

Aug. 5, 1958

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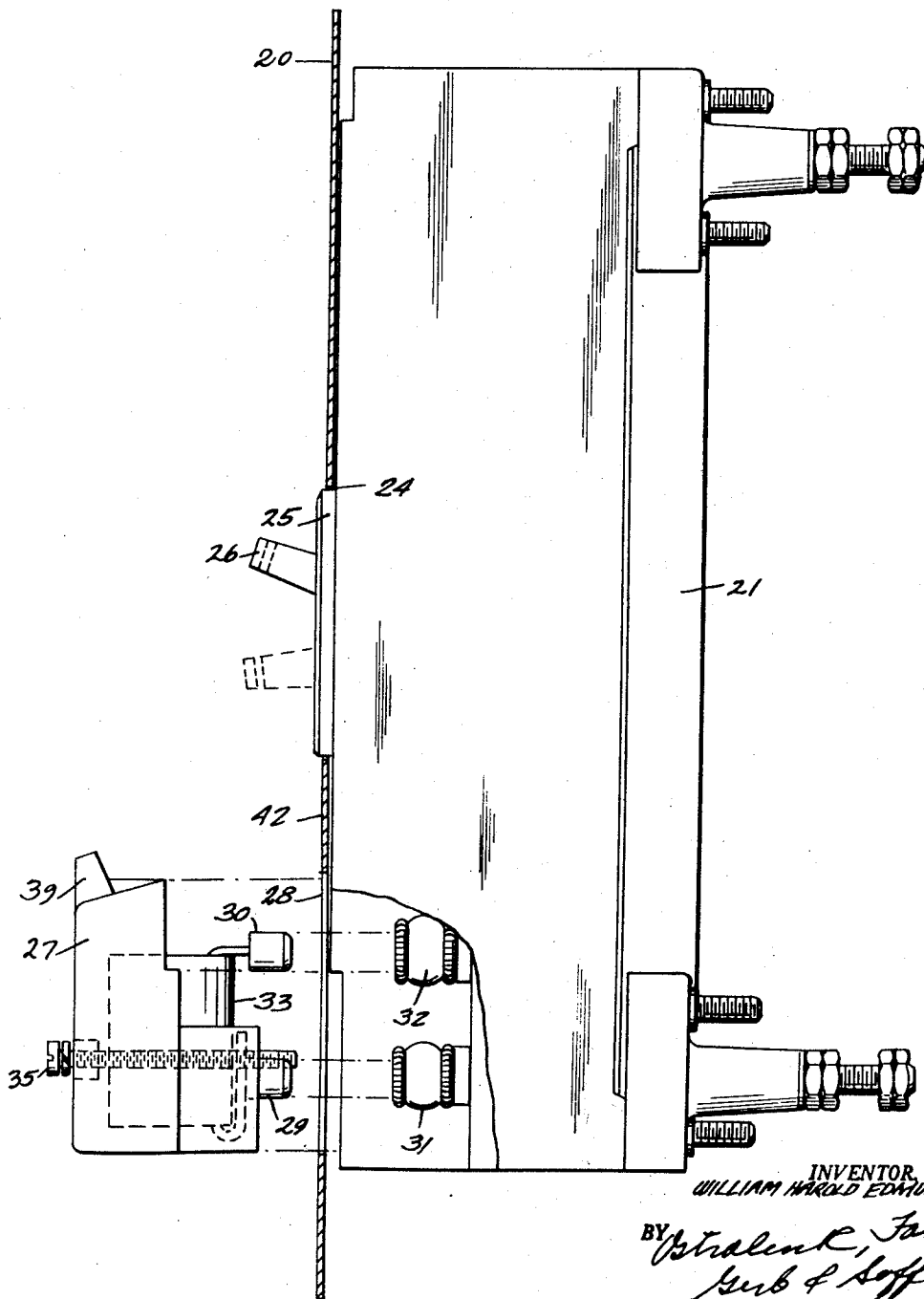
2,846,545

MOISTURE GUIDE MEANS FOR FUSE HOUSING

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FIG. 1.



