April 19, 1949. G. E. CURTISS, JR 2,467,815

SWITCH AND LATCH STRIKE UNIT

Filed April 20, 1945

2 Sheets-Sheet 1

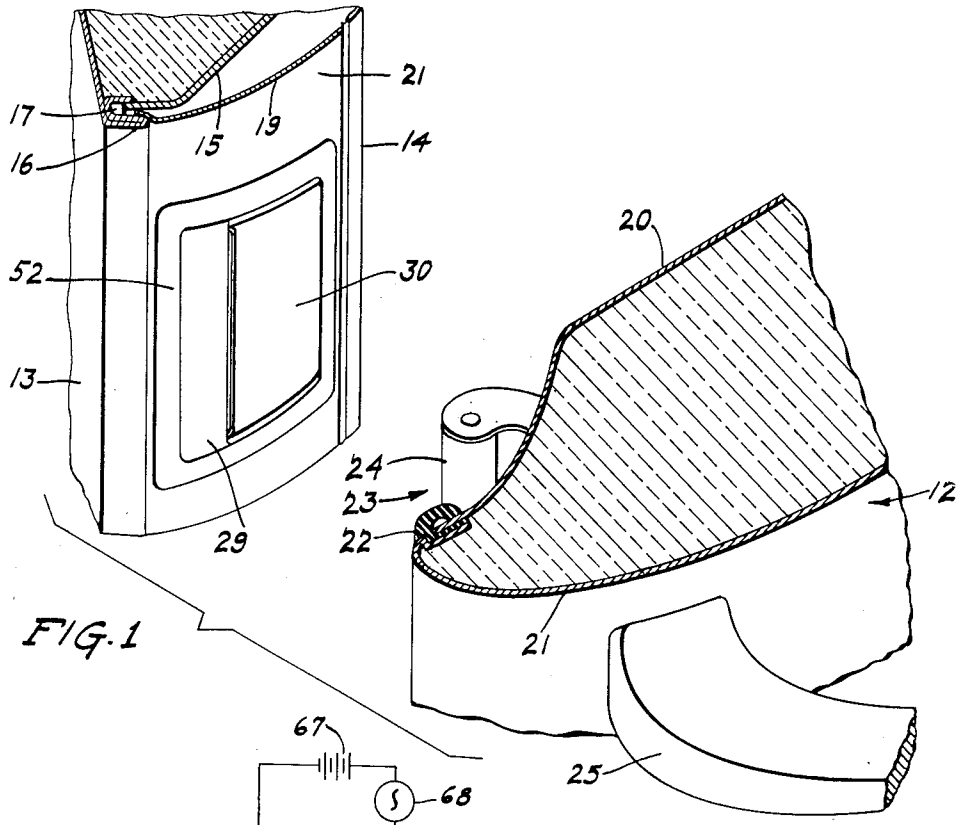


FIG. 1

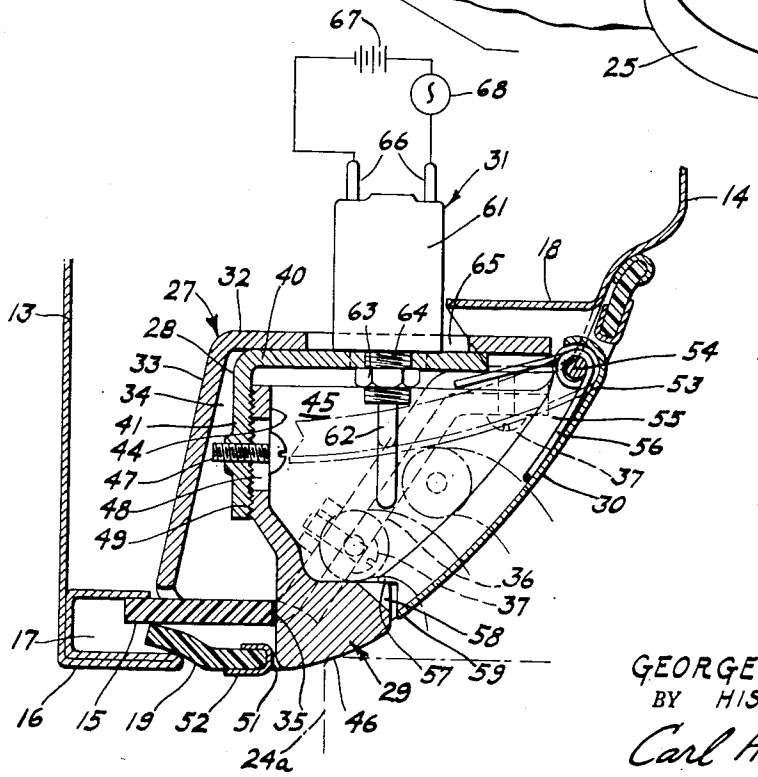


FIG. 2.

