

No. 765,166.

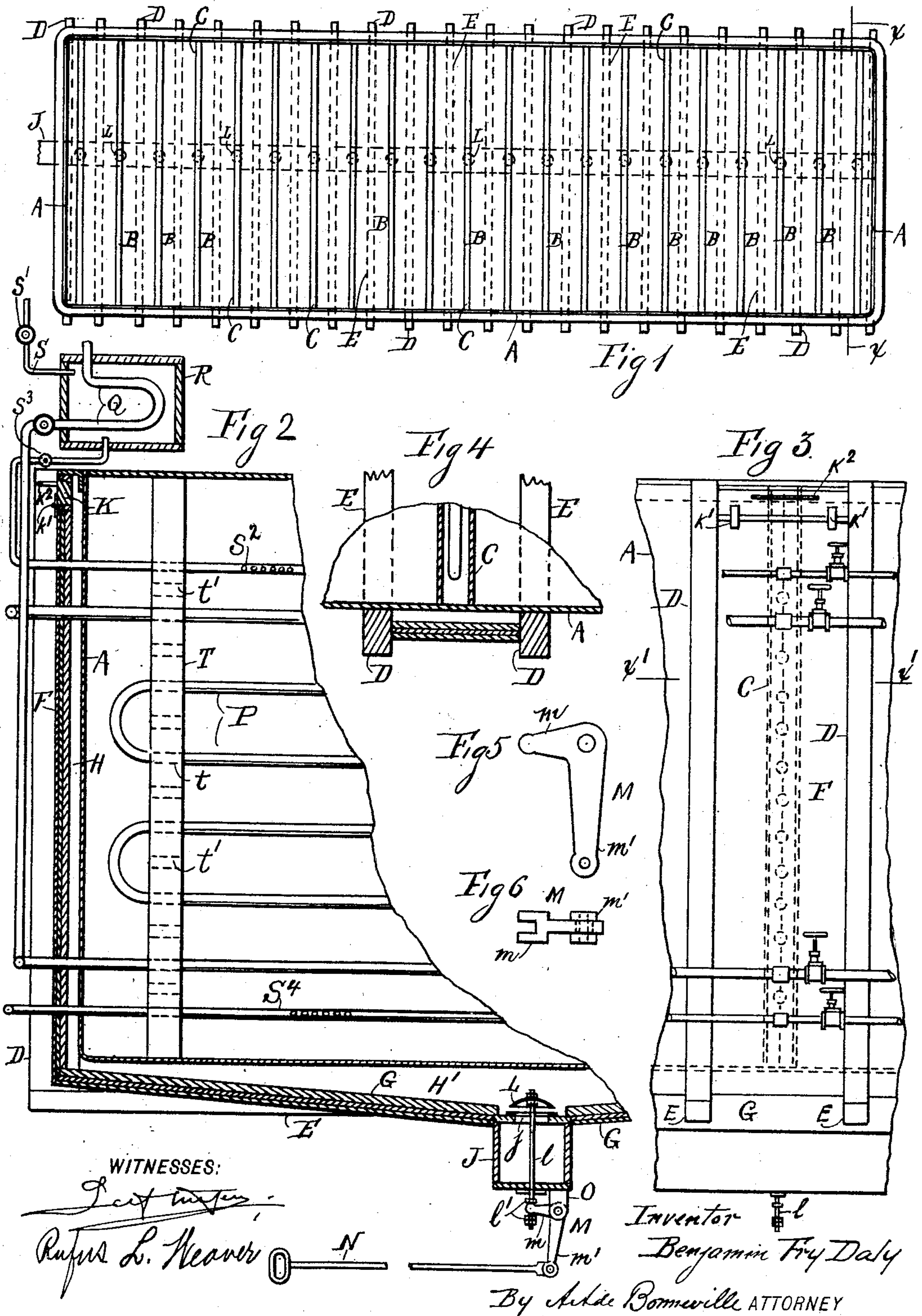
PATENTED JULY 19, 1904.

B. F. DALY.

THAWING-OFF TANK.

APPLICATION FILED JULY 17, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

BENJAMIN FRY DALY, OF BROOKLYN, NEW YORK.

THAWING-OFF TANK.

SPECIFICATION forming part of Letters Patent No. 765,166, dated July 19, 1904.

Application filed July 17, 1903. Serial No. 166,036. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN FRY DALY, a citizen of the United States, and a resident of the borough of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Thawing-Off Tanks, of which the following is a specification.

This invention relates to tanks; and its object is an ice-tank from which ice formed therein can be easily thawed off.

The present invention is an improvement on the ice-tank described in my patent application for ice-tank filed April 15, 1903, Serial No. 152,681, and its specific new and novel features comprise ducts formed on the bottom and sides of the tank, with appurtenances for conducting air of a suitable temperature or some other thawing-off medium through the said ducts.