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FIG. 3

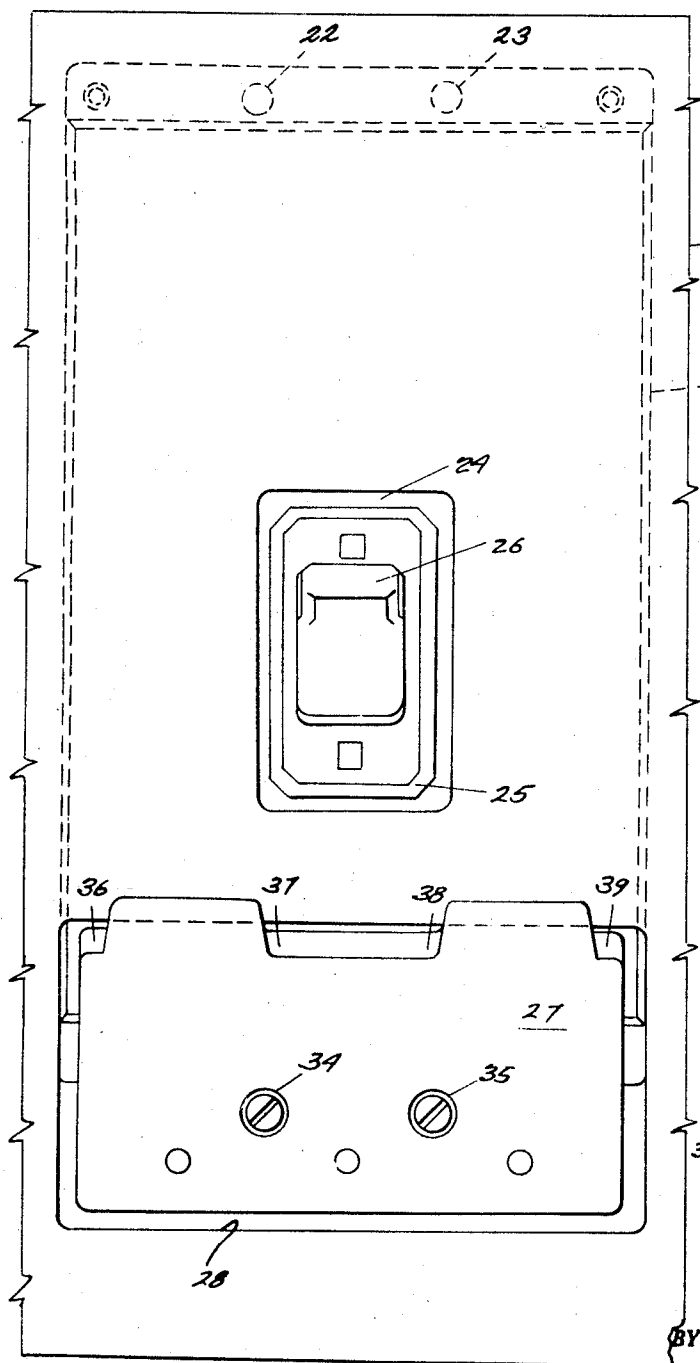
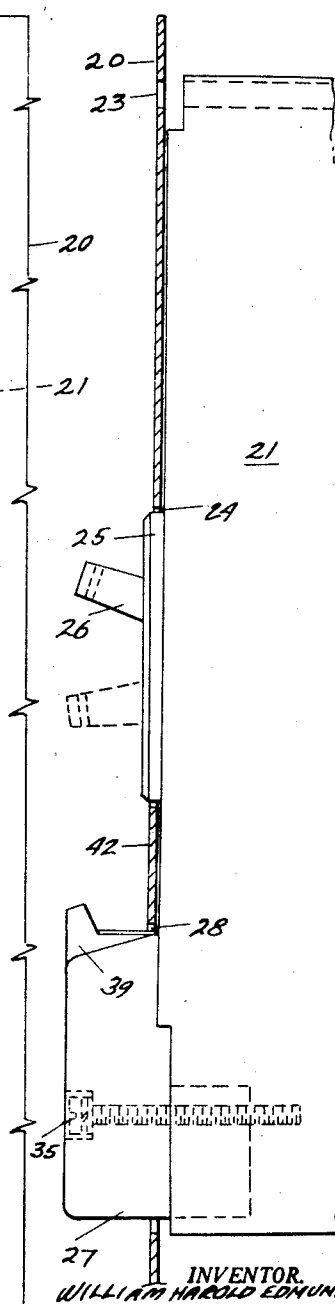


