Feb. 25, 1941. A. A. KUCHER 2,233,102

REFRIGERATING APPARATUS

Filed Aug. 10, 1936 2 Sheets-Sheet 1

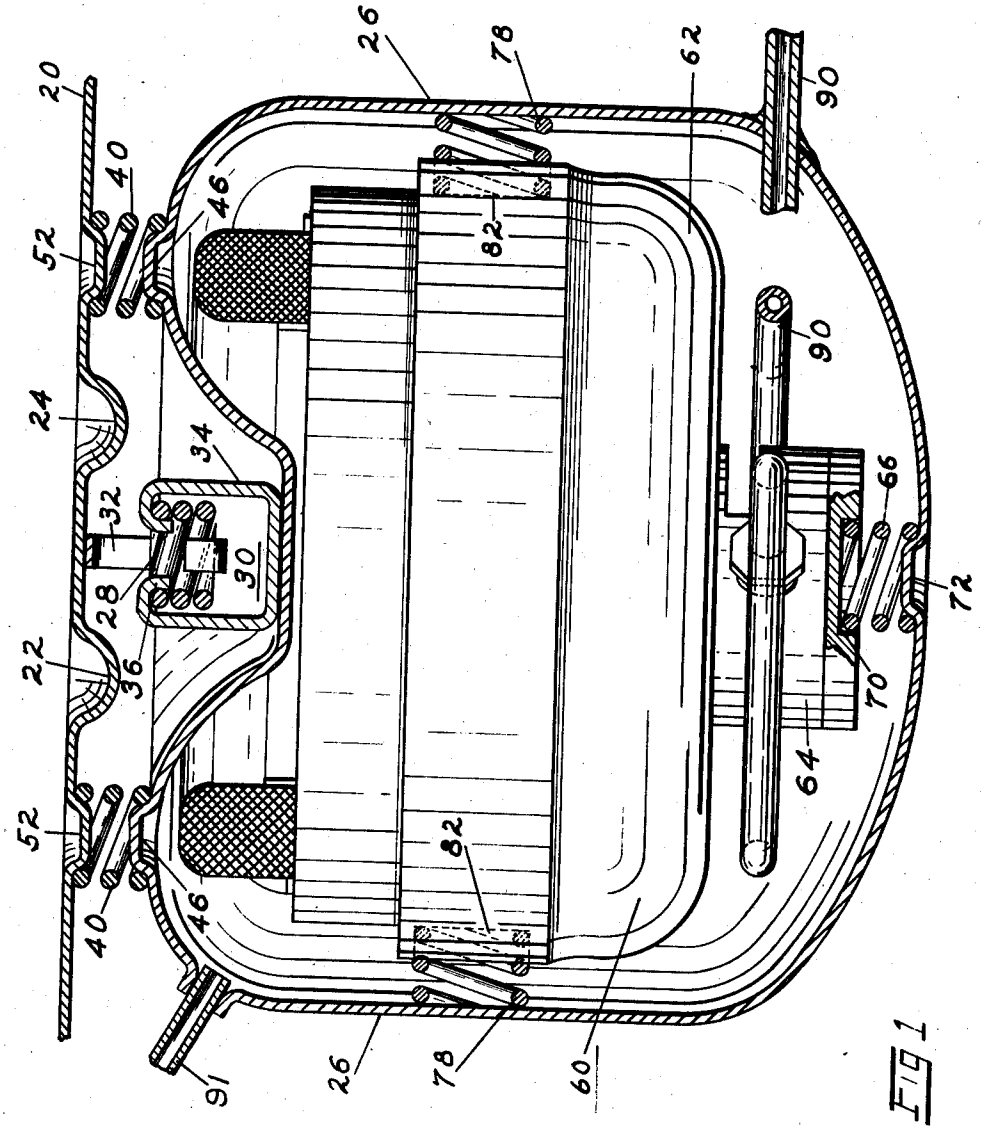


FIG 1

INVENTOR
ANDREW A. KUCHER
BY
Warren H.F. Schmeckebier
ATTORNEY

Feb. 25, 1941. A. A. KUCHER 2,233,102

REFRIGERATING APPARATUS

Filed Aug. 10, 1936 2 Sheets-Sheet 2

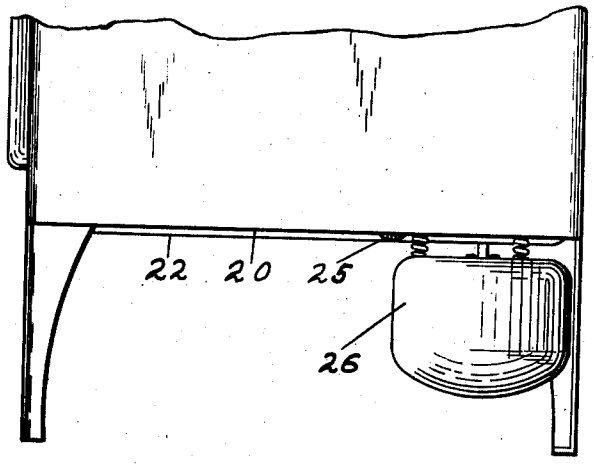


Fig 2

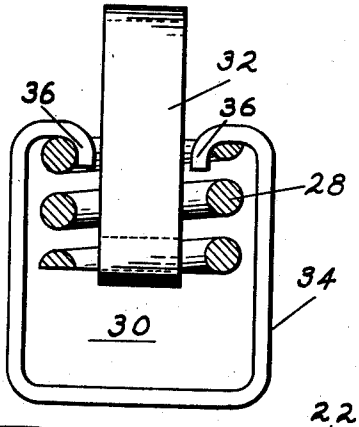


Fig 3

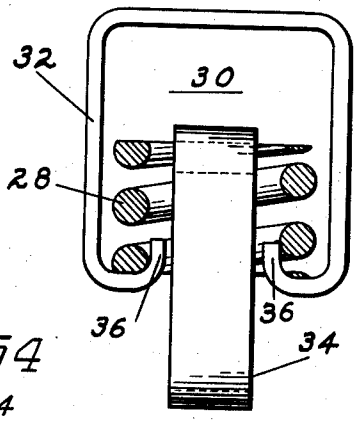


Fig 4

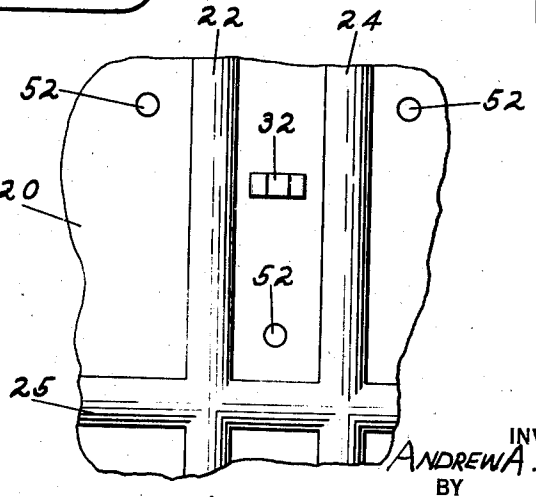


Fig 5

INVENTOR
ANDREW A. KUCHER
BY
Warren H. F. Schwechten
ATTORNEY

Patented Feb. 25, 1941

2,233,102

UNITED STATES PATENT OFFICE

2,233,102

REFRIGERATING APPARATUS

Andrew A. Kucher, Dayton, Ohio

Application August 10, 1936, Serial No. 95,091

2 Claims. (Cl. 248—26)

The present invention relates to apparatus for mounting vibratory mechanism and more particularly to apparatus for mounting the moving parts of refrigerating mechanism such as the compressor and driving motor therefor.

One of the objects of the present invention is to utilize resilient means for example springs under compression as the only apparatus for connecting a vibrator mechanism to the support therefor.

Another object of the present invention is to suspend a vibratory mechanism by a resilient means such as a spring under compression and to interpose one or more resilient members such as springs under compression between the vibratory mechanism and its support for limiting swaying of the mechanism.

A further object is to support the vibrating mechanism within a frame and on a single spring and to hold the mechanism spaced from the frame by a plurality of springs under compression.

Other and further objects and advantages will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred form of embodiment of the present invention is clearly shown.

Fig. 1 is a sectional view of the motor compressor casing showing the apparatus used to mount the mechanisms within the casing and also the apparatus for mounting the casing to the base plate;

Fig. 2 is a side view of the lower part of a refrigerator showing the casing and its supported parts in place;

Fig. 3 is a front view of the double saddle suspension used to suspend the casing from the base plate;

Fig. 4 is a side view of the double saddle suspension taken at 90° to Fig. 3, and;

Fig. 5 is a plan view of the reenforced base plate.

A preferred embodiment of my invention is shown in Fig. 1 where a base plate, support or mounting plate **20** of a refrigerator **21** is shown in part. The plate **20** is reenforced by parallel, longitudinal ribs **22** and **24** which are formed into the plate or which may be strips spot welded or riveted in place. A rib **25** is disposed transversely from the aforementioned ribs **22** and **24** shown in Fig. 5. The ribs **22**, **24** and **25** maintain the base plate **20** rigid and prevent the sagging or buckling of the plate.

