Feb. 6, 1951 P. G. LUBER 2,540,270

COMBINED STORM AND SCREEN WINDOW UNIT

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Fig. 2.

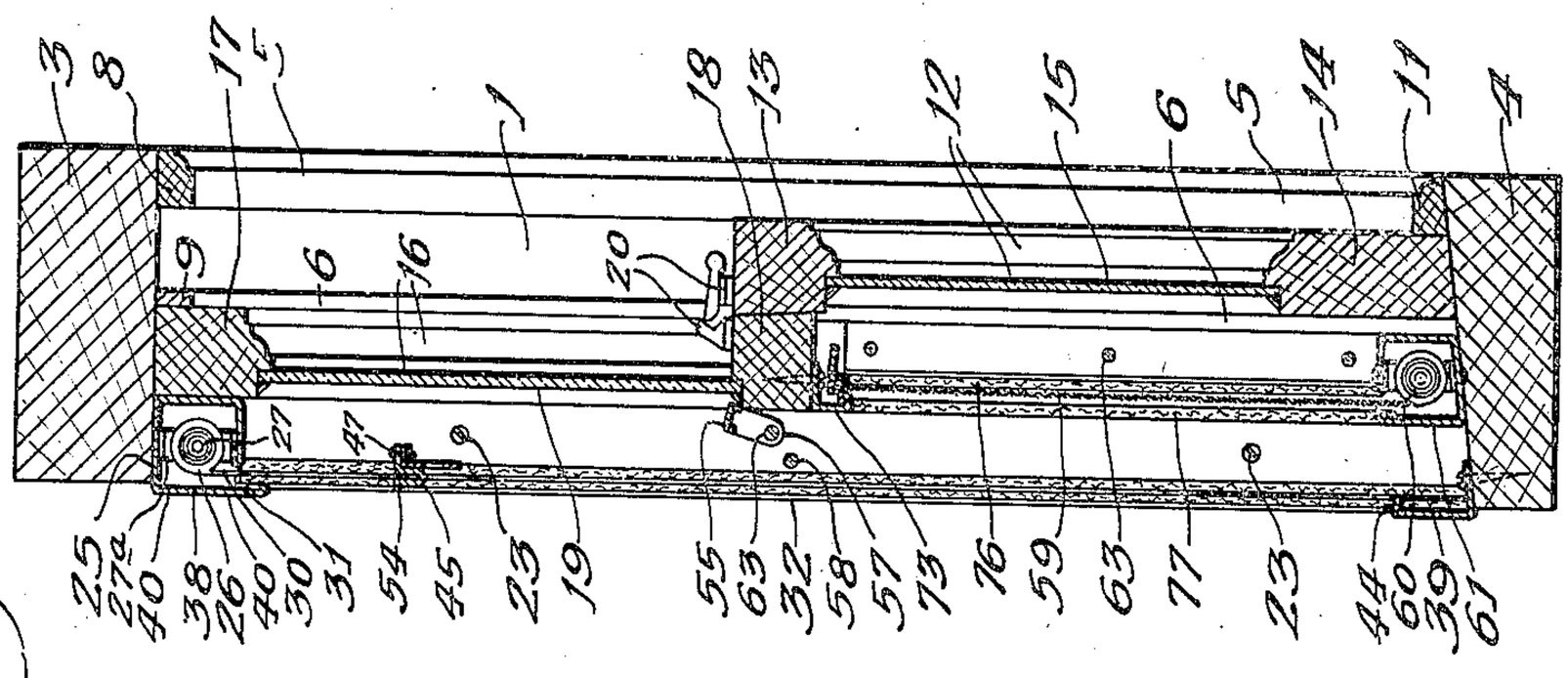
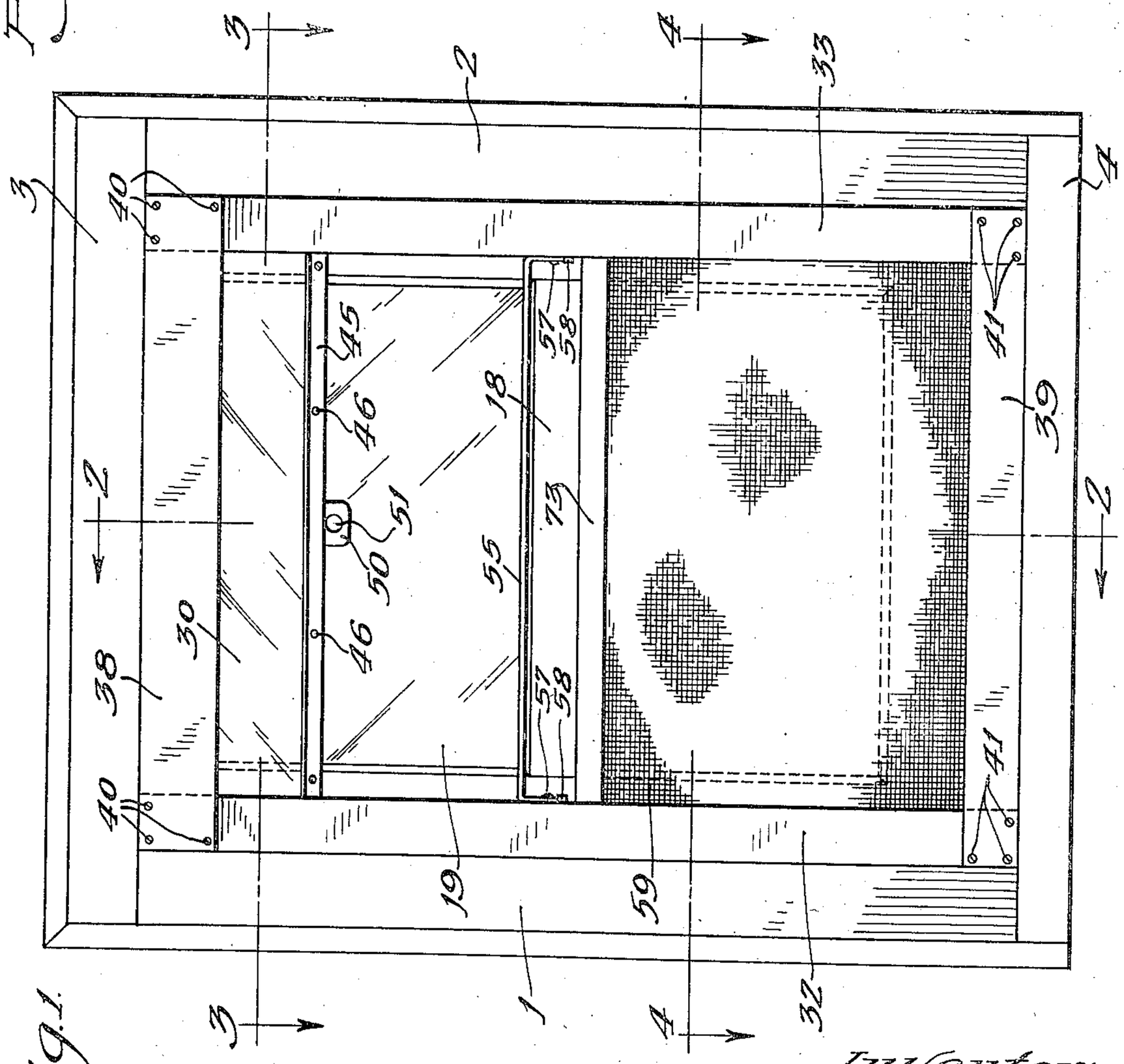