FIG. 2



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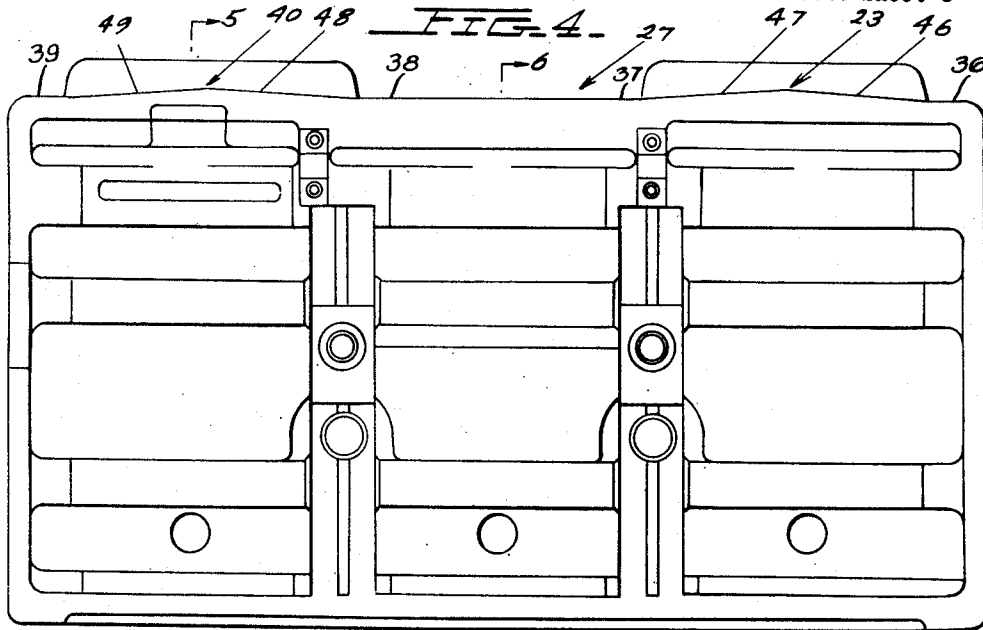
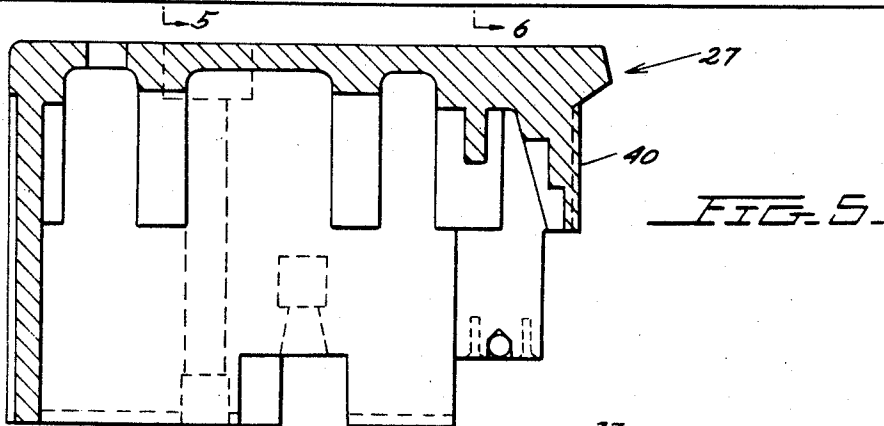
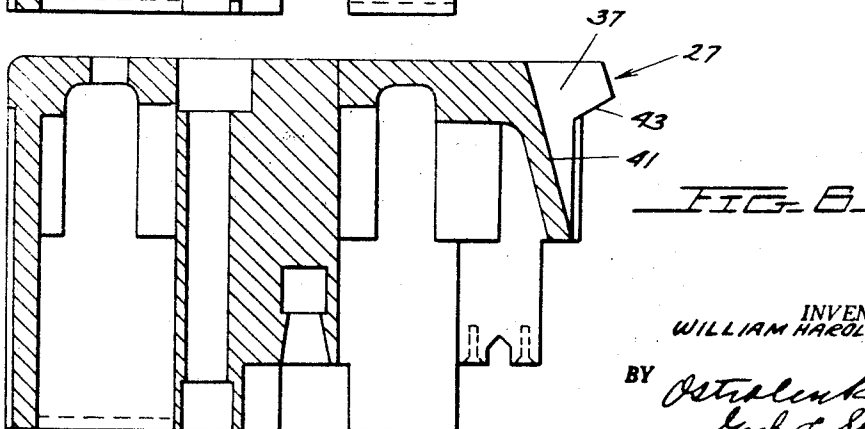
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MOISTURE GUIDE MEANS FOR FUSE HOUSING