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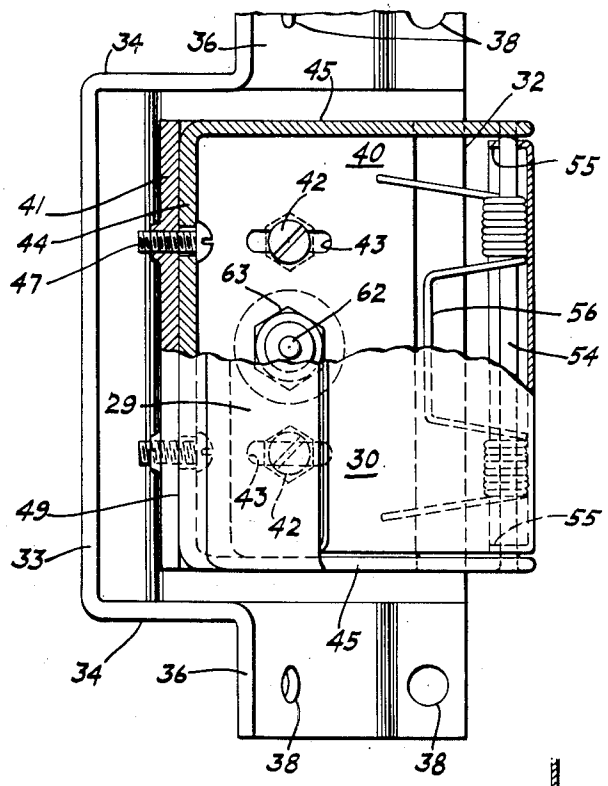


FIG. 3.

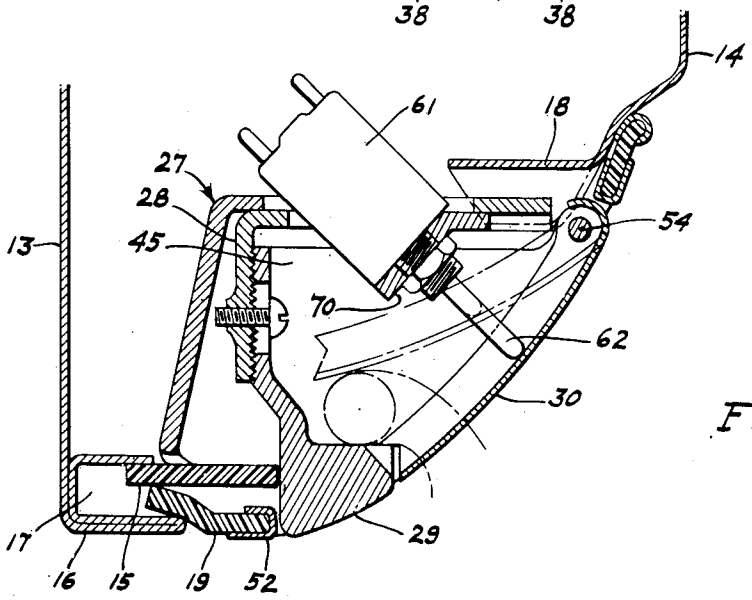


FIG. 4.

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UNITED STATES PATENT OFFICE

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SWITCH AND LATCH STRIKE UNIT

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Application April 20, 1945, Serial No. 589,413

3 Claims. (Cl. 200—55)

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This invention has to do with latching mechanism and, more particularly, is concerned with a novel strike assembly.

The invention is especially adapted for use with door latching mechanisms employed in refrigerators of the type having means for illuminating the cabinet interior, when the door of the refrigerator is open.

An important object of the present invention is to provide a novel strike construction having associated therewith circuit means for illuminating the cabinet interior when the door is open.

Another object of the invention is the provision of such a strike construction which is characterized by an improved appearance, blending with the cabinet structure in a manner harmonizing with the general "streamlined" effect of modern refrigerator cabinet construction.

