



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ³: H01H 9/04, 9/16	A1	(11) International Publication Number: WO 80/01858 (43) International Publication Date: 4 September 1980 (04.09.80)
(21) International Application Number: PCT/US80/00128 (22) International Filing Date: 4 February 1980 (04.02.80) (31) Priority Application Number: 015,350 (32) Priority Date: 26 February 1979 (26.02.79) (33) Priority Country: US (71) Applicant: EATON CORPORATION [US/US]; 100 Erieview Plaza, Cleveland, OH 44114 (US). (72) Inventor: WOODARD, Tony, Owen; Box 427, Pine Level, NC 27568 (US).		(74) Agent: BLAIR, Leslie, H.; Eaton Corporation, 100 Erieview Plaza, Cleveland, OH 44114 (US). (81) Designated States: BR, DE (European patent), FR (European patent), GB (European patent), JP. Published With international search report
(54) Title: ILLUMINATED SEALED ROCKER SWITCH (57) Abstract A sealed rocker switch wherein a light transmitting lens (28) is provided in a sealing member (10) to focus and align with a switch position indicating lamp (24) mounted in the switch base (4) and a translucent window (32) in the front of the switch operating rocker (8).		

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ILLUMINATED SEALED ROCKER SWITCHBackground of the Invention

Rocker switches which provide one or more illuminated operating positions are well known. However, the application of illuminated indicating means to this type of switch has been limited to versions which are unsealed to the entrance of dust, moisture, etc. Certain applications require a sealed type of switch, such as in a marine environment, where operating condition illumination would be desirable.

Summary of the Invention

It is the primary object of the present inventor to provide a rocker button type of electric switch which is both sealed to entrance of moisture and provides illuminated indication of one or more of its operating positions.

Other objects and advantages of the invention will hereinafter appear in the drawing.

Brief Description of the Drawings

Fig. 1 is a view in longitudinal cross section taken along the line 1-1 of Fig. 2 of a rocker actuator switch constructed in accordance with the invention.

Fig. 2 is a top view of the switch of Fig. 1, and

Fig. 3 is a perspective view of a sub-assembly used in the switch.

The Preferred Embodiment

Referring to the drawing the switch of this invention comprises an insulating base 4, a frame 6, a rocker actuator 8, a sealing member 10, and exterior



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terminals 12, 14 and 16. The base 4, frame 6 and actuator 8 are all preferably formed of a molded insulating material.

The base 4 is generally rectangular in form and provided with a cavity in which seat stationary contacts 18 and 20 that are connected by rivets 22 which extend through openings (not shown) in the base to the terminals 12 and 16. A lamp 24 is electrically connected between contacts 18 and 20 by the leads 24a and 24b which are trapped between the heads of contacts 18 and 20 and the inner surface of the base 4.

The rocker 8 has an actuator block 8a secured to its central stem 8d which may be assumed to carry a movable contact operating mechanism not shown. The details of the movable contact and its direct operating mechanism is not shown in the present application for the sake of clarity. The details of the same is shown and described in Copending application, Serial No. 15,351, filed February 26, 1979, Tony O. Woodard inventor and assigned to the assignee of the present application.

The frame 6 has side walls which overlies the side walls of the base 4, and has depending end tangs 6a and 6b that have hooked shaped ends 6c which engage within complementally formed ledges 4b found in the outer end walls of the base 4. The tangs 6a and 6b are somewhat flexible and ride over the end walls of base 4 and snap-in place at their ends 6c into the ledges 4b to hold the frame and base in assembled relation.

Frame 6 is provided at its upper surface with a beveled horizontally extending flange portion 6d, and inwardly extending ledge portion 6e and 6f which overlies the upper ends of the base 4. The sealing member 10 of the form best shown in Fig. 3 is seated between the upper ends



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of base 4 and the ledge 6e and 6f of the frame as best shown in Fig. 1.

Sealing member 10 is preferably formed of a resilient silicone rubber material. A generally rectangular translucent lens 28 is mounted in a complementally formed opening in member 10. As best shown in Fig. 1 the lens 28 has upper and lower portion 28a and 28b respectively that overlie the upper and lower surfaces of member 10 and an intermediate undercut portion 28c which is sealed within the aforementioned opening in member 10 which preferably has slightly smaller dimensions than the portion 28c. In one preferred form lens 28 is formed of a material sold under the trademark of "Lexan".

