Feb. 16, 1954 W. R. JEWELL 2,669,477

ADJUSTABLE STRIKE

Filed March 14, 1952

Fig. 1.

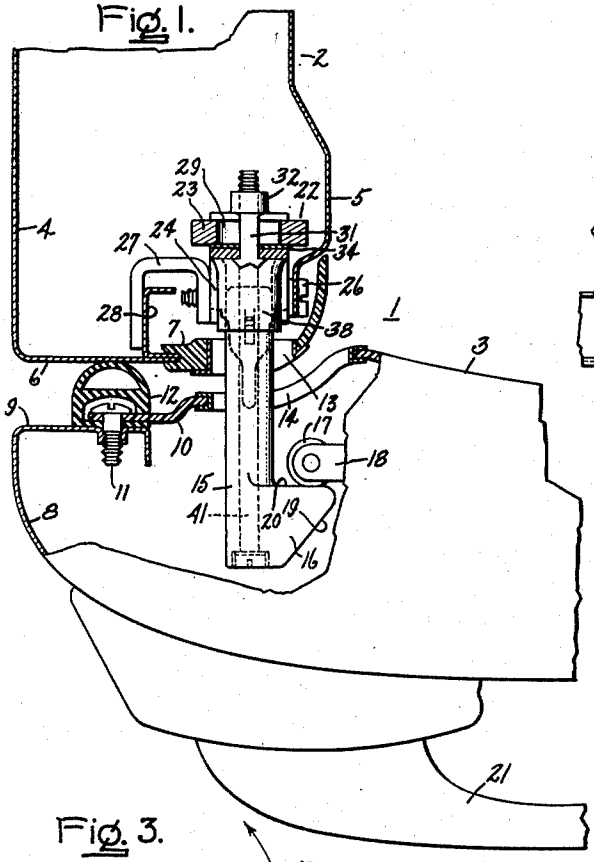


Fig. 2.

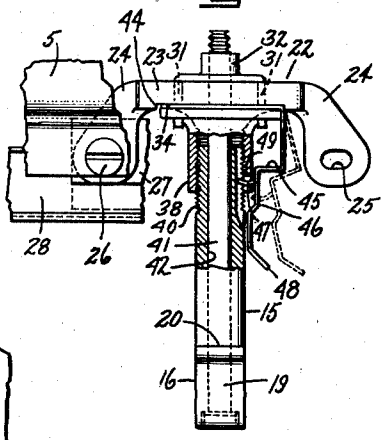


Fig. 3.

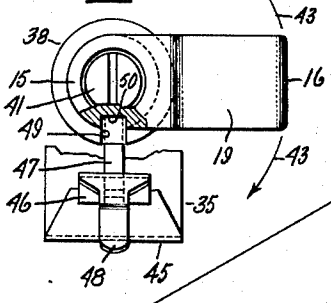


Fig. 4.

Inventor:
William R. Jewell,

by Christensen & Sanborn
His Attorney.

Patented Feb. 16, 1954

2,669,477

UNITED STATES PATENT OFFICE

2,669,477

ADJUSTABLE STRIKE

William R. Jewell, Erie, Pa., assignor to General Electric Company, a corporation of New York

Application March 14, 1952, Serial No. 276,582

7 Claims. (Cl. 292—341.18)

1

My invention relates to latches and more particularly to strikes for latches.

It is the primary object of my invention to provide new and improved means for maintaining an adjustable latch strike in a predetermined adjusted position.

It is another object of my invention to provide in connection with a longitudinally adjustably positionable latch strike, improved means for insuring a predetermined radial positioning of the strike.

It is still another object of my invention to provide with a latch strike adapted for being adjustably positionable longitudinally by being threaded into or out of a base member, improved locking means for insuring proper radial positioning of the strike when adjusted and being easily releasable for facilitating adjustment of the strike.

Further objects and advantages of my invention will become apparent as the following description proceeds, and the features of novelty which characterize my invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

In carrying out the objects of my invention, I provide a strike having one end in threaded engagement with a base member. The strike is adjustably positionable longitudinally by being threaded into or out of the base member. The base member includes a radial notch and the strike is formed with a longitudinal groove. When the notch and groove are in register, the strike is in a predetermined radial position. A locking member is biased for being seated in the notch in the base member; and when the longitudinal groove in the strike is in register with the notch, the locking member seats therein also, whereby the strike is positively maintained in the predetermined radial position.

