

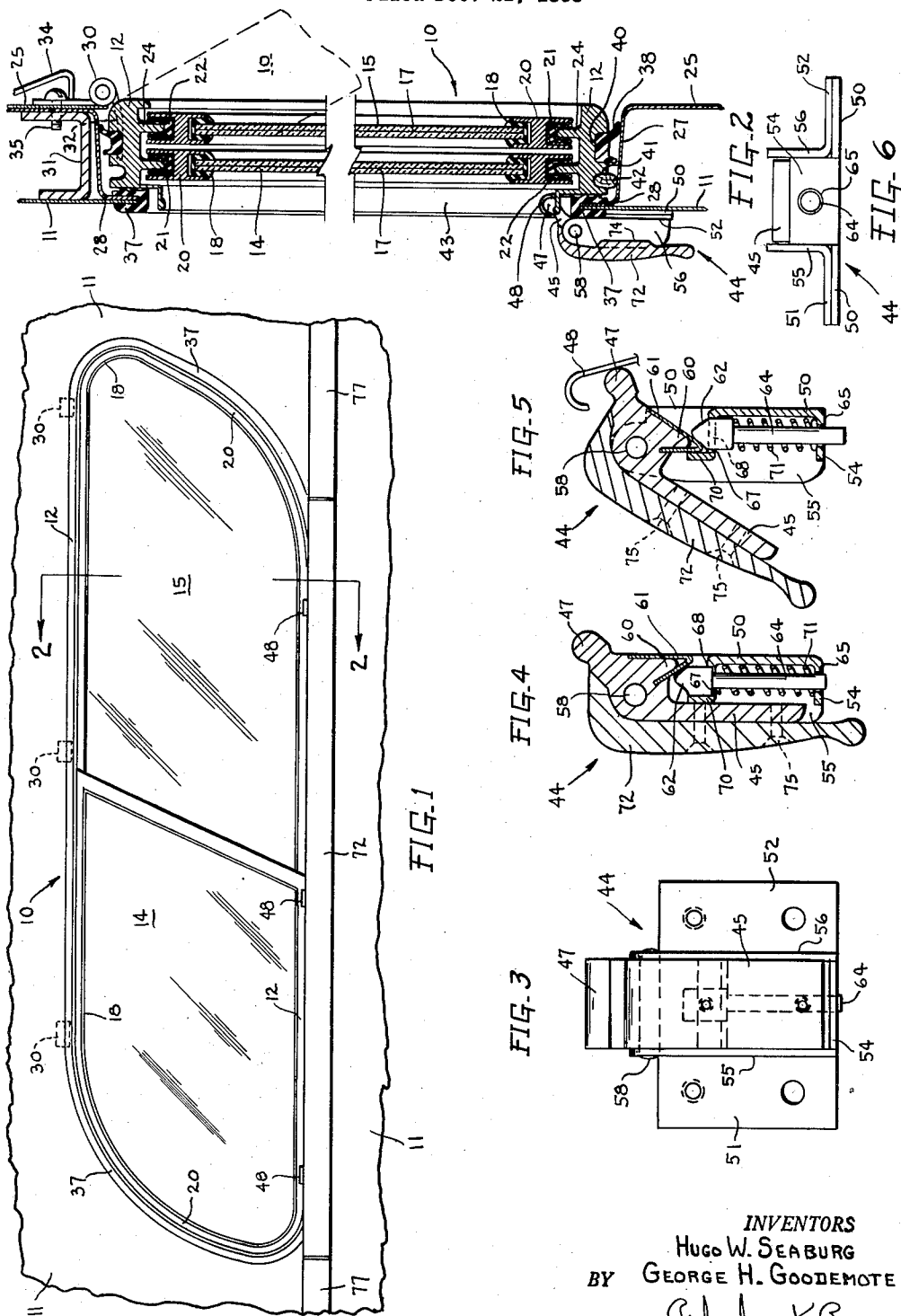
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H. W. SEABURG ET AL

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ESCAPE SASH RELEASE MECHANISM FOR VEHICLES

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INVENTORS
HUGO W. SEABURG
BY GEORGE H. GOODMOTE
Richard von K. Brunn
Attorney

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ESCAPE SASH RELEASE MECHANISM FOR VEHICLES

Hugo W. Seaburg and George H. Goodemote, Syracuse, N. Y., assignors to The O. M. Edwards Company, Inc., Syracuse, N. Y., a corporation of New York

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2 Claims. (Cl. 296—44)

This invention relates to escape sash release mechanisms, and has particular reference to a novel release mechanism for use in conjunction with vehicle mounted escape sash of unusually large size.

