

(No Model.)

F. & C. FORDER.  
CARRIAGE WINDOW.

Patented Aug. 4, 1885.

No. 323,865

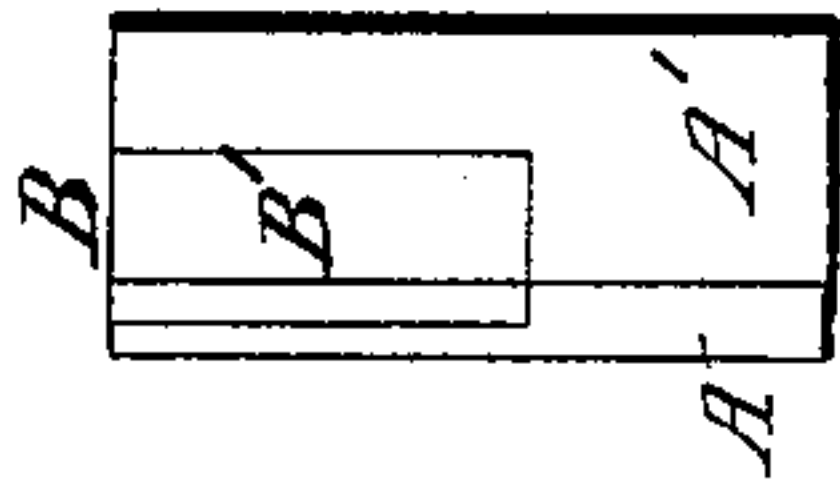


Fig. 6

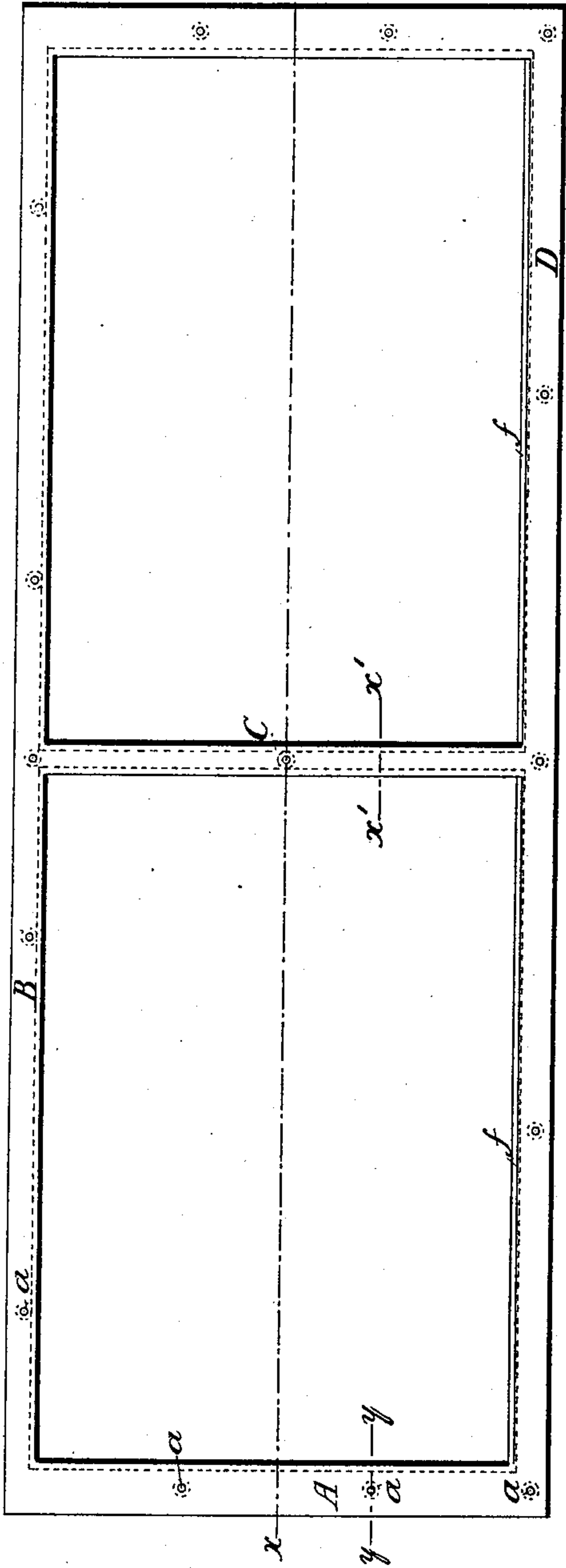


Fig. 1.

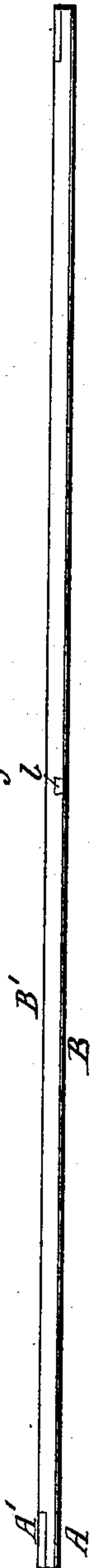


Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.

