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3,380,194

EXPANDER

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Fig. 1

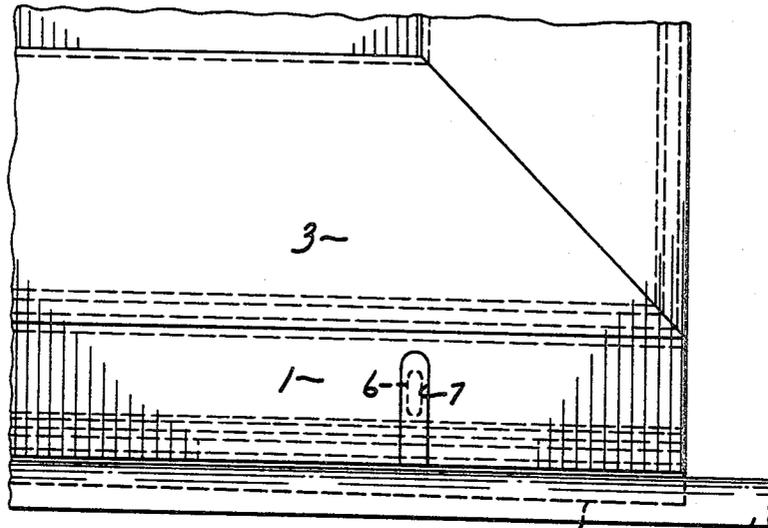


Fig. 2

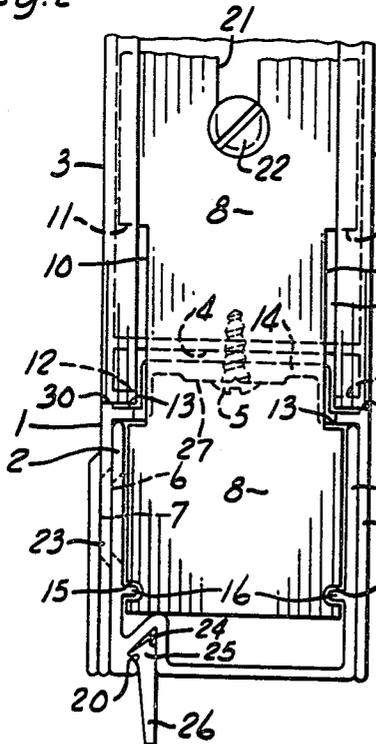
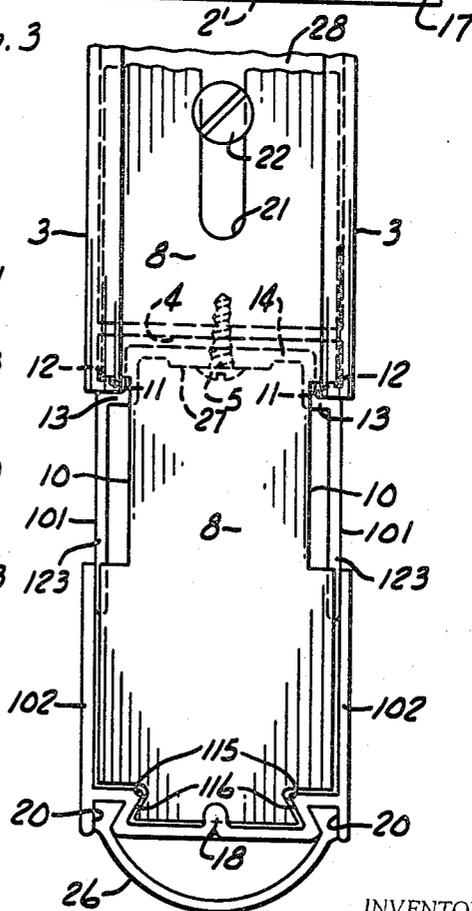


Fig. 3



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EXPANDER

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This invention relates generally to expansible closures and more particularly to a telescopic expander mounted on an edge of a closure to provide a good seal therefore.

In the window and door industry it is common knowledge that prefabricated closures will not universally fit every independent opening prepared for a closure. When the opening does not fit the standard prefabricated closure, a special closure must be fabricated for a substantial increase in cost.

The principal object of the present invention is to provide an expander for a closure which is both practical and economical while retaining an attractive appearance, thereby providing a closure which has good sealing properties and eliminates the above named disadvantages.

Another object of the present invention is to provide an expander which utilizes opposed channels, one being slidable in the other and which telescope in a direction lateral to their longitudinal direction.

Another object is to provide covers for the open ends of the telescope channels which also provide a locking means to lock the relative movement of the channels in their preadjusted telescoped position. These covers also act as stops and prevent the one channel from completely sliding out of the other before adjustment is made.

A more specific object is to provide the expander channels of the present invention with an abutment stop means to prevent sliding therebetween in their longitudinal direction. This stop means may be in the form of an outwardly protruding dimple in the inner channel which is slidably received in a groove in the side flange of the outer channel and which runs in a direction normal to the direction of the length of the channels. It may also be in the form of protrusions extending over the outside of the end covers.

