(No Model.) 2 Sheets—Sheet 1.

F. E. CANDA.

REFRIGERATOR CAR.

No. 523,512. Patented July 24, 1894.

Fig. 1.

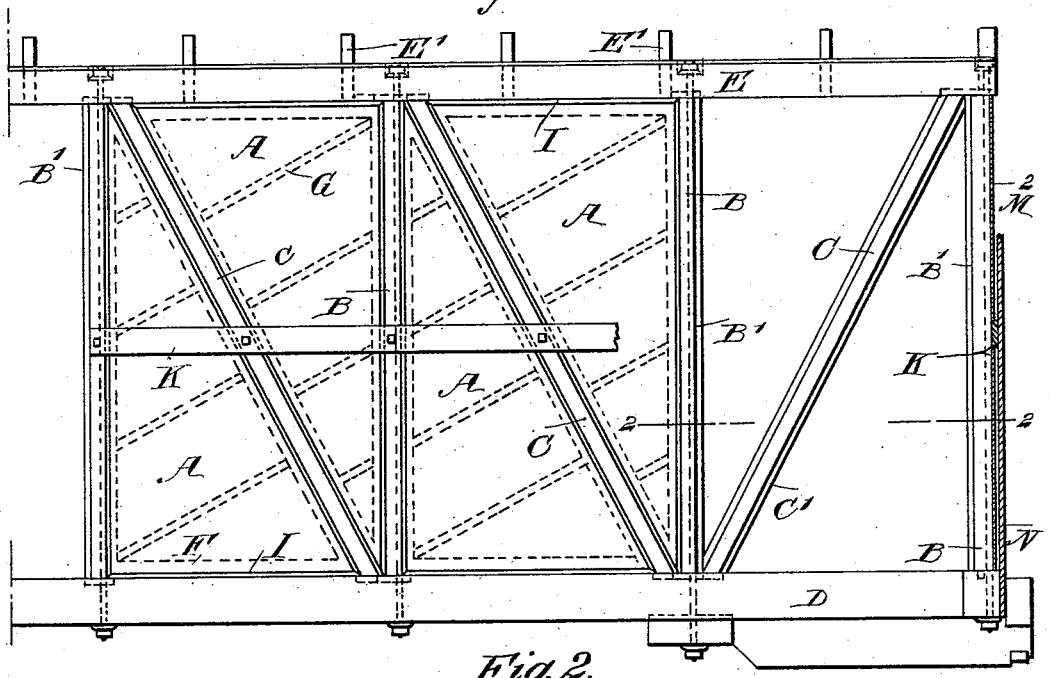

Fig. 2.

