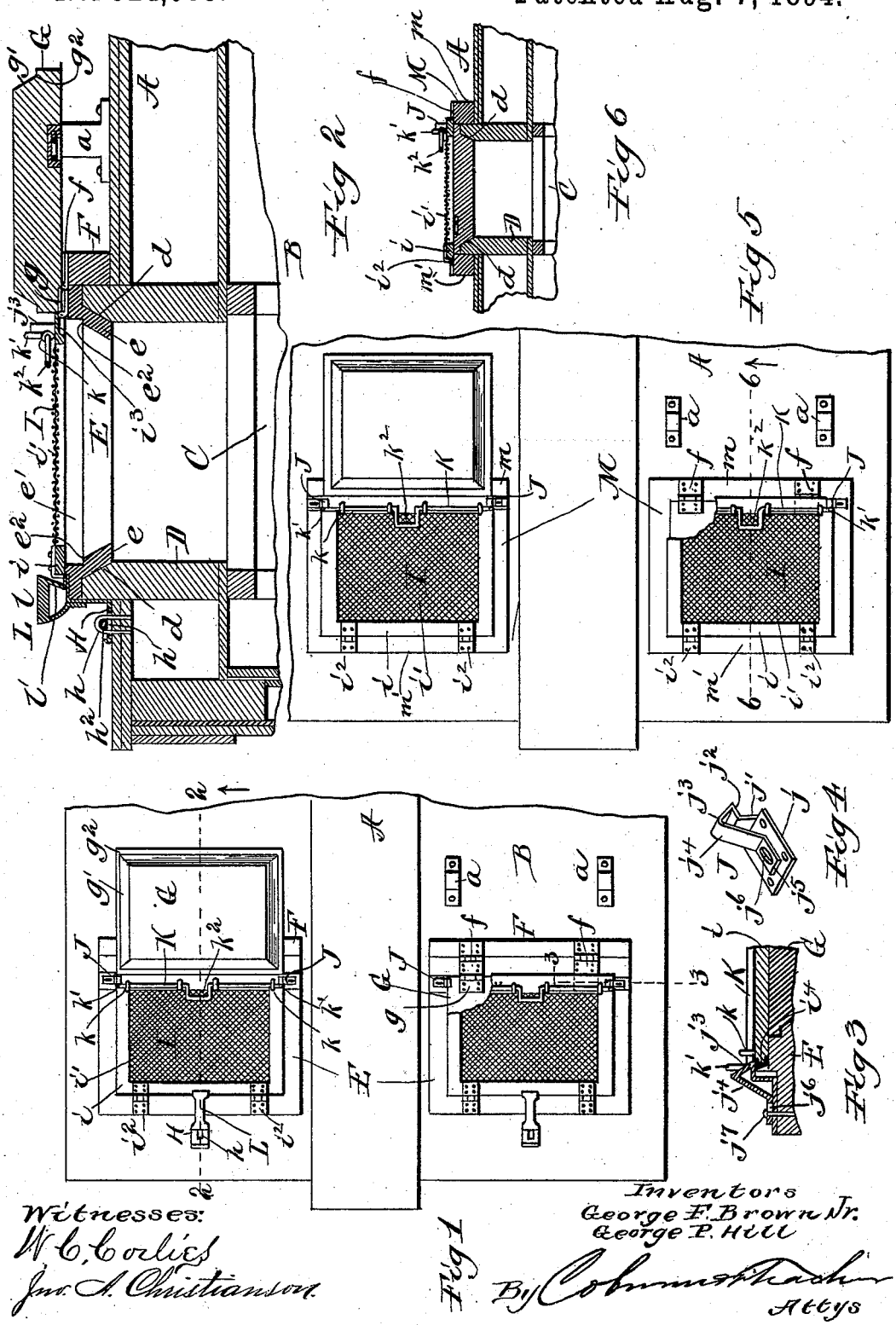
(No Model.)

G. F. BROWN, Jr. & G. P. HILL.

VENTILATOR FOR REFRIGERATOR CARS.

No. 524,083. Patented Aug. 7, 1894.



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UNITED STATES PATENT OFFICE.