Sealing member 10 is provided with a central frusto conical boss portion 10a that has a generally concaved dished surface 10b that sealingly engages with the complementally formed surface on the stem 8b of rocker 8. The rocker 8 is journaled on a pivot pin 30 that may be assumed to penetrate aligned openings (not shown) in the upper side walls of the frame 6.

A translucent window 32 is secured in a suitably formed opening of rocker 8 to overlie the lens 28. In the position of the rocker depicted in Fig. 1 the lens 28 and window 30 will all be in alignment with the light emitting bulb of lamp 24 so that an illuminated indication of that switch position will be provided. If the right hand portion of the rocker 8 is depressed, the latter will be moved to its opposite operating position wherein such alignment of the window 30 with the lens 28 and lamp 24 will be interrupted to indicate, for example an "off" position of the switch.

It will be apparent that the preferred embodiment



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shown is susceptible of modification. For example, the lens 28 and window 30 can have other shapes than rectangular. Also if a three position switch is used with a center "off" position, an additional lamp and set of lens
5 and rocker window could be used at the right hand side of the switch to provide an illuminated indication when the switch is in its other operating position.



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WE CLAIM:

1. In an electric switch having a base housing the switching mechanism, a rocker actuator pivotally movable to effect operation of the switching mechanism, 5 a frame mounted on the open-end of the base and affording pivotal support for the rocker, and a lamp mounted in said base illuminable to provide indication of a switch operating position, the improvement comprising, an elastic sealing member secured between said frame and the open end of said 10 base and sealing about a portion of said rocker to resist the entrance of moisture, dust and the like into said base, a light transmitting lens mounted in sealing member in alignment with said lamp, and a window mounted in said rocker to align with said lens and said lamp in a given 15 position of said rocker to provide light transmission exteriorally of said switch.

2. The improved electric switch in accordance with claim 1 wherein said lens is made of a transparent plastic material.

3. The improved electric switch in accordance with claim 2 wherein said lens has upper and lower flanges, and an intermediate connecting portion which is resiliently gripped by the margins of the receiving opening formed in 5 said sealing member.



