

[54] **WATERPROOF DOOR-OPERATED
SWITCH ASSEMBLY**

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[58] Field of Search 200/168 G, 153 V, 159 R

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[57] **ABSTRACT**

A switch assembly comprising a housing having juxtaposed sections respectively defining a switch compartment and an actuator member-receiving space separated by a wall forming a water-tight barrier against the entry of water splashing thereagainst. The actuator member-receiving space opens onto the front exterior of the housing through a first aperture facing in a direction parallel to said water barrier-forming wall. An actuator member in the actuator member-receiving space has a pivot shaft extending in water-sealing relation through an aperture in said wall into said switch compartment. The actuator member is resiliently urged to a position where it projects from the first aperture and is retracted within said space by the pressure of a door closing thereagainst. The actuator member shaft operates switch means in the switch compartment of the housing when the actuator member is retracted within said space. The actuator member-receiving space also opens preferably onto the exterior of the housing through another aperture facing in a direction parallel to the water barrier-forming wall and at right angles to said first aperture.

14 Claims, 9 Drawing Figures

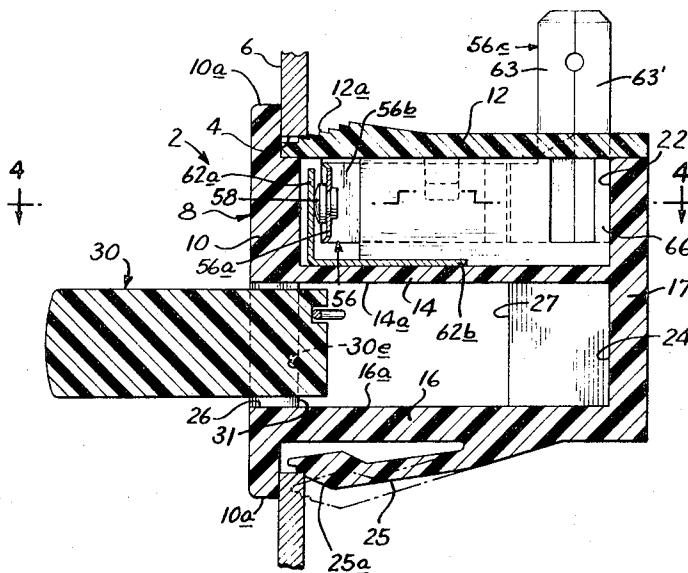


FIG. 1

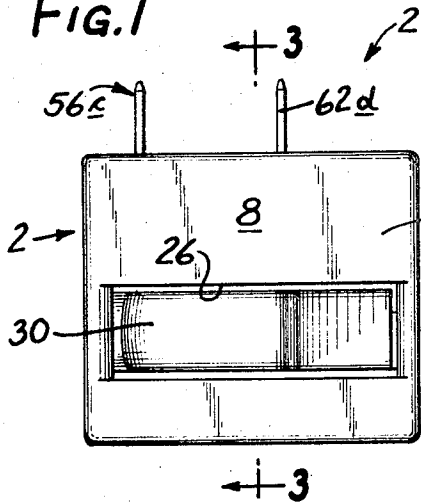


FIG. 2

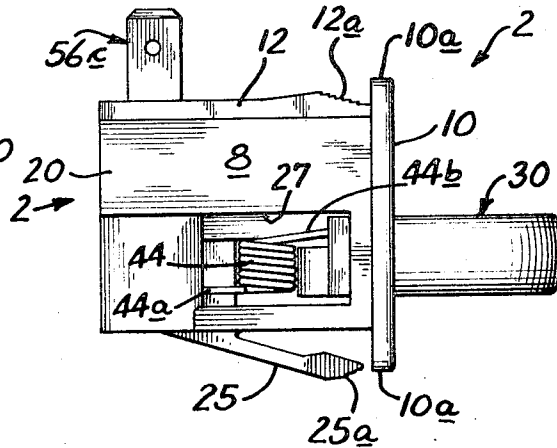
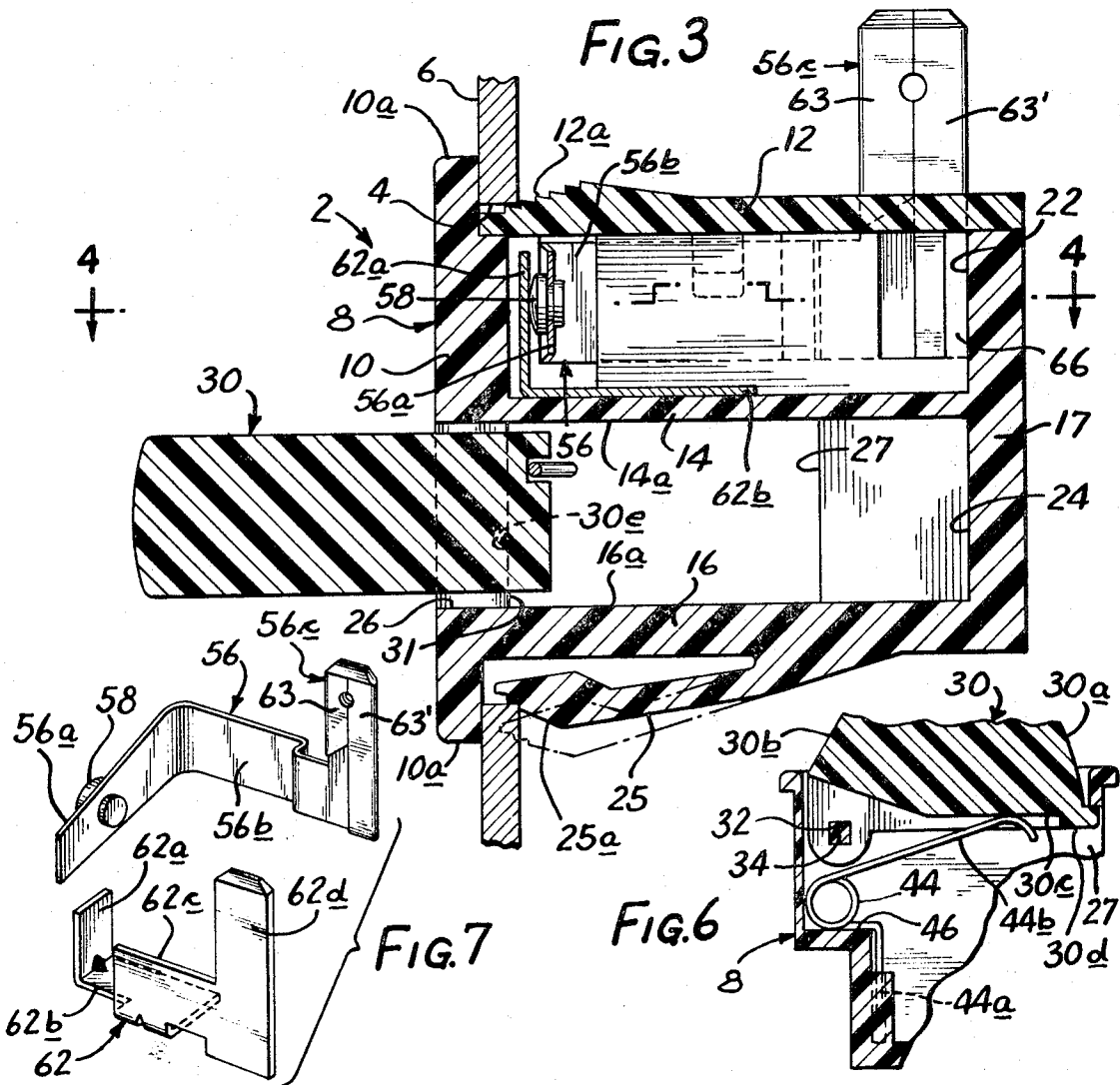
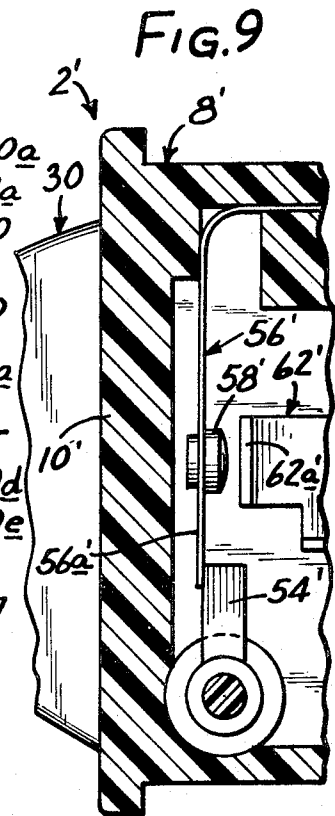
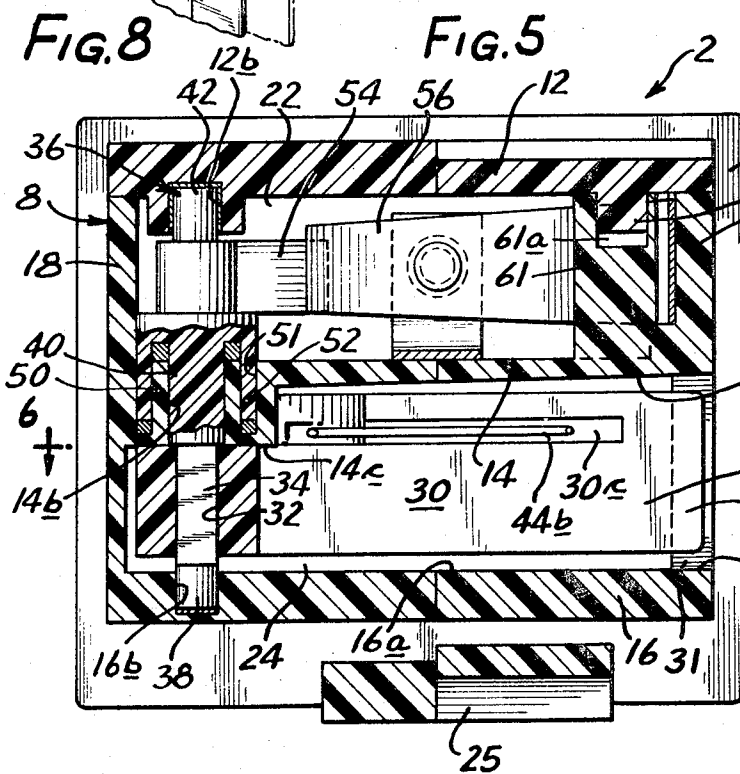
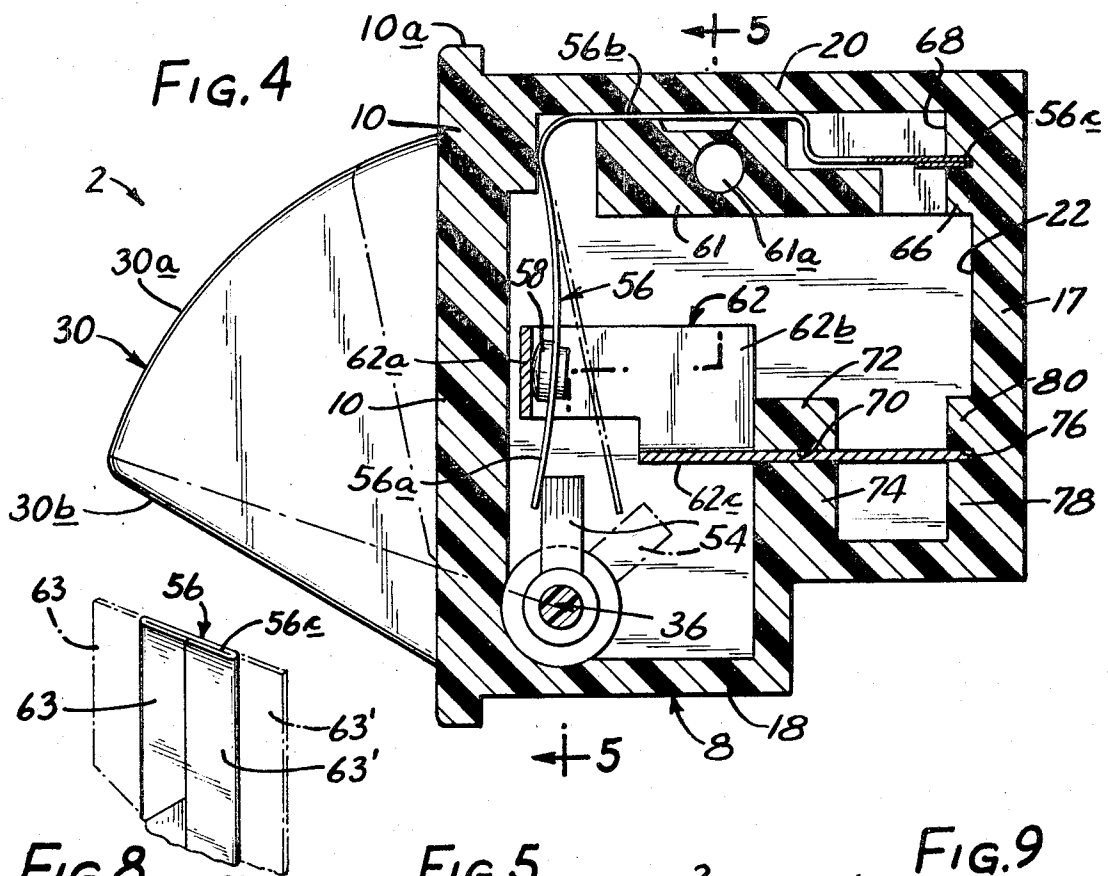


