April 17, 1962 W. M. MORRISSEY, JR 3,029,953

REFRIGERATOR DOOR SHELF ARRANGEMENT

Filed Aug. 24, 1960

FIG.1

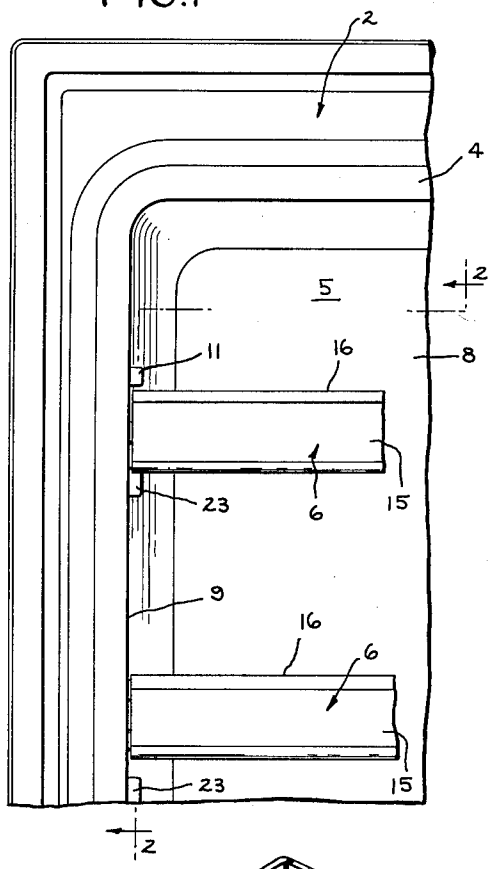


FIG.2

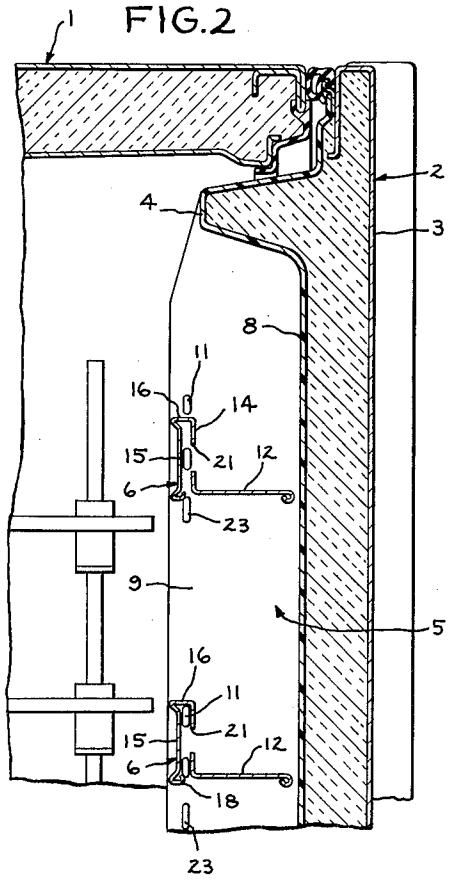
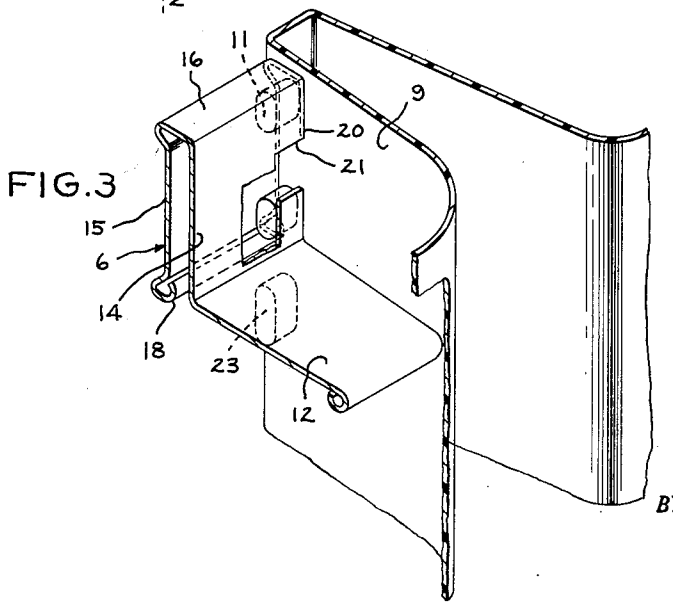


FIG.3



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REFRIGERATOR DOOR SHELF ARRANGEMENT

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The present invention relates to a refrigerator door shelf arrangement and is particularly concerned with a new and improved arrangement for supporting a removable door shelf on the inner panel of a refrigerator door.