Fig. 1.



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COMBINED STORM AND SCREEN WINDOW UNIT

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Fig. 3

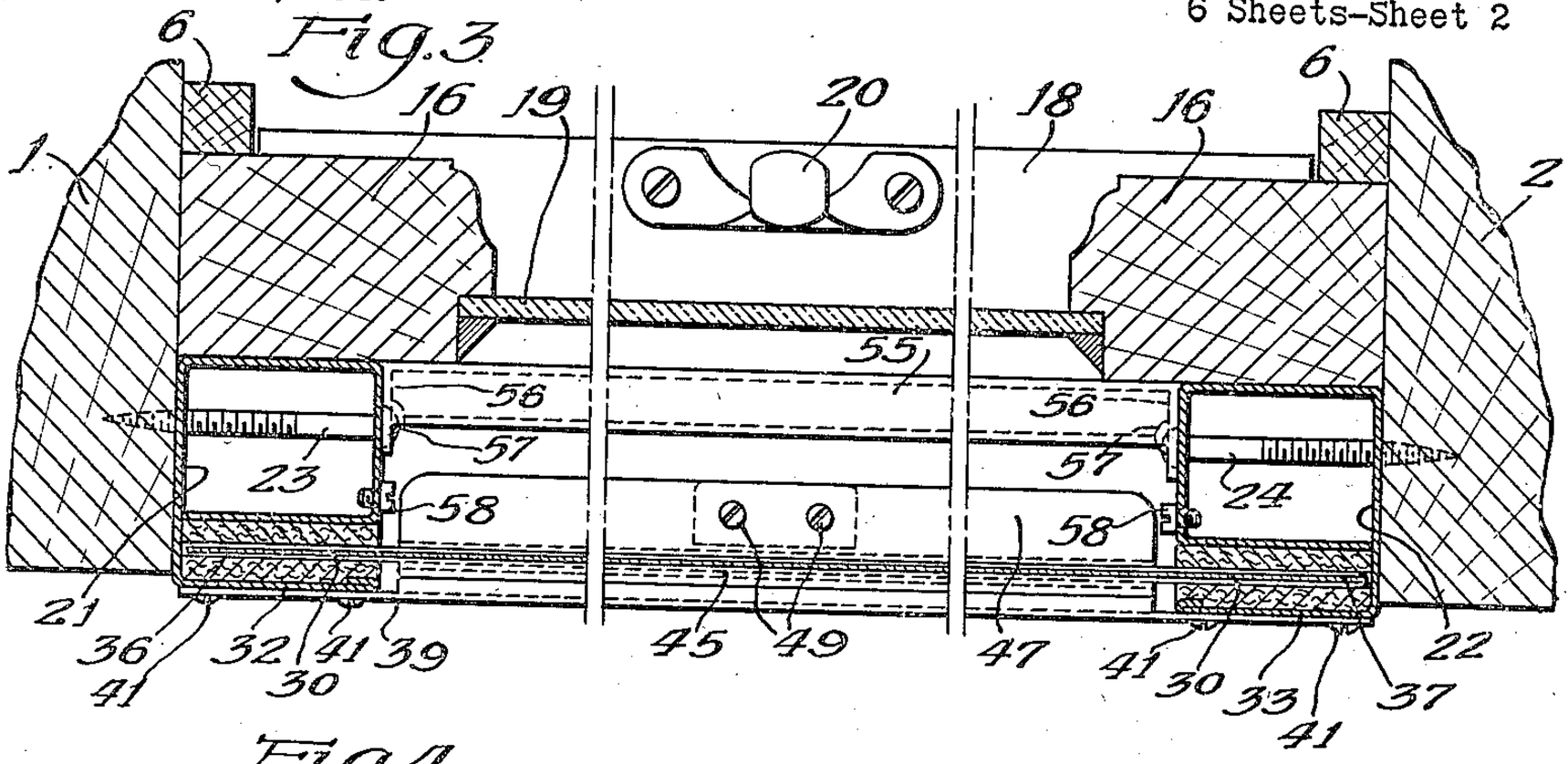

Fig. 4.

