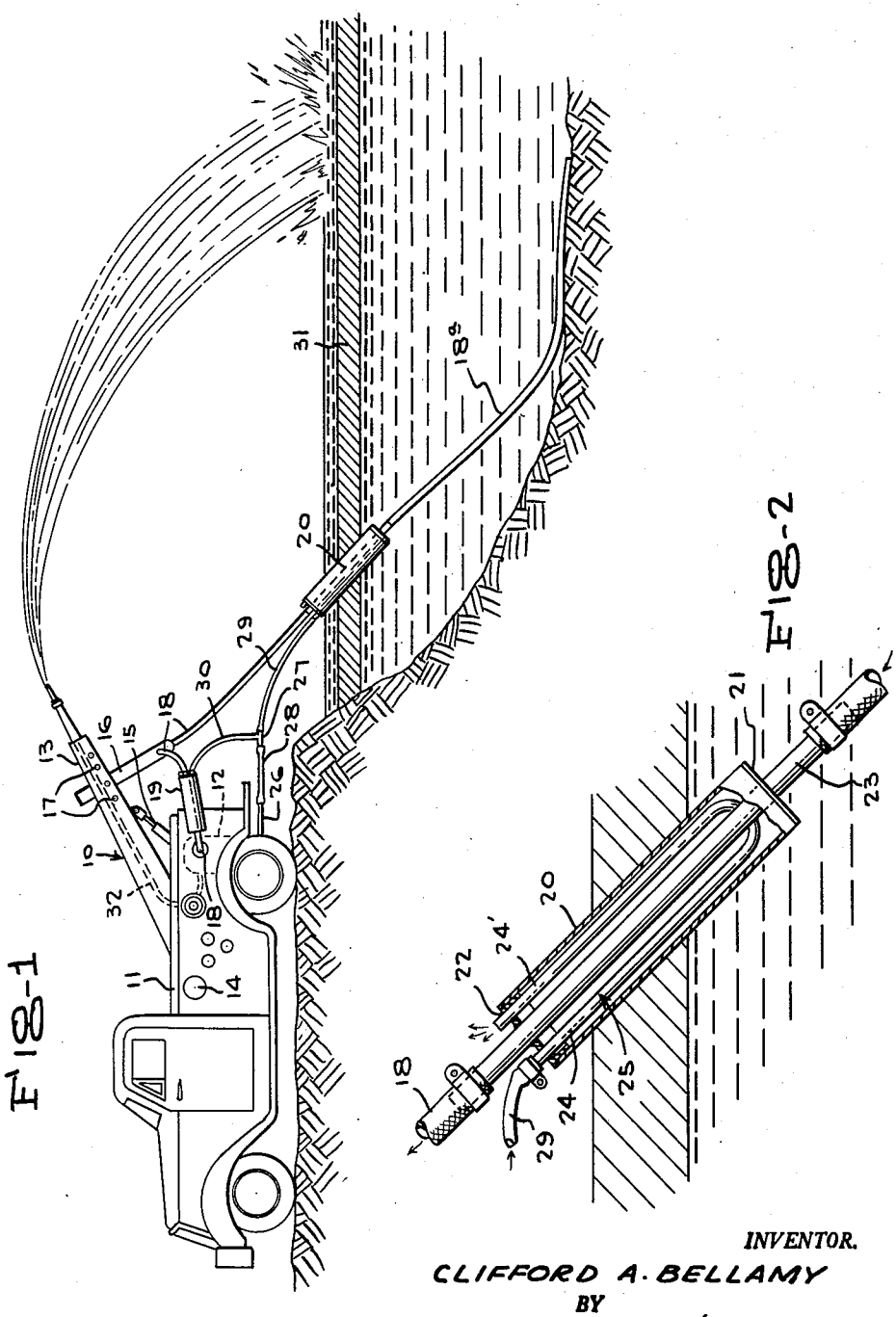
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APPARATUS FOR CONTROL OF WATER BENEATH ICE SURFACES

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APPARATUS FOR CONTROL OF WATER BENEATH ICE SURFACES

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2 Claims. (Cl. 61—1)

This invention relates to an apparatus for control of water, particularly the water existing beneath the ice surfaces of glacier lakes, which water under present conditions feeds to reservoirs or low lands, and with the coming of thawing weather, the flow of water would be increased to a point where the reservoir would be unable to receive and retain the water, with consequent flooding of the overtaxed areas.

It is therefore the cardinal object of the invention to provide an apparatus for control of water, wherein the water beneath the surface of ice formed on glazier lakes or the like, may be pumped therefrom and discharged upon the top surface of ice on the lake or other body of water to expose the water to climatic temperatures so that it may freeze and thus build up a series of layers of ice, which layers will melt gradually, under spring thawing conditions, in such quantities as to be accommodated by the reservoirs and the low lands without liability of damage by flooding, as well as conserving the water.

The present invention is a division of my prior copending application Serial Number 39,025 filed June 27, 1960.

