

(No Model.)

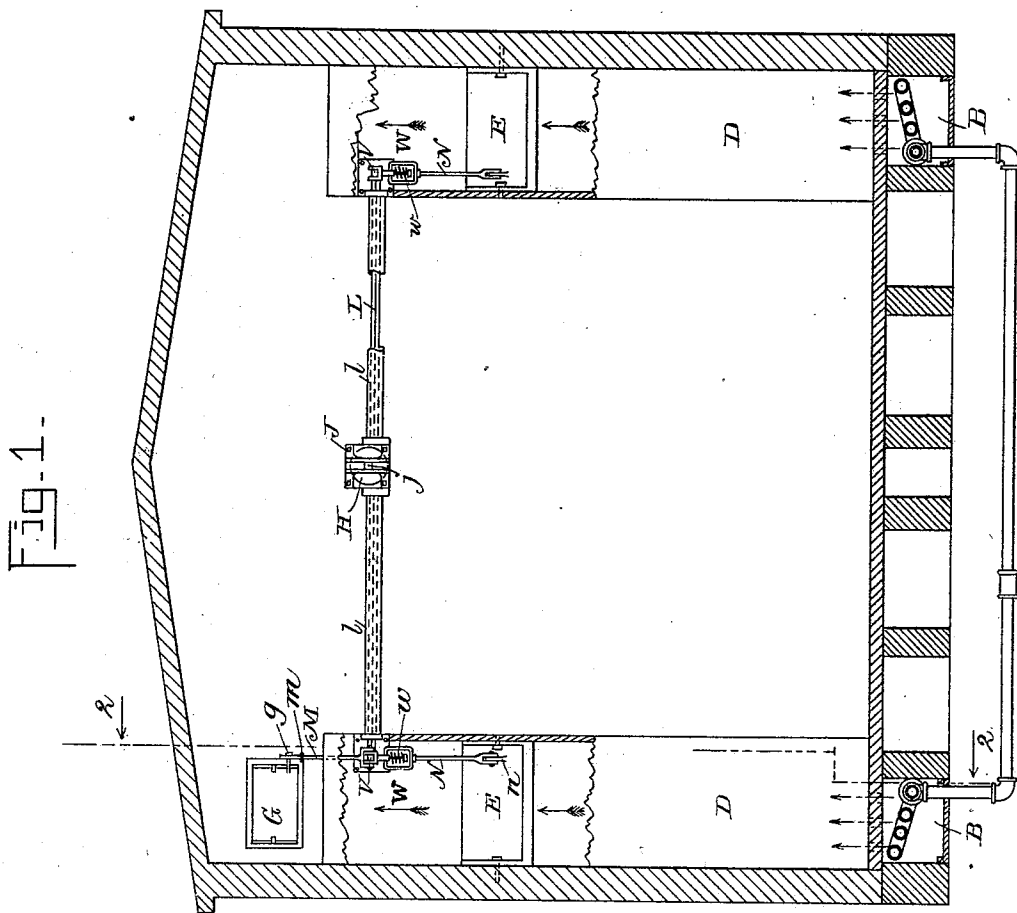
2 Sheets—Sheet 1.

J. F. McELROY.

TEMPERATURE REGULATOR FOR FRUIT CARS.

No. 514,864.

Patented Feb. 13, 1894.



Witnesses:

John W. Fisher

Grace T. May.

Inventor,

James F. McElroy.

by

Ward & Cameron.

Attorneys

(No Model.)

