Dec. 23, 1952 LA MAR S. COOPER 2,622,911

REFRIGERATOR CABINET LATCH STRIKE

Filed Oct. 28, 1950

FIG. 1

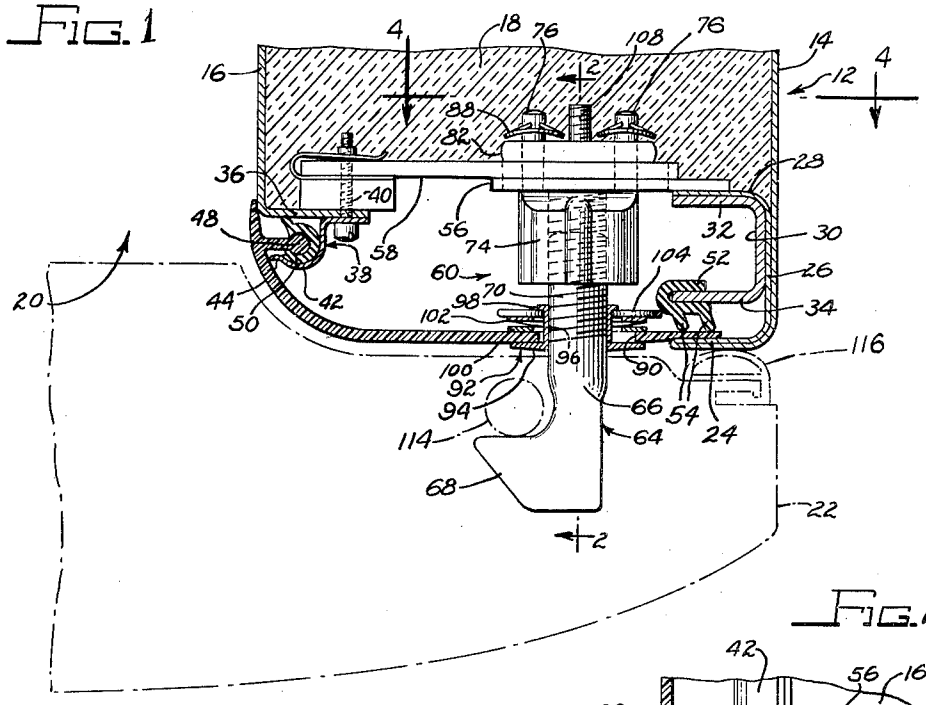


FIG. 2

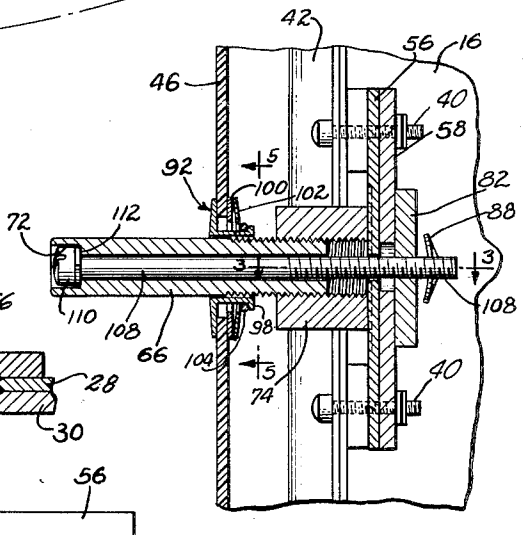


FIG. 3

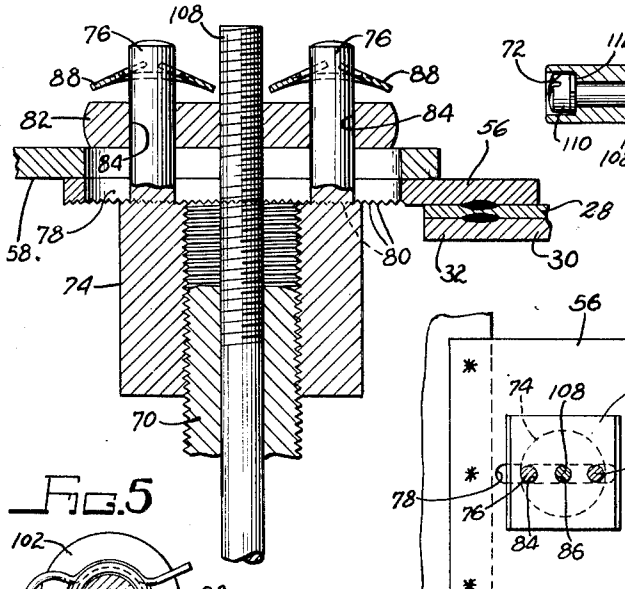
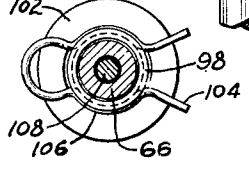


FIG. 4

FIG. 5



Inventor
LaMar S. Cooper

Bair, Freeman
by: & Molinare
Attys.

