

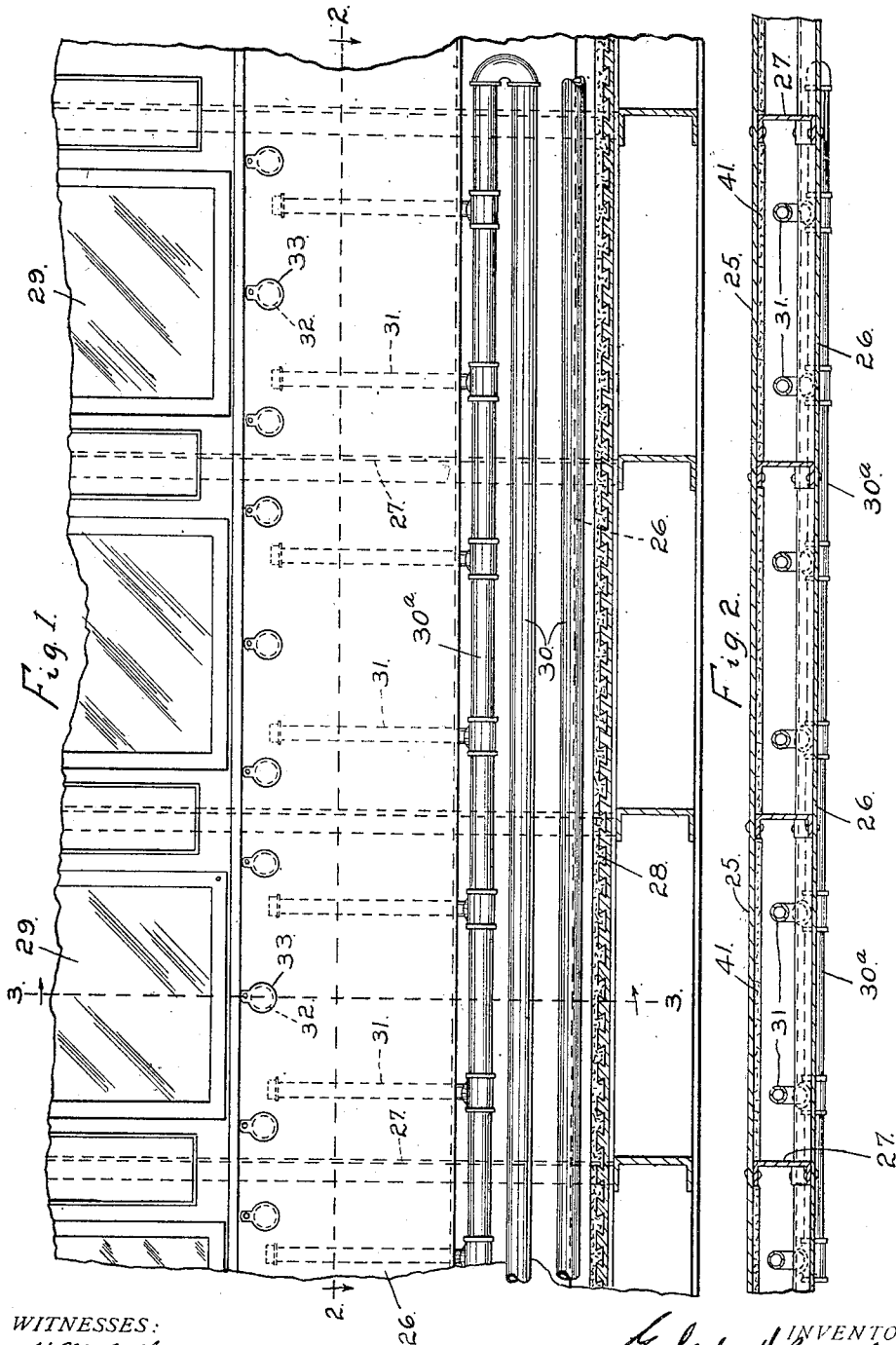
E. H. GOLD.  
HEATING SYSTEM FOR RAILWAY CARS OF METAL CONSTRUCTION.

APPLICATION FILED JAN. 27, 1913.

