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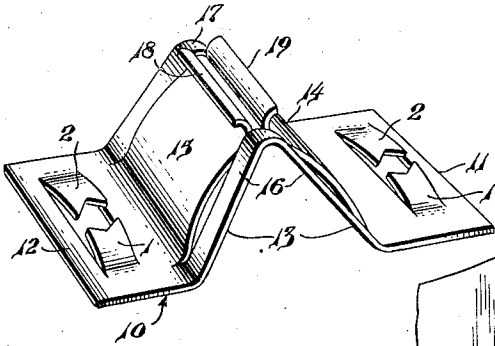
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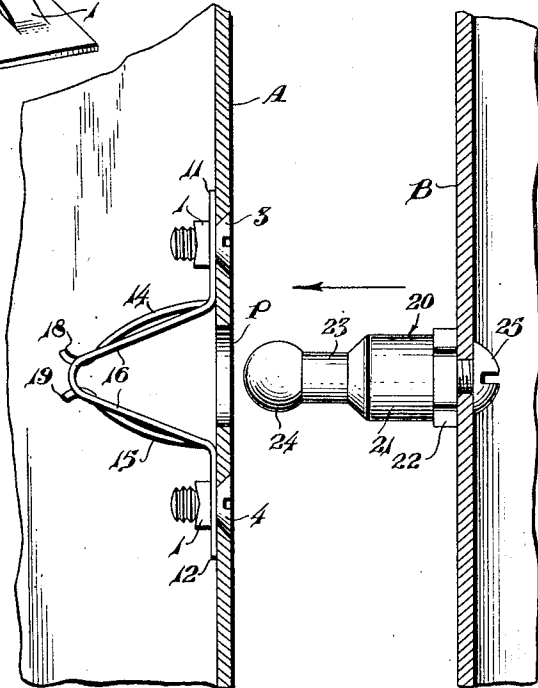
SPRING CATCH

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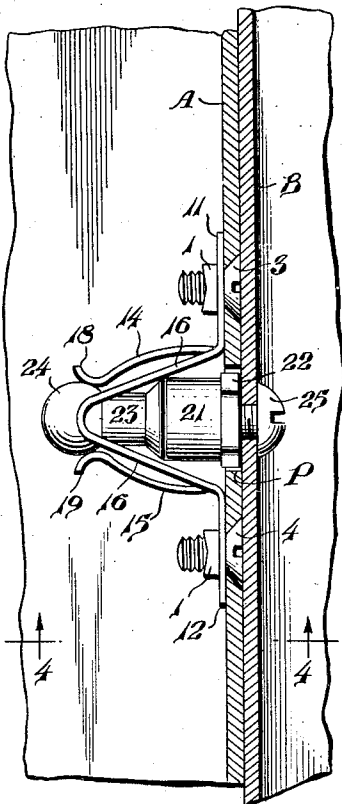
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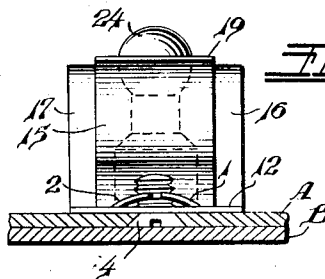
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SPRING CATCH

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13 Claims. (Cl. 292—17)

This invention deals with catches generally and relates, more particularly, to a spring catch for doors, drawers and similar swinging or sliding closures of cabinets or the like.

A primary object of the invention is to provide a catch of this character which is simple in construction, easy in operation and which is not easily broken or rendered inoperative through wear after an extended period of use.

Another principal object of the invention is to provide an improved form of spring catch which is constructed from an inexpensive section of sheet metal and provides a compact, simple form of device which, though light in weight, is extremely durable and thereby highly practical and especially adapted for use with light weight structures, especially sheet metal structures such as refrigerators, utility cabinets, stoves, ranges and the like.

A further object of the invention is to provide a catch which includes an improved form of spring keeper comprising a pair of resilient arms extending free from substantially the base of the keeper which is permanently secured to one of the side walls of a shelf or partition of a cabinet or the like, and designed to cooperate with a strike mounted on a door, closure or other part by a substantial cam wedging action by which the resilient arms are forced apart to receive the strike and frictionally and grippingly engage the same in holding position.

