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2,140,610

METHOD OF MAKING A SHELF STRUCTURE FOR REFRIGERATORS

Filed Nov. 7, 1935

2 Sheets-Sheet 1

Fig. 1

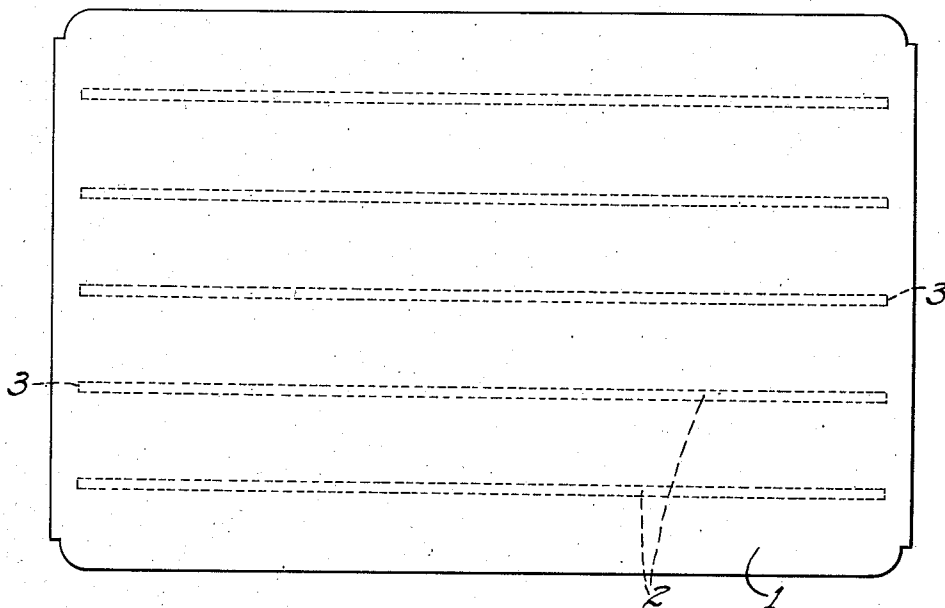
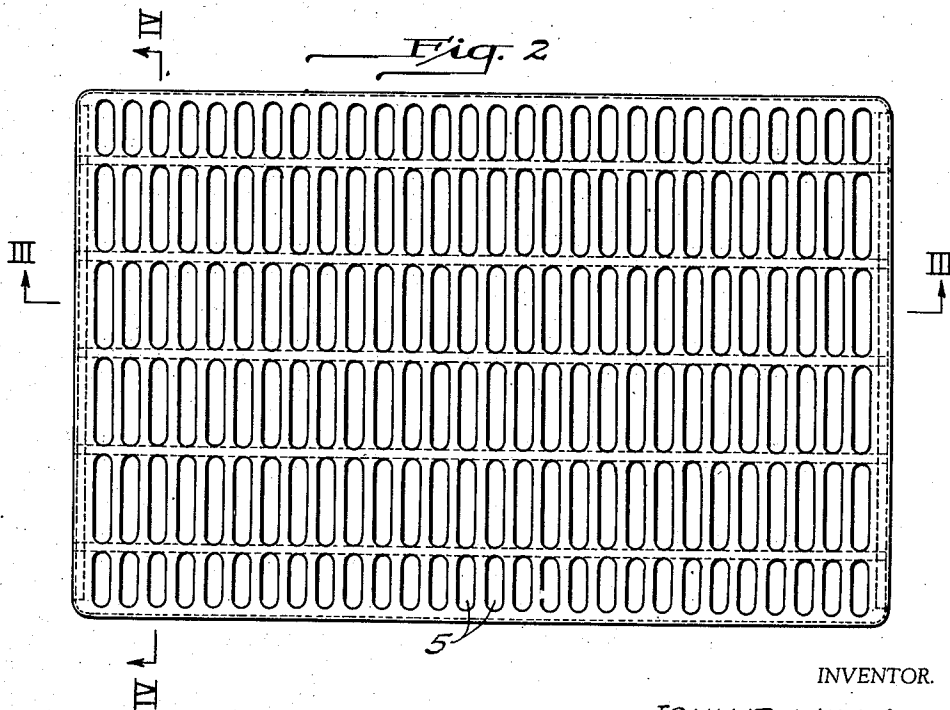