FIG. 3



SHEET 2 OF 2



WATERPROOF DOOR-OPERATED SWITCH ASSEMBLY

This invention relates to door-operated switches and has one of its most important applications in refrigerator and freezer door applications.

A substantial hazard of electric shock exists in various electrical appliances like refrigerators, freezers and the like which utilize switches which are operated by the door of the refrigerator or freezer to operate a light upon opening the door or to operate an air circulating fan upon closure of the door. The electric shock hazard is particularly acute when a housewife moves a wet sponge over the area of the refrigerator or freezer including the switch. When the sponge is drawn over the projecting actuator of such a switch, a substantial amount of water may be squirted into the switch. One of the contacts of such a switch is permanently connected through the device to be energized to a source of relatively high voltage, such as 110 volts AC, and if a continuous body or layer of water extends between this contact and the wet sponge, the high voltage is applied to the person holding the wet sponge which could harm or kill the person involved.

Accordingly, an object of the invention is to provide an improved door-operated switch assembly for refrigerators, freezers and the like wherein the hazards of electrical shock under the circumstances described above are substantially eliminated. More specifically, an object of the invention is to provide an improved door-operated switch assembly which minimizes the possibility of water or moisture entering the front portion of the switch assembly from gaining access to the terminals or contacts in the switch housing. A related object of the invention is to provide a switch assembly as described which occupies a minimum of space. A still further related object of the invention is to provide a switch assembly as described which has a more simple, economical and reliable construction than similar door-operated switches heretofore made.

