

(No Model.)

3 Sheets—Sheet 1.

O. M. EDWARDS.
WINDOW.

No. 570,916.

Patented Nov. 10, 1896.

FIG:1:

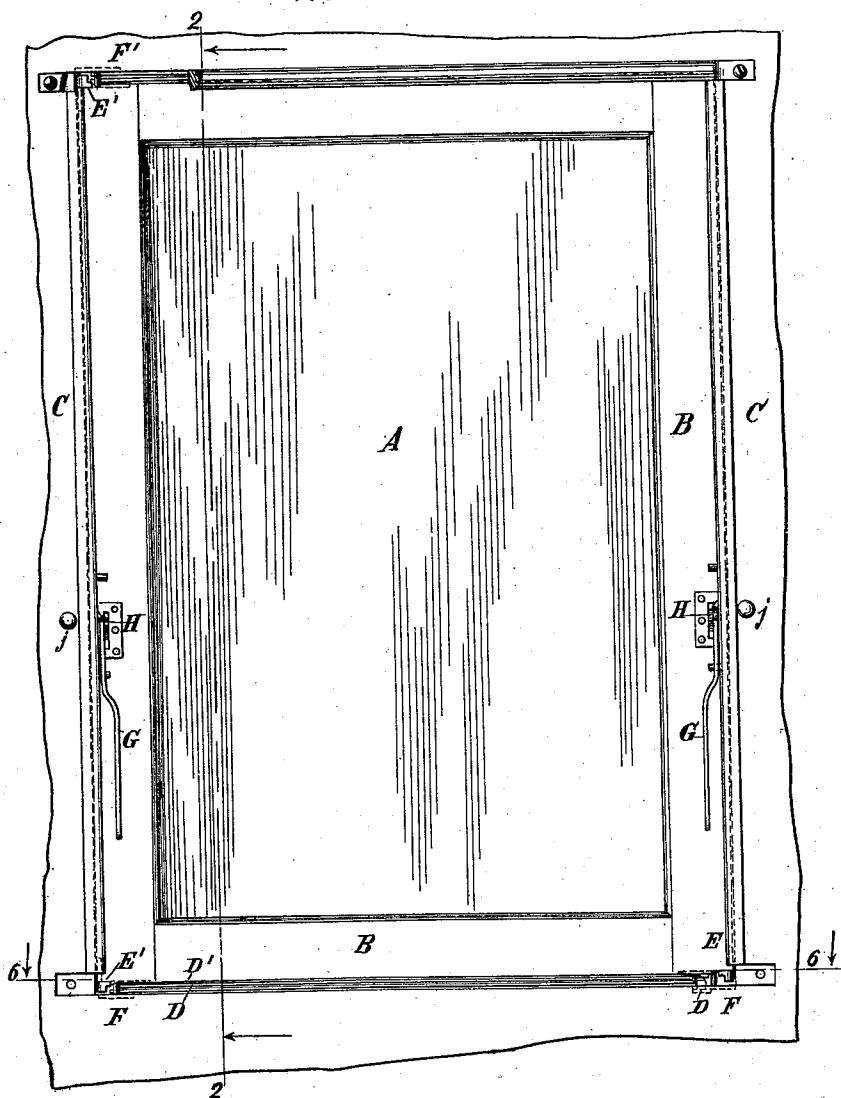


FIG:2:

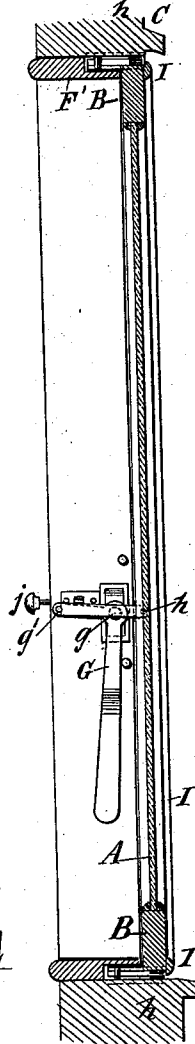


FIG:3:

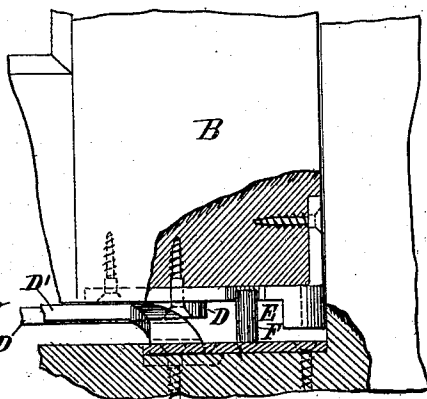
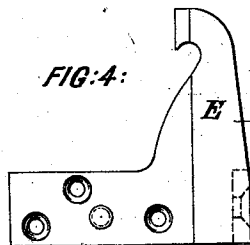


