

[54] ENERGY SUPPLY UNIT FOR FREIGHT
CONTAINERS

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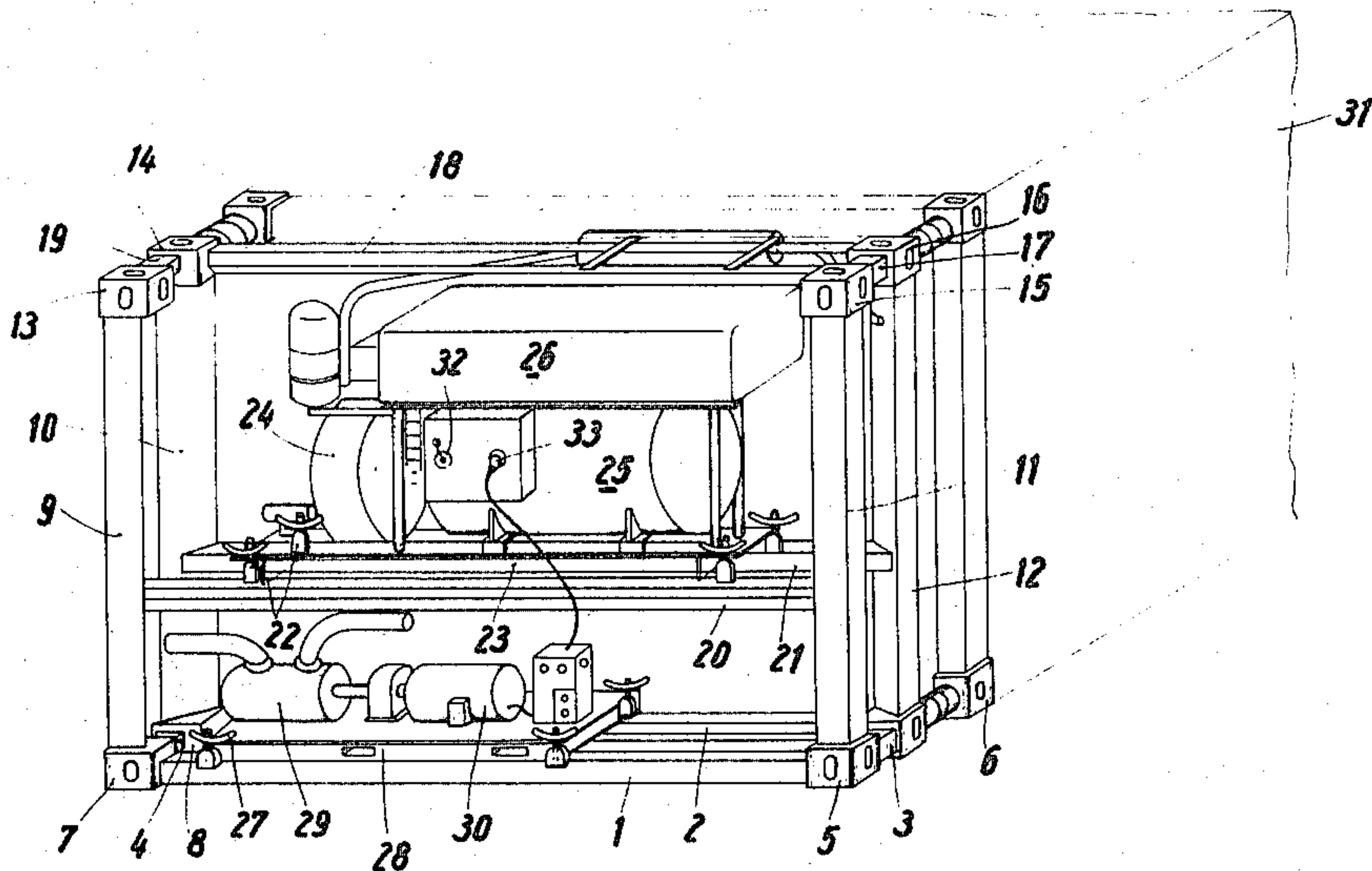
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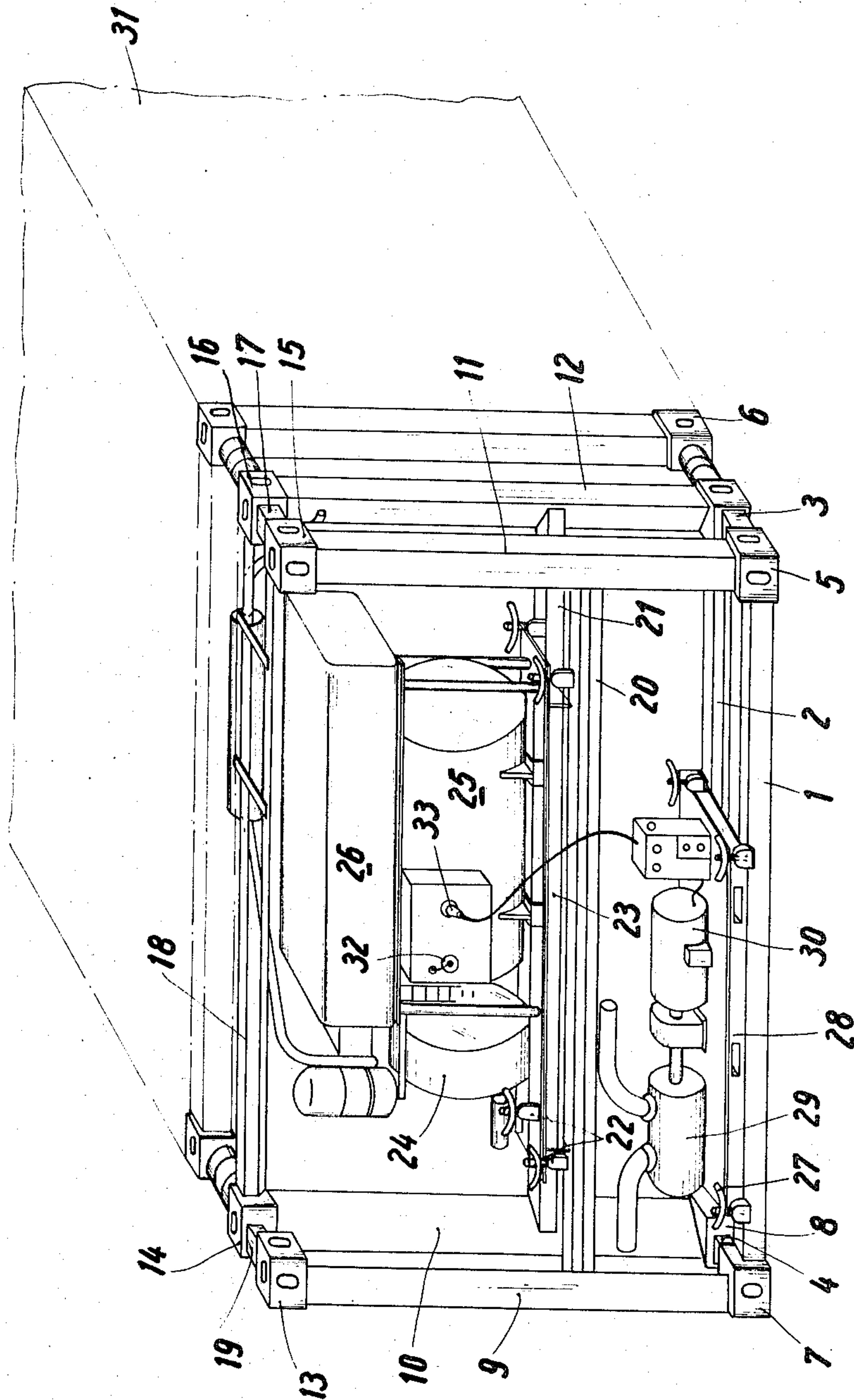
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[57] ABSTRACT
An energy supply unit for freight containers consisting of a structure having an internal combustion engine therein and at least one transducer. The structure is the same height as the container and has a detachable means for rigid connection to said container.
7 Claims, 1 Drawing Figure





ENERGY SUPPLY UNIT FOR FREIGHT CONTAINERS

This invention relates to an energy supply unit for a freight container, consisting of an internal-combustion engine and an energy transducer attached thereto.