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MOISTURE GUIDE MEANS FOR FUSE HOUSING

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Application June 15, 1956, Serial No. 591,698

6 Claims. (Cl. 200—133)

My invention relates to a fuse housing construction for preventing moisture from entering a panel board which is adapted to receive a fuse housing containing fuses to cooperate with a series connected circuit breaker.

In copending U. S. application Serial No. 472,969, W. H. Edmunds, Removable and Replaceable Current Limiter Housing for Circuit Breakers, filed December 3, 1954, and assigned to the assignee of the instant invention, I have described a circuit interrupting device which is comprised of a series connection of a circuit breaker and a current limiting fuse, these two devices being mechanically and electrically coordinated. Copending U. S. application Serial No. 582,551, W. H. Edmunds, Safety Cover for Panel Boards, filed May 3, 1956, and assigned to the assignee of the instant invention further shows a manner whereby a circuit interrupting device comprised of a circuit breaker and fuse housing may be mounted on a panel board or switchboard wherein a panel board is provided with a first and second opening through which a handle for operating the circuit breaker and the fuse housing for connecting and disconnecting the fuses protrude. Hence, an operator can operate the circuit breaker handle from the front of the panel board and similarly can remove the fuse housing from the front of the panel board for maintenance or to achieve positive disconnection of a circuit.

In the case of the circuit breaker operating handle, the aperture through which it protrudes is of sufficient size to receive the handle escutcheon which completely surrounds the handle so as to provide a substantially moisture proof seal about this aperture. However, when the panel board is situated where extreme moisture conditions are present, it is possible that moisture can flow down the front of the panel board and be trapped by the protruding fuse housing so as to flow behind the panel board through the panel board aperture that receives the fuse housing.

The principal object of my invention is to construct the top of the extending portion of the fuse housing in such a manner that the top surface extending in front of the panel board protrudes downwardly so as to direct moisture flow away from the panel board.

Another object of my invention is to construct the top surface of the protruding portion of a fuse housing so as to be comprised of a first and second intersecting surface, the line of intersection extending from the front of the panel board whereby each of the first and second surfaces adjacent to the panel board make an angle of greater than 90° therewith, so as to serve as a moisture guide when the fuse housing is connected in the panel board.

These and other objects of my invention will become apparent from the following description when taken in conjunction with the drawings in which:

Figure 1 shows a side view of a panel board having a circuit interrupter connected thereto with a fuse housing removed from the panel board.