Heretofore, it has been the practice in busses, trains and like vehicles to provide numerous individual sash assemblies along the sides of the vehicle, one such assembly being located adjacent each row of seats. Usually, with such an arrangement, at least one sash on each side of the vehicle is an escape sash which is hinged or otherwise pivotally mounted at one of its edges so that it can be swung out of the window opening to provide an emergency exit. Since these escape sashes are not large, the unhinged or free edge thereof can normally be maintained in a closed and weathertight condition by a relatively simple lock or latching means. The release mechanism for this lock or latching means is generally located below the sash adjacent the passengers in the seats, and can be easily operated by one person to enable an emergency escape from the vehicle should such become necessary.

At the present time, however, there is a definite trend, particularly among bus manufacturers, towards replacing the numerous individual sash assemblies above mentioned by a smaller number of oversized sash, each of which may serve at least two rows of vehicle seats. This change in design improves passenger visibility and imparts a more streamlined appearance to the vehicle, but creates a new problem in conjunction with escape sash latching and the release mechanism therefor. As before, the escape sash will be pivotally mounted at its top or bottom edge, but a single latch or locking device will no longer be adequate to hold its free edge in window closing position. On the contrary, if the oversized escape sash frame is to be kept from buckling and a weathertight seal maintained, the sash must be held in normal closed position by a number of strong latches at frequent intervals along its free edge.

Since a plurality of latching devices are required to maintain the new style oversized escape sash in window closing position, the common types of release mechanisms which actuate but a single latching device are no longer practical. Thus, if each latching device engaging the free edge of the oversized sash had to have its own individual release mechanism, the sash could not be quickly released in an emergency except by the concerted effort of a number of people. This, of course, might not be possible in the event of a bad accident. Furthermore, since the oversized escape sash may extend alongside two or even three rows of seats, it will be apparent that one person alone could not reach all the release mechanisms without considerable moving about which might be extremely difficult if not impossible.

In order to eliminate the problem outlined above, it is the primary object of this invention to provide a single release mechanism for an oversized escape sash which can be operated at any point along the length of the sash

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to simultaneously release all of the latching devices normally holding it in window closing position.

Another important object of this invention is to provide a single or unitary release mechanism for an oversized escape sash that can be easily operated by one person.

A further object of the invention is to provide latching means and a release mechanism for an oversized escape sash wherein the latching means operate to cam the free edge of the sash outwardly when actuated by the release mechanism.

Still another object of the invention is to provide a release mechanism for an oversized escape sash which is of simple and economical construction and yet is attractive in appearance.

Other objects and advantages of the invention will become apparent from the following detailed description read in conjunction with the accompanying drawings, wherein like reference numbers designate corresponding parts in all the views.

In the drawings—

Figure 1 is a side elevation of an oversized escape sash and release mechanism therefor, the elevation being taken from inside the vehicle;

Figure 2 is a vertical section taken along line 2—2 of Figure 1;

Figure 3 is a side elevation of a latching device provided in accordance with the invention to normally maintain the escape sash in window closing position;

Figure 4 is a vertical section through the latching device of Figure 3 showing the position of the latch elements when the device is in latched condition;

Figure 5 is a section corresponding to the section of Figure 4 showing the position of the latch elements when the device is in unlatched condition; and

Figure 6 is a bottom plan view of the latching device of Figure 3.

Having reference now to the drawings, which illustrate a typical embodiment of the invention for the purpose of disclosure, 10 generally indicates an oversized escape sash mounted in a window opening formed in the body panels 11 of the vehicle. The escape sash may comprise a continuous sash or guide frame 12 adapted to support a pair of single glazed, movable glass panels 14, 15. Panels 14, 15 are conventional, and each includes laminated sheet glass 17, glazing rubber 18 and glass frame 20. The frames 20 are formed with external channels 21 containing weatherstripping 22, and these channels receive guide ribs 24 formed integrally with the sash frame 12. It will be understood, of course, that other than as hereinafter specifically pointed out, the sash frame 12 may have any conformation necessary to support single or double glazed, fixed or movable glass panels, and it is not intended that the invention be confined to any particular frame conformation or panel arrangement.