It is known in the art to equip a freight container with an internal-combustion engine and a pump driven by the latter when the goods contained in the container require steady pumping if dissociation is to be avoided. The pump also serves to fill and empty the container. Arrangements of this kind, in which the energy-supply unit is fastened to the container, are disadvantageous to the extent the unit must be mounted within the standard dimensions of the container and thus lessens the available space. Also, the unit adds to the total cost of the container.

In many applications, the energy supply for the container is only for very brief duration, and this is done by means of a specially provided unit. This is the case, for example, if the unit is meant only to fill or empty the container or if a container holding cold-sensitive goods may be supplied by means of electrical power when standing in the factory or during travel in a well equipped container ship, a special supply which is provided is only required during transportation over land or during periods of immobility. In such cases, the costs incurred in terms of money, weight and space to achieve energy supply are prohibitive with respect to the fraction of the time the unit actually is used.

An object of this invention is to provide an arrangement for reducing these aforementioned costs.

The solution according to this invention consists in mounting the unit, that is, the internal-combustion engine together with a fuel tank and energy transducer, in a structure of the same width and height as the associated container and equipped with detachable devices for fastening to the container.

An embodiment according to this invention allows a variable or flexible adaptation to those containers precisely requiring an energy or power supply at a particular time, while other containers which are temporarily out of use or which may draw upon another source of power, may be removed from the unit. Thus, it will suffice in ports, at transshipment points, production facilities, etc., if a limited number of such units are kept on hand for connecting to those containers that are there, and as needed.

The dimensions of the structure associated with a particular type of container permits fastening the unit to a container in such manner that both may be handled by those means which are conventionally available for container transportation, such as lifts, storage devices and moving means, which usually are made to fit the type of container also. Difficulties may arise with such equipment if it were not provided with, for example, corner fittings corresponding to the particular type of container and if it were to be of improper dimensions.

It is understood that the term "energy" or "power supply" is to be understood in the widest sense. The supply power may be electrical power such as in the case of heat supply for a container carrying cold-sensitive goods, which must be provided with electrical resistance heaters. Another example is the supplying of kinetic energy to a container for filling or emptying or rotating the container contents, in which case the energy transducer is a pump. Finally this energy or power

transducer might be a compressor by means of which a fluidifiable liquid may be emptied upon air injection.

According to this invention, the unit is also suited for the supply of different kinds of energy or power because several transducers may be provided for. According to this invention, the internal-combustion engine may be coupled to a current generator, while another generator farther in the structure is available to be driven by the energy delivered from the generator. A switch may be provided for those cases, which determine whether the energy or power supplied by the generator is fed to a second transducer or directly to the container. Thus such unit would allow selective heating of the container contents or driving the pump provided for in the unit, which in this case becomes the second transducer; this pump empties or fills the container. In such eventuality, the pump is provided with an electric motor driven by the energy from the generator. The same applies if the second transducer is a compressor.

Preferably, the pump or the compressor will be made into a single construction unit with the electrical motor, the construction unit as a whole being interchangeable. The electric connection by cable between electric motor and current generator is ensured by an easily disconnectable plug-in contact. This characteristic will become important when different substances are to be pumped and different pumps have to be put into operation therefore, which also may be of different power inputs. Were it not for this particular feature of the invention, a great many power units would have to be kept on hand in order to be adapted to the various substances pumped.

The structure is to be so constructed with regard to space that additional installations, for example measuring or control instruments, filters or the likes may be mounted thereon.

Further, space in the structure is so allotted that an intermediate shelf is provided at half height, or some similar floor, thus allowing the mounting of an internal-combustion engine and a further transducer one above the other. The internal combustion engine appropriately is mounted on top so that the heat that it generates does not interfere with the operation of the further energy transducer. When such interference need not be feared, a different arrangement may of course be selected.

