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3,363,077

CONTACT SYSTEM FOR SWITCHING PURPOSES

Filed May 10, 1966

2 Sheets-Sheet 1

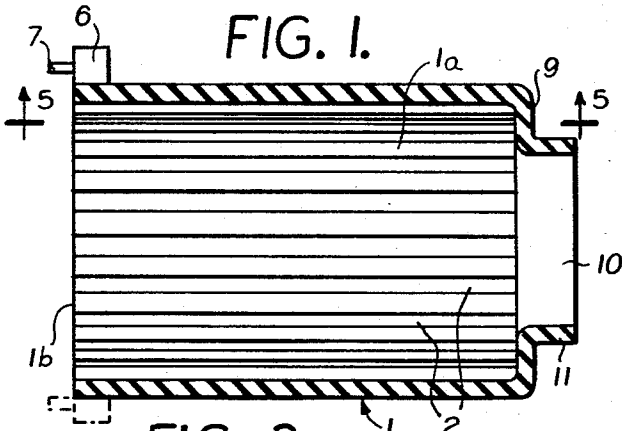


FIG. 1.

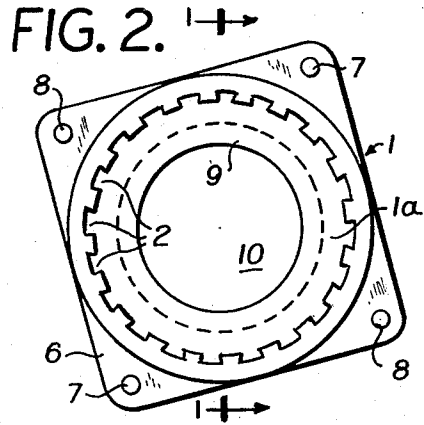


FIG. 2.

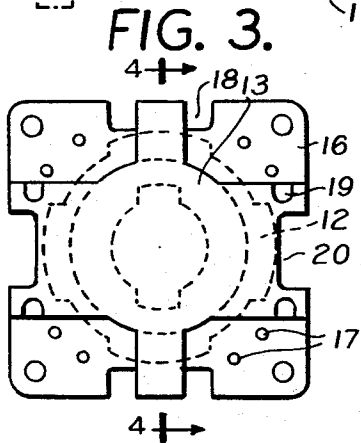


FIG. 3.

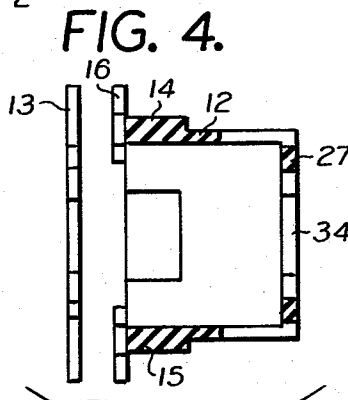


FIG. 4.

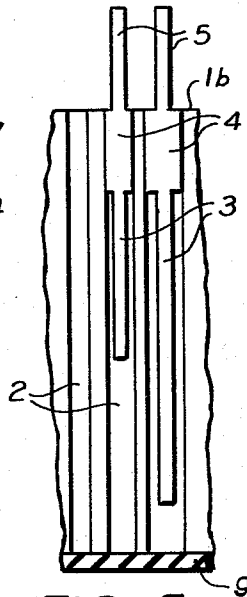


FIG. 5.

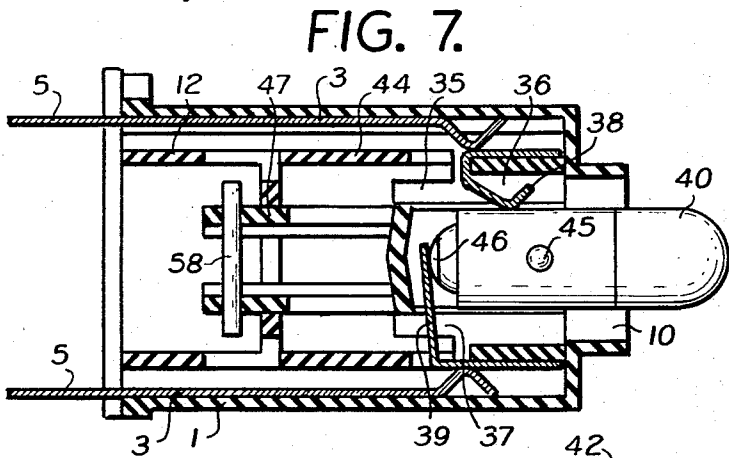


FIG. 7.

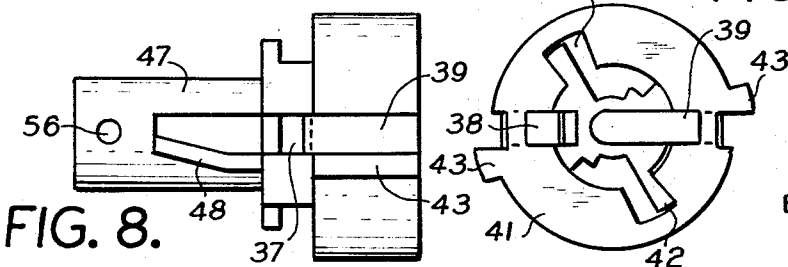


FIG. 8.