Another object of the invention is to provide a door-operated switch assembly as described which can be mounted in any one of a number of different orientations in a door opening and still be operated by a door and retain its waterproof character.

A substantial improvement and simplification in the construction of waterproof, door-operated switches is achieved by providing a housing therefor, preferably made from molded synthetic plastic material, comprising juxtaposed housing sections respectively defining a switch compartment and an actuator member-receiving space separated by a wall forming a barrier against the entry of water splashing thereagainst. The actuator member-receiving space opens onto the front exterior of the housing through a first aperture facing in a direction generally parallel to the water barrier-forming wall. An actuator member in the actuator member-receiving space has a pivot shaft extending in water-sealing relation through an aperture in said water barrier-forming wall into the switch compartment. The actuator member is resiliently urged to a position where it projects from the first aperture and is retractable into the actuator member-receiving space by the pressure of a door closing thereagainst. Switch operating means connected to the pivot shaft of the actuator member operates an electric switch within the switch compartment as the actuator member is retracted into the space

by the movement of a door thereagainst. The portion of the actuator member projecting from said first aperture presents a door engaged surface facing in a direction or directions making a substantial angle to lines passing through the axis of the pivot shaft of the actuator member, so that contact of a door thereagainst will apply a couple which will rotate the actuator member to retract the same into the actuator member-receiving space. Since the aperture through which the actuator member projects from the front of the housing opens in a direction parallel to the wall through which the pivot shaft of the actuator member passes, water splashed rearwardly through this aperture will not have a direct access to the pivot shaft-receiving aperture in the wall between the switch compartment and the actuator member-receiving space.

The door-operated switch assembly of the invention most advantageously is designed so it can have any one of a number of different orientations within the frame of a door opening, and to this end, in the most preferred form of the invention, the door engaged surface of the actuator member projecting from the first aperture of the housing is preferably a flat surface in a plane making a substantial angle with the front wall of the housing and substantially at right angles to a line passing through the axis of the pivot shaft of the actuator member. Also, in accordance with the most preferred form of the invention, where the switch assembly can have any one of a number of different orientations, it is preferred that the actuator member-receiving space open onto the front of the housing through a second aperture facing in a direction at right angles to said first aperture and parallel to said wall separating the switch compartment from the actuator member-receiving space, to provide drain openings for water for all possible orientations of the door operated switch assembly.

The preferred orientation of the door-operated switch assembly, however, is one wherein the pivot axis of the actuator member corresponds with the pivot axis of the door involved and, where a vertical door is involved, wherein the switch compartment is at the top of the housing, since this isolates the switch compartment from entrance of water into the switch compartment to a maximum degree. As a further feature for isolating the switch compartment from water splashing into the actuator member-receiving space from the aperture through which the actuator member projects is the provision, in the defining walls of the pivot shaft-receiving aperture in the wall between the switch compartment and the actuator member-receiving space and the portion of the pivot shaft passing into said aperture of inter-leaving sections forming an irregular path. Moreover, a lubricant is preferably placed along the interfaces of the pivot shaft and the defining walls of the aperture in the latter wall to reduce the friction against the pivot shaft, which is preferably slide fitted within the aperture involved, and also to act as an additional barrier against the passage of water.

The above and other objects, advantages and features of the invention will become apparent upon making reference to the specification to follow, the claims and the drawings wherein:

FIG. 1 is a front elevational view of the door operated switch assembly constituting the most preferred form of the present invention;

FIG. 2 is a side elevational view of the switch assembly shown in FIG. 1;

FIG. 3 is an enlarged transverse sectional view through the switch assembly of FIGS. 1 and 2 when the switch assembly is mounted in the opening of the frame of a door opening, the section through the switch assembly being taken along section line 3—3 shown in FIG. 1;

FIG. 4 is a sectional view of the switch assembly, taken along section line 4—4 in FIG. 3;

FIG. 5 is a sectional view through the switch assembly, taken along section line 5—5 in FIG. 4;

FIG. 6 is a fragmentary sectional view through a portion of the switch assembly shown in FIG. 5, taken along section line 6—6 therein;

FIG. 7 is an exploded view of the terminal and switch-forming blades prior to their insertion into the switch housing shown in FIGS. 1—6;

FIG. 8 is an enlarged perspective view of the terminal-forming portion of the blade which forms the movable contact element of the electric switch formed by the blades shown in FIG. 7; and

FIG. 9 is a fragmentary sectional view through the switch compartment of an except assembly identical to that shown in FIGS. 1—7 except for the use of a modified construction of the switch elements so closure of a door against the switch assembly will close rather than open the switch contacts involved.

In the various drawings now to be described, the switch assembly of the invention generally indicated by reference numeral 2 is shown in its preferred orientation when mounted in an opening 4 (see FIG. 3) in the vertical portion of the frame 6 of a door opening. However, it should be understood that other orientations could be used for the switch assembly, and that what is described as being at the top of the switch assembly can actually be at the bottom or sides thereof when a different orientation of the switch assembly is used. As previously indicated, one of the advantages of the invention is that the switch assembly can be used in a number of different orientations relative to a door opening. That is, where the door involved is vertically oriented, the switch assembly 2 can be mounted in a horizontal, top or bottom portion of the frame of a door opening or on the right or left hand side of the frame involved.