Figure 2 is similar to Figure 1 and shows the position

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of the fuse housing when it is connected to its associated circuit breaker.

Figure 3 is a front view of Figure 2.

Figure 4 is a bottom view of the fuse housing of Figures 1, 2 and 3.

Figure 5 is a cross-sectional view of Figure 4 when taken across the line 5—5.

Figure 6 is a sectional view of Figure 4 taken along the line 6—6.

Referring now to Figures 1, 2 and 3, it is seen that a panel board 20 is adapted to mount a combination circuit breaker and current limiting fuse interrupting device 21, by means of screws which may be positioned through apertures 22 and 23. The panel board 20 is provided with a first aperture 24 for receiving the escutcheon 25 of the circuit breaker handle 26 and a fuse housing 27 protrudes through aperture 28 of the panel board 20 to be connected to the circuit breaker mounted behind the panel board 20.

Hence both the operating handle 26 and the fuse housing 27 are available for operation from the front of the panel board 20. Figure 1 more specifically shows how one phase of the fuse housing 27 carries a pair of disconnect contacts to cooperate with the disconnect contacts of the circuit breaker associated with the same phase. More specifically, Figure 1 shows disconnect contacts 29 and 30 as being associated with the phase of the circuit breaker represented by disconnect contacts 31 and 32. Hence by connecting disconnect contacts 29 and 30 to disconnect contacts 31 and 32 respectively, it is seen that the current limiting fuse 33 will be connected in series with a corresponding phase of the circuit breaker operated by the operating handle 26.

Hence, in order to initiate energization of the line, an operator moves the fuse housing 27 from the position of Figure 1 to the connected position of Figure 2 and thereafter secures the fuse housing 27 into position by means of the screw means 34 and 35 as seen in Figure 3, and finally operates the operating handle 26 to its on or energizing position.

It may be seen in Figures 1 and 2 that the escutcheon 25 of the circuit breaker operating handle 26 may be made to fit tightly within the panel board aperture 24 so as to provide a substantially moisture tight seal. If, however, the panel board 20 is positioned in an atmosphere where extreme moisture conditions prevail, then it is seen that moisture running down the front of the panel board could enter this panel board at the top of the current limiting fuse housing 27 where the fuse housing fits into the aperture 28.

My novel invention contemplates a fuse housing construction that will avoid this condition.

As may be seen more specifically in conjunction with Figures 4, 5 and 6, I construct the top protruding portion of the fuse housing 27 in such a manner as to cause its surfaces to be downwardly directed. That is to say, in the case of Figure 4, the surfaces 36, 37, 38 and 39 are downwardly directed, or are so constructed as to make an angle of greater than ninety degrees with respect to the panel board in which they are mounted. This may be seen in Figure 5 where the surface extending from the panel board will deflect downwardly from its highest point 40 to a lowest point such as the line 41 which marks the termination of the surface 37 of Figure 6.

Thus when fuse housing 27 of Figure 2 is constructed as shown in Figures 4, 5 and 6, moisture flowing down portion 42 of the panel board 20 will meet a surface such as surface 39, by way of example, which will act to guide this moisture away from the front of the panel board since this surface is downwardly directed. Surfaces 36, 37 and 38 of Figures 3 and 4 clearly will operate in the

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same manner so as to prevent moisture from entering the aperture 28 of the panel board 20.

While in the embodiment shown in Figures 1 through 6, I have shown the sloping surfaces as being substantially plane surfaces, it is to be understood that to practice my novel invention, one may merely construct the guiding surface adjacent to the panel board so as to be of an angle greater than ninety degrees with respect to the panel board. Similarly, it is to be noted that by providing a plurality of sloping sections that I prevent the trapping of moisture at any point. By way of example, moisture cannot be trapped at the point such as 43 of Figure 6 in view of the diverging slopes 46 and 47, and 48 and 49 as seen in Figure 4.

