March 23, 1937. S. BRANTINGSON 2,074,979

LATCH AND STRIKER CONSTRUCTION

Filed Dec. 8, 1934

Fig. 1.

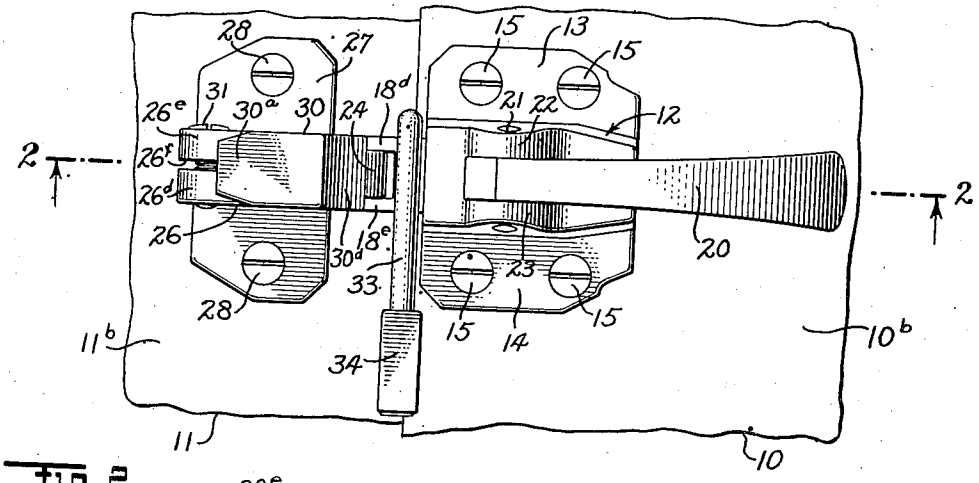


Fig. 2.

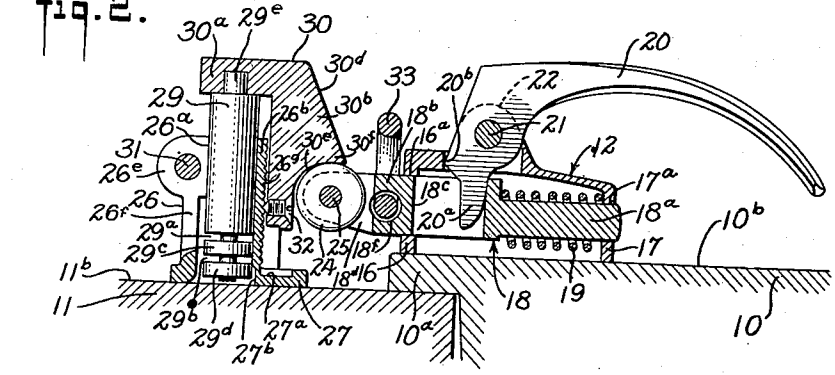


Fig. 3.

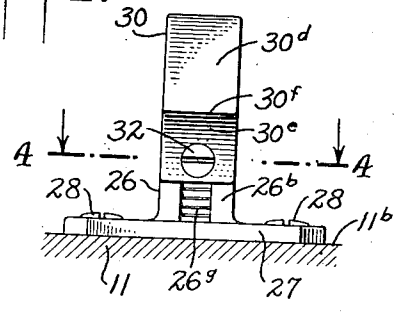
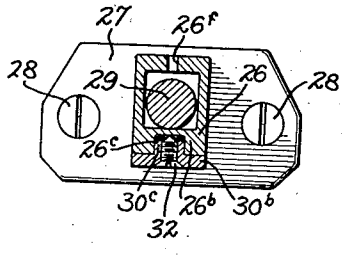


Fig. 4.



INVENTOR

Sigurd Brantingson

BY

Blair, Curtis & Dunne

ATTORNEYS

Patented Mar. 23, 1937 2,074,979

UNITED STATES PATENT OFFICE

2,074,979

LATCH AND STRIKER CONSTRUCTION

Sigurd Brantingson, Palisades Park, N. J., assignor to Francis Keil & Son, Inc., a corporation of New York

Application December 8, 1934, Serial No. 756,625

11 Claims. (Cl. 292—340)

This invention relates to latch construction, more particularly to latch construction of the type that is employed, for example, in connection with refrigerator doors.

