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C. C. WILSON

2,303,673

SHELF SUPPORTING DEVICE

Original Filed May 31, 1939

Fig. 1.

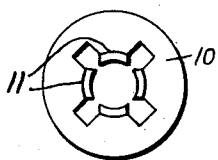


Fig. 2.

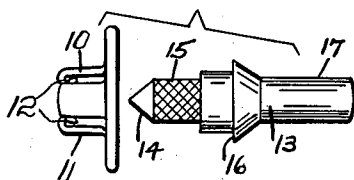


Fig. 3.

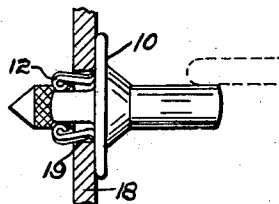


Fig. 4.

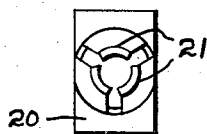


Fig. 5.

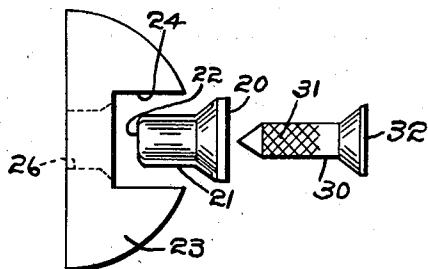


Fig. 6.

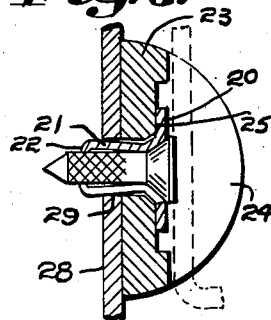


Fig. 7.

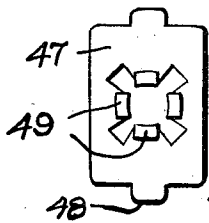


Fig. 8.

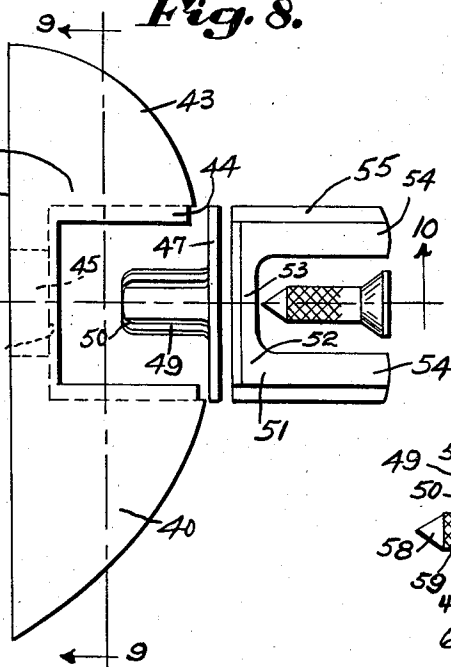


Fig. 9.

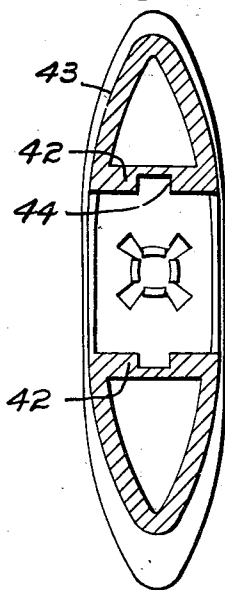
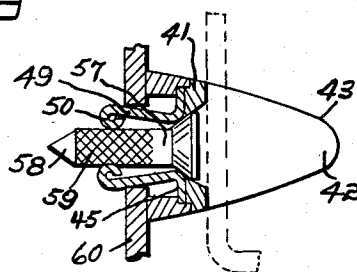


Fig. 10.



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UNITED STATES PATENT OFFICE

2,303,673

SHELF SUPPORTING DEVICE

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Original application May 31, 1939, Serial No. 276,621, now Patent No. 2,271,469, dated January 27, 1942. Divided and this application October 30, 1940, Serial No. 363,470

5 Claims. (Cl. 248-239)

The present invention relates to shelf supports, particularly to supports that are removably positioned in metallic structures, for example, refrigerators, metal book shelves and the like, and aims generally to improve existing supports for that purpose.

This application is a division of my original application Serial No. 276,621, filed May 31, 1939, and now Letters Patent No. 2,271,469, issued January 27, 1942. The claims in the present application are limited to the disclosure of Figs. 4 through 10, inclusive, while the disclosure of Figs. 1, 2 and 3 are covered by my Patent No. 2,271,469, and therefore I wish to have it understood that this covers my election to prosecute certain features of my disclosed invention while at the same time making reference to the patent of which my present application is a division.

