Nov. 24, 1953 F. E. DONATHAN 2,660,274

PUSH-OUT WINDOW STRUCTURE

Filed Aug. 21, 1952 3 Sheets-Sheet 1

FIG. 1.

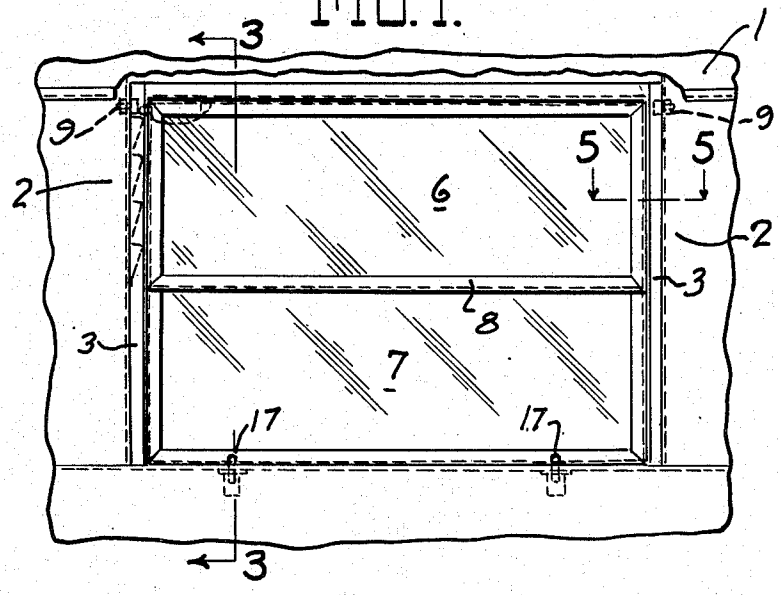
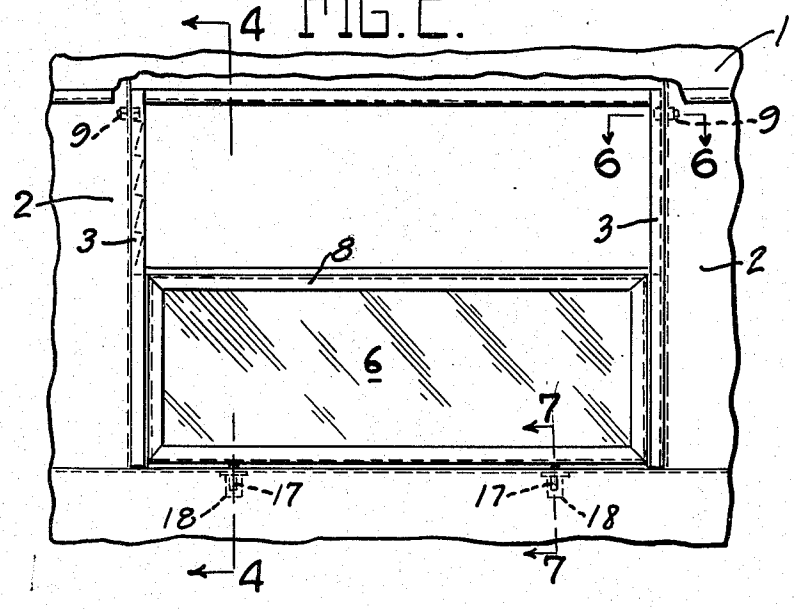


FIG. 2.



INVENTOR.
Francis E. Donathan
BY Owen & Owen,
ATTORNEYS

Nov. 24, 1953 F. E. DONATHAN 2,660,274

PUSH-OUT WINDOW STRUCTURE

Filed Aug. 21, 1952 3 Sheets-Sheet 2

FIG. 3.

