

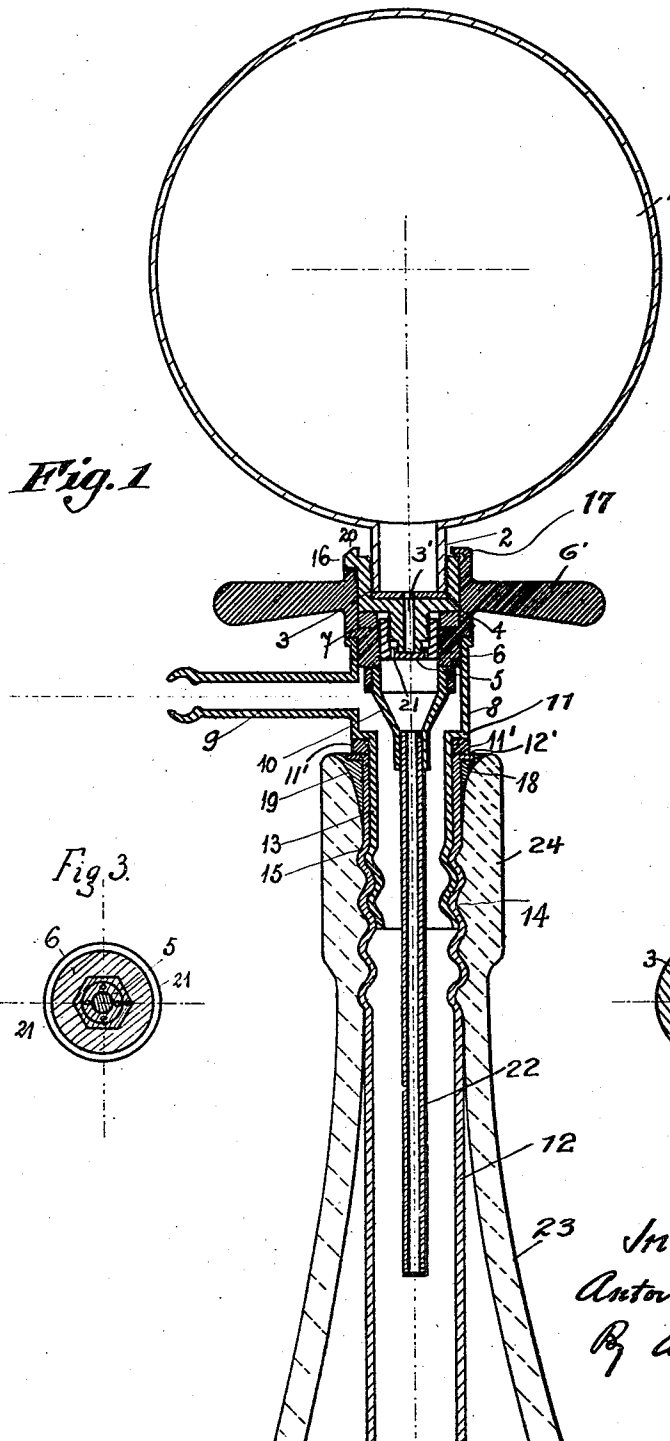
Sept. 25, 1923.

1,468,876

A. FRHR. VON CODELLI
MINIATURE COOLING APPARATUS

Filed Jan. 24, 1922

3 Sheets-Sheet 1



Inventor:
Anton Frh. v. Codelli
By *[Signature]*
att.