In recent years the trend of refrigerator cabinet construction has been toward what is loosely termed "streamlined" design. This type of design is pleasing to the eye and the general public has been educated to look for this feature when purchasing anything from automobiles to electric toasters, including refrigerators. Hence refrigerator engineers and designers have been striving toward this end by eliminating such constructional features as clash with this streamlined effect. The present invention provides a means furthering this end by eliminating the unsightly appearance of the usually exposed strike pocket and light circuit switch by combining them in a novel manner clearly illustrated in the attached drawings, in which:

Figure 1 is a fragmentary perspective view of portions of a refrigerator cabinet embodying the invention and showing a portion of the associated door in an ajar position;

Figure 2 is a transverse sectional view of the strike assembly as installed in the door jamb of the refrigerator cabinet;

Figure 3 is an elevational view of the strike assembly removed from the refrigerator and with parts broken away to illustrate an interior portion thereof; and

Figure 4 is a transverse sectional view similar to Figure 2, and illustrating a modified form of the invention.

Referring more particularly to the details of the drawings, wherein is illustrated a preferred embodiment of the invention, Figure 1 illustrates a fragmentary portion of a domestic refrigerator of known construction, preferably of streamlined design, comprising a cabinet having a closure or door 12. The cabinet includes an outer shell 13, and an inner liner 14 supported in spaced relation within said shell, as by the breaker strip 15.

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The outer shell terminates in a rim 16 formed to define a pocket 17 for receiving the outer edge of the breaker strip 15, which edge may be secured to the inner wall of said pocket by any of many well known methods, while the inner edge thereof may be similarly secured to the outwardly turned rim 18 of the inner liner. A second breaker strip 19 is also secured between the rims of the shell and liner, with its outer edge also engaged in the pocket 17, and its inner edge abutting rim 18 of the liner in a manner providing a smooth streamlined jamb between the shell and liner.

Door 12 is constructed in accordance with conventional practice and includes an inner panel 20 and an outer panel 21, which are secured together in conventional manner about their peripheral edges with the usual gasket interposed therebetween, as indicated in the drawings at 22.

Associated with the door structure is a latch mechanism 23 of which, by way of illustration, only certain parts are shown, it being understood that while the portion of the mechanism not shown may be of conventional design, it is preferably of the general type disclosed and claimed in the copending application of George E. Curtiss, Jr., Serial Number 507,839, filed October 27, 1943, which has become Patent No. 2,451,380 on October 12, 1948, and assigned to the assignee of the instant invention. The latch mechanism disclosed in the above-identified application comprises, generally, a self-cocking mechanism in which the latch bolt, represented by the numeral 24 in the present disclosure, is held in its retracted unlatched position by a trigger device, indicated in Figure 2 by the numeral 24a. This trigger device is releasable, upon contact with a portion of the strike assembly, to permit the bolt to be shot home against the keeper or abutment, in a manner to draw the door into its fully closed position. Means for actuating the latching mechanism to its retracted position to permit opening of the door, as illustrated in Figure 1, is provided by handle 25 which extends outwardly through the panel 21 of the door.

A strike assembly is positioned within the door jamb, in a manner adapted to cooperate with the latch bolt to hold the door closed when it is swung shut. In particular accordance with the present invention, this assembly includes, generally, a housing 27, strike support 28, the strike 29, a cover shield or closure 30, and the light circuit actuating switch 31.

More specifically, the housing 27 comprises a

rear wall 32, a lateral wall 33, and top and bottom wall portions which are shown at 34—34. Portions of the walls 34 extend through an opening 35 in the inner breaker strip 15, and terminate in flanges 36, as more clearly illustrated in Figure 3. Each of these flanges is secured to the breaker strip, as by screws 37, apertures 38 in said flanges being provided for that purpose.

The strike support 28 is substantially L shaped with a long body portion 40, and a shorter arm portion 41 extending at substantially right angles to the body portion. Body portion 40 is secured to the rear wall 32 of housing 27 as by screws 42 (Figure 3), slots 43 being provided where each of said screws pass through the portion 40 to thereby permit shifting of the support member relative to the housing, as further described hereinafter. In this respect it will be noted that arm portion 41 is in spaced relation with the lateral wall 33 of the housing.

Strike member 29 comprises a lateral wall 44, top and bottom walls 45, and a keeper or abutment 46. Lateral wall 44 of the strike is secured in an adjustable manner to the arm portion 41 of the strike support 28, as by screws 47 which pass through slots 48 in said rear wall to be threadedly received into suitably threaded apertures in said support. The inner face of arm portion 41 of the housing is provided with serrations which are adapted to engage with corresponding serrations on rear wall 44 of the strike 29, as indicated at 49 on the drawings, to thus prevent relative movement therebetween under conditions to be explained hereinafter.

