

(No Model.)

J. A. NORMAND.
WINDOW FOR RAILWAY VEHICLES.

No. 591,680.

Patented Oct. 12, 1897.

Fig. 1.

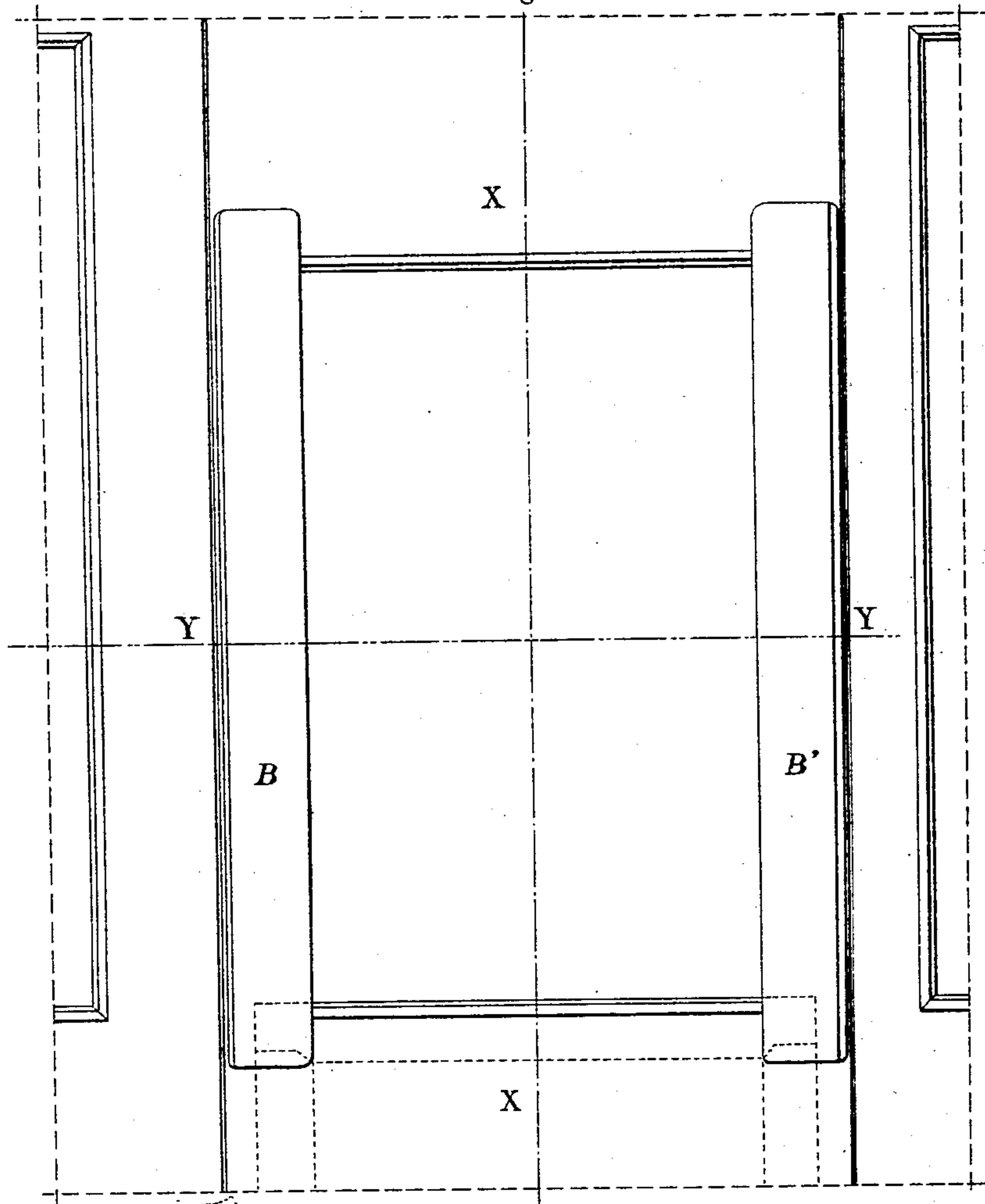


Fig. 2.