It is a primary object of the present invention to provide a new and improved refrigerator door shelf arrangement including a low cost shelf and means for removably mounting the shelf in a plurality of vertically spaced positions on a refrigerator door.

The shelf structure of the present invention is particularly adapted for use in connection with a refrigerator door of the type having an outer shell and an inner liner having a recess therein. The shelf arrangement includes at least one storage shelf provided with an upstanding or vertical front guard comprising coextensive inner and outer vertical flanges connected along their top edges and spaced apart so that the spaced flanges and the connecting portion at the top edges provides the sole means whereby the shelf is supported on opposed pairs of bosses formed integrally with the side walls of the recess. The upper of each pair of bosses engages and vertically supports the flange connecting portion and hence the shelf while the lower of each pair of bosses extends between the lower portions of the spaced flanges to prevent tilting of the shelf when in its storage position on the door. A projection adjacent the lower edge of either the inner or outer flange is preferably provided to engage the lower surface of the adjacent boss for locking the shelf in position. In order that the shelf can be mounted within the door recess in any of a plurality of vertically spaced positions, a row of at least three vertically spaced bosses is formed on each side wall of the recess adjacent the front thereof with the bosses on the row on one side wall of the recess being horizontally aligned with the bosses on the other side wall. The bosses are of such a size and are spaced a distance such that with the flange connecting portion of the shelf in engagement with any two opposed bosses other than the lowermost boss in each row of bosses, the lower edges of the flanges engage the next lower opposed bosses. To permit the mounting of the shelf on pairs of adjacent bosses below the uppermost boss, one or both side edges of the inner flange of the front guard of the shelf is provided with a notch approximately at the mid section thereof and of a size sufficient to permit the ends of the shelf to be moved horizontally past the opposed bosses. In the preferred form of the invention the lowermost bosses in each row are larger than the notch or notches provided in the inner flange to prevent the shelf from being mounted only on the lowermost bosses in which position it would be free to tilt or pivot about these bosses.

The novel features which are believed to characterize the present invention are set forth with particularity in the appended claim. The invention itself, however, may be best understood by reference to the following description taken in conjunction with the accompanying drawing in which:

FIG. 1 is a fragmentary view of a refrigerator cabinet door in which is incorporated a preferred embodiment of the present invention;

FIG. 2 is a vertical section of a refrigerator cabinet and door taken generally along line 2—2 of FIG. 1; and

FIG. 3 is an enlarged fragmentary perspective view illustrating certain details of the present invention.

Referring now to FIGS. 1 and 2 of the drawing, there

is illustrated a refrigerator cabinet 1 provided with a door 2 for closing the access opening to the cabinet. The door 2 is of the type having an outer panel or shell 3 and an inner wall or liner 4 preferably formed from a sheet of heat insulating thermoplastic material and provided with a relatively large central recess 5 for accommodating one or more door shelves 6 extending substantially the full width of the recess. The recess 5 essentially includes a rear wall 8 and vertically extending opposed side walls 9, only one of which is shown in the drawing, it being understood that the opposed side walls 9 for the purpose of the present invention are symmetrically formed or, in other words, of identical construction.

For the purpose of supporting door shelves within the recess 5 there is formed on each of the side walls 9 adjacent the front thereof at least one row of vertically spaced bosses or protuberances 11 with each of the bosses on one side wall positioned opposite or, more specifically, in horizontal alignment with the bosses on the other side wall. These bosses, or more specifically, two adjacent bosses in each of the opposed rows provide the sole means for supporting and anchoring a removable shelf within the recess 5. To this end there is provided a shelf formed of sheet metal or the like to include a horizontal load supporting portion 12 and a front guard comprising an inner vertical flange 14, an outer vertical flange 15 and a horizontal connecting portion 16 connecting the upper edges of the flanges. The inner and outer flanges 14 and 15 are spaced apart and adapted to snugly engage and enclose opposed pairs of bosses 11 when the shelf is mounted within the recess 5. More specifically, the shelf is so formed that the inner and outer flanges 14 will fit around two adjacent bosses 11 in each of the opposed rows when the shelf is mounted within the recess 5 in such a manner that, as illustrated by the lower shelf shown in FIGS. 1 and 2, of the drawing, the uppermost boss of these pairs provide vertical support for the opposite ends of the shelf by contact thereof with the connecting portion 16 while the lower bosses of the two pairs extend between the lower edges of the inner and outer flanges 14 and 15 to prevent tilting of the shelf within the recess or in other words to maintain the load supporting horizontal portion 12 of the shelf in a horizontal position. Preferably either the inner flange 14 or the outer flange 15 is provided with a projection 18 extending into the space between these flanges and adapted to engage the lower edges of some of the cooperating bosses 11 for the purpose of resiliently anchoring or locking the shelf in its supported position. In the illustrated embodiment of the invention, this projection 18 is formed by a rounded or rolled lower edge of the outer flange 15 which engages the lower edge of the adjacent boss.