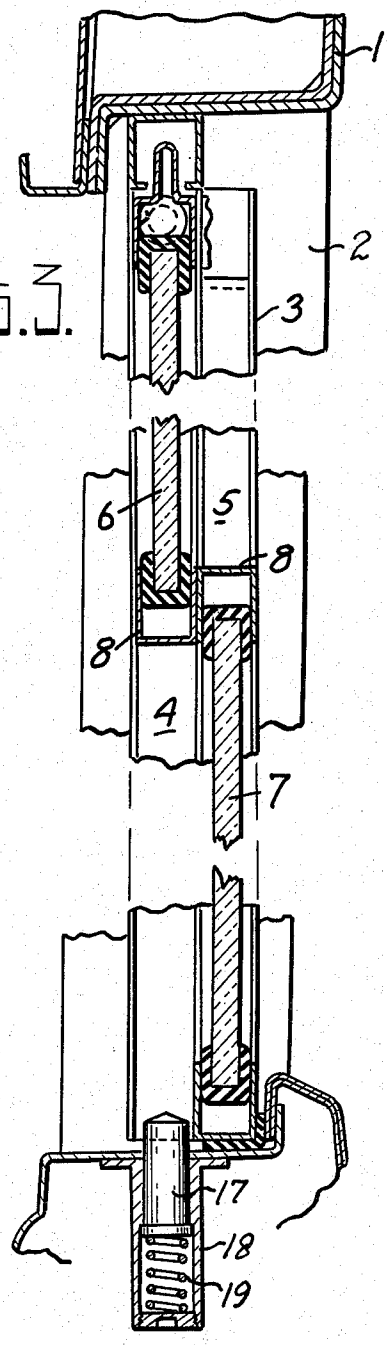
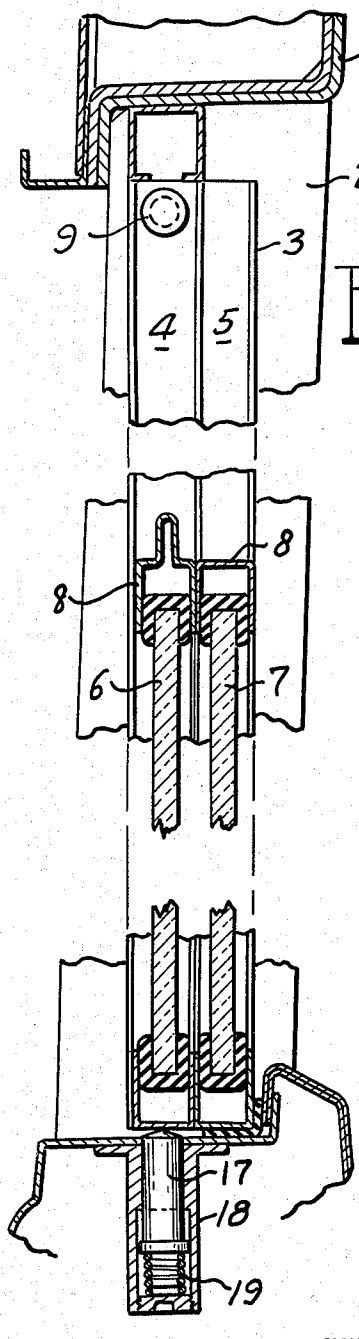


FIG. 4



INVENTOR.
Francis E. Donathan
BY Owen & Owen,

ATTORNEYS

Nov. 24, 1953 F. E. DONATHAN 2,660,274

PUSH-OUT WINDOW STRUCTURE

Filed Aug. 21, 1952 3 Sheets-Sheet 3

FIG. 7.

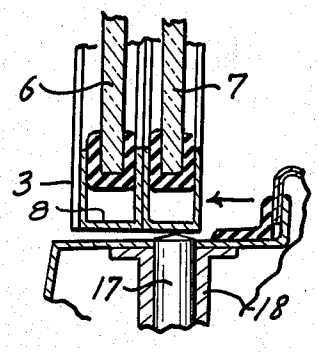


FIG. 5.

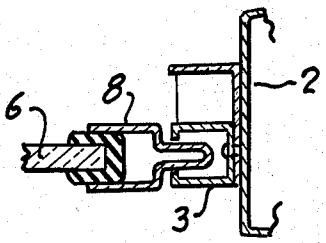


FIG. 6.