Additional objects, advantages and features of invention will be apparent from the following description, considered in conjunction with the accompanying drawing, wherein,

FIGURE 1 is a side elevation of an apparatus for carrying out the invention, the lake body and ice formation being shown in section.

FIGURE 2 is an enlarged side elevation, partly in section, of a heater unit employed with the water intake to a pump of the apparatus.

Referring more particularly to the drawing, there is illustrated in FIGURE 1, an ambulant apparatus generally indicated by the reference character **10**, which in the present instance, is shown as a motor vehicle truck **11**, which comprises a pump **12** which may be operated from a suitable power take-off from the engine of the truck. The truck is provided with a rigid, rearwardly inclined support tower **13**, which is pivotally mounted within the truck body as at **14** permitting angular adjustment of the tower by means of an adjustable arm **15**, which may also be controlled and actuated from a power take-off of the engine.

The tower **13** includes a support arm **16** which is adjustable thereon by virtue of longitudinally spaced openings **17**, the arm **16** being selectively adjusted and secured in the openings **17**. The lower end of the arm **16** is provided with suitable means for securement of a water inlet conduit **18** which passes through a heating chamber **19** and is connected to the intake side of the pump as at **18'**.

A heating chamber **20** which as shown, is positioned in a suitable opening formed in the ice formation above the lake water and as best seen in FIGURE 2, the chamber is of elongated cylindrical formation having respective end closure plates **21** and **22**, each of which is provided with an axial opening for passage and securement of a conduit **23**, the ends of which project a suitable distance beyond the closure plates for connection of the hose **18** at the upper end thereof, while a hose **18*a*** is connected at the lower end of the chamber. The hose **18*a*** is of a length so as to extend well within the body of water for

transfer thereof upon the upper surface of the ice formation, as will be described hereinafter. The closure plate **22** is additionally provided with two openings for mounting of respective legs **24** and **24'** of a heating coil **25**. The leg **24'** of the coil extends exteriorly of the closure plate **22** and is open to the atmosphere. The heating chamber **19** is similarly constructed.

It will be understood that due to extremely low freezing conditions, the heating chambers **19** and **20** are essential to maintain the water in a flowable state.

The chambers **19** and **20** in the present instance, obtain a source of heat from the hot exhaust gases emanating from the exhaust pipe **26** of the truck engine, the latter not being shown. A three-way pipe fitting **27** has one branch thereof connected to the exhaust pipe **26** by means of a suitable hose **28**, the opposite branch being connected to the leg **24** of the coil **25** by means of a hose **29**, while the intermediate branch of the fitting **27** establishes a connection with the heating chamber **19** by means of a hose **30**.

In use, the truck **11** is brought to the location for carrying out the operation and is brought into close proximity of the edge of the lake or other body of water so that the heating chamber **20** may be readily installed in a suitable opening formed through the ice surface **31**, with the hose **18*a*** submerged beneath the ice surface.

With the motor of the truck in operation, hot gases from the exhaust pipe **26** will pass through the heating chambers **19** and **20**. The pump **12** is next put into operation, creating a suction in the intake **18'**, the water inlet **18** and hose **18*a***. Water beneath the surface of the ice will thus be drawn into the pump **12** and discharged through the conduit **32** supported by the tower **13** and from which the water will be discharged upon the surface of the ice **31**. The water passing through the heating chambers will be maintained in a flowable state notwithstanding extreme climatic temperatures.

Thus it will be seen that with continuous operation in the transfer of water from beneath the ice surface to the upper surface thereof, the amount of water within the lake or river is reduced in the formation of a series of layers of ice upon the original ice surface formation. Under spring thawing conditions, water beneath the ice surface will flow normally to the point of discharge, but the layers of ice will undergo a gradual melting and thus avoid flooding or damage to property at the point of discharge of water from the lake or river.

While I have shown and described a preferred construction of the apparatus for carrying out the same, this by way of illustration only, and I consider as my own all such modifications in construction as fairly fall within the scope of the appended claims.

I claim:

1. In an apparatus that is adapted to control water beneath ice surfaces of a body of water, in combination a source of heat, an intake conduit within said body of water, pump means, said pump means being provided with a suction and a discharge port, said intake conduit being connected to said suction port, a discharge conduit connected to the discharge port of the pump, said discharge conduit adapted to discharge water upon the upper surface of said ice surface to expose said water to below freezing temperatures, heating means connected to said source of heat, and said heating means positioned in a suitable opening formed in the ice surface and encasing said intake conduit for maintaining flow of water through the intake conduit to the pump.

2. In an apparatus that is adapted to control water beneath ice surfaces of a body of water, in combination, an ambulant vehicle having an internal combustion engine, a pump and operating means connected to said engine, said pump having an intake suction port and a

discharge port, an intake conduit submerged within said body of water and operatively connected to said suction port, heating chamber means positioned in a suitable opening formed in the ice surfaces and encasing said intake conduit, conduit means connected between said heating chamber means and a source of heat from said engine and a discharge conduit and nozzle connected to the discharge outlet of said pump adapted to discharge water upon the upper surface of the ice formation of said body of water to expose said water to below freezing temperatures.

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