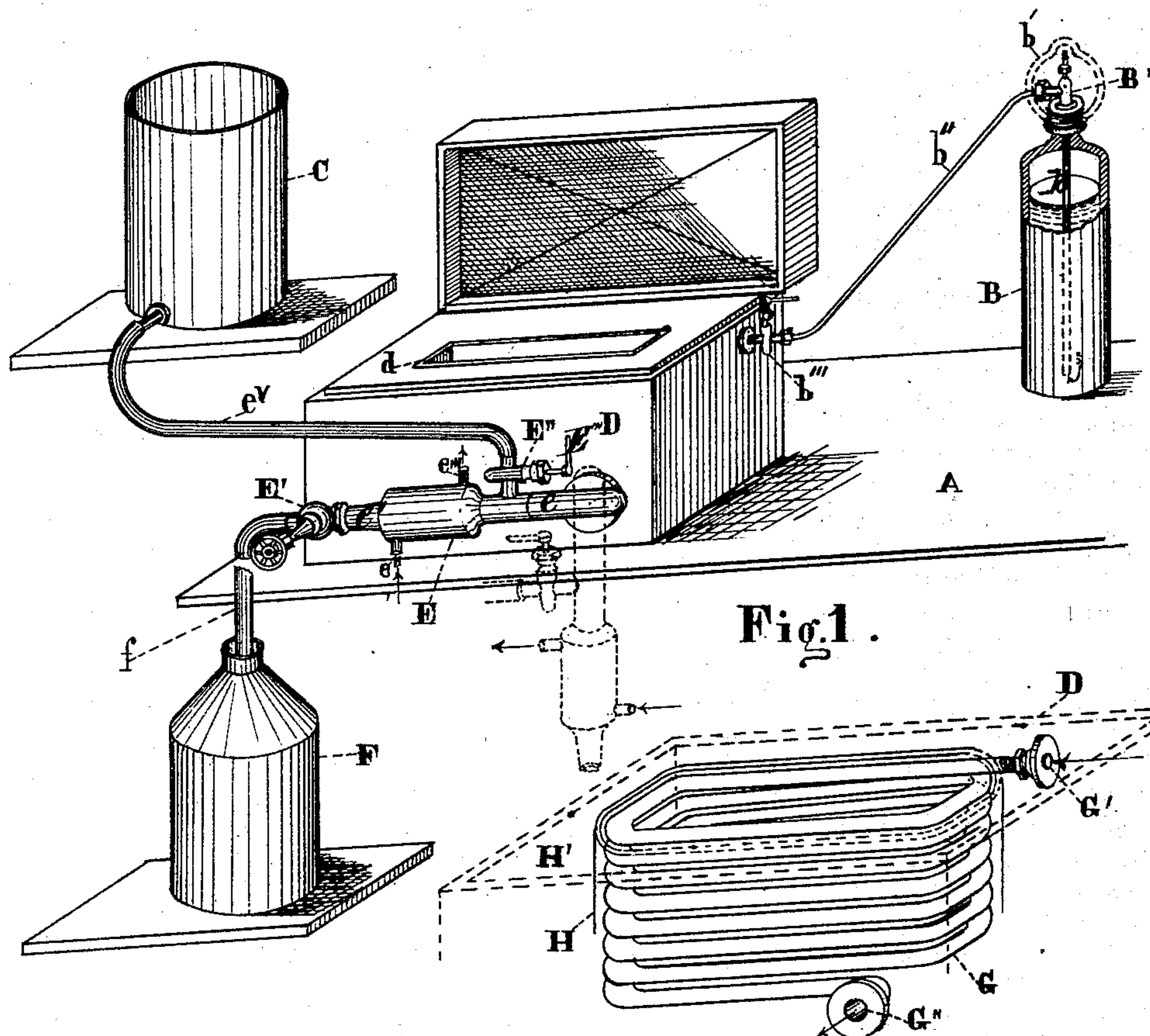


**F. V. De COPPET.**  
**Ice - Machines.**

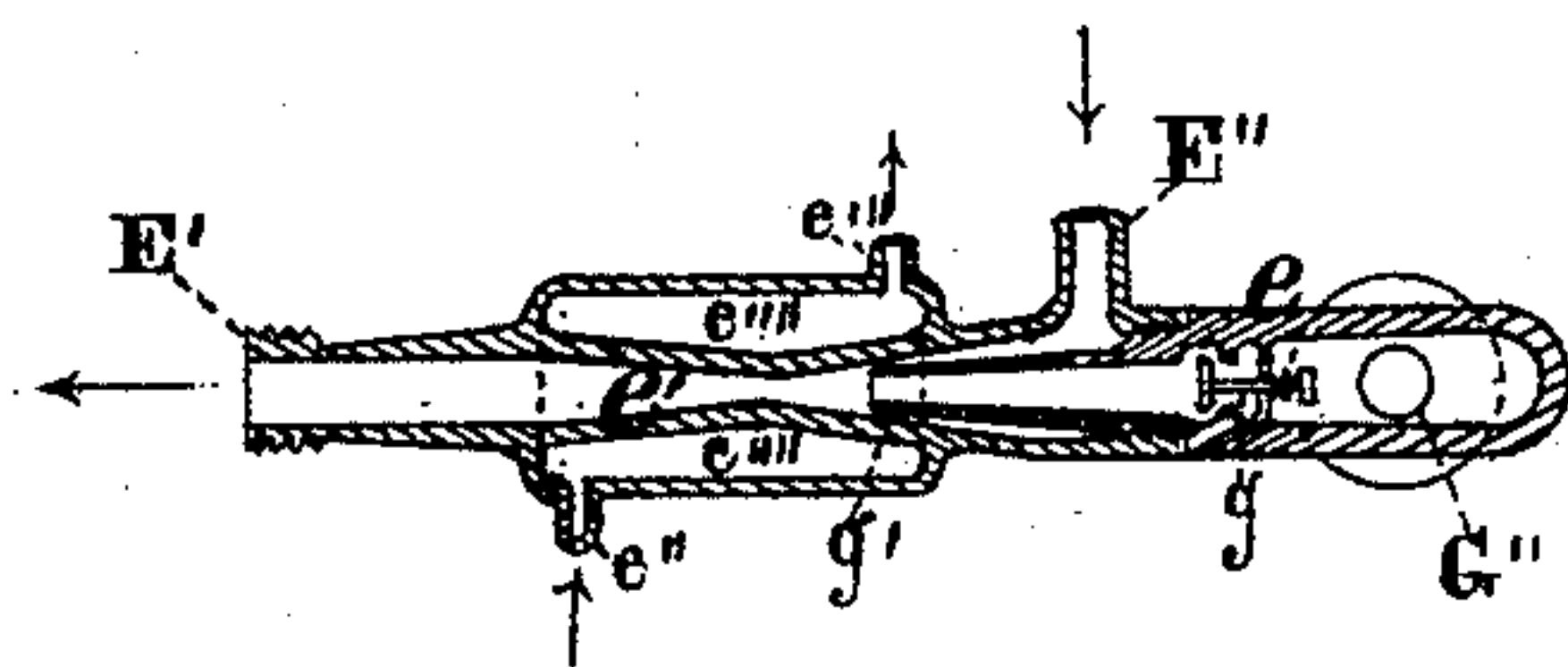
No. 156,056.

Patented Oct. 20, 1874.



**Fig. 1.**

**Fig. 2.**



**Fig. 3.**

**Witnesses.**

*J. Ward Gurley, Jr.*  
*Alfred Moore*

**Inventor.**

*Francis V. DeCoppet.*



# UNITED STATES PATENT OFFICE.

FRANCIS V. DE COPPET, OF NEW ORLEANS, LA., ASSIGNOR OF PART OF HIS  
RIGHT TO J. WARD GURLEY, JR., AND R. M. DAVIS, OF SAME PLACE.

## IMPROVEMENT IN ICE-MACHINES.

Specification forming part of Letters Patent No. 156,056, dated October 20, 1874; application filed  
December 31, 1873.

*To all whom it may concern:*

Be it known that I, FRANCIS VT. DE COPPET, of New Orleans, in the parish of Orleans and State of Louisiana, have invented a new and useful Improvement in Apparatus for Making Ice, of which the following is a full, clear, and exact description, reference being had to the annexed drawing, in which—

Figure 1 is a perspective view of my apparatus; and Figs. 2 and 3 are detached views of the congealer proper and the condenser thereof.

Corresponding parts in the several figures are designated by like letters.

This invention relates to a certain improvement in apparatus for making ice; and it consists of an inner and an outer receptacle, inclosing, respectively, a pan or vessel and a congealer, with which communicates a pipe, supplied with one or more stop-cocks, and leading from a bottle or reservoir, having a dipping-tube armed with a valve, and of a condenser of peculiar construction, having a pipe leading to a tank or reservoir, and furnished with a cock and valve, and a second pipe leading to a receiving can or tank, substantially as hereinafter more fully set forth.

To enable others to make and use my invention, I will proceed to describe it.