So that the machinery within the power unit may easily be interchangeable, as may be required for adapting to the desired power characteristics of the power unit or necessary in case of interference, the structure on which will be mounted the internal-combustion engine and/or the current generator, or the construction unit consisting of the internal-combustion engine and current-generator and/or the further energy transducer, will be provided with rapidly detachable connectors.

Other objects and advantages of the present invention will become clear when viewed with the accompanying drawing, wherein:

FIG. 1 is a perspective view of the power unit according to the present invention wherein the contour of a container tied to the power unit is shown in dots in the background.

With reference to the drawing it will be seen that the structure consists of hollow steel profiles welded together in the shape of a frame by using standard corner fittings. The basic frame consists of hollow profiles 1

through 4. Corner fittings 5 through 8 in the basic frame are soldered onto corner columns 9 through 12; the latter support at their upper ends the corner fittings 13 through 16, which are connected by struts 17 through 19, again in the shape of a frame. An intermediate floor is formed in the median area by two struts 20, 21 running parallel to profiles 1, 2. The struts 20, 21 may be easily removed though they are tightly connected through four locking handles 22 which serve also to fasten a diesel-generator set's bottom plate 23, which is shown in thin lines, as contrasted to the thick ones for the structure. The diesel engine is denoted by 24, the generator by 25 and the fuel tank by 26.

Corresponding locking handles 27 for fastening the bottom plate 28 of a pump unit are mounted on the basic frames 1 through 4 of the structure. The pump unit consists of a pump 29 and an electrical motor 30.

The dimensions and corner fittings of the structure correspond precisely to those of container 31 shown in dotted lines in the drawing. Therefore, the power unit is easily connected or disconnected to and from this container or any other one of same construction. As illustrated in the drawing, one manner of doing this is by providing cooperating studs and sleeves at the corner fittings of the structure and the associated container.

Coupling devices for power supplies may be provided at the container and the power unit, the example showing a coupling for electrical cables and a connection for a pumping conduit, which however for sake of simplicity are not shown in the drawing. At 32, one sees a selection switch for either connecting the generator to the container so as to heat latter, or connecting the generator to pump motor 30. The readily disconnectable plug-in contact for connecting motor 30 to generator 25 is indicated at 33.

Obviously, the embodiments shown are exemplary only and a wide variety of embodiments may be devised without departing from the spirit and scope thereof.

What is claimed is:

1. A power unit for an energy or power supply for a freight-container comprising a structure, an internal combustion engine mounted on said structure together

with fuel supply means and at least one transducer, said structure is of the same width and height as said container and is provided with detachable means for rigid connection to said container, said internal combustion engine being permanently coupled to a current generator, a further transducer in said structure driven by said generator, and a selector switch for selectively connecting said generator to said container and to said further transducer.

2. The power unit of claim 1, wherein said further transducer is a compressor with an electric motor.

3. The power unit of claim 2, wherein said compressor with electric motor are made into one module which is interchangeable as a whole, including an electrical cable connection between said electric motor and generator comprising a detachable plug-in connection.

4. A power unit for an energy or power supply for a freight-container comprising a structure, an internal combustion engine mounted on said structure together with fuel supply means and at least one transducer, said structure is of the same width and height as said container and is provided with detachable means for rigid connection to said container, and said structure is provided with corner fittings corresponding to those of said container.

5. A power unit for an energy or power supply for a freight-container comprising a structure, an internal combustion engine mounted on said structure together with fuel supply means and at least one transducer, said structure is of the same width and height as said container and is provided with detachable means for rigid connection to said container, said structure being provided with a median support at mid-height and said internal combustion engine and at least one transducer is mounted one above the other.

6. The power unit of claim 5, wherein said internal combustion engine is mounted on top.

7. The power unit of claim 5, wherein said structure serving to mount the internal combustion engine and said transducer is provided with rapid disconnect connecting devices.

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