In the drawing I have illustrated several embodiments of the invention as illustrative of the nature of my invention, and in which—

Fig. 1 is a plan view of an attaching member according to one form of the invention;

Fig. 2 is a side elevation of the cooperating members disassembled, according to the same form of invention;

Fig. 3 is a sectional view of the members shown in Fig. 2 assembled, and secured in a supporting structure;

Fig. 4 is a plan view of the attaching member according to another form of invention;

Fig. 5 is a side elevation showing in disassembled relation the component parts of a second form of the invention;

Fig. 6 is a sectional view of the parts assembled and secured to a supporting structure;

Fig. 7 is a plan view of the attaching member according to a third form of the invention;

Fig. 8 is a side view showing in disassembled relation the component parts of the third form of the invention;

Fig. 9 is a sectional view taken on the line of Fig. 8; and

Fig. 10 is a longitudinal sectional view thereof showing the parts assembled.

The broader features of the invention resides in the provision of a shelf support for a metallic body comprising an attaching element formed of a sheet metal stamping having a base and straight split fingers with inturned ends, extending through an aperture of the support, and a pin member having a knurled or roughened part of slightly larger diameter than the inner diameter between opposed fingers, whereby the fingers may be expanded by axial passage of the

pin therebetween into gripping engagement with the walls of the support surrounding the aperture, accidental dislodgment of the pin being prevented by engagement of the fingers with the roughened part. The resilient fingers are advantageously straight, except for their inturned ends, and the pin member is provided with means for limiting movement of the pin axially in the attaching member and for holding the parts assembled.

The invention may be embodied in different forms, several of which are illustrated in the accompanying drawing.

Referring more specifically to the forms of invention in Figs. 1, 2 and 3, the shelf support comprises an attaching member 10 having a plurality of spring fingers 11 extending from one side thereof formed with inwardly curled ends 12 and a finger-expanding and shelf-supporting pin 13. The pin 13 advantageously has a pointed end 14, a knurled or roughened finger-expanding portion 15, a shouldered stop 16, and a shelf-supporting part 17.

The attaching member 10 is advantageously formed from a single blank of metal stamped to provide a plurality of resilient fingers 11 arranged in a circumferential manner to present a pin-receiving bore. The free ends of the fingers 11 are curled inwardly or reversely bent so as to materially restrict the diameter at one end.

In use, the attaching member is applied to an apertured metal support 18, as for example, a refrigerator wall, by inserting the fingers 11 of the attaching member through the aperture 19 thereof. The pin 13 is then inserted in the bore of an attaching member, the pointed end 14 readily entering the restricted opening between the inturned ends 12 of the fingers 11. The knurled or roughened portion 15 of the pin is of larger diameter than the inturned diameter between the inturned finger ends 12, and expands them outwardly to grip the wall of the support 18 surrounding the aperture 19. The pin 13 is preferably formed with a stop portion 16 for limiting the movement of the pin in the bore of the attaching member, as well as to insure that the inturned ends 12 of fingers 11 are maintained in contact with the knurled or roughened portion 15 which acts to retain the pin in place against accidental displacement. The outer end 17 of the pin is of sufficient extent to provide a support for a shelf member S indicated in dotted lines, Fig. 3.

In the form of invention shown in Figs. 4 to 6 inclusive, the attaching member 20 may be formed

from a rectangular metal blank and provided with resilient fingers 21 with inturned ends 22. The shelf support advantageously comprises a semi-spherical button 23 of suitable material, for example a plastic compound, and formed with a transverse shelf-receiving slot 24, the bottom of which may be recessed as at 25 to receive the bore of the attaching part, and also apertured as at 26 for the passage of fingers 21 therethrough.

The shelf support 23 may be readily attached to a support 28 by inserting the fingers 21 of the attaching part through the aperture 26 as well as the aperture 29 in the support. A pin 30 having a pointed end and roughened shank 31 is then forced through the bore formed within the fingers 21 to expand the fingers into gripping contact with the wall of the support 28 surrounding the aperture. The pin 30 advantageously has a head 32 to limit the movement of the pin within the bore of the attaching member and hold the parts in assembled relation. When assembled, the base of the attaching member 20, as well as the head 32 of the pin 30, are confined within the recess 25 so as not to interfere with sliding a shelf S, indicated in dotted lines Fig. 6, in the shelf-receiving slot 24.

A further embodiment of the invention illustrated in Figs. 7 to 10 inclusive, provides for a more ornamental shelf support as well as an easy and simplified manner of applying the shelf support to the wall of the refrigerator or other supporting part.

According to this form of invention the shelf support may be a shell-like form 40 of suitable material, as for example, a metal stamping or a molded shell of plastic composition. The shell is formed to provide a base portion 41 having upper and lower outwardly extending portions 42 connecting with an outer surface 43 of suitable shape and configuration. The portions 42 are spaced and open, providing therebetween a guideway and preferably are notched as at 44 to provide a keyway for the base of the attaching member and guide. The base 41 is also provided with an aperture 45 and a recess 46 on its inner face.

The attaching member is preferably formed with a rectangular base 47 of metal of general shape conforming with the guide and is formed with keys 48 to engage in keyways 44. The base 47 is also formed with a plurality of straight fingers 49 having inwardly curled ends 50 and presenting a slotted tubular fastener member as in the case of the forms of invention shown in Figs. 1 to 2 and 4 to 6. In assembled position the base 47 of the attaching member is adapted to be confined in the recess 46 in the base 41 of the shell 40 and the fingers 49 extend through aperture 45 as shown in Fig. 10.