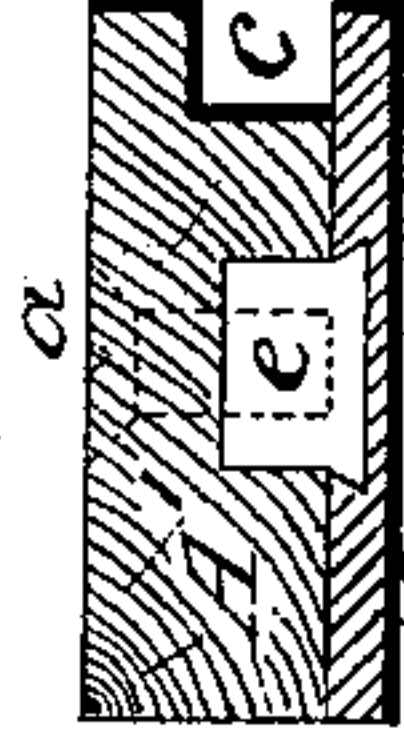


Fig. 7.

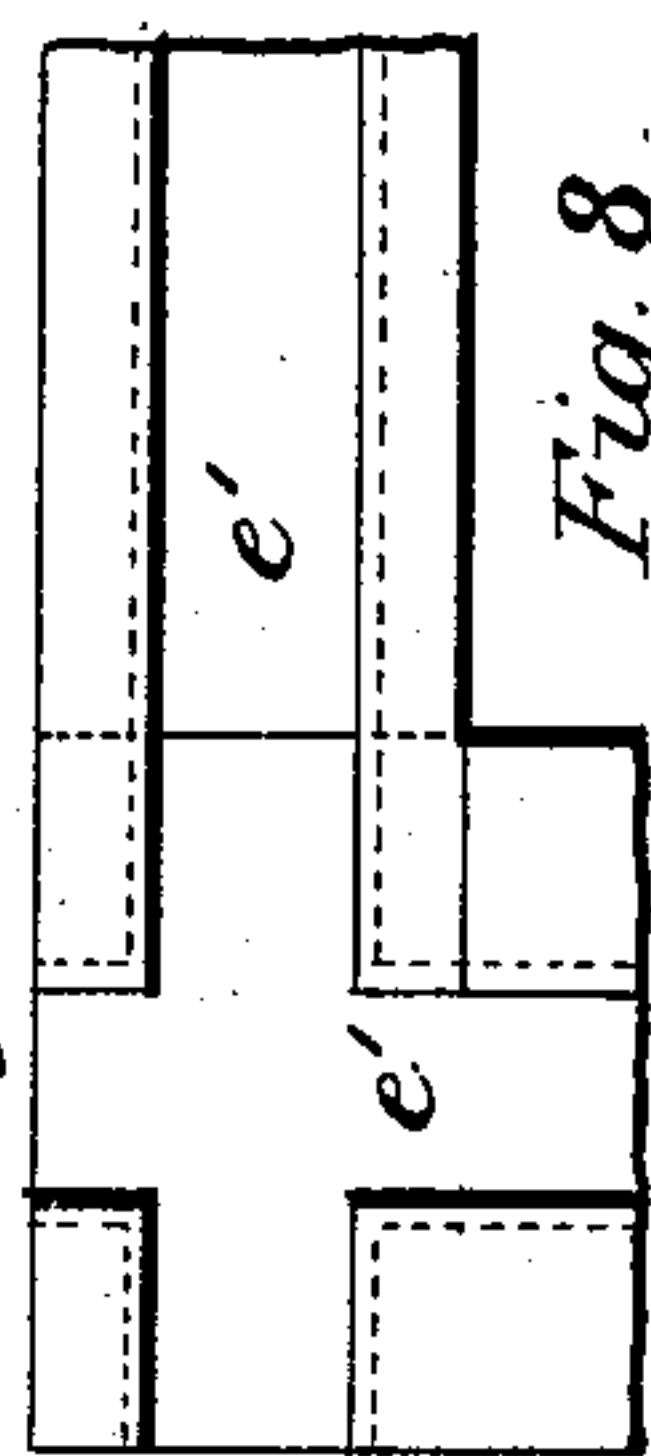


Fig. 8.

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# UNITED STATES PATENT OFFICE.

FREDERICK FORDER AND CHARLES FORDER, OF WOLVERHAMPTON,  
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## CARRIAGE-WINDOW.

SPECIFICATION forming part of Letters Patent No. 323,865, dated August 4, 1885.

Application filed May 15, 1885. (No model.)