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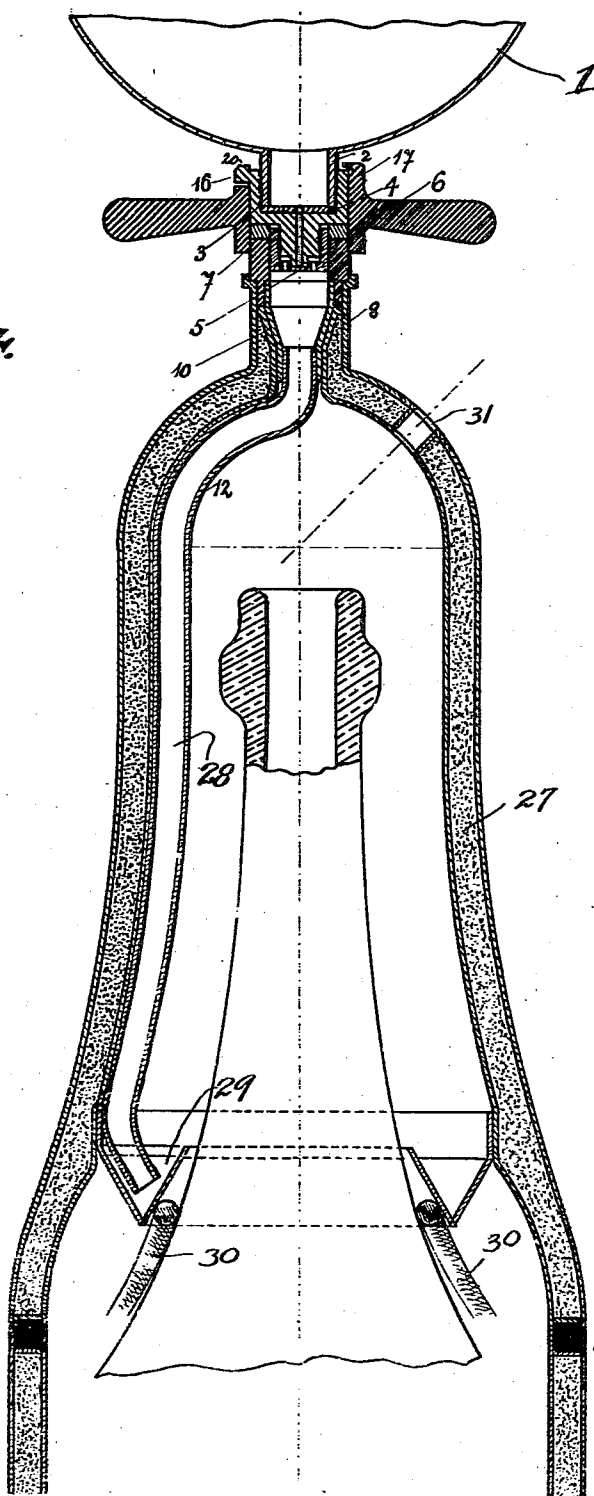
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Fig. 4.



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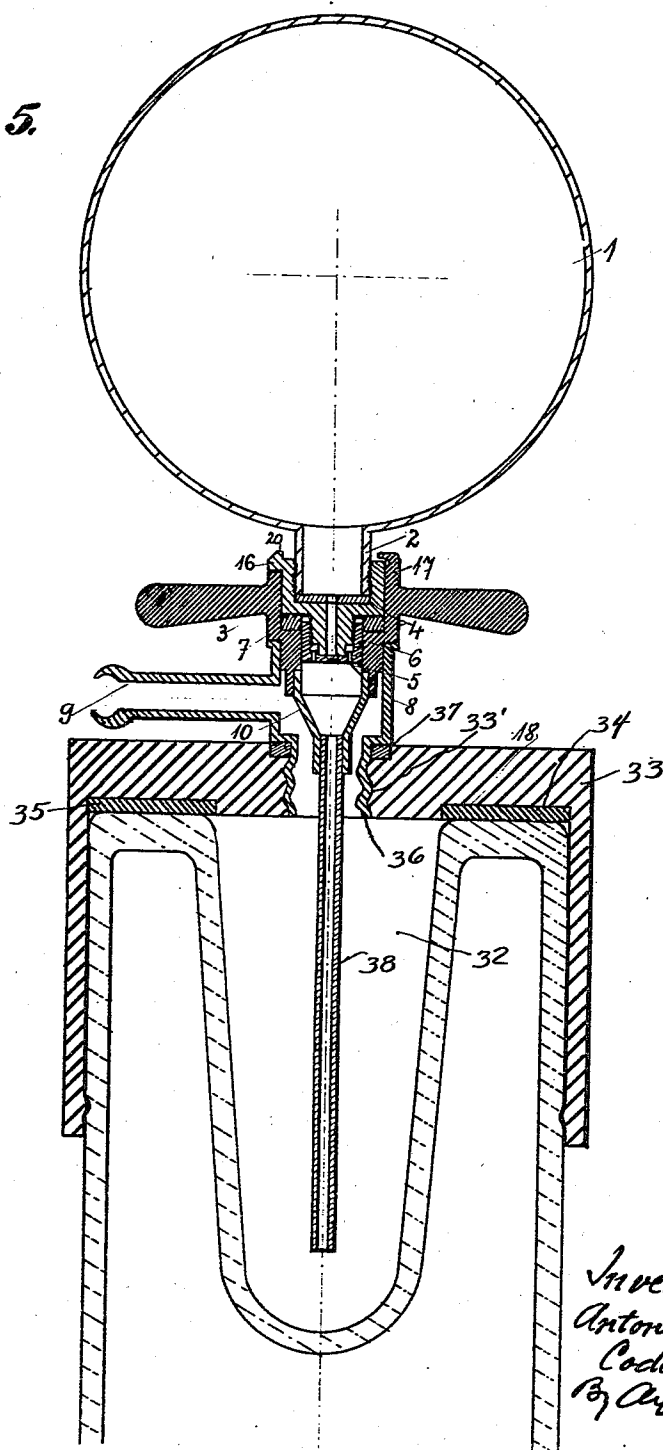
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3 Sheets-Sheet 3

