No. 706,661. Patented Aug. 12, 1902.

W. J. HUGHES.

REFRIGERATOR CAR.

(Application filed Dec. 14, 1901.)

(No Model.)

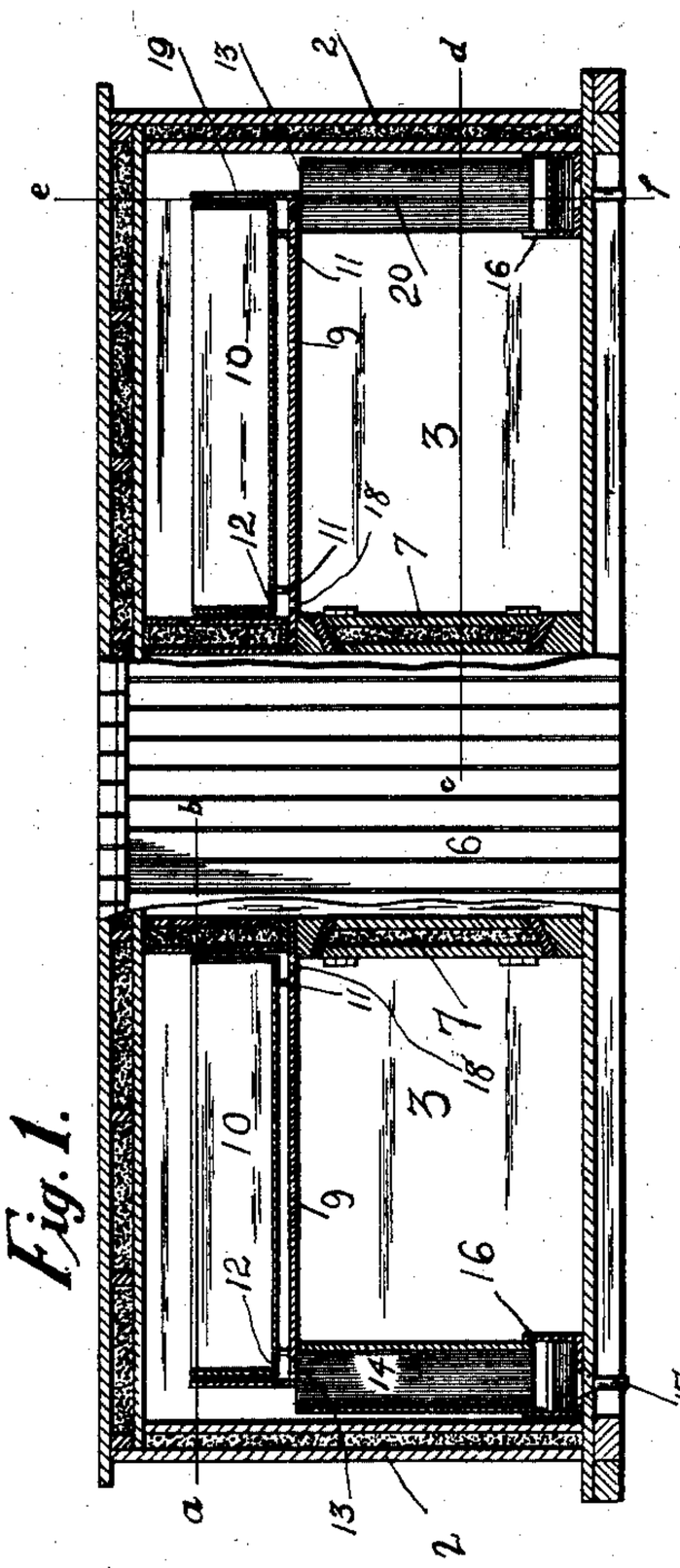

Fig. 1.

