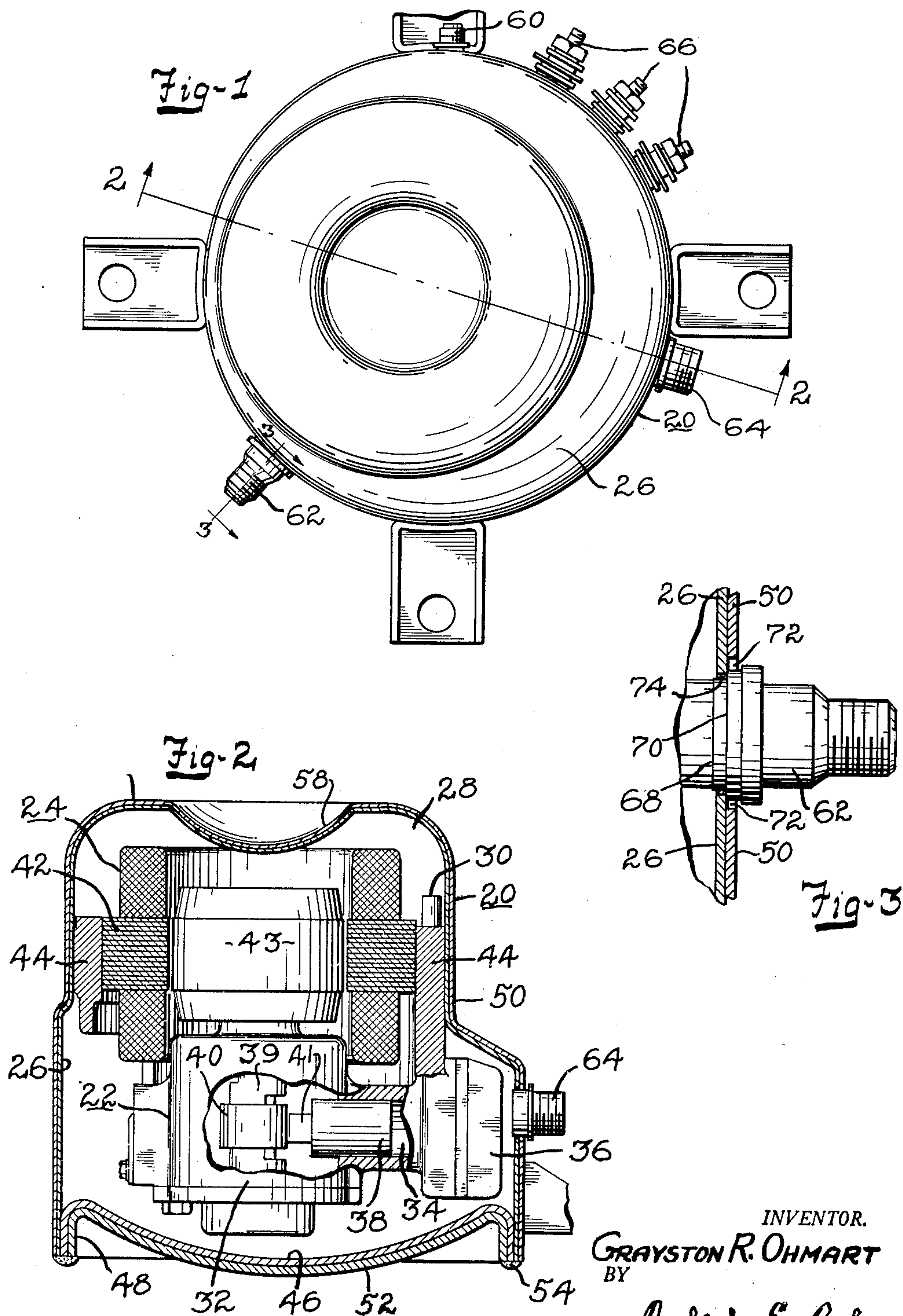


Feb. 24, 1953

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REFRIGERATING APPARATUS

2,629,544

Filed Dec. 17, 1947



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UNITED STATES PATENT OFFICE

2,629,544

REFRIGERATING APPARATUS

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Application December 17, 1947, Serial No. 792,171

5 Claims. (Cl. 230—232)

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This invention relates generally to pumps and more particularly to refrigerant compressors.