The door-operated switch assembly 2 includes a housing generally indicated by reference numeral 8 preferably made of a molded synthetic plastic material. The housing 8 includes a front wall 10 which is vertically oriented in the drawings, three spaced parallel walls including outermost walls 12 and 16 and an intermediate wall 14 all extending transversely of the front wall 10 behind the same, a rear wall 17 extending between the walls 12, 14 and 16 and side or end walls 18 and 20 enclosing the sides or ends of the housing, except for various apertures to be described. The housing 8 as illustrated and best shown in FIG. 4 has a stepped rectangular cross section so the rear of the housing is somewhat narrower than the front of the housing, caused by the stepped portion of the side wall 18.

The intermediate wall 14 is a water barrier-forming wall separating a switch compartment 22 from an actuator member-receiving space 24. In the most preferred form of the invention, all of the above men-

tioned walls except the outermost wall 12 are formed into a single integral molded part which is open at one end to expose for its full extent the switch compartment 22. The outermost wall 12, after the various electrical switch-forming elements to be described are mounted within the switch compartment 22, is positioned over the open end of the switch compartment to close the same, and is then preferably secured in place by bonding the same in any suitable way. For example, when the synthetic plastic material out of which the housing is made is a thermoplastic material, this bonding operation can be most conveniently achieved by ultrasonic bonding. The housing walls 12, 14, 16, 18 and 20 extend transversely from the front wall 10 at points spaced inwardly of the margins thereof, so that the perimeter of the front wall 10 forms a mounting flange generally indicated by reference numeral 10a and best illustrated in FIG. 3. This flange overlaps the margins of the aforementioned opening 4 formed in the frame 6 of the door opening involved. Inclining forwardly from and formed integrally with the outermost wall 16 is a resilient mounting tongue 25 with a reversely inclining front portion 25a having a grooved or roughened outer surface projecting beyond the margin of the adjacent portion of the front wall flange 10a and compressed by the adjacent portion of the frame of the door opening, fixedly to mount the switch assembly 2 within the opening 4. Cooperating with the mounting tongue 25 to secure the switch assembly 2 in place within the frame opening 4 is a serrated forwardly grooved or roughened surface 12a of the outermost wall 12, against which surface the adjacent portion of the door opening frame abuts.

The portion of the front wall 10 opposite the actuator member-receiving space 24 has a horizontally elongated aperture 26, preferably rectangular in shape. The confronting surfaces 14a and 16a of the walls 14 and 16 merge with the corresponding margins of the aperture 26. This aperture opens onto the space 24 in a direction parallel to the water barrier-forming wall 14 separating the switch compartment 22 from the actuator member-receiving space 24. There is formed at the front section of the side wall 20 of the housing 8 opposite the actuator member-receiving space a preferably rectangular shaped aperture 27 which communicates with the space 24 for the full height thereof, so that the confronting surfaces 14a and 16a of the walls 14 and 16 merge with the margins of the aperture 27. The aperture 27 opens onto the side of the housing 8 in a direction parallel to the water barrier-forming wall 14 but transverse to the direction in which the aperture 26 opens to the housing exterior. As will appear, either the aperture 26 or the aperture 27 or both of the same will act as a water drain opening for all the different possible orientations of the switch assembly 2.

Mounted within the actuator member-receiving space 24 is an actuator member generally indicated by reference numeral 30. The actuator member 30, which may be made of the same synthetic plastic material as the housing 8, has a thickness somewhat less than the corresponding dimension of the actuator member-receiving space 24. The actuator member 30 has a somewhat circular segmental shape, and has a segmental circular margin 30a which terminates at one end in a flat generally radially extending (i.e., tangentially fac-

ing) margin 30b. Located contiguous to the inner end of the flat margin 30b is a non-circular opening 32 extending through the full thickness of the actuator member. The non-circular opening 32 receives a correspondingly shaped portion 34 of a pivot shaft-forming member 36 extending transversely across the parallel walls 12, 14 and 16 of the housing 8. The pivot shaft-forming member 36 (which may be made of a synthetic plastic material) has a cylindrical end portion 38, located at the bottom of the pivot shaft-forming member 36 in the drawings which is rotatably mounted within a cylindrical opening 16b in the wall 16 at the bottom of the housing 8 as viewed in the drawings. The pivot shaft-forming member 36 has a somewhat enlarged cylindrical intermediate portion 40 rotatably mounted within a cylindrical opening 14b within the water barrier-forming wall 14 and a cylindrical end portion 42, located at the top of the pivot shaft-forming member in the drawings, rotatably mounted within a cylindrical recess 12b formed in the wall 12 at the top of the housing 8 as viewed in the drawings.