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REFRIGERATOR CABINET LATCH STRIKE

La Mar S. Cooper, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa, a corporation of Iowa

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6 Claims. (Cl. 292—341.18)

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This invention relates to a latch strike assembly for use in cabinets such as refrigerator cabinets. The primary use of the device is for use in refrigerator cabinets but it can of course be employed in other types of cabinets.

The latch strike includes an elongated shank portion with a hook element at the outer end adapted for cooperation with a latch structure in the door of the cabinet

It is an object therefore of the invention to provide a novel construction latch strike for embodiment in the wall of the refrigerator cabinet, which embodies a mounting means entirely concealed in the wall, and only a portion of the strike is exposed outwardly of the wall, and in which the exposed portion has a pleasing appearance.

The latch strike of the present invention cooperates with a latch mechanism that is imbedded in the interior of the door structure and is of the type for extension into the interior of the door for cooperation with the latch mechanism therein, whereby the latch strike is substantially entirely concealed when the door is closed.

Therefore another object of the present invention is to provide a latch strike of the type just referred to, which is of minimum dimensions so that the opening in the door into which the strike must pass can be made as small as practicable and the door construction and design will consequently have a pleasing appearance and conceal as much as possible of the latch mechanism.

Another object of the invention is the provision of a latch strike with a simple and effective means for adjustment of the strike in two directions, one of which is horizontal to compensate for variations in horizontal alignment of the door, and the other of which is inwardly and outwardly of the wall to compensate for variations in the mounting of the latch strike, and of the latch mechanism in the door, as well as the gasket on the door which engages the cabinet wall.

A still further object is the provision of a latch strike for mounting in the wall of a refrigerator cabinet in which the mounting means is of such novel construction as to employ a thermal barrier between the latch strike and the cabinet liner and therefore a thermal barrier between the latch strike and the interior of the cabinet.

With these and other objects in view, my invention consists of the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in

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the claims and illustrated in the accompanying drawings in which:

Figure 1 is a horizontal sectional view of a portion of the refrigerator cabinet showing the latch strike of the present invention and its mounting;

Figure 2 is a sectional view taken on line 2—2 of Figure 1;

Figure 3 is a sectional view taken on line 3—3 of Figure 2;

Figure 4 is a view taken on line 4—4 of Figure 1, and

Figure 5 is a view taken on line 5—5 of Figure 2.

Referring in detail to the drawings, the numeral 12 indicates a portion of a wall of a refrigerator cabinet. The wall structure includes the usual outer case 14 and inner liner 16, with insulation 18 therebetween. The liner 16, of which only a small portion is shown, defines the interior storage space of the refrigerator cabinet, which is indicated generally at 20, the storage space being closed by the refrigerator door indicated diagrammatically at 22.

The wall element 12, as will be readily understood, terminates in a surface surrounding the open side of the interior compartment 20, and this surface is completed and enclosed by a construction of a type which will now be described. The outer case 14 adjacent the surface above referred to is turned inwardly to form a flange 24, the material being bent back on itself and extended rearwardly along the inner surface of the case as indicated at 26 and again bent inwardly to form a flange 28 substantially parallel with and spaced from the flange 24, forming a channel. A channel member 30 is positioned in the first channel, having a flange 32 secured to the flange 28 as by welding, and another flange 34 spaced from but disposed closely adjacent the flange 24. The inner liner 16 is turned outwardly to form a flange 36 nearly in alignment with the flanges 28 and 32. Secured to the flange 36 is a retainer strip 38 having a flange secured directly to the flange 36 as by means of a screw 40 and an arcuate portion 42 terminating in a tip 44 spaced from the flange 36 a distance less than the greatest inner dimension of the curved arcuate portion 42.

