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RESILIENT SUPPORT

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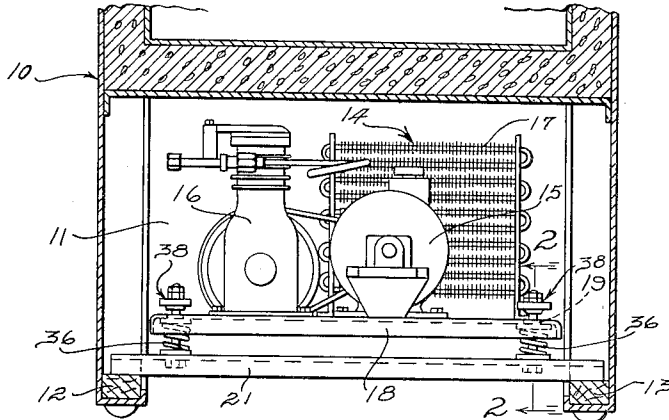


FIG. 1.

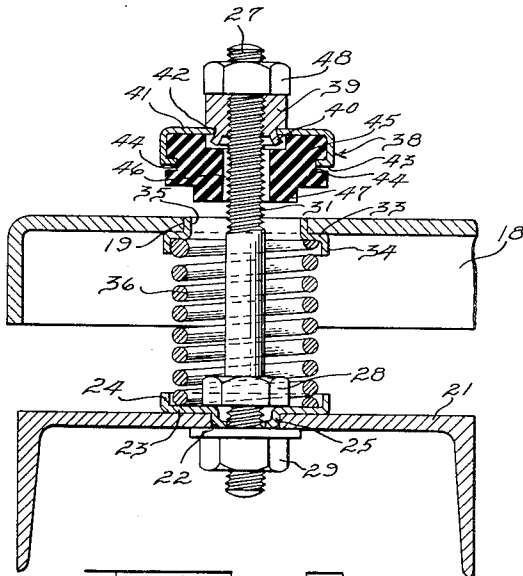


FIG. 2.

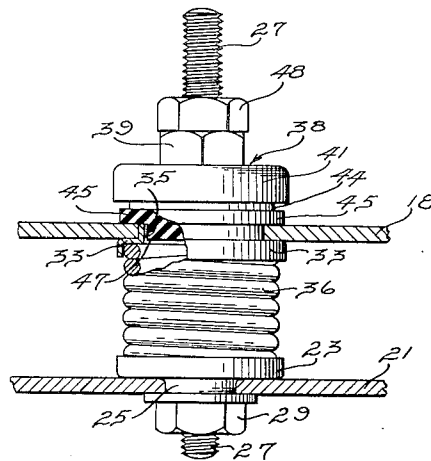


FIG. 3.

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RESILIENT SUPPORT

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This invention relates to refrigerators and it has particular relation to a mounting for supporting a refrigerating unit, in the cabinet thereof.

The primary object of the invention is to provide a mounting for a refrigerating unit that will not only yieldingly support a unit in a refrigerator cabinet for normal operation, but will also serve to firmly, but yieldably support the unit in the refrigerator cabinet when the latter is packed for shipment, whereby the loss that usually results from the damage incurred during shipping is entirely obviated.

In the construction of electric refrigerators, it is very essential that a supporting means be provided for the refrigerator unit in the refrigerator cabinet which will prevent damage to the unit when shipped from the factory to the various distributors throughout the country. Heretofore no known method of mounting the refrigerating unit in the cabinet, without entirely removing the yieldable supports and bolting the unit in place, has proven entirely satisfactory, with the result that in cases where such supports have not been removed, replacements of units necessary after shipment thereof has been exceedingly large, which obviously increases the ultimate cost of the refrigerator.

In my invention, a mounting for supporting a refrigerating unit in the cabinet is provided, in which a yielding member is interposed between a supporting member of the cabinet and the supporting member or base of a refrigerating unit, thus providing a mounting for yieldingly supporting the unit. A threaded member associated with the yielding member extends through the unit base and is provided with a resilient member movably mounted on the threaded member, for firmly but yieldably clamping the refrigerating unit in place in the cabinet for shipping purposes, and further serving as a resilient stop for excessive vibratory movements of the unit during normal operation thereof.

For a better understanding of the invention reference may now be had to the accom-

panying drawing, forming a part of this specification, in which:

Fig. 1 is a fragmentary cross-sectional view of a refrigerator cabinet, having a unit compartment therein, a refrigerating unit disposed in the cabinet and supported by a mounting constructed in accordance with my invention.

