March 23, 1943. E. P. COGSWELL 2,314,770

ATTACHING DEVICE

Filed June 28, 1941

Fig. 1.

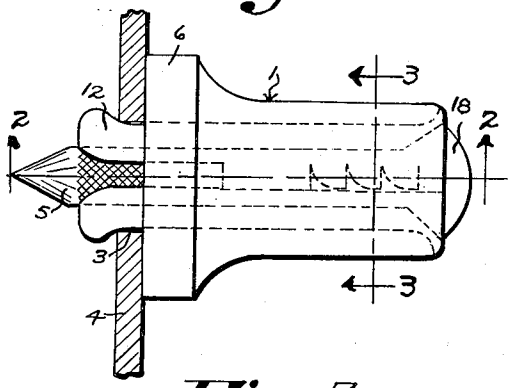


Fig. 2.

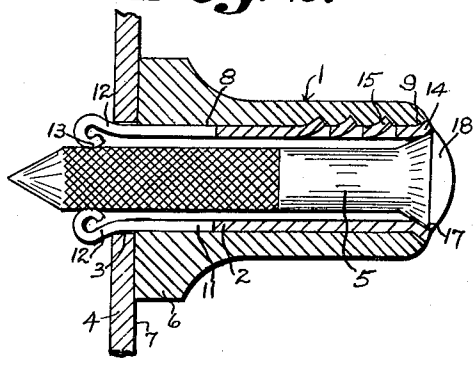


Fig. 3.

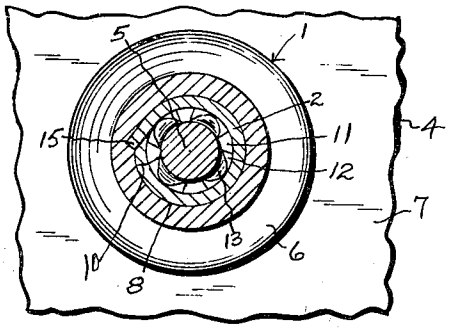


Fig. 4.

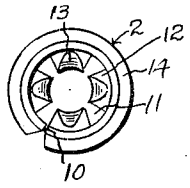


Fig. 5.

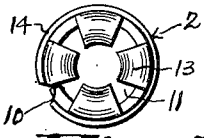


Fig. 6.

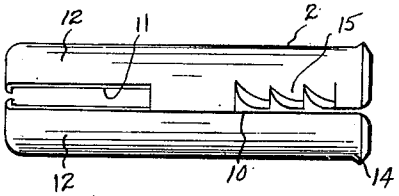
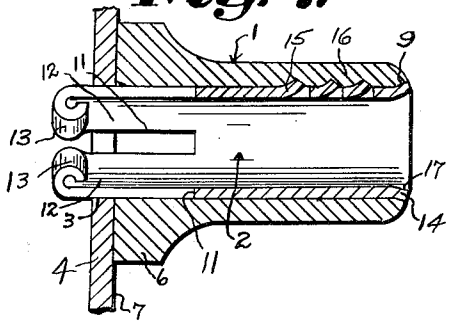


Fig. 7.



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UNITED STATES PATENT OFFICE

2,314,770

ATTACHING DEVICE

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Application June 28, 1941, Serial No. 400,256

3 Claims. (Cl. 85—2.4)

This invention relates to improvements in shelf supports for refrigerators and like structures. One of the objects of my invention is the provision of a shelf support device of simple and inexpensive construction, capable of being secured to a supporting panel operating solely from one face of the work.

Another object of my invention relates to an improved shelf support device, wherein the shelf-supporting member forming a part of the device is made of plastic material and supported throughout its length by an attaching part which operates to secure the device to a panel so as to effect a firm support for a shelf and the like.

A further object of my invention relates to a shelf support device comprising a plastic or the like shelf-supporting member and an attaching part constructed to be fixed in assembly prior to application of the device to a supporting panel.

Other objects and uses of my invention will be apparent from inspection of the drawing and specification hereinbelow set forth.

Referring to the drawing in which I have illustrated a preferred embodiment of my invention:

Fig. 1 is a section of a refrigerator installation including a part of a supporting panel and a shelf-supporting device shown in elevation secured to the panel;

Fig. 2 is a section taken along the line 2—2 of Fig. 1;

Fig. 3 is a section taken along the line 3—3 of Fig. 1;

Fig. 4 is an end view of the attaching part of my shelf-supporting device;

Fig. 5 is a view of the attaching part looking from an opposite end;

Fig. 6 is a side elevation of the attaching part; and

Fig. 7 is a section similar to Fig. 2 before the device is locked to the support.

Referring to the installation shown in Figs. 1–3, I have shown a shelf-supporting device, comprising a shelf-supporting member 1 which is preferably of plastic or the like material, having an attaching part 2 in preassembly therewith. The attaching part provides a fastener portion extending through an aperture 3 of a supporting panel 4 and expanded by a pin 5 to grip the edges surrounding the aperture 3 to secure the device in locked assembly with the panel.