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Fig. 1

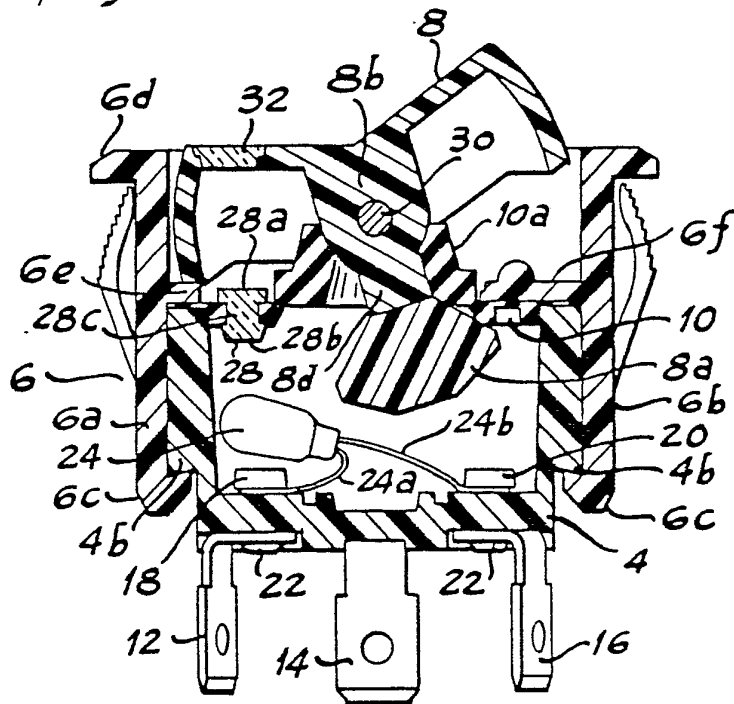


Fig. 2

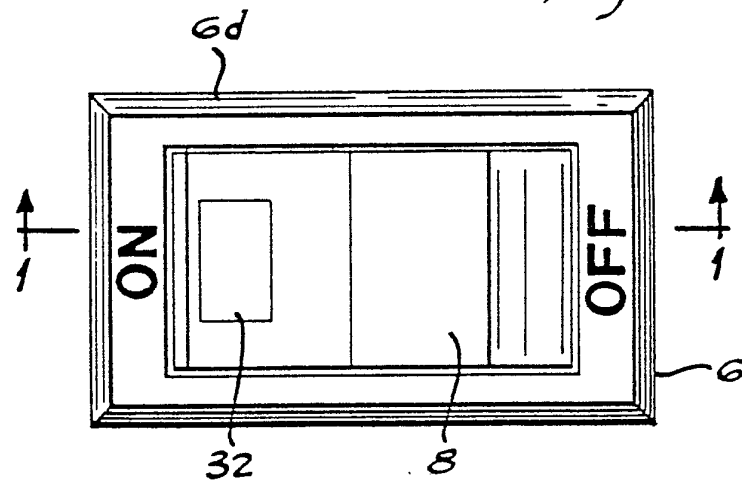
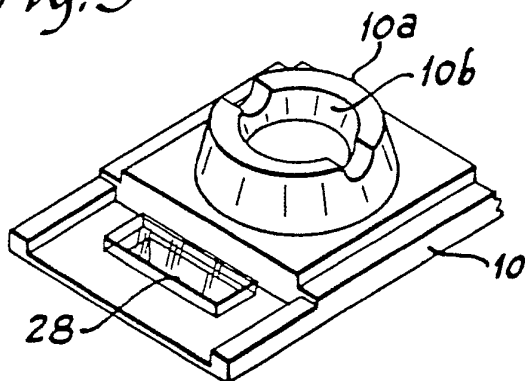


Fig. 3



INTERNATIONAL SEARCH REPORT

International Application No PCT/US80/00128

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ³

According to International Patent Classification (IPC) or to both National Classification and IPC

U.S. CL: 200/302; 315

Int CL: H01H 9/04, 9/16

462/01858

II. FIELDS SEARCHED

Minimum Documentation Searched ⁴

Classification System	Classification Symbols
US	200/302, 310, 313, 314, 315, 333, 339, 67G, 68 116/279, Dig 28

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched ⁵

III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴

Category [*]	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
A	US, A, 2,512,975 Published 27 June 1950 Sherrard	1-3
A	US, A, 2,737,557 Published 06 March 1956 Johnson	1-3
A	US, A, 3,409,751 Published 05 November 1968 Krieger	1-3
A	US, A, 3,483,345 Published 09 December 1969 Hults	1-3
A	US, A, 3,609,268 Published 28 September 1971 Sanchez	1-3
A	US, A, 3,651,296 Published 21 March 1972 Yarbrough	1-3
A	US, A, 4,013,857 Published 22 March 1977 Tanaka	1-3
A	US, A, 4,101,749 Published 18 July 1978 Josemans et al	1-3

* Special categories of cited documents: ¹⁵

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"E" earlier document but published on or after the international
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"L" document cited for special reason other than those referred
to in the other categories

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other means

"P" document published prior to the international filing date but
on or after the priority date claimed

"T" later document published on or after the international filing
date or priority date and not in conflict with the application,
but cited to understand the principle or theory underlying
the invention

"X" document of particular relevance

IV. CERTIFICATION

Date of the Actual Completion of the International Search ²

9 April 1980

Date of Mailing of this International Search Report ²

25 APR 1980

International Searching Authority ¹

ISA/US

Signature of Authorized Officer ²⁰

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FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

A	US, A, 4,135,073 Published 16 January 1979 Kobayashi	1-3
A	UK, A, 1,336,723 Published 07 November 1973 Harris	1-3
A	US, A, 2,857,485 Published 21 October 1958 Brooks	1-3
A	US, A, 2,927,983 Published 08 March 1960 Brown	1-3
A	US, A, 3,410,971 Published 12 November 1968 Sandor	1-3

V. ☐ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE ¹⁰

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers, because they relate to subject matter ¹² not required to be searched by this Authority, namely:

2. ☐ Claim numbers, because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out ¹³, specifically:

VI. ☐ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING ¹¹

This International Searching Authority found multiple inventions in this international application as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

Remark on Protest

- ☐ The additional search fees were accompanied by applicant's protest.
☐ No protest accompanied the payment of additional search fees.