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[54] **STEAM DRIVEN SONIC IMPLODER**

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[51] **Int. Cl.** **G08b 9/00**

[58] **Field of Search** ..... 116/137 A, 117, 22 A; 181/5 A, 5 AG; 203/10; 165/84, 5, 95; 73/17 A; 159/DIG. 13; 202/185 R; 43/17.1

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Primary Examiner—Louis J. Capozi

[57] **ABSTRACT**

A steam driven imploder device adapted to generate strong sonic vibrations. The device incorporates a closed cycle, steam generating system which includes an uninsulated steam pipe or vibrator submerged in a coolant such as river water which causes the steam to be rapidly condensed. The sound imploder may be used to repel fish and the like for their protection as, for example, in the vicinity of inlets to atomic energy generating plants.

5 Claims, 2 Drawing Figures

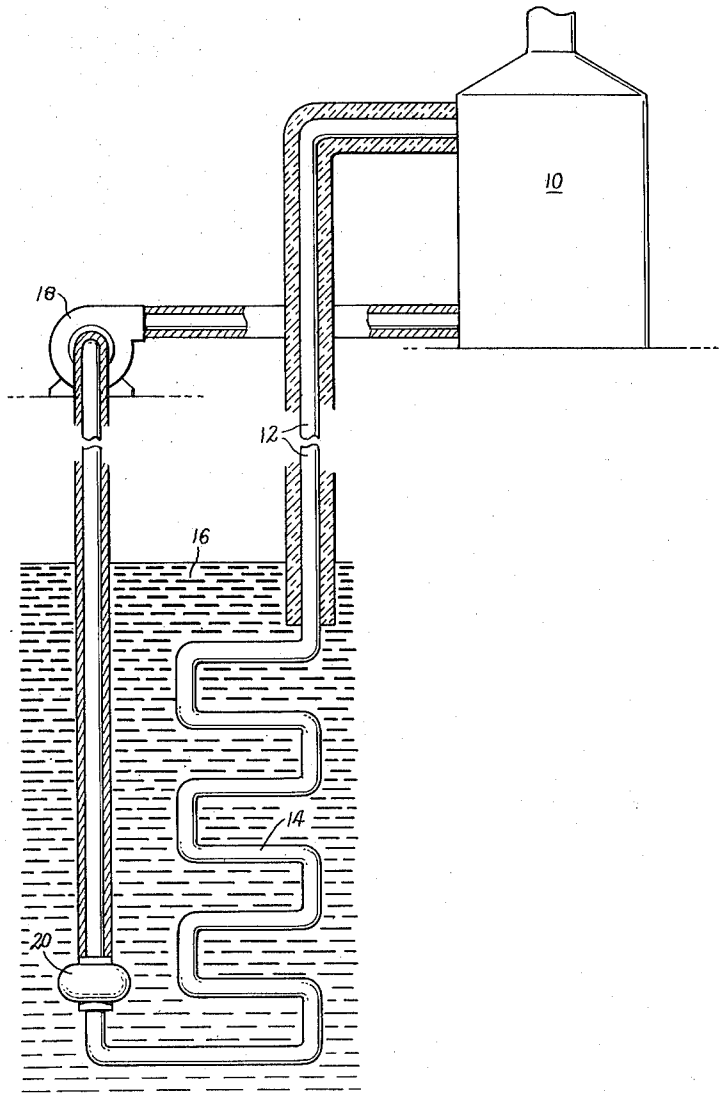


Fig 1

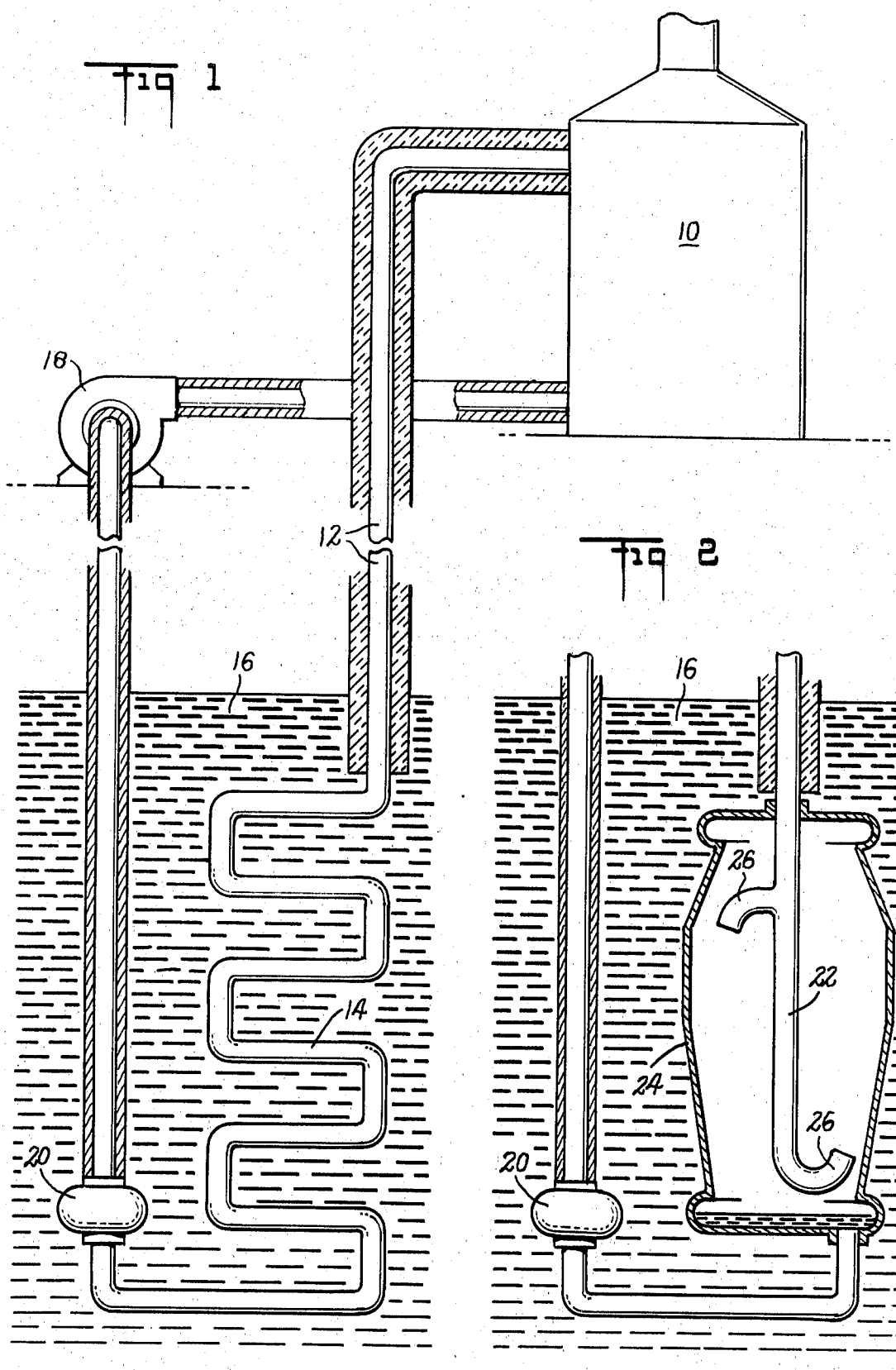


Fig 2

STEAM DRIVEN SONIC IMPLODER

This invention relates to sound generators and, in particular, to sonic imploders designed to emit sound vibrations through a liquid medium.

The instant sound generator operates on the prinsiple of implosion. Steam is conducted through an insulated pipe to an uninsulated section which is submerged in a coolant. As the steam makes contact with the cooled wall structure of the section it is instantly converted into a water condensate causing rapid pressure reduction which is then quickly built up as the steam passes into the section. The consequent contraction and expansion of pressure in the section causes severe vibration of the wall structure which becomes, therefore, a source of noise.

One object of the invention is to provide a new and improved underwater noise producer adapted, for example, to repell sea life as a protective measure therefor.

Other objects and advantages of the invention may be appreciated on reading the following description of several embodiments thereof taken in conjunction with the accompanying drawings, in which:

FIG. **1** is a diagrammatic view showing my improved steam driven imploder; and

FIG. **2** is a diagrammatic view of a modified version of the invention.

Referring to FIG. **1** of the drawings, boiler **10** generates steam which passes through insulated pipe section **12** into an uninsulated pipe section or vibrator **14** fabricated of hardened steel and formed into a spiral or coil, or into an S-shaped as shown. If the uninsulated pipe section is of considerable length it may be constituted of straight pipe. The section is submerged in water **16** which is thus heated by the section to keep the wall structure thereof cool. As a consequence, condensate forms at the bottom of the section from which it is drawn off by pump **18** through check valve **20.**