For a better understanding of my invention, reference may be had to the accompanying drawing in which Fig. 1 is a partly sectionalized plan view of my invention applied to a door latch in a refrigerator; Fig. 2 is a partly sectionalized side elevational view of the arrangement shown in Fig. 1; Fig. 3 is an enlarged end view of my invention, partly broken away to illustrate structural details thereof; and Fig. 4 is an exploded view illustrating the assembly of the parts shown in Figs. 1 to 3 inclusive.

In Fig. 1, I have shown the device of my invention, generally designated 1, in connection with a door latch in a refrigerator. Therefore, in Fig. 1 are shown part of a refrigerator cabinet 2 and part of a refrigerator door 3, the door 3

2

being provided for closing an access opening to a food storage compartment in the cabinet 2. The cabinet 2 comprises an outer case 4 and a liner 5. The outer case 4 is formed with a face portion 6 framing the access opening to the food storage compartment. Secured to the edge of the face portion 6 is the outer edge of a breaker strip 7 of plastic or like material of low thermal conductivity. The breaker strip 7 is substantially arcuate throughout its length, and the inner edge thereof extends over the edge of the liner 5, whereby the space between the outer case and liner is closed. The door 3 comprises an outer door 8 formed with a face portion 9 and an inner door 10. The inner door 10 is formed of plastic or like material of low thermal conductivity and is secured to the face portion 9 of the outer door 8 by means of a plurality of screws 11, only one of which is shown.

Provided for encircling the access opening to the food storage compartment and maintaining a seal between the cabinet 2 and the door 3 is a gasket 12 formed of rubber or any other similarly elastic deformable material. The gasket 12 is mounted on the face portion 9 by means of the same screws 11 by which the inner and outer doors are fastened together.

Fitted in an aperture in the cabinet breaker strip 7 is a grommet 13. Another grommet 14 is fitted in a similar aperture in the inner door 10 and, when the door is closed, the grommet 13 and the grommet 14 are in substantial register.

Extending through the grommet 13 in the breaker strip 7, and suitably mounted between the outer case 4 and the liner 5, in a manner which shall be described in detail hereinafter, is a strike 15. The outer end of the strike 15 is formed with a latch nose 16 and extends through the grommet 14 into the door 3, when the door is closed, in the manner shown in Fig. 1. Within the door 3, the latch nose cooperates with a latch roller 17 carried on an arm 18. When the door is closed, the roller 17 is positioned behind the nose 16 and engages the underside 20 thereof, thereby to hold the door latched or closed and to compress the gasket 12 sufficiently to provide a satisfactory seal between the door and cabinet. The latch roller 17 is associated by conventional means, which are not shown, with a handle 21 mounted on the outer door 8, and when the end of the handle 21 is moved outwardly from the door, the roller 17 is moved from behind the latch nose 16, thereby to unlatch the door and permit opening thereof.

It will be seen that in the just-described arrangement, the effectiveness of the gasket 12 in providing a satisfactory seal depends upon the amount of gasket compression when the door is latched closed. The amount of gasket compression in turn depends upon the length of that portion of the strike 15 which extends through the grommet 14 into the door 3, or in other words, the distance between the face portion 6 of the outer case 4, and the underside 20 of the latch nose 16, which is engaged by the roller 17 when the door is latched closed.

In order that satisfactory sealing may be easily obtained during assembly at the factory and also in the field when extended use has affected the gasket or slightly varied the position of the roller 17, and therefore affected the efficiency of the seal, the strike 15 is so mounted between the walls of the outer case 4 and the liner 5 as to be adjustably positionable longitudinally for varying the spacing between the underside 20 of the latch nose 16 and the face portion 6 of the outer case 4. As seen in Figs. 2 and 4, the means for mounting the strike 15 includes a bracket 22 formed with a center portion 23 and upwardly and downwardly projecting end portions 24. The end portions 24 are formed with vertically elongated holes 25 and, by means of screws 26, only one of which is shown, passing through the holes 25, the bracket 22 is secured between the edge of liner 5 and one leg of a U-shaped member 27. The other leg of the U-shaped member is suitably secured as by welding to a flange 28 formed off the inner edge of the face portion 6 on the outer case 4. The bracket 22 is preferably formed of a low thermal conductivity material, such as plastic, which provides a good thermal break between the cold liner 5 and the relatively warmer outer case 4.

