May 22, 1951 Y. W. EHRET 2,554,442

LATCHING DEVICE FOR KNOCK OUT WINDOWS

Filed March 30, 1945

Fig. 1.

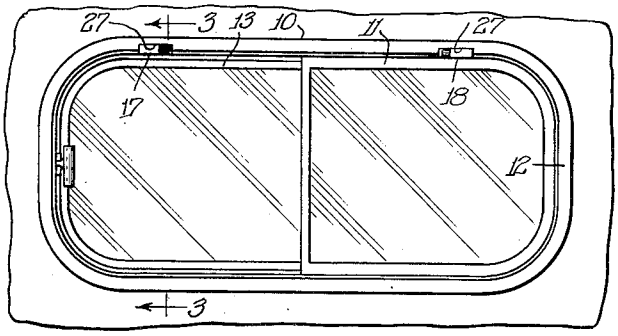


Fig. 2.

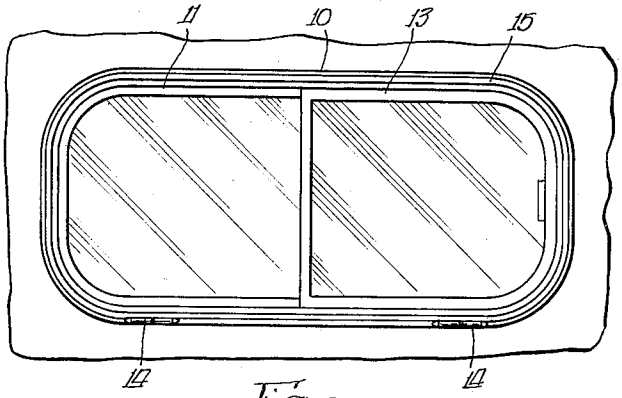


Fig. 3.