Fig. 2



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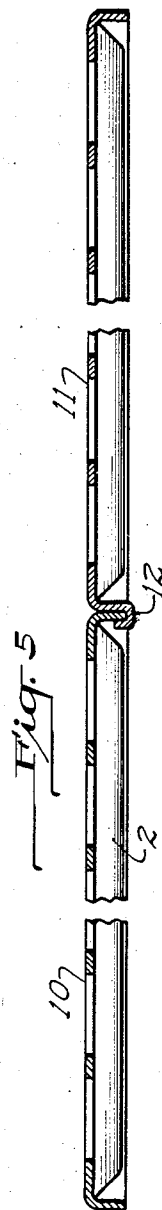
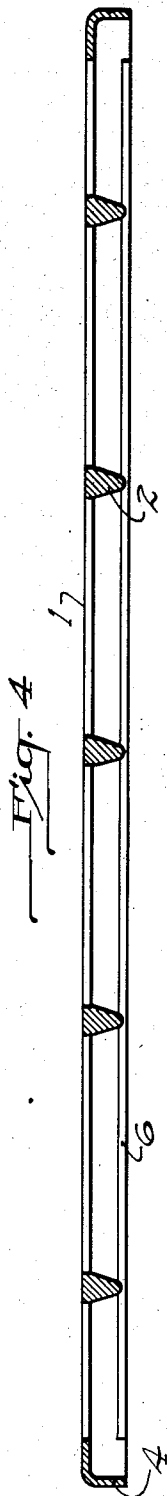
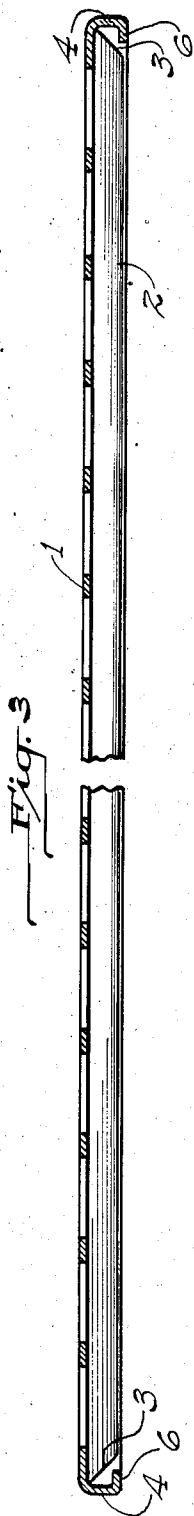
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UNITED STATES PATENT OFFICE

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METHOD OF MAKING A SHELF STRUCTURE
FOR REFRIGERATORSJohn R. Willard, New Kensington, Pa., assignor
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4 Claims. (Cl. 29—160)

This invention relates to shelves and the like and an improved method of making the same. Particularly, the invention relates to shelves for refrigerators where it is desirable to provide a structure that is sanitary and readily cleaned.

Prior shelf structures for refrigerators have been subject to numerous disadvantages due chiefly to the apparent impossibility of obtaining a structure having the strength and rigidity necessary to support the loads placed on the shelves and to also permit adequate air circulation within the refrigerating chamber. The most generally used shelf structures have been constructed of a plurality of wires placed at substantially right angles to each other, forming an open latticework or grid. The wires are generally attached in some manner at their ends to a rigid frame. In some cases the wires are welded to each other at each intersection, and in other cases are merely welded where they are attached to the frame.

Due to their structure, such shelves have provided numerous crevices or cracks where unsanitary accumulations may locate, and have been particularly susceptible to local corrosive attack of the metal forming the shelf at the joints between the parts. Such local attack has occurred irrespective of the protective methods adopted to minimize corrosion. A further disadvantage of the prior structures has been the relatively irregular surface presented by the overlapping of the wires and upon which the contents of the refrigerating chamber are placed.

It is an object of my invention to provide a shelf structure free from unsightly, readily corrodible and unsanitary joints. A further object is the provision of a unitary shelf structure which presents for the reception of the contents of the refrigerator an absolutely flat surface. Another object is to provide a shelf structure of great rigidity and strength and still permitting an adequate circulation of air within the refrigerating chamber. A still further object is to provide a structure which is readily and economically fabricated by the described method. Further objects will be apparent from the following description and the drawings, in which:

Fig. 1 shows the ribbed sheet material utilized in the construction of the shelf, shaped in the form of a blank;

Fig. 2 shows a top plan view of the formed shelf;

Fig. 3 shows a section taken along the line III—III of Fig. 2;

Fig. 4 shows a section taken along the line IV—IV of Fig. 2; and

Fig. 5 shows a section taken through another modification of the invention.

