United States Patent [19]

Gulistan

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[45] **Dec. 30, 1975**

[54] **CABINET LATCH**

[75] Inventor: **Bulent Gulistan,** Malibu, Calif.

[73] Assignee: **Deutsch Fastener Corporation,** Los Angeles, Calif.

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Related U.S. Application Data

[63] Continuation of Ser. No. 409,152, Oct. 24, 1973, abandoned.

[52] **U.S. Cl.** **292/67**

[51] **Int. Cl.²** **E05C 5/00**

[58] **Field of Search** ..... 292/57–64, 292/67–69, 204, 240, 241; 16/2; 24/221 K; 85/1 K; 151/69

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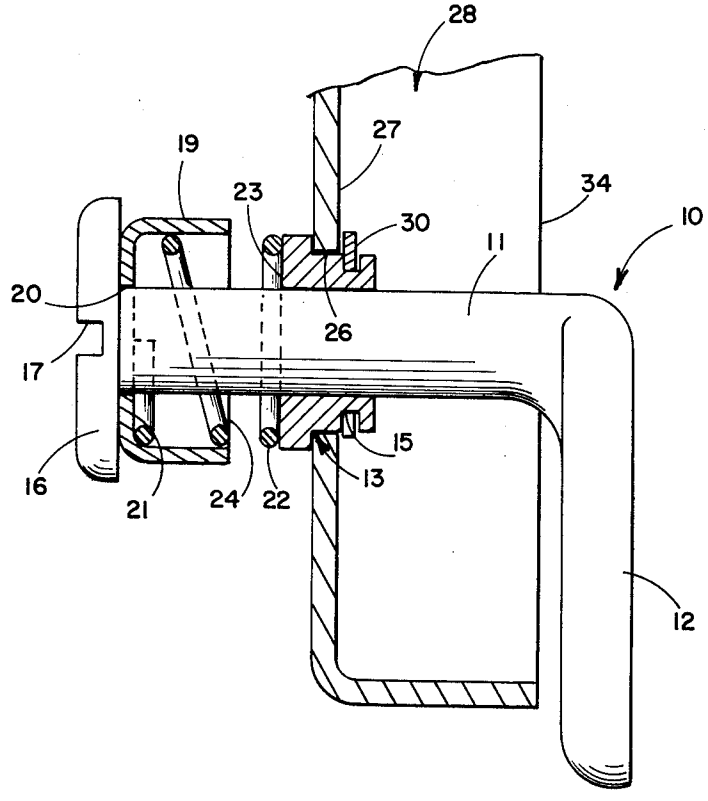
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Primary Examiner—Robert L. Wolfe
Attorney, Agent, or Firm—Gausewitz, Carr & Rothenberg

[57] **ABSTRACT**

A rotary cabinet latch including an L-shaped member, one end portion of which is rotatably and axially slidably received within a collar attachable to a workpiece, the outer end of this portion having a head with a spring interposed between the head and the collar to bias the L-shaped member in one direction.

