O. M. EDWARDS.

SASH HOLDING DEVICE.

APPLICATION FILED SEPT. 21, 1909.

1,193,000. Patented Aug. 1, 1916.

Fig. 1

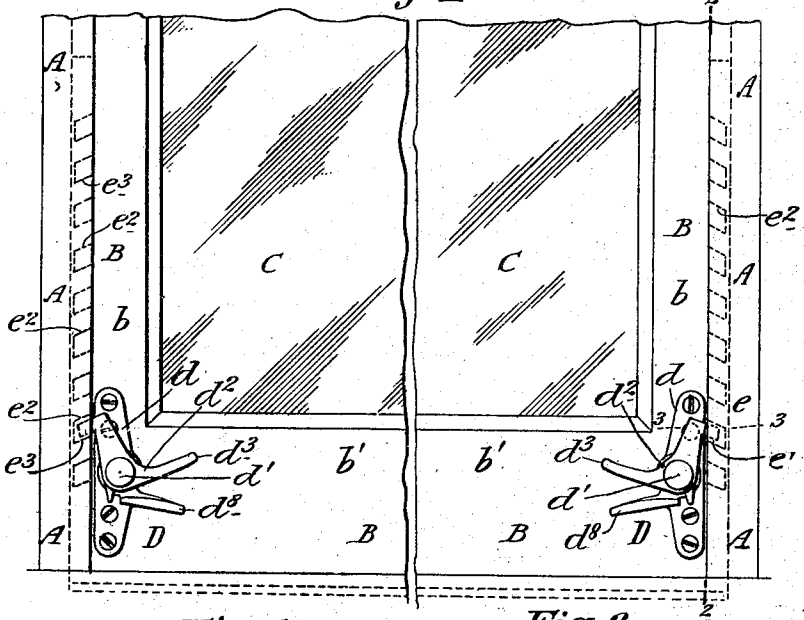


Fig. 2

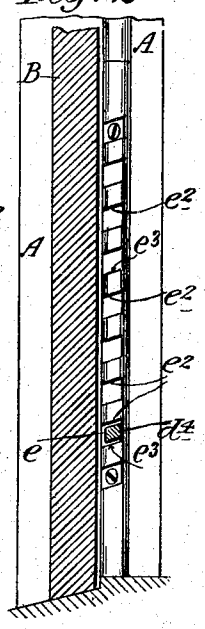


Fig. 5

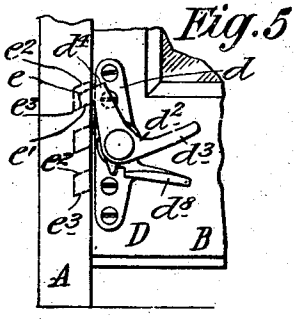


Fig. 3

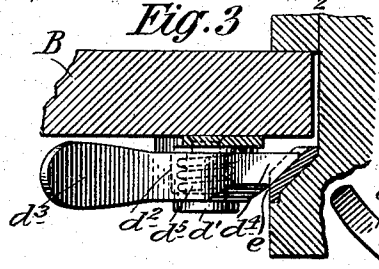


Fig. 4

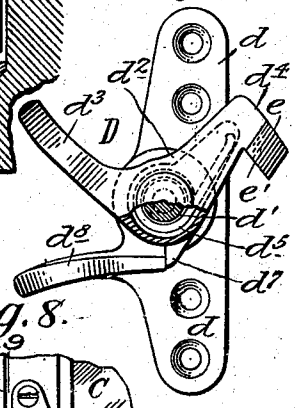


Fig. 7.

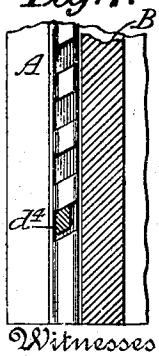


Fig. 6.

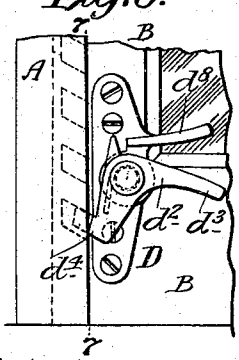


Fig. 9.