FIG:4:



Witnesses:

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F. D. Newbury

Inventor:

Olivier Mc Edwards
By H. L. Newbury

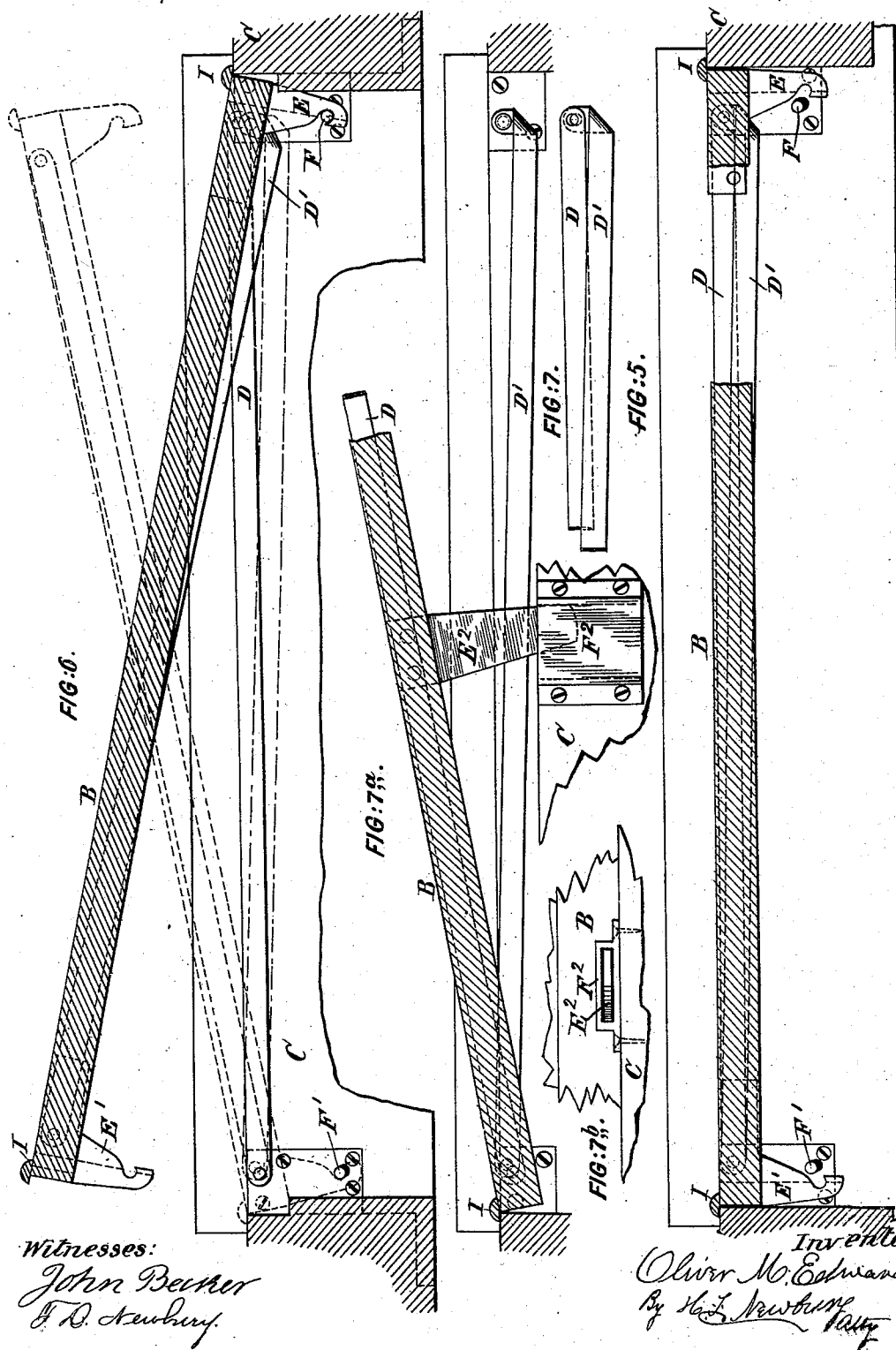
(No Model.)