2 Claims, 7 Drawing Figures



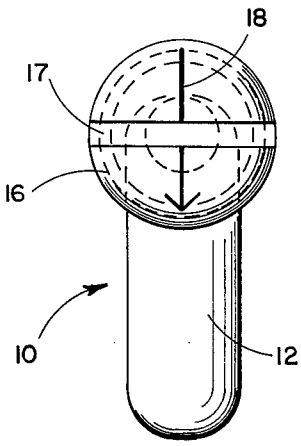


FIG. 2

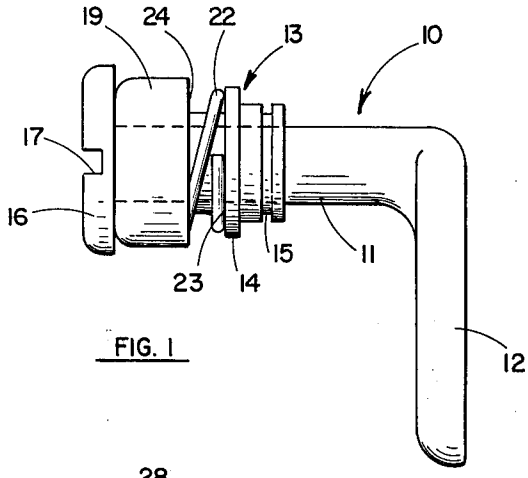


FIG. 1

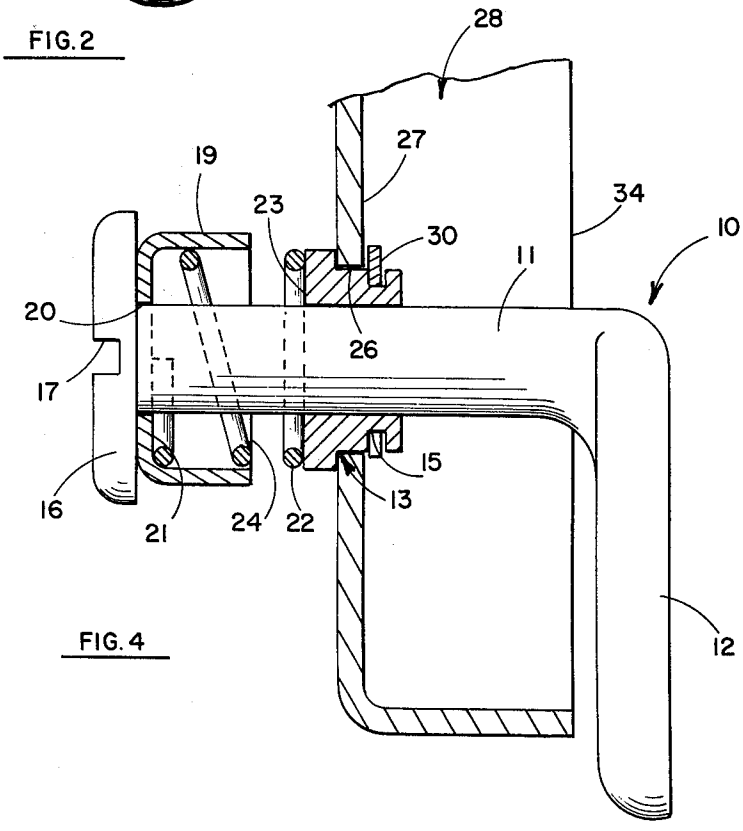


FIG. 4



FIG. 3

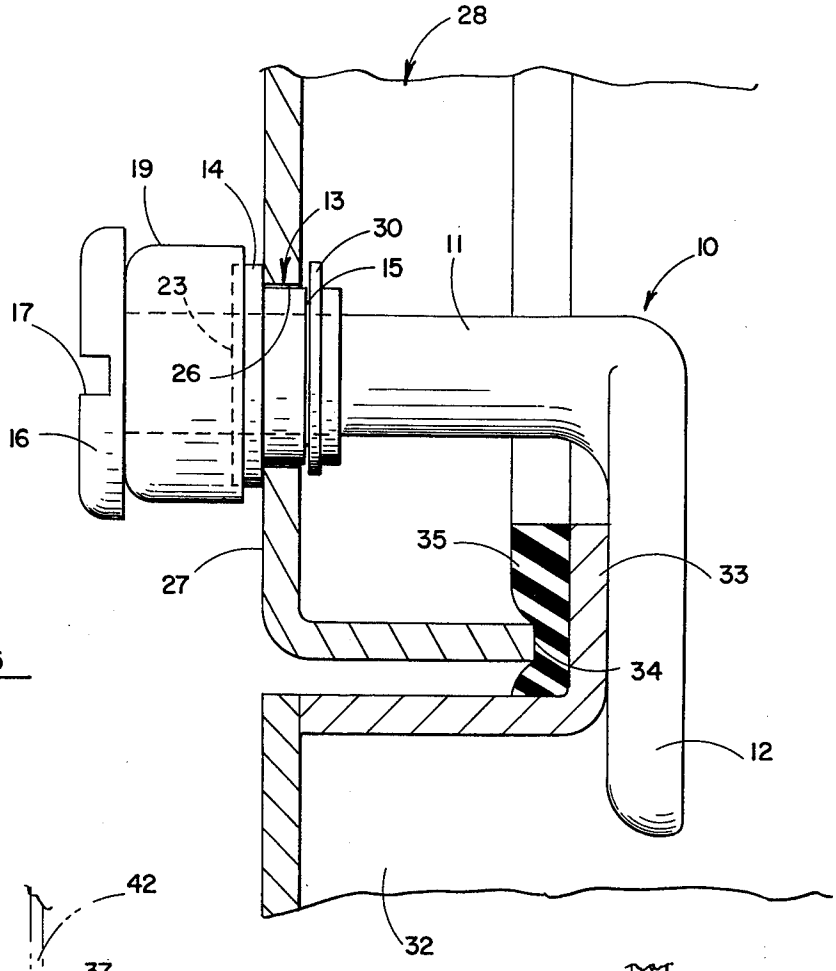


FIG. 5

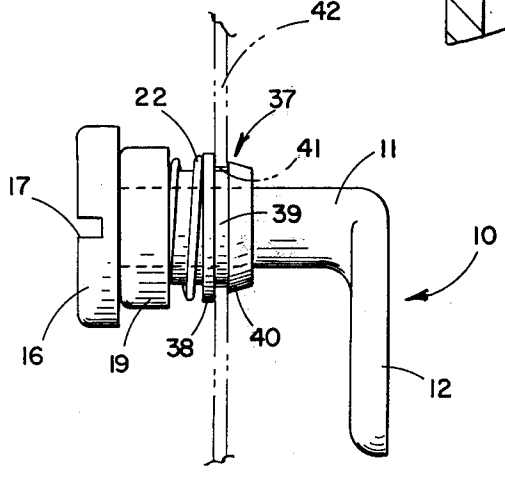


FIG. 6

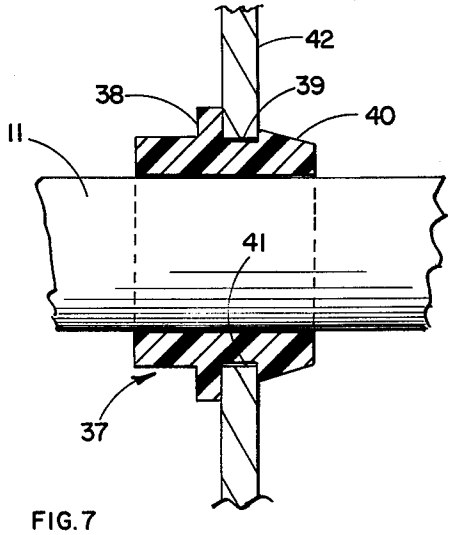


FIG. 7

CABINET LATCH

This is a continuation of application Ser. No. 409,152, filed Oct. 24, 1973 and now abandoned.

BACKGROUND OF THE INVENTION

1. Field of the Invention:

This invention pertains to a cabinet latch.

2. Description of Prior Art:

Rotary cabinet latches, such as those for electrical boxes, often have been complex, expensive to manufacture and difficult to install. Their grip lengths have been limited so that latch design must be tailored to enable the latch to fit a specific cabinet configuration. Improperly selected or designed latches will not hold the cabinet door tightly closed. Inventory requirements and costs are increased because of the variety of cabinet latches needed.

SUMMARY OF THE INVENTION

The present invention provides a simplified cabinet latch, easily and economically manufactured and readily attached to the cabinet door. It has a substantial range of grip lengths in a single latch configuration, enabling the latch to accommodate different cabinet designs, in all instances tightly holding the door closed when in the locked position.

The latch consists of an L-shaped catch, one portion of which is rotatably and slidably received in a collar or bushing. A head at one end of the portion that passes through the collar enables the catch to be turned so that its angular end accomplishes the locking of the latch. A cup-shaped member has an inner end wall adjacent the head which is apertured and receives the catch. Circumscribing the catch between the collar and the inner wall of the cup-shaped member is a compression spring which biases the angular end toward the collar and allows the latch to have its range of grip lengths.