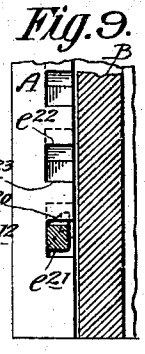
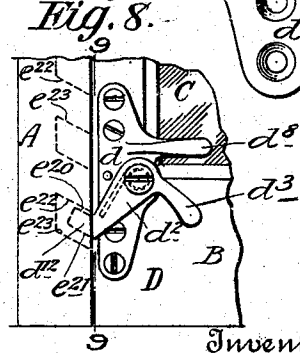


Fig. 8.



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SASH-HOLDING DEVICE.

1,193,000. Specification of Letters Patent. Patented Aug. 1, 1916.

Application filed September 21, 1909. Serial No. 518,830.

To all whom it may concern:

Be it known that I, OLIVER M. EDWARDS, a citizen of the United States, residing in the city of Syracuse, county of Onondaga, State of New York, have invented a certain new and useful Improvement in Sash-Holding Devices, of which the following is a full, clear, and exact description, reference being had to the drawing accompanying the same.

The invention relates generally to sash holding devices or fasteners by which sashes of windows are held in their frames as desired and more particularly to that class of holding devices where the sash is not only locked and positively held in the closed or partially open position, but is held in close and intimate contact with portions of the guideway in which it moves to more or less exclude dirt, rain and currents of air.

One of the objects of this invention is to provide a simple, strong and efficient sash holding device of the above character adapted for use on sashes that are automatically moved in one direction by gravity or otherwise.

Another object is to provide a holding device which is strong and simple to construct and is adapted for use in reverse positions on the sash; another object is to provide a holding device which is composed of but a few parts, simple in form, easily and simply constructed and is adapted for use on sashes having narrow stiles such as are now frequently used in metal sash.

Other objects will appear from the descriptions hereinafter given; and the invention consists in the holding device and the combinations of parts or devices hereinafter set forth and particularly pointed out in the claims hereunto annexed which form a part of this specification.

Figure 1 illustrates in front elevation portions of a sash and frame with one embodiment of this invention applied at the opposite edge portions thereof, it being understood that the sash holding devices there shown are preferably made in "rights" and "lefts", and when so made such devices are attachable to the opposite edge portions of the sash as seen; Fig. 2 shows in vertical section on line 2—2 at the right of Fig. 1 what is there seen when looking from the left to the right. Fig. 3 is a cross sectional view on line 3—3 of Fig. 1, but on an enlarged scale to better illustrate the relations of the parts there shown. Fig. 4 illustrates in front elevation and on an enlarged scale the holding device seen at the right of preceding figures when the same is detached from the sash with a portion broken away to better illustrate some of the details thereof. Fig. 5 illustrates a portion of the sash and frame seen at the lower left hand corner of Fig. 1 showing the parts in the positions they occupy when the sash is partially raised to open the window. Fig. 6 illustrates the sash holding device seen at the lower right hand corner of Fig. 1 when the same is placed in the reversed position, as it will appear when applied to the opposite edge of the sash. Fig. 7 illustrates in vertical section on line 7—7 of Fig. 6 that which is there shown, the angular portion of the locking detent being seen in cross section. Fig. 8 illustrates a somewhat modified form of the holding device seen in preceding figures where the same is mounted on the sash in the reverse order from what is seen in Figs 1 and 5. Fig. 9 shows in vertical section on line 9—9 of Fig. 8 what is there shown, the engaging portion of the locking or holding detent being shown in cross section.

Like letters of reference, wherever they occur, indicate corresponding parts of the several figures of the drawings.

A represents portions of the frame which may be of any desired construction having a guideway in which the sash B is received and held and in which it can easily move in opening and closing the window. A series of engaging surfaces or recesses for the holding device or devices to engage with may, if desired, be formed in this frame or be attached thereto. As shown these engaging surfaces are formed on separate pieces of material and attached to the frame in any desired manner. The sash B with the glass C, portions of which are shown broken away, is preferably formed with comparatively narrow side stiles, as *b*, and a similar narrow top rail with a comparatively wide bottom rail, as *b'*, as shown, but the sash

may be of any desired construction adapted to receive the holding device or devices. The holding devices are equally usable on narrow or wide stiles or wide bottom rails. Such devices are also usable in reversed positions on the sash, and also combined with other forms of holding devices. The glass C is shown mounted in the sash in the ordinary manner, but it may be mounted therein, if desired, accordingly as the construction of the sash in which it is used seems to require.

