

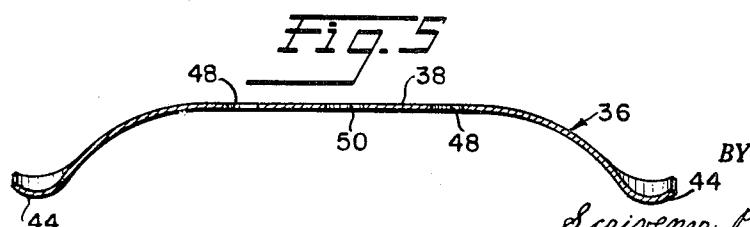
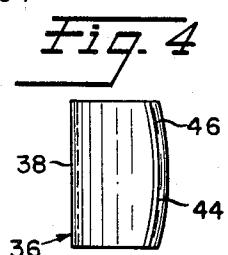
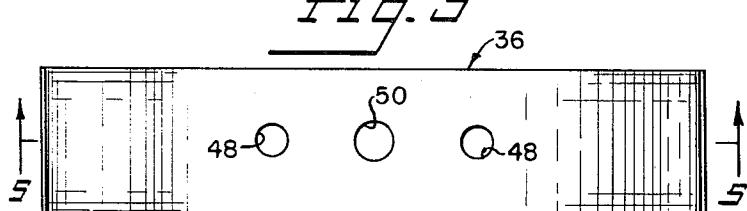
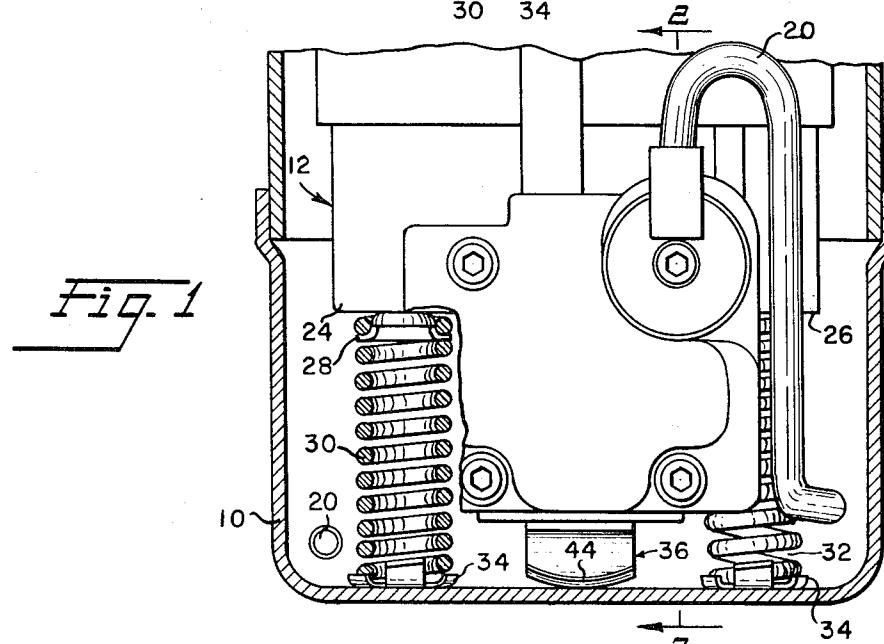
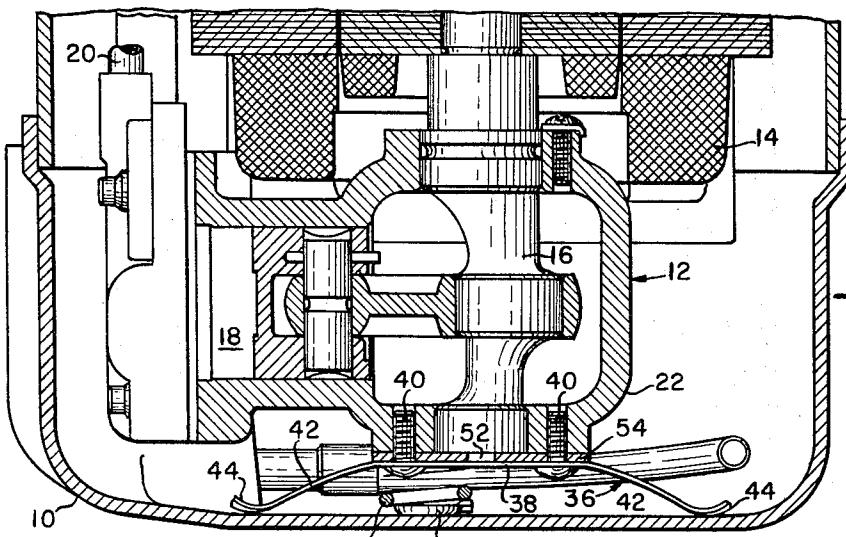
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MOUNTING SUPPORT FOR HERMETIC MOTOR COMPRESSORS

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MOUNTING SUPPORT FOR HERMETIC MOTOR COMPRESSORS

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5 Claims

ABSTRACT OF THE DISCLOSURE

Resilient mounting for hermetic motor compressor unit comprising a pair of diametrically opposed vertical coil springs between the unit and the bottom of the hermetic container and a stabilizing arched leaf spring having widely spaced legs on a line at substantially right angles to a line between the coil springs.