2 Sheets—Sheet 2.

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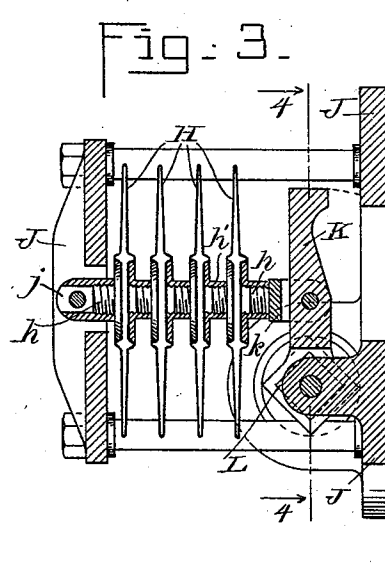
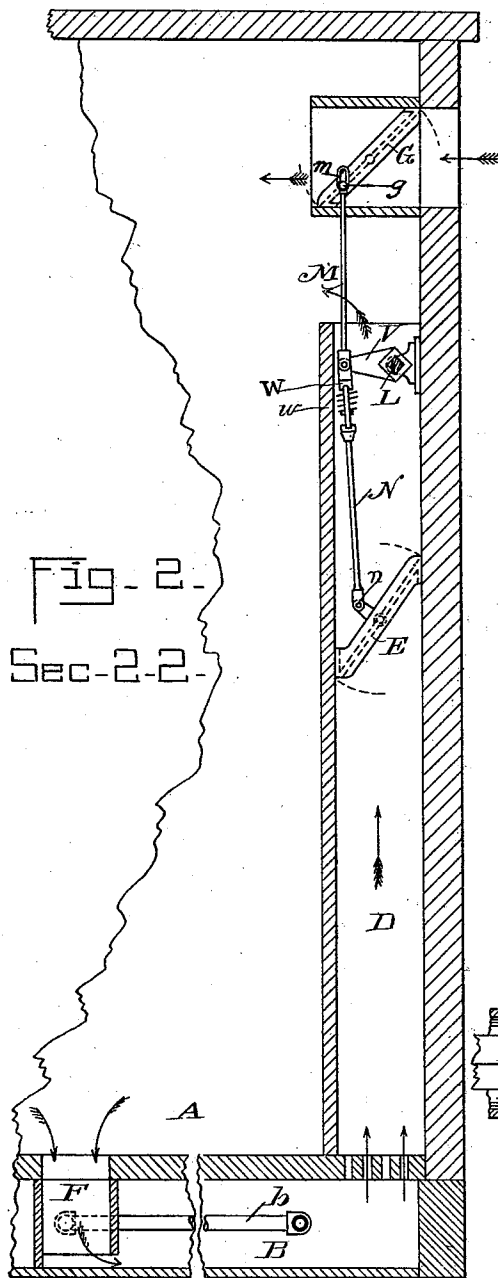
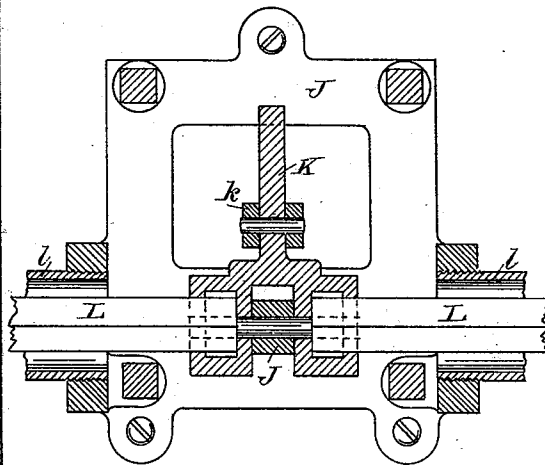


Fig. 4. Sec. 4-4.



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UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO THE CONSOLIDATED CAR-HEATING COMPANY, OF WHEELING, WEST VIRGINIA.

TEMPERATURE-REGULATOR FOR FRUIT-CARS.

SPECIFICATION forming part of Letters Patent No. 514,864, dated February 13, 1894.

Application filed April 10, 1893. Serial No. 469,698. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing in the city and county of Albany, State of New York, have invented a new and useful Improvement in Temperature-Regulators for Fruit-Car-Heating Apparatus, of which the following is a specification.

My invention relates to improvements in apparatus for controlling the temperature of fruit cars; and the object of my invention is to produce a thermostat which shall regulate the temperature of a car containing fruit, vegetables, or other perishable commodities in such a manner that the temperature shall not rise above 55° Fahrenheit, or fall below 35° Fahrenheit. I accomplish this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a cross section of the end of a car. Fig. 2 is a vertical section of the end of a car. Fig. 3 is a sectional view of the diaphragms, and Fig. 4 is a section along the lines 4—4 on Fig. 3.