Patented Mar. 16, 1915.

3 SHEETS-SHEET 1.

1,131,927.



WITNESSES:

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*A. M. Brown*

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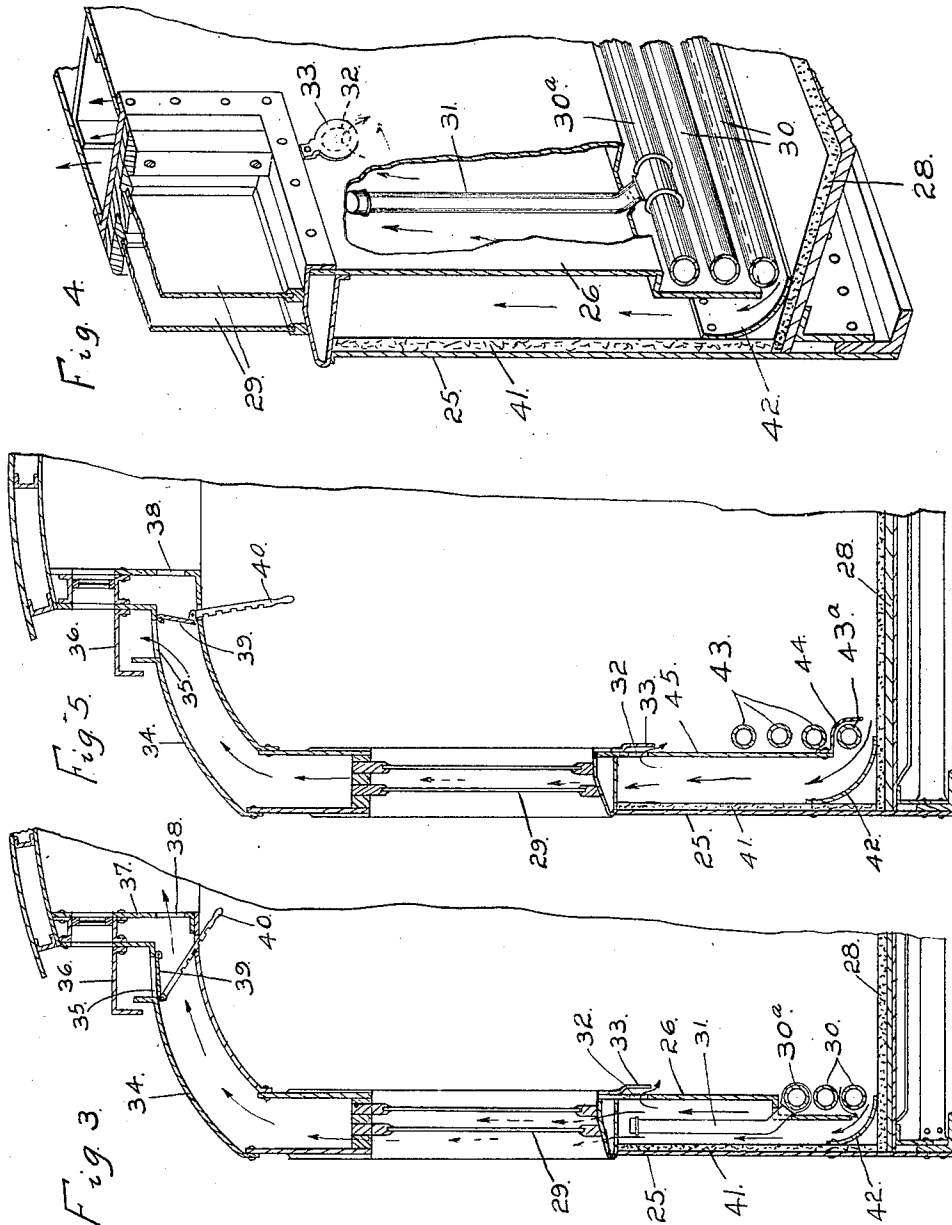
