Dec. 27, 1938. C. C. WILSON 2,141,892

SHELF SUPPORT AND INSTALLATION THEREOF

Filed Dec. 14, 1935

Fig. 1.

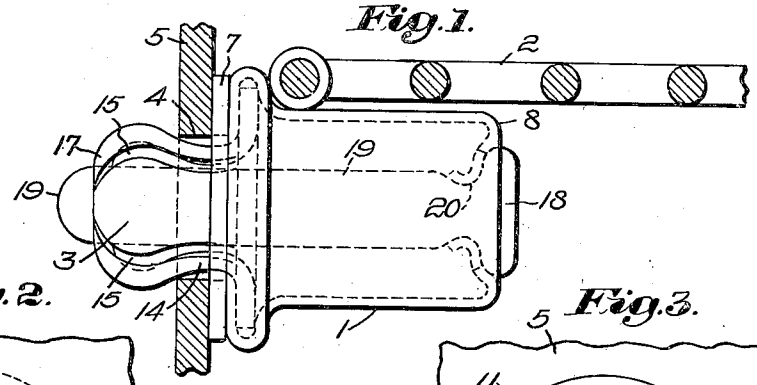


Fig. 2.

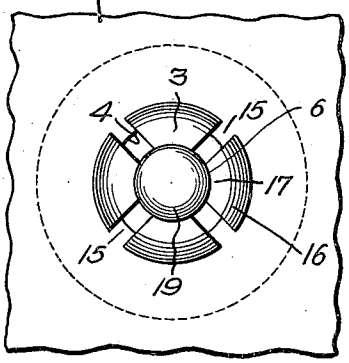


Fig. 3.

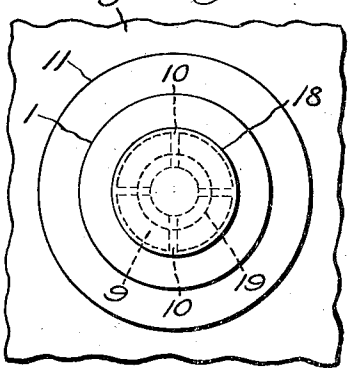


Fig. 4.

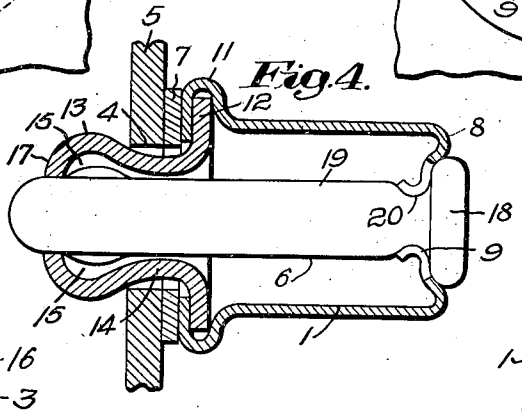


Fig. 7.

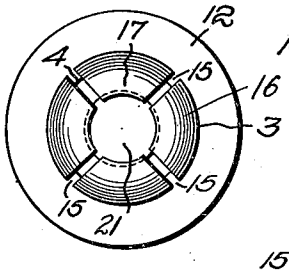


Fig. 6.

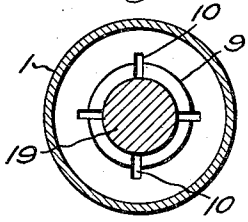


Fig. 5.

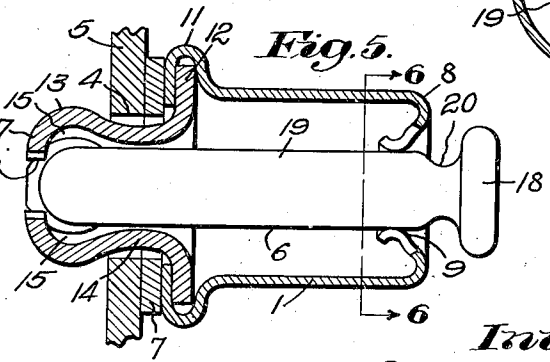
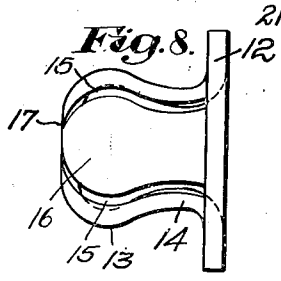


Fig. 8.



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SHELF SUPPORT AND INSTALLATION THEREOF

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Application December 14, 1935, Serial No. 54,501

6 Claims. (Cl. 248—239)

My invention relates to improvements in shelf supports for refrigerators and the like structures and installations of such supports.

Referring to the drawing, which illustrates a preferred embodiment of my invention:—

Figure 1 is a section of a refrigerator installation including a part of an inner lining, a shelf support in side elevation, and a part of a shelf carried by the shelf support;

Fig. 2 is an end elevation of the installation shown in Fig. 1, as viewed from the rear or inside of the inner lining;

Fig. 3 is an end elevation of the installation shown in Fig. 1 viewed from the front or outside of the lining;

Fig. 4 is a sectional view of the shelf support attached to an inner lining showing the support in locked position;

Fig. 5 is a sectional view of the shelf support attached to an inner lining showing the support in unlocked position;

Fig. 6 is a section taken on the lines 6—6 of Fig. 5;

Fig. 7 is an end elevation of the attaching part of my shelf support; and

Fig. 8 is a side elevation of the part shown in Fig. 7.