As best seen in Fig. 4, the center portion 23 of the bracket 22 is formed with a horizontally elongated center hole 29, and a straddling pair of horizontally elongated and parallel outer holes 30. The outer holes 30 are provided for receiving tabs 31 formed off and extending perpendicularly from the sides of a threaded fastening member 32. The tabs 31 extend through the holes 30 and then through a vertically elongated aperture 33 in a base portion 34 of a lock spring member or locking member 35, which will be described in detail hereinafter. The tabs 31 also extend through a pair of spaced apart and horizontally elongated holes 36 in side portions 37 of a base member 38. In this arrangement, the threaded fastening member 32, the bracket 22, the lock spring member 35 and the base member 38 are all prevented from rotating with respect to each other. The ends of the tabs 31 are notched as at 39 and may be spread in the manner shown in Fig. 1, thereby to hold the assembly together.

The base member 38 is formed with a threaded bore and receives in threaded engagement a threaded end portion 40 of the strike 15. It will be seen that in this arrangement, the strike 15 is longitudinally adjustably positionable by threading the strike 15 farther into or out of the base member 38. In this manner, the spacing between the underside 20 of the latch nose 16 formed on the strike 15 and the face portion 6 of the outer case 4 may be varied thereby to determine the compression and therefore the effectiveness of the gasket 12. After the strike 15 has been adjusted longitudinally, the latch nose 16 is positioned horizontally for cooperating with the roller 17.

Provided for restraining the strike 15 from rotational movement whereby the longitudinal adjustment and the horizontal positioning of the latch nose would be upset is a lock screw 41. The locking screw 41 is inserted in a bore 42 extending longitudinally through the strike 15. Beyond the threaded portion of the strike 15, the screw 41 extends through the aperture 33 in the lock spring 35, through the center hole 29 in the center portion 23 of the bracket 22 and threads into the fastening member 32. The lock screw 41 when loosened permits the strike 15 to be threaded into and out of the base member 38 for adjusting the strike. After the strike 15 is adjustably positioned longitudinally and the latch nose 16 is positioned horizontally for cooperating with the roller 17, the lock screw 41 is tightened. Thus the lock screw 41 is adapted for restraining the strike 15 from rotational movement.

It will be seen, however, that the lock screw 41 does not positively prevent the strike from rotating, therefore the cooperation between the roller 17 and the latch nose could and sometimes would cause the strike to rotate slightly in either of the directions indicated by the arrows 43 in Fig. 3. Such rotational movement, in addition to displacing latch nose 16, would cause the strike to thread farther into or out of the base 38, depending upon the direction in which the strike is rotated. This of course would upset the longitudinal adjusted positioning of the strike.

To prevent rotational movement of the adjusted strike, I have provided the above-mentioned locking spring 35 which is formed of spring steel or any similarly resilient material. The base portion 34 of the locking spring 35 is slightly arcuate but when the lock screw 41 is tightened the base member 38 holds the spring base portion 34 flat against the center portion 23 of the bracket 22 and the end edges of the base portion 34 are held in engagement with shoulders 44 formed on the center portion of the bracket 22. Extending substantially perpendicularly to the base portion 34 of the locking spring 35 and co-extensive with the strike 15 is a resilient arm 45, having a stepped-in portion 46. As seen in Figs. 2, 3 and 4, the portion 46 is formed with a finger 47 extending inwardly toward the strike 15 and an outwardly extending release tab 48. The inherent resilience of the lock spring 35 and flattening of the arcuate base portion 34 thereof by the base member 38 urges the finger 47 into a seated position in a notch 49 formed in the rim of the base member 38 in the manner shown in Fig. 2. Formed in the strike 15 is a longitudinal groove 50. The relationship between the latch nose 16, the longitudinal groove 50 and the notch 49 in the base member 38 is such that when the groove 50 and the notch 49 are in register, the latch nose 16 is in the horizontal position thereof. When the latch nose 16 is so predeterminedly positioned and the notch and groove are in register, the finger 47 on the lock spring 45 becomes seated in the groove 50. Thereafter and until the finger 47 is removed from the groove 50, the strike 15 is prevented from rotating and the adjusted positioning of the strike is positively maintained.