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VENTILATOR FOR REFRIGERATOR-CARS.

SPECIFICATION forming part of Letters Patent No. 524,083, dated August 7, 1894.

Application filed February 20, 1894. Serial No. 500,847. (No model.)

To all whom it may concern:

Be it known that we, GEORGE F. BROWN, Jr., and GEORGE P. HILL, both citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Refrigerator-Cars, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan of a part of the roof at one end of the car with our invention applied; Fig. 2, a detail vertical section taken on the line 2. 2 of Fig. 1; Fig. 3, a detail vertical section on the line 3. 3 of Fig. 1; Fig. 4, a perspective view of one of the spring catches detached; Fig. 5, a plan view of a part at one corner of a car roof showing a modification of the ventilator; and Fig. 6, a vertical section taken on the line 6. 6 of Fig. 5.

In the drawings Figs. 1, 5, and 6 are upon one scale; and Figs. 2, 3, and 4 are upon another and enlarged scale.

Our invention relates to ventilators for railway cars, but more especially refrigerator cars, whereby such cars may be used closed, as all refrigerator cars must be, or with provision for free ventilation, whereby the same cars may be adapted for use in the transportation of fruit and other like products which require a free ventilation of the cars in which they are placed.

Our invention may be regarded as an improvement in the construction described and shown in Letters Patent No. 431,221, dated July 1, 1890, and in the drawings we have shown our improvement applied to a refrigerator car substantially like that shown in the said prior patent, though the improvement is not limited to this particular car but may be applied to any car, where large openings may be provided in the roof leading into the interior of the car. We have not shown the body of the car in the drawings, as it may be of any well known construction and its interior and general construction is of no material importance to our present improvement. We have only shown a portion of the car roof in which the ventilators are placed and so much of the parts immediately below as will indicate their connection therewith.

In the drawings A represents the roof of the car, and B one end thereof, the portion of the roof shown being only a section at one end of the car. As here shown, the cooling or refrigerating chamber, C, is at the end of the car, and it will be understood that the ends of the car are alike in construction, so that the illustration and description of one are sufficient for both. An ice opening through the roof into the said chamber is cut in each corner of the roof, so that there will be two openings at each end, as seen in Fig. 1, and in these openings are fitted box casings, D, open at both the top and bottom and so communicating with the refrigerating chamber at the bottom and with the open air at the top. This construction provides the usual ice openings through which the ice receptacles or tanks immediately below are respectively supplied with ice from time to time as may be required. The upper edges of this box casing, D, are beveled on the inside so as to present an inclined face, *d*, extending around the inside of the casing at its upper edge, as seen in Fig. 2.

A casing, E, is constructed to be seated in the flaring top opening of the main box casing, D, and for this purpose is constructed with the main portions, *e*, of its sides inclined inward on an angle corresponding to the bevel of the box casing so as to be seated closely therein, as seen in Fig. 2; the section *e'*, immediately above this inclined portion is constructed with straight perpendicular edges and is extended outward horizontally beyond the inclined section *e*, to provide a kind of projecting flange which is adapted to rest directly upon the upper edge of the box casing when this casing E, is put in place. The inner edge of this flange section is also cut away a little farther at the upper line of the inclined section so as to provide at this line a rabbet or seat, e^2.

The box casing rises a little above the roof of the car, and immediately at the rear of its projecting edge there is secured to the roof a block, F, running the length of the said box casing, and the rear edge of the casing, E, is

hinged to this block by hinges, *f*, which device obviously provides for swinging the said casing, E, up out of its seat in the box casing.