Another object is to provide at least one groove along the bottom of the extension channel providing a shoulder to receive and grip the head of an elastomer weather strip. This strip may be of a flexible plastic and in the form of an extended skirt or if two parallel grooves are provided in the bottom of the extended channel and the strip has a head along both longitudinal edges, then the strip may protrude or extend out from the closure with an arcuate cross section which flexes and provides a good seal when the closure is placed in the opening.

Another object is to provide means to keep the side flanges of the outside channel sprung slightly inward at their outside ends so as to clamp the second channel when inserted therebetween. This permits adjustment without holding the movable extended channel while it is locked in place and also helps in locking them in their telescoped position.

Another advantage of the present invention is that the fixed channel, as opposed to the extension channel, may either be an integral part of the closure to be extended or a separate attachable member. This provides versatility in closures in order to meet the many varied situations encountered in installing different type closures.

Still another object of the present invention is to provide a means to independently regulate the extent of the telescopic relation of each end of the extension channel to permit the closure member to fit an opening. This permits the extension channel to be positioned out of square with the closure in order to fit an opening which is not square. This regulation may be obtained by independent-

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ly adjusting the covers which close and maintain the channels in their telescoped position.

Other objects and advantages appear hereinafter in the following description and claims and in the accompanying drawings.

The accompanying drawings show for the purpose of exemplification without limiting the invention and claims thereto certain practical embodiments illustrating the principles of this invention.

FIG. 1 is a view in side elevation partially cut away of the expander mounted on a closure.

FIG. 2 is a front or end view taken from the right side of the expander shown in FIG. 1.

FIG. 3 is an end view of the expander of the present invention in its extended position and mounted on a closure illustrating a structural variation thereof.

Referring to FIGS. 1 and 2, the first or outer channel 1 slidably receives the inner second or extension channel 2. Channel 1 is mounted on an end or edge 4 of the closure member 3 and secured with the screws 5. The channels 1 and 2 are preferably of extruded aluminum and are provided with stop means to prevent the channels 1 and 2 from sliding side ways or longitudinal relative to each other. The abutment stop means shown herein is in the form of a dimple or indentation 6 in the side flange of the extendable inner channel 2 which dimple is received by the groove 7 formed by the indentation in the side flange of the outer channel 1. This permits channel 2 to extend or telescope only outwardly from end 4 and allows no side movement thereof.

As shown in FIG. 2, the open ends of the assembled channels 1 and 2 are closed with the cover plates 8. The covers 8 are provided with side reliefs 10 which form the extension stops 11 and provide clearance about the intumed flanges 12 of the closure member 3 and the side shoulders 13 in the web 14 of the first or outer channel 1.

The covers 8 are interlocked with the extension channel 2. This interlocking means is shown in FIG. 2 by the notches 15 in the covers 8 which receive the shoulders 16 which are formed as an integral part of the channel 2.

Thus, when the closure 3 is installed in its opening, channel 2 is slid outwardly from within channel 1 to snugly fill the opening. In order to maintain channel 2 in its adjusted position, the covers 8, which are identical and placed at both open ends of the telescoped channels, are provided with longitudinal slots 21 to receive the screws 22 which are fastened into the ends of member 3 to clamp the covers 8 in their adjusted position thereby maintaining the channels in their telescoped position.

The stops 11 prevent channel 2 from completely sliding out from between the side flanges 23 of channel 1. This feature is more clearly explained in later reference to FIG. 3.

In order to provide a good sealing means for the closure 3, the longitudinal grooves 20 provide the inner shoulders 24 to receive and grip the head 25 of the elastomer weather strip 26 which continues the full length of channel 2.

The ends 27 of the web 14 are recessed in order to make them flush with recessed perimetral edge surface 28 of the closure 3 so that cover 8 may slide thereover.

At least one of the side shoulders 13 of channel 1 are provided with the draw spacers 30 which extends the entire length of the channel 1. These spacers provide the spaces or gaps 31 between the intumed flanges 12 of member 3 and the shoulders 13 to permit the web 14 to be drawn toward end 4. A space is also provided between the web 14 and the perimetral edge surface 4 to permit a drawing of the web 14 when the screws 4 are tightened. When this occurs, force is applied against the draw spacers 30 which causes the side flanges 23 to converge toward each other at their outer ends. Thus, when channel 2 is

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inserted between the flanges 23, it is gripped therebetween. This device aids in locking the adjusted channel 2 in place and permits one to first hand adjust channel 2, without having to continuously hold it in place until it is secured by the covers 8 and screws, 22.