After extended use of the refrigerator in the field, it is possible for the gasket to become slightly deformed or lose some of its elasticity or for some variation to occur in the position of the roller 17. These conditions could possibly re-

sult in unsatisfactory cabinet sealing and require compensating adjustment of the strike 15. When adjustment of the strike is required, the serviceman first loosens the lock screw 41. Thereafter, he simply exerts an outwardly directed force on the tab 48 which extends conveniently through the grommet 13. This moves the resilient arm 45 to the dash-line position of Fig. 2 or the full line position of Fig. 3, in which position the finger 47 is removed from the notch 49 and the groove 50 and the strike is no longer positively prevented from rotating. Then the strike 15 may be turned so as to be threaded farther into or out of the base member 38, thereby to vary the spacing between the underside 20 of the latch nose 16 and the face portion 6 of the outer case 4. After the serviceman has started to turn the strike in the desired direction he may release the tab 48 and the finger 47 becomes again seated in the notch 49, riding on the periphery of the strike 15. When the strike has made one complete revolution and the latch nose 16 is again satisfactorily positioned for cooperating with the roller 17, the finger 47 becomes seated in the groove 50, whereby the strike is again positively prevented from rotating. If satisfactory longitudinal adjustment is not obtained through one revolution of the strike, the tab 48 is again pushed down and the just-described operation is repeated. When satisfactory adjustment has been attained the lock screw 41 is tightened.

It will be seen that my invention, in addition to facilitating strike adjustments in the field, also facilitates and speeds up the attainment of a satisfactory door seal at the factory.

In addition to the just-described means for insuring predetermined rotational positioning of the strike 15 to insure thereby the horizontal positioning of the latch nose with respect to the latch roller 17, my arrangement includes means for further determining the position of the latch nose with respect to the roller. The above-mentioned elongated vertical holes 25 in the end portions 24 of the bracket 22 permit the bracket to be moved vertically when the screws 26 are loosened, thereby to obtain satisfactory positioning of the latch nose with respect to the sides of the roller 17. The horizontally elongated slots 29 and 30 in the center portion 23 of the bracket 22 permit the strike 15 to be moved horizontally, when the lock screw 41 is loosened, thereby to obtain satisfactory positioning of the tip of the latch nose with respect to the roller 17.

While I have shown a particular embodiment of my invention in connection with a refrigerator, I do not desire my invention to be limited to the particular construction shown and described, and I intend in the appended claims to cover all modifications within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a keeper structure, a strike comprising a threaded portion, and a longitudinal bore, a longitudinally extending groove, a base member having a threaded bore for receiving said threaded portion of said strike to afford longitudinal adjustment of said strike, and a locking member stationary with respect to said base member and biased for being seated in said groove in said strike, a locking screw extending through said longitudinal bore of said strike, said base member, and said locking member to maintain adjusted positioning of said strike, said locking member cooperating with said groove to dispose said strike in a predetermined position with respect to said base member and positively to maintain said strike in said predetermined position, said locking member being removable from said groove for facilitating adjustment of said strike.

2. In a keeper structure, a strike comprising a threaded portion, and a longitudinal bore, a longitudinally extending groove, a base member comprising a threaded bore for receiving said threaded portion of said strike to afford longitudinal adjustment of said strike, said base member further including a radial notch, and a locking member stationary with respect to said base member and biased for being seated in said notch in said base member, a locking screw extending through said longitudinal bore of said strike, said base member, and said locking member to maintain adjusted positioning of said strike, said locking member being seated in said groove also when said groove and notch are in register, said locking member cooperating with said groove to dispose said strike in a predetermined position with respect to said base member and positively to maintain said strike in said predetermined position, said locking member being removable from said groove for facilitating adjustment of said strike.

