 76, and is deflected behind the nose portion 76. As this plunger 38 continues to move downward, the flange remains behind the nose portion 76 until the plunger is depressed far enough to move the flange lower than the inclined surface of the nose portion. When this occurs, the flange moves out from this plunger 38 and underlies the inclined surface of the nose portion 76. Thereafter when this plunger 38 is permitted to move upward under the bias of its associated spring 62, the flange on the spring member 84 engages the inclined surface of the nose portion 76 and deflects the latch bar 68 to the right. It continues to deflect the latch bar 68 to the right until it reaches the end of the inclined surface, at which point the latch bar has moved far enough to the right to move the horizontal surface of a nose portion 75 out of the path of the pin member 80 of a previously depressed plunger 38. The previously depressed plunger 38 is then moved to its upward position under the bias of its associated spring 62.

From the foregoing it is seen that when any of the plungers 38 except the plunger on the far right, as viewed in FIG. 2, is moved to its downward position, it is latched in that position, and any previously latched plunger is released. When the plunger 38 on the far right is moved to its downward position, it is not latched in that position, and as it returns to its upward position, it releases any previously latched plunger. In addition, as heretofore set forth, when any of the plungers 38 are in their downward positions, the raised cam portions 46 thereon interact with the second legs of the L-shaped contact springs 30 in the manner shown in FIG. 6 to cause the closing and/or opening of one or more pairs of contacts.

The lockouts 70, which are located between the latch bar 68 and the rear wall portion 15 of the housing 10, serve to prevent the simultaneous depression of more than one plunger 38 having a pin member 80 mounted therein. The lockouts 70 comprise generally triangular shaped planar members, the bases of which rest on and are movable along the bottom latch of the recess 18 in the rear wall portion 15. As shown in FIGS. 2 and 4, each lockout 70 is located in juxtaposition with the rear wall portion 15 between a pair of guide slots 16, and each lockout is of a size that the inclined sides thereof extend into juxtaposition with a portion of the guide slots on either side thereof and the bottom extremities thereof extend into engagement with the bottom extremities of the lockouts on either side thereof. As a result, when a plunger 38 having a pin member 80 mounted therein is depressed, the base of the pin member engages the inclined surface of the one or two lockouts 70 extending into the path thereof and deflects the lockouts out of its path. This causes the lockouts 70 to occupy positions in juxtaposition with the other guide slots 16 that block the simultaneous downward movement of the pin members 80 in the plungers 38 associated with those guide slots.

What is claimed is:

1. A multiple pushbutton switch comprising:

a unitary dielectric housing including

a generally planar base portion,

a plurality of equally spaced sleeve portions extending upwardly from and generally normal to the base portion, the sleeve portions being aligned in a row intermediate the front and rear edges of the base portion,

a rear wall portion extending upwardly from and generally normal to the base portion, the rear wall portion being along the rear edge of the base portion spaced from and generally parallel to the row of sleeve portions, the face of the rear wall portion remote to the sleeve portions being relieved to provide a rectangular recess, the face of the rear wall portion in juxtaposition with the sleeve portions having a plurality of spaced guide protrusions extending normal to the base portion, each guide protrusion being associated with a pair of sleeve portions, the rear wall portion further having a plurality of equally spaced guide slots therein extending normal to the base portion, each guide slot being associated with an individual sleeve portion and in alignment therewith,

a terminal portion situated on the underside of the base portion, the terminal portion having a plurality of first and second spaced pockets therein, the terminal portion further having a plurality of parallel spaced grooves therein extending transverse to the front edge of the base portion, each groove communicating with an individual first pocket, and an individual pair of second pockets communicating through the base portion with the interior of each of the sleeve portions,

and a plurality of spaced stop portions extending outwardly from the forward edge of the base portion;

a plurality of generally L-shaped contact springs, a first leg of each contact spring having a socket portion and the second leg of each contact spring having a contact portion, the first leg of each contact spring being respectively received by an individual groove in the terminal portion of the housing with the socket portion of the leg being accommodated in the first pocket communicating with the groove in which the leg is positioned, the second leg of each contact spring extending upwardly transverse of the forward edge of the base portion of the housing, individual ones of the contact springs having the second legs thereof biased against an individual stop portion;