The usual cover or lid, G, is provided and is connected by hinges, *g*, to the top of the rear side of the casing, E, and is adapted to fit into the inside of the latter, being constructed with its lower portion beveled, as seen at *g'*, just above which is a narrow projecting ledge, g^2, whereby this lid is adapted to fit neatly within the casing, E, the beveled lower body, *g'*, setting into the flaring portion, *e*, thereof and the ledge, g^2, setting upon the seat, e^2, thus tightly closing the said opening when the car is to be used as a refrigerator. It will be seen that the part, E, thus becomes a kind of casing frame for the lid which is hinged thereto and which, therefore, may be turned down into its seat provided in this casing frame to close the opening, or thrown up and back therefrom, leaving the passage to the interior of the car open, the former adjustment being seen in the lower corner of Fig. 1, and the latter in the opposite corner and also in Fig. 2. Obviously, it will be desirable to fasten the casing frame in position on the box casing, and for this purpose we provide a right-angled hasp, H, one arm of which is secured to the front edge of the said casing-frame while the other stands out at right angles thereto and in this position rests horizontally upon the top of the car when the casing frame is down in place, as seen in Fig. 2, and it is secured in this position by means of a staple, *h*, fitted in the roof of the car, and a slot, *h'*, in the horizontal member of the hasp adapted to pass over the upper end of this staple so that a pin, h^2, may be passed through the latter above the hasp and secure the casing frame upon its seat, as seen in the said Fig. 2.

For ventilating purposes we provide a screen, I, consisting of an ordinary frame, *i*, in which is secured as usual a screen, *i'*, which may be of any suitable fabric adapted to this purpose. The screen-frame, *i*, is of a size a little larger than the opening in the casing frame, E, so that its outer edge will set over on the top edge of the latter, as seen in Fig. 2. This screen is hinged to the front of the casing frame by means of hinges, i^2, the members of which are connected respectively to the front side of the casing frame and the front bar of the screen frame, as seen in Figs. 1 and 2. The opposite or free side bar of the screen frame is provided with shallow recesses, i^3 cut out in the bottom thereof to fit over and receive the hinges, *g*, so that the said frame may be brought down into contact with the casing frame all the way around, as seen in Fig. 2; it is obvious that the screen may be turned upon its hinges and thrown over toward the end of the car in the opposite direction to the movement of the lid or cover.

It will be seen from the description above that both the lid, or cover, and the screen are hinged to one and the same piece, viz., the casing frame, but on opposite sides of the latter, so that while one may be turned up in one direction the other may be turned in the same way in the opposite direction; and it will also be seen that this support to which these two devices are respectively hinged is itself a hinged piece and, therefore, may be turned up bodily out of its seat, carrying with it the two devices hinged thereto, as described above. Now, these parts are so constructed relatively that the lid or cover may be turned down and seated in its casing frame and the screen then thrown down immediately over the lid, the top of the latter for this purpose being flush with the upper edge of the casing frame on which the screen frame is seated. This is the adjustment and arrangement of the devices when the car is to be used for a refrigerator, and is shown in the right or lower corner of Fig. 1.

When it is desired to use the car for transportation of fruit or other products requiring a good ventilation of the car, the lid or cover is turned up out of its seat and back upon the roof, and then the screen is turned down into its closed position upon the casing frame as before and there secured, when, of course, there is free passage for the air through the screens, and this adjustment being made at both ends of the car, there will be a circulation of air from the atmosphere down through the screens at one end and out through the screens at the other end of the car. This adjustment of the devices for ventilation is seen in the upper corner of Fig. 1 and in Fig. 2.

It is evident that some device is required for securing the screen to the casing frame and that this device ought to be readily manipulated so that the parts may be quickly adjusted as required. Any suitable catch or other device may be used for this purpose. In the drawings we have shown a peculiar device which we have invented, whereby the screen may be easily and quickly connected to and disconnected from the casing frame. This fastening mechanism consists of a spring catch, J, which is mounted on the ends of the casing frame in a position to engage the respective ends of the screen frame near the free edge of the latter. This catch is composed of a plate seat, *j*, by means of which it is secured to the frame, and from one end of this flat seat there rises vertically a narrow arm, *j'*, to a point about level with the top of the screen frame when closed; then it is bent at right angles and extended horizontally to form a short horizontal section, j^2, adapted to project in over the screen frame when closed; then it is bent upward and backward slightly, forming an inclined section, j^3, thence downward and outward, forming an arm j^4, to the seat, where it is again bent outward horizontally, making a foot j^5, resting on the seat and provided with a slot, j^6, through which a pin, j^7, passes into the seat. This piece is constructed of some suitable spring metal, and obviously the con-

struction described above provides an angular catch adapted to take over the top of the screen frame and also to be moved or sprung out, upon the application of suitable force, to release the screen whenever desired, this movement being provided for by the sliding of the free end of the spring on the seat, which movement is provided for by the slot and pin connection.