FIG. 9.

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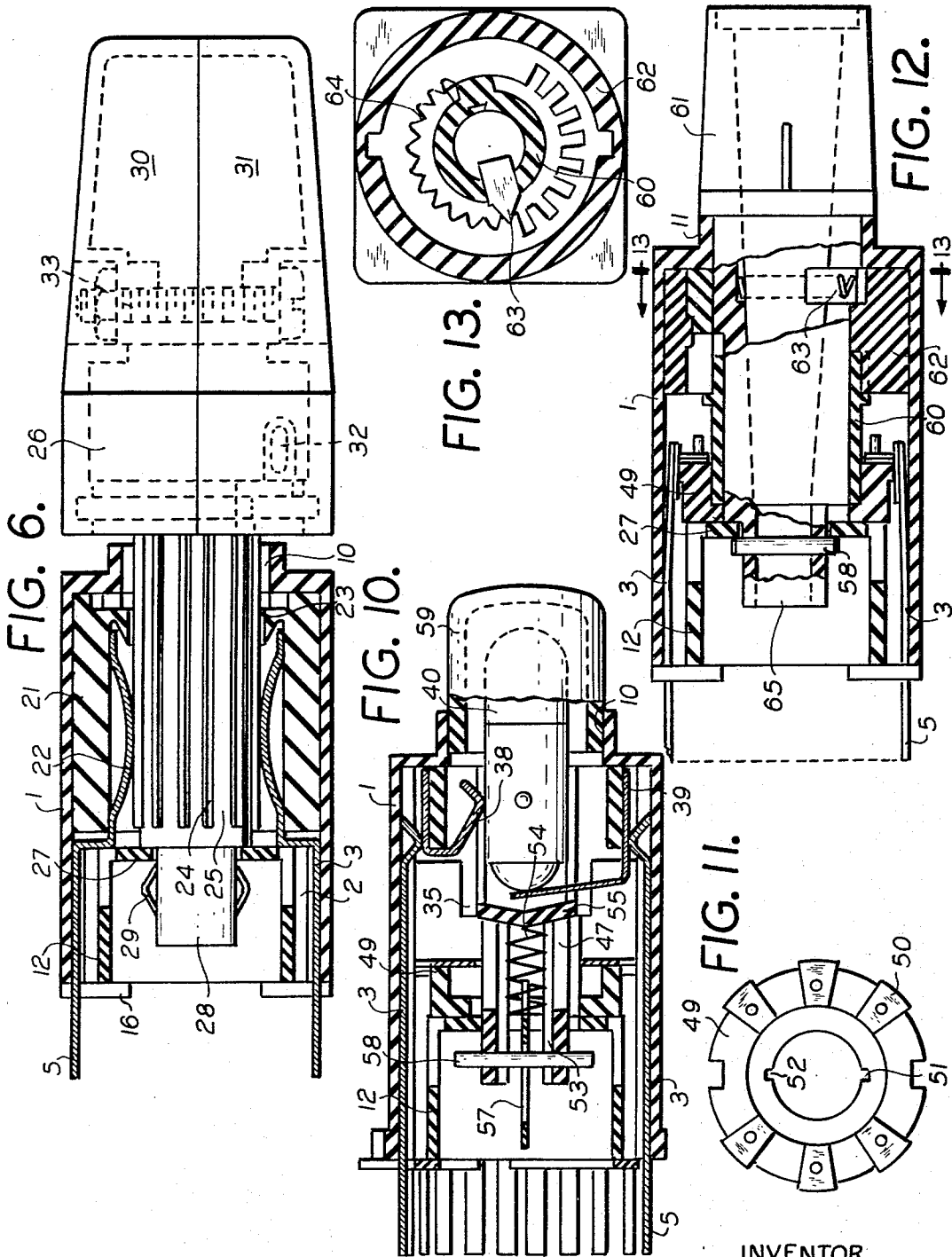
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CONTACT SYSTEM FOR SWITCHING PURPOSES

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2 Sheets-Sheet 2



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3,363,077

CONTACT SYSTEM FOR SWITCHING PURPOSES
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A 4,271/65

13 Claims. (Cl. 200—168)

ABSTRACT OF THE DISCLOSURE

A structural unit device for electrical equipment which comprises a main housing formed of insulating material and defining therewithin a main chamber. A plurality of axially disposed and parallel ribs are located in the interior surface of the main chamber and define therebetween a plurality of grooves. A plurality of contact bus blades are seated in the grooves, for connection at one end with electrical devices disposed in the main chamber and extendable at the other ends outwardly of the end portion of the main housing for connection with external electrical devices. The main housing is of pot shape. The grooves are formed such as to be open at their ends adjacent to the open end of the main housing and closed at their inner ends by a second end wall of the main housing. An inner hollow pot-shaped closure body removably seated in the open end of the main housing chamber and projecting the closure body slidable insulating members having projections received in said grooves and adapted to receive selectively different electrical devices.

The present invention relates to a contact system for switching purposes.

