May 12, 1925. 1,537,587

J. COLOMBO ET AL

MEANS FOR VENTILATING AND COOLING CARS

Filed Oct. 22, 1924

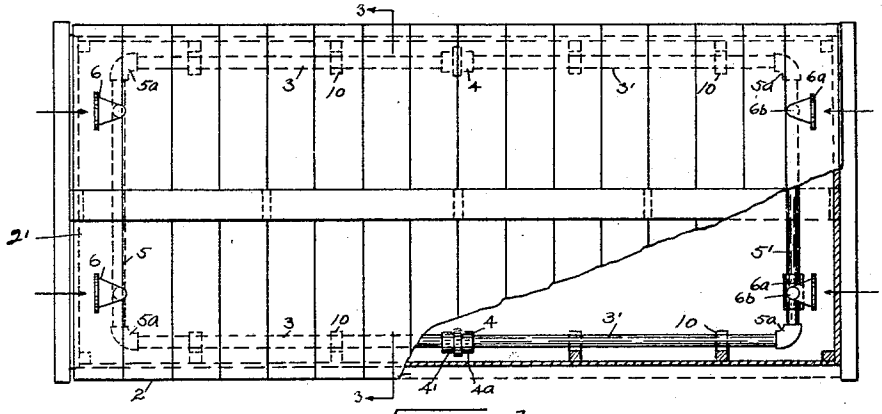


FIG. 1.

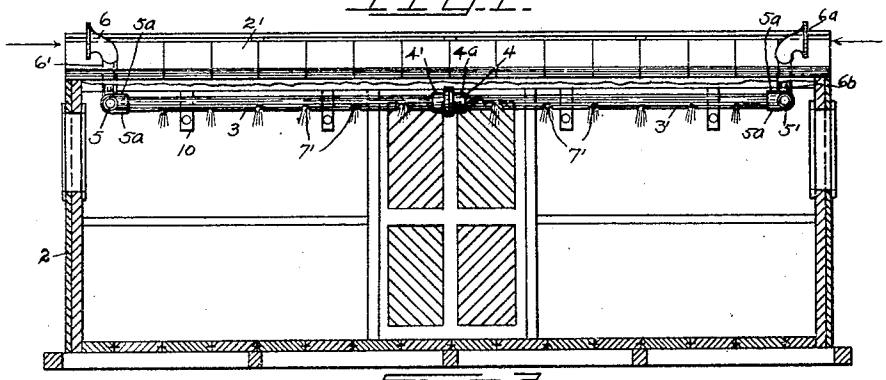


FIG. 2.

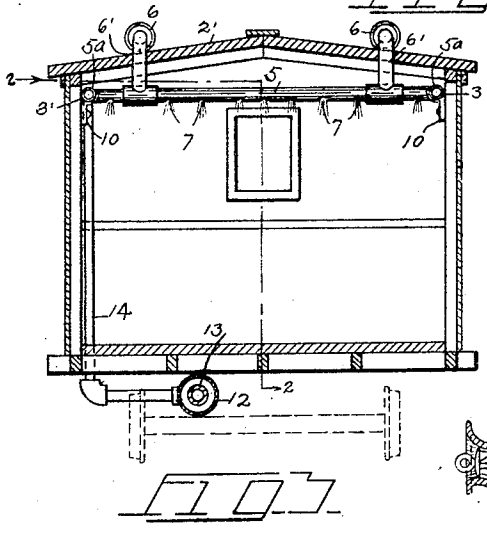


FIG. 3.

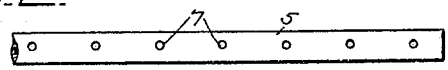


FIG. 4.

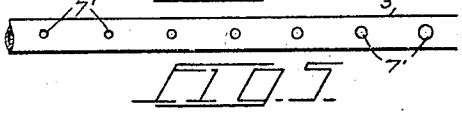


FIG. 5.

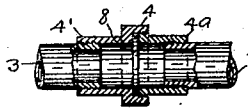


FIG. 6.

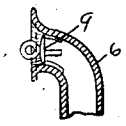


FIG. 7.