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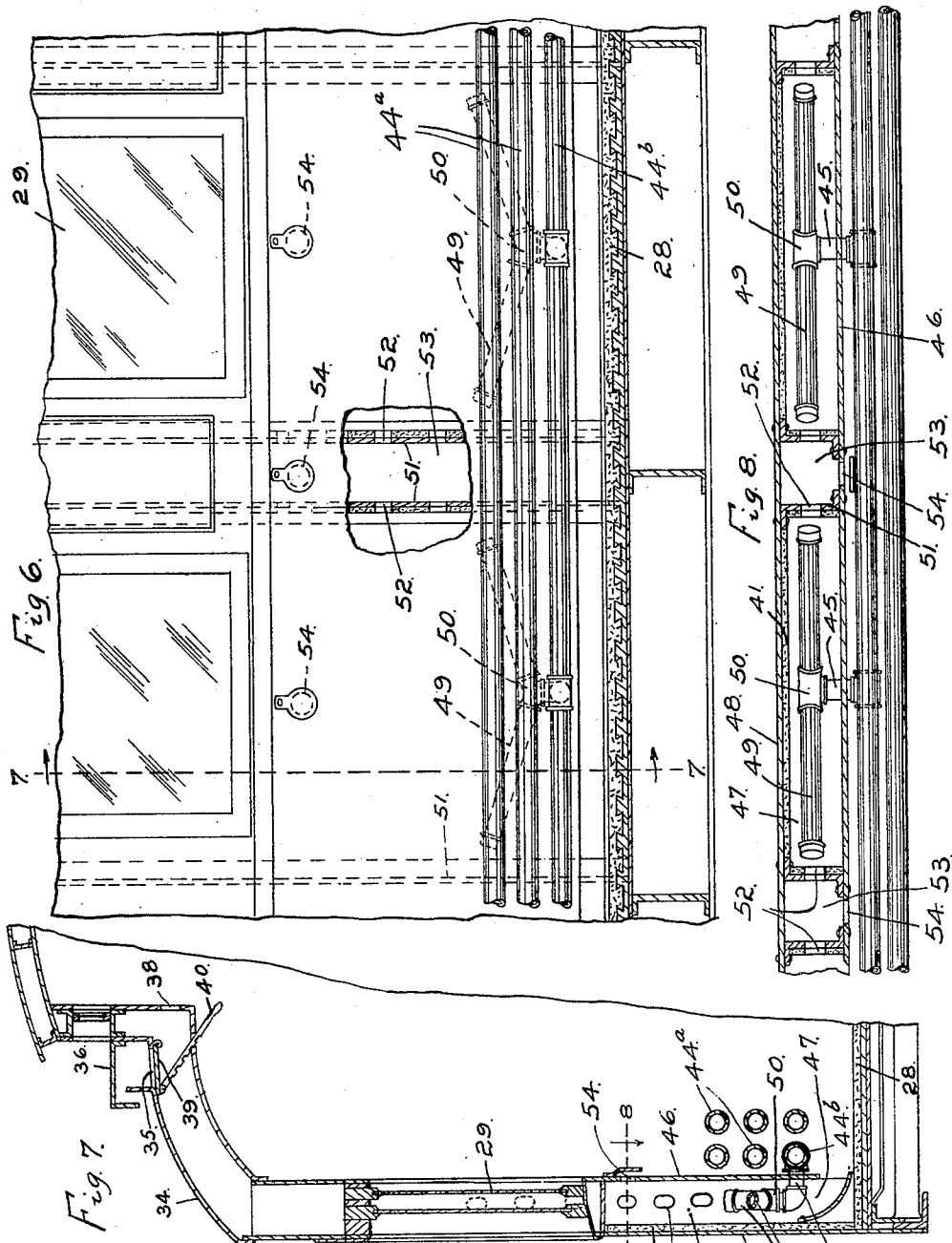
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# UNITED STATES PATENT OFFICE.

EGBERT H. GOLD, OF CHICAGO, ILLINOIS.

HEATING SYSTEM FOR RAILWAY-CARS OF METAL CONSTRUCTION.

1,131,927.

Specification of Letters Patent.

Patented Mar. 16, 1915.

Application filed January 27, 1913. Serial No. 744,440.

*To all whom it may concern:*

Be it known that I, EGBERT H. GOLD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Heating Systems for Railway-Cars of Metal Construction, of which the following is a specification.

My invention relates to heating systems, and particularly to heating systems for railway cars of steel construction. Considerable difficulty has been experienced in heating cars of this construction because of the excessive radiation through the metal walls. The amount of steam required to heat a steel car, employing the heating systems now in use, is very considerable. Moreover, the inner sheathing is cold to the touch so as to be unpleasant to the passengers and possibly unhealthy. Finally, the heating of the interior of the car results in condensation of moisture within the space between the inner and outer sheathings of the wall which causes the rusting of the metal.

My present invention has for its object to provide certain arrangements and constructions whereby a portion of the heat delivered by the radiating system which heats the interior of the car is caused to pass through the air spaces between the inner and outer sheathings of the wall, thereby reducing the loss of heat by direct conduction through the metal of the wall structure, warming the inner sheathing of the wall so as to make the same comfortable to the touch and preventing the accumulation of moisture on the inner surfaces of said wall structure.

Specifically, the object of the present invention is to provide certain improvements upon the constructions shown in the Patents No. 1,008,324 and No. 1,008,536, granted to me November 14, 1911. In the constructions of those patents the steam pipes are located either within the car in which case the inner sheathing is perforated so as to admit a part of the heat of the radiator to the spaces within the wall structure, or they are located in an air trunk adapted to communicate with the interior of the car and the spaces between the inner and outer sheathings of the wall. These arrangements have not proven in all respects satisfactory because of the difficulty of producing a circulation through the narrow, often obstructed, spaces in the wall structure, a difficulty which is increased

if the inner surfaces of the sheathings are damp.

My present invention overcomes this difficulty by locating portions of the radiating coils within the air spaces of the wall structure.

The invention is illustrated, in certain preferred embodiments, in the accompanying drawings, wherein—

Figure 1 is a fragmentary elevation of the side wall of a railway car of steel construction showing the floor and under framing of the car, the view being taken from the inside of the car; Fig. 2, a sectional plan on line 2—2 of Fig. 1; Fig. 3, a vertical sectional view on line 3—3 of Fig. 1; Fig. 4, a fragmentary view, in perspective, illustrating the construction shown in the preceding figures; Fig. 5, a view similar to Fig. 3 illustrating a modification; Fig. 6, a view similar to Fig. 1 illustrating another modified construction; Fig. 7, a vertical sectional view taken on line 7—7 of Fig. 6, and Fig. 8, a sectional plan on line 8—8 of Fig. 7.

Like characters of reference designate like parts in the several figures of the drawings.

Referring first to Figs. 1 to 4 inclusive, 25 designates the outer sheet steel sheathing of the side wall structure of the car, 26 the inner sheathing, and 27 the structural steel elements of the car body to which the inner and outer sheathings are secured. 28 designates the flooring of the car and 29 the windows. The radiator for heating the car consists of a coil of pipes 30, 30<sup>a</sup> which are located in the usual place along the bottom of the car near the side wall. The upper pipe 30<sup>a</sup> of the coil is provided with a plurality of branches 31 which project through the sheathing 26 into the spaces between this inner sheathing and the outer sheathing 25. Preferably the inner sheathing 26 terminates short of the flooring so that a certain amount of heat will enter the spaces in the wall structure at these points. The air spaces in the wall are, however, primarily heated by means of the branch pipes 31 which, it will be seen, extend up almost to the level of the window frames and lie close to the inner sheathing 26. By this means the portion of the wall of the car with which the passengers are most likely to come into contact is kept warm. A circulation through the air spaces may

be provided for by forming openings 32 just below the level of the windows, these openings being protected, in the construction shown, by means of caps 33. The openings 32 are arranged so that the warm air which issues therefrom passes directly in front of the window.

If desired arrangement may be made for causing circulation of hot air through the air spaces at the sides of the windows and above the level of the windows by providing outlets from the spaces at the top of the car. For example, I have shown the outer sheathing 34 of the roof provided with an opening 35 over which is set a ventilator 36 of any suitable construction. The inner wall 37 of the clear story is also provided with an opening 38 and a valve 39, operated by a handle 40, is arranged to direct the air current from the space within the wall structure either through opening 38 into the car, or through opening 35 to the atmosphere.