There is shown in FIG. **2** a modified version of the invention in which the uninsulated vibrator section **22** is inserted in a submerged steel barrel **24.** The section **22** has several outlets **26** some of which are downwardly directed and others upwardly directed in the barrel causing the steam to make uniform and efficient contact with the cooled wall structure of the barrel. The condensate is then led off from the vibrator by pump **18** through check valve **20** in the same manner as in the first described embodiment.

The continuing passage of steam through the submerged pipe section **14** in the embodiment of the invention shown in FIG. **1** and into the submerged barrel **24** in the embodiment illustrated in FIG. **2** preceding and following condensation of the steam in the two units results in the desired noise generation as for the specific purpose stated hereinabove. It may be noted that there is an absence of moving parts with the exception of the pump unit in the two embodiments rendering the systems highly durable and of simple construction and maintenance.

Various other embodiments of the invention may be effected by persons skilled in the art without departing from the scope and principle of the invention as defined in the appended claims.

What is claimed is:

1. An underwater sonic imploder comprising a boiler, a vibrator, insulated pipe connecting said boiler to said vibrator, said vibrator including an uninsulated pipe section submerged in a liquid medium, and a pump connecting said vibrator back to said boiler.

2. An imploder as defined in claim **1** wherein the uninsulated pipe of said vibrator is sinuously formed.

3. An imploder as defined in claim **1** wherein said vibrator includes a structure of barrel like formation, said uninsulated pipe terminating therein, means being provided for said pump to draw off condensate from said structure.

4. An imploder as defined in claim **3** wherein the uninsulated pipe within said structure has a plurality of outlets disposed variously in the upward and downward direction.

5. An imploder as defined in claim **1** wherein a check valve is provided in the line between said vibrator and said pump.

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