3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

Patented Nov. 10, 1896.

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FIG:8.

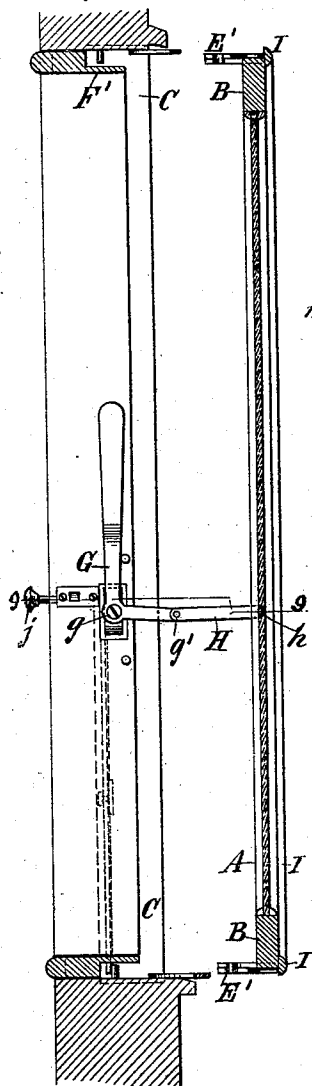


FIG:9.

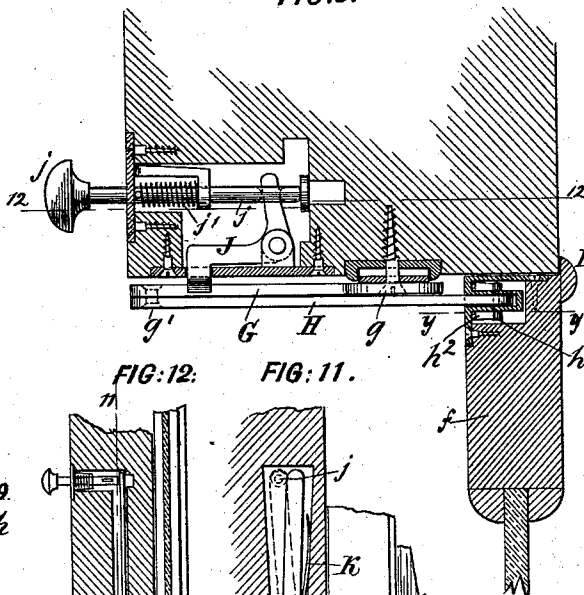


FIG:10.

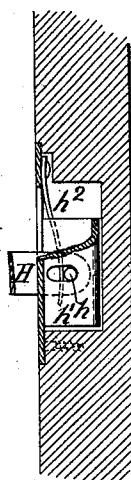


FIG:12:

FIG. 11.

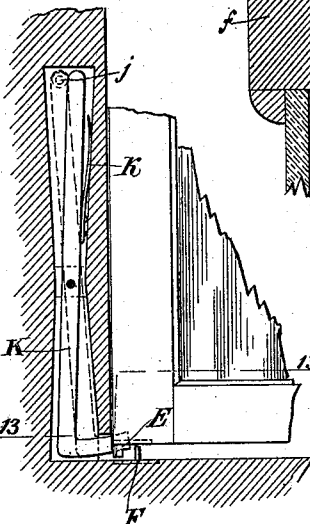
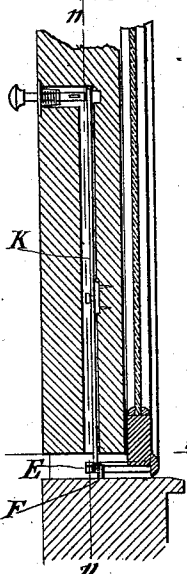


FIG:13.

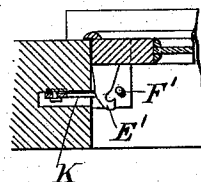
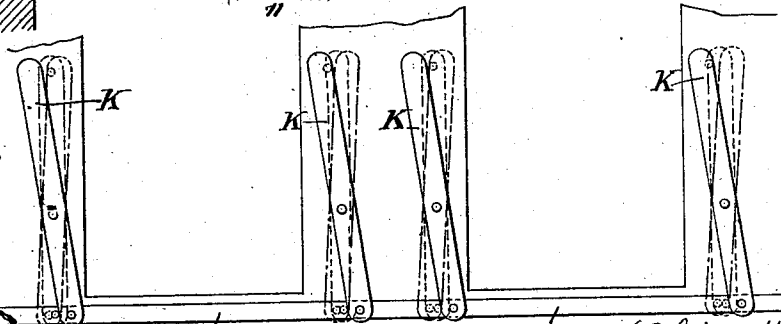


FIG:14.