3. In a keeper structure, a strike comprising a latch nose and a threaded portion having a longitudinally extending groove and a longitudinal bore, a base member having a threaded bore for receiving said threaded portion of said strike to afford longitudinal adjustment of said strike, and a resilient locking member stationary with respect to said base member and biased for being seated in said groove in said strike, a locking screw extending through said longitudinal bore of said strike, said base member, and said locking member to maintain adjusted positioning of said strike, said locking member cooperating with said groove to dispose said latch nose in a predetermined radial position with respect to said base member and positively to maintain said latch nose in said predetermined radial position, said locking member being removable from said groove for facilitating adjustment of said strike.

4. In a keeper structure, a strike comprising a latch nose and a threaded portion having a longitudinally extending groove and a longitudinal bore, a base member comprising a threaded bore for receiving said threaded portion of said strike to afford longitudinal adjustment of said strike, said base member further including a radial notch, and a resilient locking member stationary with respect to said base member and biased for being seated in said radial notch in said base member, a locking screw extending through said longitudinal bore of said strike, said base member, and said locking member to maintain adjusted positioning of said strike, said locking member being seated in said groove also when said groove and notch are in register, said locking member cooperating with said groove to dispose said latch nose in a predetermined radial position with respect to said base member and positively to maintain said latch nose in said predetermined radial position, said locking member being removable from said groove for facilitating adjustment of said strike.

5. In a keeper structure, a strike comprising a latch nose and a threaded portion having a longitudinally extending groove, a base member having a threaded bore for receiving said threaded portion of said strike in threaded engagement to afford longitudinal adjustment of

said strike, and a locking spring stationary with respect to said base member and formed to include a finger extending inwardly toward said strike and a tab extending outwardly from said strike, said locking spring biasing said finger for being seated in said groove in said strike, said finger cooperating with said groove to dispose said latch nose in a predetermined radial position with respect to said base member and positively to maintain said latch nose in said predetermined radial position, said tab facilitating removal of said finger from said groove to permit rotation of said strike for affording longitudinal adjustment of the position thereof.

6. In a keeper structure, a strike comprising a latch nose and a threaded portion having a longitudinally extending groove, a base member including a threaded bore for receiving said threaded portion of said strike in threaded engagement for affording longitudinal adjustment of said strike, said base member further including a radial notch, and a locking spring stationary with respect to said base member and formed to include a finger extending inwardly toward said strike and a tab extending outwardly from said strike, said locking spring biasing said finger for being seated in said notch, said finger being seated in said groove also when said groove and said notch are in register, said finger cooperating with said groove to dispose said latch nose in a predetermined radial position with respect to said base member and positively to maintain said latch nose in said predetermined radial position, said tab facilitating removal of said finger from said groove to permit rotation of said strike for affording longitudinal adjustment of the position thereof.

7. In a keeper structure, a strike comprising a latch nose and a threaded portion having a longitudinally extending groove and a longitudinal bore, a base member including a threaded bore for receiving said threaded portion of said

strike in threaded engagement for affording longitudinal adjustment of said strike, said base member further including a radial notch, a locking spring, a mounting bracket, a threaded fastening member including portions extending through said bracket, said spring and said base member whereby relative rotational movement between said bracket, said spring and said base member is prevented, and a locking screw extending through said longitudinal bore of said strike, said base member, said spring and said bracket for threaded engagement with said fastening member thereby to maintain adjusted positioning of said strike, said locking spring including a resilient arm co-extensive with said strike, said resilient arm being formed to include a finger extending into said notch in said base member and an outwardly extending tab, said resilient arm biasing said finger for engaging said strike through said notch, said finger being seated in said groove in said strike also when said groove and said notch are in register, said finger cooperating with said groove to dispose said latch nose in a predetermined radial position with respect to said base member and maintain positively said latch nose in said predetermined radial position, said tab facilitating removal of said finger from said groove to permit rotation of said strike for affording longitudinal adjustment of the position thereof.

WILLIAM R. JEWELL.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,069,878	Johnson	Aug. 12, 1913
2,019,408	Grill	Oct. 29, 1935
2,089,163	Hansen	Aug. 3, 1937
2,265,691	Hogg	Dec. 9, 1941
2,622,911	Cooper	Dec. 23, 1952