A shelf-receiving guide 51 is provided for the guideway presented by the portions 42, this guide being of suitable stamped or molded material, having a base 52 apertured as at 53 and provided with upper and lower extensions 54 having keys 66 on their outer surfaces adapted to fit in keyways 44. This guide normally conceals the base 47 of the attaching member and when in assembled position, the aperture 53 thereof is in alignment with the central bore of the attaching member. A pin 56 having a head 57, a pointed end 58 and a roughened shank 59 is adapted to be inserted through the aligned aperture 53 and bore of the attaching member, until the shank 59 expands the fingers 49 into locking engagement with an apertured support 60 as shown in Fig. 10.

In the form of the invention shown in Figs. 7 to 10, the base 40, attaching member 47, and guide 51 may be pre-assembled and then applied as a unit to the support 60 in which case the ends of the fingers 49 are readily insertable through the aperture of the support 60. The pin 56 may then be inserted to lock the assembled shell, attaching member and guide to the support 60, the head 61 of the pin limiting movement of the pin in the attaching part and acting to hold all of the parts in assembled relation. When it is desired to remove the shelf support from the support 60, the guide 51 may be forced outwardly in its guideway, thus withdrawing the pin from engagement with the inturned ends of the fingers 47, permitting the shell 40 and attaching member to be readily removed from the support.

According to the invention, the fingers of the attaching members may be formed straight with inwardly turned or curled ends, as shown, the construction permitting considerable economy in the manufacture of the attaching member. The expansion of the resilient fingers of the attaching members by the roughened shank of the pin provides a secure and positive means for locking the shelf support to the refrigerator wall or other support.

The invention is not to be restricted to the details of construction shown, which are intended purely as illustrative, but I intend to include, as well, equivalents as fall within the scope of the appended claims.

I claim:

1. A shelf support for attachment to an apertured support comprising a part for supporting a shelf, said part having a horizontal groove into which a shelf may fit, said part also having an aperture therethrough, an attaching member associated with said part and having a base engaging said part adjacent to said aperture and a plurality of resilient fingers extending from said base through the said part and adapted to pass through the aperture in said support and a locking member insertable through said attaching member and adapted to cooperate with said yieldable fingers to lock the parts of the shelf support to said apertured support.

2. A shelf support for attachment to an apertured metal supporting member comprising a shelf support having an apertured base and a horizontal guideway, an attaching member formed with a base portion positioned in said guideway and a plurality of resilient fingers extending through the apertures of the base and supporting member, the ends of said fingers being inturned presenting a restricted opening, and a member insertable through said attaching member having a portion engaging said fingers and of a size in excess of said restricted opening formed thereby, whereby said fingers are expanded into locking engagement with the supporting member surrounding said opening.

3. A shelf support for attachment to an apertured supporting member comprising a shell-like member having an apertured base and horizontal extensions forming a guideway therebetween, an attaching member having a base adapted to be positioned in said guideway, and resilient fingers extending through the aperture of said base and supporting member, the free ends of said fingers being inturned presenting a restricted opening, a shelf-receiving guide member positioned within said guideway and formed with an apertured base overlying the base of the attaching member, and a pin member insertable through the aperture of

said guideway and into the restricted opening formed by the inturned ends of said fingers, said pin having a portion of a diameter in excess of that of the restricted opening for expanding the inturned ends outwardly into locking engagement with portions of the supporting member surrounding the aperture therein.

4. A shelf support for attachment to an apertured supporting member comprising a shell-like member having an apertured base and horizontal extensions forming a guideway therebetween, an attaching member having a base adapted to be positioned in said guide way and resilient fingers extending through the apertures of said base and supporting member, the free ends of said fingers being inturned presenting a restricted opening, a shelf-receiving guide member positioned within said guideway and formed with an apertured base overlying the base of the attaching member, and a pin member insertable through the aperture of said guide and into the restricted opening formed by the inturned ends of said fingers, said pin having a portion of a diameter in excess of that of the restricted opening for expanding the inturned ends outwardly into locking engagement with portions of the supporting members surrounding the aperture therein, the finger contacting portions of said pin being roughened to prevent accidental displacement of the pin from

said attaching member, said pin being provided with an enlarged head overlying a portion of said guide for maintaining the parts in their assembled relation.

5. A shelf support for attachment to an apertured supporting member comprising a shell-like member having an upturned base and horizontal extensions forming a guideway therebetween, an attaching member having a base adapted to be positioned in said guideway and resilient fingers extending through the apertures of said base and supporting member, the free ends of said fingers being inturned presenting a restricted opening, a shelf-receiving guide member positioned within said guideway and formed with an apertured base overlying the base of the attaching member, cooperative guideway means on said guide and shell for positioning the guide in the shell guideway with their base apertures in registration, and a pin member insertable through the aperture of said guide and into the restricted opening formed by the inturned ends of said fingers, said pin having a portion of a diameter in excess of that of the restricted opening for expanding the inturned ends outwardly into locking engagement with portions of the supporting members surrounding the aperture therein.

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