United States Patent

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[54] **ESCUTCHEON MODULE**
3 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** ..... **174/53,** 174/66, 200/168 G
[51] **Int. Cl.** **H05k 5/03**
[50] **Field of Search** ..... 174/53, 66; 200/168 D, 168 G, 168 K, 168 H; D26/13, 13.2, 13.3

[56] **References Cited**

UNITED STATES PATENTS

2,778,869	1/1957	Bentley	174/53

FOREIGN PATENTS

468,069	3/1969	Switzerland	200/168 K

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ABSTRACT: This invention provides an escutcheon module for framing individual pushbuttons in a panel window. A module provides a frame about each pushbutton with the bottom of such module being caught at the inside surface of a panel upon which a pushbutton device is mounted and through which individual pushbuttons may project.

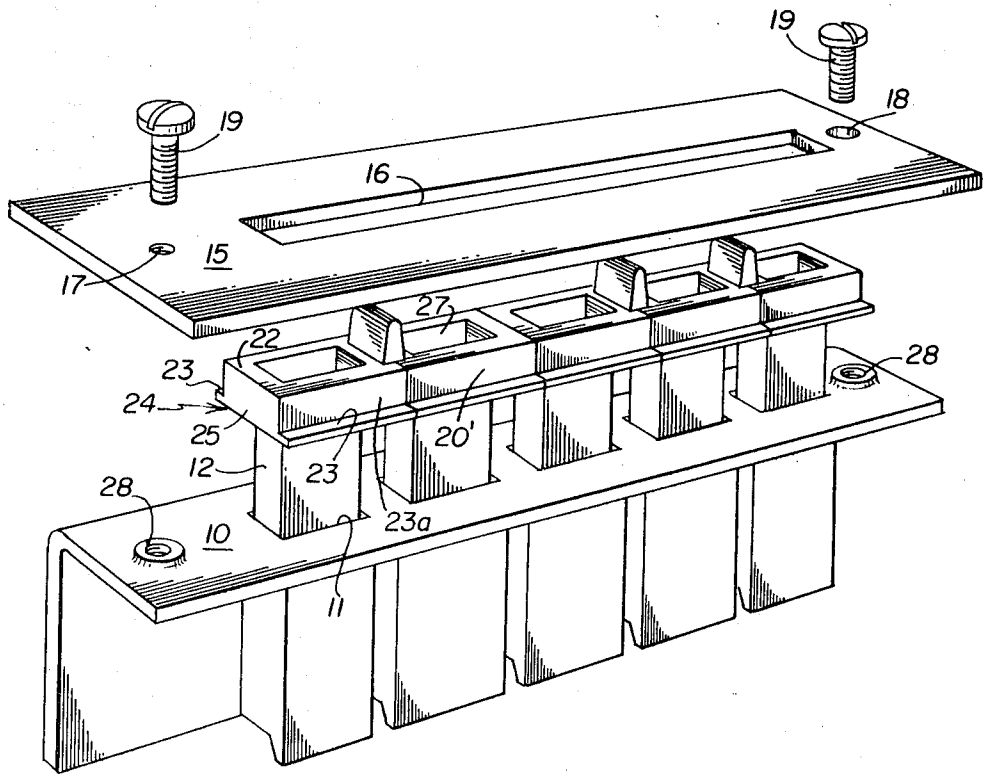


FIG. 1

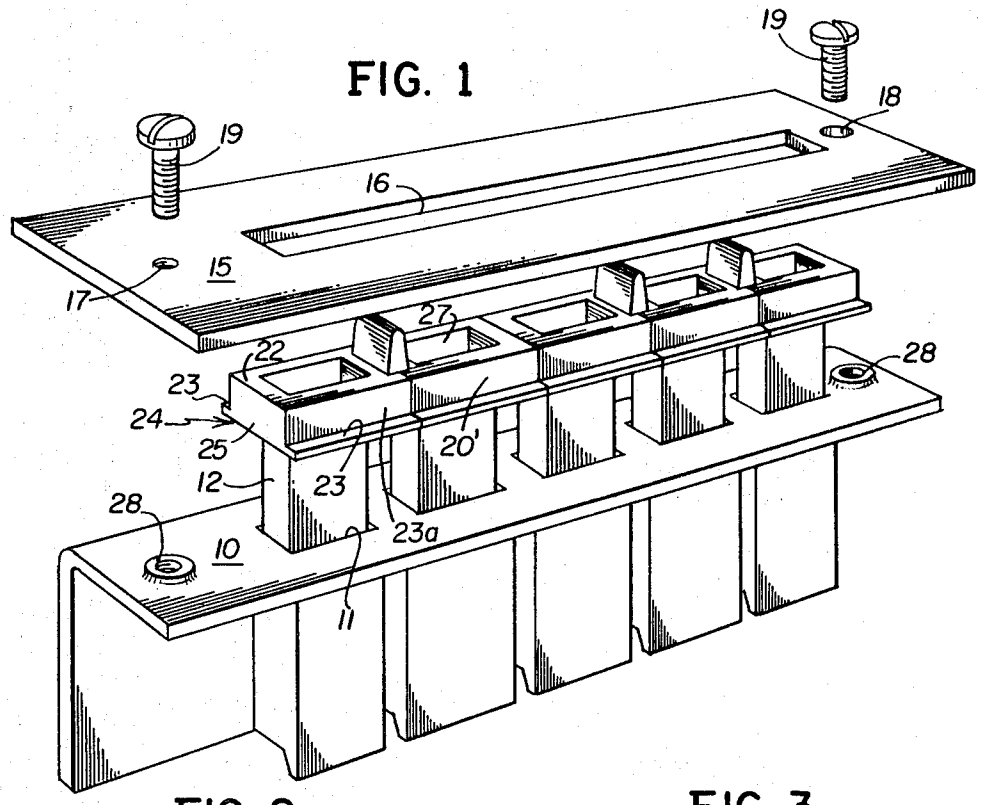


FIG. 2

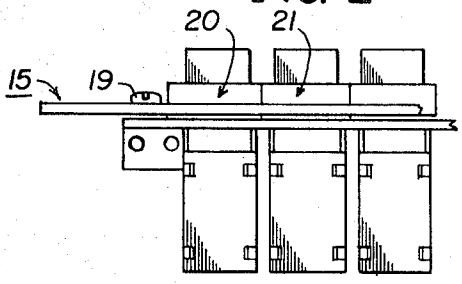


FIG. 3

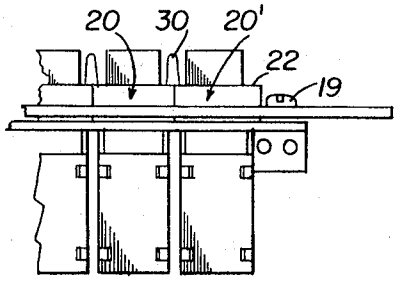
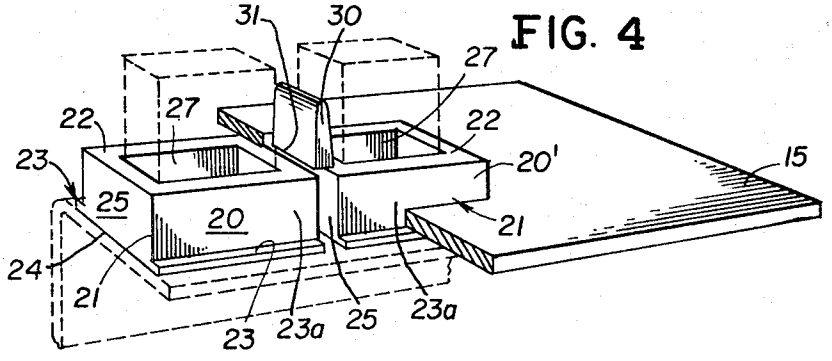


FIG. 4



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ESCUTCHEON MODULE

This invention relates to an escutcheon module for use in a panel cut out or window in which there is disposed a pushbutton or push rod forming part of a device operated by one or more pushbuttons or push rods.