The inner surface of the sheathing 25 may be covered, if desired, by any suitable form of heat insulating material 41. Preferably, for convenience particularly in cleaning the car, a flashing 42 is provided which is secured to the outer sheathing 25.

Fig. 5 shows a modified arrangement. The lower pipe 43<sup>a</sup> of the heating coil 43 is, in effect, inclosed within the space between the inner and outer sheathings of the wall structure by means of a preferably angular deflecting member 44 secured to the lower edge of the inner sheathing 45. By this arrangement practically all of the heat from the upper pipes of the coil is utilized to heat the interior of the car, while the radiation from the lower pipe 43<sup>a</sup> is diverted and utilized for heating the air spaces of the wall structure. In other respects the construction shown in Fig. 5 is the same as that shown in the preceding figures and need not be specifically described.

Another modification is shown in Figs. 6 to 8 inclusive. One of the lower pipes 44<sup>b</sup> of the heating coil 44<sup>a</sup> is provided at intervals with branch pipes 45 extending through the inner sheathing 46. Within the spaces 47, between the inner sheathing 46 and the outer sheathing 48, are the transversely arranged pipes 49, preferably a trifle inclined for the purpose of drainage, which are connected to the branch pipes 45 by T's 50. With this arrangement practically all of the air entering the spaces 47 between the inner and outer sheathings is heated.

Preferably the upstanding frame members 51 are formed with perforations 52 so as to admit hot air to the spaces or passageways 53 between the uprights of each pair of uprights. The inner sheathing may be formed with openings 54 to allow the discharge of air from the spaces 47 and 53.

By this arrangement the portion of the inner sheathing between the windows is heated as well as that directly under the windows. Also as both sides of the uprights 51 are subjected to heat the loss of heat by conduction through these members is minimized.

I claim:

1. The combination with a railway car having a wall structure comprising inner and outer metal sheathings providing a circulation space, the inner sheathing stopping short of the floor and provided with discharge openings in the upper portion thereof, of a heating system for said car comprising a radiator located within the car adjacent the opening into the bottom of said circulation space, a portion of which radiator extends into said circulation space adapted to heat the air circulating therein so as to apply heat to the inner sheathing over substantially its entire area, said outer sheathing being insulated from the heat in said circulation space by a lining of non-conducting material arranged along the inner surface of said sheathing.

2. The combination with a railway car having a wall structure comprising inner and outer metal sheathings providing a circulation space, the inner sheathing stopping short of the floor and provided with discharge openings in the upper portion thereof, of a heating system for the same comprising a heating coil having one or more pipes in the interior of the car and one or more pipes arranged between said inner and outer sheathings adapted to heat the air circulating therein so as to apply heat to the inner sheathing over substantially its entire area, said outer sheathing being insulated from the heat in said circulation space by a lining of non-conducting material arranged along the inner surface of said sheathing.

3. The combination with a railway car having a wall structure comprising inner and outer metal sheathings, the inner sheathing stopping short of the floor, and upright frame members to which the inner and outer sheathings are secured, of a heating system for said car comprising a radiating coil located in the interior of the car provided with branch pipes extending into the spaces between the inner and outer sheathings, said upright members being formed with openings for the purpose specified.

4. The combination with a railway car having a wall structure comprising inner and outer metal sheathings and frame members to which said inner and outer sheathings are secured, of a heating system for said car comprising a radiating coil located in the interior of the car and provided with branch pipes extending into certain of the spaces between the inner and outer sheath-

ings, said frame members being formed with openings, for the purpose described.

5 5. The combination with a railway car having a wall structure comprising inner and outer metal sheathings, formed with window openings, and pairs of frame mem-  
bers arranged between the inner and outer sheathings and between said window open-  
ings respectively, of a heating coil located  
10 in the interior of the car and provided with

branch pipes extending into the spaces between the inner and outer sheathings which are under the windows, said frame members being formed with openings to admit heated air to the spaces between the frame members 15 of each of said pairs.

EGBERT H. GOLD.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."