When the screen is thrown down the ends of the frame will crowd the catches outward and pass down between them until seated, when, owing to their elasticity, the catches will immediately spring back over the screen frame, as indicated in Fig. 3. To avoid wear the screen frame at these contact points may be provided with wear irons, i^4, as also indicated in Fig. 3. An easy, ready way for releasing the screen from these catches when it is desired to raise the former is obviously necessary. The device shown in the drawings for this purpose is a rod, K, mounted on the top of the screen frame and at the free edge thereof by means of staples, k, and extending the entire length of the screen. At its respective ends the rod is bent at right angles so as to provide a short right angled tip or finger, k'. The rod is also bent midway of its length to form a kind of handle, k^2, as seen in Fig. 1, and when this handle is turned down so as to lie flat on the screen, as seen in the said figure, the tips or fingers at the extremities of the rod stand upright and just at one side of the spring catches, as seen in the said Fig. 1, and also Figs. 2 and 3. Now, when it is desired to throw up the screen the rod is first seized by the handle and the latter turned up, which will, of course, throw the upright tips over and downward against the spring catches, thereby forcing the latter backward until they are disengaged from the screen frame, when, of course, the latter may be lifted by the handle.

When the lid or cover is closed and the screen turned down upon it as stated above, the fastening device which secures the screen to the casing frame will secure the cover in position also, and these two parts will both be fastened to the casing frame. There will be no occasion, therefore, for leaving the screen thrown open at any time, and in fact this is not intended.

We prefer to prevent the throwing over of the screen upon the car roof and to insure the closing thereof whenever it is turned up. The device shown in the drawings for this purpose is a kind of handle, L, fastened to the free edge of the casing frame at any point desired—in the drawings it is over the hasp. This handle is of any convenient shape, in the drawings being formed something like the handle of a flat iron, having a horizontal bar, l, for the grasp and depending arms at one or both ends, by means of which it is secured to its support. The depending arm, l', at the inner end is inclined slightly away from the side of the screen frame as it extends downward, as seen in Fig. 2, so that when the screen is turned up it never can be brought into a vertical position, as its hinged side bar will be brought up against this inclined arm and stopped before the screen reaches a vertical position; hence, whenever the screen is lifted it will drop into place again just as soon as released and can never be thrown over upon the roof of the car. Some such stop device is desirable with the construction of the several parts described above, for there is no occasion for throwing the screen back upon the car roof, as the normal position of the screen however the car is used, is closed over the chamber; when the car is to be used as a ventilated car the screen is closed down over the top of the passage to the interior, as seen in Fig. 2, and when used as a refrigerator the screen is also closed down on the top of the lid or cover, and in fact is the means for holding the latter down in place. There is, therefore, no occasion whatever for turning the screen back upon the car roof, and it is desirable that the screen shall certainly drop down over the chamber whenever free, and this result is secured by the inclination of the stop described above.

It will be seen from the description and drawings that the lid and screen are both hinged to the same supporting piece but on opposite sides thereof so as to open in opposite directions. It will also be seen that this support to which these parts are hinged is set loosely in its seat and is itself hinged to a stationary piece so that it may be swung upward out of its seat and backward upon the roof of the car, taking with it the lid and screen in a closed position. The object in hinging the casing frame, which is the support referred to, is to provide for opening the entire area inclosed by the box casing. This is the passage or opening which is used for icing the cars, the ice being introduced through this passage to the ice receptacle below. The casing frame, when seated, evidently restricts somewhat the icing opening, and the hinging thereof, which permits it to be turned up out of its seat, obviates this restriction and leaves the entire space through the box casing free for icing, which, of course, permits the ice to be delivered into the car more freely and rapidly.

The stop, L, made to form a handle as described above, provides means for easily lifting the hinged casing frame from its seat and turning it back upon its hinges as described above.

Some kind of suitable supports, a, are desirable on the roof of the car on which the lid may rest when turned back, as seen in Fig. 2, thus preventing strain upon the hinges which would result if the lid was unsupported.