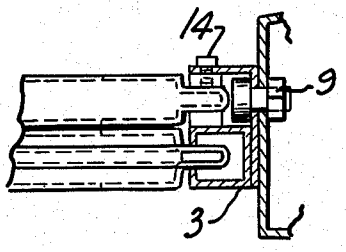
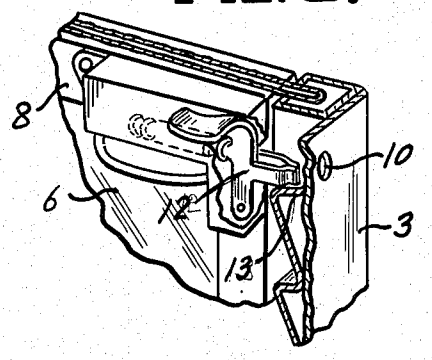


FIG. 8.



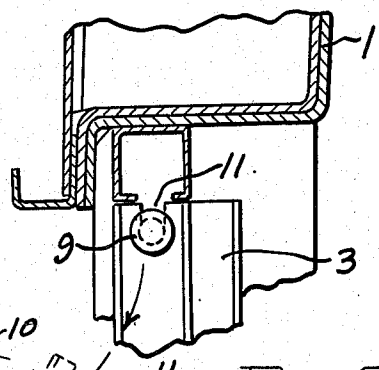


FIG. 9.

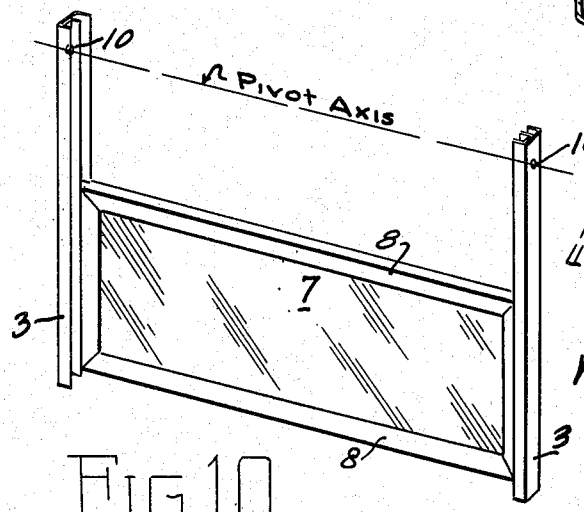


FIG. 10.

INVENTOR.
Francis E. Donathan
BY Owen & Owen,

ATTORNEYS

Patented Nov. 24, 1953

2,660,274

UNITED STATES PATENT OFFICE

2,660,274

PUSH-OUT WINDOW STRUCTURE

Francis E. Donathan, Lima, Ohio, assignor to Superior Coach Corporation, Lima, Ohio, a corporation of Ohio

Application August 21, 1952, Serial No. 305,665

7 Claims. (Cl. 189—64)

1

This invention relates to knock-out or push-out sash for the windows of passenger carrying coaches and is intended more particularly for use in connection with motor driven buses or coaches.

In the use of such coaches it is extremely important to provide windows that are capable of being easily opened or "knocked-out" or pushed out from within the coach and which at the same time are of a nature not to invite tampering with or operation by children or others except in the event of emergencies.

The primary object of the invention is the provision of a swingable or push-out sash carrying means in a window casing which is easily and quickly operable to cause a release or outward swinging movement thereof to completely uncover the casing opening to permit rapid exit of passengers therethrough should an emergency therefor arise.

Another object of the invention is the provision of a push-out window of this character having at least two sash members mounted for relative sliding movements in the casing together with means normally locking the sash members against push-out movements and operable by a predetermined sliding movement of one sash member relative to the other to release the sash members for outward movements together to completely uncover the casing opening in which they were mounted.

Further objects of the invention will be apparent from the following detailed description and from the accompanying drawings, in which:

Fig. 1 is an outside elevation of a device embodying the invention disposed in closed locked position in a window casing opening, parts of the casing being broken away.