It is common practice to mount electrical pushbutton type of switches or other devices in the window of a panel. Such a panel mounting is desirable for a number of reasons, among which are improved appearance from the front of a panel, and when properly mounted, to fill the entire space between the sides of a push rod on the one hand and the edges of a panel window on the other hand. The closure of such a space, this requiring a snug sliding fit between the sides of a push rod and the window edges, serves to prevent dirt and foreign objects from passing through the outside of the panel through the panel window and into the switch device. It is impractical to fabricate a panel window and a one or more pushbutton actuated device so that said pushbuttons or push rods will provide the snug fit referred to above. For one thing, manufacturers of pushbutton operated devices make such devices to various tolerances and dimensions. Furthermore, panel windows cannot economically be provided with windows whose dimensions are determined only at the last minute. As a rule, various size panels are available with windows of predetermined length and width.

The present invention provides a simple escutcheon module construction which is individual to one push rod and to one panel window in which a push rod can operate. Because of the individual application of an escutcheon module to a push rod, it is simple to equip a multibutton device such as a gang switch having a number of stations, each of which has its own pushbutton, and dispose the device and the escutcheon modules in one window having a standard or predetermined width and having any desired length to accommodate a predetermined number of stations. The escutcheon module contemplated by the present invention may be readily applied to individual pushbuttons prior to the mounting of the entire switch device in a panel. The mounting of such switch device or devices in a panel serves to lock the individual escutcheon module in position.

The construction of the individual escutcheon modules is so simple as to minimize tooling costs and involves the fabrication of molding dies for handling plastic materials.

The new escutcheon modules may be easily molded in any desired plastic, such as nylon, polystyrene or any other desired material to provide a dimensionally accurate construction so that clearances between parts may be minimized. In connection with the selection of plastic, certain materials, of which nylon is an example, have a self-lubricating property in which case very small clearances between relatively movable parts become possible without excessive friction between such parts. Where one or more switch constructions have molded plastic button portions around which an escutcheon module may be disposed, molding accuracy and color coding of both buttons and escutcheon modules achieves precision and smooth operation without substantial costs.

The invention in general provides for a molded flanged sleeve whose shape is such as to permit the disposition of the new escutcheon module over an appropriately dimensioned and shaped push rod or pushbutton in such a way that the flange at one end of such sleeve extends outwardly and is furthest from the free end of such pushbutton or push rod. The exterior of such sleeve is shaped to fit snugly within a panel window whose length is at least that of one station, or where longer panel windows are present, whose length will only take up one station of the window length. The construction of each escutcheon module at the flanged end is such that longitudinally adjacent modules can fit snugly together with the module flange cooperating only with edge portions along the length of a panel window. The new module may thus fit within a panel opening or window to take up the number of switch or button positions for filling the entire panel window.

In a modified construction, a barrier portion integral with a module functions to separate the region between two adjacent buttons so that functional separation of such buttons is provided. Such modified module has a barrier so constructed and located that said barrier portion also functions to cover the joint between adjacent modules and enhances the appearance of an array of modules so that a generally unitary escutcheon construction is suggested.

The invention will now be described in connection with drawings wherein exemplary forms of structures embodying the invention will be described, it being understood that additional modifications may be made without departing from the scope of the invention except as defined by the appended claims.

Referring now to the drawings,

FIG. 1 is a perspective exploded view showing embodiments of the new escutcheon modules disposed between pushbuttons and a panel prior to assembly;

FIG. 2 is a side elevation of one form of escutcheon modules in assembled relation to a panel;

FIG. 3 is a view similar to FIG. 2, but showing a modified escutcheon module; and

FIG. 4 is an exploded perspective view, with certain parts cut away, and two adjacent modules spaced to illustrate the relationship between two forms of modules.