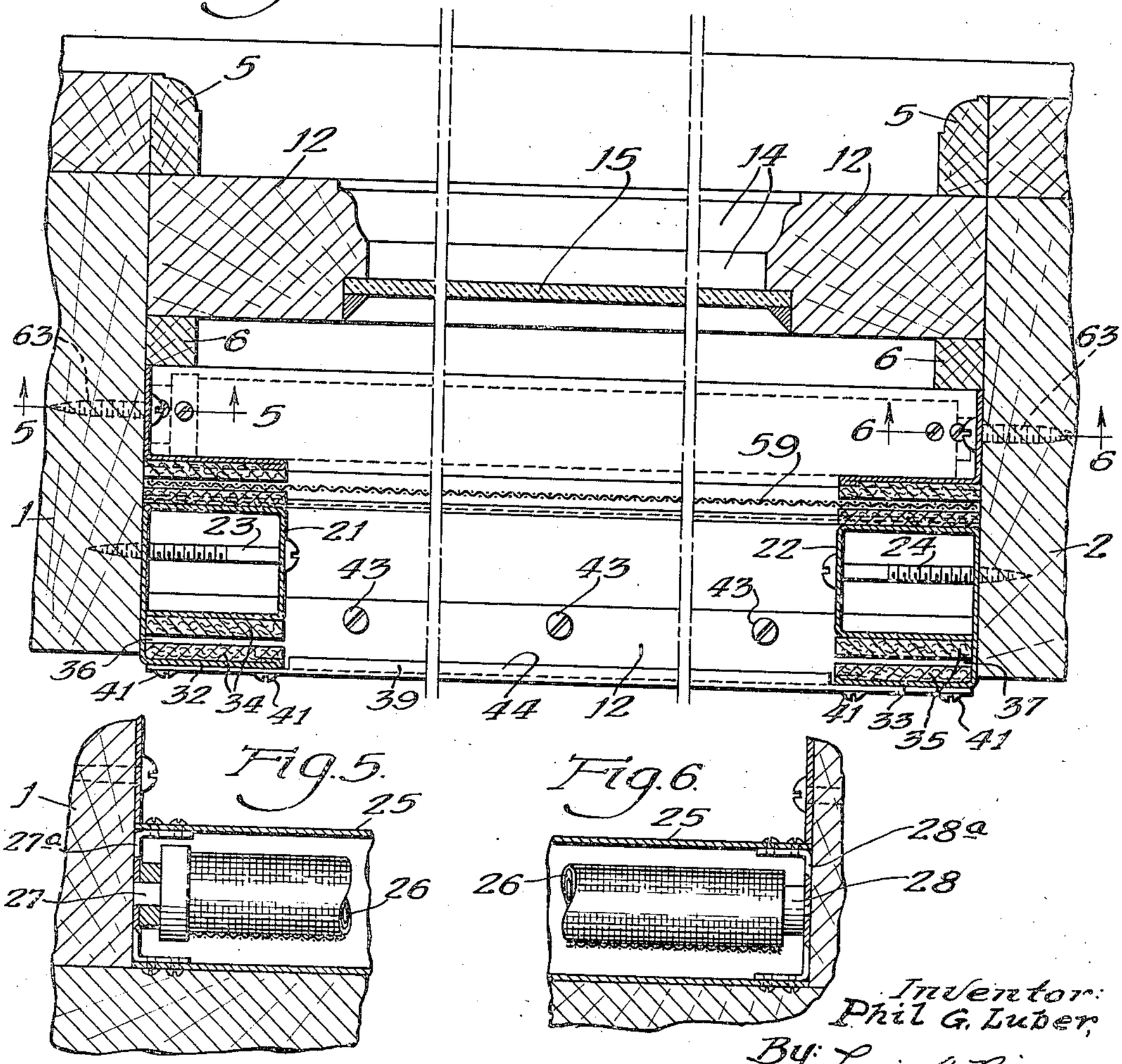

Fig. 5.

Fig. 6.

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COMBINED STORM AND SCREEN WINDOW UNIT

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Fig. 7.