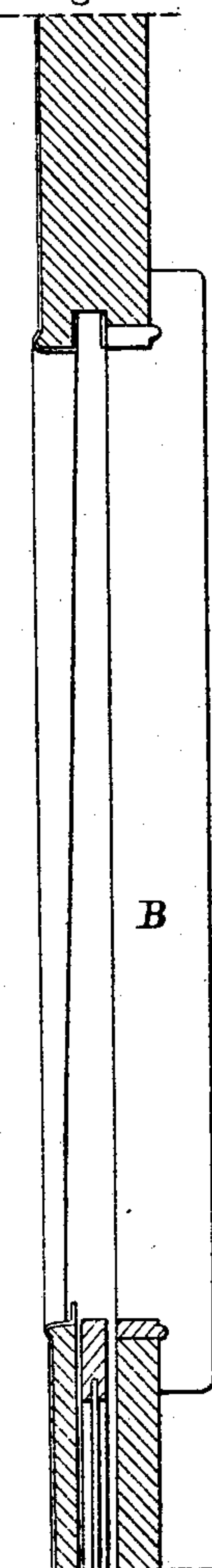
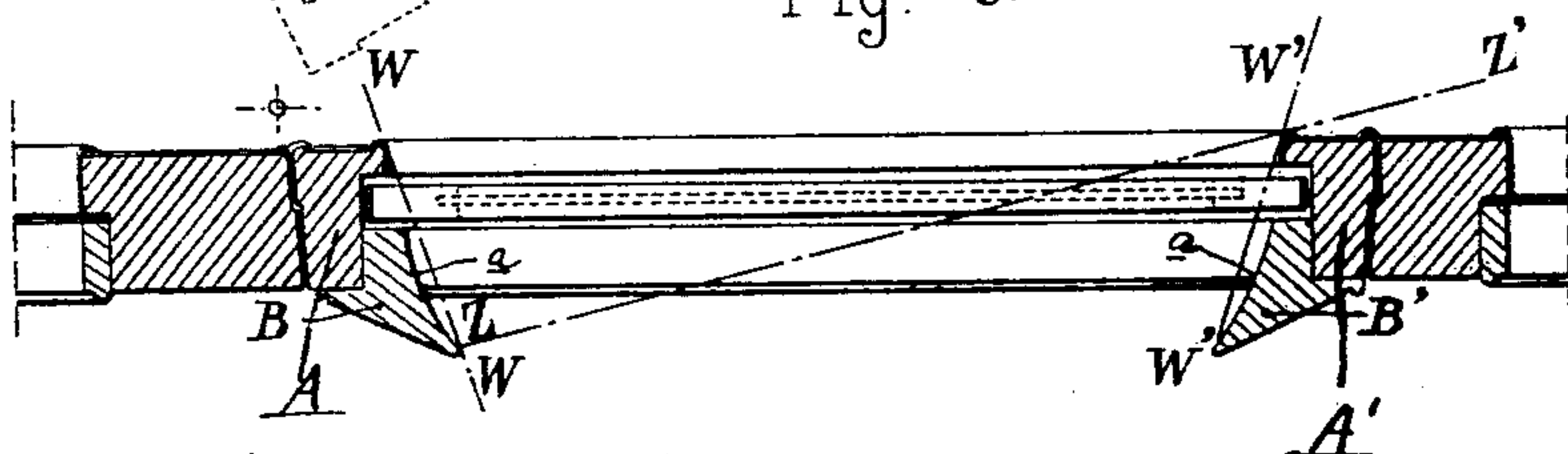


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

JACQUES AUGUSTIN NORMAND, OF HAVRE, FRANCE.

WINDOW FOR RAILWAY-VEHICLES.

SPECIFICATION forming part of Letters Patent No. 591,680, dated October 12, 1897.

Application filed May 12, 1897. Serial No. 636,170. (No model.) Patented in France November 4, 1896, No. 260,989.

To all whom it may concern:

Be it known that I, JACQUES AUGUSTIN NORMAND, a citizen of France, residing at le Havre, in the Department of the Seine-Inférieure, France, have invented certain new and useful Improvements in Windows for Railway-Vehicles, (for which I have obtained a patent in France, dated November 4, 1896, No. 260,989,) of which the following is a specification.

10 The sliding windows of railway-carriages are now generally so arranged that the currents of air which are due to the motion of the train and which are generally charged with dust and cinders enter the carriage
15 when the window is opened and violently impinge on the passengers seated near to such window and facing the engine, so that the window is frequently allowed to remain closed, when otherwise it would be very desirable
20 that it should be open. Even in the winter time it would frequently be desirable to open the window, but this is not done because then, however little the window might be opened, the comparatively warm air in the interior
25 would at once be displaced by cold air from without, the air being apt to rush in with some violence even when the wind is blowing on the side of the train opposite to that on which the window is opened, because the vertical
30 rear portion of the window-frame is in a plane perpendicular to the longitudinal axis of the carriage, and therefore drives back, inwardly, the whirling gusts of air set up by the rapidly-moving train. These inconveniences I
35 propose to remedy by increasing inside the carriage the thickness or depth of the vertical portions of the stationary frame of the sliding window and by imparting to the inner vertical walls of such frame, or at all events
40 to the one wall which receives the impact of the wind produced by the train in motion, an outwardly-diverging shape or outline.

