March 26, 1968 D. J. YOUSSI ETAL 3,374,822

SELF-STORING STORM DOORS

Filed March 22, 1965 2 Sheets-Sheet 1

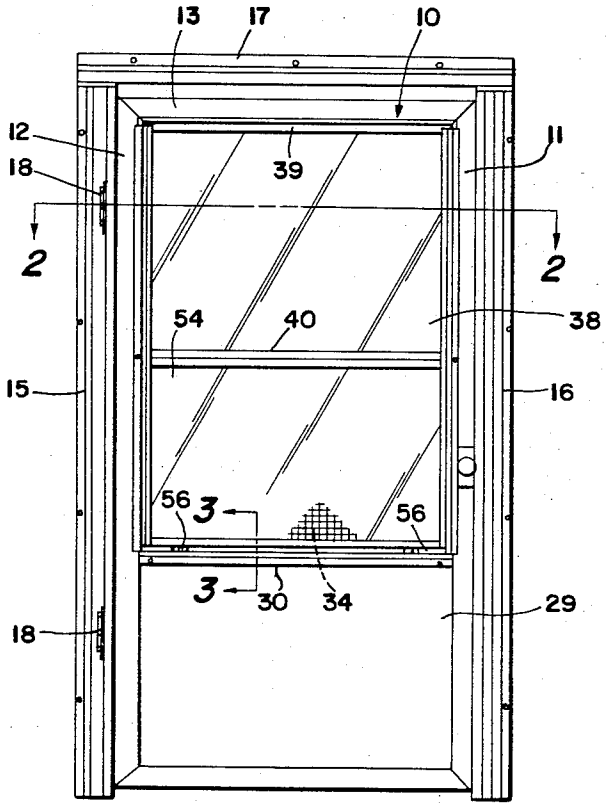


Fig. 1

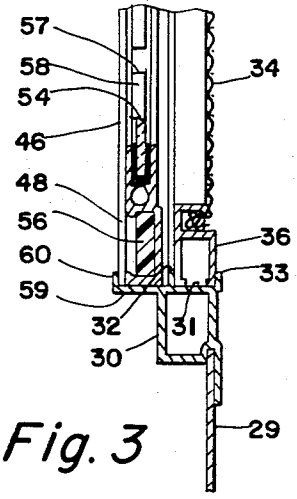


Fig. 3

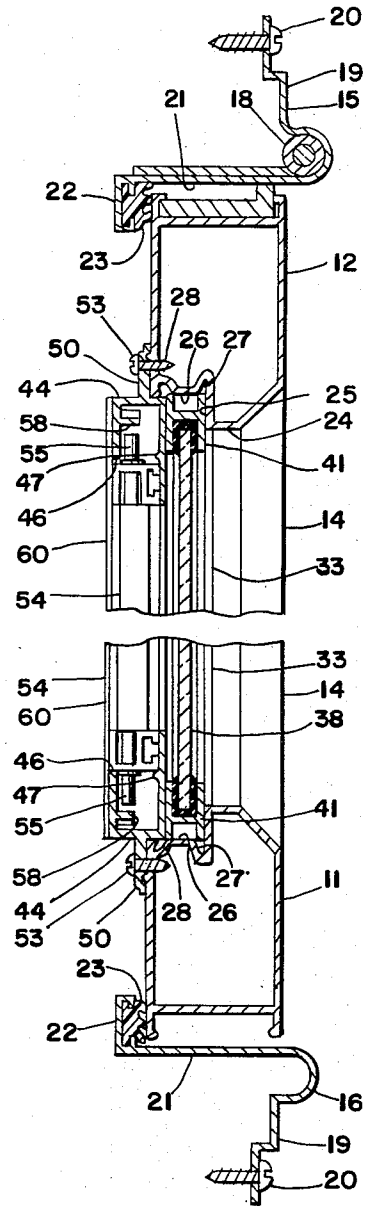


Fig. 2

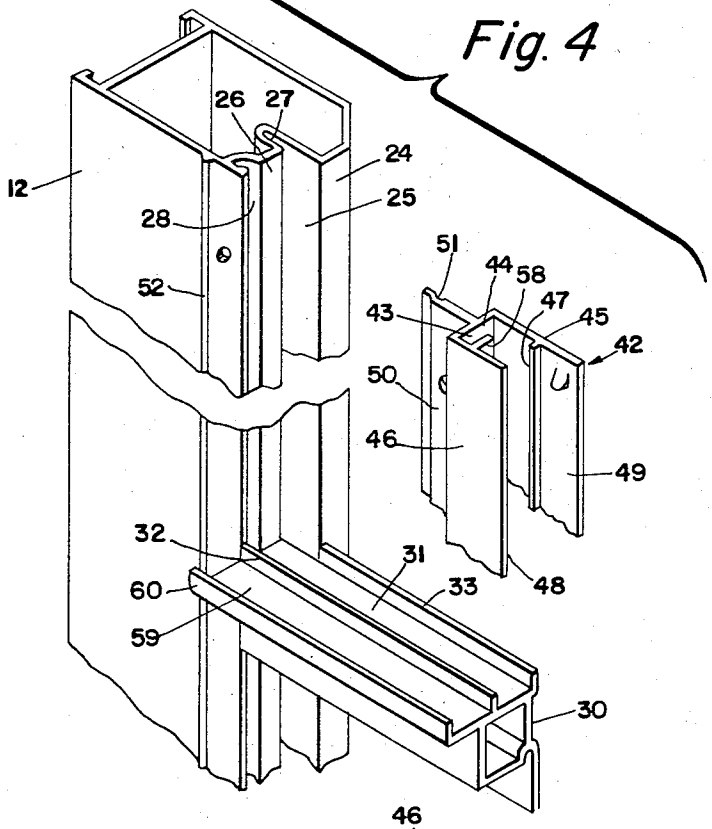
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Fig. 4



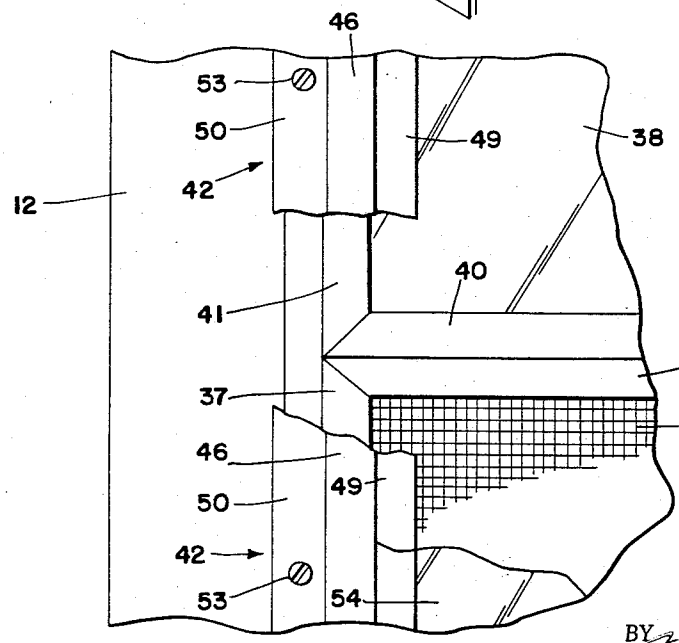


Fig. 5

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SELF-STORING STORM DOORS

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3 Claims. (Cl. 160—91)

This invention relates to self-storing storm doors and, more particularly, to a storm door construction which provides a track for a window sash unit that would normally be interchanged with a removable screen unit by removing such units from the door.

Conventional storm doors comprise a mounting frame having a pair of sash units which are removably mounted therein. At least one of the sash units may be removed so that the door has a sash pair comprising a window unit and a screen unit in the summer and two window units in the winter. The sash pairs are separated in the door frame by a horizontal supporting sill and are retained in the door frame by clips which are secured to the frame but which may be removed in order to change the sash.