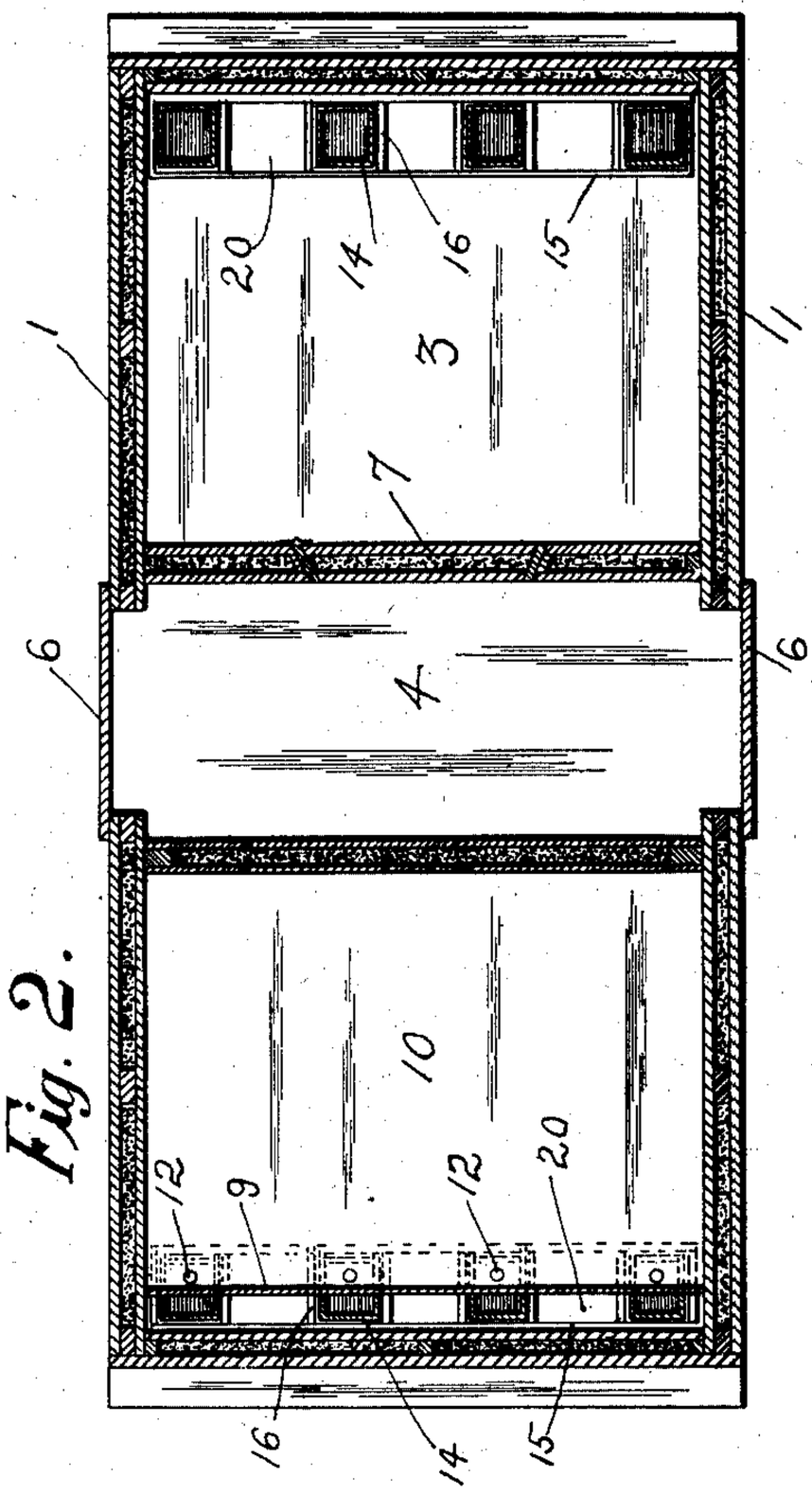

Fig. 2.

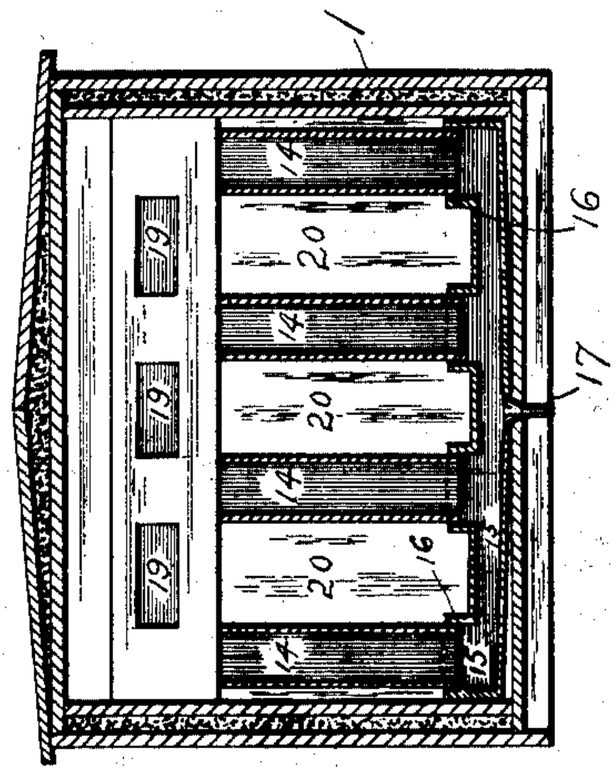

Fig. 3.

