Oct. 11, 1938. J. L. MOHUN 2,132,748

HOUSE WINDOW

Filed July 22, 1936 2 Sheets-Sheet 1

Fig. 1

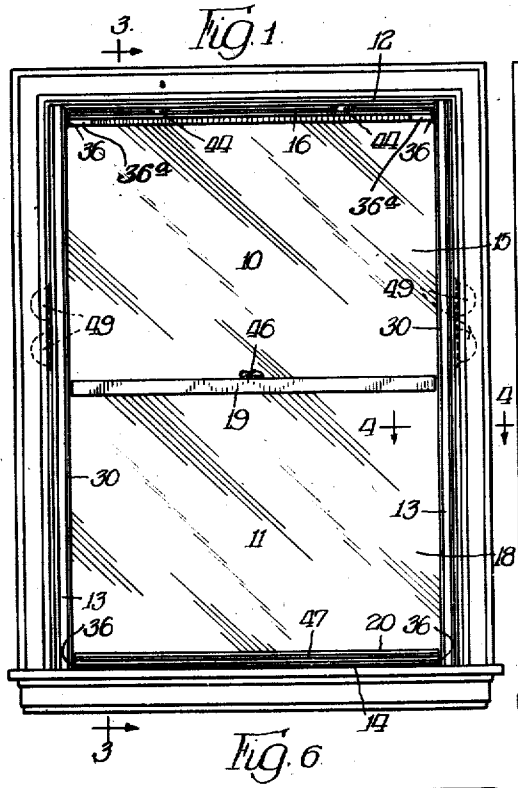


Fig. 2

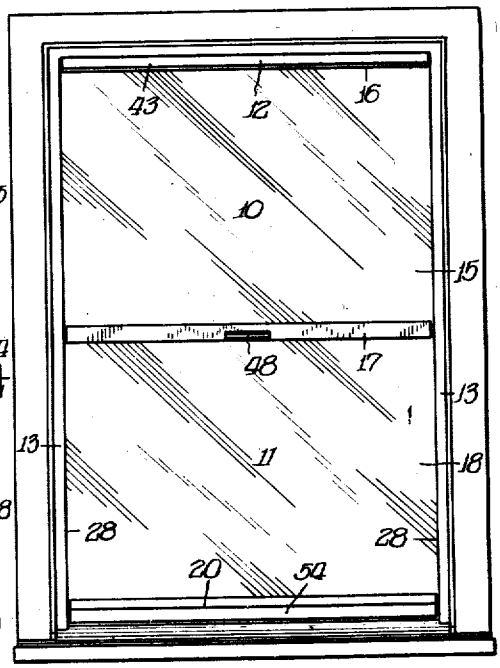


Fig. 6

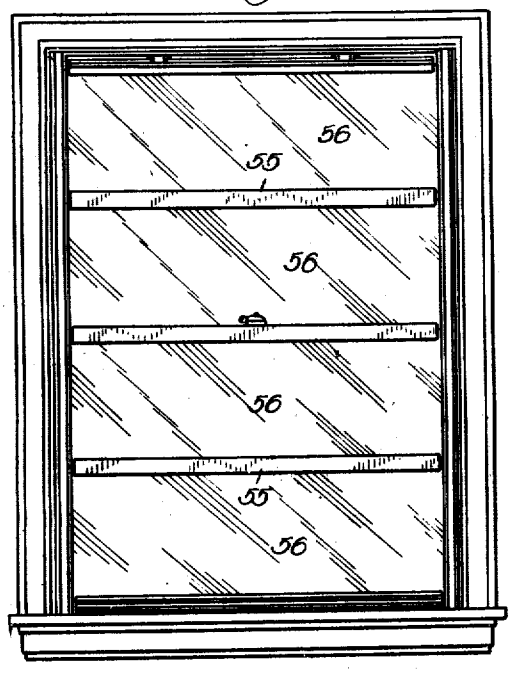
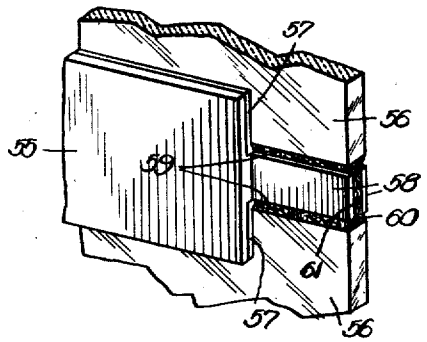


Fig. 7



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HOUSE WINDOW

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Fig. 3.

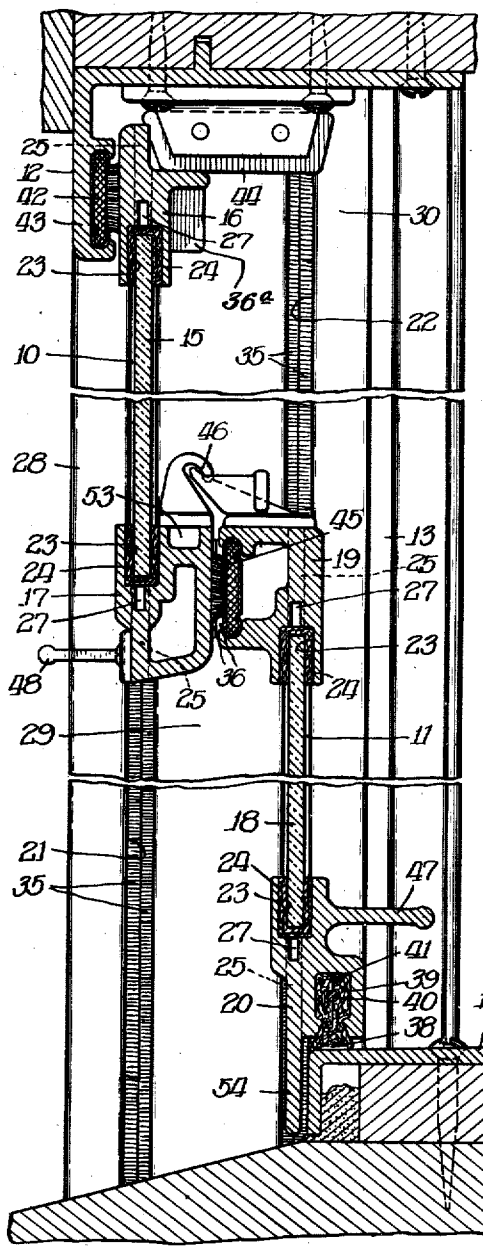


Fig. 4.

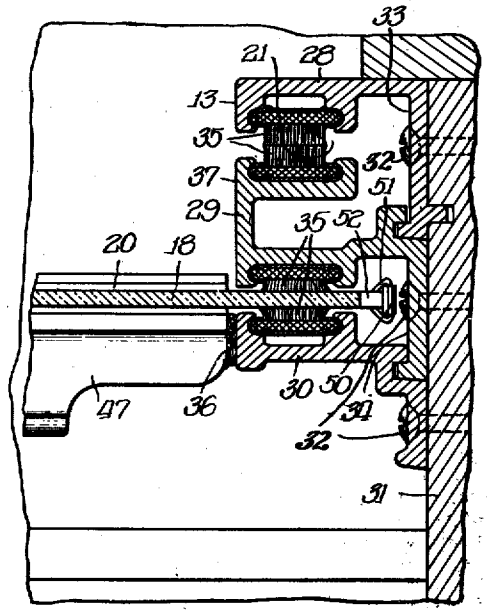
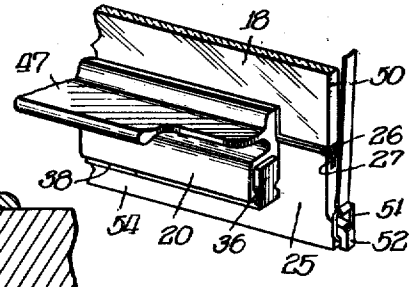


Fig. 5.



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Patented Oct. 11, 1938 2,132,748

UNITED STATES PATENT OFFICE

2,132,748

HOUSE WINDOW

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Application July 22, 1936, Serial No. 91,858

14 Claims. (Cl. 189—72)

The purpose of this invention is to provide a house window of distinctive character which is admirably suited to the present trend in modern architecture while being at the same time well adapted to the more conventional building designs.

This window is especially applicable to residences, office buildings, apartments, hotels, hospitals and like places, and will enhance the value of any building in which used. Its low manufacturing cost, the simple way in which it may be installed, and its many excellent qualities, all combine to make its use desirable for medium and even low cost homes.

The window, which may be either of double hung or single sash construction, possesses a number of novel features which are marked improvements in the house window art. There are no side rails on the sash—only narrow top and bottom rails, which are preferably made of extruded aluminum—and the side edges of the glass are cushioned in and slide freely up and down between resilient non-metallic packing strips, preferably of woven pile fabric, which come together to close off the guide openings above and below the sash. There is no metal-to-metal contact between the sash and the guiding means, with the result that all scuffing, sticking and rattling is avoided, the transfer of heat and cold at the jambs is checked, and the window as a whole is rendered remarkably sound-proof. The sash are supported by spring or weight counterbalances, two to each sash, which are connected to projections on the ends of the lower rails by means of metal tapes or chains, which connections are positioned in back of the glass-engaging portions of the guides behind the side edges of the glass. The elimination of the ordinary stiles, the narrow construction of the top and bottom rails, and the compact character of the guiding means for the side edges of the glass, all combine to provide a maximum area of clear vision.

In addition to the foregoing, an important feature of this improved window is the tightness or snugness of the fit of the sash in the guides, which does not interfere at all with the free up and down sliding movement of the sash, and which is not materially affected by the development of warping or sagging in the frame, the resilient character of the guide strips and the way in which they are mounted on the jamb members giving sufficient flexibility to compensate for all of the variations which sometimes develop after a period of time in a window frame. Another noteworthy feature is the absence of all riveting and welding.

While the foregoing statements are indicative in a general way of the nature of the invention, other objects and advantages will be apparent to those skilled in the art upon a full understanding of the construction, arrangement and operation of the parts entering into the construction of this improved window.

A preferred embodiment of the invention is presented herein for the purpose of exemplification, but it will of course be appreciated that the invention is susceptible of embodiment in other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawings:

Fig. 1 is an inside face view of a double hung window constructed in accordance with the invention;

Fig. 2 is an outside face view of the window;

Fig. 3 is a vertical section taken through the window on the line 3—3 of Fig. 1;

Fig. 4 is a horizontal seection taken through one side of the window on the line 4—4 of Fig. 1;

Fig. 5 is an outside perspective view of one of the lower corners of the lower sash, removed from its guide, showing the method of attachment of the counterbalancing tape to the projection on the end of the lower rail;

Fig. 6 is an inside face view of a window of the same type equipped with horizontally extending muntins in both the upper and lower sash; and

Fig. 7 is an inside perspective view of one side of either the upper or lower sash at the location of the muntin.

The window which is shown in Figs. 1 to 5 inclusive is of the double hung type and includes an upper sash 10 and a lower sash 11. The opening for the window is faced off at the top by a head stop 12, at the sides by jamb stops 13 and at the bottom by a sill cap 14, which facing members are all preferably of extruded aluminum construction. The upper sash 10 is composed of a pane of glass 15, a top rail 16 and a bottom meeting rail 17, while the lower sash 11 is composed of a pane of glass 18, a top meeting rail 19 and a bottom rail 20. The sash do not have any side rails, the sides of the panes of glass 15 and 18 and the ends of the rails 16, 17, 19 and 20 extending instead into snugly fitting slots provided for the same in the jamb stops 13. The upper sash 10 slides up and down in an outer slot 21, while the lower sash 11 slides up and down in an inner slot 22. When the sash

are closed, the top rail 16 of the upper sash will seal against the head stop 12, the meeting rails 17 and 19 will seal against each other, and the bottom rail 20 will seal against the sill cap 14.

The rails 16, 17, 19 and 20 are preferably of extruded aluminum construction and are provided with grooves 23 in which the edges of the panes of glass 15 and 18 are secured by means of strips of adhesive glazing tape 24. The rails are necessarily thicker than the panes of glass but the ends which enter the slots are abruptly narrowed down into tongues 25 of substantially the same thickness as the panes of glass. As this narrowing down does away with the grooves 23 and glazing tape 24 at the ends of the rails the slit-like openings left between the tongues 25 and the adjacent edges of the panes of glass are sealed off by short strips of felt or other packing material 26 which are inserted in narrow channels 27 provided in the edges of the tongues.

The stops 13 at the sides of the window are each composed of three sections 28, 29 and 30 which fit together to form a shallow box-like casing structure. This structure, which is secured to the usual wood jamb 31 by means of screws 32, contains two vertically extending dead air chambers 33 and 34, one in back of the slot 21 and the other in back of the slot 22. The slots 21 and 22 open respectively into the chambers 33 and 34 and are lined with vertically extending strips of packing material 35, which strips are secured in partially closed channels formed in the side walls of the slots.

The packing strips 35 are of woven fabric construction and are metal-bound to permit them to be slid lengthwise into the channels. The strips are characterized by a dense even pile which projects from a closely woven base into resiliently yieldable sealing engagement with the side portions of the sash. When the sash are moved into their closed positions, the packing strips 35 will substantially come together where not occupied by the sash, thereby closing off the slots 21 below the upper sash and the slots 22 above the lower sash to the entrance of dirt and other foreign matter. The strips 35 are set back in from the open edges of the slots 21 and 22, with the result that they are in large measure concealed from view and protected from the elements.

The side portions of the sash engaged by the packing strips 35 project into the stops a short distance beyond the packing strips free from any edge contact with the stop structure. The sash are kept from shifting sidewide and also from canting in one direction or the other by means of hard felt blocks 36 which project from the ends of all of the rails at the bases of the tongues 25. These blocks bear against the opposed surfaces 37 of the stop sections and may be adjusted in or out to properly center the sash. The blocks 36 are mounted in recesses of any suitable description in the ends of the rails, with the blocks for the top rail 16 of the upper sash mounted in small casings 36a attached to the inner face of that rail. The projecting portions of the blocks at the ends of the meeting rails are spread out laterally to abut with each other, as shown in Fig. 3, so as to close off the gaps between the meeting rails and the jamb stops when the window is closed.

The bottom rail 20 of the lower sash carries a sealing strip 38 of felt or other suitable material which bears against the sill cap 14 throughout the width of the window when the lower sash is in its closed position. This sealing strip fits into a partially closed groove 39 in the bottom rail and is secured in place by a spreader rod 40 which is inserted in a slit 41 in the upper portion of the strip. The guide blocks 36 for the bottom rail 20 may advantageously occupy the ends of the groove 39 and form in effect continuations of the sealing strip right up to the jambs.

When the upper sash 10 is in its uppermost position the outer face of the top rail 16 will be engaged by a packing strip 42, of the same character as the strips 35, carried by a depending flange 43 at the outer edge of the head stop 12. This engagement will effectively seal the top rail of the upper sash. As the upper sash moves into its uppermost position the top rail 16 will engage with two rubber bumpers 44 which will stop the upward movement of the sash in the proper position and at the same time exert an outward thrust on the top rail 16 of the sash, due to the inclined arrangement of the outer faces of the bumpers, causing the top rail 16 to be pressed snugly against the packing strip 42. The bumpers can be trimmed to obtain perfect alignment of the meeting rails of the sash when the window is closed.

When the upper sash 10 has been moved upwardly as far as it will go and the lower sash 11 has been moved downwardly as far as it will go, the meeting rails 17 and 19 will be sealed by a strip of packing material 45 carried by the rail 19. The meeting rails are fastened together by means of a sweep latch 46 mounted on the rails which draws the rails together and at the same time forces the upper sash up and the lower sash down.

The bottom rail 20 of the lower sash is preferably provided with an inwardly extending rib 47 which not only stiffens the bottom rail but also acts as a convenient lift for the lower sash, thus avoiding the use of separate handles and the necessity of fastening them to the rail. The meeting rail 17 of the upper sash may be provided if desired with a small centrally arranged handle 48.

The sash are provided with counterbalances, preferably, of the spring variety, which are mounted in housings 49 set back in recesses in the jambs above the level of the meeting rails. The tapes 50 from the balances for the lower sash extend downwardly through the chambers 34 in back of the edges of the sash and terminate in eyelets 51 which engage with hooks 52 formed on the ends of the tongues 25 of the bottom rail 20. The tapes from the balances for the upper sash extend downwardly in the same way through the chambers 33 into hooked engagement with the ends of the tongues on the meeting rail 17.

The upper surface of the meeting rail 17 of the upper sash, on the inside of that sash, is preferably formed into a trough 53 which catches any moisture which may form on and run down the inside of the top sash. The downwardly offset formation of the sill cap 14 provides an outwardly draining trough for catching any moisture which may form on and run down the inside of the bottom sash.

When the window is closed, a downwardly extending flange 54 on the outer portion of the bottom rail 20 of the lower sash will lap the outer portion of the sill cap 14, thereby checking the entrance of dirt, air or moisture.

The window which is shown in Figs. 6 and 7 is the same as the one shown in the previously described views except for the addition of horizontally extending muntins 55 midway between

the top and bottom rails of both the upper and lower sash. These muntins are grooved and secured to the glass sections 56 by means of interposed strips of adhesive glazing tape 57, and the ends of the muntins are narrowed down into tongues 58 of the same width as the glass in order to slide smoothly up and down with the glass without interfering with the packing strips which embrace the same. As in the previously described form the gaps 59 between the edges of the glass sections and the edges of the tongues are sealed off with packing strips 60 inserted in slots 61 in the reduced ends of the muntins.

The window of the present invention, unlike the average metal window, does not require a metal frame as the separate facing members at the top, bottom and sides are more on the order of builders' hardware and can be applied easily and effectively to an ordinary wood frame. This lack of any heavy rigidly connected metal framing about the window, combined with the cushioned insulating support for both sash and the rails thereof provided by the non-metallic packing strips, tends to materially check any heat transfer through the window.

I claim:

1. In a window, a pane of glass, top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, and stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement.

2. In a window, a pane of glass, top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, and stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, the opposed walls of the slots being lined with packing material which engages the glass and rails and prevents the same from contacting with the stops.

3. In a window, a pane of glass, top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, and stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, the opposed walls of the slots being lined with resiliently yieldable packing strips which move together to substantially close off the slots when not spread apart by the glass and rails.

4. In a window, a vertically slidable sash composed of a pane of glass and top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, and means within the slots for sealing engagement with the sash.

5. In a window, a vertically slidable sash composed of a pane of glass and top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, means within the slots for sealing engagement with the sash, and means on the sash outside of the slots for centering the sash with respect to the stops.

6. In a window, a pane of glass, top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, balancing means in the slots in back of the side edges of the glass, and connections between the reduced ends of the bottom rail and the balancing means.

7. In a window, a pane of glass, top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, balancing means in the slots in back of the side edges of the glass, and projections on the reduced ends of the bottom rail connected with the balancing means.

8. In a window, a vertically slidable sash composed of a pane of glass and top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, hollow jamb members at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, and resiliently yieldable packing strips lining the opposed walls of the slots for weather-tight engagement with the sash.

9. In a window, a vertically slidable sash composed of a pane of glass and top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, hollow jamb members at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, resiliently yieldable packing strips lining the opposed walls of the slots for weather-tight engagement with the sash, and means within the hollow interiors of the jamb members beyond the packing strips and in back of the edges of the sash for balancing the sash with respect to the window.

10. In a window, a vertically slidable sash composed of a pane of glass and top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, hollow jamb members at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, resiliently yieldable packing strips lining the opposed walls of the slots for weather-tight engagement with the sash, and blocks of cushioning material mounted on the rails at the bases of the reduced ends thereof in sliding engagement with the opposed faces of the jamb members for maintaining the sash centered with respect to the jamb members.

11. In a window, a vertically slidable sash composed of a pane of glass and top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, stops at the sides of the window provided with slots in

which the side edges of the glass and the reduced ends of the rails are positioned for vertical sliding movement, means within the slots for sealing engagement with the sash, and an inwardly projecting rib on the bottom rail of the sash which reinforces the bottom rail substantially from one end thereof to the other and provides a single continuous lift.

12. In a double hung window, two vertically slidable sash each of which is composed of a pane of glass and top and bottom rails secured to the upper and lower edges of the glass and provided with reduced ends of substantially the same thickness as the glass, stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the rails of each sash are positioned for vertical sliding movement, a sealing strip beneath the bottom rail of the lower sash, a sealing strip at the head of the window for engagement with the outer face of the top rail of the upper sash, bumpers at the head of the window for limiting the upward movement of the upper sash and wedging the top rail thereof outwardly into engagement with the sealing strip, another sealing strip between the meeting rails of the two sash, and a latch for drawing the meeting rails together on the interposed sealing strip and at the same time forcing the lower sash downwardly against the sill and the upper sash upwardly and outwardly against the head.

13. In a window, a pane of glass, a bottom rail secured to the lower edge of the glass and provided with reduced ends of substantially the same thickness as the glass, and stops at the sides of the window provided with slots in which the side edges of the glass and the reduced ends of the bottom rail are positioned for vertical sliding movement.

14. In a window, cooperating sash and frame members, one of which is made of metal and is provided with a shallow partially closed channel opening toward the other member, and a flat metal-bound strip of non-metallic packing material of slightly greater thickness than the depth of the channel slidable lengthwise within the channel into or out of sealing position between the members, in metal-to-metal contact with the side walls of the channel, and with a portion of the strip contained within the channel and another portion thereof projecting slightly beyond the face of the channel into flatwise engagement with the other member.

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CERTIFICATE OF CORRECTION.

Patent No. 2,132,748. October 11, 1938.

JOHN L. MOHUN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, second column, line 25, for the word "outside" read inside; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 6th day of December, A. D. 1938.

Henry Van Arsdale

(Seal)

Acting Commissioner of Patents.

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