The escutcheon modules embodying the present invention are applicable to any type of pushbutton device, it being understood that such device includes as a part of its construction a frame portion in which are mounted pushbuttons adapted for movement longitudinally of such buttons through windows or openings in such frame portion for longitudinal movement in a direction perpendicular to the plane of such frame portion. An example of such pushbutton construction supported in a suitable frame with which the new escutcheon module may be used is illustrated in the copending application of James R. Bailey and Kurt Lutzenberger, Ser. No. 761,174, filed Sept. 20, 1968, now U.S. Pat. No. 3,517,140 granted June 23, 1970, assigned to the same assignee as the instant application. Insofar as the present invention is concerned, the structural details of a pushbutton operated device are of no importance and instead of the pushbutton construction defined in the above-identified application, such pushbutton constructions as disclosed in prior U.S. Pat. No. 2,831,075 to Dumke et al., and No. 2,935,577 to Dumke et al. all assigned to the present assignee, may be used. For present purposes therefore, it is only necessary to show a frame having flanged portion **10** carrying any desired pushbutton operated mechanism and having windows **11** in such flanged portion through which pushbuttons **12** may project.

In the structures disclosed in each of the above-identified U.S. patents the pushbuttons identified by numerals **44** in the '075 patent consist of flat metal strips carrying molded pushbuttons at the free ends of such push rods for actual operation of the mechanism. In such patents, any panel mounting would probably involve spacing of the pushbutton mechanism rearwardly of a panel for mounting so that the molded pushbuttons only would be exposed at the front of a panel.

For purposes of the present invention, the round molded pushbuttons of the patents would be replaced by rectangular molded pushbuttons so that a pushbutton as viewed from a panel would be rectangular rather than round. Insofar as the type of pushbutton to which the present invention may be applied, the general pushbutton structure disclosed in the above-identified U.S. Pat. No. 3,517,140 is desirable to realize the full advantages of the present escutcheon module invention. This involves a pushbutton preferably of molded material having a generally rectangular shape when viewed from the front of a panel and extending for a sufficient distance so that the rectangularly shaped pushbutton appears irrespective of whether the pushbutton is in its outermost or innermost position.

Flanged portion **10** of the device to be mounted may have as many button operating stations as required, such stations

being disposed in a line along the length of flanged portion **10** and will generally be provided with suitable apertures just beyond the line of stations for mounting such device to be disposed rearwardly of panel **15**. As a rule, panel **15** will have window **16** and mounting apertures **17** and **18** for accommodating mounting bolts **19** to extend into the mounting apertures of flanged portion **10**. Window **16** of panel **15** will usually have a standard width and will have a length corresponding to the number of stations of the pushbutton device to be secured. For example, if a five-station gang switch is to be mounted, each station will be provided with its individual pushbutton to extend the full length of window **16** of panel **15**, the length dimension of the window being along the line between mounting apertures **17** and **18**.

The width of window **16** will be sufficient to accommodate the width or dimension of a rectangular pushbutton plus some room to spare. Rectangular pushbutton **12** loosely fits in window **11** of flanged portion **10**, along either window dimension, the clearance depending upon the manufacturer. No attempt has been made to show the mounting of pushbutton **12** in its pushbutton device. In any case, the dimension of pushbutton **12** transverse of the length of flanged portion **10** will usually be substantially less than the width of panel window **16** so that when flanged portion **10** is secured to panel **15**, window **16** in the panel will usually have a gap on each side of a pushbutton along the width dimension of window **16**. In addition, adjacent pushbuttons **12** along the length of window **16** have a separation therebetween which also creates a gap between adjacent pushbuttons in window **16** along the window length.