Fig. 5.



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UNITED STATES PATENT OFFICE.

ANTON FRHR. VON CODELLI, OF MOSTE, NEAR LAIBACH, YUGOSLAVIA.

MINIATURE COOLING APPARATUS.

Application filed January 24, 1922. Serial No. 531,427.

To all whom it may concern:

Be it known that I, ANTON FREIHERR VON CODELLI, a citizen of Yugoslavia, residing at Moste, near Laibach, Kingdom of Yugoslavia, have invented certain new and useful Improvements in Miniature Cooling Apparatus, of which the following is a specification.

My invention consists in a cooling-apparatus comprising a reservoir filled with a liquefied gas, e. g. ammonia, and an evaporator connected with the said reservoir and adapted to either extend into the vessel to be cooled or so shaped as to surround the said vessel. A suitable means is provided to permit a gradual escape of the liquefied gas into the said evaporator from which the vaporized gas then escapes.

In the accompanying drawings diagrammatically showing various embodiments of my invention,

Fig. 1 is a sectional view of my cooling-apparatus showing the evaporator extending into a bottle the lower portion of which is broken away;

Figs. 2 and 3 are detail views;

Fig. 4 is a similar view as Fig. 1 showing a modification, in which the evaporator is shaped to form a casing surrounding the bottle to be cooled;

Fig. 5 is also a similar view as Fig. 1, showing another modification.

According to Fig. 1, the reservoir 1 containing the liquefied gas has at the lower end a neck 2 provided with a screw-thread and adapted to receive a threaded cap 3. The latter has a perforated boss-like extension also provided with a screw-thread, adapted to receive a hexagonal screw-cap 5 having openings 21 near its periphery and adapted to close the bore 3' in the extension of cap 3. Between the neck 2 of the reservoir 1 and the cap 3 is provided a packing ring 4.

The means for opening the bore 3' consists in a socket-wrench 6 equipped with handles 6' and having a large annular recess to receive an elastic packing-ring 7, producing an air-tight seal between the said wrench and the cap 3.

For securing the wrench 6 on the cap 3, the latter is provided with an annular sector 16, while the wrench 6 carries at its upper end a claw 17 which by the turning of the wrench 6 is moved over the said annular

sector. The lower portion of the wrench 6 is shaped to fit the hexagonal cap 5, thus being operatively connected therewith. In the extreme lower end of the wrench is secured a funnel-shaped member 10, to which is attached a pipe 22. To the outside of the wrench 6 is fastened a short tube 8 provided with an outlet 9.

The tube 8 is provided with a shoulder 11 and its lower end 13 is screw-threaded. Onto this screw-threaded end is secured a tube 12, which at its upper end has a flange 12'. Between this flange and the shoulder 11 on tube 8 is provided a packing ring 11'.

23 is the upper end of a bottle into which extend the tube 12 and the pipe 22 and the neck 24 of said bottle has interior threads into which fit the threads at the upper end of the tube 12. Above the threads in the bottle neck 24 the latter is provided with a conical portion 19, adapted to receive a packing ring 18 for producing an air-tight connection between the bottle neck and the tube 12.

