H. A. GOUGE.

Ventilated Grain-Car.

No. 205,634. Patented July 2, 1878.

Fig. 1

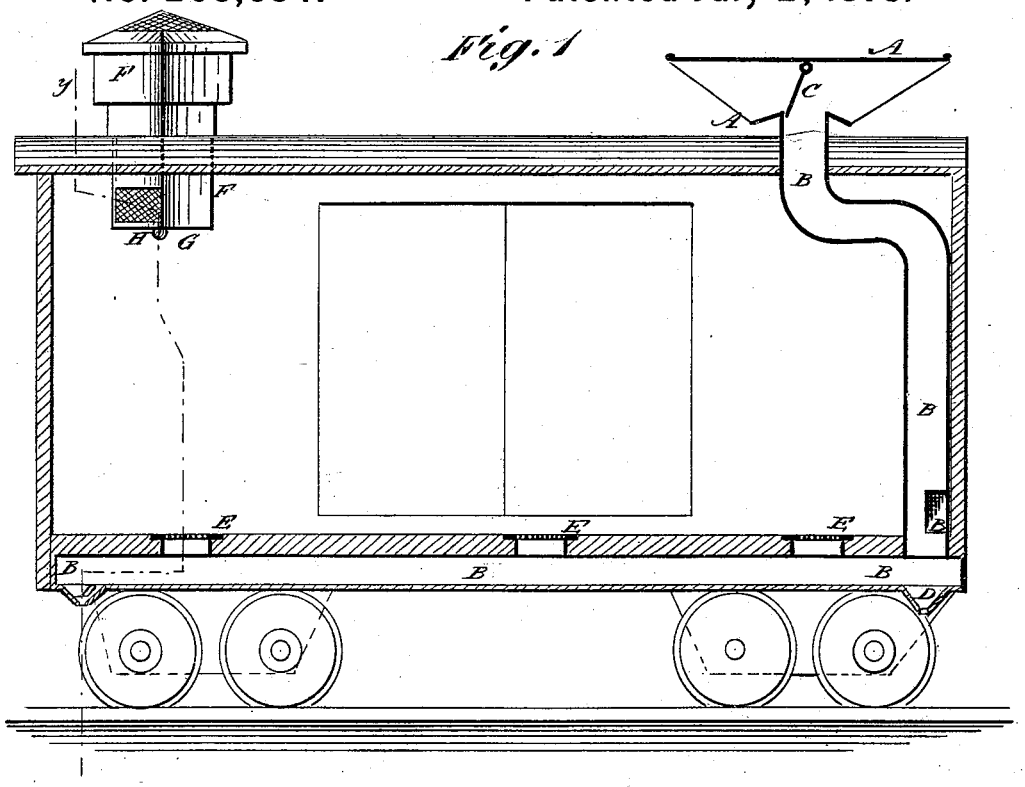


Fig. 3

Fig. 2

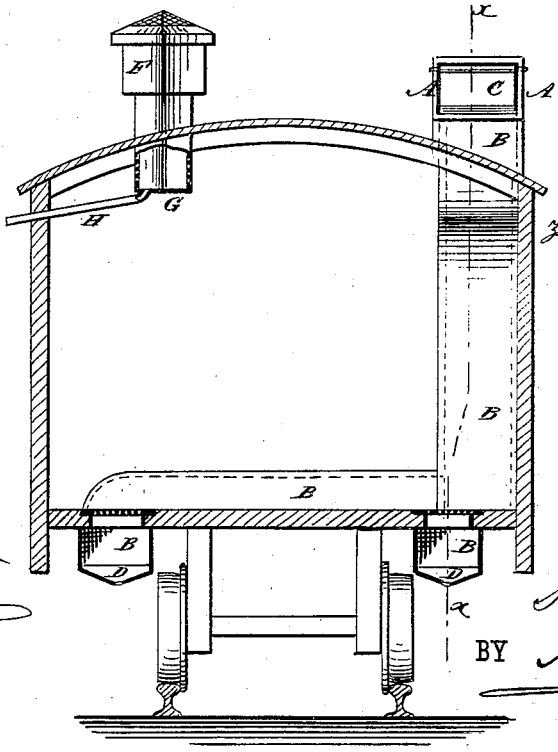
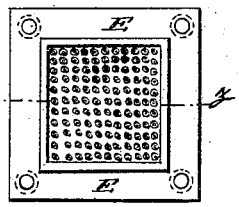


Fig. 4



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HENRY A. GOUGE, OF NEW YORK, ASSIGNOR TO SAMUEL SHETHAR, OF SAME PLACE, AND EDWARD A. NICHOLS, OF YONKERS, N. Y.

IMPROVEMENT IN VENTILATED GRAIN-CARS.

Specification forming part of Letters Patent No. **205,634**, dated July 2, 1878; application filed April 24, 1878.

To all whom it may concern:

Be it known that I, HENRY A. GOUGE, of New York city, in the county and State of New York, have invented a new and useful Improvement in Ventilated Freight-Cars, for carrying grain, &c., of which the following is a specification:

Various means have heretofore been proposed and applied to passenger-cars for rendering them more comfortable to travelers, and much attention has also been given to devising and constructing so-called refrigerator-cars for the safe transportation of perishable articles of trade. So far as my knowledge extends, all of these pre-existing arrangements have embodied a variety of expensive apparatus for cooling air or purifying it by the use of ice or of water in jets or spray.