Referring to the drawings, and particularly to Fig. 1, the sheet material 1 is provided with a plurality of relatively deep ribs 2 of slightly tapered section integrally formed thereon by rolling or a similar operation, which serve to impart longitudinal rigidity to the sheet and at the same time effect an economy of material. The material of the sheet is preferably a metal having considerable resistance to corrosion and at the same time comparatively high mechanical properties, such as some of the known alloys of aluminum. If made of a metal having inferior corrosion-resistant properties, the material may be coated with a suitable material to protect the metal base.

A preferred form of shelf made from this ribbed sheet material is shown in Figs. 2 to 4 inclusive. The shelf is formed by cutting off the ribs for a distance back from the ends, as shown at 3. A flange 4 is formed around the periphery of the shelf by pressing in suitable dies. Preferably this flange is continuous, that is, not broken at the corners, and is unitary with the shelf. The shelf may be provided with perforations 5, preferably of an elongated form, having their longitudinal axes perpendicular to the ribs 2 and located between the ribs. The perforating operation may be coincident with the flanging operation or may occur thereafter.

As it is usually more convenient to support the shelves by having the ends rest on suitable lugs or bosses extending from the sides of the refrigerating chamber, it is preferable that the flanges located at the ends of the shelves be turned in to provide a bearing surface 6 for the support of the shelf.

It is in many cases desirable to make refrigerator shelves in sections to permit the removal of a portion of the shelf to accommodate large or high objects, such as bottles, placed on shelves located below the sectional shelf. The adaptability of the shelf of my invention to an improved form of sectional shelf is illustrated in Fig. 5.

Referring to Fig. 5, the shelf section 10 is identical in detail with the shelf shown in the preceding figures. The shelf section 11 is identical except that the flange on the edge adjacent section 10 is turned upwardly at 12 to form an interlocking engagement with the adjacent flange of shelf section 10. A blank suitable for forming the shelf section would be the same as that shown in Fig. 1 except that a projecting portion similar to that provided for forming the inwardly-turned portions 6 is provided along one side of the blank.

The shelf structures above described, being formed of a single sheet of material of novel form, are entirely free from joints of any nature, thus eliminating the possibility of localized corrosion and resting places for unsanitary accumulations. 5 The upper surface of the shelf is absolutely flat, giving a level resting place for any article placed thereon, and presents a free sliding surface upon which articles may be moved about without risk 10 of overturning.

The advantages of my shelf structure are mainly dependent upon the integrally-formed ribs which contribute to the longitudinal rigidity of the shelf. By reason of the stiffening effect of 15 these ribs it is possible to provide a sufficient perforated area to obtain the desired circulation of air within the refrigerating chamber. The ribs should be of sufficient depth and area to make negligible the lessening of the longitudinal rigidity of the shelf due to the perforations. The 20 combination of the shelf having the longitudinal stiffening ribs and the continuous integral flange makes a particularly desirable structure.

While I have described my invention as taking a particular form, it will be understood that 25 change from the exact form illustrated may be made without departure from the spirit and scope of the invention as defined in the appended claims.

30 Having thus described my invention, what is claimed as new and is desired to be secured by Letters Patent is:

1. The method of forming a unitary shelf for a refrigerator or the like which comprises rolling 35 a flat surfaced sheet to produce on the under side thereof integral longitudinal ribs, and flang-

ing said sheet by cutting said ribs back on an incline a distance from the ends of the sheet substantially equal to the depth of the flange and turning down the edges by press forming.

2. The method of forming a unitary shelf for a refrigerator or the like which comprises rolling 5 a flat surfaced sheet to produce on the under side thereof integral longitudinal ribs, flanging said sheet by cutting said ribs back on an incline a distance from the ends of the sheet substantially 10 equal to the depth of the flange, perforating said sheet intermediate the ribs, and turning down the edges by press forming.

3. The method of forming a unitary shelf for a refrigerator or the like which comprises rolling 15 a flat surfaced sheet to produce on the under side thereof integral longitudinal ribs, flanging said sheet by cutting said ribs back on an incline a distance from the ends of the sheet substantially equal to the depth of the flange and turning 20 down the edges by press forming, perforating said sheet intermediate the ribs, and turning a portion of said flanges inwardly to provide a bearing surface.

4. The method of forming a unitary shelf for a refrigerator or the like which comprises rolling 25 a flat surfaced wrought metal sheet having on the under side thereof integral longitudinal ribs, flanging said sheet by cutting said ribs back on an incline a distance from the ends of the sheet 30 substantially equal to the depth of the flange and turning down the edges of the sheet by press forming to give an integral, continuous and unbroken flange.

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