In the annexed drawings, A refers to a table or platform. B refers to a strong iron bottle filled with ammonia, and having the dipping-tube *b*, up through which the ammonia, under pressure, passes from the bottle. The ammonia is introduced into the bottle in the form of liquefied gas. B' is a stop-cock, screwed on the bottle and supplied with the dipping-tube *b*, and by which the bottle is opened and closed. To protect the said cock during transportation, a cap, such as indicated in dotted lines at *b'*, is fitted over the same, and to the neck of the bottle. A branch tube or nozzle extends from the external or upper end of the dipping-tube *b*, and communicates with a tube or pipe, *b''*, leading to a short tube or nozzle screwed to the upper extremity or commencement of the coil of pipe or congealer G, and supplied with a stop-cock, *b'''*. G is a coil of pipe or the congealer proper, having the couplings G' G'' at its induction and eduction ex-

tremities, and inclosed by a box or case, H, inclosed by a second box or case, D, the space H' between which boxes being filled with some non-conductor of cold, as, for instance, charcoal. The congealer or coil of pipe G surrounds a pan or receptacle, *d*, which holds the liquid to be cooled or congealed. E is the condenser, jointed to the congealer G at G'', so as to permit of its being adjusted from a horizontal to a vertical position, as shown in Fig. 1. This condenser is composed of two parts, *e e'*, the former having its tapering part *g'* extending into and surrounded by the latter, which is screwed to the former part, and which is composed internally of two truncated cones, united together at their smaller ends, as seen in Fig. 3, and the larger end of one of the said cones is supplied with a screw-thread, to permit of the adjustment thereto of an elbow, supplied with a globe-valve, E', which elbow has a pipe, *f*, leading to and entering a can, F. Within the part *e* of the condenser is a spring check-valve, *g*, to prevent air or water entering the congealer at any time, and at the same time allow the gas or ammonia to pass from the congealer through the condenser, when the stop-cock *b<sup>3</sup>* is open. Surrounding the part *e'* is a jacket, *e'''' e''''*, to receive cold water for cooling the solution during absorption in the condenser, and having the induction and eduction tubes *e''* and *e'''*. *e<sup>v</sup>* is a flexible tube or pipe leading from a tank or reservoir, C, containing water, to a short tube or nozzle, E'', of the condenser, for supplying water to the latter, for absorbing the gas or ammonia entering the condenser. For regulating the amount of water to be fed to the condenser, a stop-cock, E''', is attached to the nozzle or tube E''. The tank C may be graduated so as to ascertain the exact quantity of water required for the absorption of the gas fed from the bottle B through the congealer G to the condenser E, by which the gas may acquire a certain specific gravity in becoming aqua ammonia, after which the latter is conducted to and received by the can F. To cut off ingress of air to the condenser is the object of the globe-valve E', disposed at the discharging end of the said condenser.



The following directions are to be observed in using my apparatus: A quantity of pure cold water is put in the tank C, according to the indicated scale or the quantity required for the absorption of the contents of the bottle B, and the water to be congealed or cooled poured into the receptacle or pan *d*, the lid or cover of the box D then being closed. Next, let the cooling water enter the jacket of the condenser. Then open wide the stop-cock B', about half-way the cock *b'''*, (if for making ice, or about one-eighth if for cooling a liquid,) open wide the valve E', also the supply-cock E'''. These steps having been taken, the liquefied gas or ammonia in the bottle being under pressure will force itself up through the dipping-tube *b* into the pipe *b''*, and expand into the congealer G, where it will absorb heat, freeze the water in the receptacle or pan *d*, and pass from the congealer into the condenser E, past or by the valve *g*, and through the tapering portion or the spout *g'* of the condenser, when it will meet the water, be instantly absorbed and produce a vacuum, after which it will become cool and be driven into the receiving-can F, where it is saved as aqua ammonia. The time consumed in making ice is about fifteen minutes; that in cooling a liquid, about five minutes. After the desired end has been accomplished, the cocks and valves are then closed, and the bottle and the can F disconnected from the apparatus.

I am aware that ammoniacal gas liquefied by means of mechanical compression has been used for generating artificial cold.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The receptacles D H, and vessel or pan *d*, congealer or coil of pipe G, cock *b'''*, tube or pipe *b''*, cock B', dipping-tube *b*, and bottle or reservoir B, all combined substantially as and for the purpose set forth.

2. The combination of the condenser E, constructed as shown and described, the congealer G, pipe *e*, tank C, cock E<sup>3</sup>, valve E', pipe *f*, and can F, substantially as and for the purpose set forth.

3. The condenser E *e e'*, having the part *e*, which is formed with a pipe, *g'*, extending into the part *e'*, and supplied with the spring check-valve *g*, and having the part *e'* formed of two frustrums of a cone, and surrounded by the jacket *e''' e''''*, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name this 31st day of October, 1873, in the presence of two subscribing witnesses.

FRANCIS VT. DE COPPET.

Witnesses:

WM. C. WHITE,  
S. R. JAMES.