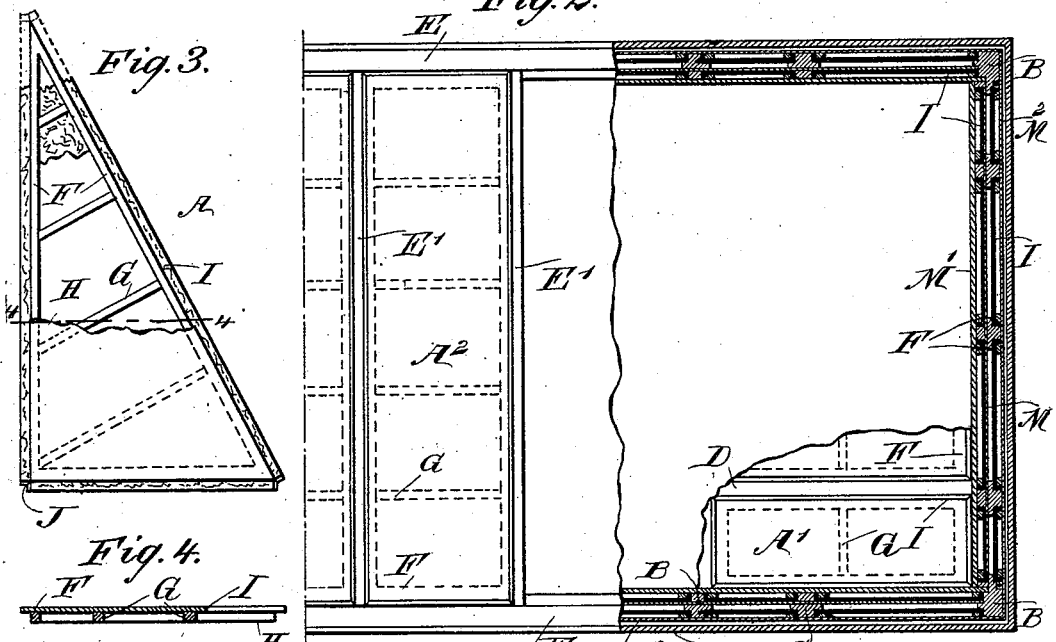

Fig. 3.

Fig. 4.

WITNESSES:

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INVENTOR

F. E. Canda

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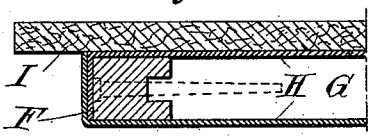
ATTORNEYS.

Fig. 5.



(No Model.) 2 Sheets—Sheet 2.

F. E. CANDA.

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Fig. 6.

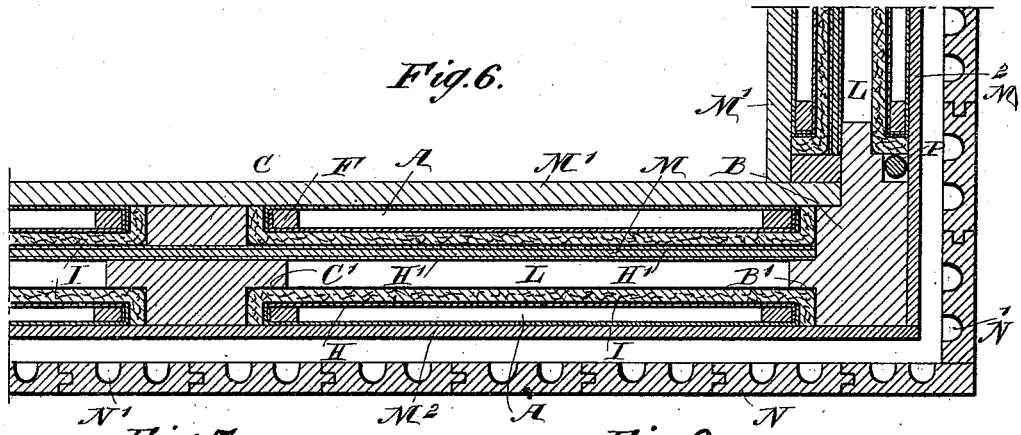

Fig. 7.

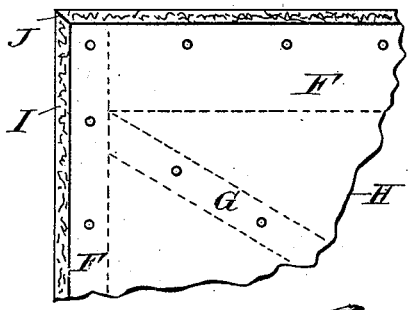

Fig. 8.

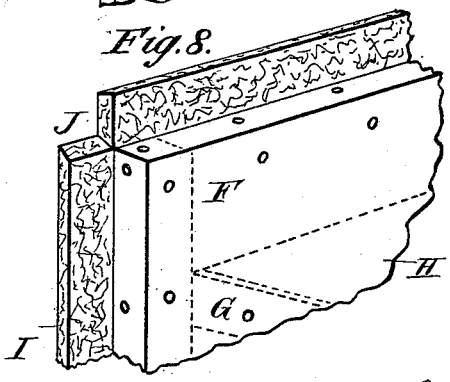

Fig. 9.