The collar may be made of metal and secured to the cabinet door by a snap ring, thereby providing grounding to meet UL requirements. Where grounding is not required, the collar advantageously is made of a deformable plastic, with a tapered end and an intermediate groove. This allows the collar to be pushed into an opening in the cabinet door so that the door at the periphery of the opening can then be received in the groove to secure the latch assembly to the door. Thus, installation is very easily accomplished.

BRIEF DESCRIPTION OF THE DRAWING:

FIG. 1 is a side elevational view of the cabinet latch assembly;

FIG. 2 is an end elevational view of the cabinet latch;

FIG. 3 is a top plan view of the lock ring used in securing the latch assembly to a cabinet door;

FIG. 4 is a longitudinal sectional view showing the cabinet latch mounted on a cabinet door;

FIG. 5 is a side elevational view, partially in section, showing the cabinet latch holding the cabinet door in the secured position;

FIG. 6 is a side elevational view of a modified form of the latch assembly; and

FIG. 7 is an enlarged fragmentary longitudinal sectional view showing the mounting collar of the modified cabinet latch.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The cabinet latch of this invention includes an L-shaped catch member **10**, one end of which is circular in cross section, while the other end **12** is flattened. A collar **13** receives the portion **11** of the catch **10** so that it is both rotatable and axially slidable relative to the collar. The flattened end **12**, on the other hand, has a larger lateral dimension than the internal diameter of the collar **13**, so that the end **12** cannot enter the collar. At one end of the collar **13** is an outwardly projecting flange **14**. Spaced a short distance inwardly of the opposite end is an annular groove **15**. All portions of the collar **13** are circular in cross section.

