

J. H. WICKES.
REFRIGERATOR CAR.

No. 189,001.

Patented March 27, 1877.

Fig. 1.

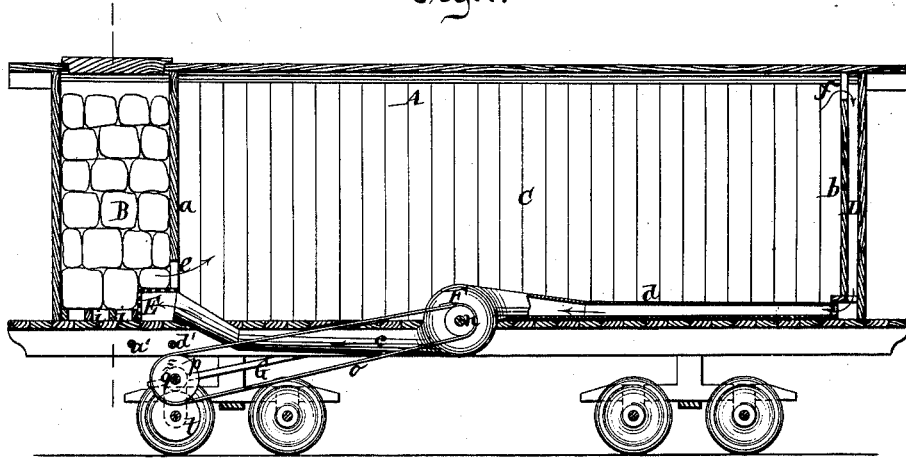


Fig. 2.

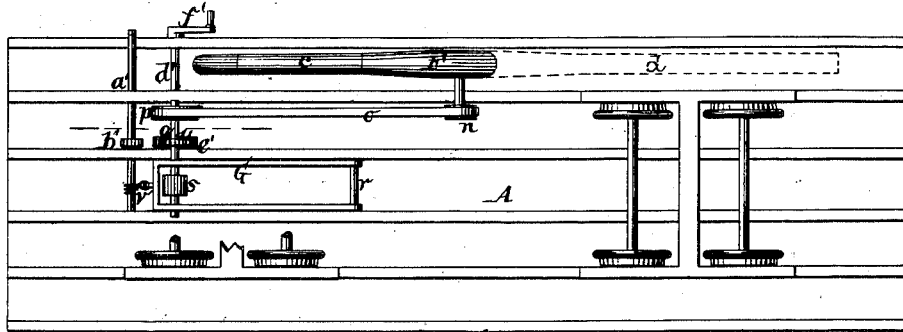


Fig. 4.

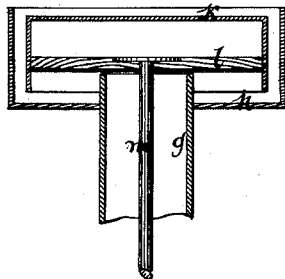


Fig. 3.

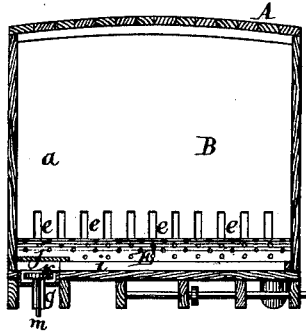
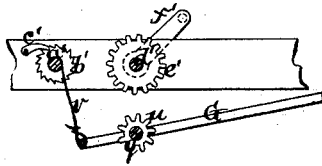


Fig. 5.



Witnesses.

Edo Hufeland,
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by
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his attorney

UNITED STATES PATENT OFFICE.

JAMES H. WICKES, OF NEW YORK, N. Y.

IMPROVEMENT IN REFRIGERATOR-CARS.

Specification forming part of Letters Patent No. 189,001, dated March 27, 1877; application filed February 1, 1877.

To all whom it may concern:

Be it known that I, JAMES H. WICKES, of the city, county, and State of New York, have invented a new and useful Improvement in Refrigerator-Cars, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a longitudinal vertical section. Fig. 2 is an inverted plan. Fig. 3 is a transverse vertical section in the plane *xx*, Fig. 1. Figs. 4 and 5 are details, which will be referred to as the description progresses.

Similar letters indicate corresponding parts.

This invention consists in the combination of a self-acting float-valve with the ice-chamber of a refrigerating-car, and with a valve-chamber and waste-pipe situated at or near one side of the car, so that, whenever the car is inclined toward the side containing the valve-chamber, the ice-water which has accumulated on the bottom of the ice-chamber is caused to flood the valve-chamber, the float-valve is raised, and the water discharged, carrying off the impurities which are mixed with it, and preventing the waste-pipe from clogging. A current of air is circulated through the ice-chamber and through the provision-chamber of the car by means of a fan-blower, to which motion is imparted by a friction-pulley, the shaft of which has its bearings in a gravitating frame situated below the bottom of the car, as described in my Patent No. 177,907. With this gravitating frame I have now combined a hand-gear, so that by raising said frame the fan-blower can be driven by hand, while the car is standing still. A ratchet-wheel and pawl serves to raise the gravitating frame and to retain it in such a position that the friction-roller is thrown out of contact with the pulley on the car-axle, thereby stopping the motion of the fan-blower when the car is in motion, and at the same time the wheels which compose the hand-gear are brought to engage with each other, so that the fan-blower can be driven by hand whenever it may be desirable.