The numeral 46 indicates a breaker strip which is composed of a plastic or other desired heat insulating material. The breaker strip 46 is generally L-shaped, having a bead 48 extending inwardly from the short leg thereof. A sealing gasket 50 of rubber or other desired resilient material is fitted over the bead 48. Another gasket 52 is fitted over the flange 34, the gasket

having ribs 54 extending toward the flange 24. The breaker strip is inserted in place by movement in a direction which in the present instance is from left to right, whereby the bead 48 with its gasket is inserted in the arcuate element 42, and the extended end of the breaker strip is inserted between the flange 24 and the extended edges of the ribs 54. The breaker strip is readily inserted into place, but due to the flexing of the ribs 54 and the fact that the mouth of the arcuate portion 42 is of less dimension than its greater interior dimension, the breaker strip cannot be readily removed. The breaker strip effectively seals the interior of the wall structure against the entrance of moisture and it forms a thermal barrier between the liner 16 and the outer case 14.

The breaker strip 46 above described, and the construction for mounting it in place, form the subject matter disclosed and claimed in the copending application of Robert E. Moore, Serial No. 197,786, filed November 27, 1950, which application is assigned to the assignee of the present application. Attention is directed to said copending application for further details of construction and purpose of the breaker strip.

A mounting plate 56 is welded to the flange 28 in position extending toward the liner 16. The height of the mounting plate 56 may be only a matter of several inches and it need not extend the full height of the wall. Interconnecting the mounting plate 56 and the flange 36 is a structural strip 58 which is composed of laminated paper impregnated with phenolic plastic. This strip possesses the desired structural strength and it is an effective thermal barrier between the mounting plate 56 and the liner 16. The strip 58 may be secured at one end by the screws 40 and at the other end it is secured between parts 56 and 82.

The latch strike and its mounting components are indicated generally at 60. The latch strike element itself is indicated at 64 and includes an elongated shank 66 with a hook element 68 in its outer end. The shank 66 is tubular in form, having a central opening extending entirely through the element, and it will be noted also that the inner end of the shank is exteriorly threaded as indicated at 70. The outer end of the opening through the shank element is in the form of an enlarged recess 72 (Figure 2).

The inner threaded end 70 of the shank element is threaded into a nut 74 having interior threads for that purpose. The nut 74 has a pair of integral prongs or fingers 76 which are arranged horizontally with respect to each other in the assembly of the device.

The mounting plate 56 is provided with a horizontal slot 78 through which the prongs 76 extend. The horizontal dimension of the slot 78 is considerably greater than the distance between the outermost surface of the prongs 76 to enable the nut or sleeve 74 to be adjusted horizontally. The engaging surfaces of the mounting plate 56 and the nut 74 are provided with relatively fine, vertically disposed, flutes or teeth 80, for retaining the nut 74 in position horizontally when brought into tight engagement therewith.

On the opposite side of the mounting plate 56 from the nut 74 is a mounting element 82 which may be referred to as a locking washer, although the element also performs the function of a locking nut. The mounting element 82 is physically in the form of a plate and has horizontally spaced holes 84 for receiving the prongs 76. The element 82 is also provided with a centrally threaded hole 86 disposed in axial alignment with the nut 74.

In assembling and mounting the device, the prongs 76 are first inserted through the slot 78 and then through the holes 84; thereafter, holding clips 88 are fitted on the prongs 76 and left in positions spaced from the element 82. The clips 88 are flexible sheet metal devices having a central hole and flexible gripping fingers extending inwardly toward each other. The inner ends of the gripping fingers are spaced apart a distance less than the diameter of the prongs 76, and when the clips are fitted on the prongs 76 the gripping fingers are flexed to the position shown and the clips are retained on the prongs. The nut 74 and the mounting element 82 are therefore effectively mounted on the mounting plate 56. These two elements are mounted in position in the construction of the cabinet wall 12 before the breaker strip 46 is put in place. At this point it should be noted that the structural strip 58 may have a bifurcated end overlying the plate 56 so that the latch strike and its associated elements can be fitted between the prongs formed by the bifurcation; however, any other desired construction may be employed.