An integral head **16** is at the outer end of the portion **11** of the catch **10**, the head being provided with a slot **17** to permit rotation by means of a screwdriver. Included on the head **16** is a marking **18** pointing in the direction of the angular end portion **12** of the catch **10**. This marking provides an exterior indicator to establish when the latch is in the locked position. The head **16** and the angular flattened end **12** prevent removal of the portion **11** of the catch from the collar **13**.

Adjacent the undersurface of the head **16** is a cup-shaped member **19**. The latter member has a central opening **20** in its inner wall **21** that receives the section **11** of the catch **10**. A compression spring **22** circumscribes the portion **11** between the inner wall **21** of the cup-shaped member **19** and the outer end surface **23** of the collar **13**. The internal dimension of the member **19** at its open end **24** is greater than the diameter of the flange **14** of the collar.

The latch device is associated with a door, which typically is the cover of an electrical box, as shown in FIG. **4**. To this end, a circular opening **26**, complementary to the central portion of the collar, is formed in the wall **27** of the door **28**. The collar **13** is fitted into the opening **26**, bringing the undersurface of the flange **14** into engagement with the outer surface of the wall **27** of the door **28**. This positions the annular groove **15** on the opposite side of the wall **27**. A snap ring retainer **30** is pressed into the groove **15**, with its periphery projecting outwardly beyond the surface of the collar to cooperate with the flange **14** in holding the collar to the wall **27**. The retainer **30** is C-shaped in plan, as shown in FIG. **3**, and is deflected outwardly slightly as the collar is forced into its interior, then springing back to be held on the collar. When the collar **13** and door **28** are made of metal, a grounding connection can be made by these elements.

As shown in FIG. **5**, the latch is in the locked position, holding the door **28** over the opening in a cabinet **32**. In this position, the end **12** of the member **10** is positioned in back of a frame member **33** at the periphery of the opening in the cabinet. The catch **10** is moved inwardly so that the open end **24** of the cup-shaped member **19** fits over the outer part of the flange **14**, concealing the spring **22**. At the same time, the forward edge **34** of the door bears against a gasket **35**, which is carried by the member **33** of the cabinet at the edge of the opening. The latch is held in this position by the force exerted by the compression spring **22**.

To assume the position of FIG. **5**, the head **16** of the member **10** is pushed inwardly and rotated to cause the angular end **12** of the member **10** to move away from the edge **34** of the door. This enables the door to be moved to the closed position. Then the member **10** is

rotated by the head **16** to position the end **12** in back of the member **33,** as shown. Upon release of the head **16,** the compression spring pushes outwardly, or to the left as the device is illustrated, on the abutment formed by the inner wall **21** of the cup-shaped member **19** and the head **16.** This biases the end portion **12** against the frame member **33** of the cabinet **32.** As a result, the edge **34** of the door, on the other side of the portion of the frame engaged by the catch end **12,** is forced tightly against the gasket **35.**

The spring, by holding the end **12** of the member **10** against the member **33,** provides a force resisting rotation of the member **10** so that it will be retained in its locked position. Nevertheless, it is a simple matter to engage the head **16** by a screwdriver at the slot **17** and rotate the catch **10** so as to release it.

Variations in grip length may be tolerated because of the ability of the catch member **10** to move axially relative to the collar **13** and the presence of the spring force to cause such movement. In other words, the spring **22** will move the end **12** of the catch toward the collar **13** to hold it in engagement with the edge of the door over a range of distance between the collar and the member **33.**

The modification of FIGS. **6** and **7** utilizes a collar **37** of a deformable plastic material, such as nylon, and eliminates the need for the snap ring **30** to hold the collar to the door panel. The nylon collar **37** includes a flange **38** inwardly of one end, adjacent which is an annular groove **39.** From the groove, there is a frustoconical portion **40** tapering toward the opposite end of the collar. The remaining components of the latch are the same as in the previously described embodiment. The compression spring **22** bears against the outer face of the flange **38,** with the circumferential surface of the collar outwardly of the flange centering one end of the spring.