The holding devices, as D, are preferably constructed with a long, narrow base plate, as *d*, preferably adapted to be secured to the surface of the sash in any desired manner and be firmly held thereon. When attached to the surface, the sash is not cut away or weakened. As these holding devices are preferably made as "rights" and "lefts" the base plates are formed as shown and the devices can be mounted upon the sash in the reverse position, accordingly as desired, without changing the construction thereof. In the form of holding or locking detent seen in Figs. 1 to 5 the sash is locked or held in the desired position, whether it be the closed position, as seen in Fig. 1, or the partially open position, as seen in Fig. 5, and the sash is also moved transversely in the guideway or at an angle to its opening and closing movement to bind that portion of the sash to which the device is attached to the frame and prevent the passage of currents of air and dirt between the sash and frame at the points where they are in frictional contact. This is also the case whether the sash is overbalanced and is thereby automatically raised to bring the locking or holding detent or detents into the position or positions seen in Figs. 6 and 8.

The operation is practically the same in each of the forms of detents shown whether the sash is automatically raised, by being overbalanced, or is without balancing means or is underbalanced, so that gravity may act to move the sash in the closing direction. In either case the sash is automatically moved in one direction. When the sash is underbalanced or not balanced at all, if the devices are used on both edges of the sash, it is preferable that they be arranged as shown in Fig. 1, while if the sash be overbalanced so as to be automatically raised the devices should be arranged after the manner shown in Figs. 6 and 8. As shown in Fig. 1 the locking or holding detents can be moved into the released position by the hands of the operator grasping the handle portions thereof and engaging with the fixed handle portions of the operating means move the sash in the opening direction, at the same time holding the detents in the released positions until the sash is raised to the desired extent, when such detents may be released and the weight of the sash supported by the hands on the fixed handle portions of the holding devices until such detents are in position to hold the sash in the desired position. The reverse is substantially the case when the sash is automatically raised, that is, the detents are operated to release the sash when the overbalancing means causes the sash to rise and the fixed handle portions of the operating means act, when grasped by the hands of the operator, to control the speed with which the sash rises and when it is to be closed force applied to such fixed portions overcomes the action of the overbalancing means and moves the sash in the closing direction until the desired point is reached, when the movable detents are released and engage with the recesses or engaging surfaces formed on or attached to the frame to hold the sash in the desired position.

If the sashes are not counterbalanced or are underbalanced the weight of each sash automatically moves the same in one direction and this movement is utilized to hold the sash tightly in the frame, whether the window is closed or partially open.

The sash holding devices herein shown and described are composed of but a few parts each of which is easily and cheaply constructed of the desired strength and such parts are combined together in a compact form so as to occupy but a little space on the exterior of the sash when combined therewith and are very efficient in use. There is but one movable part exposed to view and only such material as is required to render these devices efficient in use is employed in constructing each of the several parts. These holding devices are peculiarly adapted by their construction for use on very narrow stile sashes and can be applied thereto without cutting or weakening the sashes which is important and very desirable. In the case of metal sashes considerably used at the present time in railway cars and fireproof buildings it is important that the holding devices occupy but little space and yet be of great strength and applicable to the exterior rather than interiorly of the sash and such devices must be firmly attached in place in order to withstand the shocks to which they will be subjected in use. These devices when applied as herein set forth hold the sashes at different points in the frame and move the portions of them to which the devices are attached transversely in the frame or at an angle to the opening or closing direction of movement of the sashes to provide tightly closed and yet easily opened and closed windows.

