Nov. 26, 1929. J. D. HUSTON 1,736,788

PRECOOLER FOR REFRIGERATOR CARS

Filed Aug. 5, 1926

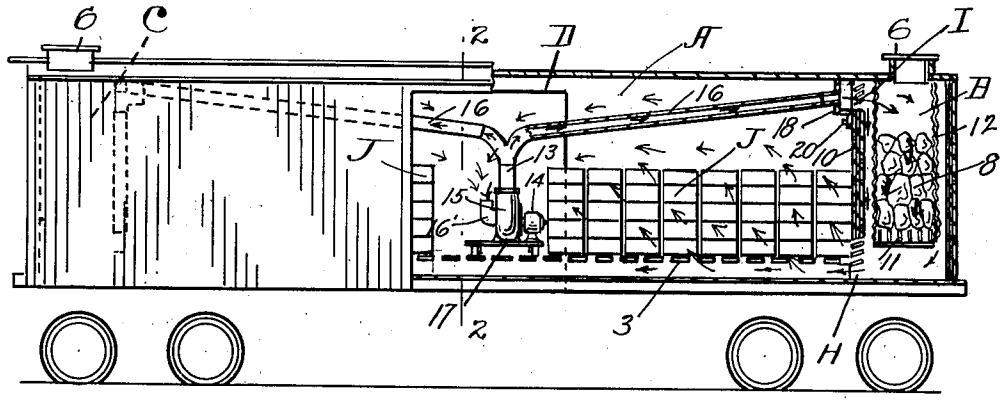

Fig. 1

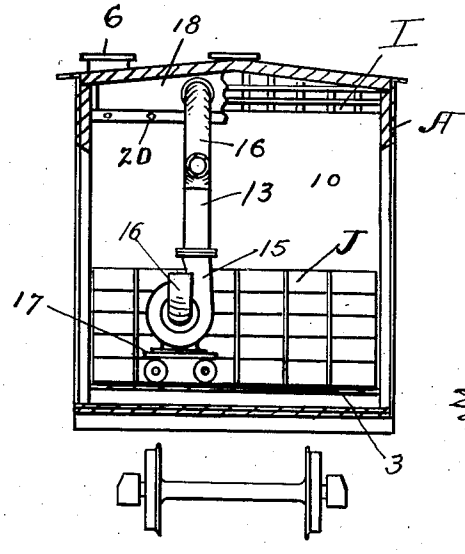

Fig. 2

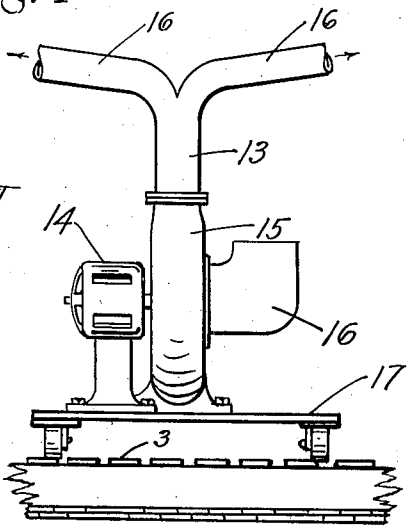

Fig. 3

Inventor:
James D. Huston
by Arthur P. Knight and
Alfred W. Knight
Attorneys.

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JAMES D. HUSTON, OF IMPERIAL, CALIFORNIA

PRECOOLER FOR REFRIGERATOR CARS

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The primary object of my invention is to provide simple and effective portable means for quickly reducing the temperature of perishable produce and other lading subsequent to loading into a refrigerator car and previous to starting the car on its journey. This initial cooling can be accomplished inefficiently by the use of ice in the ice bunkers in the usual manner, provided sufficient time is allowed. This initial cooling, however, is too slow for efficient results in making long hauls, due to the inherent heat in the lading.

My improvement provides portable means which may be quickly installed in and removed from the car after loading and before starting the car on its journey and employed to effectively augment the circulation of air through the ice bunkers and lading chamber and consequent cooling effect of the ice in the bunkers upon the lading. In this manner the lading is quickly and effectively reduced in temperature throughout the entire load, which low temperature is easily and continuously maintained by the ice in the bunkers after discontinuing the operation of my improvement.

My invention further comprises the features of construction and combination of parts hereinafter described and claimed.

In the accompanying drawing forming part of this specification, Fig. 1 is a side elevation partly in central longitudinal section of a refrigeration car showing my invention installed therein; Fig. 2 is a section taken on the line 2—2 of Fig. 1, and Fig. 3 is a side elevation of the blower and truck removed from the car.

In the drawing, A indicates the body of a refrigerator car having the usual end ice bunkers or chambers B and C in its opposite ends and the doorway D in its median portion. Each ice bunker is of usual construction and as shown has the ice basket structure 12 therein, the bunker wall 10, ice grate 11, cold air egress passage H, return air ingress passage I, extending across the upper portion of the bunker wall in the usual manner and hatchways 6. The ice bunkers or chambers B and C are thus each open at their upper and lower ends, through passages I and H, into the central or storage chamber of the car.