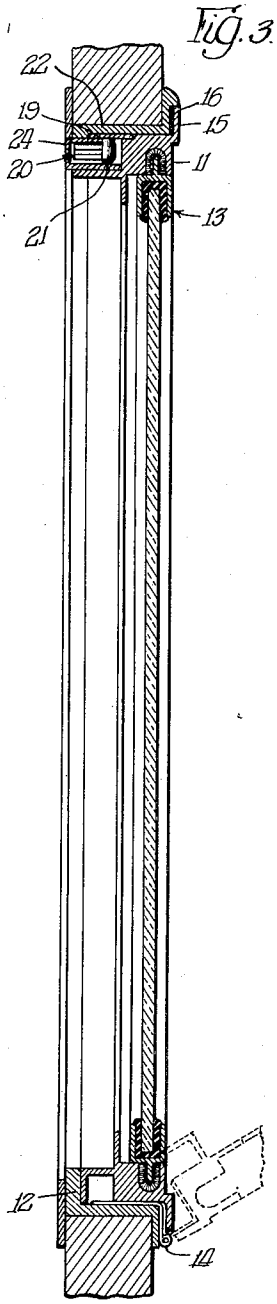


Fig. 4

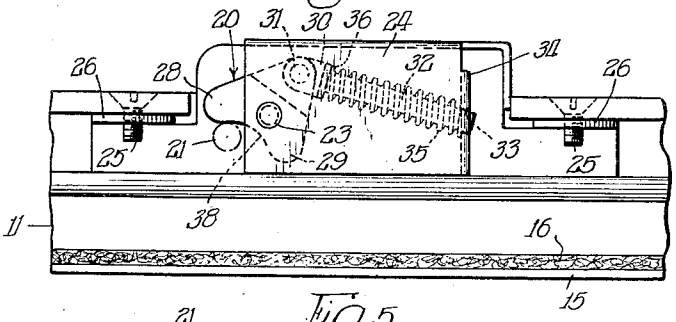


Fig. 5

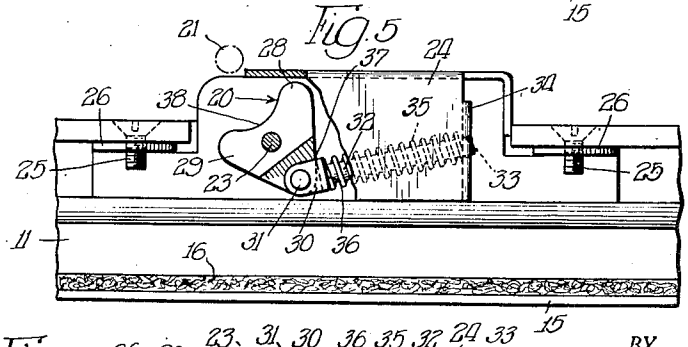
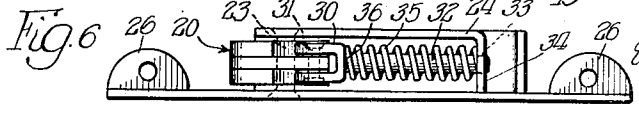


Fig. 6



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LATCHING DEVICE FOR KNOCKOUT WINDOWS

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Application March 30, 1945, Serial No. 585,711

2 Claims. (Cl. 292—78)

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This invention has to do with knock-out sash of the type used for windows of busses and other vehicles for the purpose of permitting escape of the occupants in the event of an accident.

The principal object of the invention is to provide a latching device of new and improved construction which will hold the sash tightly in its closed position, will release the sash when the latter is subjected to sufficient force, will aid in opening the sash upon the latter being released, and will automatically refasten the sash in its closed position again upon the sash being forcibly returned to that position.

The present latching device is of value not only in facilitating escape through the window opening but in allowing the sash to be swung down on the outside of the bus or other vehicle for convenient access to both surfaces for cleaning.

While the foregoing statements are indicative in a general way of the nature of the invention, other more specific objects and advantages will be apparent to those skilled in the art upon a full understanding of the construction and mode of operation of the new latching device.

A preferred embodiment of the invention is presented herein by way of exemplification but it will of course be appreciated that the invention is capable of incorporation in other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawing:

Fig. 1 is an inside view of a bus window equipped with the latching device of the invention;

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

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

Fig. 4 is a top plan view of the upper edge of the sash in the window, illustrating the position of the pivotally mounted detent of the latching device when the sash is closed, with the keeper engaged by the detent shown in dot-dash lines;

Fig. 5 is a similar view illustrating the position assumed by the detent when the sash is forced open, with the released keeper shown in dot-dash lines; and

Fig. 6 is a side view of the latching device.

Referring in more detail to the drawing, the window shown therein includes a frame 10 and a sash 11. The frame 10 is provided about its inner periphery with a flange 12, and the sash 11 is positioned in the frame in substantial abutment with such flange. The sash 11 contains a horizontally slidable panel 13, but this feature has nothing to do with the invention. The sash 11 is hinged along its lower outside edge at 14 to

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the lower outside edge of the frame 10, and is provided about its periphery with a sealing flange 15, which flange abuts the outside edge of the frame on an interposed gasket 16 carried by the flange.

The sash 11 is locked in its closed position in the frame 10 by two spaced latching devices 17 and 18. As these devices are duplicates of each other—and as one could be employed instead of two—only one of them will be described.

The latching device 17 includes primarily a keeper 19 and a detent 20. The keeper 19 consists of a downwardly projecting stud 21 which is mounted on a plate 22. The plate 22 is fixedly secured in any suitable manner to the upper edge of the frame 10, with the stud 21 projecting into interlocking engagement with the detent when the sash is in its closed position. The detent 20 is a generally triangular member which is pivotally mounted near its center on a pin 23 within a housing 24. The housing 24, which is preferably a one-piece sheet metal stamping, is positioned against the upper edge of the sash and is fixedly secured in position by screws 25 which extend through a portion of the sash into threaded apertures in ears 26 formed on the ends of the housing. The flange 12 on the adjacent portion of the frame 10 is cut away at 27 to accommodate the housing 24 when the sash is in its closed position.

The detent 20 is provided with two nose portions 28 and 29 between which the stud 21 of the keeper 19 is adapted to be positioned, with the nose portion 28 engaging the stud to hold the sash closed. The detent 20 is pivotally connected beyond the pin 23 to a bifurcated clip 30, by means of a pin 31. The pin 31 is located approximately equidistant from the two nose portions 28 and 29, measured along diverging lines which pass on opposite sides of the pin 23. The clip 30 is of U-shaped cross section and is secured to one end of a guide rod 32, which rod is slidably mounted at its other end in an aperture 33 in a flange 34 formed on the housing. A coil spring 35 encircles the rod 32 and is confined under substantial compression between the base 36 of the clip 30 and the flange 34.

