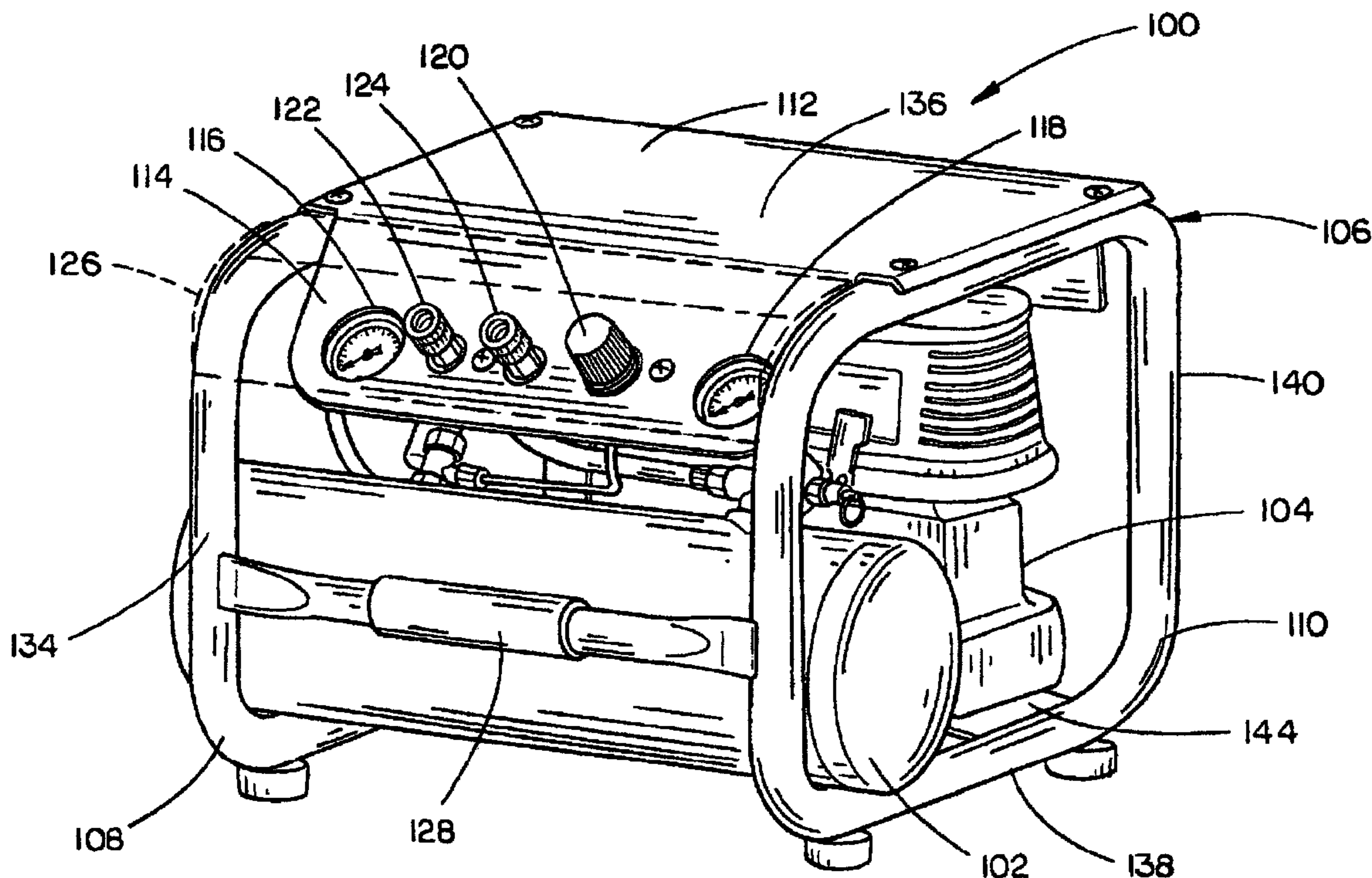




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(54) Titre : ENSEMBLE COMPRESSEUR D'AIR
 (54) Title: AIR COMPRESSOR ASSEMBLY SUPPORT STRUCTURE



(57) **Abrégé/Abstract:**

An air compressor assembly (100) includes a roll cage assembly (106) which defines a protective volume (126) within the air compressor assembly (100). The roll cage assembly (106) supports an air storage tank (102) and an air compressor (104), and at least substantially surrounds the air storage tank (102) and the air compressor (104). The air compressor assembly (100) includes a shroud (112) mounted to the roll cage assembly (106). The shroud (112) has a control panel portion (114) including control and output components which are completely contained within the protected volume. The air compressor assembly (100) further includes a handle (128). The handle (128) is positioned along a vertical axis (130) extending through the center of gravity (132) of the air compressor assembly (100) when the air compressor assembly (100) is oriented to be carried by grasping the handle (128).