A description of one of these holding devices is deemed to be all sufficient in view of the above explanations. These base plates, as *d*, of the right and left hand holding devices are each provided with a stud or other

means, as d', adapted to receive an elbow form of lever, as d^2, which is mounted to turn and be held thereon. One end of each of these levers, as d^2, is preferably provided with a handle portion, as d^3, and the other end with an angular or wedge shape projection, as d^4, adapted to engage with suitable beveled or wedge shaped engaging surfaces or recesses formed in or attached to the window frame. These wedge shape projections, as d^4, are preferably formed as indicated in the drawing so that when such projecting portions engage with the frame of the window, those parts of the sash, to which the devices are attached are moved outwardly or transversely in the frame to engage or contact with the exterior or outer stop beads forming that portion of the guideway. A spring, as d^5, is preferably provided for each lever, as d^2, one end of which spring is attached to the lever and the other end is attached to the base plate, as indicated in Figs. 3 and 4. A stop is preferably provided to limit the extent of movement of the lever when the device is unconnected with the sash or the sash is removed from its guideway. This spring is arranged for its tension to move the detent or lever into the holding position and if such projecting portion of the lever be such as is seen in Fig. 4 then the spring is to be of sufficient tension to effectively hold that part of the sash to which the holding device is attached with the desired intimate contact against the frame of the window. The projection, as d^4, in addition to having the wedge surface to engage with the beveled surfaces on the frame to hold the sash in frictional contact therewith has two engaging or holding surfaces, as e, e', arranged on opposite edges of said projection. These surfaces are preferably arranged at nearly right angles to the central line of that part of the lever which has the projecting portion, as d^4, formed integral therewith and also at substantially right angles to the beveled or wedge face on said projection. The engaging or holding surface, as e, Fig. 4 engages with undercut or beveled surfaces, as e^2, Figs. 1 and 2, formed on or attached to the frame so as to hold or lock the sash against movement in the opening direction, when such devices are arranged as shown in Fig. 1, while the undercut or beveled surfaces, as e^3, on the frame are formed and arranged for the surface, as e', Fig. 4 on the projection, as d^4, to engage therewith and hold the sash against movement in the closing direction, when the window is open as seen in Fig. 5. These surfaces, as e^2, and e^3, may be of any desired number and be arranged as desired to hold the sash against moving toward the closed position from the open or partially open position. These stops or engaging surfaces, as e^2 and e^3, which coact with the angular surfaces, as e and e' on projection, as d^4, and which with the beveled surface coacts with corresponding surfaces on the frame tend to force the sash transversely in the frame and hold it therein. Such surfaces on the frame may be arranged in any desired manner for the holding device or devices to engage therewith and tightly hold the sash in the frame. The pivot of the lever d^2 and the head d^4 of said lever are so arranged that the head moves in an arc extending away from the undercut, inclined or beveled surface of the socket with which the head is engaged, during the initial movement of the lever to carry the head out of engagement with said surface.

From the foregoing it is obvious that each recess e^2 is formed with a vertical wall, best seen in Fig. 3 disposed at an acute angle to the plane of the sash or with a top and a bottom wall disposed at an angle to horizontal planes, and the retaining device or lever d^2 is formed with a projection or nose having an engaging face as e' for engaging the vertical wall of the recess so arranged at an acute angle to the plane of the sash and with a second surface e for engaging the top or the bottom wall, as the case may be, the latter surface extending in a direction substantially concentric to the axis on which the retaining member d^2 turns, the surfaces e, e' being disposed at substantially a right angle to each other.

The base plates as d, of the holding devices D are each preferably provided with a thumb or handle piece, as d^8, which is preferably made integral with the plate and arranged as shown. When the sash is unbalanced or underbalanced and rests upon the sill of the frame, as indicated in Fig. 1, there should be some little space between the engaging surfaces on the frame and the holding surfaces formed on the angular projections of the levers, as d^2, so as to permit of some little movement between the projections on the levers and the engaging surfaces on the frame under the twisting action that always occurs to a greater or lesser extent in cars as they pass over the inequalities in the roadway. When the sash is overbalanced and is held in the closed position there must also be a space between the lowermost portion of the sash and the sill.

As seen in Figs. 8 and 9, the angular projecting portions of the lever may be formed with the coacting angular surfaces beveled or made wedging or inclined differently from what is the case in the construction seen in the preceding figures of the drawing. When the angular holding surfaces of the holding device or devices are arranged as thus seen the weight of the sash, if unbalanced, tends to force that part of the sash on which each holding device is attached outwardly into close and intimate contact

with the outer portions of the guideway, that is, to move the sash transversely in the frame, as is done in the construction seen in Figs. 1 to 5.

