Title: IMPROVEMENTS RELATING TO ELECTRIC SWITCHES

Description of Invention

This invention is concerned with improvements relating to electric switches, particularly switches of the kind having two operating members on a single face plate, hereinafter referred to as a "double switch". The invention has been devised particularly for domestic electric switches which are used to control outlet sockets, and in particular as are used to control double pole outlet sockets. It is, however, to be appreciated that the invention may be utilised in other types of electric switch where similar or analogous problems arise.

A conventional electric switch comprises a switching mechanism comprising a contact assembly comprising a movable contact which is movable in relation to a fixed contact by an operating mechanism, the operating mechanism being mounted for limited pivotal movement between two positions (the "on" and "off" positions) and being so arranged that the operating mechanism is stable only in either of said positions but not in any intermediate position. Such an electric switch is hereinafter referred to as being of the kind specified.

The operating mechanism of a conventional switch mechanism comprises an operating member, conventionally termed and hereinafter referred to as a "rocker", adapted to be engaged by the finger of a user, and a drive member adapted to engage the movable contact to cause the movable contact to move between a "make" position, when the switch mechanism is on, and a "break" position when the switch mechanism is off. The drive member may comprise a specially designed head to improve the action of the switch.

Such a switch is described in GB-B-2166296, to which reference may be made for details of construction and operation not herein described.

Conventionally the rocker is positioned directly over the moving contact, in particular such that a plane in which the rocker moves, extending at right angles to the axis of movement of the rocker, also passes close to or through the moving contact. Whilst in a single switch such positioning of the rocker

presents no great difficulty, in a double switch, where a supply of electricity is taken to both switch mechanisms from a single terminal of the socket, this requires the provision of relatively tortuous pathways between the contacts and the output terminals.

According to this invention there is provided a double switch of the kind specified, wherein each moving contact is off-set laterally from its associated rocker.

Thus a plane in which the rocker moves, extending at right angles to the axis of movement of the rocker, does not contain either moving contact.

Preferably the switch comprises a drive member extending laterally from the rocker, conveniently integral therewith and preferably in a cantilevered manner. Preferably the drive member extends parallel to the axis of rotation of the rocker, and is conveniently afforded by a "camshaft". Preferably the camshaft carries engagement means to move the moving contact of the switch mechanism between its make and break positions.

Thus preferably the engagement means comprises a head, and where the switch is a double pole switch, preferably the camshaft carries two heads one for each of the movable contacts, conveniently both contacts lying on the same side of such a plane.

In this manner the rocker may be located in any desired position irrespective of the location of the output terminals of the switch. This in turn enables the mechanism to be so located as to simplify the pathways from the contact members to the input and output terminals.

According to this invention there is also provided a double pole double electric switch comprising two switch mechanisms, each switch mechanism comprising

(a) a contact assembly for each of the two poles, said contact assembly comprising a fixed contact and a moveable contact;

(b) an operating mechanism for moving the moveable contacts, said operating mechanism comprising an operating member and a drive member for the contact assemblies;

the switch comprising a common live terminal and a common neutral terminal for each pair of switch mechanisms, wherein said moveable contacts of each switch mechanism are offset laterally from the operating member.

Preferably the moveable contacts are offset laterally on the same side of the operating member.

Thus preferably the drive member of the operating mechanism extends from the operating member, preferably from one side thereof.

According to this invention there is also provided a double switch of the kind specified comprising two conductive members providing respective conductive pathways between the live and neutral terminals (conveniently the input terminals) and the live and neutral contacts, such conductive members being of the same shape.

Preferably said conductive members are E-shaped in plan with a terminal, to which a supply of electricity may be connected, being provided on the central bar. Preferably the two longitudinal bars are at different heightwise positions.

This arrangement also enables the four further conductive members, extending between the movable contacts and the output terminals, to be of simpler design, and preferably the switch comprises four such conductive members of no more than two different designs, preferably all being of the same design.

There will now be given a detailed description, to be read with reference to the accompanying drawings, of an electric switch which is a preferred embodiment of this invention, having been selected for the purposes of illustrating the invention by way of example.

In the accompanying drawings:

FIGURE 1 is an elevation of the face plate of the switch which is the preferred embodiment;

FIGURE 2 is a view of the interior of the switch showing internal mechanism of the switch;

FIGURE 3 is a perspective view showing a rocker and camshaft of the switch;

FIGURE 4 is a schematic plan view showing the arrangement of contact members of the preferred embodiment; and

FIGURES 5 and 6 are perspective views showing two of the contact members of the switch.

The electric switch which is the preferred embodiment of this invention is a double switch, and in particular is a domestic electric switch as are used to control outlet sockets as may be used for the powering of domestic appliances.

In general, numerals which suffixes a or b are used to differentiate poles which are duplicated between the two switch mechanisms.

The switch comprises a housing 6 comprising on one side a face plate 8 the face plate comprising socket apertures 10, 12 and 14 for a three pin electric plug. For each of the sockets there is a switch comprising a switch operating mechanism 18, adapted in use to engage the moving contacts of the contact assembly, to move said moving contacts between make and break positions, in a conventional manner.

Each operating mechanism 18 comprises a rocker 16. Extending laterally from the rocker 16 is a drive member 19, hereinafter referred to as the camshaft, which engages within a channel in the interior of the housing 6 to provide for pivotal movement of the switch mechanism. Extending from the camshaft 19 are two switching heads 22, each comprising a frusto-conical tip adapted to engage the moving contact of one of the live and neutral terminals of one of the sets of switch contacts.

In this manner the rocker 16 may be spaced at any desired lateral position from the switching heads 22, and the contact mechanism may be located in any convenient position, as may be desirable in a double pole double switch.

As will be seen from Figure 4, which is a schematic view showing the assembly of contacts, two fixed conductive members 40 are used (referred to for convenience as the upstream fixed contact members), providing connection between the input terminals 28, 29 and the live and neutral moving contacts 30, 32, which are E-shaped in plan view. From the opposite side of the moving contacts 30, 32 fixed conductive elements 34 extend, to the live and neutral output pin apertures 12, 14.

Each of the conductive members 40 comprises a central transverse limb 41 which is elevated, having attached thereto the input terminal 28 or 29, this arrangement enabling the input terminal conveniently to be located within the depth of the housing 6.

Specifically, the camshafts are mounted for limited rocking movement about a common axis. This enables the conductive members on the output side of the switch mechanism (referred to for convenience as the downstream fixed contact members) to be of the same shape, indicated by the numeral 34 in Figure 4. This greatly assists in the assembly of the switch, and assists also in obtaining a reduction in cost of manufacture.

As will be seen from Figure 4, the rockers 16 are located generally on the outer edges of the face plate 8, with the camshaft 19 extending therefrom laterally inwardly.

However if desired the rockers may be located generally centrally at the face plate, with the camshafts extending generally outwardly.

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS

1. A double switch of the kind specified, wherein each moving contact is offset laterally from its associated rocker.

2. An electric switch according to Claim 1 wherein any plane in which the rocker moves, extending at right angles to the axis of the rocker, does not contain either moving contact.

3. An electric switch according to one of Claims 1 and 2 wherein the switch comprises a drive member extending laterally from the rocker.

4. An electric switch according to claim 3 wherein the drive member extends from the rocker in a cantilevered manner.

5. An electric switch according to one of Claims 3 and 4 wherein the drive member extends parallel to the axis of rotation of the rocker.

6. An electric switch according to any one of Claims 3, 4 and 5 wherein the drive member carries engagement means to move the moving contact of the switch mechanism between its make and break positions.

7. An electric switch according to Claim 6 wherein the engagement means comprises a head formed by or mounted on the drive member.

8. An electric switch according to one of Claims 6 and 7, wherein the switch is a double pole switch, and the drive member carries two heads one for each of the moveable contacts.

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9. An electric switch according to any one of the preceding Claims wherein both contacts lie on the same side of the rocker.

10. A double pole double electric switch comprising two switch mechanisms, each switch mechanism comprising

(a) a contact assembly for each of the two poles, said contact assembly comprising a fixed contact and a moveable contact;

(b) an operating mechanism for moving the moveable contacts, said operating mechanism comprising an operating member and a drive member for the contact assemblies; the switch comprising a common live terminal and a common neutral terminal for each pair of switch mechanisms, wherein said moveable contacts of each switch mechanism are offset laterally from the operating member.

11. An electric switch according to Claim 10 wherein said moveable contacts are offset on the same side of the operating member.

12. A double switch of the kind specified comprising two conductive members providing respective conductive pathways between the live and neutral terminals and the live and neutral contacts, such conductive members being of the same shape.

13. An electric switch according to Claim 12 wherein said conductive members are E-shaped in plan with a terminal, to which a supply of electricity may be connected, being provided on the central bar.

14. An electric switch according to Claim 13 wherein the two longitudinal bars are at different heightwise positions.

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15. An electric switch constructed and arranged substantially as herein before described with reference to the accompanying drawings.

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