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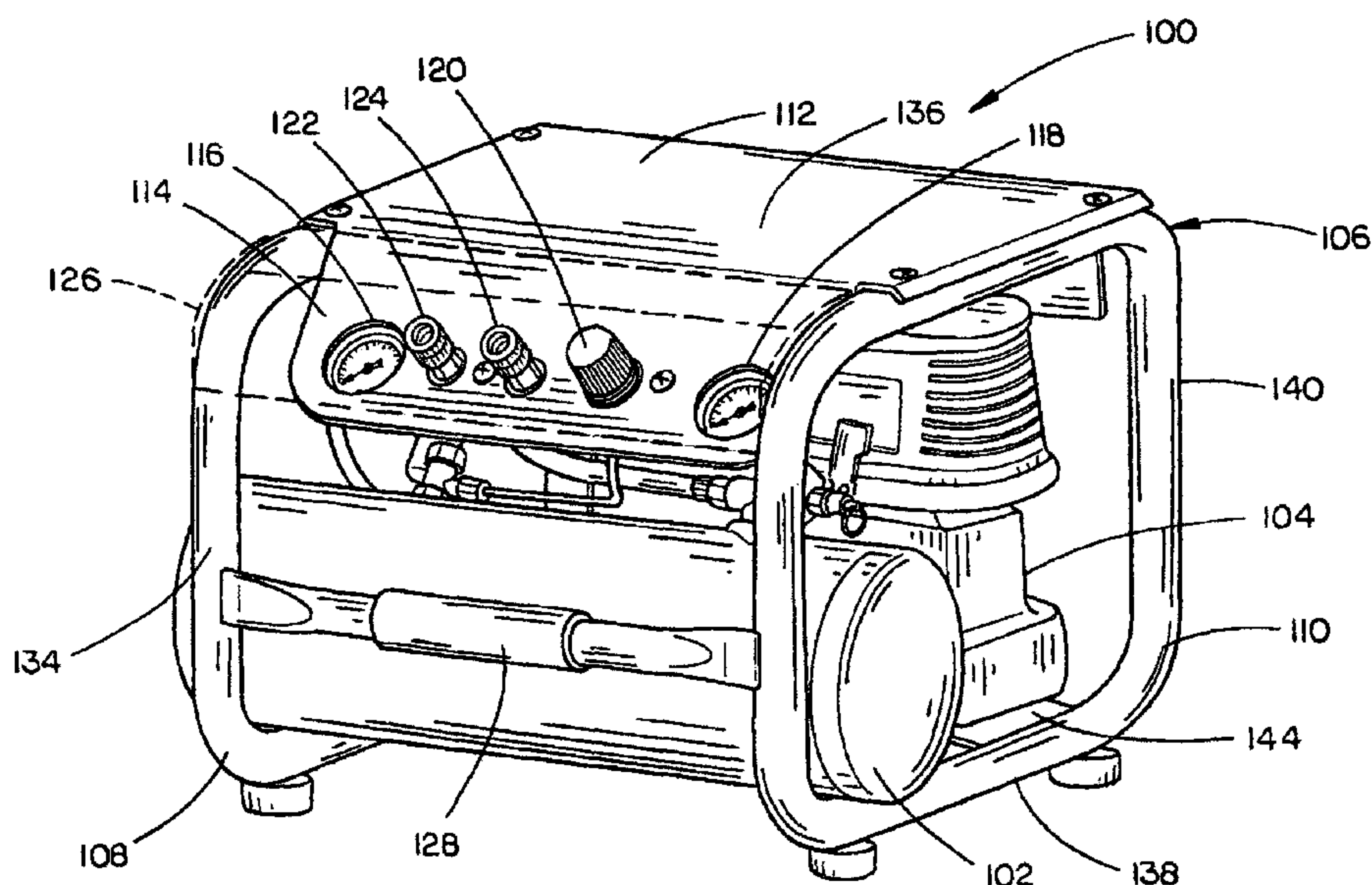
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(54) Title: AIR COMPRESSOR ASSEMBLY SUPPORT STRUCTURE



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AIR COMPRESSOR ASSEMBLY

FIELD OF THE INVENTION

5 The present invention generally relates to the field of air compressors, and more particularly to an air compressor assembly having a roll cage assembly which defines a protective volume within the air compressor assembly, wherein control and output components of the air compressor assembly are completely contained within the protective volume. Additionally, the air compressor
10 assembly includes a handle that is vertically aligned with the center of gravity of the air compressor assembly.

BACKGROUND OF THE INVENTION

 Air compressor assemblies typically include an air compressor, having a
15 motor driven pump, coupled with an air storage tank. This configuration allows for the operation of an air powered tool from the reservoir of compressed air stored in the air storage tank. When the supply of pressurized air in the air storage tank becomes depleted by the operation of the air powered tool, the air compressor may be operated for repressurizing the air storage tank. In this manner, air
20 compressor assemblies are used to provide compressed air for operating air powered tools such as nailing tools, socket driving tools, material shaping tools, sanding tools, spray painting tools, inflation chucks, and the like.

 Portable air compressor assemblies which are designed to be hand carried
25 typically include a support structure, such as a cage frame, or the like. Often, these cage frame structures are complex to manufacture, increasing the cost of the portable air compressor assembly. Further, such structures may be bulky and thus difficult to lift and carry. Moreover, for ease of access, control and output components, such as pressure gauges, pressure regulators, and air hose
30 connections, as well as portions of the air storage tank and the air compressor, are made to protrude from the cage frames. However, portable air compressor assemblies are typically used primarily in austere, harsh worksites such as

construction sites, garages, and the like. Additionally, portable air compressor assemblies are often moved frequently from one worksite to another. Often, the air compressor assemblies are tipped and rolled during transport causing the control and output components, as well as unprotected portions of the air compressor and the air storage tank to come into contact with a hard surface such as the bed of a pickup truck, the floor of a truck or van, or the like. Consequently, these protruding control and output components can become damaged, making the air compressor unusable.

10

SUMMARY OF THE INVENTION

Accordingly, the present invention is directed to an air compressor assembly including a roll cage assembly which defines a protective volume within the air compressor assembly. The roll cage assembly includes a first roll cage member and a second roll cage member which support an air storage tank and an air compressor so that the air storage tank and the air compressor are substantially surrounded by the roll cage assembly. A shroud is mounted to the roll cage assembly for at least partially covering the air compressor. The shroud includes a control panel portion supporting control and output components for the air compressor assembly that are completely contained within the protected volume defined by the roll cage assembly.