In accordance with the present invention, escutcheon module **20** is provided. Such escutcheon module essentially consists of sleeve portion **21** extending from top outer end **22** (as viewed in elevation from a side of a module) toward a lower flanged portion terminating in bottom face **24**. The lower portion of sleeve **21** has laterally extending flanges **23** on only two opposed sides **23***a* extending along the length of panel window **16**. The module sleeve exterior has remaining opposed flat side faces **25** which, in the installed position of a module, extend across the width of window **16**, such remaining flat faces permitting adjacent modules to be in close contact. Modules molded from plastic may be accurately dimensioned so that two adjacent modules disposed in face-to-face relation can have such a good fit that the separation between adjacent module sleeves will be hardly visible.

Each module **20** is adapted to fit well in a unit length of window **16** providing that the module is correctly disposed within a window. As a rule, the length of a module which should extend along the unit length of window **16** of a panel will be selected to be substantially different from the width of a module which dimension should extend along the width of window **16**. As a rule, the separation between adjacent pushbuttons along the length of window **16** will be small enough and the difference of width and length dimensions of a module great enough so that it will be impossible to position a module incorrectly except that a module may be upside down, with flanges **23** above panel **15**.

A module should always be disposed so that flanges **23** will be below at the rear or inside face of panel **15** with top face **22** of the sleeve extending through window **16** above or beyond the front face of panel **15**. It is understood that all modules must be positioned about the respective pushbuttons prior to the attachment of the device to panel **15**.

Each module **20** has inner rectangularly shaped passage **27** accurately dimensioned to provide a snug sliding fit about correspondingly shaped and dimensioned pushbutton **12**. The thickness of the four walls of module **20** should be sufficient to fill whatever spaces or gaps there may be about each pushbutton **12**. Bottom face **24** of a module is generally flat and can rest upon a flat surface of flanged portion **10**. The thickness or height of flanged portion **23** of a module sleeve (this dimension will be parallel to the sleeve height between faces **23** and **24**) should be large enough to fit between the opposing faces of frame portion **10** and the bottom face of panel **15** when the two are firmly attached.

To space flanged portion **10** from the rear or inner face of panel **15** by a desired distance, embossings **28** on frame portion **10** are provided to register with apertures **17** and **18** of panel **15**. Instead of such embossings, spring clips for engagement by threads of bolts **19** may be provided. In any event, each module **20** when properly positioned over a push rod **12** will be locked between panel **15** and frame portion **10** by flanges **23**.

An array of pushbuttons each provided with an escutcheon module extending along the length of panel window **16** functions to render all free ends of pushbuttons **12** readily accessible for manual operation. In the event that partitions between adjacent pushbuttons **12** along the length of panel window **16** are desired, modified module **20'** is provided. Such modified module differs from module **20** in that upstanding barrier portion **30** is provided at one end face **25** of the module body or sleeve. Barrier portion **30** extends beyond top face **22** away from flanges **23** of the sleeve for any desired distance.

The height of barrier wall portion **30** (this dimension is parallel to the module height between top **22** and bottom **24**) may be as desired. Conveniently, the height of barrier portion **30** may be something less than the height of the free end of pushbutton **12** above top face **22** of a module when the pushbutton is in its up or outermost position so that a series of pushbuttons along the length of window **16** of panel **15** will have the top of each barrier **30** disposed somewhat below the tops of pushbuttons **12** when in the up position. Thus barrier **30** will separate adjacent pushbuttons without reducing accessibility of each of such adjacent pushbuttons for operation. In the down or in position of a pushbutton, the barrier top may be above the free end of pushbutton **12**. However, this is a matter of individual preference.

Barrier wall portion **30** extends along the direction of travel of the module body in panel window **16** for proper positioning of the module. The shape of barrier portion **30** is not important. From base **31**, barrier wall portion **30** may taper in thickness until the top is reached. Preferably, barrier wall **30** extends for about one-half of its thickness laterally beyond adjacent end face **25** to overhang. Base portion **31** of the barrier wall serves to cover part of an adjacent module free of a barrier wall portion. Thus, in case of two adjacent escutcheon modules, each one being provided with barrier wall **30**, there will be a full station separation between adjacent barriers **30**. The advantages of such an offset barrier wall **30** are esthetic in that bottom portion **31** of a barrier will serve to cover where the opposing end faces **25** of adjacent modules meet, as well as guiding a finger to one pushbutton.