One of the objects of this invention is to provide a simple, inexpensive and durable latch construction, capable of rapid manufacture and assembly and capable of efficient and reliable action in practical use. Another object is to provide a latch construction that will be well adapted to meet the varying conditions met with in practice. Another object is to provide a latch construction that may be quickly and easily installed and with like facility adjusted or set to meet any particular requirement of practice. Another object is to provide a latch and keeper construction that will be fool-proof and that may be easily locked against unauthorized manipulation. Another object is to provide a keeper construction that will be strong, of wide adaptability, of ease and speed of adjustment, and that will also be neat in appearance. Other objects will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangements of parts as will be exemplified in the structure to be hereinafter described, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawing, in which is shown a preferred embodiment of my invention,

Figure 1 is a plan view of the latch and striker construction shown in locked position;

Figure 2 is a horizontal central sectional view as seen along the line 2—2 of Figure 1;

Figure 3 is an end view of the striker construction as seen from the right in Figure 1 or Figure 2; and

Figure 4 is a horizontal sectional view as seen along the line 4—4 of Figure 3.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring now more particularly to Figures 1 and 2, it is there shown or indicated a door 10 mounted in any suitable manner (not shown) to swing toward or away from any suitable door jamb or frame, the latter being generally indicated at 11, and taking any suitable or appropriate form. Usually, particularly in refrigerator structures, the door 10 is provided with a marginal or peripheral extending flange or overlap 10*a*, and frequently there is interposed between the frame 11 of the overlap 10*a* of the door 10 a yieldable, usually rubber, gasket (not shown). In practice, therefore, the outer faces 10*b* and 11*b* of the door 10 and door frame 11, respectively, are thus displaced from one another or offset, and, depending upon various factors, the amount or degree of offset varies and sometimes this variation is throughout a relatively wide range. To meet such varying practical conditions in a practical, inexpensive and dependable manner is one of the dominant aims of this invention.

Accordingly, I provide a latch structure to be mounted on the face 10*b* of the door 10, and that structure may include a casing 12 provided with flanges 13 and 14 adjacent its base portion and adapted to rest against the face 10*b* of the door 10, flanges 13—14 being approximately apertured to receive screws or bolts 15 to secure the casing 12 of the latch structure to the door 10.

The casing 12 has front and rear end walls 16—17, the latter being provided with an aperture 17*a* in order slidably to receive and support therein the shank 18*a* of a latch bolt generally indicated at 18, its forward or left-hand portion 18*b* being rectangular or square in cross section and extending through and slidably received in a similarly shaped aperture 16*a* in the front end wall 16 of the casing 12.

The bolt 18 is thus mounted and guided for movement in the direction of its longitudinal axis, as seen in Figure 2, and is spring pressed toward and held in extended or projected position (the position shown in Figure 2) by a coiled or helical spring 19 that extends about its shank 18*a*, and has one end abutting against the rear end wall 17 of casing 12 and its other end abutting against the enlarged or squared portion 18*b* of the bolt 18. The portion 18*b* of bolt 18 is recessed, as at 18*c*, to accommodate the downwardly projecting end or arm 20*a* of a lever or handle 20 pivoted on a stud or pin 21 that is bridged across two laterally spaced ears 22 and 23 (Figure 1) in the upper part of the casing 12, the upper wall of the latter having a suitable opening through which the lever 20 and its arm 20*a* project downwardly and into the casing 12 and into the recess 18*c* of the bolt 18. A forward portion of the lever 20 is provided with a shoulder 20*b* that abuts against the left-hand portion of the top wall of the casing 12, and thus limits the extent to which the spring 19 projects the latch bolt 18 to the left or outwardly of the casing 12.

The outermost or left-hand portion of the bolt 18 (Figures 1 and 2) is bifurcated to provide two arms 18*d* and 18*e* between which is accommodated a roller 24, the latter being rotatably supported

upon a pin or stud **25**, which in turn is supported on its opposite ends by and fixed to the arms **18***d* and **18***e* of the bolt **18**. The left-hand end of bolt **18** is adapted to coact with a keeper structure secured to the face **11***b* of the frame or door jamb or related wall, and the keeper structure includes a hollow or cylinder-like support **26** upstanding from a base plate or laterally extending flanges **27**, the latter being properly apertured to receive bolts or screws **28** for securing the structure to the wall frame or member **11**.

The part **26** is bored out as at **26***a* to give it interiorly a cylindrical surface and thus slidably but snugly to receive a cylindrical stud or arm **29** across the upper end of which extends the arm-like portion **30***a* of a keeper member **30**, whose effective keeper-acting portion **30***b* extends downwardly from the horizontal arm portion **30***a* thereof and hence parallel to the stud member **29** but exteriorly of the hollow support **26**, parts **29** and **30** forming in effect an inverted U-shaped member each, however, coacting with the support **26**. Any suitable means may be employed for securing the member **29** and the member **30** rigid together, and a suitable connection is indicated generally at **31** in Figure 2.

The support **26** may be externally of any suitable shape when viewed in horizontal cross-section, but preferably it is substantially square or rectangular, as will be seen from Figure 4, thereby providing a vertically extending wall **26***b* along the external face of which the left-hand face, as viewed in Figure 2, of the keeper portion **30***b* extends. Preferably these two portions **26***b* and **30***b* are interfitted for dependably sliding engagement therebetween, and illustratively, such an interfitting may be achieved by providing in the outer vertical face of the wall **26***b* a vertically extending slot **26***c* and by providing the inner face (the left-hand face as viewed in Figure 2) of the depending keeper portion **30***b* with a vertically extending rib **30***c* snugly interfitted with the vertical slot or groove **26***c*.

Accordingly, the two vertical arms of the inverted U-shaped structure **29—30** are slidably interfitted with the supporting member **26**, the one arm, namely the cylindrical stud **29**, coacting with appropriately shaped surfaces upon the interior of the member **26** and the other arm, namely the depending external portion **30***b* coacting externally with appropriate guideways upon the exterior of the member **26**.

The keeper portion **30***b* is also shaped to coact with the latch bolt **18**; it has an inclined face or surface **30***d* along which the roller **24** of the bolt **18** engages and rolls as the door **10** is swung shut, thereby achieving a retraction of the bolt **18** into the casing **12** and a compression of the spring **19**.

At the lower end or lower termination of the cam face **30***d*, the keeper portion **30***b* is shaped as better shown in Figure 2 at **30***e*, being formed or cut away to permit the forward end of the bolt **18**, and particularly to permit the roller **24** thereof under the urge of the spring **19**, to be projected in back of or in under the shoulder **30***f*, and thereby hold the door **10** against opening movement.

Preferably the curvature of the surface **30***e* that is engaged by the roller **24** does not mate with the curvature of the roller **24** itself but is shaped, as appears from Figure 2, to effect a cam action whereby, under the urge of the bolt **18** in a direction toward the left as viewed in Figure 2, the reaction between the cam surface and the roller **24** is such as to more tightly force and hold the door **10** in closing position.

In order to adapt the mechanism for different degrees of offsets between the faces or surfaces **10***b* and **11***b* as well as to make certain that, for any given offset, the above described wedging action of the bolt or roller with the cam face **30***a* may be dependably achieved, the position of the keeper member **30**, and hence of the shoulder or nosing **30***f* thereof, with respect to the wall surface **11***b*, may be set or fixed as may be desired. The above described coacting guiding parts and surfaces of the parts **26—29** and **30***b—26b* permit the keeper **30** to be moved or slid, relative to the support **26**, into whatever position is desired.

That having been done, a clamping screw **31** (Figures 1 and 2) threaded into an ear-like portion **26***d* of a side wall of member **26** and rotatable in a companion ear-like portion **26***e* of the member **26**, may be driven home or tightened up, thereby causing the member **26** tightly and securely to grip the cylindrical stud-like member **29** and hold it in fixed position, a slit **26***f* (Figures 1, 2 and 4) being provided in a wall of the member **26** and between the ear portions **26***d* and **26***e*.

The bottom wall of the vertical slot **26***c* may be and preferably is transversely ribbed, as at **26***g* (Figures 2 and 3) in order to provide dependable recesses between ridges thereof for coaction with the tapered or pointed end of a screw **32**; screw **32** is threaded into and through the lowermost end part of the keeper portion **30***b* and its head is preferably countersunk into the portion **30***b*, being, by this arrangement and relation of the parts, positioned opposite the outermost end of the bolt **18** (see Figure 2) and thereby to be covered and made inaccessible by that end of the bolt.

The bolt **18** (see Figure 2) is provided with a hole **18***f* extending transversely therethrough and so positioned that, when the bolt is in projected position and with its outermost end covering the screw **32**, the hole **18***f* is exposed out of the casing **12** and is thus available for the reception of the U-shaped part **33** of a padlock **34**. Accordingly, when the padlock **33—34** is locked to the bolt **18**, the withdrawal of the latter into the casing **12** (Figure 2) is precluded, as is also access to screw **32**. Screw **32** effectively clamps or locks the keeper parts **29—30** against movement relative to the support **26**, and thus unauthorized opening of the door **10** is dependably precluded.

Should any particular installation require that the spacing of the keeper member **30** from the wall face **11***b* be other than that illustratively shown in Figure 2 of the drawing, screws **31** and **32** are loosened up and the part **29—30** shifted or moved relative to its support **26** into whatever position may be necessary, whereupon the screws **31** and **32** may be driven home or tightened up and the part **30** thus dependably held in its intended position.

The parts **29** and **30***b* are of adequate length to give a wide range of change of position of the keeper member **30** relative to the support **26**. For example, as appears better from Figure 2, these virtually integral parts may be raised considerably beyond the position shown while still maintaining the part **29** in position to be clamped by the parts controlled by the clamping screw **31** and while still maintaining the vertical and depending part of the keeper

portion 30b, with its screw 32, in coacting relation to the vertical side wall 26b (see also Figure 4). Likewise, these parts 29 and 30b may be moved or positioned downwardly to a considerable extent beyond that shown in Figure 2, it being noted that the base portion or base plate 27 may be recessed as at 27a (Figure 2) in its upper face to receive the lower end of the keeper portion 30b, while the member 29, in such case, may be caused to enter a suitable hole (not shown) that may be drilled or bored into the wall 11.

However, to avoid the need of drilling or boring such a hole, as well as to achieve other advantages, I prefer to construct the lower end portion 29 in such a manner that its length may be varied at will. Illustratively, and again referring to Figure 2, I provide in the lower end of member 29 a plurality, illustratively two, of peripheral grooves or slits 29a, 29b spaced at suitable intervals from the lower end of member 29. These grooves or slits may be formed by casting or by turning or in any other suitable manner.

Accordingly, if the parts 29—30 have to be set or adjusted in a downward direction, as view in Figure 2, to such an extent as might cause the lower end of member 29 to project through the hole 27b in the base plate 27 and thus to collide with the wall 11, a suitable number of sections 29c, 29d, etc., that are formed in the above-mentioned peripheral grooves, are broken off or cut off as by hack saw or a pair of pliers or the like, thereby to maintain the resilient lower end of the member 29 wholly within the support 26—27 and thereby avoid the necessity of drilling or boring a hole in the wall 11.

It will thus be seen that the construction is of wide adaptability and flexibility and that it may easily and speedily be made to suit any particular conditions met with in practical use. Moreover, it will be seen that the construction is of inexpensive manufacture, capable of speedy fabrication and assembly of its parts, and is of rugged and durable construction. Moreover, the parts are made to coact dependably and reliably; for example, though the keeper member 30 overhangs an outer vertical wall of the hollow or cylindrical support 26, the screw 32 gives the lower end of the keeper portion 30b a rigid and strong support from the support 26 itself, thus assuring that the keeper member 30 and its related parts, particularly when the door 10 is slammed shut and the cam portion 30d struck by the bolt, can dependably take up and transmit to the support per se the forces resulting from such a blow or such action.

Accordingly, it will be seen that there has been provided in this invention a coacting latch and keeper construction in which the various objects above mentioned, together with many thoroughly practical advantages, are successfully achieved, and it will be seen that the construction is well adapted to meet the widely varying conditions of hard, practical use.

As many possible embodiments may be made of the above invention, and as many changes might be made in the embodiment above set forth, it is to be understood that all matter hereinbefore set forth, or shown in the accompanying drawing, is to be interpreted as illustrative and not in a limiting sense.

I claim as my invention:

1. In construction of the character described, in combination, a supporting bracket having a base portion adapted to rest against a wall and having a sleeve-like support extending away from said base portion, an external wall of said sleeve-like support having formed therein guiding means extending substantially parallel to the channel within said sleeve-like support, a keeper structure having a part that extends and is fitted into and is slidably guided by the channel within said sleeve-like support and a part rigid with said first-mentioned part and that extends externally of the latter and is slidably guided by said external guiding means, the interengagement between said two parts and said external guiding means preventing relative rotary movement therebetween, and means coacting between one of said keeper parts and said sleeve-like support for securing them together and against relative longitudinal movement therebetween.

2. In construction of the character described, in combination, a supporting bracket having a base portion adapted to rest against a wall and having a sleeve-like support extending away from said base portion, an external wall of said sleeve-like support having formed therein guiding means extending substantially parallel to the channel within said sleeve-like support, the channel within said sleeve-like support being cylindrical and said guiding means being in the form substantially of longitudinally extending ways, a keeper having a cylindrical post-like part slidably interfitted with said cylindrical channel in the sleeve-like support and having an external part shaped to interfit with said ways, and means operable at will for effecting a frictional gripping of said post-like part in said sleeve-like support.

3. In construction of the character described, in combination, a supporting bracket having a base portion adapted to rest against a wall and having a sleeve-like support extending away from and at substantially right angles to said base portion, whereby said bracket may be secured to a wall and said sleeve-like support is held at right angles to said wall, an external wall of said sleeve-like support having formed therein guiding means extending substantially parallel to the channel within said sleeve-like support, and a keeper structure shaped in general like an inverted U, one arm of which extends within and is telescopically related to said sleeve-like support and the other arm of which is rigid with said first-mentioned arm and extends externally thereof and is provided with means for coacting with the guiding means in said external wall, said two arms being provided with means rigidly and non-rotatably interconnecting them thereby to form said keeper structure.

4. A construction as claimed in claim 3, in which there are provided means coacting with each of the arms of said inverted U-shaped keeper structure for holding it against movement relative to said supporting bracket.

5. A construction as claimed in claim 3, in which the arm that extends externally of said sleeve-like support has a part near its lower end acting as a keeper per se for coaction with a bolt and is provided with means positioned substantially underneath said keeper per se and thereby made inaccessible when the bolt is in engagement with said keeper per se for locking said inverted U-shaped keeper structure against movement relative to said supporting bracket.

6. A construction like that claimed in claim 3, in which the external guiding means has a portion that is cross-ribbed and in which the exter-

nal arm of said inverted U-shaped keeper structure is provided with means coacting with said cross-ribbed portions for securing said keeper structure against movement relative to said supporting bracket.

7. In construction of the character described, in combination, a supporting bracket having a base portion adapted to rest against a wall and having a sleeve-like support extending away from said base portion, whereby said bracket may be secured to said wall and said sleeve-like support extends away from the latter, a keeper structure shaped in general like an inverted U, one arm of which extends within and is telescopically related to said sleeve-like support and the other arm of which is rigid with said first-mentioned arm and extends externally thereof and adjacent an outer wall of said sleeve-like support, said other arm having a keeper portion projecting laterally therefrom for interaction with a bolt, means accessible when said bracket is secured to a wall for anchoring said keeper structure to said bracket, and means interposed underneath said keeper portion and juxtaposed to the end of the bolt when interengaged with said keeper portion and covered over by said bolt and thereby made inaccessible, for anchoring said keeper structure to said bracket, thereby to prevent removal of said keeper structure even though said first-mentioned anchoring means is operated.

8. In construction of the character described, in combination, a supporting bracket having a base portion adapted to rest against a wall, said bracket having a substantially cylindrical guiding channel extending therethrough and also through said base portion, a keeper member, a cylindrical post slidably received in and interfitted with said keeper member, the end of said post nearest said base portion being integral throughout and having a plurality of transverse slits spaced longitudinally thereof, whereby said post may be shortened by severing it at any of said slits for thereby bringing said keeper member nearer to said base portion, there being a slot in the cylindrical wall of said guiding channel and extending lengthwise thereof, and means for preventing relative movement comprising means for clamping the cylindrical keeper post and those parts of the latter that intervene said transverse slits between the wall portions of said channel that are on opposite sides of said slot, whereby said bracket reinforces and strengthens the slit portion of said keeper post.

9. In construction of the character described, in combination, a supporting bracket adapted to be secured to a door frame or the like in juxtaposition to a bolt and bolt-mounting means related to a door, a support in the form of substantially an inverted U having its two depending arms rigidly interconnected whereby said support and its parts have to move as a unit, said supporting bracket having channel means for receiving at least one of the arms of said U-shaped support and for slidably guiding said one arm and hence said support as a unit in a direction toward or away from said door frame, the plane of said two arms extending in a direction toward the door, said support having a keeper member related to that arm thereof that extends nearest the door for receiving the bolt of said bolt-mounting means, and means for securing said keeper support to said supporting bracket in whatever position that said one arm and hence said support is adjusted to said supporting bracket.

10. A construction as claimed in claim 9 in which said supporting bracket is provided with channel means for receiving the other arm of said inverted U-shaped support, said channel means being shaped to expose the keeper member carried by said other arm.

11. A construction as claimed in claim 9 in which the channel means in said supporting bracket is cylindrical and in which the arm of said support received therein is also cylindrical, said supporting bracket having additional channel means for receiving the other arm of said support and for thereby preventing swinging of the latter about the axis of said cylindrical channel means and out of said plane.

SIGURD BRANTINGSON.