This invention relates to regulators, or sash holders, for opening and closing and holding opened or closed a window sash, particularly the window sashes of railway vehicles, busses, and the like, and has for its object a window regulator including toggle links pivoted together at their inner ends and pivotally connected at their outer ends to a swinging sash and to the window frame, which toggle links fold flatwise on each other when the toggle is fully folded and the sash closed.

It further has for its object a concealed locking means for holding the links from being unfolded when the sash is closed.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is an elevation of a window structure embodying this invention.

Figure 2 is an enlarged sectional view on line 2—2, Figure 1, showing the toggle as completely folded when the sash is closed.

Figure 3 is an enlarged fragmentary sectional view, similar to Figure 2, illustrating the position of the toggle of the sash holder when the sash is fully open.

Figure 4 is a face view, partly in section, of the toggle links when open, looking to the left in Figure 3.

Figure 5 is a sectional view on line 5—5, Figure 2, the sash being shown in full.

In air conditioned busses, railway cars, and the like, it is necessary that the sash be closed when the air conditioning system is working and be locked from being opened by curious persons and tamperers, and also that the sash be capable of being opened for the purpose of ventilation, if the air conditioning system fails.

The feature of this invention is a sash holder which can be operated to open the sash only in cases of emergency, as by the driver, or conductor, when the air conditioning system fails.

This window sash holder includes toggle links pivoted together at their inner ends and being provided at their outer ends with means, as hinge leaves, for pivotally connecting the links respectively to a sash, which has an opening and closing movement, and to the window frame, the toggle links being normally folded into a position in which they lie flatwise on each other, and means for locking them in this position against opening.

In the drawing, 1 designates a window frame suitably mounted and sealed as at 2 and 3 in the window opening of a car body structure 4. 5 designates a normally closed sash in the window frame 1, this being usually hinged at 6 at one end, that is its front end with respect to the direction of movement of the vehicle, and is capable of swinging to an open position, Figure 3. The sash, when closed, is tightly sealed in the window frame, as by a sealing strip 7. The sash also consists of spaced apart glass panels 8 sealed in the frame 5, as at 9.

The sash holder includes a pair of toggle links 11 and 12 pivoted or hinged together at their inner ends at 13 and at their outer ends pivotally connected to the window frame 1 and the sash frame 5 respectively, the toggle links being arranged to fold flatwise against each other, as seen in Figure 2, when the sash is closed, and a concealed locking bolt for locking the toggle links in folded position when the sash is closed. The sash holder is located at the side of the window frame opposite the hinged edge of the sash.

One of the links, as 12, is formed with a recess for receiving the other link 11 and in which the link 11 nests when the toggle is fully folded. As here shown, the link 12 is rectangular and box-like in form, and the link 11 is in the form of a block which nests or fits into the recess of the link 12 when the toggle is folded. The link 11 is pivoted at its outer end at 14 to a hinge leaf 15 which is secured to the window frame 1 in any suitable manner, as by screws 16. The link 12 is pivoted or hinged at its outer end at 17 to a hinge leaf 18 secured as by screws 19 to the sash 5.

The locking bolt is designated 20, this being mounted in a suitable bore 21 in one of the links, as the link 11, parallel to the axis of joint 13 of the toggle, or to the hinge pin 14, the bolt 20 being pressed axially as by a compression spring 22. The hinge leaf 15 is formed with angular flanges 23 to which the hinge pin 14 is pivoted, these flanges overlapping the upper and lower sides of the link 11 and also overlapping the outer end of the bore 21. One of these flanges 23 is provided with an opening 25 arranged to come into alinement with the bore 21 when the toggle is completely folded, this opening 25 being for the purpose of receiving the end or nose 26 of the locking bolt. The locking bolt 20 is held from turning in the bore 21 by a transverse pin 27 in the bore coating with a flat face 28 on the bolt.

As here shown, the opening 25 is non-circular,
and the nose 26 is of similar shape in order to fit thereinto when the toggle links are completely folded and the bolt registers or alines with the opening 25. When the toggle links are completely folded and hence, the sash locked in folded position, the locking bolt is located under one of the side walls of the recess of the boxlike link 12.

In order to make the bolt accessible for unlatching, for the purpose of opening the sash, this wall of the recess is provided with an opening 25 for receiving a suitable tool by which the bolt can be depressed through the bolt opening 25 in the flange 23.

By reason of this construction, the window regulator mechanism is particularly strong and rigid to hold a sash, not intended to be opened, in snugly closed position, and also by reason of its construction and the nesting arrangement of the links, the mechanism can not be operated by tamperers, or by anyone except authorized persons.

What we claim:

1. A window sash holder comprising a pair of toggle links pivoted together at their inner ends and hinge leaves pivoted to the outer ends of the links respectively for attachment to a sash frame and a window frame, the links being foldable into a position flatwise on each other when in folded position, and a spring pressed locking bolt carried by one of the leaves and movable, parallel to the pivot connecting the links, into and out of position when the toggle links are fully folded.

2. A window sash holder including toggle links pivoted together at their inner ends and hinge leaves pivoted to the outer ends of the toggle links respectively for attachment to a sash having an opening and closing movement and the window frame, one link being formed with a recess for receiving the other link which nests therein when the toggle is fully folded, and a spring pressed locking bolt carried by said other link and movable in a direction parallel to the pivot of the toggle into and out of interlocking engagement with the adjacent hinge leaf when the toggle is fully folded.

3. A window sash holder comprising toggle links pivoted together at their inner ends, hinge leaves pivoted to the outer ends of the links, for attachment to a sash and a window frame, one of the links being formed with a recess for receiving the other link when the toggle is fully folded, the hinge leaf connected to said other link being formed with angular flanges lapping opposite sides of said other link, one of the flanges being formed with a locking bolt opening, and a spring pressed locking bolt carried by said other link and arranged parallel to the joint of the hinge and arranged to come into alinement with the bolt opening in one of the flanges when the toggle is completely folded.

4. A window sash holder comprising toggle links pivoted together at their inner ends, hinge leaves pivoted to the outer ends of the links for attachment to a sash and a window frame respectively, one of the links being formed with a recess for receiving the second link when the toggle is fully folded, the hinge leaf connected to said second link being formed with angular flanges lapping opposite sides of said second link, one of the flanges being formed with a locking bolt opening, a spring pressed locking bolt carried by said other link and arranged parallel to the joint of the hinge to come into alinement with the bolt opening in one of the flanges when the toggle is completely folded, one of the walls of the recess having a tool receiving opening aligned with the lock bolt opening when the toggle is completely folded.

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