United States Patent [19]

Montelius

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[54] **PUMPING UNITS**

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Related U.S. Application Data

[63] Continuation of Ser. No. 883,559, Dec. 9, 1969, abandoned.

[30] **Foreign Application Priority Data**

Dec. 13, 1968 Sweden 17112/68

[52] **U.S. Cl.** ..... **417/313,** 181/33 K, 310/87

[51] **Int. Cl.** **H02k 5/10,** F04b 1/99, F04b 21/00

[58] **Field of Search** ..... 181/33 K

[56] **References Cited**

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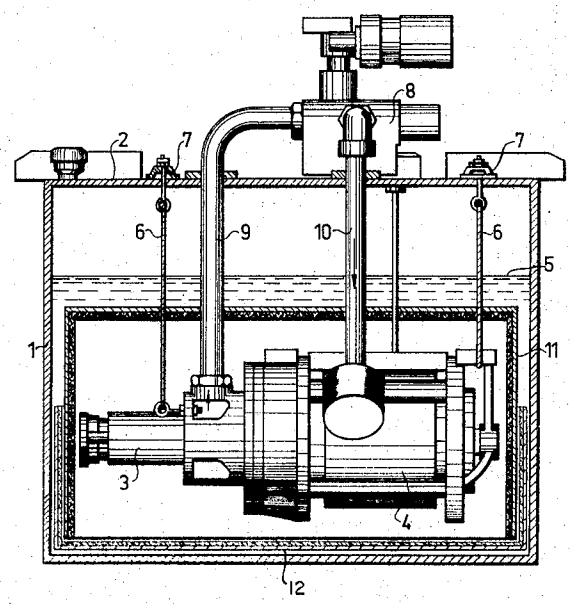
[57] **ABSTRACT**

Sound generated by a submerged motor-pump unit and transmitted through the liquid in which the unit is submerged is attenuated by shielding means comprising a first box-like member having a downwardly facing opening and a second box-like member having an upwardly facing opening and overlapping the first box-like member. The box-like members are made from sheet metal coated with foam rubber or other sound-absorbing material.

1 Claim, 1 Drawing Figure



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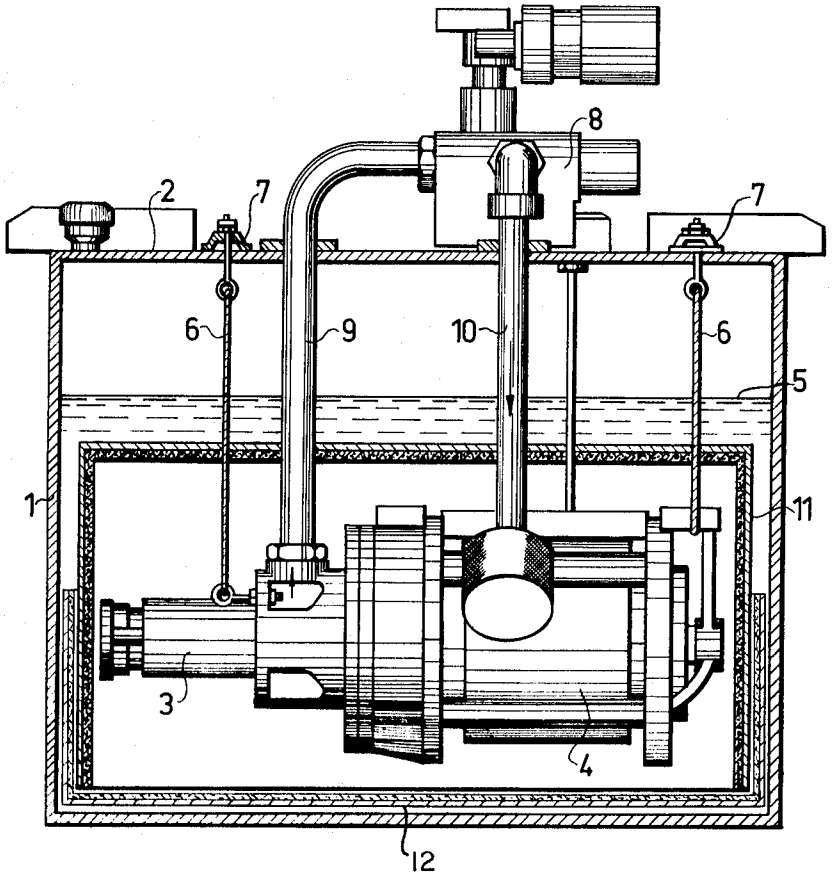

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PUMPING UNITS

This application is a continuation of Ser. No. 883,559 filed Dec. 9, 1969, now abandoned.

The present invention relates to an improvement in pumping units comprising a pump and a motor which are immersed below the liquid level in a liquid tank. The object of the invention is to provide an improved dampening of noise in such a unit.

It is known in hydraulic installations to dispose the main feeding pump of the installation together with its driving motor immersed in a hydraulic fluid tank. This has several advantages, inter alia that the motor and pump construction can be considerably simplified. However, difficult problems of preventing noise are encountered. Some of them can be solved by suspending the pump and motor assembly in vibration dampening members arranged in a suitable manner. However, vibrations from the pump may still be transmitted through the fluid to the tank walls and result in disturbing noise.

According to the present invention, an improved absorption of noise is achieved by providing within the tank a shield enclosing the pump and motor and consisting wholly or partly of sound absorbing material. This shield is arranged so that free circulation of the fluid between the spaces within and outside of the shield is possible.

An embodiment of the invention is illustrated on the accompanying drawing.

Referring to the drawing, the numeral **1** designates an oil tank having a cover **2**. A pump **3** together with a driving motor **4** is arranged so that both the pump and the motor are below the normal liquid level **5**. In the embodiment illustrated, the pump and the motor are suspended by cables **6** in vibration dampers **7** of rubber. A valve means **8** is positioned on the cover **2** and communicates with the pump outlet through a conduit **9**. A return conduit **10** extends from the valve to the interior of the tank. Further, conduits (not shown) extend from the valve for connection to other parts of the hydraulic installation, which are to be operated by hydraulic fluid.

According to this invention, there is provided a shield **11** enclosing the pump **3** and motor **4**, in the embodiment shown, constructed as an open box having the open side facing downwards. The box may be made from sheet metal coated with foam rubber or other sound absorbing material. It is disposed by means of attachment members (not shown) so that its bottom edge is spaced a short distance above the tank bottom, whereby oil from the space outside of the box can enter the space within the box. The box has suitable openings through which the above-mentioned conduits and cables extend.

The shape of the shield is unimportant, as long as it essentially encloses the pump and motor assembly, preferably both upwardly and laterally.

In order to further improve the dampening of noise, it is possible to provide a similar box **12** enclosing the pump motor assembly from below, i.e. having its open side at the top. This box is made with somewhat larger dimensions than shield **11** and disposed so that it partly encloses box **11** with a sufficient space therebetween to permit free circulation of liquid alternatively, box **11** could be made with dimensions such that it partly encloses box **12**.

I claim:

1. A pumping unit comprising a tank for containing a liquid to be pumped, a pump and motor assembly disposed in the tank below the normal liquid level therein, and shielding means essentially enclosing the pump and motor assembly comprising first and second box-like members, each made at least in part from sound-absorbing material, and each having one open end, said members having their open ends facing in opposite directions and being so arranged that one at least partially encloses the other with a space between their walls to allow circulation of liquid between the spaces within and outside of the shielding means.

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