The actuator member 30 is urged into a position where it projects from the housing 8 through the aperture 26 in the front wall 10 of the housing 8 by a coiled spring 44 or the like (FIG. 6). The coiled spring 44 is nestled within a recess at one side of the actuator member-receiving space 24, the spring resting on a shoulder 46 and having a short end portion 44a extending into an opening in the housing 8 and a long opposite end portion 44b which fits within a recess 30c (FIG. 5) formed in an end face 30d of the actuator member 30. When a door is not bearing against the actuator member 30, the end portion 44b of the spring 44 urges the actuator member into a position where a flange 30e thereon adjacent the innermost end of the circular margin 30a of the actuator member abuts against a shoulder 31 defining one of the margins of the aperture 27 in the side wall 20 of the housing 8. In this position of the actuator member 30, the flat margin 30b of the actuator member makes a substantial angle, preferably in the neighborhood of 60°, with respect to the front wall 10 of the housing 8, and makes a small angle with, or is generally parallel to, a radial line extending between the axis of the pivot shaft-forming member 36 and the outer end of the flat margin 30b, as best shown in FIG. 4. The switch assembly 2 is mounted in a position so that the closure of the door involved will engage the flat margin 30b of the actuator member facing in a generally tangential direction, so that the door applies a couple which readily pivots the actuator member 30 into a retracted position within the actuator member-receiving space 24.

As previously indicated, in the most preferred orientation of the switch assembly 2, as illustrated in the drawings, the actuator member 30 pivots about a vertical axis (which would be parallel to the pivot axis of a vertically mounted door of a refrigerator, freezer or the like). Also, the switch assembly is preferably mounted so that the switch compartment 22 is at the top of the housing where gravity will cause any water in the actuator-receiving space 24 to most readily drain away from the switch compartment. However, as previously indicated, the switch assembly is provided with a number of design features which, for all practical purposes, eliminates the possibility of water getting into the

switch compartment 22 from the actuator member-receiving space 24.

The defining wall 50 of the cylindrical opening 14b in the water barrier-forming wall 14 through which opening the center portion 40 of the pivot shaft-forming member 36 passes is provided with an annular recess 51 into which extends a cylindrical skirt 52 projecting from the pivot shaft-forming member 36. This provides an irregular path for the possible passage of water from the actuator member-receiving space 24 to the switch compartment 22. The cylindrical portion 40 of the pivot shaft-forming member 36 preferably makes a slide fit with the defining walls of the opening 14b of the water barrier-forming wall 14 which further reduces the possibility of water gaining entry into the switch compartment 22 from the actuator member-receiving space 24. Additionally, a lubricant is applied to the interfaces between the pivot shaft-forming member 36 and the defining walls 50 of the opening 14b and recess 51 both to enable the pivot shaft-forming member to turn easily and further to seal any clearances involved to the entry of water.

As a further feature reducing the possibility that water will enter the switch compartment 22 from the actuator-receiving space 24, the surface 14a of the water barrier-forming wall 14 opposite the aperture 27 inclines towards the actuator member-receiving space 24 in a direction away from the aperture 27. Accordingly, when the door-operated switch assembly is inverted from its position shown in the drawings, where the surface 14a will be at the bottom of the space 24, water will drain toward the aperture 27. Moreover, the opening 14b formed in the water barrier-forming wall 14 opens onto the actuator member-receiving space 24 on a projecting surface 14c thereof which in FIG. 5 is shown positioned below the surface 14a of the wall 14. Accordingly, when the door-operated switch assembly 2 is inverted from that position shown in the drawing, the projecting surface 14c will be elevated above the surface 14a of the wall 14 so that water cannot readily gain access to the end of the opening 14b adjacent the actuator member-receiving space 24.

The pivot shaft-forming member 36 has on the portion thereof located within the switch compartment 22 a switch actuator arm 54 which, when the door involved is open, is in the position shown in FIG. 4 where it urges the movable contact carrying end portion 56a of a metal blade 56 outwardly to bring a contact 58 carried by the said end portion 56a against a contact-forming end portion 62a of a fixed metal blade 62. When the actuator member 30 is retracted within the actuator member-receiving space 24, the pivot shaft-forming member 36 rotates so that the switch actuator arm 54 extending therefrom moves to permit the resiliency of the movable end portion 56a of the metal blade 56 to assume the position shown in dashed lines in FIG. 4, where the contact 58 thereof is separated from the contact-forming end portion 62a of the metal blade 62. As best shown in FIG. 7, the metal blade 56 which may be made of a phosphor-bronze metal with a very thin cross section (e.g., 0.010 inches), has an intermediate portion 56b forming an extension of the movable end portion 56a projecting at right angles thereto. The intermediate portion 56b of the blade 56 terminates in a transversely extending terminal-forming portion 56c

which projects snugly through a slit in the wall 12 of the housing 8 where it can make contact with a terminal in an electric socket (not shown). As best shown in FIG. 4, the intermediate portion 56b of the metal blade 56 fits snugly within a narrow slit formed between the side wall 20 of the housing 8 and a boss 61 projecting from the water barrier-forming wall 14. As best shown, in FIG. 5, the boss 61 has an opening 61a in the end thereof which receives a correspondingly shaped projection 12a from the housing wall 12.