It is an object of the present invention to provide a novel and improved construction of a contact system for switching purposes, in which there is a main hollow housing, the interior of which is so constructed as to permit its use for insertion therein of a great variety of complementary devices without altering the basic construction of the main housing.

It is another object of the invention to provide a novel and improved structural unit in the form of hollow main housing device, and other parts, which may function as a base socket or terminal for engagement with or mounting thereon of a variety of electrical devices, the construction of the main housing being such as to provide a strictly dust-proof enclosure for any electrical contacts or other elements which may be disposed therein or engaged therewith, so as to prevent any possible breakdown due to contamination by dust or other undesirable material entering into the interior of the housing.

It is a further object of the invention to provide a contact system for switching purposes, in which there is a main housing formed of insulating material and having a main chamber formed therein which is lined with a plurality of grooves extending along its interior, and so constructed as to provide seats for a corresponding number of electrical contact blades or terminals seated in the slots, the housing being provided with a novel construction of a dust-proof outer cover extensible therein, which is provided with optionally located openings for outward extension of portions of the contact elements, as needed.

It is still another object of the present invention to provide a contact system for switching purposes of an electrical terminal or base device, which is engageable at one end with one or more electrical outer circuits, and has a number of internal grooves for securely positioning electrical contact elements therewithin, the housing hav-

ing an opening at one end, for insertion therein of one or more supplemental types of devices, such as signal lamps, switches, bells, push-buttons, relays and other similar electrical devices, the main base being so constructed as to be readily employed for receiving a great variety of such auxiliary devices seated therein and without allowing the entry of dust or particles which might interfere with the internal operation or with the electrical contacts thereof.

It is another object of the present invention to provide a contact system for switching purposes, in which there is a main housing which is constructed such, as to be entirely free of externally open slots and wherein all of its electrical contacts are contained wholly within the interior of the housing, again entry of dust and dirt, the construction being such as to permit seating at one end of auxiliary devices, such as lamps, push-buttons, switches and the like, and at the other end to permit egress through tightly fitted dust-proof holes, of the other ends of the contact elements of said electrical device.

It is still another object of the present invention to provide a contact system for switching purposes, in which there is a main insulating base housing, with an end closure, securable in dust-proof fashion thereto, with inner groove arrangement for seating firmly electrical contact elements or buses therewithin, the main housing and end closure members being so constructed and of such simple design as to permit universal use as a structural unit of such a main housing and closure with a great variety of auxiliary electrical devices to be plugged into the main housing, so as to eliminate the need in manufacture for resorting to a great variety of designs of main insulating housings, thus reducing the need for maintaining a large stock of different constructions of housings, and the resultant cost thereof.

It is yet another object of the present invention to provide a contact system for switching purposes, which is simple in design, inexpensive to manufacture, rugged and long-lived in use, and which is easily manufactured by mass production methods and at a low labor cost.

With these and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIGURE 1 is a longitudinal sectional elevation of a main housing according to the present invention, along the lines 1—1 of FIG. 2;

FIG. 2 is a left end view of the main housing shown in FIG. 1;

FIG. 3 is an elevational view of a closing plate and insert device for use in closing the left end of the main housing shown in FIG. 1;

FIG. 4 is a sectional view taken along the lines 4—4 of FIG. 3, with the cover plate shown apart from the main insert portion of this device for clarity;

FIG. 5 is a fragmentary sectional plan view along the lines 5—5 of FIG. 1, showing a portion of the interior with grooves, and with several contact plates or buses set into the grooves;

FIG. 6 is a longitudinal view of a base housing according to the present invention, for serving as a plug-in base receptacle and showing a plug-in device engaged therewith;

FIG. 7 is a longitudinal sectional view of a receptacle device according to the present invention, for engagement with a lamp;

FIG. 8 is a side-view of an insert body for use with the device;

FIG. 9 is a right-end view of the insert body shown in FIG. 8;

FIG. 10 is a longitudinal sectional view of another modified form of the electrical receptacle housing,

arranged for engagement with a push-button-actuated light, according to the present invention;

FIG. 11 is a face view of a contact ring for use in the device;

FIG. 12 is a longitudinal sectional view of another modified form of the electrical receptacle housing device, arranged for engagement with a step-by-step rotary switch, according to the present invention; and

FIG. 13 is a transverse sectional view taken along the lines 13—13 of FIG. 12.

In connection with the construction of electrical devices, especially those involving electrical receptacles for connection with externally connected apparatus, for example, those needed for transmitting signals, such as by means of illuminating lamps, in hospitals, homes, hotels, motels, and other similar places, a difficulty has always arisen in fitting the outer housing as an essential element with the other portions of the signaling devices, to such an extent that they would fit together very easily and readily. In order to achieve the present, according to this invention, the construction of the universal main housing body with internal electrical contact elements, for bells, for push-buttons, for lamps, and other means for distant communication, including telephone communication, have been improved as disclosed, in order to provide a common form of basic housing or structural unit, which would suit all these various needs.

