Sept. 2, 1930. L. H. REEHSING 1,774,669

INTERMITTENTLY WORKING REFRIGERATOR OF THE ABSORPTION TYPE

Filed March 10, 1928 2 Sheets-Sheet 1

Fig. 1.

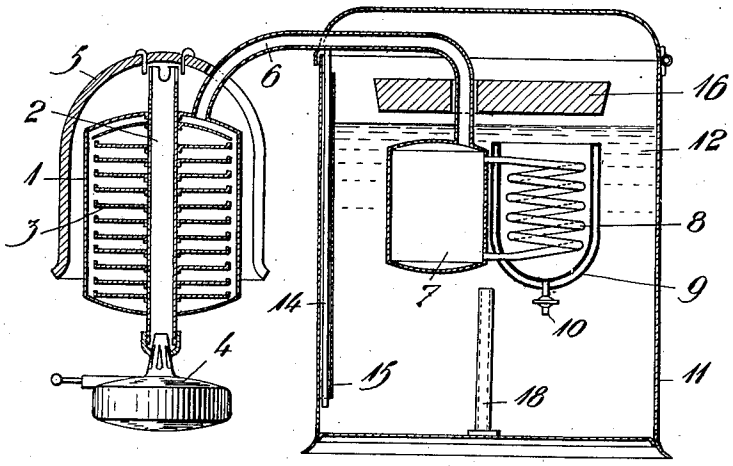
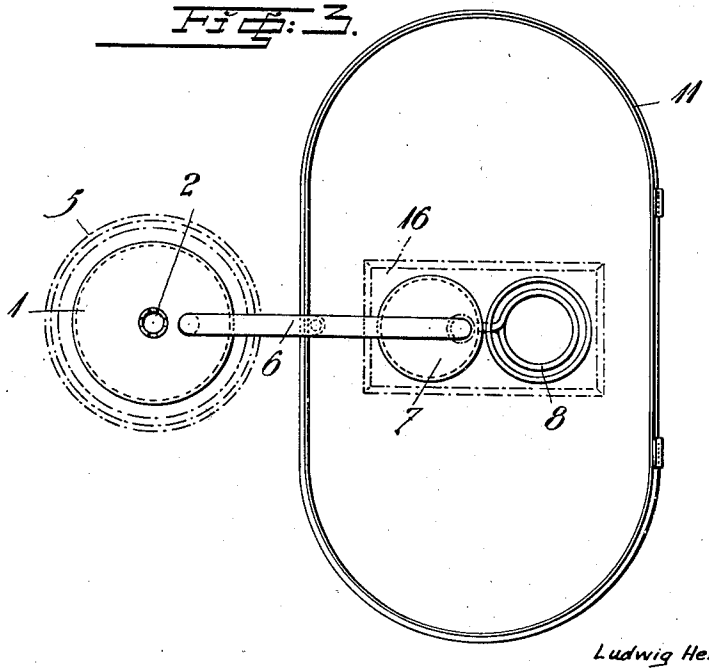


Fig. 3.



INVENTOR
Ludwig Heinrich Reehsing
By
Attorney

Sept. 2, 1930. L. H. REEHSING 1,774,669

INTERMITTENTLY WORKING REFRIGERATOR OF THE ABSORPTION TYPE

Filed March 10, 1928 2 Sheets-Sheet 2

Fig. 2.