The metal blade 56 is made of such a thin metal stock as above indicated to have the necessary flexibility that it cannot make an effective terminal, and to increase the rigidity of the terminal-forming portion 56c thereof, as shown by the dotted lines in FIG. 8, a pair of wings 63—63 are formed on the terminal-forming portion of the metal blade 56, each wing having a shape half the size of the desired terminal-forming portion. The wings are folded into confronting relationship to form a terminal of a thickness twice that of the metal blade 56. The terminal-forming portion 56c is offset slightly from the intermediate portion 56b of the metal blade 56, and the base portion thereof fits within a slit formed between bosses 66 and 68 projecting from the rear wall 17 of the housing 8.

The contact-forming end portion 62a of the metal blade 62 joins a portion 62b resting against the adjacent face of the water barrier-forming wall 14 and joining an intermediate blade portion 62c which fits within a slot 70 formed between bosses 72 and 74 respectively extending from the walls 14 and 18. The intermediate portion 62c of the blade 62 terminates in a terminal-forming portion 62d snugly fitting within a slot 76 formed between two bosses 78 and 80 extending from the rear wall 17.

Since the metal blade 62 is a fixed blade which does not require any appreciable flexibility, the thickness thereof can be made substantial enough that the terminal-forming portion 62d thereof has sufficient rigidity to act as a terminal fitting into a socket, without providing a double thickness of metal in a manner provided for the terminal-forming portion of the outer metal blade 56.

The pivot shaft-forming member 36 and the metal blade 56 and 62 are all mountable within the switch compartment through the initial open end thereof before the wall 12 has been applied thereover and bonded to the end faces of the walls 10, 17, 18 and 20. When using ultrasonic bonding techniques, in order to prevent the cylindrical end portion 42 of the shaft-forming member 36 from sticking within the aforementioned recess 12b formed in the wall 12, the walls of the recess 12b must be coated with a suitable lubricant or the like.

Refer now to FIG. 9 which illustrates a door-operated switch assembly 2' which is identical to the switch assembly 2 just described except that the switch blades involved are slightly modified so that the switch is open when the actuator member 30 is projecting from the front of the switch housing 8 and is closed when the actuator member is retracted within the actuator member-receiving space 24. To this end, a switch blade 56' is provided which is identical to the switch blade 56 just described except that the contact 58' carried on the movable end portion 56a' thereof is

on the opposite side of the switch blade and is held by the switch actuator arm 54' out of contact with the switch-forming end portion 62a' of the other switch blade 62. Accordingly, when the actuator member 30' is retracted within the actuator member-receiving space 24', the clockwise movement of the switch actuator arm 54 away from the movable end portion 56a' of the metal blade 56' will allow the contact 58' to engage the contact-forming end portion 62a' of the metal blade 62'.

It should be apparent that the door-operated switch assembly of the present invention is a relatively inexpensive, easy to assemble switch assembly where it is practically impossible for water to gain entry into the switch compartment independent of the orientation of the switch assembly.

It should be understood that numerous modifications may be made to the most preferred form of the invention described above and shown in the drawings without deviating from the broader aspects of the invention.

I claim:

1. A waterproof, door-operated switch assembly comprising: a housing having juxtaposed sections respectively defining a switch compartment and an actuator member-receiving space separated by wall means forming a barrier against the entry of water splashing thereagainst, electrical switch means in said switch compartment including terminals exposed to the outside of the housing and a portion movable between switch opening and closing positions, said actuator member-receiving space opening onto the exterior of the housing through a first aperture facing in a direction generally parallel to said wall means, an actuator member in said actuator member-receiving space which actuator member has a pivot shaft extending in water-sealing relation through an aperture in said wall means into said switch compartment, said actuator member being resiliently urged to a position where it projects from said first aperture and presents a door contacting surface facing in a direction or directions making a substantial angle to lines passing through the axis of said pivot shaft, said actuator member being retractable into said actuator member-receiving space against the resilient force applied thereto by the pressure of a door closing thereagainst, and switch operating means operated by the movement of said pivot shaft as the actuator member is retracted into said actuator member-receiving space for effecting operation of said switch means from one of said positions to the other of same.

2. The door-operated switch assembly of claim 1 wherein said door contacting surface of said actuator member is a flat surface making a substantial angle to the direction in which said first aperture opens onto the exterior of the housing.

3. The door-operated switch assembly of claim 1 wherein said housing section containing said switch means is positioned above said other housing section containing said actuator member, said pivot shaft of said actuator member extending vertically upwardly through said wall means separating said housing sections, and said actuator member-receiving space in the other housing section opening onto the outside of the housing in a horizontal direction and at a point below

said wall means so water splashing into said actuator member-receiving space through said opening cannot accumulate in said actuator member-receiving space and reach said aperture in said wall means.

4. The door-operated switch assembly of claim 1 wherein the defining walls of said aperture in said wall means and the portion of said pivot shaft passing into the same having interleaving portions forming an irregular path to the passage of water between said actuator member-receiving space and switch compartment.