As a rule, it will not be necessary or even desirable to have a modified module containing barrier wall **30** at an end position in window **16** of panel **15**. Where a row of adjacent pushbuttons **12** are to be provided with individual escutcheon modules, one module may be of the type previously described, free of barrier **30** to be at an end of window **16**, while all remaining modules may be of the type having barrier **30**, the arrangement being such that at the end of the modules in window **16** there will not be any barrier **30**, all barriers **30** being located between adjacent module ends as distinguished from a module end located at an end of window **16**.

Instead of having wall portion **30** overhang beyond face **25** of a module along the length of a module, it is possible to have the barrier outer face extend from a flush position with respect to face **25** and eliminate overhang completely. In such case, two adjacent modules may each be provided with opposed barrier wall portions so that the line of separation between the adjacent barrier wall portions extends along the sides to the top of such adjacent wall portions, thus making each barrier wall one-half of a barrier wall portion unit extending from the adjacent end portions of adjacent modules. However, such an arrangement does not present any advantages over the construction illustrated in the drawings and may impair the strength of such thin barrier portions so that breakage may occur. As shown, modules may be intermixed insofar as barriers are concerned. Escutcheon modules in various colors may be provided.

I claim:

1. In combination, a multipushbutton operated device having a flat flanged portion through which a row of longitudinally movable similar pushbuttons extend in laterally offset parallel relation with such pushbuttons aligned along a line corresponding to the length of such flange, each such pushbutton having a rectangular section perpendicular to the pushbutton length with adjacent pushbuttons in a row being spaced from each other along the length of such flanged portion, a panel plate having front and rear faces and having a rectangular window therethrough, said rectangular window having its length predetermined to accommodate a row of pushbuttons to extend through the panel window, the length of such panel window extending parallel to the length of the flange, said panel window being disposed so that the panel rear face is parallel to and opposite the flat flanged portion, the width of said panel window being somewhat greater than the width of each pushbutton of the aligned row of pushbuttons, said differences in width between the panel window on the one hand and each rectangular pushbutton being due generally to the fact that different suppliers provide a panel on the one hand and pushbutton operated device and have different spacings; and a molded plastic module sleeve for each pushbutton, such plastic sleeve having flat inside smooth walls to define a rectangular passageway through which a rectangularly shaped pushbutton extends, said plastic sleeve having smooth, flat outer side faces from one sleeve end toward but short of the other sleeve end, said other sleeve end being normally positioned between opposed faces of the panel and flanged portion, said one end of said sleeve being beyond the front face of the panel with the free end of the pushbutton being always beyond the one sleeve and available for actuation, said other sleeve end having lateral, outwardly projecting locking portions from two opposed outer sleeve faces, said two opposed outer sleeve faces lying in parallel planes extending along the length of the window and said other sleeve end locking said sleeve against removal thereof through said panel window, said panel and flanged portion of said pushbutton operated device being rigidly secured together, a sleeve filling gaps about the sides of a pushbutton, a plastic sleeve being molded to accurate dimensions for providing a finished appearance about each pushbutton projecting through the panel, and means maintaining said panel and pushbutton operated device in predetermined relation to lock each plastic sleeve about its corresponding pushbutton.

2. The construction according to claim 1 wherein a sleeve module has a generally flat barrier wall portion extending from the free end of said one sleeve and in a direction away from the flanged other sleeve end, said barrier wall extending in a direction generally parallel to the panel window width from one of the sleeve side walls extending along the panel window width, said sleeve top at said one end otherwise being smooth and flat, so that when two adjacent pushbuttons are provided with sleeve modules, a barrier wall between the free pushbutton portions can prevent accidental operation of two adjacent pushbuttons.

3. The construction according to claim 2 wherein said barrier member has at least the bottom portion thereof where it extends from the one sleeve end top overhanging laterally toward an adjacent sleeve end top portion.

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