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The air compressor assembly may further include a handle which extends between the first roll cage member and the second roll cage member for carrying the air compressor assembly. The handle is positioned along a vertical axis extending through the center of gravity of the air compressor assembly when the air compressor assembly is oriented to be carried by grasping the handle.

25

It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not necessarily restrictive of the invention claimed. The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate

30

embodiments of the invention and together with the general description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

5 The numerous advantages of the present invention may be better understood by those skilled in the art by reference to the accompanying figures in which:

FIG. 1 is an isometric view illustrating an air compressor assembly in accordance with an exemplary embodiment of the present invention;

10 FIG. 2 is a partial cross-sectional side elevation view of the air compressor assembly illustrated in FIG. 1;

FIG. 3 is an isometric view illustrating an air compressor assembly in accordance with another exemplary embodiment of the present invention;

15 FIG. 4 is another isometric view of the air compressor assembly illustrated in FIG. 3; and

FIG. 5 is a partial cross-sectional side elevation view of the air compressor assembly illustrated in FIG. 3.

DETAILED DESCRIPTION OF THE INVENTION

20 Reference will now be made in detail to the presently preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings.

Referring now to FIGS. 1 through 5, an air compressor assembly 100 is
25 described in accordance with exemplary embodiments of the present invention. The air compressor assembly 100 includes an air storage tank 102 for storing compressed air supplied by an air compressor 104. A roll cage assembly 106 supports the air storage tank 102 and the air compressor 104. The roll cage assembly 106 includes a first roll cage member 108 and a second roll cage
30 member 110. In exemplary embodiments, the first roll cage member 108 and the second roll cage member 110 are positioned on opposite sides of the air compressor assembly 100, such that the roll cage assembly 106 at least

substantially surrounds the air storage tank 102 and the air compressor 104. Preferably, the roll cage assembly 106 includes mounting points for attaching the air storage tank 102 and the air compressor 104 to the air compressor assembly 100. For example, a support pan 144, or another such support structure, is provided for supporting the air compressor 104 within the roll cage assembly 106. In one specific embodiment, the support pan 144 extends between the first roll cage member 108 and the second roll cage member 110 for supporting the air compressor 104.

10 In embodiments, the first roll cage member 108 and the second roll cage member 110 are rectangular in shape for simplicity of construction, such that the roll cage assembly 106 has a front side 134, a top side 136, a bottom side 138, and a rear side 140. For instance, in one specific embodiment, the first roll cage member 108 and the second roll cage member 110 are rectangular in shape and constructed of tube steel. However, it will be appreciated that the first roll cage member 108 and the second roll cage member 110 may be shaped differently and formed from different materials without departing from the scope and intent of the present invention.

20 In embodiments, the air compressor assembly 100 includes a shroud 112 mounted to the roll cage assembly 106 for at least partially covering the air compressor 104. Preferably, the shroud 112 is attached to the top side 136 of the roll cage assembly 106. The shroud 112 includes a control panel portion 114 for supporting control and output components for the air compressor assembly 100, such as a first pressure gauge 116, a second pressure gauge 118, a pressure regulator 120, a first air hose connection 122, a second air hose connection 124, and other such control and output components as contemplated by one of skill in the art.

30 It will be appreciated that the shroud 112, or, alternatively, another shroud, may cover other components of the air compressor assembly 100, including components located on the front side 134, the top side 136, the bottom side 138,

the rear side 140, and in other various locations within the roll cage assembly 106 as required. Further, it will be appreciated that other assemblies, such as assemblies for storing miscellaneous hardware, may be mounted to the roll cage assembly 106 as well. For example, an accessory tray assembly 146 may be mounted to the roll cage assembly 106, extending between the first roll cage member 108 and the second roll cage member 110, and including a cord wrap 148, or the like, for holding an electrical cord, a pressure hose, or another accessory for the air compressor assembly 100.

10 Preferably, the roll cage assembly 106 defines a protected volume 126 within the air compressor assembly 100. For example, in one specific embodiment, the control panel portion 114 is completely contained within the protected volume 126. Thus, the control and output components for the air compressor assembly 100, including the first pressure gauge 116, the second pressure gauge 118, the pressure regulator 120, the first air hose connection 122, and the second air hose connection 124 are contained within the protected volume 126. It will be appreciated that other components for the air compressor assembly 100 which are contained within the roll cage assembly 106 are also contained within the protected volume 126.

20 The air compressor assembly 100 includes a handle 128 extending between the first roll cage member 108 and the second roll cage member 110. The handle 128 is shaped for being grasped by a user to facilitate carrying the air compressor assembly 100. In exemplary embodiments, the handle 128 is positioned along a vertical axis 130 extending through the center of gravity 132 of the air compressor assembly 100 when the air compressor assembly 100 is oriented to be carried by grasping the handle 128.

In a specific embodiment, illustrated in FIGS. 1 and 2, the handle 128 extends between the first roll cage member 108 and the second roll cage member 110 on the front side 134 of the roll cage assembly 106. In this embodiment, the air compressor assembly 100 may be rotated to facilitate carrying the air

compressor assembly 100, such that the roll cage assembly 106 rests on the rear side 140 when the air compressor assembly 100 is oriented to be carried by grasping the handle 128.