DESCRIPTION OF THE INVENTION

This invention relates to hermetic motor-compressors for refrigeration systems and more particularly to an improved resilient mounting support for such compressors.

It is old in the art to support a hermetic motor-compressor in its container on three separate helical springs but this arrangement is not entirely satisfactory because the crowding caused by three springs limits freedom in the arrangement of electrical terminals, tubing, mufflers, etc. within the container. Additionally, the use of three helical springs as opposed to two is obviously more expensive and the object of the present invention is to eliminate the difficulties attended upon the use of three helical springs by employing only two such springs and in lieu of a third spring to provide a leaf spring at the bottom of the compressor having downwardly extending legs whose points of engagement with the bottom of the hermetic container are widely spaced apart along a line at substantially right angles to a line through the two helical springs. The leaf spring, which is slightly pre-loaded, acts as an equalizing compensator to maintain vertical stability of the motor-compressor and also serves to absorb vibration, dampen reciprocation and limit torsional forces and movement associated with starting and stopping of the motor.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a vertical elevational view, partly broken away and partly in section showing a hermetic motor-compressor embodying the present invention;

FIG. 2 is a vertical cross-sectional view taken substantially on the line 2—2 of FIG. 1;

FIG. 3 is an enlarged top plan view of the equalizing spring of the present invention;

FIG. 4 is an end elevational view of the spring of FIG. 3;

FIG. 5 is a horizontal cross-sectional view of the spring of FIG. 3 taken substantially on the line 5—5 of FIG. 3.

Referring now to the drawings, the numeral 10 designates the usual hermetic container for a substantially conventional refrigeration motor-compressor unit designated broadly by the numeral 12. The unit includes a motor 14 for driving a crank shaft 16 to operate the usual com-

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pressor piston 18 which delivers compressed refrigerant to the refrigeration system through a discharge conduit 20 in a known manner. The compressor includes a housing 22 which is provided with a pair of horizontal diametrically opposed shoulders 24, 26 carrying spring guides 28 which are engaged by the upper ends of each pair of diametrically opposed helical springs 30, 32 whose lower ends engage lower spring guides 34 rigidly connected to the bottom of the container 10.

As can be seen, the helical springs 30, 32 provide for the motor-compressor unit a two-point suspension which is inherently unstable and additional means of support must therefore be provided. In accordance with the invention, this support is provided by an arched leaf spring 36 having a raised central part 38 which is connected to the bottom of the compressor housing 22 by a pair of screws 40 with the longitudinal axis of the spring 36 being at right angles to a line between the helical springs 30, 32. The leaf spring 36 has a pair of widely spaced, downwardly and outwardly extending legs 42 having upturned end parts 44 which have a transverse curvature as indicated at 46 in FIGS. 1, 4 and 5, whereby the ends of the spring have substantially a point contact with the bottom of the container, as can be best seen in FIG. 1. As shown in FIGS. 3 and 5 the spring 36 is provided with a pair of openings 48 to accommodate the screws 40. In addition there is a central opening 50 in axial alignment with an opening 52 in a plate 54 interposed between the compressor housing 22 and the spring. The openings 50, 52 communicate with the end of the crank shaft 16 as shown.

The leaf spring 36, which is desirably slightly preloaded, acts as an equalizing compensator to maintain vertical stability of the motor compressor. In addition, the spring 36 absorbs vibration, dampens reciprocation, and limits torsional forces associated with starting and stopping the motor. The spring arrangement of the invention has functioned satisfactorily at less cost than a conventional three-point helical spring suspension and also requires less physical space for the mounting components and therefore allows more space for freedom in the arrangement of electrical terminals, tubing, mufflers, etc. within the container 10.

In view of the foregoing, further description is not deemed necessary for a complete understanding of the details of the invention.

What is claimed is:

1. A mounting support for a hermetic motor compressor unit received within a hermetic container comprising a pair of substantially diametrically opposed shoulders on the motor compressor unit, a pair of helical springs extending between said shoulders and the bottom of said container, and an arched leaf spring secured to the bottom of the motor compressor unit with its longitudinal axis at substantially right angles to a line between said helical springs, said leaf spring having a pair of downwardly and outwardly extending legs whose lower outer ends engage the bottom of the container to vertically stabilize the motor-compressor unit in cooperation with the diametrically opposed helical springs.

2. The support of claim 1 wherein the ends of said leaf spring are transversely curved so as to have point engagement with the bottom of said container.

3. The support of claim 2 wherein the ends of said

leaf spring are in addition upwardly and outwardly curved.

4. The support of claim 1 wherein the leaf spring includes a substantially planar elongated central part, the upper inner ends of said legs being integral with opposed ends of said central part.

5. The support of claim 4 including fastening elements connecting the central part of said spring to said motor-compressor unit so that the legs of said spring are at substantially right angles to a line between said coil springs.

References Cited**UNITED STATES PATENTS**

2,977,043	3/1961	Scheldorf	-----	230—235
3,246,836	4/1966	Ayling	-----	230—235

5 ROBERT M. WALKER, Primary Examiner

U.S. CL. X.R.

417—415