a plurality of generally I-shaped contact springs having a socket portion at one end thereof and a contact por-

tion at the other end thereof, each contact spring being positioned with the socket portions thereof in an individual second pocket in the terminal portion of the housing and with the contact portion thereof extending into a sleeve portion with which the pocket communicates, whereby a pair of spaced contact springs extend into each sleeve portion;

an individual lamp positioned within each sleeve portion of the housing, each lamp when so positioned having contact portions thereon in engagement with the contact portions of the pair of I-shaped contact springs extending into the sleeve portion;

an individual plunger disposed about each sleeve portion, each plunger having a central aperture extending therethrough having substantially the same configuration as the outside surface of the sleeve portion about which it is disposed, each plunger further having a raised portion and a pair of relieved portions adapted to respectively extend into engagement with and move along the guide slot and guide protrusions associated with the sleeve portion about which the plunger is disposed, each plunger further having cam portions for engaging the second legs of certain of the contact springs, the cam portions deflecting these contact springs into engagement with adjacent contact springs when the plunger is moved to a downward position;

a spring member disposed about each sleeve portion of the housing intermediate the plunger thereon and the base portion of the housing, each spring member biasing its associated plunger upwardly;

a cover member mounted over the housing, the cover member having an aperture in the upper surface thereof through which the upper ends of the plungers normally extend, the upward movement of the plungers being limited by the engagement of the raised portions and cam portions thereon with the cover member; and

a button mounted on the upper end of each plunger, the top of each button being light transmitting.

2. A multiple pushbutton switch as in claim **1** further including:

a latch bar for holding a depressed plunger in a downward position, the latch bar being positioned in the rectangular recess in the rear wall portion of the housing, the latch bar comprising an elongated member having a plurality of equally spaced upright portions, the spacing of which corresponds to the spacing between the guide slots in the rear wall portion of the housing, individual ones of the upright portions including a laterally extending nose portion having an inclined upper surface and a generally horizontal undersurface, the latch bar being somewhat smaller in length than the recess and movable along the bottom ledge thereof, the movement of the latch bar being limited by the side ledges of the recess, the latch bar when positioned against a first of the side ledges having the nose portions thereof in alignment with individual guide slots in the rear wall portion, the latch bar when positioned against the second of the side ledges having the nose portions thereof in alignment with portions of the rear wall portion between the guide slots;

a spring member for biasing the latch bar toward the first side ledge of the recess; and

pin members extending from individual plungers through the guide slots in the rear wall portion and into the recess for engaging a nose portion of the latch bar when the plunger is depressed, the engagement of a pin member with the upper surface of a nose portion deflecting the latch bar toward the second side ledge of the recess, and the engagement of the pin member with the undersurface of the nose portion latching the plunger in a downward position.

3. A multiple pushbutton switch as in claim **2** further including a plurality of lockouts positioned between the latch bar and the face of the recess in the rear wall portion of the housing, the lockouts comprising generally triangular shaped planar members, the bases of which rest on and are movable along the bottom ledge of the recess, each lockout being located in juxtaposition with the rear wall portion between a pair of guide slots and each lockout being of such size that the inclined sides thereof generally extend into juxtaposition with the guide slots on either side thereof and the bottom extremities thereof generally extend into engagement with the lockouts on either side thereof, whereby when a plunger is depressed the pin member thereon engages the inclined surface of a lockout and displaces the lockout, causing the lockouts to occupy positions in juxtaposition with the other guide slots that block the simultaneous downward movement of the pin members in the plungers associated with those guide slots.

4. A multiple pushbutton switch as in claim **3** wherein:

the latch bar includes an inverted nose portion laterally extending from one of the upright portions, the inverted nose portion having a generally horizontal upper surface and an inclined undersurface; and

the plunger in juxtaposition with this portion of the latch bar is nonlocking, the plunger having a cantilever spring member mounted thereon, the free end of which has a flange that extends into juxtaposition with the inverted nose portion and is inclined in the same direction as the undersurface of the inverted nose portion, the flange overlying the uppersurface of the inverted nose portion when the plunger is in its upward position and being deflected behind the nose portion and then moving under the undersurface when the plunger is moved to its downward position, the flange interacting with the undersurface to deflect the latch bar toward the second side ledge of the recess when the plunger returns to its upward position.