This structure described is adapted to receive and hold the lading J in the load receiving chamber or body, said lading consisting of crates or other packages to be transported. These packages are stacked on floor racks 3 on the floor part way up towards the ceiling in the usual manner, leaving a space in the center of the car and above the lading so that air may circulate freely down through and around the ice 8, in the ice bunkers, out through the cold air egress passages H, upwardly through and around the lading and to the median portion between the ends of the car and the air of warmest temperature passing back from the upper portion of the body into the bunkers through passages I. This action transpires in the usual manner while the car is in transit and while the bunkers contain ice. This operation with the use of the ice bunkers as described is capable only of slowly reducing the temperature of the lading, the time consumed rendering the apparatus uneconomical and inefficient for initial cooling or per-cooling of the car after loading, the inherent heat in the fruit or other perishable lading being sufficient to retard ordinary cooling and eventually preventing the most effective transportation of the lading over long distances.

My improvement provides means for quickly and economically pre-cooling the lading after loading into the car and before starting the car on its journey. This is accomplished by placing a rotary blower 15, of comparatively large capacity, between the stacks of lading J, in the car; said blower being mounted upon a truck or carriage means 17, which is easily wheeled into and out of the car and driven by an electric motor 14, said motor being supplied with operating current from an external source. The air inlet of this blower is provided with an ingress or inlet duct 16, opening upwardly so as to conduct air of the warmest temperature in the upper portion of the lading chamber into the blower. The air egress or outlet duct 13, leading from the blower is bifurcated and connected by branches or conduits 16, ex-

tending over the lading to the air ingress passages I, of the ice bunkers. The connections between the ends of the branches 16, and the upper openings I, of the ice bunkers are by means of spreaders or closure means 18, resembling a chambered closure which is temporarily secured in place by fasteners 20, or other suitable means, said closure means being provided with a tubular member, as shown, for connection of the branch or conduit 16 thereto.

When the blower is driven and while the doors of the car are closed, the circulation of air downwardly through and around the ice in the ice bunkers and upwardly through, around and in contact with the lading in the car is accelerated, thus quickly cooling the lading. After pre-cooling, the blower and its connections are removed from the car and the ordinary cooling of the lading by ice in the ice bunkers continues. During pre-cooling under the influence of the blower, a lower temperature is produced by the use of salt on the ice in the bunkers. It will be understood that after the blower and truck or carriage means 17 are removed, suitable bracing means may be placed between the stacks of lading at the opposite sides of the space thus left, in order to hold the same in position.

Various modifications in construction of my invention are contemplated within the spirit thereof and of the claims following.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. An apparatus for precooling a refrigerator car having ice bunkers in the opposite ends of its body, comprising a portable blower temporarily situated inside the median portion of the car having an air ingress duct extending downwardly thereinto from a position connecting with the upper portion of the provision chamber and an air egress duct detachably connected with the upper portions of the ice bunkers, said ducts being adapted to conduct chilled air received from the lower portions of the ice bunkers upwardly through and around the lading and into the blower and assist in returning air of higher temperature in the car back into the upper portions of the ice bunkers.

2. An apparatus for precooling a refrigerator car having ice bunkers in the opposite ends of its body, said ice bunkers having air ingress openings in their upper portions, comprising air spreaders detachably connected over said ingress openings, a portable blower temporarily situated inside the median portion of the car having an air ingress duct extending downwardly thereinto from a position to receive air from the upper portion of the provision chamber and an air egress duct detachably connected with said spreaders and the outlet of said blower, said blower and ducts being adapted to conduct chilled air received from the lower portions of the ice bunkers upwardly through and around the lading back into the upper portions of the ice bunkers.

3. An apparatus for precooling a refrigerator car having ice bunkers in the opposite ends of the car body, said ice bunkers having air ingress openings in their upper portions, comprising air spreaders over said ingress openings, a portable blower temporarily situated inside the median portion of the car having an ingress duct extending downwardly thereinto from a position to receive air from the upper portion of the provision chamber and an air egress duct provided with branches detachably connected with said spreaders, said ingress duct being adapted to draw chilled air received from the lower portions of the ice bunkers upwardly through and around the lading and into the blower and said branches being adapted to return air of the warmest temperature in the car received into the blower back into the upper portions of the ice bunkers.

4. A device for precooling produce in a refrigerator car having an ice chamber at one end opening into the car both at top and bottom, comprising a portable blower adapted to be set inside the car, an outlet conduit from the blower adapted to lead to the top opening of the ice chamber, and an upwardly opening intake pipe for the blower.

5. A device for precooling produce in a refrigerator car having an ice chamber at one end opening into the car both at top and bottom, comprising a portable truck to rest on the floor of the car, a blower mounted on the truck, a motor connected to the blower and also mounted on the truck, an outlet pipe projecting upwardly from the blower, a closure member adapted to close the upper chamber opening, a tubular member connected to the closure adapted to project outwardly of the ice chamber, and a conduit member arranged for detachable connection to the outlet pipe and tubular member.

6. A device for precooling produce in a refrigerator car having ice chambers at both ends opening into the car both at top and bottom, comprising a blower adapted to be set on the floor of the car centrally of its length, an outlet pipe from the blower, opposed longitudinally extending conduits adapted to lead from said pipe to the upper openings of the ice chambers, and a single upwardly projecting intake pipe for the blower.

7. A device for precooling a refrigerator car having an ice chamber at one end opening into the car both at top and bottom comprising a blower adapted to be removably disposed within the car, and conduit means from the discharge of the blower adapted to removably extend to the top opening of the

ice chamber; the intake of the blower opening into the car.

8. A device for precooling a refrigerator car having an ice chamber at one end opening into the car both at top and bottom comprising a blower adapted to be removably disposed within the car, said blower having intake and discharge openings, and conduit means from one of said blower openings adapted to removably extend to one of said ice chamber openings.

JAMES D. HUSTON.