A casing or frame **26**, preferably made in two parts, flash welded or joined in some other suitable manner is suspended from the base plate **20** by a spring **28**. The spring **28** is held between a double saddle suspension **30** which is formed by two saddles **32** and **34** of strip metal being placed at right angles to one another as shown in Figs. 3 and 4. The yoke of saddle **34** is spot welded or riveted to the casing **26** and the saddle **32** is likewise suitably secured to the base plate **20** and at 90° to the saddle **34**. The spring **28** is disposed between the two crossed saddles **32** and **34** so that it is under compression when the casing **26** is suspended from the base plate **20**. The saddles **32** and **34** have integrally formed extending spacers **36** at their free ends and these spacers **36** are bent to fit snugly within the coiled spring **28**. Thus in effect the spacers **36** align the spring **28** and likewise prevent displacement or removal of the spring **28**. The suspension afforded by the double saddle arrangement **30** and the spring **28** is the only means of suspension provided for the casing **26**. To assure that the casing is maintained level and that the sway of the casing is limited, a plurality of springs **40**, (only two of which are shown) are provided. Preferably three evenly spaced springs **40** are desirable. The springs **40**, are set over protrusions **46** formed in the casing **26**, and over protrusions **52** formed in the base plate **20**. Thus the springs **40** are held in place against accidental removal. It will be noted that in this construction the springs **40** are under compression also. In other words the aligning springs **40**, as they may be termed, are disposed in opposition to the suspension spring **28**. This mounting therefore provides a flexible, vibration reducing connection between the casing **26** and the base plate **20** and yet one that does not have any appreciable side play or undesirable movement. The casing **26** may be a sealed container for a motor compressor unit or it may be a frame that is substantially open, when it is used as a motor suspension. In either case the suspending means reduce the translated vibration to a minimum.

In the embodiment shown in Fig. 1 a motor compressor **60** is enclosed by the casing **26**. This unitary assembly **60** includes a motor **62** and an attached rotary type compressor **64**. The entire assembly **60** is supported within the casing **26** by a single compression spring **66** which is centrally disposed beneath the assembly **60**. A circular recess **70** is provided in the body of the compressor to maintain the coiled spring **66** in position at one end thereof and the opposite end of the spring encircles an inwardly extending protrusion **72** formed in the casing **26**. Thus the spring **66** is

held in place by the recess 70 at one end and by the protrusion 72 at the other end. The entire weight of the motor assembly 60 rests on the spring 66 and keeps the spring 66 under compression. To maintain the motor 62 in position and out of contact with the walls of the casing 26, a plurality of springs 78 are disposed around the outer circumference of the motor 62 and between the motor 62 and the casing 26. For simplicity, only two springs 78 are shown but it is desirable to employ three, evenly spaced from one another. The springs 78 are held in position in circular recesses 82 disposed, in this case, in the side frame of the motor 62.

Thus in the assembly of the motor-compressor unit 60 and the casing 26, the support spring 66 is set in recess 70 and the springs 78 set in recesses 82 and the entire assembly slipped into the lower half of the casing 26. It is to be understood that springs 78 are under compression when they are in position. When the unit 60 is in place, the upper half of the casing 26 may be put in place, and suitably attached.

The inlet to the compressor may be through a resilient tube 90, looped within the casing and about the compressor 64, and if the mounting is utilized, as shown, for a sealed refrigerating system, the tube 90 will be hermetically joined with casing 26. The compressor may discharge directly into the casing and in that event, the outlet tube 91 will be joined hermetically with the casing.

Although in the present embodiment a motor-compressor unit is described, it should be understood that the mounting is applicable to any type of vibratory mechanism.

From the foregoing it will be noted that I have provided a resilient mounting for a vibrating mechanism that eliminates, to a large degree, the translation of vibration to a fixed mounting. The moving part, for example the motor compressor 60, is resiliently mounted within a casing 26. There is no support between the motor-compressor and its casing except through the supporting springs under compression. The casing 26 in turn is resiliently supported from the fixed mounting for example a bottom wall 20 of a refrigerator. In this manner the vibration and attendant noise is greatly reduced while an inexpensive and efficient means of mounting is provided.

The suspension of the casing 26 and its enclosed parts may be suspended from the bottom wall of a refrigerator, toward the back of the refrigerator. This type of support or suspension of the casing enables the casing to be brought very close to the bottom wall of the refrigerator and therefore when the refrigerator is in an average size room, the front wall of the cabinet proper obscures the casing from the angle of sight of an average height person. Thus by using a suspending means of the described construction the casing and its enclosed parts may be quite inconspicuously and easily mounted.

While the form of embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow:

I claim:

1. In combination, a support, a frame carried by the support, a vibratory mechanism within the frame, a centrally disposed resilient means carried within the frame and resiliently supporting said vibratory mechanism and mechanism comprising the sole means for limiting lateral movement of the vibratory mechanism including a plurality of resilient members arranged in substantially the same horizontal plane and spaced from and opposing one another and disposed between the mechanism and frame at substantial distances from the top and bottom of the vibrating mechanism.

2. In combination, a frame; a unitary assembly disposed within the frame and including a motor and mechanism driven thereby; resilient means interposed between the bottom of the assembly and the frame for resiliently supporting the assembly; and mechanism comprising the sole means for limiting lateral movement of the assembly including a single set of resilient members arranged in substantially the same horizontal plane and interposed, in spaced relation with one another, between the assembly and frame at substantial distances from the top and bottom of the assembly.

ANDREW A. KUCHER.