As best shown in Figure 2, the window opening for the escape sash is defined by the inner body panels 11 and outer panels 25, the latter being dished inwardly to form a sill 27 and flange 28 which may be secured as by welding to the marginal edges of inner panels 11. The sash frame 12 is pivotally mounted at its upper edge to the body panels by means of hinges 30, one leaf of each hinge being secured to the outer panels 25 and post 31, and the other leaf being secured in a slot 32 in the upper rail of the sash frame. A drip moulding 34 may be provided as shown to cover the hinge screws 35 and shelter the hinge joints. When the sash frame is in window closing position as indicated in Figure 2 the inner face thereof engages weatherstripping 37 which is a continuous strip of resilient material engaging the marginal edges of body panels 11 and 25. Additional

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weatherstripping 38 is positioned in a channel 40 in the peripheral edge of sash frame 12 and this weatherstripping engages the top, sides and sill 27 of the window opening formed by the dished-in outer panels 25. A second channel 41 is formed in the bottom rail of the sash frame and a position bar 42 of some suitable material such as hard wood is retained therein. The position bar acts as a cam or lever to properly locate the sash in the opening as it is being drawn into window closing position and thereafter serves to relieve the hinges 30 of the full weight of the sash. The inner face of the sash frame is formed with a continuous inwardly projecting flange 43 which serves as a finish or garnish moulding in that it conceals most of the weatherstripping 37 from view.

The escape sash 10 is retained in window closing position by means of strong, snap-action latching devices generally indicated at 44 in Figures 2-6. In the illustrated embodiment three such latches are employed although more may be necessary or desirable in certain applications. In every case, there must be a sufficient number of devices to prevent the oversized sash frame from buckling or springing and to hold its inner face in close engagement with the weatherstripping 37 so as to insure a weathertight seal. The latching devices 44 are mounted in spaced relation on the inner body panels 11 adjacent the lower edge of the window opening as indicated in Figure 2. Each device includes a latch lever 45 having a rounded, offset head 47 adapted to engage an oppositely disposed hook plate 48 mounted on the inner face of the lower rail of the sash frame 12. The garnish flange 43 is cut away at points opposite the latching devices to permit the hook plates 48 to be mounted flush with the inner face of the sash frame as shown.

Each latching device 44 comprises a base plate 50 and a pair of angle plates 51, 52 secured in spaced relation to the base plate as by welding, Figures 3 and 6. An integral extension 54 of the base plate is folded outwardly between the outwardly extending flanges 55, 56 of the angle plates 51, 52, and with these flanges defines the latch casing. The latch lever 45 is pivotally mounted between flanges 55, 56 on a pin 58 supported by the flanges and includes, in addition to the hook engaging head 47, a nose 60 to which a wear plate 61 is suitably secured. The wear plate 61 engages the beveled or V-shaped head 62 of a latch bolt 64 slidable longitudinally in the latch casing. The lower end of bolt 64 passes freely through, and is guided by, a bore 65 in the folded base plate extension 54, while the head 62 of the bolt is guided in an aperture 67 through an outwardly turned strip 68 of the base plate. Strip 68 extends between the flanges 55, 56 in parallel relation to the extension 54 and then is turned to form a flange 70 parallel to the plane of the base plate. A strong compression spring 71 encircles the shank of bolt 64 between the underside of the bolt head 62 and extension 54, and serves to bias the bolt head upwardly against wear plate 61.

When the latching device is in latched or hook engaging condition, the V-shaped bolt head bears against the left side of the wear plate 61 as viewed in Figure 4, and the force of the spring 71 holds the head tightly against the plate to maintain this condition. A strong, positive force is required to move the latching device into unlatched condition and this force must act on the latch lever 45 to pivot it in a clockwise direction, Figures 4 and 5, about its pivot pin 58. As the latch lever is thus pivoted, the wear plate 61 forces the latch bolt downwardly against the force of spring 71 until it rides over the crown of the bolt head and stops against flange 70, at which point the head is snapped upwardly by the action of the spring and bears against the right side

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of the wear plate as shown in Figure 5 to maintain the device in unlatched condition.