The lever d^2, Figs. 8 and 9 is provided with a projecting portion d^{12} preferably formed integral with said lever and is provided with a beveled surface e^{20} and also an engaging surface e^{21} which surfaces when they engage or coact with the angular surfaces, as e^{22} and e^{23}, formed on or attached to the frame, are adapted to hold the sash against movement in two directions, that is to simultaneously hold the sash in two directions when in the closed position and overbalancing means are employed, one direction being the opening direction and the other transverse to the plane of movement of the sash in the frame, this being accomplished by the coaction of the projecting portion of said lever with the beveled or wedge shaped engaging surface e^{22}. When the sash is partially opened the engaging surface e^{21} on the projecting portion d^{12} of the lever engages or coacts with the angular surface e^{23} formed on the frame and holds the sash against closing, if desired.

If desired, the angular coacting surfaces on the projecting portions of the levers and the angular or engaging surfaces on the frame may be otherwise constructed and arranged than in the specific forms herein illustrated, as will be obvious to skilled mechanics, the essential thing being that such portions and the engaging or coacting surfaces shall be so constructed and arranged that the surfaces on such portions coact with the surface on the frame in substantially the manner herein set forth so as to have the mode of operation herein before described.

What I have herein shown and described will naturally suggest to others skilled in this art other specific forms of this invention and also modifications in the construction and arrangements of the parts wherein substantially the same work is accomplished by essentially the same means and mode of operation as in the present case, and, consequently, I do not wish to limit my invention to the specific forms herein shown, but desire to include all forms and modifications which embody the spirit of my invention as herein set forth.

What I claim as new is:—

1. The combination of a window frame, a sash movable in the frame, the frame being provided with holding means provided with sockets inclining relatively to the direction of movement of the sash, the walls of the sockets being formed with beveled faces, a lever mounted on the front face of the sash and having a head which is beveled and engages the beveled faces of the walls of the sockets, the beveled faces of the lever and the walls of the sockets being so relatively arranged that the sash is tightened in the frame and in its adjusted position in the frame during the movement of the head of the lever into the socket, and the pivot and the head of the lever being so arranged that the head moves in an arc extending away from the engaged beveled face of the corresponding socket during the initial movement of the lever out of the socket, substantially as and for the purpose described.

2. In a car window and in combination, a window sash and a window frame having in one vertical edge a recess provided with a vertical wall disposed at an acute angle to the plane of the face of the sash, and a top wall disposed at an angle to a horizontal plane, and a retaining device carried by the sash having a beveled face for engaging said vertical wall of the recess, and another face for engaging said top wall, substantially as and for the purpose described.

3. In a car window and in combination, a window sash and a window frame having at one vertical edge a recess provided with a vertical wall disposed at an acute angle to the plane of the face of the sash, and an undercut top wall, and a pivotally mounted retaining device carried by the sash having a beveled face for engaging said vertical wall of the recess, and another face for engaging said top wall, substantially as and for the purpose set forth.

4. In a car window and in combination, a window sash and a window frame having at one vertical edge a recess provided with a vertical wall disposed at an acute angle to the plane of the face of the sash, and a top wall disposed at an angle to a horizontal plane, and a retaining device pivotally mounted on the sash, and provided with a projecting portion, or nose, having a beveled surface for engaging said vertical wall of the recess and another surface for engaging said top wall, substantially as and for the purpose described.

5. In a car window and in combination, a window sash and a window frame, a strip secured at one edge of said frame, said strip being provided with a plurality of recesses, each having a vertical wall disposed at an acute angle to the plane of the face of the sash, and a top wall disposed at an angle to a horizontal plane, and a retaining device carried by the sash and having a beveled face for engaging said vertical walls of the recesses, and another surface for engaging said top walls, substantially as and for the purpose specified.

6. In a sash retaining mechanism and in combination a part for attachment to a window sash having a finger engaging portion, and a stop surface, a retaining member pivotally mounted on said part having a finger engaging portion located in coöpera-

tive relation to the first-named finger engaging portion, and having its main portion provided with an extension having a beveled engaging surface, and a second laterally extending engaging surface, and a spring tending to force a part of said retaining member against the stop surface of the first-named part, substantially as and for the purpose specified.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."