Sept. 10, 1963 A. W. AHLGREN 3,103,378

SPRING CATCH

Original Filed March 6, 1957

Fig. 1

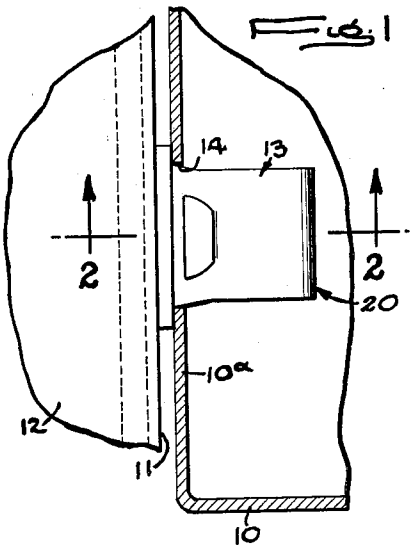


Fig. 2

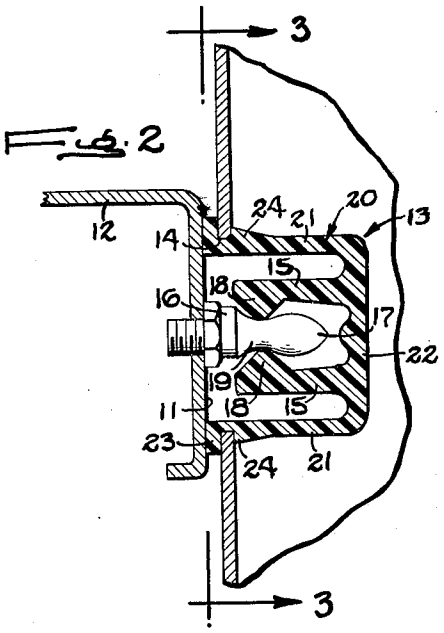


Fig. 3

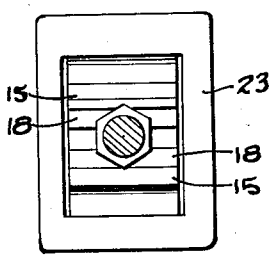


Fig. 5

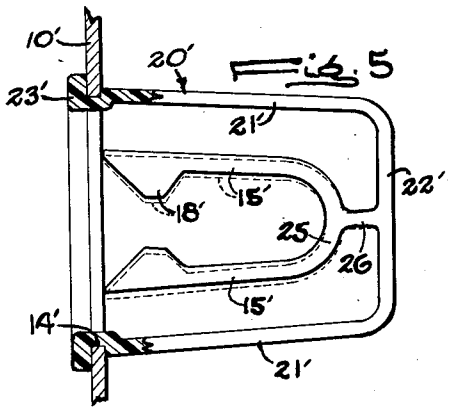
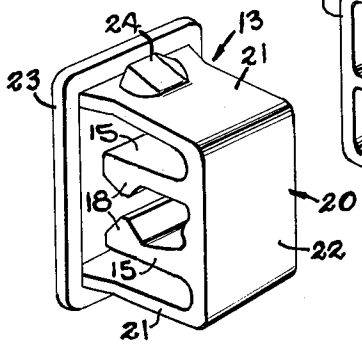


Fig. 4



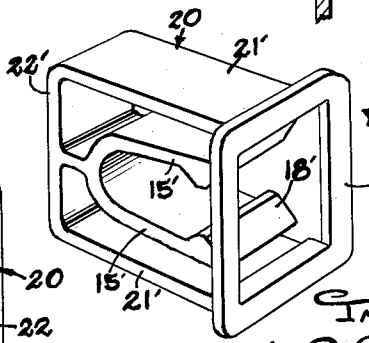


Fig. 6

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SPRING CATCH

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Continuation of application Ser. No. 657,161, May 6, 1957. This application June 1, 1959, Ser. No. 817,208
5 Claims. (Cl. 292—17)

The invention relates to a catch member for cooperating with a strike to fasten together two relatively movable parts and more particularly to a catch member having resilient fingers arranged to grasp a strike when a door is closed and thereby latch the door to an associated frame.

It is a general object to provide a novel one-piece catch member which is simple and inexpensive to manufacture, which is durable and light-weight, which is silent in operation, and which is simply and easily installed.

A more detailed object is to construct the catch member in a novel manner so as to permit the member to be made as one piece of molded nylon while avoiding the drawbacks normally attributable to this material.

FIGURE 1 is a fragmentary view showing the door in a latched position.

FIG. 2 is a cross sectional view taken along the lines 2—2 of FIG. 1.

FIG. 3 is a view of the catch member taken along the lines 3—3 of FIG. 2.

FIG. 4 is a perspective view of the catch member.

FIG. 5 is a side view of a modified form of the invention, parts being broken away and shown in section.

FIG. 6 is a perspective view of the modified catch member.