It will be seen that the strike abutment 46 extends through opening 35 in the inner breaker strip 15 and an opening 51 provided in the outer breaker strip 19, to the extent that the outer face thereof is substantially flush with the outer surface of an escutcheon 52. This escutcheon bounds the opening 51 in a manner to enhance the appearance thereof by providing a frame for that portion of the strike assembly appearing on the exterior of the jamb. Each of the top and bottom walls 45 of said strike element are coextensive and terminate along a line substantially coincident with the transverse curve of said escutcheon from one side of opening 51 to the other. Each of said walls 45, further, is provided with an inwardly extending portion 53 (see Figure 2) to which is secured the ends of a shaft 54 which provides the means for pivotally mounting the closure 30 on the strike, said shaft passing through inwardly turned flange portions 55 of the closure. The closure is normally held in its extended position by resilient means, shown for example, as a torsion spring 56 (Figures 2 and 3) which is positioned on the shaft 54 with its ends bearing against the body portion 40 of strike support 28, and an intermediate portion thereof exerting pressure against the underside of the shield to urge it toward its closed position, illustrated in full lines in Figure 2.

At least one, and preferably both, of the side portions 55 of the closure is provided with an extension 57 (see Figure 2) adapted to engage an end portion of the underside of abutment 46, to thereby limit the outward movement of said closure to the position previously described in which its outer surface is substantially flush with the outer face of escutcheon 52. The inner edge of the abutment is cut away, as shown at 58 in Figure 2, to provide clearance enabling the outer edge or lip 59 of said closure to pass thereby when pivoted inwardly, it being understood that the

vertical dimension of the lip 59 is not greater than the length of the relieved portion 58. By reason of this last described construction the lip 59 of the closure may be brought closely adjacent the outer edge of abutment 46 to thus give the appearance of an uninterrupted surface across the face of the strike assembly.

As described to this point, it is clearly evident that there is provided in a streamlined door jamb construction, a strike assembly which defines a latch bolt receiving pocket or recess provided with a closure shield which, in addition to enhancing the streamlined effect of the jamb by covering the unsightly pocket, also acts as a shield to prevent the accumulation of dirt or foreign matter in said pocket or recess.

It is customary, in refrigerator cabinet construction, to provide some means for automatically illuminating the interior of the food storage compartment when the door is opened. Heretofore this has been provided for by incorporating a light circuit in the refrigerator having an exposed switch actuating element associated with the cabinet structure in a manner to be actuated to and from circuit closing position by opening and closing of the door.

In the present invention, the light circuit switch, indicated by the numeral 31, has been cooperatively associated with the above described strike assembly, with the switch actuating element projecting into the path of movement of the closure member 30, when the closure is pivoted inwardly to the position indicated by the broken lines in Figure 2. While the switch may be of any desired type, it is preferably of conventional plunger-actuated design and, in the present instance, includes a body portion 61 housing the contact elements. These elements are preferably in closed light-actuating relation when the plunger 62 is in extended position, that is, when the door 12 is open, the plunger 62 being resiliently urged toward such extended position by any suitable spring means, not shown. Housing 61 is rigidly mounted upon the body portion 40 of the strike support 28, this being accomplished in the illustrated embodiment by a nut 63 threadedly engaged over sleeve 64 which extends through a suitable opening in said portion 40. The strike housing-member 27 is, in turn, provided with an elongated slot 65 through which the switch housing extends into the space between the shell and liner. Suitable connection elements 66 extend from the enclosed contacts within the switch housing and are connected in series with a suitable source of electrical energy 67 and with the lamp 68, located in any desired position in the refrigerator interior.

In the course of assembling the strike with the jamb structure it may be found that the strike element 29 is not in position to obtain the best latching result or, perhaps, the outer surface contour of the strike assembly may not be placed correctly to obtain the best appearance. It is for these reasons that the previously described adjustable features have been incorporated in the strike assembly. Let it be assumed, for example, that the exterior contour of the strike assembly is slightly below or inside of the outer surface of the escutcheon. In such case, it may be quickly adjusted by loosening screw 47 and moving the strike element outwardly a notch or two along the serrated face of the arm 41 until the outer surfaces are properly aligned. Again, it may be necessary to adjust the strike transversely, in which case the screws 42 are loosened and the

strike and strike support are moved as a unit to the desired position and the screws tightened.