After the reservoir 1 has been filled with a liquefied gas, e. g. ammonia, and tightly closed by the cap 5, the socket-wrench 6 is put in place on the cap 3, the hexagonal lower portion of the wrench engaging the hexagonally shaped cap 5. The claw 17 at the upper end of the wrench 6 enters a recess 16' in the sector 16. When the wrench 6 is now turned, the claw 17 engaging the said sector 16, the cap 5 is gradually opened, and the liquefied gas can escape from the reservoir 1 and enter the pipe 22 dripping into the evaporating-pipe 12, wherein it is evaporated and then escapes through the outlet 9 provided on the tube 8. In order to prevent any loss of the cooling medium, only such quantities of liquefied gas are allowed to enter the tube 12 as can actually be evaporated therein. Therefore a stop 20 is provided on the sector 16, which stop prevents the wrench 6 from being turned too far. After enough gas has been released, the wrench 6 is turned back thereby closing again the cap 5, and the claw 7 having again been moved to register with the recess 16' in the sector 16, the wrench with its attached parts can now be removed from the reservoir 1.

In the modification shown in Fig. 4 the evaporator in this case is of such dimensions as to form a casing 27, so that the bottle may

be placed within the same. To prevent the bursting of the bottle the latter must be uniformly cooled. For this purpose the pipe 28 attached to the funnel-shaped member 10 is bent along the inner wall of the evaporator casing 27 and leads into an annular trough 29, provided with small openings for the liquid gas to pass through. The bottle may be placed into this trough from below, being held in position therein by any suitable means. The part of the bottle below the trough 29 may be covered by a suitable absorbing material 30, tightly surrounding the bottle, so that the liquefied gas will be absorbed by the said material without touching the bottle. In this way a uniform evaporation of the cooling medium is obtained and the bottle is prevented from bursting.

The evaporated cooling-medium escapes through the outlet 31 provided at the upper end of the evaporating casing 27.

In the modification shown in Fig. 5, bottles are employed the bottoms of which have an inwardly extending tube-shaped cavity 32 which forms the evaporator. The bottle is put upside down and placed with its bottom into a holder 33, which is provided with an annular recess 34 containing a packing 35 against which the bottom of the bottle is pressed. The center of the holder 33 is provided with a threaded opening 33' adapted to receive the correspondingly threaded upper end of a tube 36, extending into the tubular cavity 32 in the bottom of the bottle. The tube 36 forms a continuation of the short tube 8 attached to the wrench 6, and a packing ring 37 is provided in a recess in the holder 33, where the short tube 8 enters the same. 38 is the drip-pipe connected to the funnel-shaped member 10, to allow the liquid gas to drip down into the cavity 32, after, by a corresponding turn

of the wrench 6, the cap 5 has been sufficiently unscrewed. The evaporated liquid gas escapes through tube 36 and the outlet 9 attached to the short tube 8.

I claim as my invention:

1. A cooling device, comprising a reservoir containing a liquefied gas, a closure for the said reservoir, an evaporator independent of the said reservoir, and operative means connecting said evaporator with said reservoir and adapted to operate said closure.

2. A cooling device as specified in claim 1, including a drip-pipe interposed between the said reservoir and the said evaporator.

3. A cooling device as specified in claim 1, including an outlet provided on the said evaporator for the vaporized liquid.

4. A cooling device comprising a reservoir containing a liquefied gas, a closure for the said reservoir, an evaporating chamber independent of the said reservoir, a manually operated member adapted to connect the said reservoir and the said evaporating chamber and to open the said closure, and means for fastening said member to said reservoir.

5. A cooling device as specified in claim 4, including a funnel-shaped body held in the said member, and a drip-pipe extending from the said funnel-shaped body into the said evaporating chamber.

6. A cooling device as specified in claim 4, including a connecting tube between the said member and the said evaporating chamber, and an outlet on said connecting tube.

In testimony whereof I affix my signature in presence of two witnesses.

ANTON FRHR. v. CODELLI.

Witnesses:

S. FRIEDRICH FIEGEBURGER,
EMILIE TURETSCHER.