As it is most desirable that shelves provided on a refrigerator door be capable of being mounted in any of a plurality of vertically spaced positions along the door, each of the rows of bosses preferably comprises at least three spaced projections or bosses 11 so arranged so that any two adjacent bosses in each row can be employed to support an end of the shelf 6. In other words, each row preferably comprises at least three vertically spaced bosses thus providing means for supporting the shelf in either of two positions using, in the case of three bosses, the intermediate boss as part of the shelf support means in both shelf positions. As the flange 14 of the shelf is too high to be conveniently inserted between adjacent bosses for mounting of the shelf on a pair of bosses below the uppermost boss in any given row, there is provided in at least one, and preferably both of vertical edges 20 of each of the shelf flanges 14 and approximately midway between the top and the bottom thereof a notch 21 of a size such that one of the bosses 11 will pass through the

notch thus permitting the shelf to be moved horizontally into position within the recess below an upper boss. This action is illustrated in connection with the upper shelf in FIGS. 1 and 2 of the drawing showing the position of the shelf as it is moved horizontally during mounting thereof within the recess **5**. Thus, while any of the shelves **6** may be mounted on the upper pair of bosses of the opposed rows merely by inserting the shelf into the recess above these bosses and then moving the shelf downwardly to the point where the upper bosses engage the connecting section **16** and the lower bosses are in latching engagement with the projection **18**, the spacing of adjacent bosses to provide the proper support for the shelf when in its supported position on the door is such that the shelf would be prevented from being moved into its supporting position on any of pairs of bosses other than the upper pair of bosses in the absence of the notch **21**.

Because at least two of the bosses **11** must engage each end of the shelf for the proper support thereof, means are also provided for preventing the user from attempting to mount the shelf on only the lowermost boss of each row. For this purpose the lowermost boss on each row indicated by the numeral **23** is larger, that is either higher or longer, than the remaining bosses so that it cannot pass through the notch **21** provided in the inner flange **14** of the shelf. In the illustrated embodiment of the invention the lower boss **23** is shown as being of a greater height than the remaining bosses so that it cannot pass through the notch **21**. On the other hand, the lowermost bosses **23** should be of substantially the same width as the remaining bosses, in order that they can be received between the inner and outer flanges **14** and **15** to provide the proper support for the lower portion of the front guard when the shelf is mounted on the lowermost pairs of bosses.

While there has been shown and described a preferred embodiment of the present invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and it is therefore intended by the appended claim to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

In a shelving arrangement for use with a refrigerator door of the type having an outer shell and an inner liner including side and rear walls defining a recess and including at least one storage shelf, that improvement comprising supporting means formed integrally with said door and said shelf and adapted to releasably mount said shelf at a plurality of vertically spaced positions within said recess, said supporting means including a row of at least three vertically spaced bosses formed integrally on each side wall of said recess adjacent the front thereof with said bosses on one row being horizontally aligned with said bosses of the other row, the lowermost boss in each of said rows being of a larger size than the remaining bosses, said shelf comprising a front guard including vertically extending, substantially coextensive inner and outer flanges and a connecting portion interconnecting said flanges at the upper edges thereof, said flanges being spaced apart a distance to fit over said bosses and being of a height such that when said connecting portion rests on opposite bosses in said rows thereof the lower edges of both of said flanges fit around and engage bosses in said rows thereof next below said bosses engaged by said connecting portion to prevent tilting movement of said shelf relative to said door, said inner flange including a notch midway in at least one side edge thereof of a size greater than the size of said remaining bosses but smaller than said lowermost boss whereby said inner flange of said shelf can be moved horizontally past any of said remaining bosses and into said recess for mounting of said shelf on vertically adjacent bosses below the upper bosses in said rows but cannot be moved past said lowermost bosses thereby preventing the user from attempting to mount said shelf only on said lowermost bosses.

References Cited in the file of this patent

UNITED STATES PATENTS

2,453,387	Rundell	Nov. 9, 1948
2,784,044	Kurowski	Mar. 5, 1957
2,852,328	Jewell	Sept. 16, 1958