In other words, it is important that the basic enveloping housing is one in which the switches, push-buttons, lamps, relays and other types of combination elements employed in electrical communication, should be easily fitted so that manufacturing difficulties would be lessened and manufacturing costs reduced. In order to achieve this, in the past, resort has been had to use of main basic housings, in which slits were formed which were openly accessible to the ambient air, and in which the contact plates or elements or bus bars, were secured. With the aid of these contact elements in the present invention, the terminal ends thereof are extended through one end of the basic housing. The basic housing can be assembled with other and larger apparatus, and may possibly even according to the latest mode of construction, be incorporated with printed circuits by mounting directly in certain portions thereof.

A most important consideration in the construction of this type of apparatus is not only to achieve a very remarkable reduction in the cost of manufacture, but also a simplification thereof, so that the repair of the apparatus at low cost is also possible.

An important feature of the present invention is to provide an improvement over what heretofore has taken place in such construction, namely that heretofore, even though a basic construction of main housing has been attempted to be employed, such constructions have been in the main usable only for these specific types of switches, lamps, push-buttons, relays, etc., for which they were originally designed and intended, and were not universally employable for all of these purposes, or at least a great many of them.

According to the previously known types of construction for main housing for such receptacle electrical devices, slots or grooves had been employed, but they had been mainly employed on the outer surfaces of the main housing, for engagement with the slits formed in the main housing. This type of slit construction has brought about the result that dust and dirt is able to penetrate inside of the main housing, so that interference with the internal contacts and other elements have resulted, and failures of the devices themselves have resulted.

A main object of the invention accordingly is to overcome an inherent difficulty which has resulted from existing constructions thereof, and above all, to provide a dust-free assembly of the portions of the device, as to make it possible to use it as a basic structural unit in

connection with apparatus of various kinds, and for various purposes, in a universal manner.

According to the present invention, the grooves which form an important part thereof, are not open at both ends, but are open at one end of the main housing.

According to a modified form of the present invention, in order to enhance the positioning of the contact blades, the grooves in which they are seated may be formed in generally and preferably dovetail cross-section. It is thus seen that by the construction with the grooves on the inner surface of the main wall of the base housing, it can very easily be constructed so as to be free from penetration of dust and other foreign objects. At the same time, those portions of the electrical circuits, such as the contact blades are easily reached for engagement with other elements which can be slidably engaged therewith, for electrical contact therewith. It is thus apparent that various types of apparatus may be engaged with this base receptacle device, by suitable simple modification of its interior construction, such for example, as a complete amplifier, which may be plugged-in under the present concept of miniaturization for connection with the circuits which are connected to the base receptacle device.

In addition, the main base housing is so arranged that while it may conveniently be formed in a cylindrical outer contour, at one end it has an integral outer flange, which is substantially rectangular in contour, and with which there is engageable a closure plate which is substantially secure against dust and dirt penetration therethrough, the outer closure plate being provided with holes through which the contacts from inside the housing may extend, without lessening their protection against dust and dirt penetration. At the other end of the main housing, an opening is provided with at least a partial wall, and an axial flange for the insertion at this second end of various devices, such as push-buttons, lamps, rotary switches, and other devices which may be employed in connection with this base receptacle device.

According to a further embodiment of the present invention, the device may include an insert body which may be formed for seating a lamp socket and one or more turnable and also axially movable contact rings, whereby various types of circuit changes may be achieved. The foregoing objects of this construction are achieved in the present device in order to enable it to be universally employed in connection with various differential uses.

A further advantage of the present construction is that inasmuch as the auxiliary engageable devices are both axially movable and turnable, there is the possibility and the assurance that the contacts themselves will remain clean and perfectly conductive. By use of the contact rings, as disclosed herein, the various types of switching arrangements can be constructed, and connections made to the sections of the contact rings, so that contact elements on the interior of the main base, can be brought into electrical contact for each other especially those which are immediately adjacent to each other, as well as others.

Reference may now be had to the drawings in order to understand clearly a preferred embodiment of the present invention, reference numerals denoting similar parts throughout the several views.

Referring now in particular to FIG. 1, there is a main base or housing 1, which is preferably formed of insulating material, and as seen, is conveniently generally cylindrical in contour. The main housing 1 defines a chamber 1a formed therein, which is preferably cylindrical also in contour, and has on its inner surface a number of ribs or grooves 2 formed integrally therewith and extending radially inwardly therefrom, for the seating therein of contact blades or bus wires 3, also seen in FIG. 5, for effecting necessary contact in this device. The contact blades or buses 3 which are seated in the hollow grooves between the ribs 2, are separately spaced from each other, as seen also in FIG. 5, and have portions 4 thereof which may be somewhat wider so as to

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conform to the width of the grooves, for frame engagement therewith. From FIG. 5 it is seen that the end portions 5 of the contact buses or blades 3 extend outwardly from the leftward end 1b of the main base housing 1.

As seen in FIGS. 1 and 2, while the main body of the main base housing 1 is preferably generally cylindrical in contour, it has at its leftward end, as seen in FIG. 1, a generally rectangular end flange 6 against or upon which a dust-proof closing cover is seatable. For this purpose, the main base 1 is provided with a short pin 7, which extends through holes in the closure plate for proper alignment. While there are only two pins 7 shown, additional holes 8 may be provided in the end flange 6. Through these holes, additional fastenings may be inserted, in order to enhance the securement of the closure cover with the main base 1. At the other end of the main base 1, there is a wall 9, which is integral therewith, and has preferably a central opening 10 with an axial rearwardly oriented cylindrical flange 11 through which various types of connective apparatus may be engaged with the main base.