The breaker strip 46 is provided with a hole 90 in substantial alignment with the nut 74 when the breaker strip is put in place. The hole 90 is of greater diameter than the shank 66 to allow for adjustment of the shank, and obviously the hole 90 in the final construction may not be concentric with the shank 66. The hole 90 is covered by an escutcheon 92 having a plate element 94 in the form of a disc of a diameter substantially greater than the hole 90. The disc 94 has a central hole and an axially extending sleeve element 96 terminating in an inner flange 98 of relatively small radial dimension. A washer 100 surrounds the sleeve element 96 and engages the inner surface of the breaker strip. Engaging the washer 100 is a spring washer 102 composed of spring material, having portions bent out of its normal plane. A locking pin 104, roughly in the shape of a hairpin, is then fitted into the assembly, in a position engaging the spring washer 102 and having arcuate portions 106 engaging the inner surface of the flange 98. The spring washer 102 reacts between the washer 100 and the pin 104, biasing the pin inwardly and thereby retaining the disc portion 94 of the escutcheon plate in engagement with the outer surface of the breaker strip.

The mounting elements 74 and 82 are put in place in the construction of the wall as above noted. Later in the construction of the wall, the breaker strip 46 is inserted in place as above described, after the escutcheon plate 92 and its associated parts having been put in position in the breaker strip. The latch strike proper 64 is then inserted through the hole in the escutcheon plate 94 and threaded into the nut 74. The locking screw 108 is then inserted through the tubular latch strike element 64, extended through the slot 78, and threaded into the hole 86. The outer end of the locking screw 108 is of course provided with a head such as 110 and is associated with a lock washer 112, the head and washer being disposed in the recess 72.

The door 22 of the cabinet includes a latch mechanism having a latching element 114 adapted for cooperation with the latch strike. The inner panel of the door 22—that is, the panel

next to the breaker strip 46—is provided with an opening for insertion of the latch strike, and the latch mechanism is such that the latching element 114 engages with the hook element 68 for latching the door closed. The door is of course provided with a handle for unlatching the latch and permitting the door to be opened. It is believed that it is unnecessary to illustrate any particular kind of latch mechanism. The door is also provided with a sealing gasket 116 which engages the wall of the cabinet for sealing the interior of the cabinet from the exterior.

The locking screw 108 can be loosened, after which the whole assembly can be adjusted horizontally, if such should be desired, in order to position the latch strike for proper coaction with the latch mechanism. After the latch strike is adjusted to its desired position, the locking screw 108 is turned in to tight locking position, whereupon the teeth 88 interlock to retain the latch strike and its whole assembly against horizontal displacement.

The latch strike is also adjustable longitudinally inwardly and outwardly of the wall. In order to make such adjustment, the locking screw 108 is loosened and the strike element proper 64 can be so adjusted by threading it inwardly or outwardly. After making such adjustment, the locking screw 108 is again turned into tight locking position. It may be desired to adjust the latch strike inwardly or outwardly to compensate for variations in the thickness of the gasket 116, or other minor variations in dimensions encountered in articles of manufacture.

In all adjustments horizontally of the latch strike, the escutcheon plate 92 covers the hole 90 and in all longitudinal adjustments inwardly and outwardly the escutcheon plate is retained in engagement with the breaker strip 46 by the spring washer 102, and the latch strike moves longitudinally relative to the escutcheon.

An advantageous feature of the invention is that there is a thermal barrier between the latch strike and the interior of the refrigerator cabinet. The structural strip 58 provides effective heat insulation and the same is true of the breaker strip 46.

The latch strike, because of its novel construction, is simple and effective for the purpose intended, as well as being of pleasing appearance, the latter including the feature that the latch strike is of minimum dimensions whereby when the door is opened a minimum portion of the latch strike is exposed, and when the door is closed the latch strike is concealed.

While I have herein shown and described a preferred embodiment of my invention, it will be understood of course that I do not wish to be limited thereto, since many modifications may be made; and I, therefore, contemplate by the claims appended thereto to cover any such modification or substitutions of mechanical equivalents as fall within the true spirit and scope of the claims.

I claim:

1. In a device of the character disclosed for mounting in a wall structure and adapted for cooperation with a door having a latch, the combination comprising, a plate mounted in said wall, said plate having an opening therethrough, an interiorly threaded tubular member on one side of said plate, a locking washer having a threaded opening on the opposite side of said plate, a tubular strike element threaded in said tubular member and extending out of the wall

for cooperation with said latch, said strike element on rotation thereof being adjustable inwardly and outwardly of the wall, and a locking screw extending through said strike element, through the opening in said plate and threaded in said locking washer, said locking screw reacting between said strike element and locking washer for locking said tubular member and locking washer in engagement with said plate and locking said strike element against rotation in said tubular member, said washer and said tubular member both being displaceable over the surface of said plate except when engaged with said plate by said locking action of said locking screw.