One object of my invention is to provide a satisfactory and inexpensive shelf-supporting means which may be secured to a support while operating solely from a front or outer face of the work. This method is of substantial advantage in the case of many constructions, such as refrigerators, as the setting of the shelf supports with the refrigerator inner lining may be done quickly and easily as the last step in the assembling process due to the fact that it is not necessary to obtain access to the rear side of the wall to which the supports are to be anchored.

A further object of my invention is to furnish a support which is particularly constructed to be secured to a supporting wall in such a way that it provides a minimum amount of friction between the shelf support and the wall which it engages. This attaching means is especially useful in connection with the refrigerator inner linings as in most cases the inner lining is porcelained for advantages of cleanliness and neat appearance, and it has been found that porcelain is often chipped or cracked by the nut and screw type attaching means which are furnished by the shelf supports now in common use with the result that a marred and defaced aspect is given to the visible surfaces of the inner lining. The particular construction of the fastening means of my present invention is directed especially to prevent any injury to the porcelain finishing.

Referring to the installation illustrated in Fig. 1, I have shown a shelf support having a supporting member 1 carrying a shelf 2 of grille construction. The shelf support also has an attaching portion 3 assembled with the member 1 and extending through an aperture 4 of a refrigerator inner lining 5 and in fastening engagement with the walls surrounding the aperture. The portion 3 is expanded by means of the pin 6 to grip the edges surrounding the aperture so that the shelf support is finally secured in locked relation with the inner lining. A washer 7, preferably made of a fibrous material, is located between the member 1 and the front surface of the support and adapted to take up any slack between the attaching portion and the supporting member after final attachment so as to prevent any looseness between the parts of the installation.

Referring in detail to the particular construction of the shelf support, I have illustrated in Figs. 4 and 5 a support providing a barrel-shaped shelf-carrying member 1 formed of sheet metal having an opening at both ends. A locking means 8 is provided in my preferred form and formed integral with the free end of the member by turning inwardly the material of the end to provide the resilient segments 9. The segments are made yieldable by the slits 10 extending from the free edges of the inwardly-turned material part way toward the straight lateral edges of the supporting member. A flange 11 is formed integral with the other end of the supporting member.

As a means of securing the member 1 to the inner lining, I have provided the attaching portion 3 which, as shown in Figs. 7 and 8, is pressed from a single piece of sheet metal and provided with a base flange 12, a head portion 13 and a shank 14 between the head and base portions. The head and shank portions are rendered resiliently contractible by a plurality of slots 15, herein shown as four (Fig. 7), which preferably extend to or slightly into the base so as to divide the head and shank into four spring arms 16. In the preferred construction of my attaching portion the free ends of the arms 16 have end portions 17 which extend inwardly toward a common center. The pin 6 has a head 18 and a shank 19, the latter portion extending longitudinally of the shelf support, as shown in Fig. 5. A groove means 20, the purpose of which will be hereinafter more fully described, is located on the longitudinal length of the shank 19, in my preferred form, as illustrated in Fig. 5.

In assembling the parts of the installation, the washer 7 is snapped over the head 13 so that when the shelf support is finally assembled with the inner lining the washer will be positioned as shown in Figs. 1, 4 and 5. The arm portions 16 of the attaching portion 3 are extended through the aperture 4 of the inner lining 5, the aperture being somewhat smaller in diameter than the diameter of the stud head 13 and adjacent part of the stud shank 14. Inasmuch as the arms 16 are contractible and expansible, the head and shank portions will contract as they are pushed through the aperture until they have passed through the opening whereupon they will expand sufficiently to permit the shank 14 to grip the walls surrounding the aperture 4 of the inner lining. The pin 6 is now inserted into the opening of the free end of the supporting member 1 and extended through the axial passages of the support so that it will take a position as shown in Fig. 5. At this point it is important to note that the opening 21 between the inturned end portions 17 of the arms 16 is somewhat smaller than the cross-sectional area of the shank 19 due to the fact that the opening 21 has been contracted to a slight degree by the snap fastener engagement of the stud shank portion with the edges of the aperture 4. For this reason the inturned ends 17 will engage the shank of the pin as the latter is moved into final position, thereby forcibly expanding the head and shank portions of the stud member so that the stud shank will enter into locking engagement with the walls surrounding the aperture 4, as illustrated in Fig. 4.