As pointed out hereinbefore, if each of the latching devices 44 had to be individually unlatched, the escape sash 10 could not be quickly released except by the concerted action of several people. Furthermore, the oversized sash is too long and the devices adjacent the extremities thereof too far apart for one person to easily reach them all without considerable moving about which might not be possible in the event of a bad accident. Accordingly, the invention provides a release mechanism common to all of the latching devices in the form of an elongated bar 72 which extends substantially the full length of the escape sash and may be operated at any point along its length to simultaneously unlatch all of the devices. Bar 72 is of rigid material such as metal and is formed with a reinforcing rib 74 on the inner side thereof. This rib is cut away adjacent each latching device to receive the latch lever 45, Figures 2, 4 and 5, and is securely attached to the levers as by screws 75. With this construction, it will be apparent that if the lower edge of the rigid bar is grasped at any point along its lower edge and pulled outwardly this motion will be simultaneously transmitted to each of the latching devices causing their latch levers to pivot about the pins 58 and release the escape sash. Since the bar 72 extends below the devices, it will be apparent also that a greater mechanical advantage is obtained by pulling outwardly on its lower edge than would be obtained by pulling outwardly on the individual latch levers, and this makes the actuation of the devices easier even though all are actuated at the same time. The location of the release bar 72 beneath the escape sash 10 not only makes it easily accessible to the passengers in the seats but also permits it to serve as a portion or continuation of the fixed trim moulding 77 about the inside of the vehicle, Figure 1, so that it in no way impairs the attractive appearance of the vehicle interior.

In operation, the release bar 72 need only be grasped at any point along its length and pulled or jerked outwardly to simultaneously disengage the latching devices 44 from the hook plates 48, as described hereinbefore. However, it should be noted that the pivoting action of the latch levers 45 about their pivot pins 58 not only moves the lever heads 47 out of engagement with the hook portions of the plates 48, but also causes the heads 47 to bear against the straight portions of the plates and cam the escape sash outwardly, as indicated in Figure 5. This camming action of the latching devices during the releasing operation is important since, in starting the movement of the escape sash out of the window opening, it overcomes the static friction tending to retain the sash in window closing position (due to the engagement of the position bar 42 and weatherstripping 38 with the sill and sides of the window opening) and thus enables the sash to be easily pushed the rest of the way out of the opening to provide an emergency exit.

From the foregoing description it will be apparent that the subject invention provides a novel as well as highly practical latching means and release mechanism for oversized escape sash of the type now being commonly installed in public conveyances. This invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The embodiment disclosed is therefore to be considered in all respects as illustrative rather than restrictive, the scope of the invention being indicated by the appended claims.

What we claim is:

1. Release mechanism for an oversized vehicle escape sash serving at least two rows of vehicle seats, said sash being swingably mounted at its upper edge in a window opening defined by the vehicle body panels, comprising: a plurality of latching devices mounted in spaced colinear relation on the body panel below the lower edge of said

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sash, weatherstripping on said body panel adjacent the lower edge of said sash, hook elements on the lower edge of said sash opposite said latching devices, cam means on said latching devices normally engaging said hook elements to cam the lower edge of the sash into sealed relation with said weatherstripping when said devices are locked and to cam the lower edge of the sash outwardly from the window opening when said devices are unlocked, and means operable to simultaneously lock and unlock said latching devices comprising a single elongated bar member extending substantially the full length of said sash and secured to each of said latching devices, said member forming a portion of the trim moulding of the vehicle and overlying said latching devices to normally conceal them from view.

2. A release mechanism for an oversized vehicle escape sash serving at least two rows of seats, said sash being swingably mounted at one edge in a window opening defined by the vehicle body panels, comprising: a plurality of latching devices mounted in spaced, colinear relation on the body panel adjacent the opposite edge of said sash, hook elements on said sash opposite said latching devices, means on said latching devices normally engaged

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by said hook elements to maintain the sash in window closing position, said latching devices being rockable towards the plane of said sash, and a substantially flat, elongated bar member rigidly secured to all of said latching devices and operable at any point along its length by edgewise pivotal movement thereof to simultaneously rock the devices towards the plane of the said sash, said means on the latching devices being disengaged from said hook elements during the rocking movement of the devices and being operable simultaneously with said disengagement to cam said sash outwardly of the window opening.

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