Figure 1 is a front elevation taken from the exterior, showing my invention applied to a
45 car-window. Fig. 2 is a section upon the line xx in Fig. 1, and Fig. 3 is a section upon the line yy in Fig. 1.

50 In the new construction the parts $A A'$, which form the inner sides of the window-frame, are provided with guard-strips $B B'$, having faces $a a$, which converge inwardly

and diverge toward the outside of the car-window. Said guard-strips $B B'$ preferably extend somewhat above the top and below the sill of the window, as shown in Fig. 1, and
55 they are rabbeted, as seen in Fig. 3, in such manner that the rabbets receive the angles of the sides of the window-frame upon the inner side of the window. In this manner the outer edges of the diverging faces $a a$ are
60 brought near to the inner face of the window.

The surfaces $a a$ preferably have a slightly-concave form, as seen in cross-section, and their inner edges extend inward beyond the edge of the sill a distance equal to the width
65 of said sill or thereabout. These faces should lie at such an angle of divergence outwardly and with the plane of the window that two lines, such as $W W$ and $W' W'$, shall have an angle of divergence of not far from thirty
70 degrees.

If the air-currents produced by the speed of motion have a direction from the right to the left—as, for example, in the line zz' —the increased width of the sides of the frame will
75 diminish the volume of air which enters the carriage obliquely without striking the inner rear wall of the frame. The air that strikes the said wall cannot find its way into the interior of the carriage, being repelled by the
80 oblique form of the surface of B , upon which it impinges, but even though a small portion of such air should enter dust and cinders, owing to the inertia thereof, will not enter
85 with it.

The strips $B B'$ do not project inward farther than the arm-rests generally fixed in the carriage, and when the door is opened, as shown in dotted lines in Fig. 3, they do not
90 reduce the width of the aperture.

A further advantage of the pieces $B B'$ is that they effectively intercept the rays of the sun, which would otherwise enter at the sides of the curtain when it is drawn down.

Where the relative dimensions of the parts
95 are as shown in the drawings, the desired result will be attained even with a wind of medium strength blowing at right angles to the line of movement at a speed of, say, four and one-half meters per second. The resultant
100 of a wind having this velocity upon meeting a car running at a speed of about nineteen

meters per second or sixty-eight kilometers per hour would be in such direction that it would be excluded from the interior of the car.

Generally the arrangement according to my
5 invention will permit the window to be opened on either side of the carriage without creating any whirling currents of air in the carriage, and even under unfavorable circumstances the total or partial opening of the
10 window will be attended with far less inconvenience than at present is the case.

I have shown and described a window fitted in a carriage-door, but my invention can also be applied to windows provided in stationary
15 parts or fixtures as well as in all vehicles.

The pieces B B' may be fixed or adjustable or removable and adapted to be placed in the position most favorable under the conditions, such as the direction in which the train is
20 moving at the time, and then the slight reduction of the field of vision which the pieces B', secured to the vertical portion of the frame, (which is not receiving the impact of the wind at the time,) would otherwise occasion can
25 be obviated; but, on the other hand, this slight disadvantage is amply compensated for in the case of stationary parts by the simplicity and strength and by the fact that they require no manipulation whatever.

30 Having now particularly described and as-

certained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with a window of a railway-carriage or other vehicle of guide-
strips mounted at one or both sides of the window-frame and upon the interior of the car, said guide-strips having faces which diverge outwardly, substantially as hereinbefore described. 35 40

2. The combination with the sides of a car-window of guard-strips having outwardly-divergent faces which have one edge lying near the window, crossing the sill of the latter and projecting inwardly beyond the same in converging lines, substantially as described. 45

3. The combination with a car-window of guard-strips having rabbets which receive the inner angles of the sides of the window-frame, and provided with slightly-concave faces
50 which cross the sill and project inwardly in lines which converge, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JACQUES AUGUSTIN NORMAND.

Witnesses:

PHILIP S. CHANCELLOR,
E. MILLET.