Witnesses

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UNITED STATES PATENT OFFICE.

OLIVER M. EDWARDS, OF SYRACUSE, NEW YORK.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 570,916, dated November 10, 1896.

Application filed June 7, 1892. Serial No. 435,831. (No model.)

To all whom it may concern:

Be it known that I, OLIVER M. EDWARDS, a citizen of the United States, and a resident of the city of Syracuse, county of Onondaga, and State of New York, have invented certain new and useful Improvements in Windows, of which the following is a full, clear, and exact description, reference being had to the drawings accompanying and forming a part of the same.

My invention relates to improvements in windows, and has especially to do with that class of windows for railroad-cars which are hung to swing horizontally on hinges attached to opposite sides or edges of the window-sash and to the car or other structure, and which are so arranged that the sash may swing open at either one of its edges, as may be desired. Car-windows of this class are designed to be swung open at the side or edge of the sash nearest the rear of the car, so that an opening is provided for the ready escape of impure or heated air from the car, and at the same time the entrance of smoke, dust, and cinders is prevented, as well as too great an inrush of air to the car so as to inconvenience passengers occupying seats immediately in the rear of the windows opened.

The object of the present invention is to provide means for hinging, supporting, and controlling car-windows of the above class, which, while comparatively simple, are at the same time strong and durable and able to withstand the rough usage which such windows are necessarily subjected to.

The invention consists, first, in the combination of a window-sash and double-pivoted hinges of a peculiar construction and arrangement; second, in the combination of a window-sash, hinges, and abutments; third, in the combination of a window-sash, hinges, and means of a peculiar construction and arrangement for opening and closing the window.

The above are the more prominent features of my invention. Other features will be developed in the course of the following description of the manner in which my invention is or may be carried into effect, which I shall now proceed to give by reference to the accompanying drawings, and fully point out in the claims.

Like letters of reference, wherever they oc-

cur, indicate corresponding parts in all the figures.

Figure 1 is a front elevation of a car-window closed, in which the bottom of the window-casing is removed and the upper left-hand corner of the casing broken away to better show the construction and arrangement of the hinges. Fig. 2 is a longitudinal section of Fig. 1 on line 2 2 with the window closed and with the bottom of the window-casing in place. Fig. 3 is an enlarged view of the parts at the lower right-hand corner of Fig. 1. Fig. 4 is an enlarged plan view of one of the abutments attached to the window-sash. Fig. 5 is an enlarged cross-section on line 6 6 of Fig. 1 with the window closed and partly broken away and bottom and sides of window-casing removed. Fig. 6 is an enlarged cross-section on the same line as Fig. 5 with the bottom of window-casing removed, but with the window open, at its left-hand edge or side shown in full lines and at its right-hand or opposite side or edge in dotted lines. Fig. 7 is an enlarged plan view of the hinges at the right of Fig. 5 when the window is closed. Figs. 7^a and 7^b are enlarged plan and sectional views of modifications of certain details of my invention. Fig. 8 is a longitudinal section of Fig. 1 on line 2 2 with the window open at one side or edge. Fig. 9 is an enlarged cross-section of Fig. 8 on line 9 9. Fig. 10 is a longitudinal section on line *y y* of Fig. 9. Fig. 11 is an enlarged view of a locking device arranged in connection with the device shown in Fig. 9 on line 11 11 of Fig. 12. Figs. 12 and 13 are sectional views of certain of the parts of Figs. 9 and 11, showing details of arrangement of same, on line 12 12 and 13 13 of Figs. 9 and 11, respectively. Fig. 14 shows a modification of the arrangement of the parts of Figs. 11, 12, and 13.

In Figs. 1, 2, and 8 A is the glass of the window-sash, B and C is the frame or opening in the car into which the window-sash shuts or closes, and the sash is free to move outward at either edge or side from the frame or opening C of the car, so as to permit the escape of the heated or impure air from the car.

