Mar. 13, 1923. 1,448,071

S. H. LAWSON

AIR COOLING SYSTEM

Filed Oct. 20, 1920

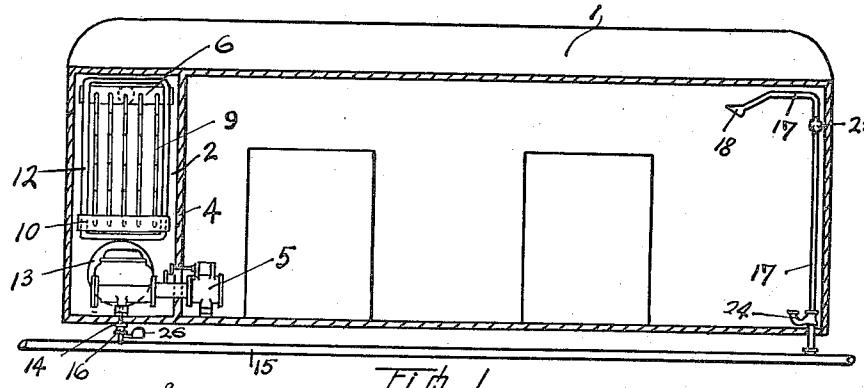


Fig. 1

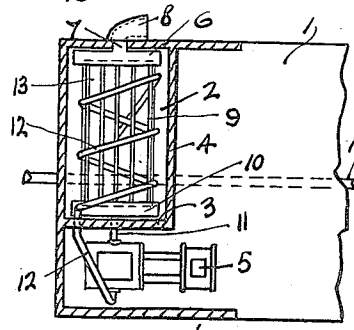


Fig. 2

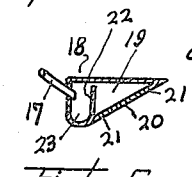


Fig. 6

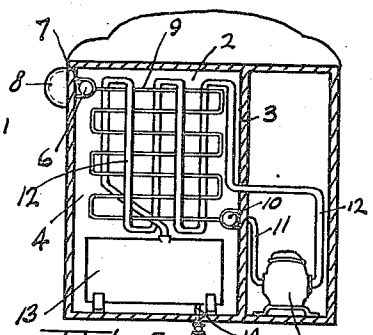


Fig. 3

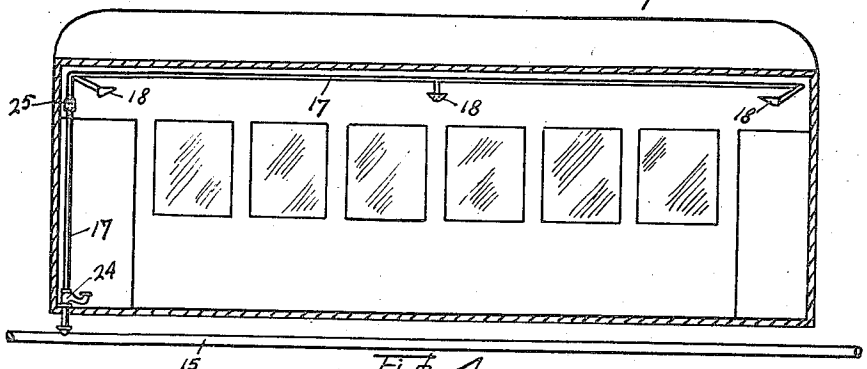


Fig. 4

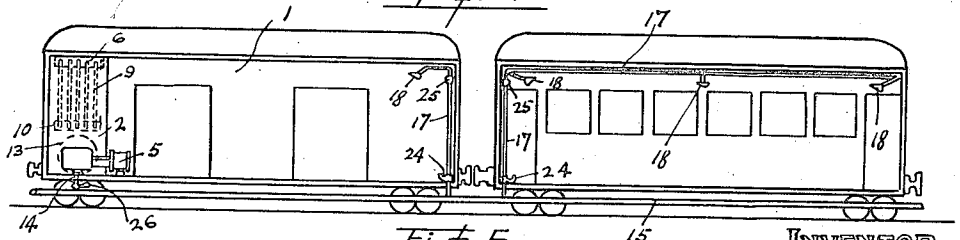


Fig. 5

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Patented Mar. 13, 1923. 1,448,071

UNITED STATES PATENT OFFICE.

SAMUEL HERBERT LAWSON, OF VICTORIA, BRITISH COLUMBIA, CANADA.

AIR-COOLING SYSTEM.

Application filed October 20, 1920. Serial No. 418,241.

To all whom it may concern:

Be it known that I, SAMUEL HERBERT LAWSON, a citizen of the United States, and a resident of the city of Victoria, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Air-Cooling Systems, of which the following is a specification.

My invention relates to improvements in air cooling systems, and the object of my invention is to provide a system of this nature which is particularly adaptable for use in railway Pullman cars, steamer cabins, halls, or the like places, to render them comfortable in hot weather by cooling the air therein, or for compartments in which perishable articles such as meat, fish, and other food commodities are contained or transported so that they will be unaffected by heat.

I attain this object by the construction illustrated in the accompanying drawings in which—

Fig. 1 is an interior view of a railway baggage car showing the cooling apparatus.

Fig. 2 is a plan view of the apparatus.

Fig. 3 is an end view.

Fig. 4 is an interior view of a pullman car showing the cool air distributing means.

Fig. 5 is a view illustrating the practical application of the system.