5. A multiple pushbutton switch as in claim **1** wherein:

the upper end of each plunger is relieved to provide a shoulder having a pedestal portion extending upwardly therefrom, the pedestal portion having a recessed portion at the lower end thereof, a crown portion at the upper end thereof; and

the button is hollow, and open at the lower end, and two sides thereof have inwardly extending protrusions, the button being positioned over the pedestal portion of the plunger with the protrusions accommodated by the recessed portion of the pedestal portion.

6. A multiple pushbutton switch as in claim **1** which further includes a terminal plate mounted to the underside of the terminal portion of the housing, the terminal plate having a plurality of spaced apertures that are positioned in alignment with the socket portions of the contact springs and serve to guide plugs into engagement with the sockets.

7. A multiple pushbutton switch comprising:

a dielectric housing including

a generally planar base portion,

a plurality of spaced sleeve portions extending upwardly from the base portion, the sleeve portions being intermediate the front and rear edges of the base portion,

a rear wall portion extending upwardly from the base portion, the rear wall portion lying along the rear edge of the base portion spaced from the sleeve portions,

and a terminal portion situated on the underside of the base portion, the terminal portion having a plurality of first and second spaced pockets therein, the terminal portion further having a

plurality of parallel spaced grooves therein extending transverse to the front edge of the base portion, each groove communicating with an individual first pocket, and an individual pair of second pockets communicating through the base portion with the interior of each of the sleeve portions;

a plurality of generally L-shaped contact springs, the first leg of each contact spring having a socket portion and a second leg of each contact spring having a contact portion, the first leg of each contact spring being respectively received by an individual groove in the terminal portion of the housing with the socket portion thereof being accommodated in the first pocket communicating with the groove, the second leg of each contact spring extending upwardly transverse to the forward edge of the base portion of the housing;

a plurality of generally I-shaped contact springs having a socket portion at one end thereof and a contact portion at the other end thereof, each contact spring being positioned with the socket portion thereof in an individual second pocket in the terminal portion of the housing and with the contact portion thereof extending into a sleeve portion with which the pocket communicates;

an individual lamp positioned within each sleeve portion of the housing, each lamp when so positioned having contact portions thereon in engagement with the contact portions of the pair of I-shaped contact springs extending into the sleeve portion; and

an individual pushbutton disposed about each sleeve portion and movable along the length thereof, each pushbutton having a portion adapted to interact with the wall portion to guide the movement of the pushbutton, each pushbutton further having a cam portion for engaging the second legs of certain of the contact springs, the cam portion deflecting these contact springs into engagement with adjacent contact springs when the plunger is moved to a downward position, each pushbutton further having a light transmitting portion at the upper end thereof.

8. A pushbutton switch comprising:

a base;

a sleeve extending upwardly from the base;

a terminal block underlying the base, the terminal block having a plurality of spaced pockets therein, the terminal block further having a plurality of spaced grooves therein, each groove communicating with an individual pocket, and a pair of pockets communicating through the base with the interior of the sleeve;

a pair of L-shaped contact springs, a first leg of each contact spring having a socket portion and the second leg of each contact spring having a contact portion, the first leg of each contact spring being received by an individual groove in the terminal block with the socket portion thereof being accommodated in the pocket communicaing with the groove, the second leg of each contact spring extending upwardly transverse to the base;

a pair of generally I-shaped contact springs, each contact spring having a socket portion at one end thereof and a contact portion at the other end thereof, each contact spring being positioned with the socket portion thereof in an individual pocket in the terminal block and with the contact portion thereof extending into the sleeve;

a lamp positioned within the sleeve in engagement with the contact portions of the I-shaped contact springs; and

a pushbutton disposed about the sleeve and movable along the length thereof, the pushbutton having means for interacting with the L-shaped contact springs for causing the actuation thereof when the pushbutton is depressed.

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ROBERT K. SCHAEFER, *Primary Examiner.*