June 30, 1931. O. F. NELSON 1,812,113

REFRIGERATING APPARATUS

Filed April 1, 1929

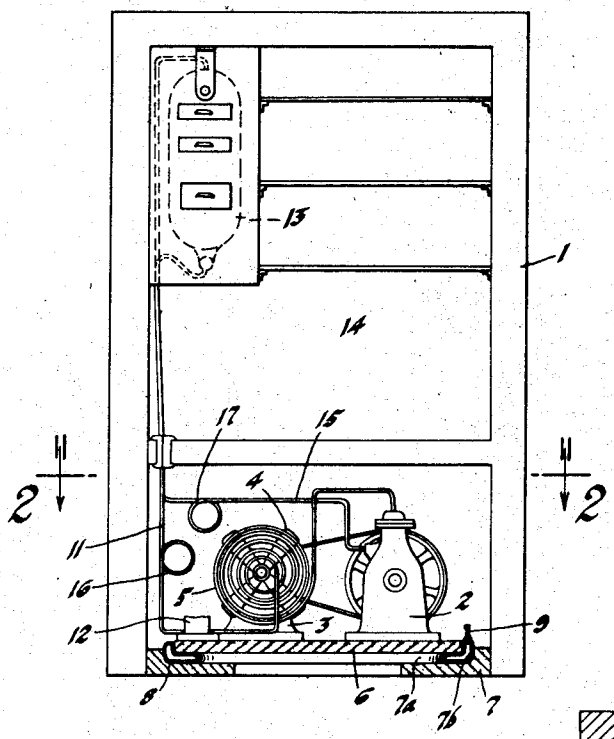


Fig. 1

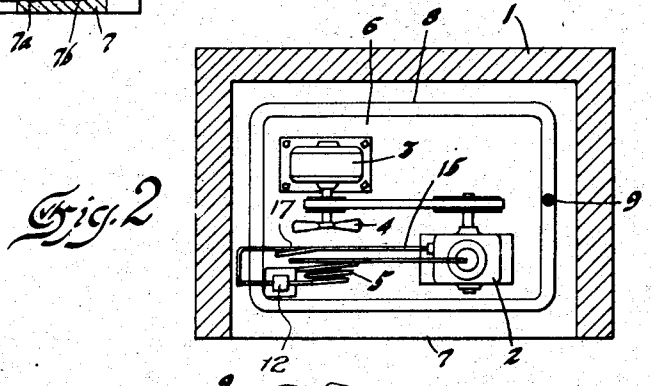


Fig. 2

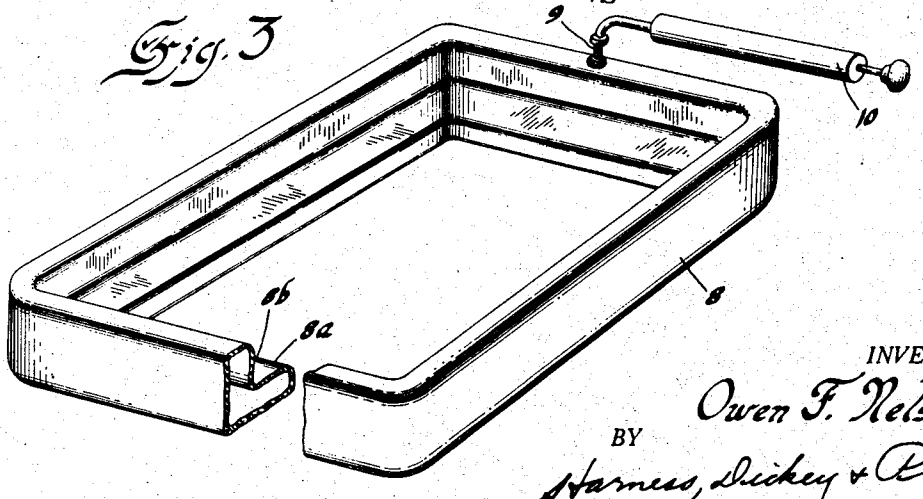


Fig. 3

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REFRIGERATING APPARATUS

Application filed April 1, 1929. Serial No. 351,812.

This invention relates to refrigeration, and particularly to mechanical refrigerating systems installed within suitable casings.

An object of the invention is to provide a sound and vibration absorbing support for the driving and driven parts of a mechanical refrigerating system, effective upon the base which it carries, throughout the marginal extent of said base.

Another object is to provide a sound and vibration absorber for supporting refrigerating or other machines, comprising a resilient inflatable member of approximately annular form.

A further object is to form such an annular member so as to not only constitute a support for a machine base when inflated, but to also circumferentially embrace said base so as to effectually absorb lateral as well as vertical vibrations.

These and various other objects the invention attains by the construction hereinafter described and illustrated in the accompanying drawings, wherein:

Figure 1 is a front view of a refrigerator, showing a motor-compressor unit installed in the casing thereof and supported by the improved vibration-absorbing member.

Figure 2 is a cross-sectional view of the same, taken upon the line 2—2 of Figure 1.

Figure 3 is a perspective view of the shock and vibration-absorbing support, showing a pump engaged therewith for inflating said support.