WITNESSES:

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REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 706,661, dated August 12, 1902.

Application filed December 14, 1901. Serial No. 85,916. (No model.)

To all whom it may concern:

Be it known that I, WILL J. HUGHES, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Refrigerator-Cars; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is so to construct a refrigerator-car that access may be had to the storage-space within the same without permitting the ingress of hot air from the outside and the egress of cold air from said storage-place. To attain this end is important, because it is frequently necessary in refrigerator-car service to remove a part only of the perishable freight from within the car while the remainder is not taken from the car until a subsequent time. This is true where some of the freight is intended for and removed at way-stations. The particular construction of car made the subject-matter of my present application is also useful where it is desirable to separate shipments, as in this construction a part of the freight is placed in one compartment and the rest of the freight in an entirely separate compartment, and either portion may be conveniently removed without disturbing the other.

Other features of invention connected with the refrigerating means will hereinafter clearly appear in the specification.

With the above objects in view the invention consists in the novel features of construction hereinafter fully described, particularly pointed out in the claims, and clearly illustrated by the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a refrigerator-car, the side door of same, however, being partly shown in full. Fig. 2 is a horizontal sectional view, one end of same being taken on the lines *a b*, Fig. 1, and the other end on the line *c d*, Fig. 1. Fig. 3 is a transverse sectional view on the line *e f*, Fig. 1.

In the drawings, 1 indicates the side walls of the car; 2, the ends thereof. These walls are formed in any desired manner; but I have shown them as usually constructed in refrigerator-cars with an inner and outer shell with suitable packing between. 3 indicates the storage-compartments in the car, and 4 a vestibule extending between said storage-compartments and from one side of the car to the other. The ends of said vestibule are closed by the doors 6. Leading from said vestibule 4 into the storage-compartments 3 are the doors 7. Located adjacent to the roof, near the ends of the car, are the ice-bunkers 9, which contain within them the ice-pans 10, supported slightly above the floor of said bunkers by the blocks 11 or in any other desired manner. Apertures 12 in the bottom of said ice-pans 10 allow the water arising from the melting of the ice, to flow out of the pan, and into the ice-bunker proper, which, in turn, is provided with apertures 13. Apertures 13 communicate with water-tubes 14, which serve to convey the water from the ice-bunkers to the lower part of the car, where they discharge into the cross drain-pipe 15, provided with the upwardly-projecting cups or tubes 16, which telescope the lower end of the water-tubes 14, as shown in Fig. 3. The cross drain-pipe 15 is provided with the outlet 17, through which the water escapes to the exterior of the car. Communicating with the compartments 3 and ice-bunkers 9 are the openings 18, which allow the warm air in the compartments 3, which naturally rises to the top of the car, to enter the ice-bunkers 9, where it is cooled by contact with the ice, thus forming a circulation of air. When cooled, it is heavier and passes through the openings 19 into the air-ducts 20, which are formed by the side walls of a plurality of water-tubes 14, located at the ends of the car. The arrangement of a series of water-tubes to drain off the ice-water necessarily arising from the melting of the ice across the end of the car increases the refrigeration-surface in the storage-compartments 3, and by reason of the fact that they are placed close enough together to form the air-ducts 20 the ice-water within said water-tubes 14 aids in maintaining the cool temperature of the air descending from the bunkers 9. As the water-tubes 14 tele-

scope with the projecting cups 16 of the cross drain-pipe 15 the cold temperature of the water draining through these pipes is preserved, enhancing the advantages secured by the construction and arrangement just described.

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

1. In a refrigerator-car, a centrally-located vestibule, having outlets at both its ends through the side walls of the car, and inlets through the compartments formed on both its sides, said inlets and outlets being controlled by doors, ice-bunkers arranged in the side compartments, water-conduits leading downwardly from said bunkers, cold-air conduits arranged between said water-conduits, and pipes leading from said water-conduits to the exterior of the car, substantially as described.

2. In a refrigerator-car, a centrally-located vestibule, and storage-compartments on both sides thereof, ice-bunkers in said storage-compartments, water-conduits leading downwardly from said bunkers, a pipe or gutter having upwardly-projecting cups or tubes telescoping said water-conduits, and cold-air conduits arranged to alternate said water-conduits, substantially as described.

In testimony whereof I have hereunto set my hand this 12th day of December, 1901.

WILL J. HUGHES.

Witnesses:

HUGH K. WAGNER,

FAY CHAMBERLAIN.