Although multiple track, self-storing type storm windows are widely used, manufacturers of storm doors have not provided such multiple tracks on the door frame since the provision of such tracks would require separate extrusion dies for the side frame members on the one hand and the top and bottom frame members on the other hand. Furthermore, the cost of fabrication, tooling, and labor is increased if frame members having different cross sectional areas are joined at their ends. The extrusion of side frame members with tracks requires more metal than is required in the conventional door frame, thereby increasing the weight and cost of the door.

It is an object of the present invention to provide a track for a storm door that will permit the storage of the extra sash unit in the door, and which will replace the conventional screw clips and serve as a means to retain the remaining sash units in the door frame.

It is a further object of this invention to permit the same inventory of door frames to be used both for self-storing type storm doors and for nonself-storing or conventional storm doors.

It is another object of the invention to provide a self-storing type storm door that may use the same extrusion sections for both the side frame members and the transverse frame members.

Another object is to provide a self-storing type storm door which avoids the cost of the excess "useless" metal represented by those portions of track-shaped side frame members that extend beyond the lights of the door and down along the kick plate.

It is a still further object of this invention to provide side tracks for a storm door which permit the elimination of the conventional horizontal supporting still between sashes.

These and other objects, features, and advantages of the invention will become apparent and more fully understood from the following detailed description of the invention and from the accompanying drawings, in which:

FIG. 1 is an elevational view of a storm door and its door jambs, as viewed from the inside of the door;

FIG. 2 is an enlarged, cross sectional view with portions broken away for clarity, the plane of the section being indicated by the line 2—2 in FIG. 1;

FIG. 3 is an enlarged, fragmentary, cross sectional view, the plane of the section being indicated by the line 3—3 in FIG. 1;

FIG. 4 is a fragmentary, exploded, perspective view of a portion of the storm door illustrated in FIG. 1; and

FIG. 5 is an enlarged, fragmentary, elevational view

of a portion of the door illustrated in FIG. 1, with portions broken away for clarity.

Referring now to the drawings, and particularly to FIG. 1, a storm door **10** is illustrated. The storm door **10** includes side frame members **11** and **12** and top and bottom frame members **13** and **14**, respectively. The frame members **11–14** may be aluminum extrusions and may have identical cross sections. For a given strength, each has substantially less weight than would frame members formed with multiple tracks.

A Z-bar unit comprising side Z-bars **15** and **16** and a head Z-bar **17** are respectively associated with the frame members **11–14**. The frame member **12** is hinged to the side Z-bar **15** by hinges **18**. Each Z-bar **15–17** comprises a first face flange or leg **19** which is screwed to the outer face of a wood door frame (not shown) by screws **20**. The Z-bars **15–17** also include a second leg **21** which extends substantially perpendicular to the leg **19** and lies against an inside surface of the dor jamb or lintel. A stop flange **22** is provided at one end of each leg **21** and each stop flange **22** retains a weather seal strip **23**.

The frame members **11–14** may be mitered together at their ends to provide a frame unit. Each frame member **11–14** comprises a hollow section having an inner edge **24**. The inner edge **24** is provided with a step which comprises a face **25** and a recessed edge **26**. Inner and outer grooves **27** and **28**, respectively, are provided along the sides of the recessed edge **26**. A kick plate **29** is mounted at the bottom of the door **10** and its side and bottom edges are retained in the inner grooves **27** of the side frame members **11** and **12** and the bottom frame member **14**. The top edge of the kick plate **29** is held by a sill **30** which extends between the side frame members **11** and **12**.

The sill **30** has an inner channel **31** formed by flanges **32** and **33**. The flange **33** rests against the face **25** and the channel **31** corresponds in width to the width of the recessed edge **26**. A screen sash unit **34**, which comprises upper and lower frame members **35** and **36**, respectively, and side frame members **37**, is mounted in the door **10** so that its bottom frame member **36** rests in the channel **31** and so that its side frame members **37** are engaged by the recessed edges **26**. A window sash unit **38**, which comprises upper and lower frame members **39** and **40**, respectively, and side frame members **41**, is mounted in the door **10** so that its lower frame member **40** rests on the upper frame member **35** of the sash unit **34** and so that its side frame members **41** are engaged by the recessed edges **26**.