A more specific object is for the provision of an improved form of spring keeper constructed from a section of sheet metal which is bent to provide a foreshortened base portion from which cooperating spring arms may be provided to extend free from said base and receive therebetween a cooperating strike element in substantial snap fastening engagement therewith.

Still another object of the invention comprehends the provision of a sheet metal spring keeper having a foreshortened base portion from which may be formed relatively long spring arms having curved or rounded extremities adapted to receive and engage the rounded cam surfaces of a cooperating strike with a minimum of distortion and strain thereby minimizing possibility of breakage of the spring arms from crystallization.

Further objects and advantages of the invention and other new and useful features in the construction, arrangement and general combination of parts will be readily apparent to those skilled in the art as a description thereof proceeds with reference to the accompanying draw-

ing in which like reference characters designate like parts throughout the same, and in which:

Fig. 1 is a perspective of the improved spring keeper per se showing the foreshortened base portion thereof and cooperating spring arms provided therefrom;

Fig. 2 is an elevational view of the improved catch as mounted on a cabinet structure or the like in which the door is approaching its closed position and the strike carried thereby is about to engage the spring keeper;

Fig. 3 is a view similar to Fig. 2 showing the door in closed position with the strike engaged by the spring arms of the keeper; and,

Fig. 4 is a sectional view of Fig. 3 taken on line 4—4, looking in the direction of the arrows.

Referring now, more particularly, to the drawing, the catch construction of the present invention is shown in the form of a pair of substantial snap fastening members comprising a spring keeper 10, and cooperating strike 20, adapted to be mounted on a pair of opposed, abutting wall members A, B, of the usual cabinet casing and door or other closure therefor. The fastening members comprising the catch are so mounted in a completed installation that on closing of the door, they are practically concealed within the casing such that the respective wall members may be brought into substantial flush contact with each other to provide a uniform, substantially unbroken exterior appearance to the cabinet or other structure. A further advantage of the improved spring catch resides in the fact that the door or other closure is fully and tightly closed and under more than the usual amount of spring tension whereby looseness of the door in closed position is eliminated and squeaks, rattling and other objectionable noises are prevented.

It will be understood that the cooperating fastening members of the spring catch may be mounted as desired on any pair of separable, abutting wall surfaces but where employed as a door catch, they are, of course, preferably secured adjacent the superposed free edges of the door and casing.

As shown in Fig. 1, the spring keeper is simple in construction and thereby may be cheaply produced from an inexpensive section of sheet metal preferably tempered spring steel for most effective toughness and durability but, of course, may be provided from any other suitable material such as cold rolled steel and the like.

The strip or section of metal is suitably bent into a substantial, inverted V-shape between the

base flanges 11, 12 thereby forming a foreshortened base portion 13 comprising a substantially intermediate, projecting body from which may be provided a pair or more of relatively long, resilient spring arms 14, 15. It will be understood that the spring arms are provided from the strip by suitable longitudinal slits extending on either side of a transverse slit in the center area thereof such that when the strip is bent into the inverted V-shape aforesaid, the said spring arms extend free from the base flanges 11, 12 intermediate supporting elbows 16, 17. The spring arms are therefore disposed in substantial face-to-face relation and being resilient, are readily adapted to receive therebetween a strike element 20, Fig. 2, designed to gradually spread the spring arms apart and permit the same to spring into holding position with a projecting head element provided thereon, as presently to be described. It will therefore be appreciated that this structure provides a most practical arrangement for a spring catch inasmuch as the respective parts thereof may be formed separately and from different materials such that the spring keeper may be constructed of resilient metal and the strike provided from any suitable, inexpensive non-resilient material.

A resilient keeper of the type just described is preferably formed with the spring arms 14, 15 thereof inclined toward each other and slightly bowed, as shown, with the extremities thereof spaced a suitable distance apart and curved or rounded, as at 18, 19 to provide substantial lip elements adapted to permit the head of the cooperating strike to readily enter and seat therebetween on being applied thereto in one direction and be easily withdrawn therefrom upon movement in an opposite direction. The spring arms are supported in their inclined relation to each other by the elbows 16, 17 and also by the base flanges 11, 12 which fixedly secure the entire keeper to the supporting surface and thereby maintain the spring arms in operative position at all times to receive and effectively hold the cooperating strike therebetween.

Inasmuch as the keeper is preferably constructed of sheet metal, the base flanges 11, 12 thereof are admirably suited for the provision of integral bolt or screw engaging means in the form of cooperating tongues 1, 2, or the like, which may be struck and formed therefrom and designed for engaging a securing bolt or screw substantially in the manner of a self locking nut. Such integral bolt receiving means in the base flanges may, of course, be provided in any other suitable form or construction depending on the strength required and the use to which the device is put, so long as the elements thereof threadedly engage the bolts as they are driven home. However, it has been found that such bolt receiving means prepared in the form of cooperating tongues, as shown, are the most efficient and most practical in that they are possessed of unusual inherent strength and will not collapse or pull through on tightening of the bolt nor loosen from fastening engagement under constant strain, heavy usage and rough handling of an installation in which they are employed. This takes place by reason of the fact that such tongues tend, more effectively, to move toward each other and dig into the grooves intermediate adjacent threads on tightening of the bolt or screw and thereby become embedded in the root diameter of such threaded member in locked, frictional fastening engagement therewith. Thus, any vibration, jarring or strain taking place

in a completed mounting cannot cause displacement, reverse rotation or tend toward unscrewing of the threaded fastening member from applied fastening position. It will therefore be appreciated that in the provision of such integral bolt receiving means, the use of individual threaded nuts or lock washers of any kind is entirely dispensed with thereby making for a considerable saving not only in the cost of such nuts and lock washers, but also materially reducing the expense and labor involved in the tedious, time-consuming assembling operations which such fastenings require.

Referring to Fig. 2 it will be understood that the resilient keeper thus provided is easily and quickly mounted on the wall member A by its base flanges 11, 12 through such bolt engaging means 1, 2 in threaded fastening engagement with securing bolts or screws 3, 4. The heads of the securing bolts are preferably countersunk such that the exterior of said wall member is a substantial plane surface against which the abutting wall member B may be brought into close, flush contact therewith.

In mounting the keeper, a passage P, for the cooperating strike is provided in the wall member and the keeper, of course, suitably adjusted thereon such that the spring arms 14, 15 thereof are in substantial alignment with such passage in position to receive evenly and uniformly therebetween the head of the cooperating strike mounted on the abutting wall member B.

The strike 20, Fig. 2, may be provided in any suitable form for cooperative engagement with the spring arms of the keeper and, of course, may be constructed from either resilient or non-resilient material. A preferred form of strike is illustrated and comprises a solid body portion 21 provided with a tool engaging surface 22 and a reduced shank 23 formed with a substantial annular or ball-type projecting head element 24. The said body portion of the strike being solid, is readily tapped to provide an internal thread adapted to receive a bolt fastening 25 for mounting the same in desired position on the wall member B.

With the resilient keeper and cooperating strike mounted on their respective wall members in the manner aforesaid, it will be understood that such fastening members are thereby arranged to be moved into and out of snap fastening engagement by substantial straight longitudinal or axial movement as indicated by the arrow in Fig. 2. During this movement, by reason of the annular or ball shaped configuration of the striker head 24, the spring arms of the keeper are caused to gradually spread apart and permit said head to pass therebetween and seat the rounded undersurfaces thereof on the rounded contact surfaces 18, 19, of the spring arms in the fully closed position of the abutting wall members substantially as shown in Figs. 3 and 4. In this relation, it is to be noted that the passage P, provided in the wall member A, is of such size as to fully receive the strike in holding position wherefor the abutting wall members may be disposed in close, flush engagement to permit the door or other closure to be fully and tightly shut and otherwise present a substantially smooth, unbroken appearance to the cabinet, casing or other structure.

As illustrated in Fig. 3, the actual contact elements of the improved catch consists of the rounded surfaces of the lip elements 18, 19 of the keeper and the rounded surfaces of the annular or ball-type head 24 of the strike. Thus the strike is adapted to effectively engage the spring

arms in limited angular relation if necessary, in what may be termed a universal contact, and accordingly, the keeper and strike may be mounted in various relative positions to have a wide range of use on different types of cabinets and similar structures. A further advantage resides in the fact that should the keeper and strike be somewhat misaligned to cause the striker head to move one of the spring arms more than the other, such inaccuracy is readily compensated for by the engagement of the rounded surfaces of the striker head in universal, close contact with the curved, rounded surfaces of the lips 18, 19 of the spring arms. This arrangement together with the foreshortened base construction of the keeper providing for relatively long spring arms, prevents undue distortion and strain in the spring arms and otherwise minimizes danger of fracture of the same by reason of crystallization incident to continuous wear over an extended period of use.

In releasing the members of the catch from the fastening position shown in Fig. 3, a substantial axial pull exerted on the strike causes the rounded undersurfaces of the ball-type head portion 24 thereof to cam the rounded surfaces of the curved lips 18, 19 of the spring arms to spread the same apart and thereby permit the strike to be disassociated from the keeper and easily and quickly withdrawn to the open position of the door or other closure.

While this invention has been described in detail with a specific example such example is illustrative only, since it will be apparent to those skilled in the art that other modifications within the spirit and scope of the invention may be constructed without departing from the teachings or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed is:

1. In a catch construction of the class described, a keeper mounted on a wall member having a strike passage provided therein, said keeper comprising a section of sheet metal having a bend providing a foreshortened base and means for mounting the same onto said wall member, a pair of yieldable spring arms provided from said foreshortened base and disposed in substantial alignment with said strike passage, said spring arms being adapted to engage a cooperating strike mounted on a second wall member and receivable in said strike passage to be engaged by said spring arms of the keeper in holding said wall members in substantially abutting relation.

2. In a catch construction of the class described, a keeper mounted on a wall member having a strike passage provided therein, said keeper comprising a section of sheet metal having a bend providing a base flange for mounting the same onto said wall member and a foreshortened base presenting a substantially intermediate projecting body portion comprising a pair of yieldable spring arms struck and formed therefrom, said spring arms being provided with cam surfaces disposed in substantial alignment with said strike passage, said spring arms being adapted to engage a cooperating strike mounted on a second wall member and receivable in said strike passage to be engaged by said cam surfaces on the spring arms of the keeper in holding

said wall members in substantial abutting relation.

3. In a catch construction of the class described, a keeper mounted on a wall member having a strike passage provided therein, said keeper comprising a base flange for mounting the same onto said wall member and a foreshortened base presenting a substantially intermediate projecting body portion comprising a pair of relatively long, yieldable spring arms struck and formed therefrom and disposed in substantial alignment with said strike passage, said spring arms being adapted to engage a strike mounted on a second wall member and receivable in said strike passage to be engaged by said spring arms of the keeper in holding position, said spring arms having portions thereof in substantial face to face relation providing blunt contact surfaces engaging said strike by substantial cam action.

4. In a catch construction of the class described, a keeper mounted on a wall member having a strike passage provided therein, said keeper comprising a sheet metal device having a base flange provided with integral fastener receiving means for mounting the same onto said wall member, said keeper having a foreshortened base presenting a substantially intermediate projecting body portion, said body portion having struck and formed therefrom a pair of relatively long, spring arms disposed in substantial alignment with said bolt passage and provided with curved portions presenting rounded contact surfaces, said spring arms being adapted to engage a cooperating strike mounted on a second wall member and fully receivable in said strike passage to engage said spring arms of the keeper in holding said wall members in close, substantially flush engagement in abutting relation, said strike having a substantial ball-type projecting head presenting rounded contact surfaces adapted for substantial snap fastening engagement with the rounded contact surfaces on said spring arms.