Fig. 2 is a view similar to Fig. 1 with the upper sash lowered in lug unlocking position.

Fig. 3 is an enlarged fragmentary section on the line 3—3 in Fig. 1.

Fig. 4 is an enlarged fragmentary section on the line 4—4 in Fig. 2.

Figs. 5 and 6 are enlarged sections respectively on the lines 5—5 and 6—6 in Figs. 1 and 2.

Fig. 7 is an enlarged section on the line 7—7 in Fig. 2 with the closing unit for the casing opening moved partially outward from the closing position shown in Fig. 4.

Fig. 8 is a fragmentary enlarged section in perspective of the locking means for the upper sash in connection therewith.

Fig. 9 is an enlarged fragmentary section similar to the upper portion of the section in Fig. 4 showing a modification of the pivot means and showing in dotted lines the guide strip partially removed from the casing, and

Fig. 10 is a perspective view of the closing unit for the casing opening removed from the casing.

2

Referring to the drawings, 1 designates the casing structure of a motor coach or the like forming a window opening 2. Within this opening at each side and extending substantially its full length is a sash guide strip 3 having two parallel runways 4 and 5 for respective upper and lower sash members 6 and 7. The sash members in the present instance, have metal frames 8 that engage at their outer vertical edges in the respective guideways of the strips 3. Each strip 3, in the present instance, is connected at its upper end to the respective side of the casing by a pivot bolt 9 or the like (Figs. 1, 2, 4 and 6) with such bolts coaxial, thus permitting an outward swinging of the guide strips and sash members carried thereby. These bolts may be mounted in apertures 10 in the strips (Fig. 10) or in upwardly opening end slots 11 (Fig. 9).

The upper sash member 6 is freely slidable in the guide strips, except for a releasable catch means 12 near each upper edge which is spring pressed to coact with respective sets of catch steps 13 in the adjacent guide strips (Fig. 8). This sash may be lowered to the bottom of the strips, as shown in Figs. 3 and 4. The lower sash member 7, however, is stationarily mounted in the two strips 3 in its lowered position, being held by set screws 14 (Fig. 6) or in any other suitable manner.

In the bottom wall 16 of the casing opening and in close relation to the outer side of the lower sash 7, when in closed position, as shown in Figs. 3 and 4, are mounted, in the present instance, in transversely spaced relation, two vertical studs or detents 17. These studs are mounted in respective sockets 18 in the base of the window casing and each is normally pressed outward, or held raised in obstructing position to an outward swinging of the lower sash, by a coiled expansion spring 19 in its socket.

The studs 17 are in the vertical plane of the runs 4 of the two guide strips when such strips are in vertical or closed position, as shown in Figs. 3 and 4, so that the bottom of the upper sash when lowered will strike and rest on said lugs.

The weight of the upper sash is not sufficient in itself to lower the studs 17 against the spring pressure, thus making it necessary to apply a manual downward pressure to the sash 6 for such purpose. When such release of the studs has been effected an outward pressure on the lower sash 7 will cause it and the guide strips 3—3 with the other sash to swing outwardly about the pivots 9 to open escape-position. During such initial outward swinging the lower edges of both sash slide over the depressed studs 17.

In the use of a window equipped with the present invention the upper sash is free, except for the catch means 12, to be raised or lowered as

may be desired. Should an associated coach meet with an accident making it necessary or desirable to effect a hasty exit through a window opening, a person near the window quickly lowers the upper sash against the locking studs 17 and in doing so applies sufficient force to the sash to depress the studs out of the path of outward swinging movement of the lower sash 7. Simultaneous with such releasing movement of the studs an outward pressure should be applied to the lower sash to force it over the depressed studs. The springs 18 are preferably of such stiffness as to be most conveniently depressed by a sudden thrust or lowering of the outer sash 6 against the studs, and the outward pressure on the lower sash must be applied at approximately the same instant so as to swing the lower sash over the studs while depressed or before a rebound action raises the studs sufficiently to prevent such swinging. When the lowered sash has been thus released the two sash and associated guide strips may be swung outwardly sufficient to permit persons to escape from the coach through the window opening. If slots 11 are provided in the guide strips 3 for the pivots 9 the strips and sash are permitted to drop from the casing structure when swung outwardly sufficient to pass the bottom wall of the opening, thus leaving the opening entirely free and unobstructed for escape purposes.