One of the objects of my invention is to provide an improved refrigerant motor-compressor sealed unit constructed so as to decrease audible vibrations thereof.

Another object of the invention is to provide for suppressing audible vibrations of a motor-compressor unit in an inexpensive manner.

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

In the drawings:

Fig. 1 is a top plan view of a motor-compressor unit embodying features of my invention;

Fig. 2 is a vertical cross sectional view of the motor-compressor unit, taken along the line 2—2 of Fig. 1; and

Fig. 3 is an enlarged vertical sectional view of a detail of the compressor, taken along the line 3—3 of Fig. 1.

In the drawings, the numeral 20 designates generally a pump or motor-compressor unit of the type adapted for compressing gaseous refrigerant. This unit comprises, in general, a compressor 22, an electric driving motor 24 and a sealed casing 26. Enclosing the compressor 22 and the compressor driving motor 24, the sealed casing 26 forms an intake chamber 28 for gaseous refrigerant which passes from the chamber 28 into the compressor through the preferably upstanding intake tube 30. In the present arrangement, the electric driving motor 24 is mounted on and above the compressor 22 which in turn is mounted on the inner wall of the casing 26. The compressor 22 is located in the lower or base portion of the casing 26 and the motor 24 is located in the upper or dome portion of the casing 26.

The compressor 22 includes a housing 32, a laterally extending cylinder 34 and a cylinder head 36. A piston 38 in the cylinder 34 is reciprocated by the motor 24 through a driving shaft 39 and a crank 40 connected to the piston by a connecting rod 41. For further details of construction and operation of the motor and compressor, reference may be had to Patent No. 2,199,415, issued May 7, 1940.

The electric motor 24 comprises a stator 42 and a rotor 43. Surrounding the rotor 43, the stator 42 is received and supported in an integral, heat conducting portion 44 of the compressor housing 32 which extends upwardly into the dome portion of the casing 26. The compressor housing por-

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tion 44 is preferably tubular in shape and the stator 42 is preferably press fitted therein and to the housing side wall for attachment thereto and for good heat transfer relationship therewith. In turn, the housing tubular portion 44 is press fitted to and within the casing dome portion for supporting the motor-compressor thereon and to transfer heat of the motor 24 to the casing 26 for radiation or dissipation of the heat to atmosphere. The sealed casing 26 is preferably formed of sheet metal including a relatively heavy gauge closure plate 46 which forms the bottom wall of the casing 26. As shown, the closure plate 46 preferably is provided with an out-turned peripheral flange 48 which is preferably press fitted tightly within and to the cylindrical side wall of the casing 26.

In accordance with my invention, I provide the motor-compressor with a noise suppressor 50 in the form of a cover or outer casing. The noise suppressor or casing 50 fits snugly over the sealed compressor casing 26 so that the corresponding walls thereof are in close proximity with each other. I arrange for the corresponding walls of the inner and outer casings 26, 50 to be in loose contacting engagement with each other so that vibrations of the sealed casing 26 are dampened by the outer casing 50. To obtain a desirable complementary fit of the outer casing 50 over the casing 26, I prefer to form or shape these casings together. For additional dampening of motor-compressor audible vibrations, an outer plate 52, complementary to the closure plate 46 may be provided. These plates 46, 52 and the lower casing edges adjacent thereto are united and the joints therebetween sealed preferably by butt welding, as at 54. Other than at these sealed joints, the casings 26 and 50 are relatively loosely associated so that the side and top walls of the sealed casing 26 may be free to vibrate or move slightly toward and away from the adjacent corresponding walls of the outer casing or noise suppressor which because of its close but loose arrangement with casing 26, acts to dampen the audible vibrations. In the vibrating action of the sealed casing walls, friction is created between these walls and the corresponding walls of the outer casing 50 which friction also absorbs or dampens audible vibrations. Further, I provide complementary, inwardly dished portions 58 in the casing top walls which increases the above mentioned frictional force between the casings, thus further dampening audible vibrations of the motor-compressor.