Referring now to FIGS. 1, 2 and 3, and 4, it is seen that a hollow main base closing body 12 is seatable in the open end of the main base 1, and that it includes a substantially rectangular contoured closure plate 13 which is shown separately therefrom in the side view in FIG. 4, in order to securely close the interior of the main base housing shown in FIG. 1 especially against the entry of dust and dirt. The closure body 12, as shown in these views, has portions or radially extending ribs 14 and 15 thereof seen in FIG. 4, for engagement with two of the grooves 2 on the interior of the main body, so that rotation of the closure body in relation to the main body 1 is prevented. Further the closure body 12 is provided with four corner portions 16, which are engageable with the outer flange 6 at its related corners, of the main base 1 and securable therewith, so that the interior of the closure body 12 is also enclosed by means of a closure plate 13 shown in end view in FIG. 4. The portions 16 of the closure body 12 and the closure plate 13 are provided with holes 17 or cutouts 18, 19 and 20, through which the contact blades 3 which extend out of the main body or housing 1, may be extended.

As seen in FIG. 6, a portion of which shows an assembly of the device as shown in FIGS. 1, 3 and 4, the construction illustrates how the closure insert body 12 is assembled within the main base housing 1. In addition as shown, on the interior of the main base housing 1, there is a cylindrical insulating wall 21, which with the aid of the engagement with the grooves 2 of the main base housing 1, is so lodged as to be prevented from rotation. On the inner surface of the insulating bushing 21, there are ribs 22 which extend from the corresponding grooves 2 of the main base housing 1. In these grooves 2 especially as seen at 22, are correspondingly bent or formed contact blades or buses 3 seated therein, which at one end are engaged against abutments 23 of the insulating bushing 21. As shown, the contact blades 3 which are preferably resilient or springy in contour and embodiment, are set to press resiliently inwardly against the corresponding contact blade body or bell 24, which forms a cylindrical and generally conformingly shaped body 25 of insulating material, of the insert electrical apparatus 26, for engagement by insertion in the main receptacle housing 1. The cylindrical body 25 of the insert device or plug-in device 26, is provided at its left end with a locating extension 28, which is insertable through the opening in the middle of the end wall 27 of the hollow closure body 12, it being seen further from FIG. 6 that there are retaining springs 29 carried by the extension 28 which spring through the opening in the end wall 27 upon insertion therein so as to enhance the engagement therewith. From FIG. 6 it is further seen that the contact ribs 24 are extended along the outer

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surface of the main extension or neck of the plug-in device 26, which itself includes two parts 30 and 31, and also as needed may include soldering lugs indicated generally at 32, for connection with the interior and exterior devices involved in connection with the plug-in. The plug-in device 26 is divided into two main sections for convenience, and these in turn may be readily held together and assembled by means of a retaining screw 33.

By insertion of the cylindrical insert base portion 25 of the plug-in electrical device 26 through the opening 10 of the main base housing 1, the contact blades 24 are brought into good contact with the contact blades 3 which are seated in the grooves of the main housing 1, whereby the particular contact extensions 5 of the contact blades 3 involved in the arrangement are brought into a continuous circuit. As seen further in FIG. 6, and also in FIG. 4, the insertion of the cylindrical base portion 25 into the interior of the main base 1, pushes the extension 28 through the opening in the end wall 27, the opening being shown at 34 in FIG. 4, in the closure body 12, so that the retaining springs 29 are pressed inwardly on the extension 28 as they pass by through opening 34, and thereafter spring outwardly and thereby retain the insert device 26 firmly in engagement with the main base device 1. In order to avoid an incorrect insertion of the plug-in device 26, it is also apparent that one or more non-symmetrically located ribs and grooves may be formed in the main base housing 1 and the plug-in device 26, or portions thereof, so that there will be no question as to the angular orientation of the insertion of the plug-in device 6 in relation to the main housing 1. It is conceivable that within the scope of the present invention, the arrangement may be so that the polarization of the various related contacts in two or more poles, may be attained by this type of comparable construction. From FIG. 6 it is clear that the main contact blades or buses 3 according to this embodiment, are continuous from their outer ends 5 through the grooves in the interior of the main housing 1, and bent in similar fashion as indicated, inwardly and then is shaped with arched inner portions as at 22 to form springy or resilient contact engaging portions. For this purpose and in order to avoid the breakage of these springy portions, they are slightly shortened at their right hand ends as seen in FIG. 6 in order to allow for some degree of compression of their arched portions.

