United States Patent

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[54] **BULLET CATCH**
4 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **292/71;** 292/74
[51] **Int. Cl.** **E05c 5/00,** E05c 19/02
[50] **Field of Search** ..... 292/71, 74, (PLP), 70, 73, 75, 14—16; 49/419; 70/(X1), (X2), (X3), (X4)

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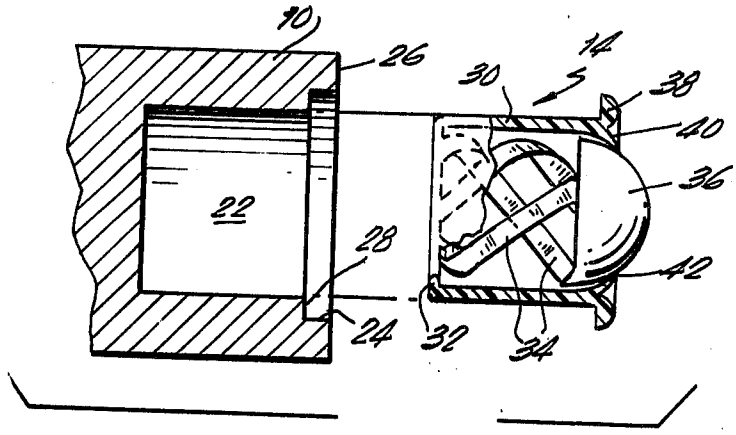
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Assistant Examiner—Robert L. Wolfe
Attorney—Kenneth S. Goldfarb

ABSTRACT: A one-piece integrally formed bullet catch preferably formed of nylon comprising an open ended cylindrical casing having an inwardly extending flange at one end and an outwardly extending flange at the other end. Helical springs are integrally formed with the inwardly extending flange and with a hemispherical head which extends partially through the opposite end and is resiliently held with the integral springs under compression by a swaged tapered retainer member which has a circular line of contact with the hemispherical head and which is resiliently engaged with the hemispherical head to hold the hemispherical head against accidental movement.



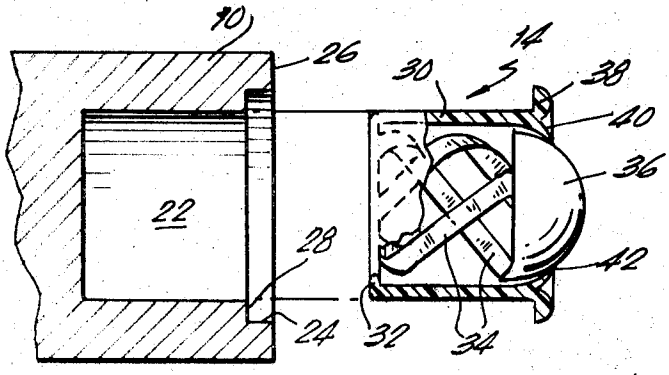


FIG. 1

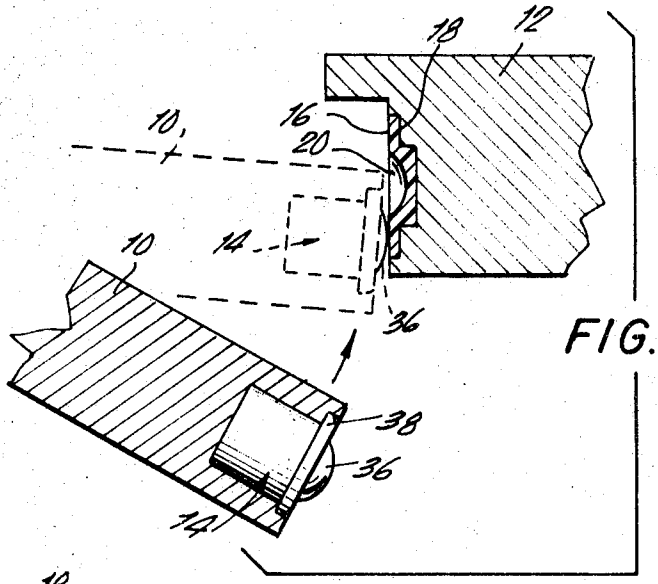


FIG. 2

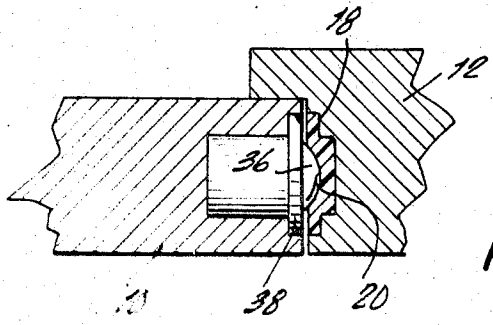


FIG. 3

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BULLET CATCH

This invention relates to a latching device, and more particularly to a novel one-piece bullet catch.