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UNITED STATES PATENT OFFICE.

JOHN COLOMBO AND CHARLES ANGELLO, OF AUBURN, NEW YORK.

MEANS FOR VENTILATING AND COOLING CARS.

Application filed October 22, 1924. Serial No. 745,184.

To all whom it may concern:

Be it known that we, JOHN COLOMBO and CHARLES ANGELLO, citizens of the United States, residing at Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Means for Ventilating and Cooling Cars, of which the following is a specification.

This invention relates to means for ventilating and cooling cars used for transporting perishable freight and the like, and has for its object to provide novel, simple and effective means for forcing air into cars by the movement of a train in opposite directions. A further object is to provide two or more series of similar conduits or pipes, which may be disposed in any convenient part of a railroad car, the said conduits communicating with the atmosphere, by means of a plurality of funnel-shaped extensions, which preferably pass through and project above the roof of the car, the said funnels preferably being disposed near the opposite ends of the car, and the funnels at the respective ends preferably facing in opposite directions, for facilitating the alternate charging of said series of conduits with air which is compressed by the movement of the car in opposite directions, the said conduit being arranged in the form of a rectangular loop, which extends substantially the full length and breadth of the interior of the car, certain of said conduits having progressively increasing ports or openings, for the exit of the air received from the funnels; said conduits, as shown being arranged in two similar sections, and each section receiving and dispensing only the air received from the funnels located at the corresponding ends of the car. A further object is to provide means for plugging for closing the funnels during cold weather. And a further object is to provide means for utilizing the said conduits for dispensing heated instead of cool air.

We attain these objects by the means set forth in the detailed description which follows, and as illustrated by the accompanying drawing, in which—

Figure 1, is a broken top plan view of a freight car; showing by full and dotted lines the arrangement of the ventilating and cooling pipes; also showing the funnels by which the pipes are charged with air. Fig. 2 is the central vertical longitudinal section, taken on line 2—2 of Fig. 3. Fig. 3 is a vertical cross-section, taken on line 3—3 of Fig. 1 showing the means for supplying heated air to the conduits. Fig. 4 is a broken elevation of one of the transverse conduits. Fig. 5 is a similar view of one of the longitudinal conduits. Fig. 6 is an enlarged view of one of the unions; showing the means for preventing the air received from one set of funnels from flowing into the series of pipes which connect with the opposite set of funnels. And Fig. 7 is a view showing means for plugging the funnels for preventing air from reaching any of the dispensing pipes.

In the drawing, 2 represents generally the body of a box-car suitable for transporting fruits and other perishable freight, and 2′ is the roof of the car.

Our ventilating and cooling system comprises a plurality of conduits, as 3—3′ preferably made of ordinary piping, which are disposed along the opposite sides of the car, preferably near the eaves of the roof 2′. The conduits 3—3′ preferably extend from the ends toward the middle of the car where they are connected by means of unions 4. At the ends of the car, the pipes 3—3′ are connected respectively by means of transverse pipes 5—5′, and elbows 5^a. The pipes 3 and 5 are supplied with air by means of funnels 6, which are mounted on the top ends of short pipes 6′, the latter tapping the pipes 5, and then extending upwardly through the roof 2′. The pipes 3′ and 5′ are similarly supplied with air by means of funnels 6^a, which are mounted on the top ends of pipes 6^b. The funnels 6 and 6^a face in opposite directions, and when the car is moving in the directions in which mouths of the several pairs of funnels face, the air is collected by the funnels and thence conducted downwardly into the pipes 5 and 5′ to be distributed by the latter, in opposite directions to the pipes 3—3′. All of the horizontal pipes are provided with perforations for the exhaust of the air, and in order to insure the carrying of the air to the middle of the car, the pipes 5—5′ are preferably provided with relatively small perforations, 7, all the same size; while the pipes 3 and 3′ are provided with perforations 7′ which increase in diameter progressively from the ends towards the middle of the car, as shown in Fig. 2. In the preferred form of the device the longitudinal or side pipes

3—3′ only conduct the air from the respective ends of the car to the unions, the said unions being provided with stops, which consist of imperforate disks 8, the latter being clamped between the members 4′ and 4ª of the unions, as best seen in Fig. 6. By this construction and arrangement, when the car is moved in either direction, fresh air will be carried by the pipes 3 or 3′ a sufficient distance to effectively ventilate and cool the car. By disposing the funnels 6—6ª, as herein shown, the car will be ventilated and cooled to the same extent whether it is being moved backward or forward. By providing the cross-pipes 5—5′ with the small perforation 7, the greater volume of the air is carried by said pipes into the side pipes 3—3′, and as the smaller perforations 7′ occur near the ends of the car, a considerable portion of the air may be conducted to the dead ends of the pipes 3—3′ before it is entirely exhausted. When the weather becomes cold and the need of artificial cooling is not urgent, the funnels at the opposite ends of the car may be closed, in the manner shown in Fig. 7, by readily detachable plugs 9 similar to those employed for closing the smoke pipe openings of ordinary chimneys. The pipes 3—3′ and 5—5′ are preferably supported by brackets 10, which may be bolted to the uprights 2ª of the car frame.

Obviously the same system of piping may be employed for heating fruit and other cars during cold weather, by first plugging the funnels 6—6ª as shown in Fig. 7, and then conducting heated air derived from a jacket 12, which, may be placed loosely around a steam pipe 13 disposed beneath the car, the hot air being conducted from the jacket 12 by risers 14 which connect to the pipes 3—3′, as shown in Fig. 3.

Having thus described our invention, what we claim is—

1. Means for ventilating and cooling freight and other cars, comprising parallel perforated side conduits disposed inside the car at the sides near its top, means for coupling the conduits at the sides of the car, means for forcing air into the side conduits between the couplings and the opposite ends of the car alternately according to whether the car is moving in a forward or in a reverse direction, and means for preventing the air from flowing through said couplings.

2. Means for ventilating and cooling freight and other cars, comprising parallel perforated aligning side conduits disposed inside of a car at the sides near its roof, means for coupling the aligning conduits at the opposite sides near the middle of the car, means for preventing communication between the aligning conduits, means for charging the conduits at one side of said couplings with air when the car is being moved in one direction, and means for charging the conduits at the other side of the couplings when the car is being moved in the opposite direction.

3. Means for ventilating and cooling cars and the like, comprising parallel aligning side conduits extending from the opposite ends toward the middle of the car, said conduits being perforated and the perforations increasing in diameter progressively towards the middle of the car, means for coupling the meeting ends of the aligning conduits, means for preventing communication between the aligning conduits, cross conduits connecting the respective side conduits near the ends of the car, and means communicating with the cross conduits for charging the corresponding pairs of side conduits with air compressed by the movement of the car in either direction.

4. Means for ventilating and cooling freight cars comprising aligning perforated conduits disposed at the opposite inner sides of the car, unions for supporting the meeting ends of the aligning conduits, means carried by the unions for preventing communication between the aligning conduits, the perforations of said side conduits increasing in diameter progressively from the ends of the car towards said unions, perforated cross conduits, the perforations of the cross conduits being of uniform diameter, and funnels disposed above the roof of the car adjacent the ends and adapted for supplying air to the side conduits between the unions and the adjacent ends of the car.

5. Means for cooling and ventilating freight cars and the like, comprising similar side conduits disposed along the inner top sides of a car, said side conduits being arranged in pairs, and each pair extending from the corresponding end towards the middle of the car, each pair of said conduits being perforated and the said perforations increasing in diameter progressively from the ends towards the middle of the car for equalizing the distribution of the air, cross conduits connecting each pair of side conduits at the ends of the car, said cross conduits having relatively small perforations of uniform diameter, funnels for charging one pair of side conduits and the corresponding cross conduits with air when the car is being moved in one direction, funnels for charging the other pair of side conduits and the corresponding cross conduit with air when the car is being moved in the opposite direction, and means for preventing the air from flowing from one pair of side conduits into the other pair.

In testimony whereof we affix our signatures.

JOHN COLOMBO.
CHARLES ANGELLO.