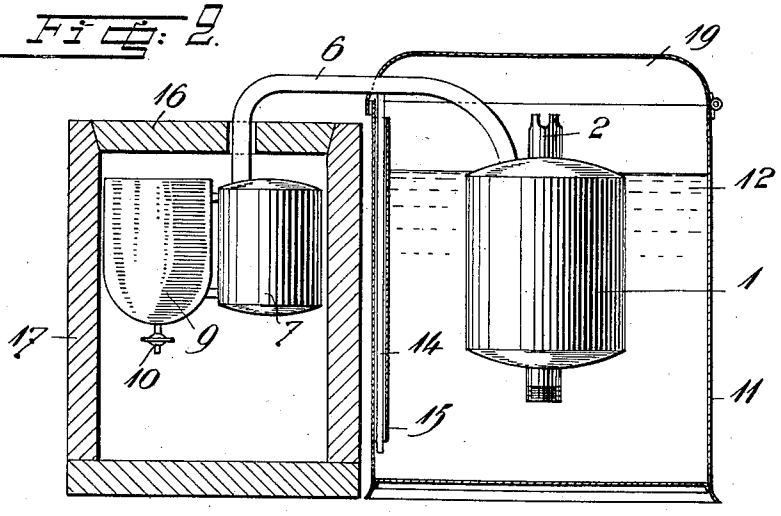
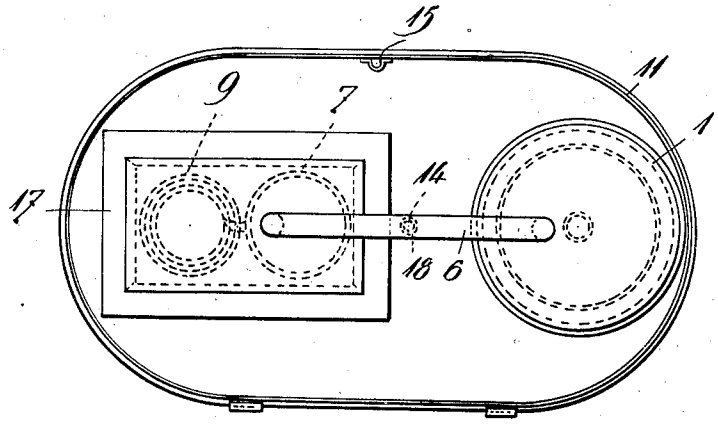


Fig. 4.



INVENTOR
Ludwig Heinrich Reehsing
By

Attorney

Patented Sept. 2, 1930 1,774,669

UNITED STATES PATENT OFFICE

LUDWIG HEINRICH REEHSING, OF BREMEN, GERMANY

INTERMITTENTLY-WORKING REFRIGERATOR OF THE ABSORPTION TYPE

Application filed March 10, 1928, Serial No. 260,669, and in Sweden January 27, 1928.

The present invention relates to an intermittently working refrigerator of the kind, in which the boiler alternatingly works as a boiler and as an absorber, and further the evaporator as an evaporator and a condenser. The idea of the invention is based upon the carrying-out and combination of the same in order to obtain a portable cooling aggregate of a safe working and, at the same time of an easy manipulation, being specially adapted for automobiles and motor boats.

A refrigerator carried out according to the present invention is essentially characterized by the combination of a boiler and a condenser connected with the latter by a pipe system, a detachable case, enclosing, with clearance, the condenser and shaped as an ice-safe, and further a container containing the boiler as well as the condenser and said case, said container serving, at the working of the present refrigerator, to receive the cooling fluid necessary for cooling the condenser and the boiler respectively.

Other features characteristic of the invention will be more particularly set forth in the following, in connection with the embodiment, illustrated in the annexed drawing.

Fig. 1 shows the refrigerator, in a vertical section, illustrating the working position of the several parts during the boiling period; Fig. 2 shows the positions of the parts during the cooling period and Fig. 3 illustrates Fig. 1 in a plan view. Finally, Fig. 4 shows the refrigerator packed together.

1 is the boiler which consists of a cylindrical container, through which runs an axially located pipe 2, which has a number of shelves 3 extending into the boiler chamber fixed to its exterior walls. Loosely mounted at the lower end of the pipe 2 is a heating-device 4 such as a spirit-lamp, and the top end of the pipe 2 has a casing 5 enclosing the boiler with clearance, detachably mounted to it. A piping 6 runs from the top end of the boiler, the second end of said piping opens into the top end of the condenser 7. Besides, the condenser is connected with a pipe coil 8 extending from one side of the condenser and surrounded by a vacuum container 9 having double walls and the space between said walls evacuated, said container being at its bottom provided with an outlet-cock 10. The condenser 7 together with the pipe coil 8 and the container 9 are, in Fig. 1, placed in a container 11, holding a cooling fluid, for instance water 12.

In order to maintain the parts in the position shown in Fig. 1 the pipe 6 is provided with a bar 14 extending downwards, which is put into a sleeve 15 at one side of the container 11. For purposes mentioned below a disc 16 of wood or the like encloses the part of the piping 6 located immediately above the condenser.

In Fig. 1 the parts are assumed to occupy the position which corresponds to the boiling period, that is to say the expelling of the gases from the absorption means and their subsequent condensation to a fluid.

As an absorption means chloride of calcium or chloride of magnesium may be used, placed on the shelves 3 in the boiler and as a gas, ammonia may be used.