Various types of latching devices including bullet catches have been devised. These devices are usually formed of metal and are made of numerous pieces having separate springs, ball detents, casings, end walls, and the like. The separate manufacture of each of these elements and their assembly has proven costly. Further, the use of metal devices often results in the wearing of the wood or metal cabinets and the decorative finishes thereof.

In carrying out the object of the present invention which avoids the disadvantages of the prior art metal bullet catches and like latching devices, an integral one-piece bullet catch molded of nylon or other suitable synthetic plastic material is accomplished, it being recognized that the bullet catch can be colored all the way through so as to match the decorative finish of the cabinet or like device in which the bullet catch is employed, and which can be made more inexpensively while being adapted to withstand accidental disengagement due to vibrations and the like, because of a novel arrangement of a swaged tapered retainer member resiliently frictionally clampingly holding the hemispherical spring-pressed head.

Still further objects and features of this invention reside in the provision of a bullet catch that may be molded of nylon or like material, which does not require any assembly steps and only a single swaging operation to finish the product, which is effective in use, and highly attractive in appearance.

These, together with the various ancillary objects and features of the present invention, which will become apparent as the following description proceeds, are attained by this bullet catch, a preferred embodiment of which is illustrated in the accompanying drawing, by way of example only, wherein:

FIG. 1 is an exploded sectional view of the bullet catch comprising the present invention;

FIG. 2 is a horizontal sectional view through a door and associated member illustrating the manner in which the bullet catch functions; and

FIG. 3 is a view similar to FIG. 2 but showing the bullet catch in a closed position.

With continuing reference to the accompanying drawing, wherein like reference numerals designate similar parts throughout the various views, reference numeral **10** generally designates a closure such as the door of a kitchen cabinet **12** or the like with which the bullet catch generally designated by reference numeral **14** and comprising the present invention is adapted to be utilized.

The cabinet **12** has a latch member **16** disposed in a suitable recess **18** therein, the latch **16** being provided with a concave depression **20**. The latch member **16** may be molded from suitable material such as nylon or the like and may be secured to the kitchen cabinet **12** by means of any suitable fastening device or by bonding.

The closure **10** is provided with recess **22** therein which has an enlarged portion **24** immediately adjacent the edge **26** of the door **10** forming a shoulder **28**. The bullet catch **14** is adapted to be disposed in the recess **22** and secured therein by bonding, force fitting, or by fastening, and includes a cylindrical casing **30** having a flange **32** at its inner end with which a plurality of helical springs **34** are integrally formed. Also integral with the springs **34** is a hemispherically shaped catch head **36** which extends outwardly of the casing **30**. The casing **30** is open at both ends and a peripheral flange **38** extends about the forward end of the casing. This flange is adapted to seat against the shoulder **28** when the bullet catch is installed in the recess **22**. A swaging tool is used to form a swaged portion **40** which is pressed to partially close the forward opening in the cylindrical casing **30** and to provide a circular line of contact **42** with the sphere **36**. The swaged portion **40** is resilient so that an unusual result is obtained in that the force of the springs **34** will be sufficient to press the hemispherical head **36** against the resilient force exerted by the tapered heat swaged retainer member **40** which, as can be seen, is of a circular configuration terminating at a circular ring of contact **42**. This circular contact will cooperate with the force exerted by the springs **34** to maintain the hemispherical head **36** in its extended position and against accidental jarring of the door because of both frictional and clamping engagement with the tapered member **40** when in a closed position, thereby enhancing the closure provided when the hemispherical head **36** engages in the depression **20** as shown in FIG. 3. The helical springs **34** serve to rotate said head as it is urged into engagement with the member **40** to enhance the frictional clamping engagement and resistance to accidental opening due to vibration and the like.

The entire bullet catch assembly **14** may be molded out of nylon and after molding the only step necessary to be done is a heat-swaging step necessary to form the tapered member **40**.

A latitude of modification, substitution and change is intended in the foregoing disclosure, and in some instances, some features of the present invention may be employed without a corresponding use of other features.

I claim:

1. An integral one-piece bullet catch for a movable closure having a recess, and a fixed element having a catch member provided with a depression, comprising an open ended cylindrical casing in said recess, said casing having an inwardly extending flange at one end and an outwardly extending flange at the opposite end thereof, a hemispherical head adapted to seat in said depression, said head extending partially through said opposite end, spring means integral with said head and said inwardly extending flange, and a tapered resilient retainer member resiliently frictionally and clampingly engaging said head with said spring means under compression and with said retainer member being pressed outwardly.

2. A bullet catch according to claim **1**, wherein said member is circular and has circular contact with said head.

3. A bullet catch according to claim **1**, wherein said springs means include a plurality of separate spaced helical springs for rotating said head upon movement thereof.

4. A bullet catch according to claim **1**, wherein said member is circular and has circular contact with said head, said spring means including a plurality of separate spaced helical springs for rotating said head upon movement thereof to enhance engagement with said member to inhibit accidental opening due to vibration.