We prefer the construction above described in which the casing frame is hinged so as to be thrown up and provide an icing opening the full size of the box casing. But the other parts of our invention may be used without

this special construction, and we have shown in Figs. 5 and 6 a modification in construction on this plan. The construction is substantially the same as described above and shown in the other figures of the drawings, except in the following particulars: The casing frame, M, is constructed of plain rectangular bars and is of a size to just surround the portion of the box casing, D, projecting above the roof, as seen in Fig. 6, instead of setting into this upper end of the box casing as in the construction first described. The solid lid or cover, G′, in these figures, is made larger than in the other construction, so as to conform in size to the upper opening of the box casing, D, as also seen in said Fig. 6. It will be seen that this construction provides for the full opening of the box casing for icing by simply turning back the lid. This lid is hinged at one edge to one of the sides, *m*, of the frame, M, and the screen is hinged to the opposite side, *m′*, of the same, and both are free to be thrown back upon the car roof to fully open the space for icing.

In some of the minor devices and some details of construction and arrangement there may be modifications without departing from our invention so long as the main features thereof are retained, which are the hinging of the lid and screen to the same support, as described; and a secondary feature found in the hinging of this support itself, so that all these three main parts of the device may be turned up and out from the icing opening together.

Having thus described our invention, what we claim to be new, and desire to secure by Letters Patent, is—

1. In a railway car, the roof provided with openings near the respective ends, in combination with a lid or cover hinged to a casing around said opening and adapted to tightly close the same, and a screen also hinged to said casing independently of the lid and at the side opposite to the lid hinges, substantially as described.

2. In a railway car, the roof provided with openings near its respective ends, in combination with a lid hinged to a casing surrounding said opening and adapted to close the latter, a screen also hinged to said casing at the side opposite to the lid hinges and adapted to close over the said opening with the lid thrown up and to close down over the top of said lid when the latter is turned down upon its seat, and means for fastening the screen in its closed position, substantially as described.

3. In a refrigerator car, a refrigerating chamber near the respective ends, in combination with the roof provided with cased openings leading into said chamber, a casing frame seated on the box casing of said opening and hinged to a stationary support at one side thereof, a solid lid or cover and a screen hinged respectively to opposite sides of said casing frame, substantially as described.

4. In a refrigerator car, the roof provided with opening into the interior, in combination with a box casing, D, set in the said opening, a hinged screen, I, arranged to be turned down over the opening through the said casing, the spring catches, J, on opposite sides of the screen, and the rod, K, mounted loosely on the top of the screen, extending across the same, and provided with angular tips, *k′*, at the respective ends adapted to release the catches by turning the rod, substantially as described.

5. In a railway car, the roof provided with openings leading into the interior, in combination with a hinged screen, I, arranged to close over said opening, the spring catches, J, composed of the seat, *j*, and the elastic strip, j', j^2, j^3, bent as described and provided with slotted foot, j^5, pins, j^7, passing through said slots into the seat, *j*, and rod, K, mounted loosely on the top of the screen and provided with angular tips, *k′*, at its respective ends, adapted to engage with the inclined faces, j^3, of the spring by the turning of the rod, substantially as described.

6. In a railway car, the roof provided with openings into the interior, in combination with a casing set in said openings, a hinged screen arranged to close down upon the top of said casing, and a stop arranged just in rear of the hinged bar of the screen frame and inclined slightly toward it, substantially as described.

7. In a refrigerator car, a refrigerating chamber near the respective ends thereof, a box casing, D, set in the roof of the car and inclosing a passage leading through the latter to the said chamber, a casing frame, E, hinged at one side to a suitable support at one side of the said box casing and seated in the top of the latter, a solid lid, G, hinged to one side of the casing frame, E, and adapted to be turned down into a proper seat therein, a screen, I, hinged to the opposite side of the said casing frame and adapted to be closed down over the top of the lid when closed into its seat and also over the open space inclosed by said casing frame when the lid is thrown up, means for securing the screen to the said casing frame and thereby also securing the lid in its seat, and means for fastening the hinged casing frame to the roof of the car, substantially as described.

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