5. The door-operated switch assembly of claim 1 wherein said water sealing relation between said pivot shaft of said actuator member and the defining walls of said aperture in said wall means is formed at least in part by a snug sliding fit therebetween and by a lubricant at the interface therebetween which also permits the pivot shaft readily to rotate within said aperture.

6. A waterproof, door-operated switch assembly comprising: a housing having juxtaposed sections respectively defining a switch compartment and an actuator member-receiving space separated by water barrier-forming wall means, the housing section defining said actuator member-receiving space having apertures opening onto the outside of the housing in at least two different orthogonal directions parallel to said water barrier-forming wall means, electrical switch means in said switch compartment including terminals exposed to the outside of the housing and a portion movable between switch opening and closing positions, an actuator member in said actuator member-receiving space which actuator member has a pivot shaft extending in water-sealing relation through an aperture in said water barrier-forming wall means into said switch compartment, the point at which said pivot shaft passes through said aperture in said water barrier-forming wall means being such that water will drain through one or the other of said apertures in said housing section defining said actuator member-receiving space in all possible orientations of the housing before backing up to said point, said actuator member being resiliently urged to a position where it projects from one of said apertures in said housing section defining said actuator member-receiving space and being retractable into said actuator member-receiving space against the resilient force applied thereto by the pressure of a door closing thereagainst, and means moved by the rotation of said pivot shaft as the actuator member is retracted into said actuator member-receiving space for affecting operation of said switch means for one of said positions to the other of same.

7. A waterproof, door-operated switch assembly comprising: a housing comprising a front wall, three spaced parallel walls extending transversely of said front wall behind the same, a rear wall extending between said parallel walls and end walls extending between said front and rear walls to complete a housing defining a juxtaposed switch compartment and an actuator member-receiving space separated by the intermediate one of said three parallel walls, an aperture in said front wall communicating with said actuator member-receiving space, an actuator member in said actuator member-receiving space which actuator member has a pivot shaft extending transversely in water-sealing relation through an aperture in said inter-

mediate wall into said switch compartment, said actuator member being resiliently urged to a position where it projects from said aperture in said front wall and being retractable into said actuator member-receiving space against the resilient force applied thereto by the pressure of a door closing thereagainst, said pivot shaft being journaled in openings in the outermost of said parallel walls and said aperture in said intermediate wall, electrical switch means in said switch compartment which switch means have terminals exposed to the outside of the housing and a portion movable between switch opening and switch closing positions, and means operated by said pivot shaft as the actuator member is retracted into said actuator member-receiving space for affecting the operation of said switch means from one of said positions to the other of same.

8. The door-operated switch assembly of claim 7 wherein one of said end walls of said housing opposite said actuator member-receiving space has an aperture communicating with said actuator member-receiving space in a direction parallel to said intermediate wall.

9. The door-operated switch assembly of claim 7 wherein the side of said intermediate wall facing said actuator member-receiving space is inclined toward the switch compartment in a direction away from the point at which the pivot shaft passes through said intermediate wall, and said actuator member-receiving space communicates with a water draining aperture communicating with the outside of the housing so water drains from the housing before it reaches the point where said pivot shaft passes through said intermediate wall.

10. The door-operated switch assembly of claim 7 wherein said intermediate wall has a portion projecting therefrom, in which projecting portion said aperture through which said pivot shaft passes extends, and said actuator member-receiving space has at least one water draining aperture at a level below said projecting portion when the switch assembly is oriented so the surface of said intermediate wall facing said actuator member-receiving space is positioned at the bottom of said actuator member-receiving space.

11. The door-operated switch assembly of claim 7 wherein the outermost of said parallel walls defining one of the margins of said switch compartment is initially a separate part from the rest of the housing so as to expose the interior of said switch compartment, said switch compartment including a number of bosses defining therebetween narrow mounting slots opening in the direction of the latter wall, and said switch means including metal blades frictionally anchored within the slots between said bosses, which blades respectively operate contacts to be opened and closed.

12. The door-operated switch assembly of claim 7 wherein one of the outermost of said parallel walls is initially a part separate from the rest of the housing so said switch compartment is initially open in the direction toward the latter wall, said pivot shaft, said switch operating means and the electrical switch means all being parts which are insertable into said switch compartment through said initially open end thereof, and said actuator member having a non-circular opening adapted to receive a correspondingly shaped non-circular portion of said pivot shaft when the actuator member is positioned within said actuator member-

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receiving space through said aperture in the front wall thereof.

13. The door-operated switch assembly of claim 7 wherein the outermost of said three parallel walls forming a margin of said switch compartment is a synthetic plastic molded part and the rest of said housing constituting a separate integrally molded synthetic plastic part.

14. The door-operated switch assembly of claim 7 wherein said housing section containing said switch means is positioned above said other housing section containing said actuator member, said pivot shaft of

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said actuator member extending vertically upwardly through said intermediate wall separating said housing sections, and said actuator member-receiving space in the other housing section opening onto the outside of the housing in a horizontal direction and at a point below said intermediate wall so water splashing into said actuator member-receiving space through said opening cannot accumulate in said actuator member-receiving space and reach said aperture in said intermediate wall.

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