5 In another specific embodiment, illustrated in FIGS. 3 through 5, the handle 128 extends between the first roll cage member 108 and the second roll cage member 110 on the top side 136 of the roll cage assembly 106, beneath the shroud 112. In this embodiment, the shroud 112 includes an opening 142 for providing access to the handle 128, for grasping the handle 128 to facilitate
10 carrying the air compressor assembly 100.

Those of skill in the art will appreciate that other handle configurations may be provided as well, including other handles which are positioned along the vertical axis 130 extending through the center of gravity 132 of the air compressor
15 assembly 100 when the air compressor assembly 100 is oriented to be carried by grasping the handle 128, without departing from the scope and intent of the present invention. Moreover, it will be appreciated that two or more handles may be included with the air compressor assembly 100, including handles wherein each handle is positioned along an axis extending through the center of gravity
20 132 of the air compressor assembly 100 when the air compressor assembly 100 is oriented to be carried by grasping the handle.

It will be appreciated that various components of the air compressor assembly 100 which extend between the first roll cage member 108 and the
25 second roll cage member 110 (e.g., the support pan 144, the shroud 112, the accessory tray assembly 146, and the handle 128) form part of the roll cage assembly 106, connecting the first roll cage member 108 and the second roll cage member 110 together and strengthening the roll cage assembly 106. By not requiring a more complex roll cage assembly, the use of such components makes
30 the air compressor assembly 100 more economical to assemble. However, it should be noted that other components may be utilized for connecting the first roll

cage member 108 and the second roll cage member 110 together and strengthening the roll cage assembly 106, such as structural members and the like.

In FIGS. 1 through 5, the air compressor assembly 100 is illustrated having
5 an air storage tank 102 oriented in a horizontal direction. However, it will be appreciated that other orientations may be utilized for the air storage tank 102 of the present invention, including air storage tanks having a vertical orientation, air storage tanks configured as “pancake” style air storage tanks, and air storage tanks having specialized shapes. Further, it should be noted that the air compressor
10 assembly 100 may include more than one air storage tank, such as two air storage tanks mounted side-by-side, or the like. The use of air storage tanks 102 having configurations other than those specifically illustrated herein is well known in the art. Consequently, the substitution of such tanks in place of the air storage tanks 102 specifically illustrated in FIGS. 1 through 6 does not depart from the scope
15 and intent of the present invention.

It is believed that the present invention and many of its attendant advantages will be understood by the foregoing description, and it will be apparent that various changes may be made in the form, construction and
20 arrangement of the components thereof without departing from the scope and spirit of the invention or without sacrificing all of its material advantages. The form herein before described being merely an explanatory embodiment thereof.

CLAIMS

What is claimed is:

- 5 1. An air compressor assembly, comprising:
an air storage tank for storing compressed air;
an air compressor for supplying compressed air to the air storage tank;
a roll cage assembly for supporting the air storage tank and air compressor, the
roll cage assembly including a first roll cage member and a second roll
10 cage member opposite the first roll cage member so that the roll cage
assembly at least substantially surrounds the air compressor and air storage
tank; and
a shroud mounted to the roll cage assembly for at least partially covering the air
compressor, the shroud including a control panel portion for supporting at
15 least one of a pressure gauge, a pressure regulator, and an air hose
connection,
wherein the roll cage assembly defines a protected volume within the air
compressor assembly and the control panel portion and the at least one of
the pressure gauge, the pressure regulator, and the air hose connection are
20 completely contained within the protected volume.
2. The air compressor assembly as claimed in claim 1, further
comprising a handle extending between the first roll cage member and the second
roll cage member for being grasped to facilitate carrying the air compressor
25 assembly.
3. The air compressor assembly as claimed in claim 2, wherein the
handle is positioned along a vertical axis extending through a center of gravity of
the air compressor assembly when the air compressor assembly is oriented to be
30 carried by grasping the handle.

4. The air compressor assembly as claimed in claim 3, wherein the first roll cage member and the second roll cage member are substantially rectangular in shape so that the roll cage assembly has a front side, a top side, a bottom side and a rear side, the shroud being attached to the top side.

5

5. The air compressor assembly as claimed in claim 4, wherein the handle extends between the first roll cage member and the second roll cage member on the top side beneath the shroud, and wherein the shroud includes an opening formed therein for providing access to the handle for grasping the handle.

10

6. The air compressor assembly as claimed in claim 4, wherein the handle extends between the first roll cage member and the second roll cage member on the front side, and the air compressor assembly is rotated so that the roll cage assembly rests on the rear side when the air compressor assembly is oriented to be carried by grasping the handle.

15

7. The air compressor assembly as claimed in claim 1, further comprising a support pan extending between the first roll cage member and the second roll cage member for supporting the air compressor within the roll cage assembly.

20

8. The air compressor as claimed in claim 1, further comprising an accessory tray assembly mounted to and extending between the first roll cage member and the second roll cage member.

25

9. The air compressor as claimed in claim 8, wherein the accessory tray assembly includes a cord wrap for holding an electrical cord.

10. An air compressor assembly, comprising:
an air storage tank for storing compressed air;
an air compressor for supplying compressed air to the air storage tank;

30

a roll cage assembly for supporting the air storage tank and air compressor, the roll cage assembly including a first roll cage member and a second roll cage member opposite the first roll cage member so that the roll cage assembly at least substantially surrounds the air compressor and air storage tank; and

5 a handle extending between the first roll cage member and the second roll cage member for being grasped to facilitate carrying the air compressor assembly;

wherein the handle is positioned along a vertical axis extending through a center of gravity of the air compressor assembly when the air compressor assembly is oriented to be carried by grasping the handle.