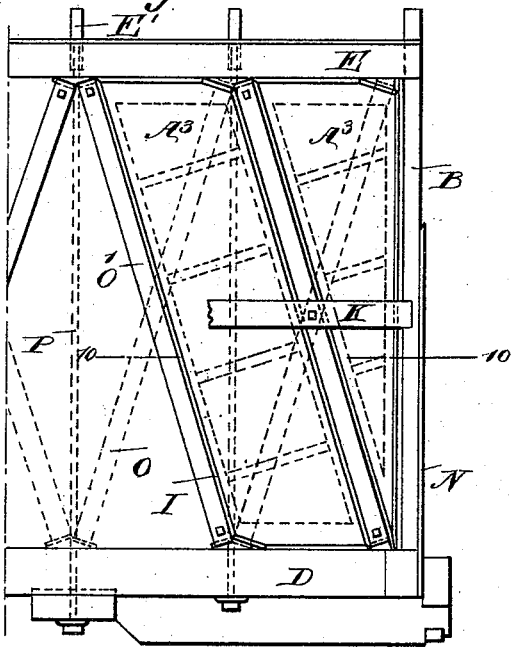

Fig. 10.

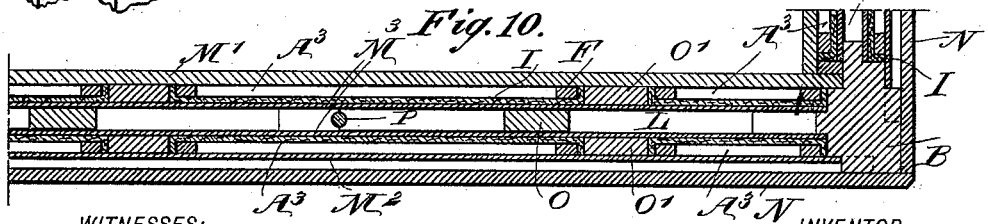

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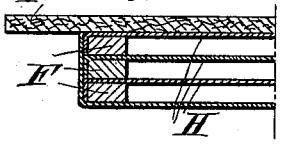
Fig. 11.



INVENTOR

F. E. Canda

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

FERDINAND E. CANDA, OF NEW YORK, N. Y.

REFRIGERATOR-CAR.

SPECIFICATION forming part of Letters Patent No. 523,512, dated July 24, 1894.

Application filed January 18, 1894. Serial No. 497,261. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND E. CANDA, of New York city, in the county and State of New York, have invented certain new and useful Improvements in Refrigerator-Cars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to the construction of insulating walls for refrigerator cars, and the object of the invention is to provide improved means for securing the insulating material in the walls of a refrigerator car, so as to prevent the said insulating material from becoming crumpled, or being jarred from its fastenings and thereby impairing the insulation of the car.

Another object of the invention is to so construct the car walls that they will be light, comparatively thin and inexpensive, and that the insulating material may be readily put in place or removed, if necessary.

A further object is to obtain a very reliable tight joint between the insulating material and the car frame.

The invention consists principally of insulating frames or panels provided on one of their sides with a marginally protruding layer or facing of an insulating material, said frames or panels being adapted to be held or clamped between the posts, braces, sills, carlings, or other parts of the car frame.

The invention also consists of certain features of construction, and combinations of parts, as will be fully disclosed hereinafter and pointed out in the claims.

I will now proceed to specifically describe my invention with reference to the annexed drawings, in which—

Figure 1 is a side elevation of one end of a refrigerator car embodying my improvements, with parts broken away and other parts in section, the outermost lining of the side wall being removed. Fig. 2 is a plan view with parts broken away and other parts in section on the line 2—2 of Fig. 1. Fig. 3 is a detail side view of one of the panels shown in Fig. 1, with parts broken away. Fig. 4 is a transverse section of the same on the line 4—4 of Fig. 3. Fig. 5 is an enlarged detail view of the left-hand portion of Fig. 4. Fig. 6 is a sectional plan view of a corner portion of the car. Figs. 7 and 8 are a broken side elevation and a broken perspective view, respectively, of one of the insulating frames or panels, Fig. 8 representing the frame as it appears before it is put in place in the car wall, and Fig. 7 showing how the edges of the felt are bent and compressed when the panel is inserted in the space it is intended to fill. Fig. 9 is a side elevation, similar to Fig. 1, of a car provided with another form of truss. Fig. 10 is a horizontal section of the same, taken essentially on the line 10—10 of Fig. 9; and Fig. 11 is a sectional view, corresponding to Fig. 5, of a modification.