I wish it understood that my invention is not limited to any specific construction or arrangement of the parts, but is capable of numerous modifications and changes without departing from the spirit of the claims.

Having described my invention, I claim:

1. An escape window, comprising a casing forming a window opening, guide strips mounted in opposite side walls of the opening and transversely movable outwardly relative thereto, a lower sash and an upper sash carried by said strips and transversely movable therewith, the upper sash being guided by the strips for raising and lowering movements relative thereto, at least one detent stud in the lower portion of the casing normally standing in position to lock the sash and strips against outward movement relative to the casing, said stud being moved to unlocking position by a forceful lowering of the upper sash thereagainst.

2. An escape window, comprising a casing forming a window opening, vertical guide strips mounted in said opening at each side thereof, pivot means connecting the upper ends of said strips and permitting an outward swinging of the strips, a lower sash connected to and carried by said strips at their lower ends, an upper sash connected to and guided by said strips for raising and lowering movements relative to the lower sash, said strips and sash being swingable together to close or uncover said opening, at least one detent lug in the casing in the path of swinging movement of the lower sash to normally lock it in closed position, said detent lug also being in the path of lowering movement of the upper sash whereby a predetermined forceful lowering of the upper sash will move the lug from lower sash locking position and permit outward swinging of the sash and guide strips from the casing opening.

3. An escape window of the class described, comprising a casing forming a window opening, vertically disposed side guide strips in said opening at opposite sides thereof, casing attaching means for the strips at their upper ends permitting outward swinging thereof relative to the opening, upper and lower sash carried by and swingable with said strips, the upper sash being vertically slidable in the strips and a lower sash being fixed thereto, at least one spring pressed detent mounted in the casing at the bottom portion of the opening and normally projected into position to lock the sash and strips against outward movement from closed position relative to the opening, said detent being in the path of lowering movement of the upper sash whereby upon a predetermined forceful lowering thereof the detent is depressed to release the sash and the strips for outward movement during the period of depression.

4. An escape window of the class described, comprising a casing forming a window opening, vertically disposed guide strips in said opening at opposite sides thereof, means swingingly mounting the upper ends of the strips in the opening, an upper and a lower sash carried at their side edges by said strips, the upper sash being guided for raising and lowering movements by said strips, releasable means in the casing normally engaging the lower sash to lock it and the guide strips in window closing positions, said last means being released by a predetermined lowering movement of the upper sash.

5. An escape window of the class described, comprising a casing forming a window opening, vertically disposed guide strips in said opening at opposite sides thereof, means mounting said strips for outward swinging opening movements, upper and lower sash carried by said strips for movement therewith, and releasable means in the casing for normally locking said strips and sash against outward opening movement relative to the window opening, one of said sash being guided for raising and lowering movements in said strips and operable by a predetermined movement thereof to engage and release said locking means to permit outward movements of said strips and sash.

6. A window of the class described, comprising a casing forming a window opening, a closing unit mounted in said opening and outwardly movable relative to the casing to uncover a part at least of said opening, said unit including a guide strip at each side and upper and lower sash carried by said strips and at least one sash being slidable in the strips relative to the other, releasable means normally locking the unit against outward movement in the opening and operable by a predetermined movement of the slidable sash and by pressure therefrom to release said locking means.

7. A combination as called for in claim 6 wherein the locking means comprises at least one spring pressed locking lug mounted in the casing and normally having locking engagement with the unit.

FRANCIS E. DONATHAN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
256,559	Forg	Apr. 18, 1882
1,533,619	Thompson	Apr. 14, 1925
1,630,388	McClean	Aug. 14, 1928

FOREIGN PATENTS

Number	Country	Date
5,619	Great Britain	Mar. 18, 1895