10

11. The air compressor assembly as claimed in claim 10, further comprising a shroud mounted to the roll cage assembly for at least partially covering the air compressor, the shroud including a control panel portion for supporting at least one of a pressure gauge, a pressure regulator, and an air hose connection.

15

12. The air compressor assembly as claimed in claim 11, wherein the roll cage assembly defines a protected volume within the air compressor assembly and the control panel portion and the at least one of the pressure gauge, the pressure regulator, and the air hose connection are completely contained within the protected volume.

20

13. The air compressor assembly as claimed in claim 12, wherein the first roll cage member and the second roll cage member are substantially rectangular in shape so that the roll cage assembly has a front side, a top side, a bottom side and a rear side, the shroud being attached to the top side.

25

14. The air compressor assembly as claimed in claim 13, wherein the handle extends between the first roll cage member and the second roll cage

30

member on the top side beneath the shroud, and wherein the shroud includes an opening formed therein for providing access to the handle for grasping the handle.

15 15. The air compressor assembly as claimed in claim 13, wherein the handle extends between the first roll cage member and the second roll cage member on the front side, and the air compressor assembly is rotated so that the roll cage assembly rests on the rear side when the air compressor assembly is oriented to be carried by grasping the handle.

10 16. The air compressor assembly as claimed in claim 10, further comprising a support pan extending between the first roll cage member and the second roll cage member for supporting the air compressor within the roll cage assembly.

15 17. The air compressor as claimed in claim 10, further comprising an accessory tray assembly mounted to and extending between the first roll cage member and the second roll cage member.

20 18. The air compressor as claimed in claim 17, wherein the accessory tray assembly includes a cord wrap for holding an electrical cord.

 19. An air compressor assembly, comprising:
an air storage tank for storing compressed air;
an air compressor for supplying compressed air to the air storage tank;
25 a roll cage assembly for supporting the air storage tank and air compressor, the roll cage assembly including a first roll cage member and a second roll cage member opposite the first roll cage member so that the roll cage assembly at least substantially surrounds the air compressor and air storage tank;
30 a handle extending between the first roll cage member and the second roll cage member for being grasped to facilitate carrying the air compressor assembly; and

a shroud mounted to the roll cage assembly for at least partially covering the air compressor, the shroud including a control panel portion for supporting at least one of a pressure gauge, a pressure regulator, and an air hose connection,

5 wherein the roll cage assembly defines a protected volume within the air compressor assembly and the control panel portion and the at least one of the pressure gauge, the pressure regulator, and the air hose connection are completely contained within the protected volume.

10 20. The air compressor assembly as claimed in claim 19, the handle positioned along a vertical axis extending through a center of gravity of the air compressor assembly when the air compressor assembly is oriented to be carried by grasping the handle.