*To all whom it may concern:*

Be it known that we, FREDERICK FORDER and CHARLES FORDER, both subjects of the Queen of Great Britain, and residing at Wolverhampton, England, have invented certain new and useful Improvements in Carriage-Windows, specially applicable for the front lights of Hansom cabs, (for which we have applied for Letters Patent in Great Britain, our application being numbered 14,142, and bearing date the 25th day of October, 1884, but have not yet received the grant of such Letters Patent,) of which the following is a specification.

15 This invention has for its object constructing the sashes of carriage-windows, so as to give them a lighter appearance and cause them to present less obstruction to the view, and to increase their strength and durability.

20 The framing-bars of the sashes of carriage-windows are ordinarily made of wood, which has to be of considerable breadth to give the necessary strength and to enable the joints to be properly secured.

25 This invention is illustrated in its special application to the front light of a Hansom cab by the accompanying drawings, of which—

30 Figure 1 is a front elevation of the lower sash; Fig. 2, a plan, and Fig. 3 a sectional plan, taken on line *x x* of Fig. 1. Fig. 4 is a full-size section through the side bar of the frame, taken on line *y y* of Fig. 1; and Fig. 5 is a corresponding section of the center-bar of the frame, taken on line *x' x'* of Fig. 1. Fig. 6 is a full size end view of one of the corners, showing the method of juncture. Fig. 7 is a corresponding view to Fig. 4, but shows a method of joining the wood and metal frames (hereinafter described) together in cases where 40 the metal frame is to be burnished at its outer face; and Fig. 8 is an inside view of the metal frame only, when the same is constructed in the manner shown at Fig. 7.

45 Similar letters refer to similar parts throughout the several views.

A B C D is a metal frame connected to a wooden frame, A' B' C' D', by means of screws *a a*, &c. The bars forming the metal frame are halved into one another at their junction 50 and are brazed together, and the bars forming the wooden frame are halved together at

the corners, and the vertical center bar, C', is dovetailed into the bars B' and D', as shown at *b*, Fig. 2. The screws *a a*, &c., are screwed into the metal frame and have their heads 55 countersunk in the wood, as shown. A rabbet, *c c*, &c., is formed along the edge of the wooden bars which is toward the metal, thereby forming, when the wooden frame is fixed to the metal frame, a groove suitable to receive the 60 glass *d d* between the wood and metal frames. The glass may be fixed either with putty or cloth in the ordinary manner, and, if desired, a second metal frame may be fixed at the back of the wood to further strengthen the sash. 65

The wood frame may be fixed to the metal frame, as shown, or the screws may be screwed into the wood with their heads countersunk in the metal, or, when two metal frames are employed, the screws may be screwed into 70 one with countersunk heads in the other.

When it is desired to burnish or polish the outer face of the metal frame, (which it is usually preferred to place at the front,) it is of course desirable that the screws should not 75 show on the surface of such frame, and the method of fixing the wood and metal frames together (shown by Fig. 7) may be adopted. In this case, *e* is a nut formed with a dovetail to fit into a dovetail groove in the inner face 80 of the bars forming the metal frame. The screw *a* is screwed into the nut *e* in order to fix the wood and metal frames together, and a nut, *e*, is slid along a groove in the bar to each position where a screw is required. Fig. 85 8 shows the crossing of the grooves *e' e'* at an angle of the frame, so that nuts may be easily slid into their places after the metal frame has been built up and burnished.

Instead of forming grooves along the metal 90 bars and employing nuts to slide therein, corresponding nuts may, of course, be sweated or brazed in place along the back of the bar, if preferred.

Wood is preferred to be employed, in conjunction with the metal frame, to form the 95 complete sash-frame; but any light material of sufficient strength for this purpose may be employed. *f f* indicate simply a chamfer on the front edge of the bottom bar, D, of the 100 metal frame.

This invention is applicable of course to



the windows of carriages generally, including railway and tramway carriages, as well as vehicles to run on the common roads, and such application will now be readily understood without need for further description.

By this method of constructing the sashes of carriage-windows the depth of the framing-bars forming the sash may be much less than when such bars are made only of wood, thus causing less obstruction to the view and admitting more light into the carriage. This reduction in the width of the framing-bars is of special advantage in the case of the front light of a Hansom cab, where the center or meeting bar is almost immediately opposite the face of the rider. Sashes made in this manner are also stronger than when the framing-bars thereof are made entirely of wood and are more durable.

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

1. A sash-frame for a carriage-window, constructed of a metal frame, in combination with a frame of wood or other light material of sufficient strength for the purpose, substantially as and for the purposes set forth.

2. The rabbet, formed in the edge of the wood frame or other frame of light material, in combination with a metal frame against such rabbeted edge, substantially as and for the purpose set forth.

3. The dovetail grooves *e' e'*, in combination with nuts *e*, substantially as and for the purpose set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

FREDERICK FORDER.  
CHARLES FORDER.

Witnesses:

STEPHEN WATKINS,  
ROBERT M. LISTER.