For purposes of illustration, the invention is shown in FIGS. 1 through 4 in conjunction with a door **10** adapted to be closed against an associated door-frame, which is part of a cabinet or the like, with the door swinging toward the front edge **11** of a shelf **12**. While the catch member **13** of the spring catch may be mounted on either the door or the shelf, it is shown as positioned within an opening **14** cut in the door and alined with the front edge **11** of the shelf. The catch member **13** includes elongated fingers **15** which extend in the same direction and project toward the shelf edge **11**. Cooperating with the fingers **15** is a strike **16** which herein has an enlarged end portion **17** and is secured to the shelf edge in such a location that, as the door is closed, the strike end portion enters between and is grasped by the free end portions of the fingers **15** to fasten the door in a closed position.

The elongated fingers **15** are shaped to engage the strike **16** behind the enlarged end portion **17**. This is achieved, in this instance, by forming shoulders or lugs **18**, one positioned on each finger, so that they project toward each other with a space between the lug ends. The fingers are yieldable to permit them to spread apart and then grasp the strike.

The present invention contemplates constructing the catch member **13** in a novel manner so as to permit this member to be made as a single piece of molded plastic, such as nylon, while avoiding the disadvantages normally attributable to such a material. Thus, the catch member, even though made of a plastic material, holds the strike **16** securely in spite of the tendency of such a material to take a permanent set when stressed for extended periods of time or to take a temporary set when subjected to excessive stresses. In general, this is achieved by arranging the catch and the strike so that little, if any, force is exerted by the fingers **15** on the strike when the door **10** is in the closed position but a gripping force is

exerted in response to a slight opening movement of the door.

To the foregoing ends, the catch **13** is made so that the spacing between the lugs **18** is equal to the diameter of the reduced intermediate portion **19** of the strike **16**, that is, the portion behind the enlarged head **17**. It should be observed that, if the spacing between the lugs originally is less than this amount, the fingers **15** eventually will assume this position. This is for the reason that molded nylon and similar materials assume a permanent set when held in a given position for extended periods as would be the case with the door **10** which normally would be closed. Thus, either as originally constructed or as a result of service use, the fingers **15** do not exert any appreciable force on the strike when the door is closed.

Previously, it has been considered necessary that the fingers **15** exert a gripping force on the strike **16** when the parts are in the latching position and, in prior catches, the fingers have been made of spring steel to achieve this. I have discovered that, in spite of the fact that fingers made of nylon or the like do not exert such a force, an effective gripping action may be obtained by combining the catch with a strike which gradually increases in size from the reduced intermediate portion **19** to the enlarged head **17**. Thus, as soon as there is a tendency for the strike to move outwardly, the fingers **15** are flexed and thereby exert a gripping force. Thus, even though the fingers normally do not yieldably bear against the strike, they do effectively prevent the strike and hence the door from moving outwardly.

Further according to the invention, the catch member **13** is constructed in a novel manner so that, when the strike **17** flexes the fingers **15** by entering between them, the stresses are distributed throughout the catch member rather than being localized. This prevents excessive stresses at any one point of the catch so that the fingers do not take on a temporary set. It should be observed at this point that, if the fingers did assume a temporary set, they would be slow to return to their normal position after being spread apart by the strike and there would be a period when the strike was not held.

To the foregoing ends, the catch member **13** is formed with a U-shaped body portion **20** having sides **21** and the fingers **15** are integral with the body and extend away from the inner bottom portion **22** thereof in a direction generally parallel to the sides. When the catch member is mounted in place within the opening **14**, the bottom portion and the sides are behind the inner door surface in position to receive the strike **16**.

As shown in the drawings, in the preferred form of the invention illustrated in FIG. 2, the thickness of the legs **21** and at least of portions of the bottom **22** is no greater than the narrowest parts of the fingers **15**. In this way, flexing of the fingers is transmitted to the legs and the bottom which thus bow as the fingers are spread apart. As a result, the stresses are distributed throughout the catch member rather than being concentrated in the fingers. To insure that the stresses are transmitted to the bottom and the legs, the fingers are widened gradually toward their bases so that they have less tendency to flex independently of the body **20**.

In accordance with another aspect of the invention the catch member is shaped to include means for cushioning the impact and deadening the noise which results when the two parts are slammed together. To this end, a rectangular flange **23** is rigid with the outer ends of the body sides **21** and in a plane parallel to the bottom portion **22** to lie against the door surface **10a** and be interposed between the shelf surface **11** and the door surface when the door is closed. The flange is molded as a single piece

with the body 20 and the fingers 15 and thus, an integral portion of the unitary piece is utilized to cushion impact between the opposingly faced surfaces of the two parts.

The catch member is also shaped to include means cooperating with the flange 23 for holding the catch member in place within the opening. For this purpose, abutments 24 are formed on the catch member and project outwardly from the sides 21. One face of each abutment is substantially parallel with the flange 23 and is spaced from the latter a predetermined distance. The outer surfaces of the abutments are tapered inwardly toward the closed end or the bottom of the U.

