United States Patent [19]

Dooley

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[54] **LATCHING DEVICE**

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[73] Assignee: **General Electric Company**

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[52] **U.S. Cl.** .....**292/87,** 220/55 k, 292/175

[51] **Int. Cl.**.....**E05c 1/10**

[58] **Field of Search**.....292/74, 75, 76, 77, 87, 175, 292/DIG. 38, 19; 220/55 K

[56] **References Cited**

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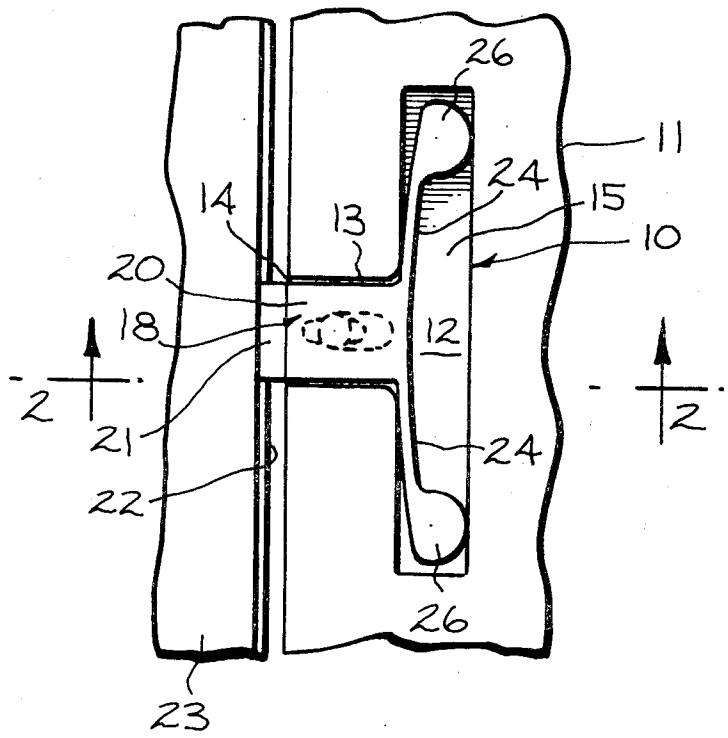
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Primary Examiner—Albert G. Craig, Jr.
Attorney—Frank L. Neuhauser et al.

[57] **ABSTRACT**

A one-piece self biasing plastic latch member for retaining a movable closure member to a stationary member having a bolt member with integrally formed flexible arms adapted to bias the bolt member to an operative position for engagement by the stationary member. The latch may include a handle formed integral with the bolt member.

5 Claims, 2 Drawing Figures



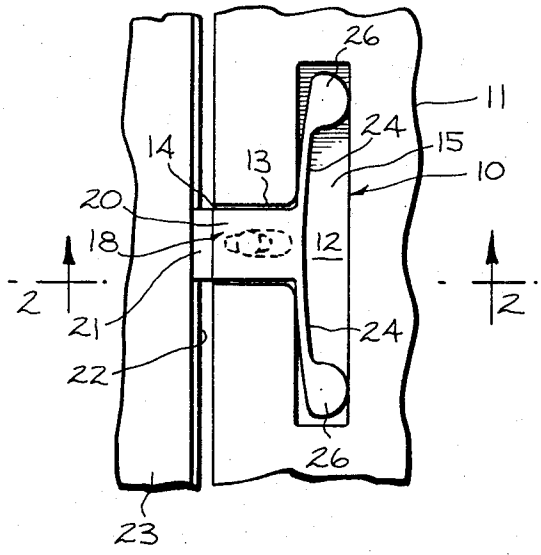

26
11
24
15
14
13
10
20
18
12
2
2
21
24
22
26
23

FIG. 1

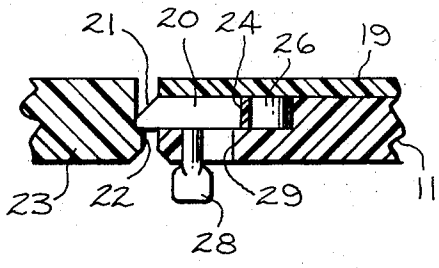

21
20
24
26
19
23
22
29
11
28

FIG. 2

LATCHING DEVICE

BACKGROUND OF THE INVENTION

This invention relates to a latch for retaining a hinged closure member to a stationary member including a housing having a one piece plastic latching member disposed therein; the latching member being the sole moving part for maintaining the latch in proper operative engagement with a strike.

Prior latching devices such as U. S. Pat. No. 2,804,329 to E. H. Landis, frequently include separate parts for operating the latching device, e.g., a bolt member and a separate spring means for biasing the bolt into an operative position. The use of a plurality of parts is disadvantageous in that it requires additional steps in assembly and, in many instances, the separate parts are metal and require close tolerances which result in costly machined parts. Attempts have been made to provide plastic latches such as U. S. Pat. No. 3,479,075 to E. J. Swanno, which provides a one-piece latching member. However, the design shown therein does not lend itself to an ordinary simple cabinet latch especially one in which the latch member moves parallel to the face of the door.

It is therefore an object of the present invention to provide an economically constructed latching device employing a minimum of parts.