At the beginning of the boiling period the gas is absorbed by the absorbing means placed on the shelves 3, and by heating the boiler by means of the heating-device 4, the gases are successively expelled from the absorbing means. The combustion gases and the hot air respectively emanating from the heating-device 4 flow up through the pipe 2 and are after this forced, by the influence of the cap 5 to wipe over the outside of the boiler to escape at the bottom end of the boiler. The gas expelled from the boiler flows through the piping 6 to the condenser, in which it will be condensed to a fluid gradually filling the boiler and the pipe coil 8. When the gas is expelled from the absorption means in the boiler, the boiling period will be ended and the heating-device 4 and the cap 5 are removed, after which the unit comprising elements 1, 6, 7, 8, 9 is elevated as a whole and turned 180° about the longitudinal axis of the bar 14 and the sleeve 15 to be lowered, afterwards, when the boiler is brought down into the container 11, while the condenser will be placed at the out-side of the container 11. The gas condensed in the condenser now begins evaporating by abstracting heat

from the surroundings, and the gas flows back to the boiler, which now serves as an absorber. To utilize the cold now produced by the condenser a box 17 is placed round the condenser 7, and vacuum container 9 while said disc 16, Fig. 2, serves as a cover. Thus, the condenser 7 and vacuum container 9 serve, during the working period, shown in Fig. 2, as an evaporator or cooler, while the boiler 1 works as an absorber. When all fluid contained in the condenser 7 and vacuum container 9, now acting as an evaporator, is gasified, the refrigerator should be charged once more and for this purpose the unit is again turned 180° to the position as illustrated in Fig. 1, and the boiling is again started.

When the refrigerator is not used, the several parts of the same, including the box 17, the heating-device 4 and the cap 5 are placed into the container 11 in a way shown by Fig. 4 and in order to fix the position of the several parts in relation to the container, the latter may be provided with a sleeve 18, centrally protruding from the bottom, the bar 14 fixed to the piping 6 being pushed down into said sleeve. To protect the parts from dust the container 11 is preferably provided with a cover 19.

Having now particularly described the nature of my invention and the manner of its operation, what I claim is:

1. In a portable refrigerating apparatus of the absorption type, in combination, a unit comprising a boiler, a condenser and a connecting pipe, pivot means for said unit, a box adapted to enclose said condenser and a container adapted to enclose said box and said unit during transportation and to contain cooling liquid during operation.

2. In a portable refrigerating apparatus of the absorption type, in combination, a unit comprising a boiler, a condenser, a pipe connecting the interiors of said boiler and said condenser and a bar vertically disposed and integral with said pipe, a box adapted to enclose said condenser, a container having a cover and having said unit and said box disposed therein and a sleeve centrally positioned in said container engaging said bar when said box and said unit are in portable position.

3. In a portable refrigerating apparatus of the absorption type, in combination, a unit comprising a boiler, a condenser, a pipe connecting the interiors of said boiler and said condenser and a bar vertically disposed and integral with said pipe, a box adapted to enclose said condenser, a container having a cover and a sleeve integral with the side of said container engaging said bar when said unit is in operative position.

4. In a portable refrigerating apparatus of the absorption type, in combination, a unit comprising a boiler, a condenser, a pipe connecting the interiors of said boiler and said condenser and a bar vertically disposed and integral with said pipe, a box adapted to enclose said condenser, a container having a cover and having said unit and said box disposed therein, a sleeve centrally positioned in said container engaging said bar when said box and said unit are in portable position and a second sleeve integral with the side of said container engaging said bar when said unit is in operative position.

5. In a portable refrigerating apparatus of the absorption type, in combination, a unit comprising a boiler, a condenser having a pipe coil connected thereto, a pipe connecting the interiors of said boiler and said condenser and a bar vertically disposed and integral with said pipe, a box adapted to enclose said condenser, a container having a cover and a sleeve integral with the side of said container engaging said bar when said unit is in operative position.

6. In a portable refrigerating apparatus of the absorption type, in combination, a unit comprising a boiler, a condenser having a pipe coil connected thereto, a vacuum container surrounding said pipe coil, a pipe connecting the interiors of said boiler and said condenser and a bar vertically disposed and integral with said pipe, a box adapted to enclose said condenser, a container having a cover and a sleeve integral with the side of said container engaging said bar when said unit is in operative position.

LUDWIG HEINRICH REEHSING.