Mounting of the catch member is accomplished simply by inserting the body 20 within the opening 14. As the closed end or the bottom of the U is moved in a direction to seat the catch member in place, the tapered surfaces of the abutments engage the edges of the opening and the sides 21 yield so that the abutments are urged inwardly. The edges of the opening then ride over the abutments until the flange 23 is seated against the door, as shown in FIG. 2. The spacing between the abutment faces and the flange 23 is made approximately equal to the width of the door material, so that when the flange is seated against the door, the edges of the opening lie within the spaces, and the resiliency of the sides 21 urges the abutments outwardly to a position where the abutment faces cooperate with the flange to hold the catch member in place.

The complete catch member is molded in a single piece. The means that actually effect the fastening, the mounting means, and the impact cushioning means are all included in one integral, inexpensive, simply and easily made unit that is durable and light-weight. The molded nylon permits silent and easy closing and opening of the door.

A modified form of the invention is shown in FIGS. 5 and 6 in which the parts corresponding to the parts of the preferred embodiment are indicated by the same but primed reference characters. As in the preferred form, the modified form incorporated molded nylon fingers 15' and the catch member 20' is capable of being molded as a single piece. In this case, however, the fingers are connected to the bottom 22' of the catch member in a novel manner so that they automatically compensate for misalignment of the catch member and the strike and this without interfering in any way with the effective spring action of the fingers.

To the foregoing ends, the fingers 15' are joined at their inner ends by an arcuate portion 25 integral with the legs 15' and this portion, in turn, is joined to the back 22' by a stem 26 which also is an integral portion of the catch member 20'.

With the foregoing arrangement, the stem 26 may flex and this turns the fingers 15' bodily together without changing their positions relative to each other as shown in broken lines in FIG. 5. Thus, should the strike be misaligned relative to the catch member 20', the strike, as it engages the fingers, will cause the stem to flex until the space between the lugs 18' is centered relative to the strike. At the same time, the fingers snap in behind the strike in the same manner as they would if the strike and catch member were aligned.

As used in the appended claims, "molded plastic material" denotes a plastic material which assumes a permanent set when subjected to stresses for extended periods of time.

This application is a continuation of my copending application Serial No. 657,161, filed May 6, 1957, and now abandoned, which in turn is a continuation-in-part of application Serial No. 549,976, filed November 30, 1955, and now abandoned.

I claim as my invention:

1. For use with a strike having an enlarged end portion,

a catch comprising a body portion made as a single piece of molded plastic material and being U-shaped with generally parallel legs and a connecting bottom, and two elongated resilient fingers integral with said body portion and projecting outwardly from said bottom and between said legs, said fingers being spaced apart with their free end portions directed toward each other to engage the strike behind the enlarged end portion thereof, said legs and said bottom having portions which are at least as thin as the narrowest part of said fingers and said fingers becoming thicker toward said bottom to transmit stresses to the bottom whereby the legs and the bottom flex with the fingers as the strike enters between the fingers.

2. A spring catch comprising a pair of elongated resilient fingers laterally spaced from and generally parallel to each other, a member spanning adjacent ends of said fingers and joining the fingers at these ends, a lug integral with each of said fingers adjacent the free end thereof, said lugs projecting laterally of said fingers and toward each other to define a space for receiving a strike, a body, and a flexible stem generally paralleling said fingers and connected at one end to said body and at the other end to the mid-portion of said member whereby the stem may flex to turn the fingers bodily together and into alignment with the strike.

3. A spring catch as defined in claim 2 wherein said fingers, said lugs, said body and said stem are formed as a single piece of molded nylon.

4. A spring catch comprising a pair of elongated resilient fingers laterally spaced from and generally parallel to each other, a member connecting one end of one finger to the adjacent end of the other finger, the other ends of said fingers defining a space for receiving a strike, a body, and a flexible stem generally parallel to said fingers and connecting said member to said body whereby the stem may flex to turn the fingers bodily together into alignment with the strike.

5. For use with a strike having an enlarged end portion of predetermined diameter and tapered gradually behind said end portion to a reduced diameter, a catch made in a single piece and of molded plastic material and comprising a body portion, two elongated resilient fingers integral with said body portion and projecting away from the body portion, said fingers being parallel and spaced apart a distance greater than said diameter, a lug integral with each of said fingers adjacent the outer end thereof, said lugs projecting laterally of said fingers and toward each other to be spaced apart a distance substantially equal to said reduced diameter, said fingers spreading apart as the end portion of the strike enters between said lugs and resiliently returning to their normal position when said end portion passes beyond the lugs whereby the lugs engage the tapered portion of the strike so that the fingers are resiliently flexed upon initial outward movement of the strike relative to the fingers, a member spanning the inner ends of said fingers and joining the fingers at those ends, and a flexible stem generally paralleling said fingers and connected at one end to said body portion and at the other end to the mid-portion of said member whereby the stem may flex to turn the fingers bodily together and into alinement with the strike.

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