Each side of the window-sash B is provided with double-pivoted hinges D and D', which

are preferably constructed as shown and also preferably arranged at the top and bottom of the sash. The hinges D are attached to one side or edge of the window-sash B, and the sash turns or swings on the hinges D when the opposite side or edge of the sash opens; and the hinges D' are attached to the side or edge of the sash opposite to that to which the hinges D are attached, and the sash turns or swings on the hinges D' when the side or edge of the sash to which the hinges D are attached swings open; and the side or edge of the sash which does not open is preferably permitted to move simultaneously with the opening side sufficiently to prevent any serious binding of the hinges on their pivots as well as to permit the sash or an extension or bead thereon to remain in contact with the exterior of the car and maintain a close joint for the exclusion of smoke, dust, and cinders, as well as too great an inrush of air at such point of contact.

As here shown, the hinge D is a straight flat piece of metal with the end to the left of Fig. 6 attached to the window frame or opening C and with its other end attached to the right side or edge of the sash B. The hinge D' is a flat piece of metal with one of its ends bent at nearly a right angle and with the extreme end on a different plane from that of the main portion or body of the hinge, so that while the bent end is attached to the window frame or opening C the body of the hinge is in contact with the window-sash B, to which its unbent end is attached and partially covers or overlies the body of the hinge D, and in this way provision is made for the two hinges crossing each other. From an examination of the several figures it will be seen that the pivotal point of attachment of the hinge D to the sash is in close proximity to the pivotal point of attachment of the hinge D' to the car, and also that the pivotal point of attachment of the hinge D' to the sash is in close proximity to the pivotal point of attachment of the hinge D to the car. The two pivotal points of the hinges D and D' to the window-sash are arranged inside of the outer edges of the sash, so that these two points are separated from each other a distance less than the width of the sash, and also that both edges or sides of the sash are free to move on the hinges to the required extent when either side of the sash is opened, and that the two leaves or parts of each hinge are not detachable from each other, but remain connected together by their pivots or pintles.

To one of the two opposite edges or sides of the window-sash there are preferably attached two abutments E, and to the other edge or side two abutments E', which are preferably rigidly secured thereto and move with the sash B, and so arranged that they will respectively engage with abutments F and F', attached to the car, and by such engagement preferably both lock the unopened edge or side of the sash and assist in support-

ing the weight of the same when opened at either of its sides or edges. These abutments are preferably arranged as shown, so that they form substantially rigid stops and prevent any excessive strain from being thrown on the hinges when the sash is fully opened. These abutments, when so arranged, are capable of locking or holding the sash firmly in place when the same is fully or nearly opened and prevented from closing even when the hinges are entirely removed, and because of this fact they both lock and assist in supporting the window-sash when it is fully or nearly opened.

Figs. 5 and 6 show only the hinges D D' and the abutments E E' and F F' at the bottom of the window-sash; but the top is also provided with the same hinges and abutments, except the hinge D' is bent upward instead of downward, as shown in said figures.

The abutments may be differently arranged from what they are shown in Figs. 1, 2, 3, 4, 5, 6, and 8, as will be seen in Figs. 7^a and 7^b, wherein the abutment E² is attached to the center of the sash B, and is composed of a flat piece of metal of a somewhat triangular shape, which moves in a suitably-arranged slot in the abutment F², attached to the car, so that the abutment E² is brought against one edge of the slot in F², when the window-sash is opened at one edge or side, and is brought against the other or opposite side of the slot when opened at its opposite side or edge. The abutment E² always remains in engagement with the abutment F² in the latter construction. In this case, as in that of the other construction, it is preferable to arrange these abutments E² and F² at the top and bottom of the sash. In the construction shown in Figs. 7^a and 7^b the abutments E² and F² will not fully support the sash B when opened and held open without the aid of the hinges or means for holding the sash closed, nor will they lock the unopened edge or side of the sash to the car, and in these respects it differs from the construction shown in Figs. 1, 2, 3, 4, 5, 6, and 8, but nevertheless the abutments E² and F² assist in supporting the weight of the sash when it is open.

As here shown, there is preferably attached to each side of the window-sash means for opening the sash and holding it in either its open or closed position, and these means consist of a bell-crank lever G, pivoted at *g* to the window-frame or car, and a pitman or link H, pivotally attached to the sash at *h* and to the lever G at *g'*. The pitman or link H is preferably pivoted to the sash B so that it has a yielding and elastic connection therewith, and by this means permits the unopened side or edge of the sash B to move on its hinge at that side or edge and permits the sash, or preferably an extension or band I attached to the sash, to remain in close contact with the exterior of the car whether the sash is open or closed, and also be held in such contact with a yielding and elastic pressure to

more effectually close the window and prevent its rattling and making a noise when open or shut. The pin which pivotally connects the pitman or link H to the sash B at *h* moves in a slot in bracket *h'*, attached to the sash, and a spring *h²* bears against this pin so as to force it against the end of the slot in bracket *h'* nearest to the sash, as is clearly seen in Fig. 10. This spring permits the sash B to move away from the pitman or link H, as well as permits the link or pitman H to move away from the sash, from which it results that the sash B or its extension is held in close contact with the car with a yielding and elastic force, both when open or closed, and is prevented from rattling in either position.