In the drawing, the letter A designates a railroad-car, which is divided by two vertical partitions, *ab*, into three compartments, BCD, one of which forms the ice-chamber, the other

the provision-chamber, and the third an air-chamber. In the ice-chamber is situated an air-distributor, B, which is made of perforated sheet metal, and extends throughout the entire width of the car. This air-distributor communicates by a pipe or duct, *c*, with a fan-blower, F, which draws its air through a pipe, *d*, from the air-chamber D. The air which is injected through the air-distributor into the ice-chamber escapes through openings *e* into the provision-chamber, whence it passes through openings *f* in the top of the partition *b* into the air-chamber, to be sucked in again and again by the fan-blower.

In the bottom of the ice-chamber, close to one of its sides, is secured a waste-pipe, *g*, for carrying off the ice-water. This waste-pipe extends a short distance above the bottom of a valve-chamber, *h*, Fig. 4, which is secured in the bottom of the ice-chamber.

On this bottom are secured slats *i*, which support the junks of ice, leaving channels through which the ice-water can find its way into the valve-chamber *h*, and over this valve-chamber is secured a board, *j*, so as to protect the valve, *k*. This valve is constructed of sheet metal; and it is provided with a wooden bottom, *l*, the edge of the sheet-metal case being made to project below this bottom, as shown in Fig. 4.

On the under surface of the bottom *l* is secured a layer of india-rubber, and in the bottom is fastened a rod, *m*, which extends through the waste-pipe *g*, so that the valve can be raised from its seat from the outside, whenever it may be desirable. When the valve is placed on the waste-pipe, its bottom being lined with india rubber produces a close joint on the top edge of said pipe, so as to exclude the external air. As the ice-water accumulates in the valve-chamber the valve is buoyed up, and the surplus water escapes without permitting any air to enter, and whenever the car passes round a curve so as to depress that side of the car which contains the waste-pipe, the ice-water which has accumulated between the slats *i* rushes toward the valve-chamber, the valve is suddenly raised from its seat and the water discharges violently, so as to carry off sawdust, straw, or other impurities which may have become mixed with the ice-water,

and which otherwise would be liable to clog up the waste-pipe, or to prevent the correct operation of the float-valve.

Another great advantage of this arrangement is that the freezing of the waste water in the discharge pipes or trap is prevented, the valve-chamber *h* being situated inside the car, so that its temperature is precisely the same as that in the chamber. If a trap of the ordinary construction is used, the waste-pipe is liable to freeze up in a cold night, and it does not thaw during the day, so that the ice-water cannot discharge.

The fan-blower *F* is situated between the floor-beams of the car, and on its arbor is mounted a pulley, *n*, from which extends a belt, *o*, to a pulley, *p*, which is mounted on a shaft, *q*, that has its bearings in the outer end of a gravitating frame, *G*. The inner end of this frame swings on a pivot, *r*, (see Fig. 2,) and on the shaft *q* is also mounted a pulley, *s*, which bears down upon a pulley, *t*, mounted on one of the car-axes. Both these pulleys are covered with india-rubber, leather, or other suitable material, so that, when the car is in motion, the pulley *s* is caused to revolve by frictional contact, and the fan-blower receives the required motion. This fan-blower is so constructed that it injects air into the ice-chamber in whatever direction it may be turned.

On the shaft *q* is also mounted a pinion, *u*, and to the outer end of the gravitating frame *G* is secured a chain or rope, *v*, which is attached to a shaft, *a'*, situated below the bottom of the car, and extending out beyond its side, so that a hand-crank can be attached to it. On this shaft is mounted a ratchet-wheel *b'*, Fig. 5, with which engages a pawl, *c'*; and if said shaft is turned in the proper direction, the gravitating frame is raised and retained in its elevated position by the pawl and ratchet-wheel.

In the bottom of the car is also mounted a second shaft, *d'*, which runs parallel to the shaft *a'*, and on which is mounted a cog-wheel, *e'*, in such a position that, when the gravitating frame is raised, the pinion *u* is thrown in gear with said cog-wheel *e'*. A hand-crank, *f'*, serves to turn the shaft *d'*.

When it is desired to stop the motion of the fan-blower while the car is in motion, the gravitating frame *G* is raised and retained in its elevated position, and if the car is standing still, and it is desired to impart motion to the fan-blower, this object is effected by raising the gravitating frame and turning the shaft *d'* by hand.

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

1. The combination, with the ice-chamber of a refrigerator-car, of a valve-chamber, *h*, secured in the bottom of the ice-chamber, a self-acting valve, *k*, arranged in the valve-chamber, and a waste-pipe, *g*, extending from the latter above its bottom, said valve being protected by the board *j*, substantially as and for the purpose described.

2. The combination, in a refrigerator-car, of a hand-gear, *d' e' u*, with the gravitating frame *G*, pulleys *p* and *n*, and fan-blower *F*, substantially as and for the purpose set forth.

3. The combination, in a refrigerator-car, of a ratchet-wheel, *b'*, pawl *c'*, and shaft *a'*, with the gravitating frame *G*, pulleys *p* and *n*, and fan-blower *F*, substantially as and for the purpose shown and described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 27th day of January, 1877.

JAMES H. WICKES. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHÜBER.