

No. 661,963.

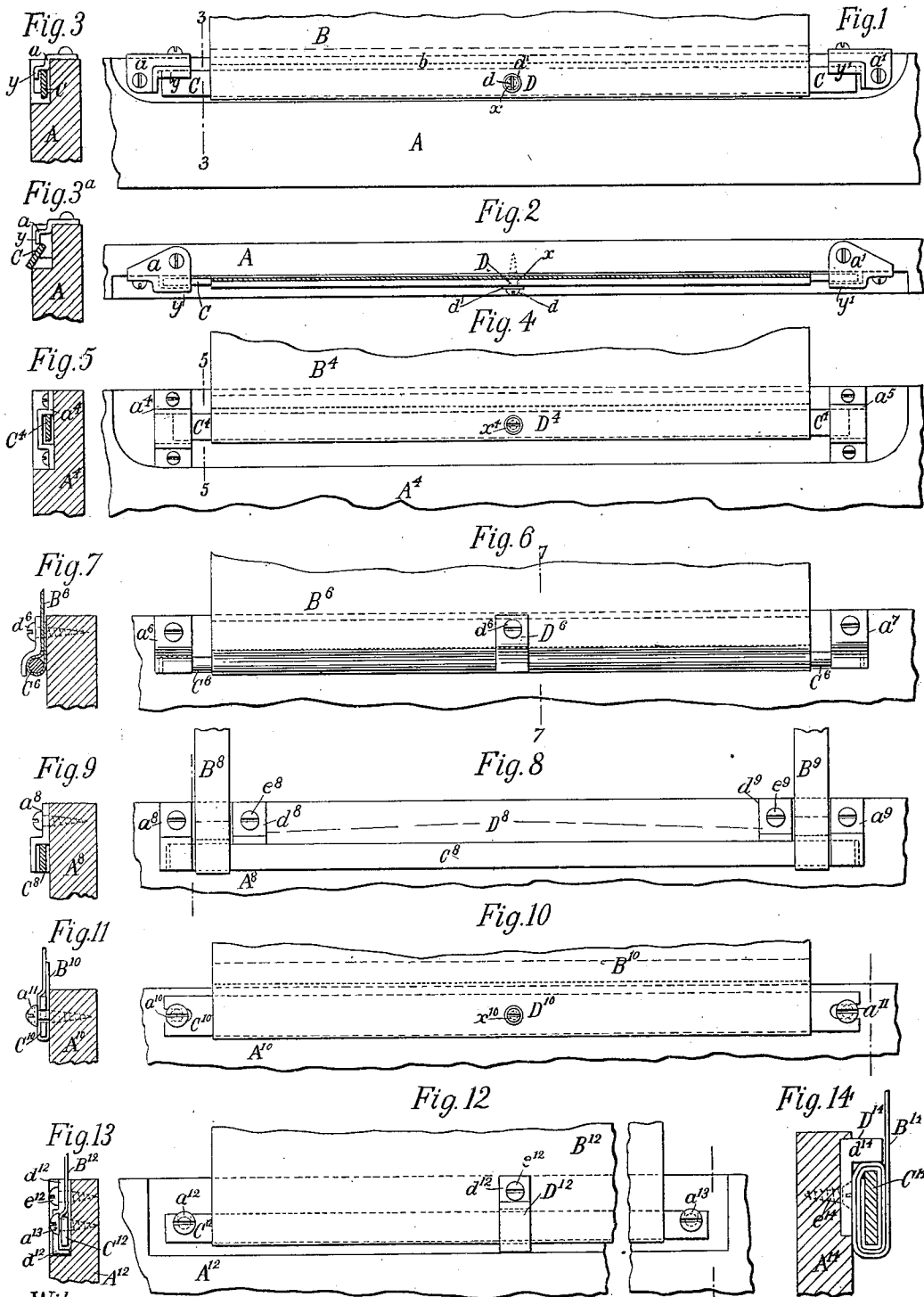
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SECURING FLEXIBLE MATERIAL TO WINDOW SASHES.

(Application filed Mar. 18, 1900.)

(No Model.)



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SECURING FLEXIBLE MATERIAL TO WINDOW-SASHES.

SPECIFICATION forming part of Letters Patent No. 661,963, dated November 20, 1900.

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To all whom it may concern:

Be it known that I, OLIVER M. EDWARDS, a citizen of the United States, residing at Syracuse, county of Onondaga, State of New York, have invented new and useful Improvements in Securing Flexible Material to Window-Sashes, &c., 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 means for securing flexible material, usually a web or webs of woven fabric, to a window-sash and similar devices, where the sash or device is to be lifted or supported by the application of force to the flexible material, as by the lifting or pulling force of a spring roller or rollers to which such material is in part also secured. Such flexible material is used to quite an extent to connect the window-sash of railway-cars to automatic raising or counterbalancing devices, which usually consist of spring-rollers constructed after the general plan of shade-rollers—that is, with a barrel which receives a portion of the flexible material (one end of the web or webs) as it receives one end of a window shade or curtain, and a spring, one end of which is connected to the barrel and the other to some fixed part, so that the spring, by means of the barrel or fixed part, or both, can be put under stress or tension and exert its force on the barrel to lift and support the sash as desired, the whole being mounted in position for the roller to do this work. This flexible material has to be very firmly and evenly attached to the sash and with little or no injury to the material itself, so that all portions of it may bear substantially an equal strain and exert substantially an equal force upon the sash in the direction in which it moves without unnecessary wear of or injury to the material. The means more generally used for connecting this material (the end or ends of pieces of webbing) to the sash of cars consist of forming a pocket, as it were, near or at such end by turning the material over upon itself and stitching the end or ends down upon the body portion of the material, and thus forming a pocket of suitable dimensions adapted to receive a bar, usually of metal, whose length is usually greater than the width of webbing to be at-

tached to the sash, which bar is provided with holes through which screws pass and are screwed into the upper portion of the sash. This bar is of considerable width as compared with its thickness, and it is secured to the sash by the screws, so that the flexible material pulls edgewise on the bar, and the strain on the screws which secure it to the sash is in a direction at right angles to their length. Consequently there is nearly an equal strain upon the flexible material, and it is firmly secured to the sash if such bar is once properly secured to the sash. The number of screws required to securely attach this bar to the sash requires considerable time to put them in place, and this is also the case if for any reason the screws have to be removed, as when repairs are to be made to the sash or other work is to be done thereon, which work makes it desirable to remove the sash. First-class railway-cars are usually sent once or twice a year to the shops to have a general overhauling and cleaning up given to them, and on such occasions all of the sash are removed, scraped, and varnished, and this requires the flexible material to be disconnected from and again connected to the sash, and to do this all of these screws have to be removed and then replaced before the cars go into service again. These screws have to be removed and replaced with the spring-rollers exerting their full force upon the flexible material to pull it away from the sash, and this requires that the person doing this work shall overcome that force and hold the material firmly at the same time the screws are being removed or replaced, which naturally increases the labor required to do this work. The length of time required to remove and replace all of these screws is an item of considerable expense. Many of the screws and washers used are lost and have to be replaced, which is another item of expense. Each time these screws are removed and replaced tends to make their hold on the wood of the sash less secure, which in time causes another item of expense.

The object of my invention is to provide means by which the flexible material or webbing may be readily and firmly attached to or connected with the sash and be disconnected therefrom with less difficulty and labor and also less tendency to stretch the edges of the

flexible material or to weaken the attachment of the material to the sash than heretofore; and it consists in combining catches with a sash in such a manner that a bar in engagement with flexible material can be engaged with and disengaged from the catches without removing them from the sash; and my invention also consists in certain other novel and useful combinations of parts, all of which will be hereinafter fully described, and pointed out in the claims.

Like letters of reference wherever they occur indicate corresponding parts in all of the figures.

Figure 1 shows in front elevation the top portion of a sash with the lower portion of the flexible material attached to the sash by one embodiment of my invention, other portions of the sash and flexible material being broken away in order to show the necessary parts on a larger scale. Fig. 2 shows in plan the parts seen in Fig. 1. Fig. 3 shows in cross-section on line 3 3 the parts seen in Fig. 1. Fig. 4 shows in elevation a modification of the construction shown in Figs. 1, 2, and 3. Fig. 5 shows in cross-section on line 5 5 some of the parts seen in Fig. 4. Fig. 6 shows in elevation another modification of the construction seen in other figures. Fig. 7 shows in cross-section on line 7 7 the parts seen in Fig. 6. Fig. 8 shows in front elevation another modification of catches and supporting means attached to a portion of a sash. Fig. 9 shows in end elevation one of the catches seen in Fig. 8 with the bar in cross-section. Fig. 10 shows in elevation a modified construction of catches and supporting means. Fig. 11 shows in end elevation the construction seen in Fig. 10. Fig. 12 shows in elevation a modified construction of bar from that seen in other figures, a portion being broken out, as seen. Fig. 13 shows in end elevation the parts seen in Fig. 12. Fig. 14 is a view in cross-section, on an enlarged scale, of a modification on the way the flexible material may be made to engage with the bar.

In Figs. 1, 2, and 3, A is the window-sash; B, the flexible material; C, the bar, preferably of metal, with which the flexible material engages, and a a' the catches, attached to the sash and with which the bar C engages to secure the flexible material to the sash. In order that the bar C engages with the flexible material, I prefer to form a pocket b in that part or portion of the material which it is desired to secure to the sash. This may be done by turning the end of the webbing over upon the body portion thereof and stitching the two together at a point or points, so as to leave a sufficient amount of the doubled thicknesses to form a space or pocket between them which will admit of the insertion therein of the bar which is to engage with this part or portion of the flexible material. This bar is preferably of greater length than the width of the flexible material, as seen in Figs. 1 and 2; but it may be of less or greater length than

there shown, provided it is adapted for the flexible material to engage therewith and at the same time adapted to engage with and disengage from the catches attached to the sash.

The catches a and a' , as shown in Figs. 1, 2, and 3, are constructed so as to be open to receive the upper edge of the bar when moved in an upward direction, but with closed portions at their upper or top portion and their outermost or outer side portions, so that the bar C is practically confined in three directions thereby—edgewise, endwise, and sidewise. The construction of catches a and a' I deem the preferred form; but other forms may be employed, if desired, several of which are shown in other figures of the drawings, some of the latter holding the bar sidewise and edgewise only and others, in addition, holding the bar, as in the construction in Figs. 1, 2, and 3. These catches a and a' are constructed with portions arranged at right angles to each other, so that one portion lies on the top edge of the sash and the other lies on the side portion, as is clearly seen in those figures. This permits of the screws which hold them to the sash to enter the wood of the sash at right angles to each other, and as a result the catches are held very firmly in place. I prefer the form of catches shown in Figs. 1, 2, and 3, because the right-angled portions afford means other than the screws for adjusting them in place, and it enables the screws, which secure them to the sash, to enter the wood in two directions; but this need not necessarily be the case, as is clearly seen in other figures of the drawings, where all of the screws enter the wood from substantially one direction, and the screws afford the only means of adjusting the catches in place.

Preferably the sash is recessed, as shown in Figs. 1, 2, and 3, to receive the catches, bar, and flexible material inside of the general surface of the sash; but this need not be the case, if desired, as will be seen upon reference to Figs. 6 and 8, where the sash is not recessed. This recessing of the sash permits of that portion of it which is exposed to view in the regular use of the car to be finished or refinished in oil, varnish, or otherwise without disturbing the catches, so that after they are once properly placed in position they need not be removed, except when broken or otherwise incapacitated for use. I also prefer the lips y y' of these catches, which receive and partially encircle the bar C, to be of less width than the bar, as shown, because it permits the bar to be received by the catches before its sides are substantially parallel with the surface of the sash, when the bar is fully received by the catches, as seen in Figs. 1 and 3. This construction permits the bar to enter the catches when in the position seen in Fig. 3^a and then to gradually assume the position seen in Fig. 3.

Fig. 3^a shows the same parts as are shown in Fig. 3, but with the bar C in the position

it occupies just as its upper edge is entered between the lip *y* of the catch *a* and the recessed part of the sash *A* instead of as being fully received by such catch, as seen in Fig. 3.

5 The same result is accomplished by the construction shown in Fig. 12, wherein the heads of catches *a*¹² *a*¹³ extend over only a portion of the width of the bar *C*¹², as seen, and the bar is practically confined in three directions, as is the case in Figs. 1, 2, and 3.

10 If desired, the bar *C* may be constructed with a hole or recess *x*, which receives the body of the screw *d* as it is screwed into the sash, which screw with washer *d'* form means *D*, attached to the sash between the catches *a* and *a'*, and which engage with the bar *C* and support the bar against a pull upon the flexible material *B*. The screw *d* also engages with the recess *x* in the bar and prevents the bar *C* from disengaging with the catches *a* and *a'*, attached to the sash *A*. The screw *d* also passes through the flexible material *B* as it is screwed into the sash, and in this way prevents such material moving laterally relatively to the bar and sash.

15 After the pocket *b* is formed in the flexible material and the catches *a* and *a'* are secured to the sash *A*, to firmly attach or secure the material *B* to the sash *A* the bar is inserted in the pocket and its upper edge is entered in the catches, as seen in Fig. 3^a, and moved upward into the position seen in Fig. 3, when the screw *d*, with the washer *d'* upon it, of the means *D* can be screwed into the sash through the flexible material *B* and recess *x* in bar *C*, when the flexible material will be firmly attached or secured to the sash and substantially an even strain will be exerted upon the material connected to the sash upon a pull upon it in the direction the sash moves in opening and closing the window-opening.

20 To disconnect the flexible material from the sash, remove the means *D* and move the bar *C* downward and outward at its lower edge until it is free from the catches *a* and *a'*, when the bar and flexible material may be disposed of as desired. One way of so disposing of them is to secure the flexible material to the body of the car back of its normal position and leave it there until the sash is to be returned and again connected to the flexible material. It has been customary to do this by using a single screw and washer in a central hole in the bar heretofore used, and the same can now be done by using the means *D*, whatever its form may be, screwing the screw *d* into the body of the car while it is in recess *x* of the bar. This securing of the bar *C* and material *B* to the body of the car avoids any danger of the loss of the bars or mixing them up with other bars and not knowing which particular bar was originally adjusted to the particular catches on a sash, and it also keeps the flexible material in its adjusted relations with the spring-roller, as well as its attachment thereto, without danger of disturbing such relations and attach-

ment, all of which requires time and labor to accomplish. Each of the means here shown is adapted for this use of securing the flexible material to the body of the car; but the adaptability of such means for such use is no necessary part of my invention.

25 Instead of constructing the catches as shown in Figs. 1, 2, and 3 they may be constructed as seen in Figs. 4 and 5, where *a*⁴ and *a*⁵ constitute the catches which receive the bar *C*⁴ and firmly secures it to the sash *A*⁴. The bar *C*⁴ is provided with a recess *x*⁴, corresponding to recess *x* of Figs. 1, 2, and 3, and corresponding means *D*⁴ are employed in connection with such recess to support the bar. In addition to supporting the bar *C*⁴ between the catches *a*⁴ and *a*⁵ the means *D*⁴ confine the bar endwise, and thus holds the bar in engagement with the catches once such means are attached to the sash, and in this respect serve the same function that is served by the means *D* in Figs. 1, 2, and 3.

30 In Figs. 4 and 5 the bar *C*⁴ is first entered in one of the catches *a*⁴ or *a*⁵ and moved far enough therein to permit of its opposite end entering the other catch when it is moved into position to receive the means *D*⁴, which when in proper position prevents the disengagement of the bar from its catches. The size and shape of this bar in cross-section, with which the flexible material engages, may be such as the constructor desires—as, for instance, round, as seen in Fig. 6, the catches *a*⁶ and *a*⁷, with the means *D*⁶, being properly formed to receive and support such bar. As here seen, the bar *C*⁶ is round in cross-section and of course a greater quantity of material in such a case is required for a given rigidity, and for this reason the oblong shape in cross-section, as seen in Figs. 1 to 5, is preferred. This shape seen in these figures also requires less space or thickness of the sash to be cut away to bring the catches wholly inside of or below the general surface of the sash, and for this reason the shape shown in those figures is preferred. The smaller the size or rigidity of the bar in cross-section the greater is the need of supporting it between the catches if such catches be placed near its ends as shown. In Fig. 6 the bar *C*⁶ is not provided with a recess to receive any portion of the means *D*⁶, so that such means, in addition to supporting the rod against a pull on the flexible material *B*⁶, do not hold the bar *C*⁶ in engagement with the catches *a*⁶ and *a*⁷, as in Figs. 1 and 4, or prevent its disengagement therefrom; but it will be observed that the screw *d*⁶ of such means passes through the flexible material *B*⁶ and prevents its lateral movement. The catches *a*⁶ and *a*⁷ are so constructed that the ends of the bar *C*⁶ are more or less inclosed by them, and consequently the bar is held with substantially no endwise movement, and because of this and the use of means *D*⁶ it is held firmly to the sash with the flexible material in engagement with such bar.

Instead of the flexible material being in a single web it may be in more than one, as seen in Fig. 8, where two are shown with a considerable space on the bar C^8 between them. These webs are designated as B^8 and B^9 , the catches for the bar C^8 as a^8 and a^9 , and the means which engage with the bar C^8 between the catches a^8 and a^9 as D^8 . These means consist of two pieces d^8 and d^9 , which are attached to the sash by screws e^8 and e^9 , respectively. The catches a^8 and a^9 , like those seen in Figs. 6 and 7, inclose more or less of the ends of the bar C^8 and with a like result. The means D^8 , it will be observed, have no portion passing through the flexible material B^8 and B^9 , and in this respect differs from what is the case in preceding figures.

Instead of having the catches which receive the bar with which the flexible material engages, as shown in preceding figures, they may be made as seen in Figs. 10, 11, and 12, wherein a stud or screw with a comparatively large head is attached to the sash. These catches a^{10} , a^{11} , a^{12} , and a^{13} receive the bar, and in Figs. 10 and 11 it is received and held substantially as is the case in Figs. 4 and 5, while in Fig. 12 the bar C^{12} is received and held substantially as is the case in Figs. 1, 2, and 3, the sash in Fig. 12 being recessed as in those figures. In Figs. 10 and 11 the means D^{10} are substantially the same as in Figs. 1 and 4, and the bar C^{10} is provided with a recess x^{10} , corresponding to recess x of Figs. 1, 2, and 3, and the mode of operation is essentially that of the construction shown in Figs. 4 and 5.

In Fig. 12 the means D^{12} differs somewhat from any of the corresponding means in other figures. In this case the screw e^{12} passes through the part d^{12} and the flexible material B^{12} , and consequently such material is held from moving laterally. The part d^{12} is seen in Fig. 13, and it first abuts against the upper side of the bar C^{12} , the flexible material being between the two, and thus supports the bar between the catches a^{12} and a^{13} against a pull upon the flexible material. It then passes over the bar C^{12} and under the under edge of such bar, and thus it holds the bar in engagement with the catches or disengaging therefrom.

Instead of forming a pocket in the flexible material so that such material may engage with the bar, such engagement may be made to take place by tightly winding the lower end of such material or webbing two or three times around such bar, as seen in cross-section in Fig. 14, which is on an enlarged scale, before entering the bar in the catches. In Fig. 14 the bar C^{14} is shown as loosely wrapped within the material B^{14} , which may then be received in the catches, a device like d^8 and screw e^8 of Fig. 8 being used as means for supporting the bar C^{14} and with no portion of such means passing through the flexible material B^{14} , but such parts d^{14} and e^{14} form means D^{14} , which support the bar between

the catches against a pull upon the flexible material B^{14} . The pressure on the bar C^{14} , caused by the catches forcing it toward the sash A^{14} , will force the flexible material between the bar and sash into intimate friction contact with the bar and different layers of material, so that any force exerted on the material will not cause that portion of it wrapped around the bar to slip, it being understood that the several layers are tightly drawn on the bar before it is received by the catches. If desired, other forms of means for supporting the bar between the catches than D^{14} may be used, as other forms are herein illustrated.

In each form in which the improvement is herein illustrated the catches attached to the sash are arranged to receive and hold the bar widthwise of the sash—that is, the bar extends in the direction of its length over a large portion of the widthwise dimensions of the sash, and the flexible material engaging with the bar is secured to the sash in the same plane or one substantially parallel to that in which the sash moves in opening and closing the window-opening.

I have shown and described several different forms of bars, catches, and means for supporting the bars between the catches, but it is obvious other forms than those shown may be used without departing from the spirit of my invention. Therefore I do not limit myself to the particular forms herein shown and described.

What I claim as new is—

1. The combination, substantially as set forth, of a window-sash, catches attached to the sash and adapted to receive and hold a bar widthwise thereof without removing the catches from the sash, a bar adapted to be received and held widthwise of the sash by the catches, and flexible material adapted in part to engage with the bar, whereby the flexible material is secured to the sash in a plane substantially parallel to that of the sash by the bar engaging with the catches attached thereto.

2. The combination, substantially as set forth, of a window-sash, catches attached to the sash and adapted to receive and hold a bar widthwise thereof without removing the catches from the sash, a bar adapted to be received and held widthwise of the sash by the catches, and flexible material provided with a pocket adapted to receive the bar, whereby the flexible material is secured to the sash in a plane substantially parallel to that of the sash by the bar engaging with the catches attached thereto.

3. The combination, substantially as set forth, of a window-sash, catches attached to the sash and adapted to receive a bar without removing the catches from the sash, a bar adapted to be received by the catches and to be thereby connected with the sash, flexible material adapted in part to engage with the bar, and means attached to the sash between the catches and adapted to engage with the

bar and afford a support therefor against a pull on the flexible material, whereby the flexible material is secured to the sash by the bar engaging with the catches and means attached to the sash.

4. The combination, substantially as set forth, of a window-sash, catches attached to the sash and adapted to receive a bar without removing the catches from the sash, a bar adapted to be received by the catches and to be thereby connected with the sash, flexible material adapted in part to engage with the bar, and means attached to the sash, a portion of which passes through the flexible material, and such means engages with the bar and supports the same against a pull upon the flexible material, whereby the flexible material is secured to the sash by the bar engaging with the catches and means attached to the sash.

5. The combination, substantially as set forth, of a window-sash, catches attached to the sash and adapted to receive a bar without removing the catches from the sash, a bar adapted to be received by the catches and to be thereby connected with the sash, flexible material adapted in part to engage with the bar, and means attached to the sash, a portion of which engages with the bar and affords a support for the same against a pull on the flexible material and also against disengagement from the catches, whereby the flexible material is secured to the sash by the bar engaging with the catches and the means attached to the sash and the bar is prevented from disengaging with the catches on the sash.

6. The combination, substantially as set forth, of a window-sash, catches attached to

the sash and adapted to receive a bar without removing the catches from the sash, a bar provided with a recess in its midway portion and adapted to be received by the catches and to be thereby connected with the sash, flexible material adapted in part to engage with the bar, and means attached to the sash, a portion of which is adapted to engage with the recess in the bar and afford a support for the same against a pull upon the flexible material and also against movement of the bar relatively to the catches, whereby the flexible material is secured to the sash by the bar engaging with the catches on the sash and the bar is supported and held in engagement with the catches by the means engaging with the bar.

7. The combination, substantially as set forth, of a window-sash recessed to receive catches and a bar, catches attached to the sash in the recessed part thereof and adapted to receive a bar and provided with lips of a less width than the width of the bar, a bar adapted to be received by the catches by entering the bar beneath the lips at an angle to the position it assumes when fully received by the catches, and flexible material adapted to engage with the bar, whereby the flexible material is secured to the sash by the bar engaging with the catches on the sash, the bar entering beneath the lips of the catches at an angle to the position it assumes when fully engaged therewith.

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