It is desirable that only one side of the window-sash be opened at a time, and also that it cannot be opened by small children when allowed in close proximity to the window. To aid in the accomplishment of this result, I place preferably in connection with the means for opening, closing, and holding the sash in either the open or closed position, a locking device, preferably of the spring-latch order, so arranged that both hands of the operator or person desiring to open the window are required to open it at one side, that is, one hand to manipulate the locking device and the other to manipulate the means for opening the sash. By this means it is rendered so difficult for children to open the sash that it practically prevents their doing so, and it also prevents more than one side of the sash being opened at a time by thoughtless and inexperienced persons. This locking device, as here shown, consists of a pivoted bell-crank lever J, with one of its ends beveled like a spring-latch, so that it is moved in one direction by the lever G when the latter is moved into position upon closing the sash B. This bell-crank lever J is connected with a push pin or rod *j*, so that the two move together, and the pin *j* is provided with a spring *j'*, which tends to throw the lever J into position to engage with and lock the lever G and hold the window closed. Thus upon closing the sash B by throwing the lever G into position to do this, the lever J is moved back against the stress of the spring *j'* out of the way of the lever by the contact of the short arm of the lever G with its beveled end, and as the arm of lever G passes by the end of J the spring *j'* throws it out over the lever G and prevents the backward or opening movement of the lever G until the lever J is removed out of the way by pressing on the push pin or rod *j*, and at the same time moving the lever G with the other hand.

I have shown and described the locking device for the lever G as located on one side of the window only, but both sides or edges of the window will be provided with such locking devices.

The engagement of the abutments E and E' with the abutments F and F' prevents the

edge or side of the sash, which remains closed when its opposite side opens, from being opened, but in order to prevent this side or edge of the window being opened when other forms of abutment are used, or when they are omitted entirely, or from any undue strain being put on the abutments or means for opening and closing the sash by an attempt to open the side of it by operating the lever G, a pivoted lever K (see Figs. 11, 12, and 13) is arranged to engage or contact with the abutment E' when that edge or side of the sash is closed and hold the opposite end of the lever K out of the path of the inner end of the push pin or rod *j*. A spring *k* is arranged to hold the lever K in the path of the push pin or rod *j* when uncontrolled by the abutment E', so that it cannot be moved inward to remove the lever J from its locking position, and the lever J is locked in position whenever the sash is opened by the movement of the abutment E' toward abutment F', which is in a direction to allow the spring *k* to move the lever K in front of the end of pin or rod *j* and prevent its inward movement. The same movement of the lever K takes place on the opposite side or edge of the sash, owing to the fact that the abutment E moves with the opening edge or side of the sash so far away from the lever K on that side or edge that the abutment E does not touch it, but upon the closing of the sash the abutment E is again brought into contact with the lever K and moves it away from the pin or rod *j*, so that the lever J is free to move and permit the lever G to pass by it and be locked thereby.

The levers K and their arrangement relatively to the levers J are the same for both sides or edges of the window, except that they move in opposite directions.

If it is desired that the opening of the window-sash shall be beyond the control of the passengers in one or both directions, the levers K may be connected to a rod, as shown in Fig. 14, extending along the side of the car just below the windows, from one end to the other, instead of arranging their ends to contact with the abutments E and E', as shown in Figs. 11 and 12. In this case the springs *k* may be dispensed with and the levers K be controlled in both directions by the rod L, which will be at a suitable point provided with an operating-handle of any convenient construction and be under the control of the trainmen. A movement of the rod L to move the levers K into the position shown in full lines in Fig. 14 will lock all of the levers J on one side of all the windows, leaving the opposite side or edge free to be opened, and a movement of the rod L to move the levers K into the position shown in dotted lines will lock all of the levers J on the opposite side of the windows which were before unlocked and unlock those which were before locked, and a movement of the rod L to move the levers K into a position midway between these two positions will lock

all of the levers J of all of the windows and prevent either edge or side of any of the windows being opened by the passengers. Thus the trainmen can lock the levers J at the forward edge or side of all of the windows, leaving the rear edge or side to be opened and closed at the pleasure of the passengers, or all of the levers J may be locked, preventing either edge or side of the window being opened by the passengers.