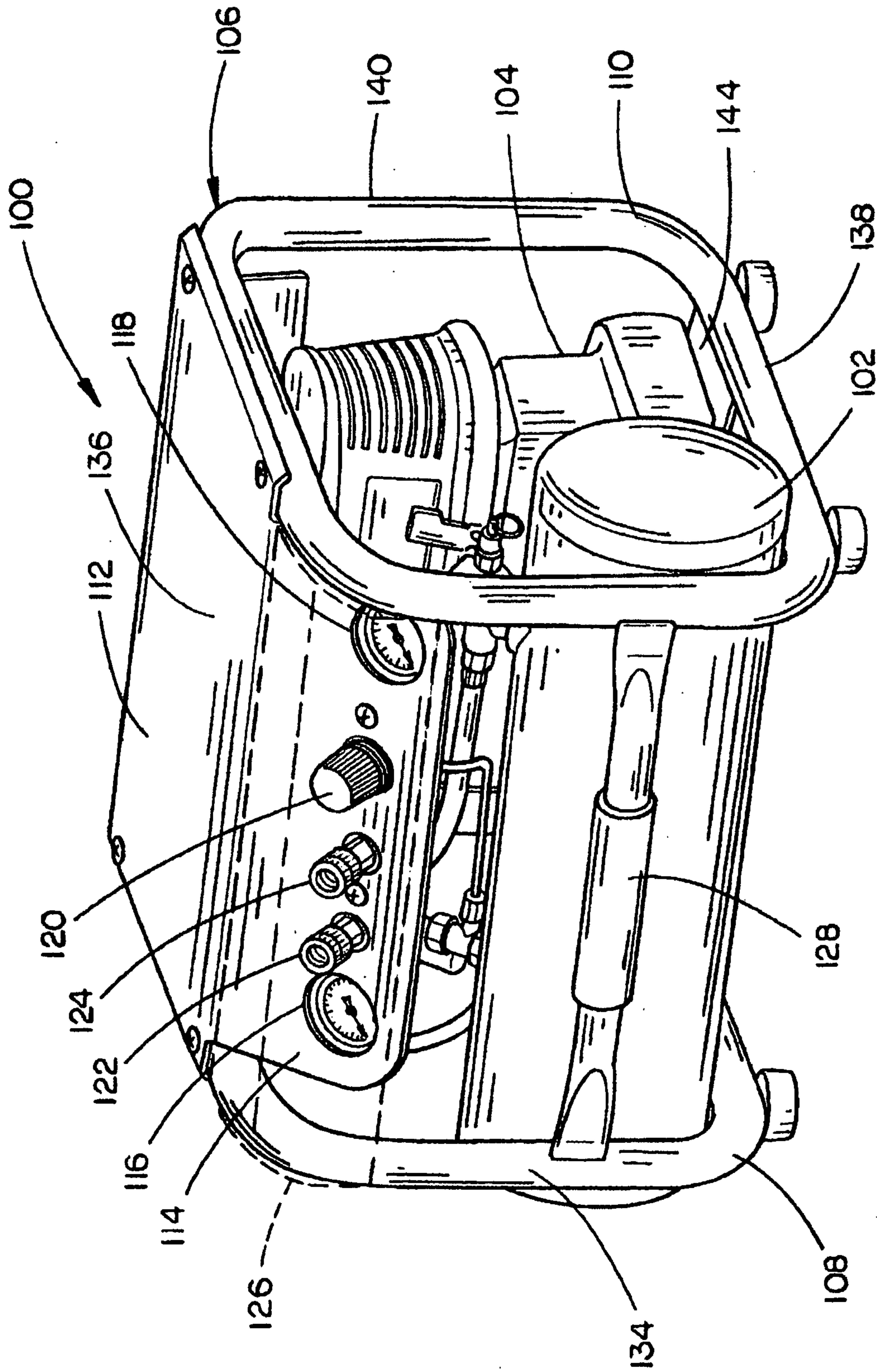


FIG. 1

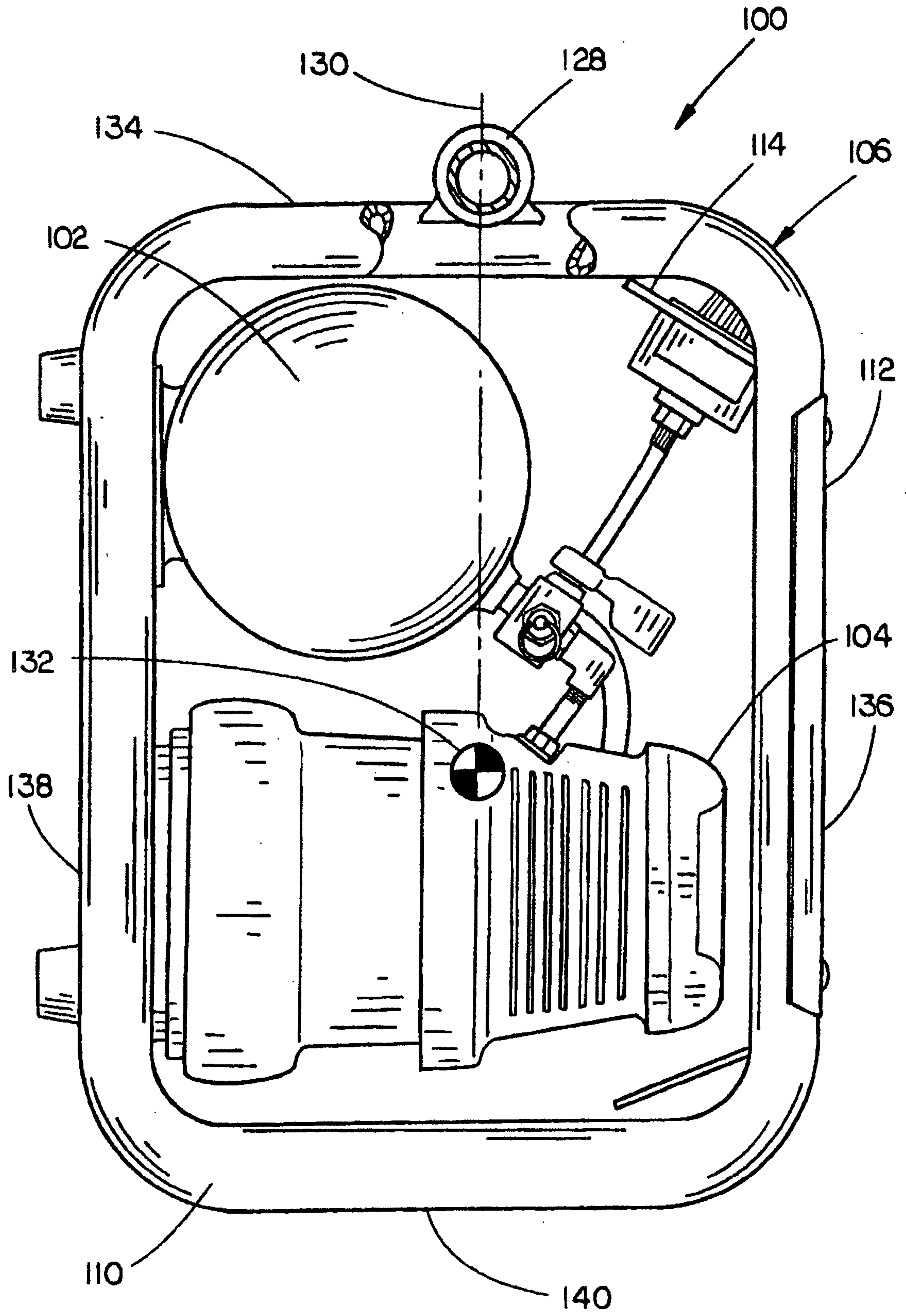