The object of my invention has been to attain to desired results by the use of simple, comparatively inexpensive, and thoroughly effectual means; and the main feature of my invention consists in the combination, with a box freight-car, of a hood on the roof of the car, provided with means for securing an inward-forced current of air regardless of the direction in which the car is moved, a pipe which extends from said hood below the bottom of the car, cinder-outlets in said pipe, through which dust and cinders taken in by the hood are freely discharged from the pipe, and perforated plates in the floor of the car, which communicate with the air-pipe below, the whole being so constructed and arranged that when the loaded car is in motion air freed from heavy dust and cinders will be forced upward into the mass of bulk freight.

The hood used by me is of the double-ended class, and has, as usual, a valve which secures a downward current of air from either end of the hood, according to the direction in which the car may be moving.

The cinder outlets referred to are of great practical importance, and are not mere pockets for catching and retaining cinders and dirt, but they are so constructed that a sufficient current of air is continually passing outward from the pipes, which not only secures the prompt discharge of such heavy particles as would freely gravitate, but also such finer particles as require the accelerating force of the escaping current of air.

I prefer and do usually employ floor-plates provided with numerous small vertical conical holes, each hole being like an inverted funnel, so that when the car is in motion air will be forced into the car through the conical holes in well-defined jets.

My invention further consists in the combination, with the air-outlet of a grain-car, of a drip-pan, which will receive rain or snow in case of the accidental removal of or injury to the hood or cap with which such outlets are usually provided.

Figure 1 is a vertical longitudinal section of a car to which my improvements have been applied, taken through the line *x x*, Fig. 2. Fig. 2 is a cross-section of the same, taken through the line *y y*, Fig. 1. Fig. 3 is a detail cross-section of one of the perforated plates, taken through the line *z z*, Fig. 4. Fig. 4 is a detail view of the under side of one of the perforated plates.

Similar letters of reference indicate corresponding parts.

It is well known that the transportation of corn, wheat, and other cereals in bulk in cars over long distances is attended with great danger of heating, sweating, &c., thereby greatly injuring the value thereof at the point of delivery; and the object of this invention is to furnish means to force a strong current of air through grain, cereals, and other perishable articles (or products) in bulk, when in transit in a railroad-car, by the forward motion of the car.

The invention consists in the hood provided with a valve, the pipe, and the outlets, in combination with the perforated plates; in the combination of a drip-pan and pipe with the air-outlet of a grain-car ventilator; in the distributing-pipes, having small openings in their bottoms to serve as outlets to the cinders, and in the plates provided with holes for giving force to the air-currents, in combination with the distributing-pipes and with the floor of the car, as hereinafter fully described.

A represents the hood, through which the air enters the car, and which is attached to the upper end of the pipe B. The ends of

the hood A are beveled off upon their lower sides, as shown in Fig. 1, to prevent rain or snow from entering the pipe B, while having a large mouth or opening to draw in air.

To the upper middle part of the hood A, directly over the center of the pipe B, is hung a plate, C, by its upper edge. The plate C is made of such a size as to move easily within the hood A, and is made of such a depth that its lower edge may rest alternately against the inner surface of the opposite sides of the end of the pipe B, so that the said plate C may serve as a valve to prevent air from passing directly through the hood A, and as a guide-plate to direct the air into the open upper end of the pipe B.

The pipe B passes in through the roof of the car, and down along one corner, and extends along the under side of the floor of the car, near one side. At or near the floor of the car the pipe B is branched, one branch passing across the end of the car above or below its floor, and then extends longitudinally along the under side of the said floor, as shown in Fig. 2.

The hood A is made of such a size, in comparison with the pipes B, as to force a strong current of air through the entire length of the said pipes.

In the pipes B, near each end of the car, are formed downwardly-projecting tapering or hopper-shaped chambers D, having small openings in their bottom, to serve as exits for any cinders that may be drawn in by and with the air-current, the said cinders dropping into the said hoppers, and being forced out through the openings in their bottoms by the air-current. The air from the pipes B passes into the car through the holes in the floor, which holes are covered by plates E.

The plates E are let into the floor of the car so that their upper surfaces may be flush with the upper surface of said floor. Upon the lower side of the plates E are formed flanges of a depth equal to the thickness of the car-floor, which flanges fit into the opening through the said floor. The plates E have numerous small holes formed through them for the passage of air, which holes are made tapering, or larger at their lower than at their upper ends, so that the air may be compressed as it is forced through them, and may thus be driven into the car with greater force. The holes in the plates E are made so small that grain, when placed in the car in bulk, cannot pass through or choke the said holes, and the force of the air-current will be sufficient to force the air up through the mass of grain resting upon the car-floor, so as to thoroughly ventilate it and carry off any moisture that may be in it.

As the air rises to the upper part of the car it escapes through the outlet F, to the bottom of which is attached the pan G, so that should the cap of the outlet F be blown or knocked off, or the said outlet be left uncovered, the said pan may receive any water or snow that may enter the said outlet and prevent it from dropping into the car, the said water passing off through the pipe H, leading from the drip-pan G out through the wall of the car.

Although my invention relates more particularly to the preservation of grain in bulk, it is equally useful when other articles, such as meats, vegetables, fruits, butter, &c., are transported in cars.

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

1. The combination, with a box freight-car, of a hood provided with means for securing an inward-forced current of air regardless of the direction in which the car is moved, the pipe B, cinder-outlets D, by which cinders taken in by the hood are freely discharged from the pipe, and perforated plates E in the floor of the car and communicating through the perforations with the pipe B, all constructed and arranged substantially as described, for forcing fine jets of air freed from cinders upward through the bulk freight of the car while in motion, as set forth.

2. The combination of a drip-pan, G, and pipe H with the air-outlet F of a grain-car ventilator, substantially as shown and described.

HENRY A. GOUGE.

Witnesses:
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