I have described my invention in connection with railroad cars, but it is manifest that it is applicable to other structures than cars; therefore I do not wish to be understood as limiting it to cars. It is manifest that the hinges here shown and described may be used with or without the abutments, and also with or without the levers G, J, and K and their connected parts, and also that the abutments may be used in connection with other forms of hinges with beneficial results, and also that the locking-levers J may be used in connection with some other part connected to the sash than the lever G, and also with or without the locking-levers K. It is also manifest that the form and arrangement of the several parts may be changed without departing from the principles of operation of the several combinations herein set forth; therefore I do not wish to be limited to the form and arrangement herein shown.

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

1. The combination, substantially as set forth, of a window-sash and two double-pivoted hinges which are pivoted to opposite edges of the sash and to opposite sides of the sash-opening of the car, the pivotal point of each hinge on the sash being in close proximity to the pivotal point of the other hinge on the car when the sash is closed into its opening, the two pivotal points on the sash being separated from each other a distance less than the width of the sash, whereby the sash is free to swing or turn on its hinges to the required extent to open at either of its edges, and the opposite edge of the sash is adapted to contact with the window-frame on the car beyond the pivotal point of its hinge.

2. The combination, substantially as set forth, of a window-sash, a hinge, a movable abutment and a stationary abutment arranged in the path of the movable one, and both abutments being arranged adjacent to the hinge side of the sash, whereby the two abutments are brought into engagement with each other upon the swinging of the window-sash upon the hinge and thereby assist in supporting the weight of the sash when the same is swung open.

3. The combination, substantially as set forth, of a window-sash, a hinge, an abutment attached to the sash and a second abutment attached to the car and arranged in the path of the one on the sash, whereby the two abutments are brought into engagement with each other upon the swinging of the win-

dow-sash upon the hinge and thereby assist in supporting the weight of the sash when the same is swung open.

4. The combination, substantially as set forth, of a window-sash, a hinge, a movable locking-abutment, and a stationary locking-abutment arranged in the path of the movable one, whereby the two abutments are brought into locking engagement with each other upon the swinging of the window-sash upon the hinge and thereby both lock the unopened edge or side of the sash to the car and assist in supporting the weight of the sash when the same is swung open.

5. The combination, substantially as set forth, of a window-sash, a hinge, a locking-abutment attached to the sash and a locking-abutment on the car arranged in the path of the one on the sash, whereby the two abutments are brought into locking engagement with each other upon the swinging of the window-sash upon the hinge and thereby both lock the unopened edge or side of the sash to the car and assist in supporting the weight of the sash when the same is swung open.

6. The combination, substantially as set forth, of a window-sash, two hinges, one for each of the two opposite sides or edges of the sash, two abutments, one of each attached to the opposite sides or edges of the sash and two abutments on the car, one of each at the opposite sides of the window-sash opening and arranged in the path of one of the abutments attached to the sash, whereby each one of the abutments on the window-sash is adapted by its movement to alternately engage with one of the abutments on the car and assist in supporting the weight of the sash when swung on the hinge at either one of its two edges or sides.

7. The combination, substantially as set forth, of a window-sash, two hinges, one for each of the two opposite sides or edges of the sash, two locking-abutments, one of each attached to the opposite sides or edges of the sash and two locking-abutments on the car, one of each at the opposite sides of the window-sash opening and arranged in the path of one of the abutments on the sash, whereby each one of the abutments on the window-sash is adapted by its movement to alternately be brought into locking engagement with one of the abutments on the car, thereby both locking the unopened side or edge of the sash to the car and assisting in supporting the weight of the sash when swung open on the hinge at either one of its two edges or sides.

8. The combination, substantially as set forth, of a window-sash, two double-pivoted hinges which are pivoted to opposite edges of the sash and to opposite sides of the sash-opening of the car, the pivotal point of each hinge on the sash being in close proximity to the pivotal point of the other hinge on the car when the sash is closed into its opening, the two pivotal points also being separated

from each other a distance less than the width of the sash, and means attached to both the sash and the car which are adapted to move the sash, whereby the sash is opened or closed at either one of its edges.