Similar letters of reference denote similar parts throughout the several views.

As illustrated in Fig. 1, the insulating frames or panels A, are made triangular and are held between the posts B, the braces C, and the sills D and the plates E, respectively. The posts and braces are recessed along their edges to form shoulders B′ and C′ respectively, which serve as supports and stops to determine the position of the frames or panels A, as is plainly shown in Figs. 2 and 6. Each of the panels consists of side bars F arranged corresponding to the contour of the panel, and cross bars G whose ends are let into the bars F (Fig. 5), or otherwise connected therewith. The cross bars usually are parallel to each other, as shown in Fig. 3. The frames consisting of the bars F and cross bars G are covered on both sides with a layer of insulating paper H, whereby a series of separate dead air spaces are formed between the said bars. This insulating paper is turned over and tacked on the edges and sides of the frame and along the cross bars (see Figs. 7 and 8). A layer or facing of hair felt I is secured on one side of the frame over the paper, and the said felt is cut somewhat larger than the frame to project at the edges thereof, forming a loose flexible marginal portion as will be seen best in Figs. 3 and 8. The frames are made a little smaller (by approximately the extent of the thickness of the felt used) on every side, than the space they are intended to fill. The felt is notched at the corners, as indicated at J, so that it may be readily pressed into place (see Fig. 7). It will be understood that the panel will require no fas-

tening or nailing to maintain it in position, and therefore any shock to the body of the car will not affect the insulating panel, the felt forming a cushion to prevent the panel from being exposed to the full force of the continual jarring and straining movements of the car. It will be seen that the dead air spaces within the frame will be at all times preserved, as no strain comes on the places where the insulating paper H is secured to the frame. Furthermore, it is clear that the joint around the frame will be a tight one, and as felt is a yielding and compressible material, it will not work out of place, so that a perfect insulation will be maintained. A belt rail K, is usually employed to nail the outer weather boards to and will also prevent outward movement of the pane's held in the sides and ends of the car.

The floor and roof of the car are provided with insulating panels A′ and A² respectively, which are rectangular instead of triangular, but are constructed in substantially the same manner as described with reference to Figs. 3, 4, 5, 7, and 8. The floor panels are held between the sills D, and the roof panels between the carlings E′.

I prefer to employ at least two sets of insulating panels in the construction of the car walls, one set near the outer surface of the wall, and the other adjacent to the inner surface thereof. This construction is shown in Figs. 2 and 6, and it will be observed that the two sets of insulating panels inclose between them a central air space L, whereby the insulation is further improved. A lining M, covered on each side with a layer of insulating paper H′, is placed in contact with the felt of the inner set of panels. Inner and outer linings designated as M′ and M² respectively, are secured to the corresponding faces of the braces and posts. On the outside of the belt rail K is located an exterior wall N, which may be provided with grooves, as shown at N′, in Fig. 6, in order to increase the air space between the said wall and the outer lining M². I desire it to be understood, however, that my invention is not limited in its application to the particular car frame shown in the drawings, but may be applied to any design of framing, and to any or all parts of the car.

In the form of construction shown in Figs. 1, 2, and 6, the posts and braces are recessed along their edges. In Figs. 9 and 10, I have represented a modification in which the surfaces of the braces are even as usual, so that the ordinary braces will require no change to receive and hold my improved insulating panels.