FIG. 2

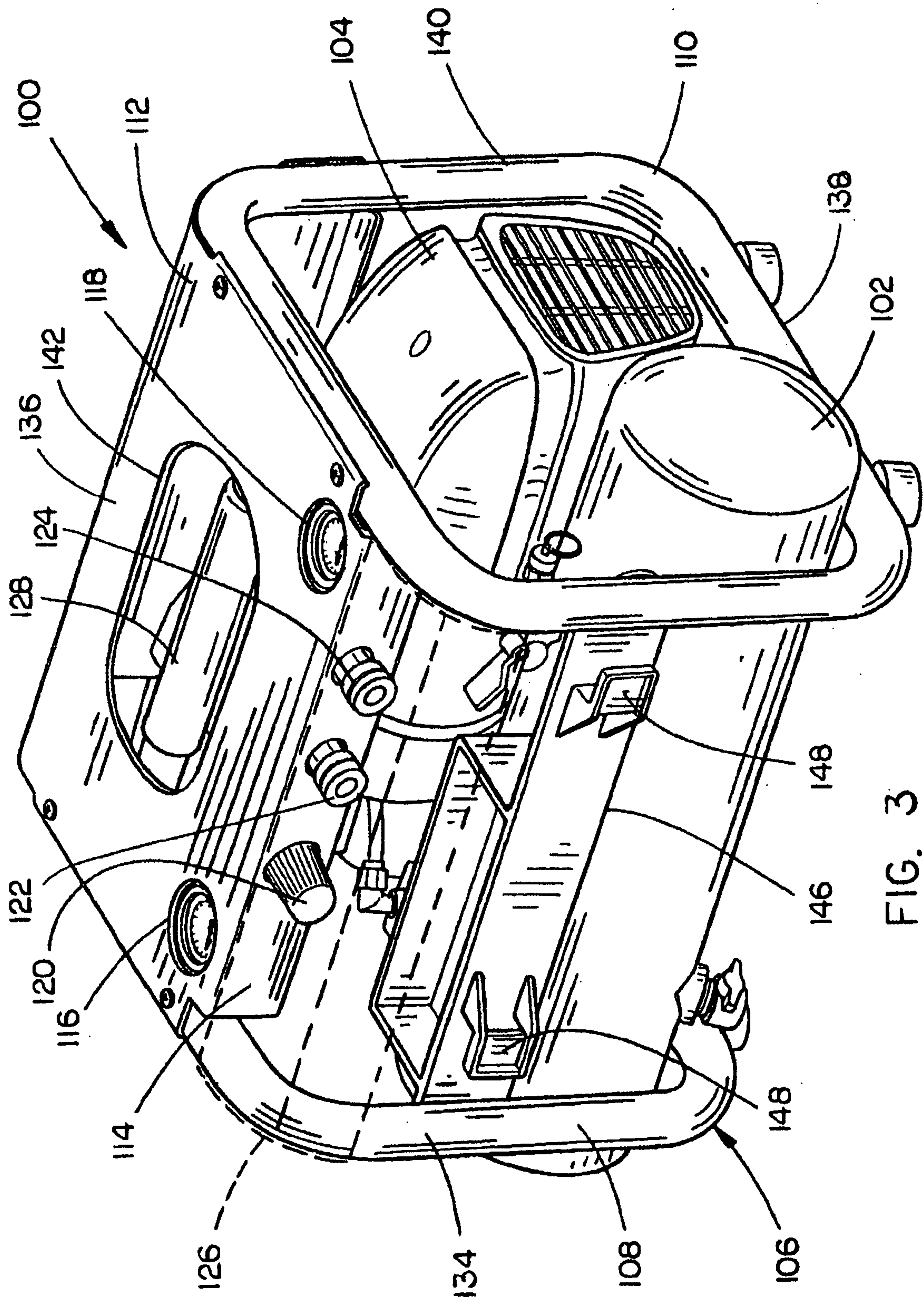


FIG. 3