Secured in and to the sidewall of the sealed

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casing 26 is an inlet fitting 60, an outlet fitting 62 and a filler plug 64. The inlet fitting 60 opens into the sealed chamber 28, formed by the casing 26, and the outlet fitting 62 communicates directly with the cylinder head 36. Also secured in and to the side wall of the casing 26 are fittings 66 for receiving electric lead lines (not shown) which extend into the casing 26 for connection to the driving motor 24. The fittings 60, 62, 66 and the filler plug 64 are each attached to the casing side wall and the joints are sealed preferably by brasing, in the manner shown in Fig. 3. Each fitting has a reduced inner portion 68 positioned in a hole in the casing and a stop or shoulder 70 abutting the outer surface of the casing 26. A relatively large clearance aperture 72 is provided in the outer or noise suppressing casing 50 for receiving each of the fittings and to allow the shoulders 70 thereof to seat against the outer surface of the inner casing 50. These shoulders 70 prevent the brasing material, as at 74, from flowing between and uniting the casing side walls which if united would defeat the purpose of the outer or noise suppressing casing.

From the foregoing description, it will be noted that I have provided an improved sealed motor-compressor unit in which a suppressor in the form of an additional casing or cover is utilized to dampen noises created by a noise creating element which in the present case is a motor-compressor unit. In addition, it will be noted that I have provided for suppressing motor-compressor noises inexpensively while adding an additional protective covering for the unit. Further, have provided for the sealing of the inner casing and the noise suppressing casing in a manner to insure that they will be closely, but loosely associated for good noise dampening results. Also, I have provided for the securing and sealing of fittings to the inner sealed casing in a manner such that the outer or noise suppressing casing remains unattached to the inner casings in the vicinity of the fittings.

Although only a preferred form of the invention has been illustrated, and that form described in detail, it will be apparent to those skilled in the art that various modifications may be made therein without departing from the spirit of the invention or from the scope of the appended claims.

I claim:

1. In a machine, operating mechanism generating heat and noise, a sheet metal casing enclosing said mechanism having top, side and bottom walls, and a sheet metal cover complementarily fitting over and in contact substantially with the entire top and side walls of said casing substantially down to the bottom thereof to absorb audible vibrations and to conduct the heat generated by said mechanism to outside atmosphere.

2. A composite casing construction for operat-

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ing mechanism comprising, an inner shell having a top, side and bottom, and an outer sheet metal shell fitting snugly over said inner shell complementary thereto and having a side wall in opposed contacting relationship to said first side wall to effect dampening of audible vibrations and to effect heat transfer from said inner shell to outside atmosphere, said outer shell substantially entirely covering said top and side walls.

3. In a machine, operating mechanism generating heat and noise, a sheet metal casing receiving said mechanism having top and side walls, and a sheet metal cover fitting complementary with and over said casing in contact substantially with the entire outer surfaces of the top and side walls thereof to both dampen audible vibrations of the casing and conduct heat therefrom to ambient.

4. A composite casing construction for an operating mechanism comprising, an inner shell to receive the mechanism having side and top walls, and an outer sheet metal shell fitting snugly over said inner shell substantially complementary thereto and having side and top walls respectively in flat opposed contacting relationship to the side and top walls of said inner shell to effect dampening of audible vibrations thereof and to effect heat transfer from said inner shell to outside atmosphere, said outer shell substantially entirely covering the top and side walls of said inner shell.

5. A noise suppressor and heat conducting casing for operating mechanism comprising, inner and outer sheet metal shells formed together as a lamination having top and side wall opposed surfaces in mutual contact substantially over the entire surfaces thereof such that the inner shell conducts heat to the outer shell and the outer shell conducts the heat to ambient and also dampens vibrations of the inner shell.

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