Fig. 2 is an enlarged sectional view of a mounting for supporting a refrigerating unit constructed in accordance with my invention, taken substantially along line 2-2 of Fig. 1.

Fig. 3 is an elevational view, with portions broken away, of a mounting for a refrigerating unit constructed in accordance with my invention, disclosing the unit support rigidly mounted to the portion of a refrigerating cabinet.

In practicing my invention a refrigerator cabinet 10, is provided with the usual unit compartment 11 in which the horizontally disposed parallel cabinet frame members 12 and 13 are exposed in the bottom thereof. A refrigerating unit 14, which includes a motor 15, a compressor 16 and a condenser 17, rigidly mounted on a conventional base or supporting member 18 having a plurality of openings 19 therein, is supported in the unit compartment in the following manner.

Members 21, shown in the form of inverted channels for the purpose of illustration, are rigidly secured adjacent their ends, in spaced and parallel relation, to the members 12 and 13 respectively, and are provided with openings 22 therein spaced in accordance with the openings 19 in the base 18. A washer 23 having a flange portion 24 and a shoulder portion 25 is disposed in each of the openings 22 and is rigidly secured to the members 21 by means of studs 27 and nuts 28 and 29. Each stud 27 is provided with a threaded portion 31 extending through its corresponding opening 19 in the base 18. A washer 33, having a flange portion 34 and a shoulder portion 35, is disposed in each of the openings 19, with the outer periphery of the shoulder substantially contacting with the edge portion of the opening 19. A helical spring 36 disposed about each stud 27, is mounted between the members 18 and 21, with the outer periphery of

the spring contacting with the inner periphery of the flange portions 24 and 34, thus limiting the radial movement of the spring with respect to the base.

5 An adjustable stop device 38 for limiting upward movement of the base 18 is provided on each stud 27. Each device 38 is provided with a nut 39, threaded on the corresponding stud 27, and has a downwardly extending portion 40 which is rigidly locked to an inverted cup shaped member 41, by radially spreading the portion 40, as indicated at 42. The brim of the cup shaped member 41 is inwardly turned to provide a flange 43, co-acting with a peripheral recess 44, of a rubber block 45, for securing the block in the cup-shaped member 41. The rubber portion 45 is provided with a centrally disposed opening 46, somewhat larger than the diameter of the stud 27, which assures easy movement of the block 45 along the stud 27, and a shoulder portion 47 adapted to be disposed within the shoulder portion 35 of the washer 33 when moved to a position for shipping. A lock nut 48 threaded on the stud 31 is provided to maintain the locking device 38 in any desired adjusted position.

When the refrigerating unit 14 is mounted in the cabinet 11 for normal operation, the unit support 18 rests on the springs 36, which are supported by the channels 21, with the studs 27 extending through the openings in the unit support and freely movable relative thereto. The locking members 38 are threaded on the studs 27, with the shoulder portions 47 of the blocks 45 spaced from the unit support 18, as best shown in Fig. 2, so as to act as a stop for the base only in cases of excessive vertical vibratory movements of the unit.

The above described mechanism provides an exceptionally efficient yielding mounting for the unit because the springs 36 readily absorb the vibratory movements of the unit and prevent them from being apparent in the cabinet, and the rubber blocks 45, which normally are spaced from the member 18, act to materially reduce the force of shocks which may be incurred during the operation of the refrigerator due to excessive vertical movements of the unit. It will be noted that the support also provides for a lateral movement of the unit base 18, due to the large openings in the washers 34, and which are considerably larger than the diameter of the studs 27. When in normal position, the blocks 45 also serve as a means for preventing disengagement of the unit base from the studs in cases where the refrigerator is moved or tipped and it has been forgotten to tighten down the locking members 38.

In preparing the refrigerator for shipment, the refrigerating unit 14 is firmly, yet somewhat yieldingly, secured in the compartment

11 by axially moving the devices 38 along the studs 27, until the springs 36 are fully compressed, with the shoulders 47 of the blocks 45 disposed within the openings of the shoulders 35 of the washers 31, as best shown in Fig. 3. It will be noted that with the shoulders 47 of the blocks 45, disposed in the openings of the flange members 35, lateral movement of the unit is entirely obviated.

From the foregoing description, it is apparent that I have provided a mounting, for supporting a refrigerating unit within a cabinet, which will either freely yieldingly support a unit for normal operation, or firmly, but yieldingly support a unit in the cabinet for shipment, as may be desired. Thus a mounting is provided that is more efficient and more economical than the mountings heretofore employed.

Although I have illustrated but one form which my invention may assume and have described in detail but a single application thereof, it will be apparent to those skilled in the art that it is not so limited but that various minor modifications and changes may be made therein without departing from the spirit of my invention or from the scope of the appended claims.