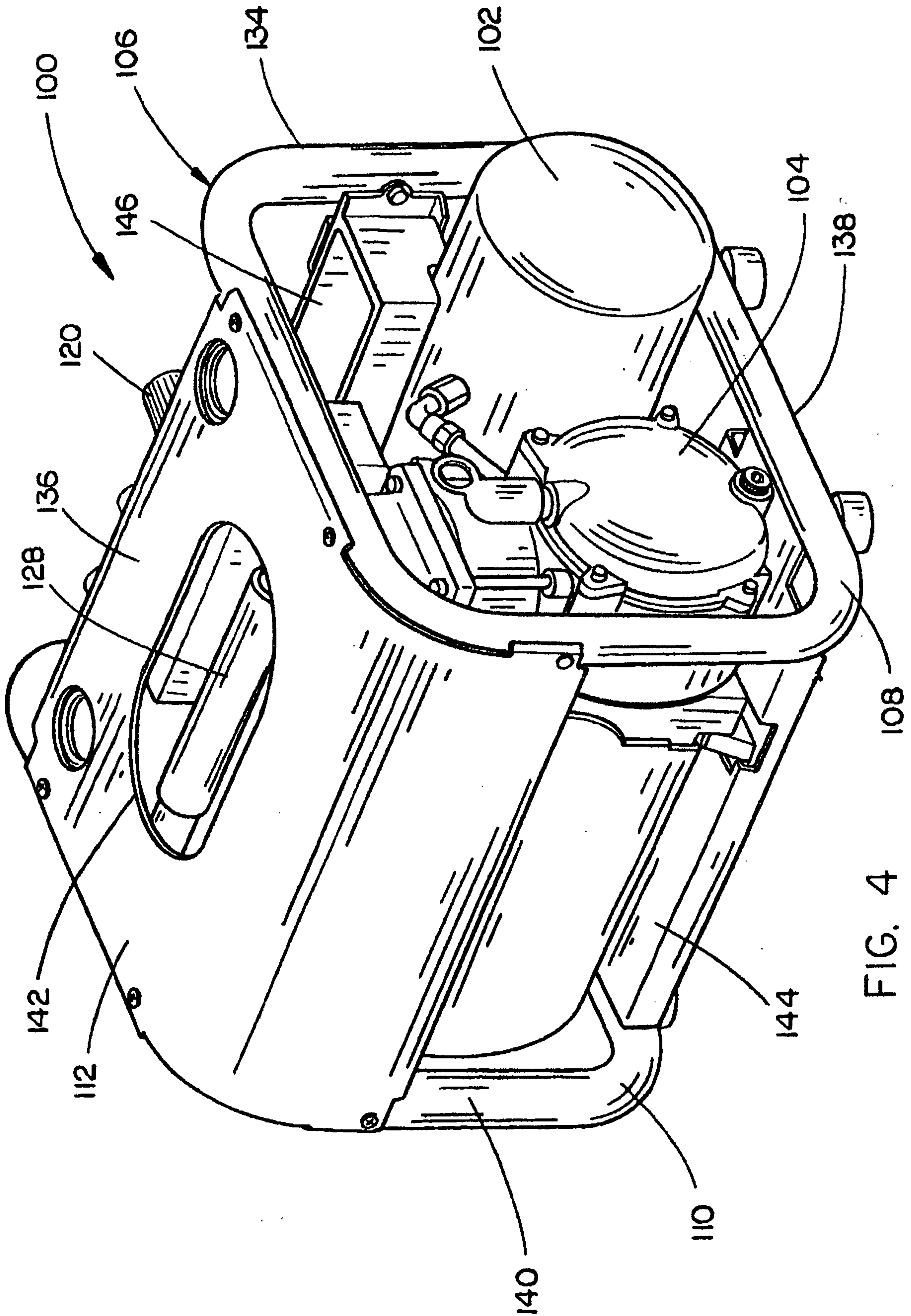


FIG. 4

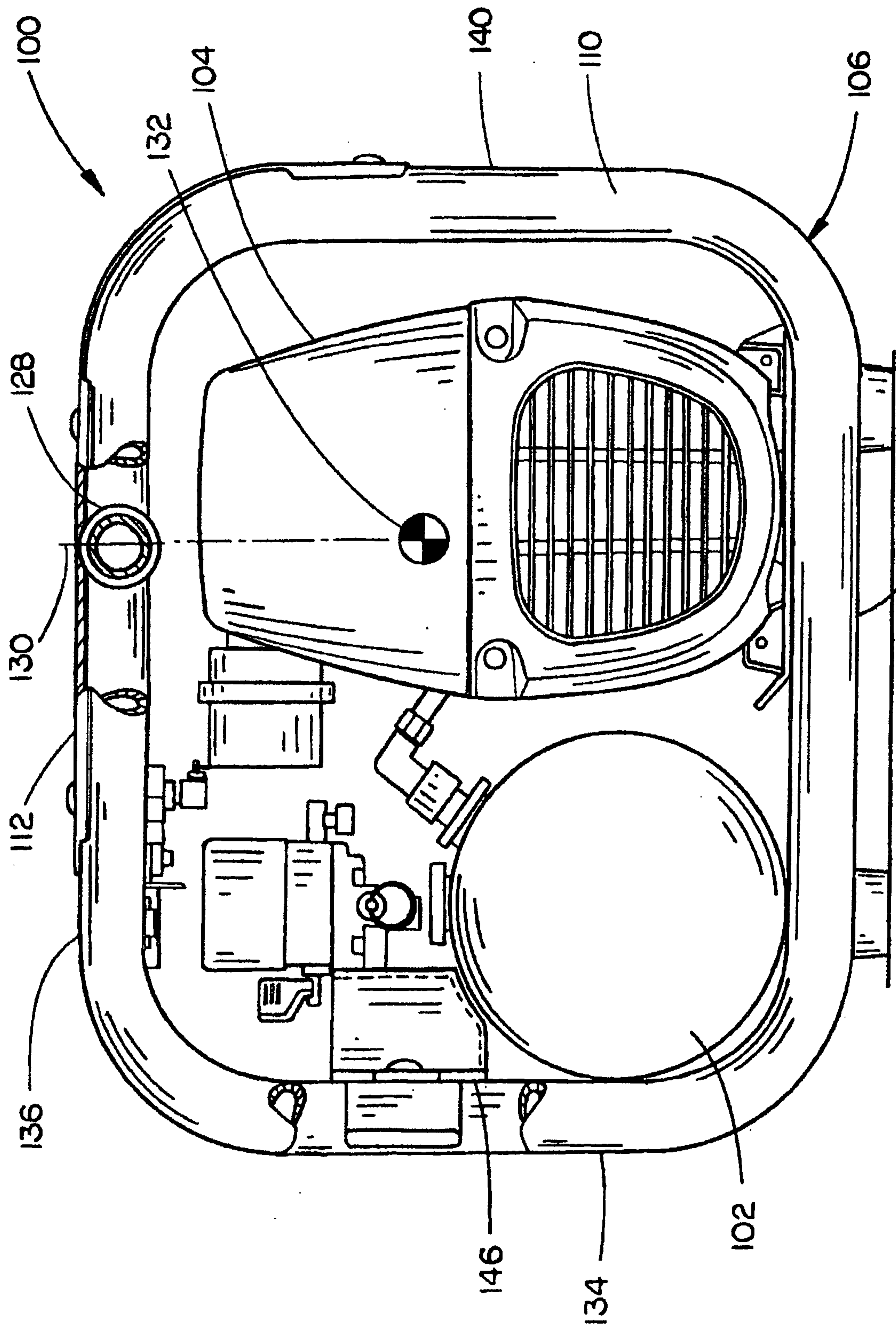


FIG. 5