Fig. 6 is a sectional view of a distributing nozzle forming part of the apparatus.

Similar figures of reference indicate similar parts throughout the several views.

To illustrate the carrying-out of the invention its application to a railway train will be described, a baggage car and a Pullman car being shown in the drawings.

In the forward end of the baggage car 1 a compartment 2 is formed by building therein partitions 3 and 4 from the floor to the roof, the partition 3 being spaced from the wall of the car to provide floor space on which a suitably operated air pump 5 is placed. Within the compartment 2 near the roof and mounted on the wall of the car opposite to partition 3 is a header 6 having a tubular branch 7 extending through the car wall and terminating outside the car in a rearwardly directed funnel shaped end 8. The header 6 is provided with a plurality of openings, say five in number, although there may be any approved number, to each of which is connected one end of a pipe coil 9 of a small diameter, preferably about three-sixteenths of an inch in the bore, the opposite end of which coil is connected to a similar opening in a header 10 mounted on the inside of the partition 3 towards the bottom thereof, from which it will be seen that there are thus five coils 9 extending from the upper header 6 to the lower header 10, each of which coils is carried back and forth transversely of the compartment 2. The header 10 is connected with the suction branch of the pump 5 by means of a pipe 11, while from the discharge branch of the pump a discharge pipe 12 is carried into the compartment 2 and passed in the form of a coil around the series of coils 9, its opposite end being connected to an air tank 13 secured to the floor of the compartment. The coil 12 is preferably of larger diameter than the coils 9, say about three-quarters of an inch bore.

From the tank 13 a delivery pipe 14 extends downwardly and is connected to the ordinary steam pipe extending along the train for steam heating. It will thus be seen that instead of running another pipe for the cooling system, the steam pipe already installed is employed as part of applicant's apparatus, as the heating system is not used with the cooling system. The pipe 14 is provided with a reducing valve of an suitable type indicated by the numeral 16, so that the air pressure in the tank 13, say 30 lbs. per square inch, may be reduced to, say 15 lbs. per square inch in the line 15.

At suitable points in the floor of each car branches 17 are carried through from the pipe 15 and extended upwardly towards and along the roof, as shown in Fig. 4; these branches may, of course, be led to any desired point. Air distributors 18, which may be in the form of ornamental ceiling fixtures, are inserted in the branch pipes 17, at suitable points, one form of distributor being shown particularly in Fig. 6 and consisting of a hollow casing 19 formed of any approved material, such as glass or metal, the lower face 20 of the casing being inclined and provided with apertures 21 through which the cool air is sprayed from the pipe 17, a vertical wall 22 being arranged within the casing 19 between the air inlet and the apertures and extending to within a short distance of the top of the casing so that, while the air may pass to the apertures any moisture contained in the air will impinge on the wall and fall into the

bottom of the casing, which is provided with a trap portion 23 for the purpose of collecting the moisture, which may be drained off therefrom by any suitable means, thus ensuring that the air sprayed from the distributors 18 will be dry.

Water traps 24 are also inserted in the branches 17 adjacent the car floor to assist in the freeing of the air from moisture as it passes to the distributors, while at a high point in each vertical portion of each branch 17, near the car ceiling, is inserted any suitable form of temperature regulator valve, indicated by the numeral 25, so that as the temperature in the car rises or falls the valve will open or close and thus the free passage of the cool air through the pipes to the distributors will be respectively permitted or restricted.

If desired, a receptacle, indicated by the numeral 26 in Fig. 1, containing a suitable disinfecting medium, may be mounted on the pipe 14 so that the disinfectant will be drawn therefrom by the air passing through the pipe 14 to mix with the air, and thus cool pure air will be delivered into the pipe 15 and branches 17 to be discharged into the cars through the distributors 18.

From the foregoing the manner in which the invention is used will be readily understood and may be briefly described as follows. The compartment 2 is filled with ice, which then entirely surrounds the coils 9 and 12. The pump 5 being set in operation air is drawn thereinto through the funnel 8 and the small bore coils 9, being chilled as it travels through the coils, and is discharged as cold air through the coil 12, in which it is further chilled, into the tank 13, from which it passes through pipe 14 into pipe 15 and thence to the branches 17 and distributors 18, the cold air spraying therefrom and effectually reducing the temperature in the cars and rendering them comfortable in hot weather.

From the foregoing it will be seen that I have provided an air cooling system which is effective and highly practical while at the same time it is comparatively inexpensive to install and maintain.

What I claim as my invention is:—

In an air cooling system for railway coaches, an ice-cooled compartment formed in the coach, an air pump located exteriorly of said compartment, a header mounted on the inside of the compartment outer wall adjacent the roof thereof having a branch extending through the wall and open to the atmosphere, said branch being turned rearwardly, and formed funnel shape, a second header mounted on the compartment inner wall and in communication with the pump suction branch, a plurality, of small bore pipe coils extending between said headers, a tank within said compartment, a pipe coil of larger diameter than the first mentioned ones coiled around them having one end connected to the pump discharge branch and its opposite end connected to the tank, a delivery pipe from said tank, vertical branch pipes extending from said delivery pipes into the coach and carried therethrough to designated points at which discharge orifices are provided, and hollow casing members inserted into each respective orifice each having its lower face apertured whereby the air delivered into the casing issues therefrom as a spray.

Dated at Victoria, B. C., this 6th day of October, 1920.

SAMUEL HERBERT LAWSON.