Referring now again to the drawings, and in particular to FIG. 7, it is seen that here a further embodiment of the present invention is illustrated, for example as an insert socket for a lamp or other illuminating device of this type, and to show how the universal construction of the main housing 1 permits its adaptability for this purpose. In the construction shown, there is a plug-in body 35 further details of which are shown in FIGS. 8 and 9. The insert or plug-in body 35 is seen here constructed as a lamp socket device, and is intended to bring the lamp into contact with electrodes 38 and 39 carried by the main housing 1, or at least engageable with its contact blades or buses 3, after insertion of the insert body shown in FIGS. 8 and 9. From FIGS. 7, 8 and 9, it is further seen that the lamp socket insert is provided with terminal portions 36 and 37, which in conjunction with the contact blades 38 and 39 are engageable at one end with the inserted lamp 40, and at their other ends with two of the contact buses or blades 3 which are seated in the grooves of the main base housing 1, and are extendable at their outer ends 5 for connection in an external circuit as desired. The end wall 41 of the insert device 35 is provided with cut-out or notch portions 42, which provide lodgement for the bayonet pin type engagement of the lamp 40.

The insert or plug-in device 35 includes further on its outer surface axially parallel ribs 43 which are slidably engageable with the grooves 2 of the main base housing 1, and so aid that the insert body 35 is axially movable, but once inserted in the main base, remains unable to

be turned. As seen further in FIG. 7, in the example shown, where it is not desired that the insert device 35 should be movable axially, the inner portion of the insert body 35 is engaged with the main base 1 by sliding into a tubular body 44 which with the aid of the closure body 12 is held securely with the main base body 1.

Referring further to FIG. 7, it is seen that upon the insertion of the lamp 40 in the lamp socket shown, the pins 45 of the lamp are insertable through the notches 42 of the insert body 35 and then turned slightly. The contact blade 39 presses then against the base contact 46 of the lamp 40 and exerts pressure also against the pins 45 against the end wall 41 of the insert body 35.

As also shown in FIGS. 8 and 9, the construction of the insert body 35 not only is adaptable for use as a lamp socket, as shown in FIG. 7, but also for other purposes. Hence the insert body 35 is provided with a cylindrical extension portion 47, which is insertable through the opening 34 in the end wall 27 of the closing member 12, the extension 47 being provided with two inclined or curved or tapered cam ribs 48. Mounted on this extension 47 there is a contact ring 49 which is slidable for the purpose of mounting, and is provided with metal contact terminals or segments 50, for electrical contact with various ones or pairs of the contact blades or wires 3 which are set forth in the grooves 2 in the interior of the main housing 1, and shown at 3. The contact ring 49, as seen best in FIG. 11, is provided with two grooves 51 and 52, or notches, for engagement with the cam ribs 48 of the insert body 35. It can be seen that by shifting the contact ring 49 axially relative to the insert body 35, the contact ring 49 will be turned or rotated in accordance with the contours of the cam ribs 48. By this means, as illustrated, the extent of such rotation is so chosen that in any one position of the metal contacts 50 each may be in contact with only one of the contact blades 3 seated within the main housing 1, or after a desired axial shifting thereof with two contact buses or blades, so that these with the aid of the metal contact terminals or segments 50, upon such rotational movement are brought into electrical contact with each other.

Referring to FIG. 10, it is seen that there is illustrated a pushbutton operated lamp, which includes in its construction an insert body 35 shown in FIGS. 8 and 9. On the extension or neck 47 of the insert body 35 there is, for example, a contact ring 49 similar to that shown in FIG. 11, slidably mounted thereon, and there is a cross-abutment 53 which is carried across the contact ring 49, there being a compression spring 54, one end of which presses against a shoulder 55 of the insert body 35, and the other end of the spring 54 thus presses against the cross abutment 53, to act on the contact ring 49. It is also seen that the extension portion or neck 47 also extends further inside the closure body 12 which is shown separately in FIGS. 3 and 4, and as previously mentioned, is securely disposed inside the main housing 1 and secured against rotation therein. As seen further in FIG. 10, a retaining pin 58 is inserted through the bores 56, as also seen in FIG. 8 of the insert body 35 and through a slot 57 of the cross-abutment 53. As also seen in FIG. 7, the lamp socket is illustrated, which engages the contact blades 38 and 39 of the insert body 35, which contact blades 38 and 39 are brought into electrical contact with one or the other of the stationary contact blades 3 seated in the grooves 2 of the main housing 1. A lamp 40 is seated in the socket provided in the insert body 35, which lamp 40 is covered by a transparent cup-shaped push-button 59, which is frictionally fitted into the opening 10 of the main housing 1. By means of the push-button 59, it is seen that both the interior of the main housing 1 and also the lamp 40 are at the same time covered and protected against dust and dirt entry. It is also to be understood, although it is not illustrated in FIG. 10, that in order to secure the push-button 59 against accidental dislodgement, it

may be provided with axially parallel longitudinal ribs, which at their ends have small resilient projecting lugs to engage behind the end wall 41 of the insert body 35 in order to act as retainers for the push-button 59.