The side frame members **37** and **41** of the units **34** and **38**, respectively, are retained against the faces **25** by a pair of channel tracks **42**. The channel tracks **42** each comprise a channel **43** which is defined by a web **44** and projecting first and second flanges **45** and **46**, respectively. The flange **45** has a guide bead **47** which is opposite an edge **48** of the flange **46**, and the flange **45** extends beyond the edge **48** to define a bearing or guide surface **49**. A flange **50** projects outwardly from the web **44** and has a recess **51** which cooperates with a bead **52** on the frame members **11** and **12**. The flange **50** of each track **42** is fixed to the frame members **11** and **12** by self-tapping screws **53**.

As may be seen most clearly in FIG. 2, the tracks **42** are installed so that their flanges **45** press the side frame members **37** and **41** against the faces **25** to securely retain the sash units **34** and **38** relative to the door **10**.

A sliding sash window unit **54** is mounted in the tracks **42** and is retained therein by tilt lugs **55** (FIG. 2) which project from each upper corner of the unit **54** into the channel **43**.

Conventional latch bolts **56** (FIG. 1) are provided at each lower corner of the sash unit **54** and each latch bolt

56 has an end portion that projects into the channel 43 and engages one of a series of detents 57 which are struck out of a longitudinal projection 58 on each flange 46. The sash unit 54 may be raised by pulling the latch bolts 56 inwardly against the bias of springs (not shown). The sash unit 54 is retained in the tracks 42 by its tilt lugs 55 and slides along the face 49. The sash unit 54 may be retained in a preselected, elevated position by releasing the latch bolts 56 so that they engage a detent 57. The sill 30 is provided with an outer channel 59 which is defined by the flange 32 and a flange 60, and which receives the sash unit 54 in its lowered or "window closed" position.

The invention is not restricted to the slavish imitation of each and every one of the details described above, which have been set forth merely by way of example with the intent of most clearly setting forth the teaching of the invention. Obviously, devices may be provided which change, eliminate, or add certain specific details without departing from the invention.

What is claimed is:

1. In combination with a storm door having a frame, a pair of sash units mounted in the frame, the improvement comprising means for retaining the pair of sash units in the frame, said retaining means including means defining a track, a third sash unit received by said track, means including means movable relative to said third sash unit and carried thereby engageable with said track for guiding said third sash unit between raised and lowered positions, said engageable means also being disengageable from said track to permit said third sash unit to be removed from the track while said track is mounted on the frame.

2. In combination with a storm door having a frame, a pair of sash units mounted in the frame, the improvement comprising means for retaining the pair of sash units in the frame, said retaining means having a pair of

spaced flanges defining a track, a third sash unit received by said track, means including means movable relative to said third sash unit and carried thereby engageable with said track for guiding said third sash unit between raised and lowered positions, said engageable means also being disengageable from said track to permit said third sash unit to be removed from the track while said track is mounted on the frame.

3. In combination with a storm door having a frame, a pair of sash units mounted in the frame, the improvement comprising means for retaining the pair of sash units in the frame, said retaining means having a pair of spaced flanges defining a track, a third sash unit received by said track, means including means movable relative to said third sash unit and carried thereby engageable with said track for guiding said third sash unit between raised and lowered positions, said engageable means also being disengageable from said track to permit said third sash unit to be removed from the track while said track is mounted on the frame, receiving a third sash unit for guiding said third sash, one of said flanges extending along the edges of said pair of sash units to retain said units in the door frame.

References Cited

UNITED STATES PATENTS

2,321,554	6/1943	Milnor	160—107
2,737,271	3/1956	Sylvan	160—91 X
3,057,023	10/1962	Hewit	160—91 X
2,923,351	2/1960	Zitomer	160—91 X
3,083,419	4/1963	Pennington et al.	49—453 X
3,122,797	3/1964	Segre	49—453 X

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,374,822 March 26, 1968

Dale J. Youssi et al.

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, lines 20 and 21, cancel "receiving a third sash unit for guiding said third sash".

Signed and sealed this 5th day of August 1969.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents