

April 29, 1958

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2,832,622

ROLLER-TYPE DOOR CATCHES

Filed Feb. 8, 1956

2 Sheets-Sheet 1

FIG. 1

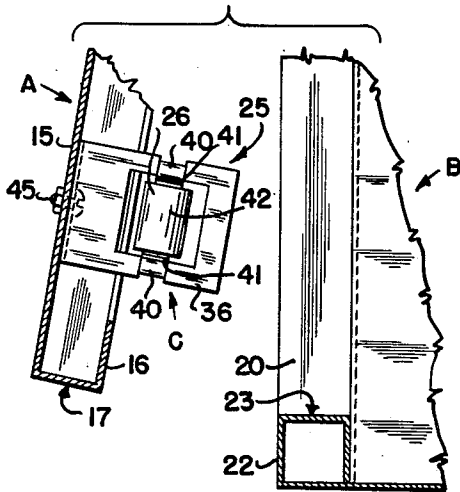


FIG. 2

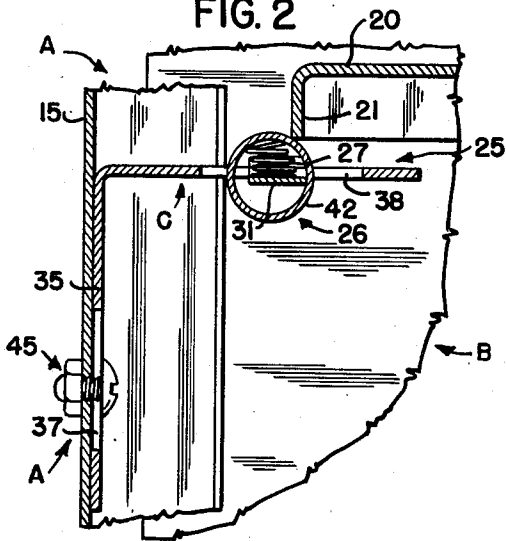


FIG. 4

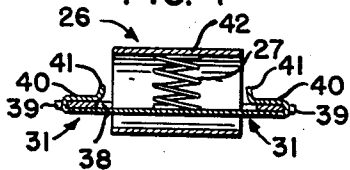


FIG. 3

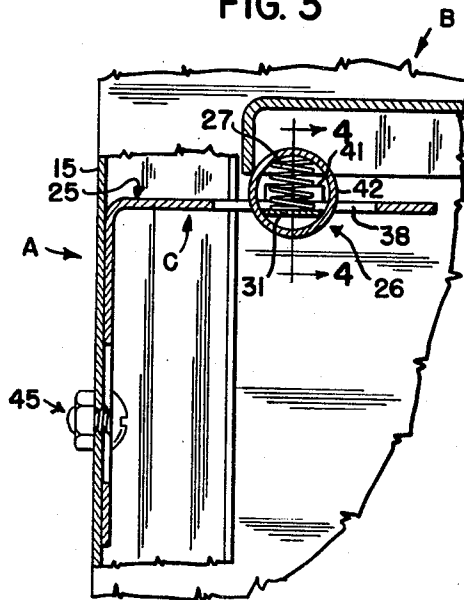
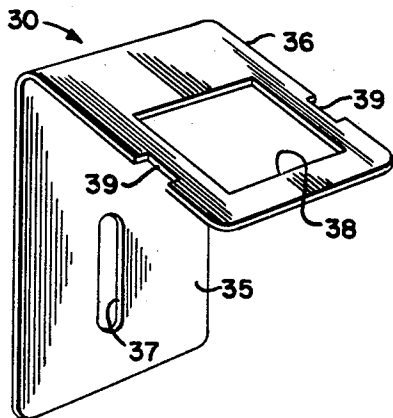


FIG. 5



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FIG. 6

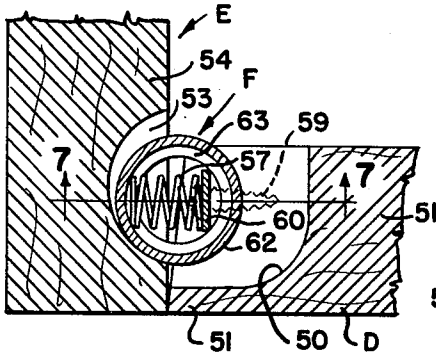


FIG. 7

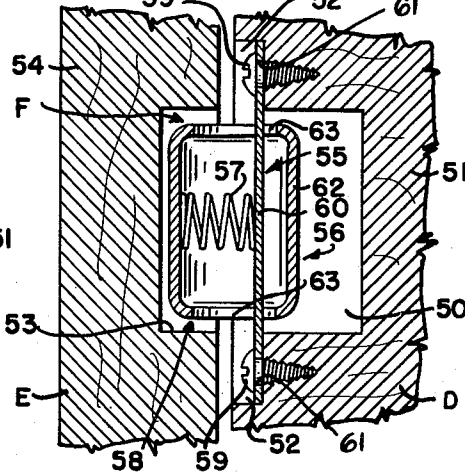


FIG. 8

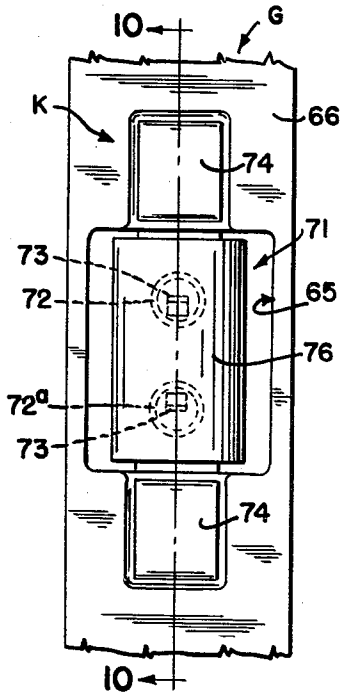


FIG. 9

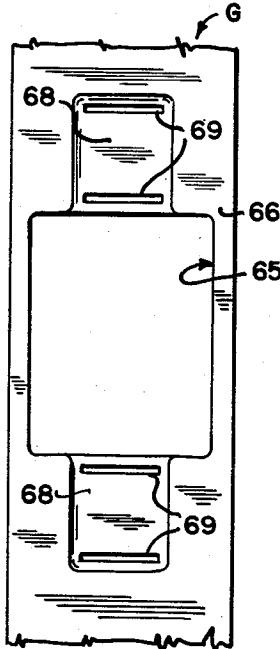
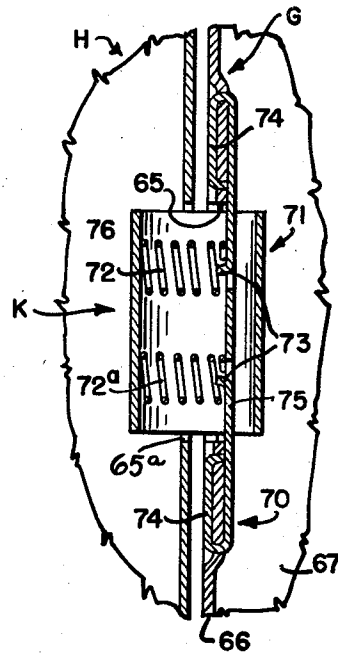


FIG. 10



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ROLLER-TYPE DOOR CATCHES

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9 Claims. (Cl. 292—73)

This invention relates to closure fasteners and more particularly to roller-type door catches.

An important object of the invention is to provide a resiliently-urged roller-type door catch, the roller or detent of which will not be apt to bind, since it will not only reciprocate transversely in a direction normal to its axis of rotation but will also oscillate, thus providing play to render the closure with which it is associated easier to open or close because in pulling the closure to an open position, the roller will bodily give somewhat, before the compressing action is applied to the resilient means and, in closing, the roller will also bodily give somewhat before this compressing action is applied.

Another important object of the invention is to provide a roller-type door catch, as described above, the roller of which may tilt, in addition to the motions stated above, whereby it will roll over a slanting or uneven surface and may enter a keeper or the like which also has a slanting or uneven surface, and retain a closure in a closed position.

A further important object is to provide a resiliently-urged roller-type door catch which, because of its construction, permits the resilient means to be housed wholly within a tubular or hollow roller, whereby the overall size of the catch is reduced, and this permits the catch structure to occupy a relatively shallow recess in association with a closure. Since the resilient means is housed wholly within the roller the former is protected against damage.

An additional important object is to provide a resiliently-urged roller-type door catch which preferably comprises, at the maximum, but four simple portions, exclusive of means to attach the catch to a support, and may comprise only three portions, with one of the portions additionally functioning as means to attach the catch to a support.

Other objects and advantages of the invention will be apparent during the course of the following detailed description of the invention, taken in connection with the accompanying drawings, forming a portion of this disclosure, and in which drawings:

Fig. 1 is a fragmentary view, partly in horizontal section, illustrating one form of the catch associated with a partly swung shut closure for a cabinet or the like and for association with a fixed portion of the cabinet, as a shelf thereof.

Fig. 2 is a vertical section enlarged over the showing in Fig. 1 with the closure nearly closed.

Fig. 3 is a vertical section, quite similar to Fig. 2 but with the closure in a closed position.

Fig. 4 is a vertical section of the catch of Fig. 1, substantially on the line 4—4 of Fig. 3.

Fig. 5 is an enlarged view in perspective of a bracket portion of the catch of Figs. 1—4.

Fig. 6 is a vertical section of a modified form of the catch associated with a closure and a fixed portion of a structure closed by the closure.

Fig. 7 is a horizontal section of the same, substantially on the line 7—7 of Fig. 6.

Fig. 8 is a plan view of a third form of the catch, attached to the edge portion of a closure.

Fig. 9 is a plan view of the edge portion of the closure of Fig. 8.

Fig. 10 is a vertical section, substantially on the line 10—10 of Fig. 8.

In the drawings, wherein for the purpose of illustration are shown three forms of the invention and wherein similar reference characters designate corresponding parts throughout the several views, the letter A designates a closure, and B a fixed portion of a structure closed by the closure A, while C designates the catch therefor; D designates a closure and E a fixed portion of a structure closed by the closure D, while F designates the catch therefor; G designates a closure and H a fixed portion of a structure closed by the closure G, while K designates the catch therefor.

The closure A may be a conventional pressed metal door of a cabinet and includes a front wall 15 and end flange 16 having an edge face 17, while the fixed portion B may be a conventional pressed-metal shelf 20 of a cabinet with downturned flange 21 and the portion B being provided with a stile 22 having a face 23 to partly frame the opening of the cabinet and slidably receive the face 17 when the closure A is in a closed position. The flange 21 and adjacent part of the body of the shelf define an opening or keeper for the tubular detent member.

Referring now to the catch C, the same includes support means 25, detent means 26 and resilient means 27 for the detent means 26.

The support means 25 comprises a bracket portion 30 and resilient means-supporting portion 31. Preferably the bracket portion 30, best shown in Fig. 5, is a suitable metallic strip formed, as being bent, into a right-angular shape to provide a leg 35 and arm 36, and the former is preferably provided with a longitudinally-extending slot 37 to receive a portion of means to secure the catch C to, for example, the closure A. The arm 36 is provided with a detent-receiving opening 38 and a pair of preferably small recesses 39 extending from the opposite edges of the arm 36 toward each other and toward the opening 38 and adapted to receive doubled-over end parts 40 of the portion 31 to be next described.

The resilient means-supporting portion 31 of the support means 25 comprises a narrow strip or length of preferably thin but strong metal, such as steel, bridging the opening 38 with the longitudinal axis of the strip or length substantially coincident with the axis of the opening 38 which last-named axis extends through the recess 39. The end parts 40 of the strip or length extend snugly into the recesses and are then doubled over to be positioned substantially as in Fig. 4 to overlap portions of the arm 36 adjoining the recesses 39 and with their extremities turned or bent upwardly to form stop means 41 for a purpose later detailed.

The detent means 26 is a tubular detent member 42, as a tube of copper, with an exterior diameter and length less than the width and length of the opening 38. By way of example only, I may provide a tubular detent member, with outer diameter of substantially three-eighth inch and length of slightly less than one-half inch, with the opening substantially one-half inch each way.

The tubular detent member 42 is floatably mounted upon the resilient means-supporting portion 31 as by a conventional expansion helical spring which may form the resilient means 27. One end of the spring is adapted to bear against the inner face of the tubular detent member 42 intermediate the ends of the latter, and the other end

of the spring seats upon the resilient means-supporting portion 31 intermediate the ends of the latter. This association of parts permits the tubular detent member 42 to float within the opening 38 and project therefrom as, for example, in Fig. 4, since the fully expanded spring is less in length than the interior diameter of the tubular detent member 42, as may be appreciated in Fig. 3, the spring will urge the tubular detent member 42 outwardly in one direction until the interior face of the latter contacts the longitudinal edges of the portion 31, whereby the portion 31 additionally functions as stop means.

The stop means 41 aid in preventing the spring from becoming separated from the tubular detent member 42 and the portion 31.