If, for example, two adjacent stationary contact blades or buses 3 seated in the main housing 1 are suitably arranged relative to one of the contact or metal switch plates or segments 50 of the contact ring 49, then these two contact terminals 3 can be switched in a completed circuit in series with the contact blades 38 and 39 which are operatively connected with the lamp 40. Now then, if the push-button 59 is pressed against the insert body 35, the body 35 will be pushed in axial direction to overcome the spring bias of the spring 54. As a result, the cam ribs 48 of the insert body 35 will engage in the grooves 51 and 52 of the contact ring 49, whereby the latter will be turned or rotated in dependence upon the distance of movement or advance of the cam ribs 48. As a result of this rotation, there will be brought into electrical contact with each other the above-mentioned metal blade 50 of the contact ring 49 and the related or adjacent contact blades or elements 3 of the main housing 1, whereby the electrical current circuit through the lamp 40 will be completed and so that insofar as there is an electrical current from a suitable electrical current source connected thereto, the lamp 40 will be lighted. When the pressure on the push-button 59 is released, then the pressure spring 59 will push the insert body 35 back into its rest or stationary position, whereby the contact ring 49 through the cam ribs 48 will be rotated into its return position and the connection between the two contact elements by means of the metal blade 50, will be broken and so the lamp 40 will be extinguished.

It is apparent, that at every actuation of the push-button 59 the involved contact elements will be rubbed up against each other, so that there will always be a good contact engagement due to cleanliness of such contacts.

It is also to be understood that the lamp lighting switch shown in FIG. 10 can also be so constructed as to be a delay lighting switch, by employment of known conventional delay devices, which can be carried out in a simple manner. It is also to be understood that the example of construction shown in FIG. 10 may also be employed as a simple push-button switch, and in this event the lamp 40 may be omitted. As the contact ring 49 can be formed with a plurality of metal switch blade contacts 50 then, by simple construction the switching can be arranged of many more switch circuits by mere direct pressing of the push-button 59. By omission of the lamp 40 and installation of a delay or permanent contact type of apparatus, which remains on, the construction of such types of switches, is readily accomplished.

Referring now to FIGS. 12 and 13, there is illustrated an example of a programed or rotary step switch. In this embodiment it is seen, that the contact ring 49 is engaged with a rotatable member 60 with which is secured a movable turning knob 61, through the flange 11 of the main housing 1. The rotatable member 60 is turnably disposed in a ring 62, which in turn is non-rotatably disposed in the main housing 1. As seen in FIGS. 12 and 13, a coil spring actuated detent or ratchet member 63 is carried radially by the rotatable member 60 so that as the rotatable member 60 is rotated, the detent or ratchet member 63 snaps into engagement with the teeth or notches 64 formed in the inner surface of the ring 62. These notches 64 are, for example, so constructed that the turning angle of the rotatable member 60 from notch to notch is sufficient to cause spanning of two of the contact blades 3 seated in the main housing 1. These contact blades 3 press accordingly against the metal ring segments 50 of the contact ring 49, which as explained in the previous example is spaced from that end of the main housing 1 which is nearest to the turning knob 61, and lodged against the closure member 12. The rotatable body 60 in-

cludes a cylindrical end extension portion 65 which extends through the opening 34, as shown in FIG. 4 of the closure body 12. Through this extension portion 65 or neck there is radially inserted therethrough a retaining pin 58, which is within the interior of the closure body 12 and on the leftward side of its wall 27, so that the contact ring 49 is blocked against axial movement.

The program or step-by-step switch shown in FIGS. 12 and 13 lends itself to many variations in construction and use. For example, it may be arranged with individual poles for a number of programs or steps or contact stations, for example, for positions for 10 program stations, or double poles may be arranged for several programs, for example, with 5 positions for 5 programs. It is also possible in this type of construction to arrange one or more singular or plural pole stepped or sequence switches or the like.

It is understood that the invention is not confined only to the example and embodiments shown and described. Thus, within the principles, of the invention, certain portions shown in some of the views may be combined with those in other, and for example, by suitable linkages, push-button switches may be combined with turnable switches and combined with lamp lighting switches and this may all be embodied in a single unit, if desired.

While I have disclosed several embodiments of the present invention, it is to be understood that these embodiments are given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. A structural unit device for electrical equipment, comprising

a main housing formed of insulating material, and defining therewithin a main chamber,

a plurality of axially disposed and parallel ribs located in the interior surface of said main chamber, and defining therebetween a plurality of grooves,

a plurality of contact bus blades seated in said grooves, for connection at one end with electrical devices adapted to be disposed in said main chamber, and extendable at their other ends outwardly of the end portion of said main housing, adapted for connection with external electrical devices,

said main housing being of pot-shape, said grooves being so formed as to be open at their ends adjacent to the open end of said main housing, and being closed at their inner ends by a second end wall of said main housing,

an inner hollow pot-shaped closure body removably seated in the open end of said main housing chamber, and having at least one projection received in at least one of said grooves of said main housing to block rotation of said inner hollow pot-shaped closure body relative to said main housing and adapted to receive selectively different electrical devices.

2. The device, as set forth in claim 1, wherein said main chamber has inner walls dovetailed in cross-section to form said grooves, and said contact bus blades are seated in said grooves to retain said contact bus blades therein.