When the sash 11 is in its closed position the nose portion 28 bears with considerable pressure against the stud 21 of the keeper, as shown in Fig. 4, and holds the sash tightly closed on the sealing gasket 16. When the sash is forced open by being struck or pushed with considerable pressure, the nose portion 28 will yield and the detent will snap from the position shown in Fig. 4 to the

position shown in Fig. 5, through the dead-center position of the spring 35. In this latter position the detent 20 will be brought to rest against the pressure of the spring 35 by engagement of one edge of the detent with the base 36 of the clip 30 at 37.

It will be understood from the foregoing that the detent 20 is acted upon in two different directions by the spring 35, and that the direction in which it is acted upon depends upon the position into which the detent has been snapped. The detent is provided with a curved throat portion 38 between the nose portions 28 and 29, and the stud 21 of the keeper operates in this throat portion. In moving from the position shown in Fig. 4 to the position shown in Fig. 5 the detent 20 passes momentarily through a dead-center position.

When the sash 11 is forced open from its closed position the detent 20 will turn quickly from the position shown in Fig. 4, in which the nose portion 28 is pressing with considerable pressure against the stud 21, into an oscillated position, wherein the other nose portion 29 will contact and press against the opposite side of the stud 21, giving added impetus to the opening movement of the sash and moving it beyond the detent 20 as shown in Fig. 5.

When the sash 11 is ready to be closed again it is moved forcibly into its closed position. As it approaches this position the nose portion 29 of the detent will engage with the stud 21 and yield, swinging the detent into a position in which the nose portion 28 will force itself behind the stud 21, again locking the sash tightly in its fully closed position.

The detent 20 may advantageously be of laminated form, as shown in Fig. 6, with the clip 30 embracing only the center lamination and with the other laminations cut away to provide clearance for the sides of the clip.

I claim:

1. For use in a vehicle window having a frame member and a sash member hingedly connected to one side of said frame member, a latching device for detachably connecting the other side of said sash member with said frame member, said latching device comprising a keeper pin on one of said members and a pivotally mounted detent member on the other of said members, said detent member having two nose portions between which said keeper is adapted to be positioned with one of said nose portions engaging said keeper when said sash member is in closed position and the other of said nose portions engaging said keeper during the initial opening movement of said sash member, a guide rod having a generally U-shaped end portion, said detent member comprising two outer plates and an inner plate with portions of the outer plates cut away to provide a generally triangular connecting portion on said inner plate for pivotally connecting thereto said U-shaped rod end, a compression spring on said guide rod operable to resist pivotal movement of said detent member towards a dead-center position but accelerating the pivotal movement of said detent member away from a dead-center position, said triangular connecting portion being positioned between the legs of said U-shaped end portion with an adjacent side edge thereof adapted to engage the base of said end portion and provide stop means permitting limited movement of said detent relative to said guide rod in either direction away from a dead-center position, whereby said latching device functions to yieldably hold said sash in closed position and to initially resist and then accelerate the movement of said member when it is forced open by pressure exerted against the sash.

2. For use in a vehicle window having a frame member and a sash member hingedly connected to one side of said frame member, a latching device for detachably connecting the other side of said sash member with said frame member, said latching device comprising a keeper pin on one of said members and a pivotally mounted detent member on the other of said members, said detent member having two nose portions between which said keeper is adapted to be positioned with one of said nose portions engaging said keeper when said sash member is in closed position and the other of said nose portions engaging said keeper during the initial opening movement of said sash member, a guide rod having a slotted end portion, said detent member having a triangular connecting portion opposite said nose portions, said connecting portion being pivotally secured in the slot in said rod end with an adjacent side edge thereof adapted to engage the edge of the rod at the base of the slot and limit the relative movement of the detent and the guide rod from a dead-center position of the detent to the open position thereof, and a compression spring on said guide rod operable to resist pivotal movement of said detent member towards the dead-center position but accelerating the pivotal movement of said detent member away from the dead-center position, whereby said latching device functions to yieldably hold said sash in closed position and to initially resist and then accelerate the movement of said member when it is forced open by pressure exerted against the sash.

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