Referring to the drawings, Figure 1 represents a plan view of the tank. Fig. 2 shows an enlarged partial section of Fig. 1 as on the line $x-x$. Fig. 3 is a partial side view of Fig. 2. Fig. 4 represents a section of Fig. 3 on the line $x'-x'$. Fig. 5 shows an enlarged front view of a bell-crank. Fig. 6 is a top view of Fig. 5.

The tank is represented to consist of the inner metallic casing A, which is divided into sections B by the cells C, extending between the sides of the tank. On the outer faces of the metallic casing A there extend the posts D, that are carried on the cross-beams E and on which latter the casing A is supported. Between the posts D and cross-beams E there is secured at a suitable distance from the said casing the planking F and G, forming the ducts H H', extending under the bottom and on the sides of the tank. Under the bottom of the tank there is situated the longitudinal duct J. It is secured under cross-beams E, and the planking G extends to the upper portion of the said longitudinal duct J. In the upper portions of the planking F there are formed openings with doors K, that swing on hinges k' and have handles k^2 . In the longitudinal duct J are formed openings j' with valves L, that open the said longitudinal duct, with each duct on the bottom and sides of the

tank. The ducts H H' around the tank are located to straddle the vertical planes of the cells C. Each valve L is supported on a spindle l , the end of which is straddled by a bifurcated arm m of a bell-crank M, and nuts l' on the spindle maintain the said arm in position thereon. A lever N is pinned to the other bifurcated arm m' of the bell-crank, which latter is journaled in a bracket O, extending from the longitudinal duct J.

The cells of the tank, with their appurtenances, are similar to those described in my said patent application Serial No. 152,681, being formed inside of the metallic casing A, with their side plates and covers. The cells each contain a coil P for a refrigerant, the coils being suitably connected with supply-piping and discharge-piping, the latter leading to a coil Q in a fore-cooler R. Air enters the fore-cooler through piping S with valves S' and is led from the same into the cells through piping S^2 , having perforations, a valve S^3 being in the latter piping to control the amount of air entering the cells. The air is discharged from the cells through perforated pipes S^4 . The coils and air-pipes are maintained in the cells by means of supports T, which are made in halves and have openings t to hold the coils and piping and other openings t' to allow the circulation of the air in the cells.

To operate the invention, the sections B between the cells are filled with water or other liquid to be frozen, after which the refrigerating medium is allowed to expand in the coils P, which freezes the liquid in the cells, after which the refrigerant is conducted to the coil Q in the fore-cooler, its supply having been cut off, and when the refrigerant is passing through the said fore-cooler air is admitted through the piping S and by means of the perforated pipes S^2 enters the cells C, and it being of a higher temperature than the sides of the cells thaws the ice formed on its sides off of the same. The air in the cells is led out of the same through the perforated piping S^4 . While the air is being circulated in the cells C to thaw the ice from their sides, air of the proper temperature is allowed to escape from the longitudinal duct

J through the valves L into the ducts H' H, and the hinged doors K being opened a circulation of air is maintained in the latter ducts, by which the ice on the bottom and sides
5 of the tank is thawed, and the plates of said ice are ready to be removed from the sections of the tank.

Having described my invention, I claim—

1. The combination in an ice-tank, of cells
10 therein, coils in the cells for a refrigerant, air-piping leading into the cells, means to cool the air before entering the cells, air-piping leading to the outside from the cells, ducts on the sides and bottom of the tank, a longitudinal
15 air-duct connected to the ducts on the sides and bottom of the tank, valves between the longitudinal duct and the other ducts, means to open and close the said valves, and doors at the upper ends of the ducts on the
20 sides of the tank.

2. The combination in an ice-tank, of cells therein dividing the tank into sections, coils in the cells for a refrigerant, a fore-cooler, a coil in the fore-cooler, the latter coil connected with the coils in the cells, air-piping
25 leading from the fore-cooler to the cells, air-piping leading to the outside from the cells, ducts on the sides and bottom of the tank, a longitudinal air-duct connected to the

ducts on the sides and bottom of the tank, 30 doors at the upper ends of the latter ducts, valves between the longitudinal duct and the other ducts, means to open and close the said valves.

3. The combination in an ice-tank, of cells 35 therein dividing the tank into sections, coils in the cells for a refrigerant, a fore-cooler, a coil in the fore-cooler, the latter coil connected with the coils in the cells, air-piping leading from the fore-cooler to the cells, 40 air-piping leading to the outside from the cells, ducts on the sides and bottom of the tank, a longitudinal air-duct connected to the ducts on the sides and bottom of the tank, valves between the longitudinal duct and the 45 other ducts, hinged doors at the upper ends of the latter ducts, bell-cranks connected with the valves, and levers extending from the bell-cranks to oscillate the same, and open and close the valves. 50

Signed at New York, in the county of New York and State of New York, this 10th day of July, A. D. 1903.

BENJAMIN FRY DALY.

Witnesses:

IRENE CRAWFORD,
FREDERIC H. CARL.