Assembly of the tubular detent means 26, resilient means 27 and resilient means-supporting portion 31 may be readily effected by sliding the spring and straightened-out portion 31 into the tubular detent member and then doubling the end parts 40 of the portion 31 as in Fig. 4 so as to detachably secure the portion 31 to the arm 36.

Means 45 for fixedly attaching the catch C to the structure, as the closure A, may be a conventional nut and bolt assembly with the shank thereof extending through a suitable opening provided in the wall 15 and through the slot 37, whereby the support means 25 may be adjusted for instance in order to provide proper engagement of the tubular detent member 42 with the flange 21.

In Fig. 2 it will be noted that the tubular detent member 42 has contacted the bottom edge of the flange 21 and has moved, from its normal position, (i. e. its position as in Fig. 3) both toward the bottom and toward the left of Fig. 2, as is evidenced by the condition and position of the spring of the resilient means 27 of Fig. 2. That is, the tubular detent member has not only a reciprocatory up-and-down yielding motion but also a second yielding or oscillating motion. In addition it has a third or tilting motion as is clear in Fig. 4. The second yielding or oscillating motion tends to prevent binding of the detent means and jarring of the closure at all times but especially when a closure to which it is attached is shut or opened hurriedly.

With reference to the catch F of Figs. 6 and 7, this may be associated with a closure D and fixed portion E of a structure closed by the closure D, in which the closure D and portion E may be of wood and the former provided with a recess or opening 50 in edge and rear portions of the closure wall 51, which recess or opening is somewhat T-shaped longitudinally as may be seen in Fig. 7 so that there is a pair of shallow minor recesses 52 to either side of the main or larger and deeper recess, and the fixed portion E is provided with an opening or arcuate recess or keeper 53 extending into a portion 54 as a stile. The larger recess bears a relationship to the detent means 56 to be described as the opening 38 bears to the detent means 26.

The catch F of Figs. 6 and 7 is somewhat like the catch C since it has support means 55, detent means 56, resilient means 57, stop means 58 and means 59 for fixedly attaching the catch F to a structure, as the closure D.

Support means 55 comprises the resilient means supporting portion 60 which may be a narrow strip or length of preferably thin but strong metal, as steel, bridging the opening 50 and with the end parts of the strip disposed upon the bottoms of the shallow or minor recesses 52 and each end part provided with an opening 61 to accommodate portions of the means 59 as will be subsequently explained.

The detent means 56 is a tubular detent member 62, as a tube of copper, with an exterior diameter and length less than the width and length of the opening 50 so as to function as does the detent means 26. The tubular detent member 62 of the means 56 may have its edge parts turned inwardly to provide narrow flanges 63 to function as stop means 58 as does the stop means 41.

The resilient means 57 may be exactly like and function as does the resilient means 27.

Means 59 for removably securing the catch F to a structure, as the closure D, may be screws, with portions of the shanks thereof extending through the openings 61 and into the closure wall 51 at the minor recesses 52.

As for the catch K of Figs. 8, 9 and 10 for association with the edge portion of a closure G and a fixed portion H of a structure as a pressed metal cabinet, this catch may be attached to the closure G for example by providing an opening 65 in the flange 66 of the closure wall 67 and a pair of depressions or minor recesses 68 in the flange 66 and extending from and preferably narrower than the opening 65. Each recess 68 is provided with a pair of spaced-apart parallel transversely extending slots 69 extending through the flange 66 substantially as shown in Figs. 9 and 10, while the fixed portion H is provided with an opening or keeper 65a which functions as does the opening or keeper 53 and the opening defined by the flange 21 and adjacent part of the body of the shelf 20.

The catch K comprises support means 70, detent means 71, resilient means 72 and 72^a and stop means 73 and may be detachably secured to the closure G as by means 74.

Support means 70 comprises the resilient means-supporting portion 75 which may be a narrow length or strip of preferably thin but strong steel or the like, bridging the opening 65 and with portions of the end parts thereof disposed in the recesses 68. However, the extreme terminal portions of the end parts are inserted through the outermost of the slots 69 and into the innermost of these slots as may be seen in Fig. 10, with the extreme terminal portions doubled over, and this provides the means 74.

The detent means 71 may be exactly like the means 26, although the tubular detent member 76 may be longer than the member 42. It bears a relationship to the opening 65 as the opening 38 bears to the detent means 26 and the larger recess or opening of the T-shaped recess 50 bears to the detent means 56.

The resilient means 72 and 72^a is shown, in the example in Fig. 10 as two expansion helical springs, although but one may be employed if desired. In Fig. 10, the springs are disposed at substantially equal distances from the ends of the tubular detent member 76.

Stop means 73 may be a pair of lugs struck from the material of the strip or length of steel of the support means 70 to extend into the terminal convolution at one like end of each spring.

In each form of the invention, the resilient means-supporting portions 31, 60 and 75 is a length or strip of preferably narrow but strong metal and with the end portions of the lengths or strips of the portions 60 and 75 having additional functions which permit dispensing with the use of the bracket portion 30 without loss of the function of a member like this bracket. In each form of the invention, the portions 31, 60 and 75 limit outward movement of the detent means, since the side edges of the former are adapted to contact the inner faces of the tubular detent (as may be seen in Fig. 3 in connection with the portion 31).

Each form of the invention provides for total enclosure of the resilient means, 27, 57, 72 and 72^a within the respective tubular detent members, whereby the resilient means is protected against damage, yet any of the portions 31, 60 or 75 and their associated resilient means may be readily inserted into the associated tubular detent member.

In each form of the invention, the tubular detent member is resiliently urged to an operative detent position, such as in Figs. 3 or 10, for example, but the tubular detent member may also oscillate transversely, so as to take positions as in Fig. 2, for example, whereby binding or jarring is obviated at such times as the tubular detent member contacts the edge of a keeper.

Various changes may be made to the forms of the invention herein shown and described without departing

from the spirit of the invention or scope of the following claims.

What is claimed is:

1. A roller-type door catch including a cylindrical tubular detent roller open at both ends; support means, having a resilient means-supporting portion extending through said roller and outwardly of the ends thereof; resilient means for resiliently urging said roller into an operative detent position, said resilient means being disposed within said roller and being supported by said resilient means supporting portion and bearing against the interior surface of said roller; and attaching means for fixedly attaching said resilient means-supporting portion to a support.

2. A roller-type door catch as claimed in claim 1, characterized in that said resilient means-supporting portion is of substantially less width than the interior diameter of said roller, includes a substantially flat intermediate part upon which said resilient means is mounted, and the side edges of said intermediate part of said resilient means-supporting portion normally contact the inner face of said tubular detent roller.

3. A roller-type door catch as claimed in claim 1, characterized in that said support means also has a bracket portion, provided with a central opening, with said resilient means-supporting portion mounted upon said bracket and extending across said opening and with said roller disposed in said opening and normally free of the edge of said opening.

4. A roller-type door catch as claimed in claim 1, characterized in that said support means has a bracket arm provided with edge portions, a central opening and a pair of recesses in said edge portions adjacent to but spaced from said central opening, said resilient means-supporting portion being elongated and extending through said roller, said resilient means-supporting portion being mounted upon said bracket arm and extending across said opening with portions of the end parts of said resilient means-supporting portion disposed within said recesses, doubled over the adjacent edge portions and the terminals of said end parts outturned, whereby said outturned terminals provide stop means to retain said resilient means from accidental movement out of said roller.

5. A roller-type door catch as claimed in claim 1,

characterized in that said resilient means-supporting portion is elongated, and includes end parts, and said attaching means is disposed at each end part of said resilient means-supporting portion.

6. A roller-type door catch as claimed in claim 5 characterized in that the terminals of said end parts are outturned, whereby they provide stop means to retain said resilient means from accidental movement out of said roller.

7. A roller-type door catch as claimed in claim 1, characterized in that said tubular detent roller has flanges extending from said open ends toward the longitudinal axis of said tubular detent roller, whereby said flanges provide stop means to retain said resilient means from accidental movement out of said tubular detent roller.

8. A roller-type door catch as claimed in claim 1, characterized in that said resilient means-supporting portion is elongated, and is provided with end parts of bendable material whereby said end parts may be bent to extend through appropriate slots in a door frame.

9. The combination of a closure provided with an edge portion, a detent member-accommodating opening in said edge portion and a pair of openings in said edge portion outwardly of and spaced from said detent member-accommodating opening, and a roller-type door catch including a tubular detent member; support means, having an elongated resilient means-supporting portion extending through said tubular detent member and bridging said detent member-accommodating opening, means at the end parts of said resilient means-supporting portion for fixedly attaching said resilient means-supporting portion to said closure at said pair of openings; and resilient means for resiliently urging said tubular detent member into an operative detent position, disposed in and bearing against said tubular detent member and supported upon and bearing against said resilient means-supporting portion.

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