During this longitudinal movement of the pin 6 through the shelf support the shank 19 will engage and expand the free edges of the resilient segments 9, as illustrated in Fig. 5, due to the fact that the opening between the segments is of less diameter than the cross-sectional area of the shank. The expanded position of the segments 9 will be maintained until such time as the pin is moved into final fastening engagement with the parts 17, at which occurrence the grooved means 20 will permit the segments to spring outwardly toward normal position thereby securely locking the pin with the shelf support. As a result of the pin locking means any possible chance of unintentional withdrawal of the pin out of locking engagement with the support is prevented. Although I have illustrated this locking means in connection with a preferred form of my shelf support installation, I do not wish to be limited thereby, as I have found that in ordinary usage of my fastener the pin 6 will be so securely held by the frictional engagement of the same with the inturned ends of the resilient arms that the locking means may be a superfluous accessory in connection with a satisfactory working of the installation.

It will be noted that the commercial utility of the support is greatly increased by the fact that as a result of the particular construction of the attaching portion, it is possible for the stud arms in first attachment to engage in a firm spring grip the walls surrounding those apertures of varying sizes which have a diameter less than the distance between opposite arms when the arms are in normally expanded unengaging position. Also, the gradual sloping shape of the stud shoulders will permit the arms to engage surrounding walls of slightly varying thicknesses.

Furthermore, I do not wish to limit myself to the preferred construction, as described, of an attaching portion which enters into snap fastener engagement with the aperture of the inner lining before the final permanent locking action of the pin member because it is obvious to those skilled in the art that my device could be made to work, though not so satisfactorily, by relying on an expansible attaching portion which does not provide the aforesaid snap fastener action, but which is expanded to grip the walls surrounding the aperture solely by the action of the pin in cooperation with a boss means furnished by the attaching portion.

Although I have only shown in the drawing a portion of the refrigerator inner lining or retaining wall, it is understood that the entire wall or walls may have as many supports as are necessary to carry the shelf or shelves which are to be located within the refrigerator.

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

I claim:

1. A shelf support for refrigerators and the like comprising a barrel-shaped shelf-supporting member having an opening at one end thereof, a flanged base integral with the other of said ends, an attaching part having an axial passage therethrough, said attaching part having a head, a neck and a base, said base assembled with the flanged end of said member, said part being split from the outer end of its head portion to its base portion to form contractible and expansible arms, said arms being turned into the axial passage at their free ends to form a boss, said head and neck portions being adapted to extend through an aperture of a refrigerator inner lining and resiliently engage the walls surrounding said aperture, and a pin extending through the axis of said shelf support for engaging said boss to expand said head and neck tightly against said inner lining whereby said shelf support is securely locked thereto.

2. A shelf support for refrigerators and the like comprising a hollow shelf-supporting member having an opening at both ends thereof, a resilient locking means associated with one of said ends, a yieldable attaching portion assembled with the other of said ends adapted to be inserted into an aperture of a refrigerator inner lining and expanded for gripping the walls surrounding said aperture, and a pin inserted axially of said supporting member and extending through said shelf support for expanding said attaching portion, said pin having means constructed to enter into fastening engagement with said resilient locking means whereby said pin is securely interlocked with said support.

3. A shelf support for refrigerators and the like comprising a barrel-shaped supporting member having an opening at both ends thereof, the material of one of said ends being turned inwardly to form a resilient locking means, a contractible and expansible portion assembled with the other end of said member adapted to be inserted into an aperture of a refrigerator inner lining and resiliently engage the walls surrounding said aperture, and a headed pin extending axially of said shelf support for expanding said contractible and expansible portion tightly against said inner lining whereby said shelf support is securely locked thereto, said pin having a tapered portion located on its length for entering into snap fastener en-

gagement with said locking means whereby said pin is securely locked with said support.

4. A shelf support installation for refrigerators and the like structures comprising an inner lining having an aperture therethrough, and a shelf support, said shelf support providing a barrel-shaped shelf-supporting member having openings at both ends thereof, an expansible and contractible portion associated with one of said ends, a washer snapped over the free end of said portion, said portion extending through the aperture of said inner lining and resiliently gripping the walls surrounding said aperture, and a pin extending axially of said shelf support for expanding said portion tightly against said walls whereby said support is securely fastened to said inner lining.

5. A refrigerator shelf support installation comprising an inner lining having an aperture therethrough, a shelf support, said shelf support providing a barrel-shaped shelf-supporting member having an opening at both ends thereof, a flanged base integral with one of said ends, an attaching portion assembled with said flanged base having an axial passage therethrough, said attaching portion having a contractible and expansible part extending through the aperture of said inner lining, said part resiliently engaging the walls surrounding said aperture, a pin assembled with said shelf support to expand said part tightly against said walls for locking said support thereto, and a washer assembled with said installation, said washer seated against the opposite face of said inner lining from that against which said part is expanded.

6. A shelf support for refrigerators and the like comprising a shelf-supporting member having an axial passage extending therethrough, a sheet metal hollow attaching element assembled with said shelf-supporting member in line with the axial passage, said attaching element having yieldable fingers with ends turned toward each other and terminating around an aperture at one end of the device and a pin extending through the shelf-supporting member and into the attaching element and having an end of larger diameter than the aperture surrounded by said fingers whereby said attaching element may be expanded by axial movement of said pin as and for the purposes described.

CARY C. WILSON.