SUMMARY OF THE INVENTION

By this invention, there is provided a housing including a T-shaped recess for receiving a one-piece plastic latching member for retaining a hinged door to a stationary member. The latching member has a bolt section disposed in the main leg portion of the recess and is provided with a latch face extending from the housing into cooperative relationship with a strike on the stationary member. Formed integral with the bolt section opposite the latch face are resilient arms extending into the cross portions of the T-shaped recess. The outer ends of the resilient arms are provided with bulbous bearing means engaging the rear wall of the cross portion to bias the bolt section and its latch face into cooperative relationship with the strike on the stationary member.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view with parts removed illustrating the latching member of the present invention; and

FIG. 2 is a sectional view along line 2—2 of FIG. 1 illustrating the details of the latch of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, the latching device is contained in a housing **10** which, in the illustrated embodiment, forms a part of a movable closure member or door **11** pivotally supported at one side by hinges (not shown). The door **11** may be a hinged closure member for a clothes washing machine, cabinet or other enclosure requiring an access closure.

It is to be understood that the invention is not restricted to the particular modification shown since the entire latch can be made as a separate item and suitably secured to a door. The latch of the present invention will therefore be described with specific reference to its unique one-piece latching component and without reference to the manner in which it may be mounted on or form part of a door.

The illustrated housing **10** comprises a generally T-shaped recess **12** molded as an integral part of the inner wall or the door **11**. The T-shaped recess **12** includes a leg portion or channel **13** terminating at one end in an opening **14** located in the front face of the door **11**. The other end of the leg **13** communicates with a cross portion or channel **15** disposed perpendicular thereto and extending outwardly therefrom.

Located in operative relationship in the recess **12** is a resilient one-piece generally T-shaped plastic latch member **18** which may be made of a resilient or elastic material such as polypropylene. When the recess **12** is provided in the door, the latch member **18** is retained in said recess by the inner door panel **19** forming one wall of the latch housing.

The latch **18** includes a main body or bolt section **20** which is slidably received in channel **13**. One end of the bolt **20** includes an operating or cammed latch face **21** extending through the opening **14**. As seen in FIG. **2**, the latch face **21** in its normally operative or latched position engages a keeper or strike **22** which, in the present embodiment, is formed on the stationary member or cabinet **23**.

In order to hold the bolt **20** and latch face **21** in latching relationship with the strike **22** when the closure member **10** is in its closed position, the end of bolt **20** opposite the face **21** includes a pair of integrally formed resilient arms **24**. The arms **24** are arcuate in configuration and extend outwardly and rearwardly from the rear of bolt section **20** so as to be spaced at their outer extremity from the front wall of the cross portion **15**. Each of the arms **24** carries at their ends thereof an enlarged bulbous bearing portion **26** integral with and extending rearwardly from the main portion of arms **24**. The bearing portions **26** engage the rear wall to bias the bolt **20** outwardly into operative position. When the bolt **20** is biased in its normal latched position, the arms **24** adjacent the bolt **20** contact the front wall of the cross portion to limit the forward movement of the bolt.

In operation, when the closure member is closed and the cam face **21** contacts the keeper **22**, the resilient arms **24** yield to allow the bolt **20** to move inwardly and the cam face **21** to ride over the keeper **22** and into a latch position. As the bolt **20** moves rearwardly, the arms **24** flex causing the bearing portions **26** to rotate on the rear wall. To minimize the friction during rotational movement of the bearings **26** on the wall, the bearing surfaces are arcuate so that the points of contact are restricted to the tangent of the arc and wall.

The above described operation of the member **18** is repeated manually when it is desired to unlatch the closure member **11** from a stationary member **23**. To this end a knob or handle **28** is provided for manually sliding the bolt member **20** in the groove **13** for movement away from keeper **22**. The handle as shown in the drawings may be formed integral with the latch **18** and is dimensioned to be inserted through a slot **29** in which the handle **28** moves.

From the above description, it will be seen that there has been provided a simple and low cost latch essen-

tially consisting of only a housing or equivalent means for mounting the latching member on a door, and a latching member having integrally formed bolt and spring arms that provide the sole means for supporting the latch end in proper operative position within the housing, and for biasing the bolt into engagement with the strike.

While in accordance with the Patent Statutes, there has been described what, at present, is considered to be the preferred embodiment of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made thereto without departing from the invention, and it is intended therefore in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of this invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A latch for retaining a movable closure member to a stationary member comprising:

housing means defining a T-shaped recess including a leg portion having an opening at the forward end thereof and a cross portion at the rear end at right angles thereto;

a one-piece plastic latch member disposed in said recess;

said latch member having a bolt section slidably mounted in said leg portion of said recess;

one end of said bolt section having a latch face extending through said opening into latching relationship with said stationary member;

a pair of resilient arms formed integral with and extending outwardly from the other end of said bolt section into said cross portion;

the ends of said resilient arms having enlarged bearing means formed thereon in engagement with the rear wall of said cross portion for biasing said latch member forward into latching relationship with said stationary member;

the forward surface of said resilient arms adjacent said bolt section normally engaging the front wall of said cross portion for limiting the forward movement of said bolt section;

said bearing means being spaced from said front wall of said cross portion when said latch member is in a latched position for allowing rotational movement of said bearing means upon flexure of said resilient arms when said bolt section is moved rearwardly in said leg portion for releasing said latch end from said stationary member.

2. A latch as set forth in claim 1, wherein the bearing means are provided with arcuate bearing faces.

3. A latch as set forth in claim 2, wherein the bearing means extends rearwardly from said resilient arms.

4. A latch as set forth in claim 3, wherein the resilient arms are arcuate and extend outwardly and rearwardly.

5. A one-piece resilient latch as set forth in claim 4, wherein a handle is formed integral with said bolt section and projecting therefrom for manually retracting said bolt section.

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