3. The device, as set forth in claim 1, wherein said main housing is generally cylindrical in cross-section, with a substantially rectangular end flange carried at its open end,

a dust-tight closure plate engageable with said rectangular flange over said inner hollow pot-shaped closure body, and having holes formed therein for extension therethrough of the outer ends of said contact buses and wires, and wherein

there is a second end wall at the opposite end of said main housing and integral therewith, and having a central opening formed therethrough, with an axially extending cylindrical flange carried thereby for the insertion therein and extension therethrough of elec-

trical appliances and equipment used with said main housing.

4. The device, as set forth in claim 1, further comprising

insert body means disposed within said main chamber, lamp socket means carried by said insert body means, and

at least one rotatable and axially slidable contact ring means, carried by said insert body means for use therewith.

5. The device, as set forth in claim 1, wherein said main housing comprises a substantially rectangular end flange, and said inner hollow pot-shaped closure body comprises a complementary substantially rectangular end flange at its outer end portion,

outer closure plate means constructed and arranged for lying against said underlying said flanges on said main housing and said inner hollow pot-shaped closure body, to that said outer closure plate means is securable firmly to said underlying two flanges, and so that the interior of said inner hollow pot-shaped closure body is enclosed.

6. The device, as set forth in claim 4, wherein said insert body means is constructed and arranged for supporting a lamp, and comprises a hollow portion for insertion of said lamp, a plurality of contact bus blades extending into said hollow portion and in engagement with the electrodes of said lamp mounted in said hollow portion, said contact bus blades being constructed and arranged for engagement electrically with at least two of said contact bus blades seated in said inner grooves of said main chamber, said lamp being formed with a bayonet-type base with radially projecting pins, and hollow grooved retaining means formed in a wall of said lamp receiving hollow portion of said insert body means, for engagement with said bayonet pins of said lamp for retaining said lamp firmly in bayonet-type fashion engagement therewith.

7. The device, as set forth in claim 6, further comprising

resilient spring means disposed in said main chamber, for exerting spring bias between said insert body means and said main housing for biasing said insert body means axially outwardly in a direction towards said lamp,

said insert body means being formed with an extension neck portion at its inner end, for extension through an opening formed in said inner hollow pot-shaped closure body, for guided slidable movement axially of said insert body means,

and at least one inclined turning guiding cam rib means, integrally formed with said insert body means for effecting rotation.

8. The device, as set forth in claim 4, wherein said insert body means comprises an integral cylindrical extension neck portion,

a contact ring means slidably and rotatably seated upon said extension neck portion, and

a plurality of metal contact ring segments carried by said contact ring means and so constructed and arranged as to be movable into position for effecting electrical contact between at least two of the externally connectable contact bus blades which are seated in the grooves on the inner surface of the main chamber.

9. The device, as set forth in claim 8, wherein said contact ring means has at least one groove formed therein and wherein said insert body means includes at least one inclined turning guiding cam rib means extending outwardly therefrom, for engagement with said contact ring groove whereby upon axial movement of said insert body means, said contact ring means is rotatable by such engagement with said cam rib means.

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10. The device, as set forth in claim 9, wherein said extension neck portion of said insert body means is hollow, longitudinal slot means formed through said extension neck portion and the wall of said inner hollow pot-shaped closure body through which said neck portion extends, a transverse abutment member extending through said slot means and through the interior of said extension neck portion, and secured to said contact ring means for movement therewith in an axial direction, but without blocking rotation of said contact ring means, retaining pin means carried by said extension neck portion at its outermost end inwardly of said inner hollow pot-shaped closure body, for blocking engagement of said extension neck portion therewith, and resilient spring means acting between said transverse abutment member and said insert body means, for exerting resilient bias for maintaining releasably the normal orientation of said contact ring means against the inner surface of said insert body means.
11. The device as set forth in claim 4, further comprising transparent push-button means axially slidably seated in said central opening in said second end wall at the opposite end of said main housing, for providing visibility therethrough for a lamp carried by said lamp socket means, said push-button means being engageable with said insert body means for movement axially therewith, and so seated in said central opening as to provide a dust-proof seal against entry of dust and dirt into the interior thereof.
12. The device, as set forth in claim 8, further comprising rotary switch device means disposed within said main chamber, and comprising a plurality of rotary rest positions formed in said rotary switch device means and cor-

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- respondingly related to said longitudinal grooves formed in said main chamber of said main housing, and whereby said contact ring means is so constructed and arranged for engagement with the rotatable body of said rotary switch device means, and in relation to said cylindrical end flange of said main housing through which said rotary switch device means extends, for affording step-by-step switch engagement with various contact bus blades in said grooves, and a rotatable switch actuating knob carried by said rotary switch device means, and extending outwardly of said cylindrical flange of said main housing for permitting manual rotation of said rotary switch device means.
13. The device, as set forth in claim 6, wherein said contact bus blades are extended at their inner ends inwardly of the inner surface of said main chamber, and arched to form resilient contact members, an electrical device engageable with and insertable into said main chamber, and comprising a plurality of polarized contact members for electrical contact with said arched contact members in said main chamber, said electrical device comprising a neck portion for carrying said contact members, and extensible into said main chamber, and an outer extension portion engageable through an opening in said inner hollow pot-shaped closure means, and carrying resilient releasable locking means for retaining the same in said engagement.

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