The door sill 17 as shown in FIG. 1 is square with the closure 2, however, enough tolerance is permitted between the guide grooves 7 and the dimples 6 so that channel 2 may be adjusted out of square with the closure member 3. This permits the expander to fill an opening such as against a door sill which is not square as is often the situation. This is illustrated in FIG. 1 by the dashed line 2' which indicates the position of channel 2 in a telescoped slanted position to meet a slanted sill (not shown). Each cover 8 may be independently regulated to determine the extent of the telescopic relation of each end of channel 2 with the respective ends of channel 1.

The channel 2 of the present invention may be an integral part of the member 3 rather than a secured separate piece as shown. This would enhance the appearance of this closure, however the versatility of using the closure 3 with or without the expander does not exist. As shown, the expander of the present invention may readily be attached to any one or more of the four edges of the closure 3 as the situation may require.

Another form of the stop means is illustrated in FIG. 3. The extension channel 102, which corresponds to channel 2 in FIGS. 1 and 2, is limited in movement in its longitudinal direction by the protrusions 18 on both ends of channel 102. Protrusions 18 overlap the covers 8 and thereby limit the longitudinal movement of channel 102 as the protrusions 18 act as stops against the covers 8 which are fixed by screws 22. Protrusions 18 or the dimples 6 and corresponding grooves 7 may be provided by impressing the same by a punch after the channels have been extruded.

FIG. 3 illustrates a structural variation of the present invention wherein the first channel 101 is mounted in telescopic relation with the second extension channel 102 as before, however, the flanges 123 of the channel 101 are slidably received within the second channel 102 instead of being entirely exposed to the outside as shown in FIGS. 1 and 2. Channel 102, corresponding to channel 2 of FIGS. 1 and 2, is now the outside or outer channel and channel 101 is the inner channel. In this view, the extension channel 102 is shown in its extended position.

A second structural variation of the present invention is illustrated in the interlocking means between channel 102 and the covers 8. In place of the notches 15 and shoulders 16, the grooves 20 provide the shoulders 116 to be received and interlocked in the notches 115 provided in cover 8. This interlocking means provides complete coverage of the open ends of channels 101 and 102 and eliminates the extra material used in providing the shoulders 16 of the expander shown in FIGS. 1 and 2.

In order for the covers 8 to interlock with channel 102, the channel 101 is made slightly shorter than channel 102. This permits the covers 8 to cover over the ends of channel 101 to engage and interlock with the shoulders 116.

As shown in FIG. 3, the weather strip 26 may be provided with two longitudinal heads 25 to be each received and gripped in their respective grooves 20. This configuration provides the closed weather strip 26 with an arcuate cross section which will flex to provide a tight even seal. As set forth in the claims, the expanders shown in FIGS. 2 and 3 perform the same function in the same manner and merely illustrate two possible practical forms which the structure of the present invention as claimed may conform to.

FIG. 3 shows channel 102 in its fully extended position which illustrates the effectiveness of the stops 11 of cover 8. Stops 11 are in engagement with the under-

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side of the inturned flanges 12 which prevents channel 102 from sliding completely out of channel 101.

I claim:

1. An expander for a closure having perimetral ends forming a plurality of corners consisting of an outwardly open channel having its web secured to the perimetral end of the closure to be extended, said channel extending for substantially the full length of said end, a second channel of substantially the same length as the first and having its side flanges slidably fitting in telescopic relation the side flanges of said first channel, cover plates adjustably secured to the closure adjacent its corners and extended over the respective ends of said channels to substantially close the same, and interlocking means between each of said covers and the ends of said second channel to support the latter in its telescoped position.

2. The expander for the closure of claim 1 characterized in that each cover has an adjustable means to permit said second channel to be extended laterally of said first channel, and a lock means for said cover plate to independently maintain the extent of the telescopic relation of each end of said second channel to permit the closure member to fit an opening.

3. The expander for the closure of claim 1 which also includes an external groove longitudinally of said second channel having an inner shoulder, an elastomer substantially as long as said groove and having a head locked on said shoulder, a skirt projecting outwardly from said head to engage and seal with an opening when said closure member is hung therein.

4. The expander for the closure of claim 1 which also includes parallel external grooves longitudinally of said second channel each having an inner shoulder, an elastomer substantially as long as said grooves and having a head locked on each of said shoulders and a web connecting said heads to engage and seal with an opening when said closure member is hung therein.

5. The expander for the closure of claim 1, characterized by an abutment stop means to limit the relative movement between said channels in their longitudinal direction.

6. The expander for the closure of claim 1 characterized by a draw spacer engaging said web and said perimetral end to be extended for the full length thereof and positioned adjacent one of said side flanges of said first channel to provide a draw space between said web and said end to be extended.

7. The expander for the closure of claim 1 which also includes recessed surfaces bound by inturned flanges in the perimetral ends of said closure and characterized in that portions of said covers extend under their respective inturned flanges of said perimetral ends, and the sides of said cover are relieved where they pass said inturned flanges to form opposed stops, said inner stop determining the outermost position of said second channel.

8. The expander for the closure of claim 1, said cover plate characterized by a longitudinal slot, and screw means passing through said slot and into said closure to engage and lock said cover plate.

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