Similar letters refer to similar parts throughout the several views.

For the purpose of heating fruit cars, I have invented a system by means of which the heating agent is placed outside of, usually beneath the car, and at each corner thereof along the under side of the bottom of the car.

The chamber B in which the piping *b* is placed communicates with the interior of the car A after passing through the hot air box D, which is usually open at the top and which extends above the commodities carried in the car. A cold air duct F connects the lower portion of the car with the pipe containing chamber B, allowing for a circulation of air. The cold air coming from the car into the hot air chamber B through the cold air duct F, is warmed by the steam pipes and passes into the upper portion of the car through the hot air box D.

In order to control the temperature of a car, I place a valve E within the hot air box D, and also a valve G communicating with the exterior of the car, both of which valves are opened and closed by means of my thermostat, which I construct and arrange in the following manner: A thin circular piece of

spring brass, slightly concave is joined to a similar thin circular piece of spring brass, having their concave surfaces toward each other and soldered together along their edges. Within the diaphragms H thus formed, I place a small quantity of hydro-carbon liquid, whose boiling point is between 35° Fahrenheit and 55° Fahrenheit. I place a series of these diaphragms H side by side, and connect them by means of a projecting lug *h* on the side of one diaphragm near the center thereof, suitably threaded, which meshes with a threaded sleeve *h'* extending from the adjacent diaphragm provided with a female thread. The diaphragms thus connected together are suitably mounted within the frame J, which frame is secured to the end of the car. The projecting lug on the diaphragm farthest from the frame J is connected to the lever K by the threaded sleeve *k*; the projection on the diaphragm farthest from the lever K is connected to the frame J by the bracket *j*. The lever K is fulcrumed to the base plate of the frame J and connected with a squared rocking shaft L. The rocking shaft L is usually placed within a pipe *l* and supported within suitable bearings in the sides of the hot air boxes D. At each end of the rocking shaft L, I secure a crank arm V which is connected with a rod M. The rod M is provided at its upper end with an elongated eye *m* within which is placed the pin *g*, which is attached to the butterfly valve G. The crank arm V is also connected with the rod N by means of the spring buckle W. The rod N is secured to the butterfly valve E by suitable connections *n*. The spring buckle W is arranged in such a manner that when the rocking shaft is caused to revolve by the expansion of the diaphragm the crank arm V will be raised, which will cause the butterfly valve E to close and the rod M will be raised, the pin *g* will come in contact with the lower end of the eye *m* and the butterfly valve G will be opened. The spring *w* on the spring buckle W will be acted upon and will be contracted when the butterfly valve G is opened, thus allowing for the upward movement of the rod M after the butterfly valve E has been closed; the construction of the eye on the rod M allowing it to reciprocate along the pin *g*, and if the clos-

ing of the butterfly valve E is sufficient to
reduce the temperature, the butterfly valve
G may not be opened at all. When the tem-
perature has risen sufficiently high to cause
5 the liquid within the diaphragms to evapo-
rate, they will expand imparting motion to
the lever K and thus causing the rockingshaft
to rotate, which will in turn operate the valves
as described. Upon the cooling of the tem-
10 perature, the diaphragms will collapse, draw-
ing back the lever K and closing the valve
G, opening the valve E.

I do not claim in this application the sys-
tem described and claimed in my application,
15 Serial No. 469,699, filed April 10, 1893.

What I claim as my invention, and desire
to secure by Letters Patent, is—

In a temperature regulator for fruit cars, a
valve placed within a hot air box, a valve
within the car communicating with the ex- 20
terior thereof, a rocking shaft extending
across the car, connecting rods between said
valves and said rocking shaft, a thermostat
containing a liquid which vaporizes, a lever
operated by said thermostat, said lever con- 25
nected with said rocking shaft, so adjusted
and connected that by the operation of the
thermostat, said valves may be opened and
closed, substantially as described and for the
purpose set forth.

JAMES F. McELROY.

Witnesses:

EDWIN A. SMITH,
WILLIAM P. EDDY.