What I claim:

1. The combination with a refrigerator cabinet, having a unit compartment and a refrigerating unit disposed therein, of a mounting for securing the unit in the cabinet, comprising a bar member rigidly secured to the cabinet, means including a threaded member secured to said bar member and extending beyond the unit base, for yieldingly supporting the unit, the means including a rubber member fixed to an inverted cup shaped member, the cup shaped member being rigidly mounted on a member co-acting with the threaded member, for securing the unit against movement in the cabinet.

2. The combination with a refrigerator cabinet, having a unit compartment and a refrigerating unit disposed therein, of a mounting for securing the unit in the cabinet, comprising a bar member fixed relative to the cabinet, means including a threaded member fixed to said bar member and extending beyond a unit support, for yieldingly supporting the unit, a nut having a downwardly and radially extending flange, a cup shaped member having an inwardly extending flange portion, mounted on the downwardly extending portion of the nut, and a rubber block secured to the cup shaped member, for securing the unit against movement in the cabinet for shipping purposes and serving as a resilient stop for excessive vibratory movements of the unit during normal operation.

3. The combination with a refrigerator cabinet, having a unit compartment and a refrigerating unit disposed therein, of a

mounting for securing the unit in the cabinet, comprising a channel member rigidly secured to the cabinet, a base for said unit having a plurality of openings therein, means including threaded members extending through the openings of said base, and resilient members, for yieldingly supporting the unit, and resilient means having an annular shoulder thereon, threaded on each of said members and adapted to be disposed in the annular openings of said base during shipment, for securing the unit against movement in the cabinet.

4. The combination with a refrigerator cabinet, having a unit compartment and a refrigerator unit disposed therein, of a mounting for securing the unit in the cabinet, comprising a channel member rigidly secured to the cabinet, the base of said unit having a plurality of openings therein, means including a threaded member extending through each of the openings in said base, and an encircling spring, for yieldingly supporting the unit, means having a downwardly extending radially bent flange portion, movably secured to each of the threaded members, an inverted cup shaped member rigidly secured to the downwardly extending portion of each of said means, and a rubber member, having an annular shoulder therein rigidly secured to each of said cup shaped members, the shoulder portion of the rubber member co-acting with the corresponding opening of said base, for securing the unit against movement in the cabinet.

5. The combination with a refrigerator cabinet, having a unit compartment and a refrigerator unit disposed therein, of a mounting for securing the unit in the cabinet, comprising a pair of channel members rigidly secured to the cabinet, the base of said unit having a plurality of openings therein, flanged members, each having an opening therethrough, mounted in each of the openings of the base, a plurality of flanged members secured to the channel members, a spring disposed within the confines of the flanged members, a threaded member extending through each of the openings of the first mentioned flanged members for yieldingly supporting the unit with the opening of the first flanged member of such size as to provide a lateral movement of the unit, a nut having a downwardly bent portion thereon, an inverted cup shaped member secured to the nut, and a rubber block having a shoulder thereon, the shoulder co-acting with the corresponding opening of the first mentioned flange, for supporting the unit against movement in the cabinet.

6. In combination, a supporting member, a power unit supporting member, a bolt connected to one member and extending through an enlarged opening in the other, threaded means on the latter end of the bolt, means on

the bolt for cushioning vibratory movement of the unit both axially and laterally of the bolt, and means on the bolt adapted to project into the enlarged opening in the unit supporting member when the threaded means is tightened to draw the members toward each other, whereby upon tightening such threaded means, the cushioning means is compressed and the means on the bolt adapted to project into the enlarged opening in the unit supporting member, is moved into such opening from which it follows that movement of the unit supporting member axially and laterally of the bolt may be substantially prevented during shipping of the unit.

7. In combination, a supporting member, a power unit supporting member, a bolt connected to one member and extending through an enlarged opening in the other, cushioning means around the bolt between the members for normally and resiliently cushioning and dampening vibratory movement of the unit axially and laterally of the bolt, threaded means on that end of the bolt projecting from the enlarged opening in the unit supporting member, for holding the members together, and means on the bolt adjacent such threaded means and adapted to project into the enlarged opening in the unit supporting member when the threaded means is tightened whereby upon tightening the threaded means, said last mentioned means on the bolt adjacent thereto is moved into the enlarged opening in the unit supporting member and the cushioning means between the members is compressed, from which it follows that upon tightening the threaded means when the unit is to be shipped, vibratory movement of the unit axially and laterally of the bolt may be substantially prevented.

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