9. The combination, substantially as set forth, of a window-sash, two double-pivoted hinges which are pivoted to opposite edges of the sash and to opposite sides of the sash-opening of the car, the pivotal point of each hinge on the sash being in close proximity to the pivotal point of the other hinge on the car when the sash is closed into its opening, the two pivotal points also being separated from each other a distance less than the width of the sash, two abutments, one of each attached to the opposite edges of the sash, and two abutments on the car, one of each at the opposite sides of the window-sash opening, whereby each one of the abutments on the window-sash is adapted by its movement to alternately engage with one of the abutments on the car and assist in supporting the weight of the sash when swung on the hinges at either one of the two edges of the sash.

10. The combination, substantially as set forth, of a window-sash, hinges at two of its opposite edges or sides adapted to allow the sash to yield or move at both of its edges simultaneously and means connected to the sash with a yielding connection and adapted to open or close the sash at either of its opposite edges or sides, whereby the sash is permitted to yield or move at one of its edges or sides when the opposite edge or side is swung open on its hinge.

11. The combination, substantially as set forth, of a window-sash, hinges at two of its opposite edges or sides adapted to allow the sash to yield or move at both of its two edges simultaneously and means connected to the two opposite edges or sides of the sash with a yielding connection and adapted to open or close the sash at either of its opposite edges or sides, whereby the sash is permitted to yield or move at one of its edges or sides when the opposite edge or side is swung open on its hinge.

12. The combination, substantially as set forth, of a window-sash, two double-pivoted hinges which are pivoted to opposite edges of the sash and to opposite sides of the sash-opening of the car, the pivotal point of each hinge on the sash being in close proximity to the pivotal point of the other hinge on the car when the sash is closed into its opening, and means attached to the car and to the sash with a yielding connection between the two and adapted to open or close the sash at either of its two opposite edges, whereby the sash is permitted to yield or move at one of its edges while its opposite edge is swung open on its hinge.

13. The combination, substantially as set forth, of a window-sash, two double-pivoted hinges which are pivoted to opposite edges of the sash and to opposite sides of the sash-

opening of the car, the pivotal point of each hinge on the sash being in close proximity to the pivotal point of the other hinge on the car when the sash is closed into its opening, and means connected to the two opposite edges or sides of the sash with a yielding connection and adapted to open or close the sash at either of its opposite edges or sides, whereby the sash is permitted to yield or move at one of its edges while its opposite edge is swung open on its hinges.

14. The combination, substantially as set forth, of a window-sash, hinges at two of its opposite edges, adapted to allow the sash to yield or move at both of its edges simultaneously, and extensions on the same edges of the sash as the hinges, and adapted to engage with the exterior of the car adjacent to the sash-opening.

15. The combination, substantially as set forth, of a window-sash, hinges at two of its opposite edges or sides adapted to allow the sash to yield or move at both of its edges simultaneously, extensions on the same edges or sides of the sash as the hinges, and adapted to engage with the exterior of the car adjacent to the sash-opening, and means connected to the sash with a yielding connection adapted to open or close the sash, whereby the extension on the sash is held in close contact with the exterior of the car when the sash is open with the force required to overcome the yielding connection.

16. The combination, substantially as set forth, of a window-sash, hinges at the opposite edges of the same, means independent of the hinges connected to the sash and the car and adapted to open the sash, and a locking device adapted to be self-locking and engage with the means for opening the sash, and also be operated independently of such means, whereby the sash and the means for opening the same are both locked in the closed position until both the means and locking device are simultaneously operated.

17. The combination, substantially as set forth, of a window-sash, hinges at the opposite edges of the same, a locking device attached to the car and adapted to be self-locking and to engage with a connection attached to the sash independent of the hinges by means of which the sash is opened and closed, and a second locking device adapted to engage with the first one and prevent its unlocking until the second one is operated, whereby the first locking device can be locked by the second locking device to prevent the sash being opened on that side of the same.

18. The combination, substantially as set forth, of a window-sash, hinges at the opposite edges of the same, a locking device adapted to be self-locking and engage with a connection attached to the sash independent of the hinges, and a second locking device adapted to engage with the first one and connect with a part attached to the sash and be operated, whereby the movement of the sash

in opening and closing operates the second locking device to lock or unlock the first locking device.

19. The combination, substantially as set forth, of a window-sash, hinges at the opposite edges of the same, an abutment attached to the sash, a locking device adapted to be self-locking and engage with a connection attached to the sash independent of the hinges, and a second locking device adapted to en-

gage with the first one and connect with the abutment on the sash and be operated, whereby the movement of the abutment when the sash is opened and closed operates the second locking device to lock and unlock the first locking device.

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Witnesses:

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