5. In a spring catch, a keeper for receiving and holding a cooperating strike, said keeper comprising a piece of sheet metal having a bend providing a body comprising a pair of spaced body sections projecting from the base thereof, said spaced body sections having bodily fashioned therefrom a pair of yieldable strike engaging elements having portions thereof disposed in substantial face to face relation and designed for frictionally and grippingly engaging said strike in holding position.

6. In a spring catch, a keeper for receiving and holding a cooperating strike, said keeper comprising a piece of sheet metal having a bend providing a foreshortened base presenting a substantially V-shaped body comprising a pair of spaced body sections receiving said strike, said spaced body sections having bodily fashioned therefrom a yieldable strike engaging element having a face portion thereof designed for frictionally engaging said strike by substantial cam action.

7. In a spring catch, a keeper for receiving and holding a cooperating strike, said keeper comprising a piece of sheet metal having a bend providing a body comprising a pair of spaced body sections receiving said strike, said spaced body sections having bodily fashioned therefrom a pair of yieldable strike engaging elements having portions thereof disposed in substantial face to face relation, said portions having substantial blunt cam surfaces spaced apart a distance less than the diameter of the strike and designed for

frictionally and grippingly engaging said strike in holding position.

8. In a spring catch, a keeper for receiving and holding a cooperating strike, said keeper comprising a piece of sheet metal having a bend providing a body comprising a pair of spaced body sections, said spaced body sections having bodily fashioned therefrom a pair of yieldable strike engaging elements having the free end portions thereof disposed in substantial face to face relation and having substantial cam lips presenting blunt contact surfaces designed for frictionally and grippingly engaging said strike.

9. In a spring catch of the class described, a keeper for receiving and holding a cooperating strike, said keeper comprising a piece of sheet metal having a bend providing an attaching flange and a foreshortened base including a substantially V-shaped body, said substantially V-shaped body comprising a pair of spaced body sections projecting from said flange and receiving said strike, said spaced body sections having bodily fashioned therefrom a pair of yieldable strike engaging elements having the free end portions thereof disposed in substantial face to face relation, said free end portions of the strike engaging elements having substantial cam surfaces designed for frictionally and grippingly engaging said strike.

10. In a spring catch, a keeper mounted on a wall member for receiving and holding a cooperating strike on a part to be secured in latched relation to said wall member, said keeper comprising a section of sheet metal providing a body having a pair of strike engaging elements bodily fashioned therefrom, said body having a foreshortened base provided by a bend between the points at which said strike engaging elements are integral with the body, said bend causing portions of said strike engaging elements to be disposed in substantial face to face relation for frictionally and grippingly engaging said strike.

11. In a spring catch, a keeper mounted on a

wall member for receiving and holding a cooperating strike on a part to be secured in latched relation to said wall member, said keeper comprising a section of sheet metal providing a body having a pair of strike engaging elements bodily fashioned therefrom, said body having a foreshortened base provided by a bend between the points at which said strike engaging elements are integral with the body, said bend causing the end portions of said strike engaging elements to be disposed in substantial face to face relation, said end portions having substantial cam surfaces for frictionally and grippingly engaging said strike.

12. In a spring catch, a keeper mounted on a wall member for receiving and holding a cooperating strike on a part to be secured in latched relation to said wall member, said keeper comprising a section of sheet metal providing a body having a pair of strike engaging elements bodily fashioned therefrom and attaching flanges on opposite sides of said body, said body having a foreshortened base provided by a bend between the points at which said strike engaging elements are integral with the body, said bend causing the end portions of said strike engaging elements to be disposed in substantial face to face relation, said end portions having substantial cam surfaces for frictionally and grippingly engaging said strike, said attaching flanges being fixedly secured with respect to the wall member thereby preventing said body from losing its initial bent configuration under force incident to engaging or disengaging said strike and strike engaging elements.

13. In a spring catch, a keeper for engaging a cooperating strike, said keeper comprising an originally plate-like body having a pair of elements in end to end relation originally, said body having a bend in the region of said elements causing said elements to be disposed in face to face position in the bent condition of the body whereby the elements may frictionally engage the strike to retain the same in holding position.

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