Although I have described herein preferred embodiments of my invention, many variations and modifications will now be obvious to those skilled in the art. I prefer, therefore, to be limited, not by the specific disclosure herein, but only by the appended claims.

I claim:

1. A panel board; said panel board having holes; a circuit interrupting device mounted behind said panel board; said circuit interrupting device having a fuse unit; said fuse unit having a housing; said housing protruding through a corresponding hole of said panel board to the front of said panel board; said fuse unit housing having an upper surface; said upper housing surface having a rear edge and a front edge; said rear edge being behind and immediately below the edge of said corresponding hole of said panel board and adjacent said circuit interrupting device; all portions of said upper housing surface being operatively sloped to prevent water from accumulating on said upper housing surface and from draining behind said panel board.

2. A panel board; said panel board having holes; a circuit interrupting device mounted behind said panel board; said circuit interrupting device having a fuse unit; said fuse unit having a housing; said housing protruding through a corresponding hole of said panel board to the front of said panel board; said fuse unit housing having an upper surface; said upper housing surface having a rear edge and a front edge; said rear edge being behind and immediately below the edge of said corresponding hole of said panel board and adjacent said circuit interrupting device; all portions of said upper housing surface being operatively sloped to prevent water from accumulating on said upper housing surface and to drain water thereon toward said front edge thereof.

3. A panel board; said panel board having holes; a circuit interrupting device mounted behind said panel board; said circuit interrupting device having a fuse unit; said fuse unit having a housing; said housing protruding through a corresponding hole of said panel board to the front of said panel board; said fuse unit housing having an upper surface; said upper housing surface having a rear edge and a front edge; said rear edge being behind and immediately below the edge of said corresponding hole of said panel board and adjacent said circuit interrupting device; all portions of said upper housing surface being operatively sloped to drain water therefrom in a pattern leading from all points of said upper housing surface eventually to said front edge thereof.

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4. A panel board; said panel board having holes; a circuit interrupting device mounted behind said panel board; said circuit interrupting device having a fuse unit; said fuse unit having a housing; said housing protruding through a corresponding hole of said panel board to the front of said panel board; said fuse unit housing having an upper surface; said upper housing surface having a rear edge and a front edge; said rear edge being behind and immediately below the edge of said corresponding hole of said panel board and adjacent said circuit interrupting device; part of said upper housing surface being sloped downwardly from said rear edge of said front edge thereof to drain water away from said panel board; the remainder of said upper housing surface being sloped downwardly to the side to drain water toward said first mentioned part thereof and then down said first mentioned part to said front edge and away from said panel board.

5. A panel board; said panel board having holes; a circuit interrupting device mounted behind said panel board; said circuit interrupting device having a fuse unit; said fuse unit having a housing; said housing protruding through a corresponding hole of said panel board to the front of said panel board; said fuse unit housing having an upper surface; said upper housing surface having a rear edge and a front edge; said rear edge being behind and immediately below the edge of said corresponding hole of said panel board and adjacent said circuit interrupting device; said fuse unit having two protrusions extending upwardly from the front edge to serve as a handle to facilitate removal of said housing; portions of said upper housing surface adjacent said two protrusions being operatively sloped to drain water therefrom to a centrally positioned portion of said upper housing surface located between said two protrusions.

6. A panel board; said panel board having holes; a circuit interrupting device mounted behind said panel board; said circuit interrupting device having a fuse unit; said fuse unit having a housing; said housing protruding through a corresponding hole of said panel board to the front of said panel board; said fuse unit housing having an upper surface; said upper housing surface having a rear edge and a front edge; said rear edge being behind and immediately below the edge of said corresponding hole of said panel board and adjacent said circuit interrupting device; said fuse unit having two protrusions extending upwardly from the front edge to serve as a handle to facilitate removal of said housing; part of said upper housing surface being positioned behind said protrusions; said part of said upper housing surface being sloped downwardly to drain water toward the side edges thereof to the remainder of said upper housing surface.

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