Referring in detail to the shelf-supporting device, the shelf-supporting member 1 is generally barrel-shaped and provides a flange 6 at one end of greater diameter than the aperture 3 and adapted to abut a surface 7 of the supporting panel 4 in final assembly of the parts. The shelf-supporting member 1 is solid in form except for an axial aperture or bore 8 which extends entirely through the member. The member 1 has a countersink 9 at its end away from the flange 6 for a purpose to be described. The attaching part 2 is preferably formed from one piece of sheet metal rolled into generally tubular form and providing a slit 10 along its entire length. The diameter of the attaching part is only slightly less than the diameter of the bore 8 so as to fit snugly within the bore when the parts are in assembly. A number of slits 11 extend from one end of the attaching part a predetermined distance toward the opposite end dividing the first end into four yieldable segments 12 which cooperate to provide a fastener means for attaching the device to the panel 4. The free ends 13 of the segments 12 extend inwardly toward a common center for a purpose to be described. The opposite end of the attaching part from that having the yieldable segments has an integral laterally extending element in the form of an annular flare 14 adapted to seat within the countersink 9 of the supporting member 1 in assembly of the parts. Laterally projecting elements in the form of teeth 15 extend from the attaching part intermediate the yieldable segments 12 and flare 14. The teeth 15 are preferably formed integral with an edge of the attaching part adjacent the slit 10 and have their outermost ends facing the flare 14. It is understood, however, that the teeth 15 could be sheared from imperforate portions of the attaching part or formed in other ways to extend from other points without departing from the scope and spirit of my invention.

In assembling the parts of the shelf-supporting device, the attaching part 2 is moved into the end of the supporting member 1 having the countersink 9 and then pressed axially along the bore 8 until the flare 14 engages the countersink 9 so as to limit further movement of the attaching part relative to the member 1 in the direction of its insertion. During this action the teeth 15 which project laterally beyond the outer contour of the attaching part tend to embed themselves in the wall 16 of the member 1 adjacent the bore 8 and thereby resist any forces tending to cause removal of the attaching part in a direction opposite to that of its insertion. Thus, the flare 14 and teeth 15 cooperate with the member 1 to secure the parts against any normal forces tending to separate the same. It will be seen that when the attaching part and supporting member are in final assembly, portions of the

yieldable segments 12 extend beyond the flanged end 6 of the supporting member.

In attaching the shelf-supporting device to the supporting panel, the segments 12 are extended through the aperture 3 of the supporting panel. The outside diameter of the yieldable segments 12 may be slightly greater than the diameter of the aperture 3 so that the segments contract slightly upon insertion through the aperture so as to frictionally engage the walls of the aperture, thereby securing the shelf-supporting device in temporary assembly with the panel. Any forces tending to separate the attaching part 2 from the member 1 during this initial attachment is resisted by the teeth 15. The pin 5 is now inserted into the end of the attaching part having the flare 14 and moved axially of the attaching part to engage the ends 13 of the segments 12. The diameter of the pin is slightly greater than the distance between the opposite inturned ends of the yieldable segments and as a result when the pin is moved into final position the yieldable segments are expanded to enter locking engagement with portions of the supporting panel adjacent the aperture 3 as illustrated in Figs. 1 and 2. The flare 14, of the attaching part provides a recess 17 (Fig. 2) to receive the pin head 18 after the pin has been moved to full locking position.

Thus, by my invention, I have provided a novel method of securing an attaching part in assembly with a shelf-supporting member of plastic or other nonmetallic material. At the same time, the attaching part operates to support the shelf-supporting member throughout its length so as to effect a very rigid installation.

Although I have illustrated and described a preferred embodiment of my invention, I do not wish to be limited thereby as the scope of my invention is best defined by the following claims.

I claim:

1. A shelf support for refrigerators and the like comprising a shelf-supporting member having an axial passage extending through opposed ends thereof, a metal-attaching member having a tubular shank disposed within said passage, a yieldable fastener means at one end of said shank adapted to be inserted in the aperture of a supporting panel and expanded by a pin inserted axially of said shank for gripping the walls surrounding said aperture, said shank having a laterally projecting element at the opposite end engaging the opposite end of said shelf-supporting member adjacent said axial passage for limiting axial movement of said parts in one direction, and said shank having a second projecting element intermediate its ends engaging the wall of the passage through said shelf-supporting member to limit axial movement of said parts in an opposite direction.

2. A shelf support for refrigerators and the like comprising a shelf-supporting member having an axial passage extending through opposed ends thereof, a metal-attaching member extending through said passage and having a tubular shank disposed within said passage, an expansible portion at one end of said shank adapted to be inserted in the aperture of a supporting panel and expanded by a pin inserted axially of said shank for gripping the walls surrounding said aperture, said shank having a laterally projecting element at the opposite end engaging the opposite end of said shelf-supporting member adjacent said axial passage for limiting axial movement of said parts in one direction, and said shank having a series of teeth intermediate its ends engaging a wall of the passage through said shelf-supporting member adjacent said axial passage to limit axial movement of said parts in an opposite direction.

3. A shelf-support for refrigerators and the like comprising an enlongated shelf-supporting member of plastic and the like material having a flanged end, said member having a countersink in its end opposite said flanged end, said member having a longitudinal axial passage extending through said opposed ends thereof, a metal attaching member extending through said passage and having a tubular shank disposed within said passage, yieldable segments at one end of said shank extending beyond said flanged end adapted to be inserted in the aperture of a supporting panel and expanded by a pin inserted axially of said shank for gripping the walls surrounding said aperture, said shank having a flared portion at the opposite end engaging said countersink for limiting axial movement of said parts in one direction, and said shank having a series of teeth intermediate its ends engaging a wall of the passage through said shelf-supporting member adjacent said axial passage to limit axial movement of said parts in an opposite direction.

ELLIOT P. COGSWELL.