The collar **37** is installed in the door panel by pushing it through the opening in the panel. Thus, as in the construction of FIGS. **6** and **7,** the apical end of the frustoconical portion **40** of the collar is dimensioned so that it can enter the opening **41** in the door panel **42.** The collar **37** then is pushed into the opening **41,** which deflects the material of the collar as the tapered surface is advanced. This permits the panel at the periphery of the opening **41** to enter the annular groove **39** of the collar. The material of the frustoconical portion **40** then returns to its free position, providing a radial surface at the edge of the groove **39** to cooperate with the flange **38** and hold the collar to the door panel **42.**

The foregoing detailed description is to be clearly understood as given by way of illustration and example only, the spirit and scope of this invention being limited solely by the appended claims.

I claim:

1. In combination with a door having a panel, said panel having an opening therethrough, a latch device for said door comprising

a collar having

an intermediate portion received in said opening,

a flange exteriorly of said opening at one end thereof overlapping and engaging one side of said panel,

an annular groove exteriorly of said opening at the opposite end thereof, and an aperture extending axially therethrough,

a snap ring having an inner portion received in said groove and an outer portion projecting beyond said groove for engaging the opposite side of said panel and cooperating with said flange in holding said collar to said panel,

a one-piece substantially L-shaped member having

a first portion extending through said aperture and a second portion at an angle to said first portion and positioned outwardly from said opposite side of said panel,

said first portion of said substantially L-shaped member being cylindrical and being substantially complementarily received in said aperture, so that said collar at said aperture guides said first portion for axial and rotational movement relative to said collar,

a head projecting laterally outwardly from the end of said first portion opposite from said second portion for providing a means for imparting rotation to said L-shaped member,

said head having an undersurface facing said panel,

a cup-shaped member having an inner transverse wall having an opening receiving said first portion and in juxtaposition with said undersurface of said head, said head being entirely exteriorly of said cup-shaped member and beyond said inner transverse wall thereof, and a compression spring one end of which engages said inner wall of said cup-shaped member and the opposite end of which engages the outer surface of said flange of said collar,

for thereby biasing said cup-shaped member, said head and said L-shaped member to a first position where said head is spaced outwardly from said one side of said panel and said cup-shaped member is spaced outwardly from said flange of said collar with a portion of said compression spring being exposed between said cup-shaped member and said flange of said collar,

said substantially L-shaped member, head and cup-shaped member being movable in opposition to said spring to a second position in which said head is relatively closer to said one side of said panel,

said cup-shaped member having a larger lateral dimension than that of said flange of said collar, whereby when said cup-shaped member is in said second position said flange of said collar is received in said cup-shaped member and said compression spring is concealed.

2. In combination with a door having a panel, said panel having an opening therethrough, a latch device for said door comprising

a collar of deflectable plastic material having

an intermediate portion received in said opening,

a first flange exteriorly of one end of said opening overlapping and engaging one side of said panel,

a second flange of smaller outside diameter than said first flange exteriorly of the opposite end of said opening overlapping and engaging the opposite side of said panel,

said second flange having a frustoconical circumferential surface convergent outwardly from said opposite side of said panel, for permitting said second flange to be forced through said opening so that said intermediate portion of said collar is so received in said opening,

and an aperture extending axially therethrough,

a one-piece substantially L-shaped member having

a first portion extending through said aperture and a second portion at an angle to said first portion and positioned outwardly from said opposite side of said panel,

said first portion of said substantially L-shaped member being cylindrical and being substantially complementarily received in said aperture, so that said collar at said aperture guides said first portion for axial and rotational movement relative to said collar,

a head projecting laterally outwardly from the end of said first portion opposite from said second portion for providing a means for imparting rotation to said L-shaped member,

said head having an undersurface facing said panel,

a cup-shaped member having an inner transverse wall having an opening receiving said first portion and in juxtaposition with said undersurface of said head, said head being entirely exteriorly of said cup-shaped member and beyond said inner transverse wall thereof, and a compression spring one end of which engages said inner wall of said cup-shaped member and the opposite end of which engages the outer surface of said first flange of said collar,

for thereby biasing said cup-shaped member, said head and said L-shaped member to a first position where said head is spaced outwardly from said one side of said panel and said cup-shaped member is spaced outwardly from said first flange of said collar with a portion of said compression spring being exposed between said cup-shaped member and said first flange of said collar,

said substantially L-shaped member, head and cup-shaped member being movable in opposition to said spring to a second position in which said head is relatively closer to said one side of said panel,

said cup-shaped member having a larger lateral dimension than that of said first flange of said collar,

whereby when said cup-shaped member is in said second position said first flange of said collar is received in said cup-shaped member and said compression spring is concealed.

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