In the following description of operation, it should be understood that the type of latch mechanism referred to is merely exemplary, and that other known types may as readily be used.

In the position illustrated in Figure 1, let it be assumed that the door is approaching its closed position. As the latch bolt **24** moves into contact with the closure **30**, the closure is pivoted inwardly of the pocket until the door reaches fully closed position, at which time the closure **30** will have been moved by the latch bolt to the position approximated by the dotted lines in Figure 2. When this position is reached, trigger **24***a* contacts the outer surface of the strike **46**, thereby releasing the latch bolt and permitting it to swing into engagement with the underside of the keeper, as illustrated in the second dotted line representation of said bolt. Prior to the movement just described, the switch-actuating plunger **62** is in its extended position with the light circuit closed, thus providing illumination for the cabinet interior. The above described movement, on the other hand, causes the closure **30** to move the switch-actuating plunger **62** inwardly to thus break the light circuit during the time the door is closed.

Similarly, when it is desired to reopen the door, the handle **25** of the latch mechanism is rotated in a manner to withdraw the bolt from engagement with the keeper, thus permitting the door to swing away from the jamb, at which time the spring **56** moves closure **30** to its full line position, as illustrated, permitting the switch-actuating plunger **62** to move to its extended position, and reclose the light circuit.

The modified form of the invention, illustrated in Figure 4, is similar to the preferred embodiment just described with the exception that the portion of the strike support to which the light circuit switch is attached is bent inwardly, as indicated at **70**, to an extent permitting the switch-actuating spring-pressed plunger to engage the inside of the shield **30**. It is evident that this simplifies the construction, in that the plunger also serves to urge the closure or shield **30** toward its closed position, as illustrated in full lines, without the aid of the torsion spring **56** heretofore described in connection with the foregoing embodiment. The construction and operation of this modified form of the invention are similar to that of the preferred embodiment with the exception above described.

From the foregoing, it will be appreciated that the present invention provides a novel and advantageous strike construction, combining light circuit control means with structural features which are both practical and of exceptionally pleasing appearance.

It will be understood that while the invention is particularly applicable to refrigerators, it is readily apparent that it may be utilized with other constructions, without departing from the spirit thereof as defined in the appended claims.

I claim:

1. A strike assembly for use with a latch mechanism having a latching member, said assembly including structure defining a recess for receiving and releasably retaining said member, an electric switch secured to said structure, resiliently urged means extending within said recess and adapted to actuate said switch, and a movable closure for said recess permitting unrestricted entrance of said member into said recess, said switch actuating means being adapted normally to urge said closure to its closed position and further being operative to move said switch to one position upon the entrance of said member into said recess and to move said switch to another position upon withdrawal of said member from said recess.

2. In a refrigerator including a cabinet having a jamb and a door including a latch mechanism having a latch bolt, a strike assembly comprising; structure defining an open pocket in said jamb for receiving and releasably retaining said latch bolt when said door is closed, closure means for said pocket movable to permit unrestricted entrance of said bolt into said pocket, an electric switch, and spring-pressed switch-actuating means extending from said switch into contact with said closure and serving to maintain the latter in closed position when the refrigerator door is open, said closure being operative to actuate said switch-actuating means to move said switch into open-circuit position upon entry of said bolt into said pocket, said closure further serving both to close said pocket in a manner imparting a substantially unbroken appearance to the jamb when said bolt is withdrawn from said pocket and simultaneously to provide for movement of said switch to its closed-circuit position.

3. In combination with a refrigerator comprising a cabinet having a door jamb, and a door having a latch mechanism including a latch bolt; a strike assembly comprising: a structure defining an open pocket in said jamb for receiving and releasably retaining said latch bolt when the door is closed, said structure including a first part fixed to said jamb and a second part having a keeper, said second part being movably mounted with relation to said first part to permit adjustment of said keeper relative to said jamb and thus enable positioning of said keeper to best advantage with relation to the latch bolt when the door is closed, an electric switch secured to one of said parts, spring pressed switch actuating means extending within said pocket, and a closure pivotally mounted upon one of said parts and normally urged by said switch actuating means to a position closing said pocket in a manner imparting a substantially unbroken appearance to said jamb when the bolt is withdrawn from said pocket, said closure further being displaceable in response to movement of said bolt toward latching position, said switch actuating means being operable by said closure to move said switch to open-circuit position in response to entrance of said bolt into said pocket and to move said switch to closed-circuit position upon withdrawal of said bolt from said pocket.

GEORGE E. CURTISS, JR.

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