The truss frame of the car consists of central braces O and lateral braces O′, in combination with the usual sills D, plates E and truss rods P. Between the central and the lateral braces I arrange linings M³, which serve as a backing for the insulating panels A³. These panels are of various shapes, either triangular or of the form of a parallelogram, according to the spaces they are intended to fill. Their construction does not substantially differ from that described with reference to Figs. 3, 4, 5, 7, and 8.

As shown in Fig. 11, the insulating panels may be constructed of several sections placed contiguous to one another, thus multiplying the dead air spaces, but I prefer the construction hereinbefore described, and the use of additional frames or panels to make up the thickness of insulated wall required.

With my improved mode of insulation, I not only get the advantage of using the felt and paper as insulators, but also that of small dead air spaces inclosed in the insulating material. It is possible, also, to employ a much thinner felt than usual, with the same results. The sides and ends of the car can be made comparatively thin, (about five inches thick) under this mode of construction, and will yet afford an insulation that will answer the requirements of the traffic.

I desire it to be understood that instead of paper and felt, I may use any other insulating material having similar properties.

It will be seen that the improved construction is simple, strong, light, durable, economic, readily applicable, and very efficient for its purposes.

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

1. An insulating panel for the purpose described, the said panel consisting of a frame provided on one of its sides with a layer of an insulating material, said layer extending beyond the contour of the frame, as set forth.

2. An insulating panel for the purpose described, the said panel consisting of a frame provided on one of its sides with a layer of a compressible insulating material, said layer extending beyond the contour of the frame, and being notched at the corners of the frame, as set forth.

3. An insulating panel for the purpose described, the said panel consisting of a skeleton frame covered with an insulating material to form dead air spaces in the frame, and a facing of a compressible insulating material secured to one side of the frame and arranged to project beyond the contour thereof, to form side cushions along the edges of the frame, substantially as set forth.

4. An insulating panel for the purpose described, the said panel consisting of a skeleton frame composed of side bars and cross bars connecting the same, the frame being covered with an insulating material to form dead air spaces in the frame, and a compressible insulating material arranged to project beyond the contour of the frame, substantially as set forth.

5. An insulating panel for the purpose described, provided on one of its sides with a facing of a flexible insulating material whose edges project beyond the contour of the panel, as and for the purpose set forth.

6. An insulating panel for the purpose described, the said panel consisting of a skeleton frame composed of side bars and cross bars connecting the same, the frame being covered with insulating paper to form dead air spaces in the frame, and a layer of felt secured to one side of the said frame and arranged to project beyond the contour thereof, substantially as and for the purpose set forth.

7. The combination, with the car timbers, of an insulating panel constructed to fill the space between the said timbers and made somewhat smaller than the said space, and a compressible material secured to the said panel and provided with a loose marginal portion located between the said timbers and the edges of the insulating panel to form a supporting cushion for the panel, substantially as described.

8. The combination, with the car timbers, of an insulating panel having dead air spaces in its interior and made of essentially the same shape as the space between the timbers it is intended to fill, yet somewhat smaller than the said space, and a layer of a compressible insulating material secured on one side of the panel and projecting at its edges between the said timbers and the edges of the panel, substantially as described.

9. The combination with the cars timbers inclosing between them a series of separated spaces, of a filling for each space, consisting of an insulating panel made of essentially the same shape as the said space and arranged between the car timbers, and cushions interposed between the timbers and the edges of the panels to hold the latter in position, substantially as described.

10. The combination, with the posts and braces, of an inner and an outer set of insulating panels held between the said posts and braces, said sets being spaced so as to leave a central dead air space between them, substantially as described.

11. The combination, with the posts and braces, of an inner and an outer set of insulating panels held between the said posts and braces, said sets being spaced so as to leave a central dead air space between them, and an insulating lining held on the outer side of the inner set of panels, substantially as described.

12. The combination, with the posts and braces, of separate insulating panels held between the posts and braces, and a belt rail extending along the outer faces of the posts, braces, and panels, substantially as described.

FERDINAND E. CANDA.

Witnesses:
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F. W. HANAFORD.