2. In a device of the character disclosed for mounting in a wall structure and adapted for cooperation with a door having a latch, the combination comprising, a plate mounted in said wall, said plate having a horizontal slot therein, an interiorly threaded tubular member on one side of said plate, a locking washer having a threaded opening on the opposite side of said plate, a tubular strike element threaded in said tubular member and extending out of the wall for cooperation with said latch, said strike element on rotation thereof being adjustable inwardly and outwardly of the wall, and a locking screw extending through said strike element, through said slot in said plate and threaded in said locking washer, said tubular member and locking washer being adjustable horizontally in said slot, said locking screw reacting between said strike element and locking washer for locking said tubular member and locking washer in horizontally adjusted positions on said plate, and for locking said strike element against rotation in said tubular member.

3. In a device of the character disclosed for mounting in a wall structure and adapted for cooperation with a door having a latch, the combination comprising a plate mounted in said wall, said plate having a horizontal slot therein, mounting elements having interiorly threaded openings on opposite sides of said plate, said plate and one of said elements having interengaging teeth, said one mounting element having a portion projecting through said slot and into the other mounting element so that said two mounting elements are displaceable as a unitary assembly with respect to the axis of said plate, a strike element threaded in one of said elements and extending out of the wall for cooperation with said latch, said strike element on rotation thereof being adjustable inwardly and outwardly of the wall, said strike element having an opening therethrough, and a locking screw extending through said strike element and threaded into the mounting element on the opposite side of the plate, said locking screw, acting through said strike element reacting between said mounting elements and locking them in horizontally adjusted positions, and locking said strike element against rotation.

4. In a device of the character disclosed for mounting in a wall structure and adapted for cooperation with a door having a latch, the combination comprising, a plate mounted in said wall, said plate having a horizontal slot therein, a threaded tubular member on one side of said plate, said tubular member having horizontally spaced prongs extending through said slot, a locking washer on the opposite side of said plate and having openings receiving said prongs, means for locking said tubular member and washer to-

gether comprising an interiorly threaded opening in said washer, a tubular strike element threaded in said tubular member and extending out of the wall for cooperation with said latch, said strike element on rotation thereof being adjustable inwardly and outwardly of the wall, and a locking screw extending through said strike element, through the opening in said plate and threaded in said locking washer, said locking screw reacting between said strike element and locking washer for locking said tubular member and locking washer in engagement with said plate and locking said strike element against rotation in said tubular member.

5. In a refrigerator wall and latch strike construction, said wall having an outer closure member extending between the outer case and inner liner, the combination comprising, a mounting member secured in the wall and extending through an opening in said wall closure member to the exterior of the wall for cooperation with a latch, said latch strike being adjustable longitudinally in directions inwardly and outwardly of the wall and being adjustable transversely of said first directions, an escutcheon on said latch strike engageable with the outer surface of said wall closure member, said escutcheon being of sufficient dimensions to cover said opening in all positions of transverse adjustment of said latch strike, said latch strike being movable longitudinally through said escutcheon, and means for retaining said escutcheon in engagement with said wall closure member and against displacement therefrom by longitudinal movement of said latch strike.

6. In a refrigerator wall and latch strike construction, said wall having an outer case and

inner liner with insulation therebetween, and said wall having an outer closure member of insulation material extending between said outer case and inner liner, the combination comprising, a mounting member secured in the wall on said outer case, a reinforcing member of insulation material interconnected between said mounting member and said inner liner, a latch strike adjustably mounted on said mounting member and extending through an opening in said wall closure member to the exterior of the wall for cooperation with a latch, said latch strike being adjustable longitudinally in directions inwardly and outwardly of the wall and being adjustable transversely of said first directions, an escutcheon on said latch strike engageable with the outer surface of said wall closure member, said escutcheon being of sufficient dimensions to cover said opening in all positions of transverse adjustment of said latch strike, said latch strike being movable longitudinally through said escutcheon, and means for retaining said escutcheon in engagement with said wall closure member and against displacement therefrom by longitudinal movement of said latch strike.

LA MAR S. COOPER.

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The following references are of record in the file of this patent:

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