In refrigerating mechanisms of the type wherein the compressing and condensing mechanism is embodied in the same cabinet as the cooling element and the cabinet is adapted to be positioned in the kitchen or other room of the dwelling that persons are present in, it is desirable that the operation of the refrigerating mechanism is as silent and unnoticeable as possible. The operation of the electric motor commonly employed for driving the mechanism produces a hum which is irritating to some individuals. It quite often happens in constructions as heretofore marketed that the cabinet will act as a sounding board for the motor and will thus aggravate the undesirable hum of the motor. Furthermore, in the smaller types of refrigerating mechanism where a single cylinder piston type compressor is employed it is practically impossible to eliminate vibration in the compressor when operating, and this vibration is often transmitted to the cabinet in an undesirable manner and with undesirable results, such as causing rattling of the articles supported in the cabinet. Accordingly, it is the principal object of the present invention to provide means for insulating the cabinet against transmission to it of the undesirable humming of the electric driving motor, and further insulate it from the vibration of the compressor.

Referring to the drawings, the reference character 1 designates the casing of a mechanically cooled refrigerator, having installed in its lower portion a refrigerant compressing and circulating unit comprising a compressor 2 and a motor 3 driving said compressor. Said motor is illustrated as further actuating a fan 4 adapted to cool a refrigerator-condensing coil 5. The condensing coil 5 is connected by a tube such as 11 through a receiver 12 to an expansion element 13 positioned in the cooling compartment 14 of the cabinet. The other side of the expansion element 13 is connected by the tube 15 to the suction side of the compressor 2. The tubes 11 and 15 are preferably provided with one or more loops such as 16 and 17, respectively, for a purpose which will be described later. The motor 3, compressor 2, condenser 5 and receiver 12 are carried by a suitable base 6, and between the latter and the bottom 7 of the casing 1, which is formed to provide co-acting horizontal and vertical surfaces 7*a* and 7*b*, respectively, is interposed my improved vibration-absorbing member 8. This has the nature of an endless tube of rubber or other elastic material impervious to air, preformed to an L-shaped cross-section, and to a general rectangular form, conforming to that of the base 6, whereby the inwardly projecting lower portion 8*a* of said member rests against the surface 7*a* and forms a seat conforming to the base 6, and its upstanding portion 8*b* bears against the surface 7*b* and is adapted, when inflated, to snugly embrace

the edge of said base. At some suitable point an inflation valve member 9 is carried by the member 8, and is engageable by a suitable air pump 10. The member 8 is maintained under a relatively low pressure, only sufficient inflation being required to support the weight of the base 6 and parts carried thereby and to maintain the edges of the same out of contact with the surfaces 7b of the base 7. The base 6, and all the parts carried thereby, therefore floats on a cushion of air and is insulated from the cabinet proper thereby. Thus the vibrations of the motor 3 which cause the audible humming noise are prevented from reaching the cabinet proper through any connection which will permit transmission of the humming noise to the cabinet, and the base 6 being floatingly suspended, is permitted to yield to the vibrations of the compressor, and such vibrations are accordingly prevented from becoming transmitted to the cabinet itself. It will be apparent that this substantially eliminates any noise or vibration of the cabinet itself due to transmission of the same from the motor compressor unit. The loops 16 and 17 previously referred to are provided in the tubing 11 and 15 in order that the movement of the motor-compressor unit on its base relative to the cabinet will not set up undue stresses in the tubing 11 and 15 which might otherwise induce breakage of the same.

While the described noise-eliminating and vibration-absorbing support has been disclosed as associated with a mechanically-cooled refrigerator, it is to be understood that said support may be employed to eliminate or minimize the noise and vibration produced by various kinds of other machines, and particularly those disposed within a casing, tending to accentuate such disturbances, but I find it of greatest advantage in connection with refrigerating mechanisms of the type described, in order to prevent amplification of the audible sounds of the motor-compressor unit by the cabinet, and transmittal of physically apparent vibrations to the cabinet.

Formal changes may be made in the specific embodiment of the invention described without departing from the spirit and substance of the broad invention, the scope of which is commensurate with the appended claims.

What I claim is:

1. As a new article of manufacture, a shock-absorbing support, having the form of an endless pneumatic tube forming an opening and comprising a seat-forming portion projecting into said opening, and an upstanding portion adapted to embrace a seated member.

2. As a new article of manufacture, a shock-absorbing support comprising an inflated resilient annular member having a portion marginal to its central aperture projecting inwardly to form a seat for a supported member, and having an upstanding portion surrounding said seat, adapted to embrace a member engaging said seat.

3. In combination with a base adapted to support machinery subject to vibration, means for supporting said base comprising an inflatable member having a vertical flat portion embracing the sides and a horizontal flat portion engaging the bottom of said base.

4. In combination with a base adapted to support machinery subject to vibration, means for supporting said base comprising an inflatable L-sectioned member embracing the sides and bottom of said base.

5. In combination with a base adapted to support machinery subject to vibration, means for supporting said base comprising an inflated ring-like member providing a flat horizontal surface marginally embracing the bottom of said base and a flat vertical surface embracing the side edges of said base.

6. In combination, a base bounded at its margins by co-operating horizontal and vertical surfaces, a machine subject to vibration mounted on said base, a support for said base having horizontal and vertical surfaces complementary to said marginal surfaces of said base, and an inflatable member interposed between said surfaces of said base and said surfaces of said support and embracing said marginal surfaces thereof for resiliently maintaining said complementary surfaces in spaced relationship.

7. In a refrigeration cabinet, a support for the compressor and condenser comprising a base in the cabinet, an annular step in the base, an annular resilient member L-shaped in cross section in the step and a base for the compressor and condenser seated in the resilient member.

8. The combination in claim 7 in which the L-shaped resilient member has an annular recess filled with compressed gas and the base for the compressor is held inwards horizontally by the resilient member.

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