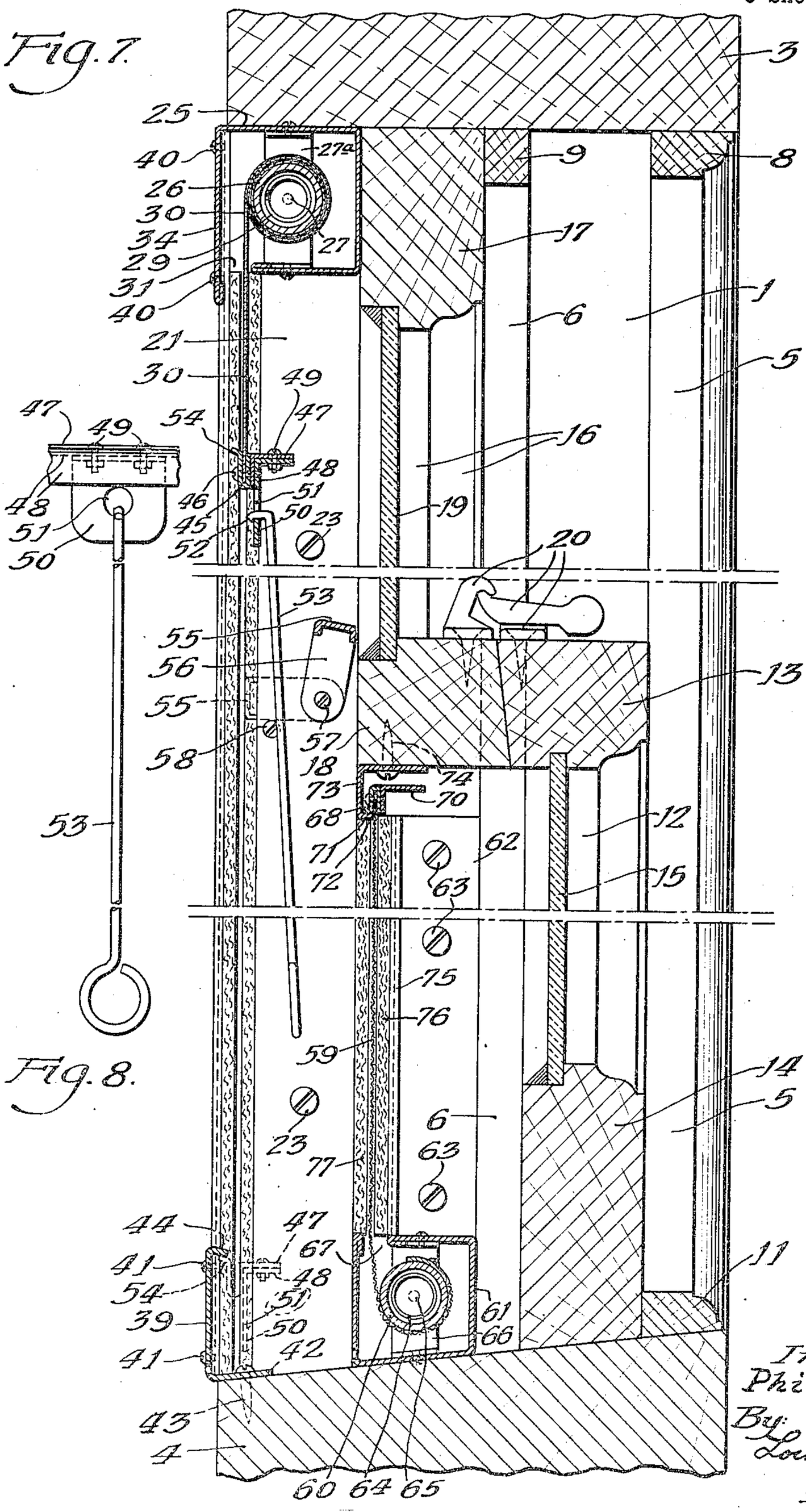

Fig. 8.

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Fig. 10.

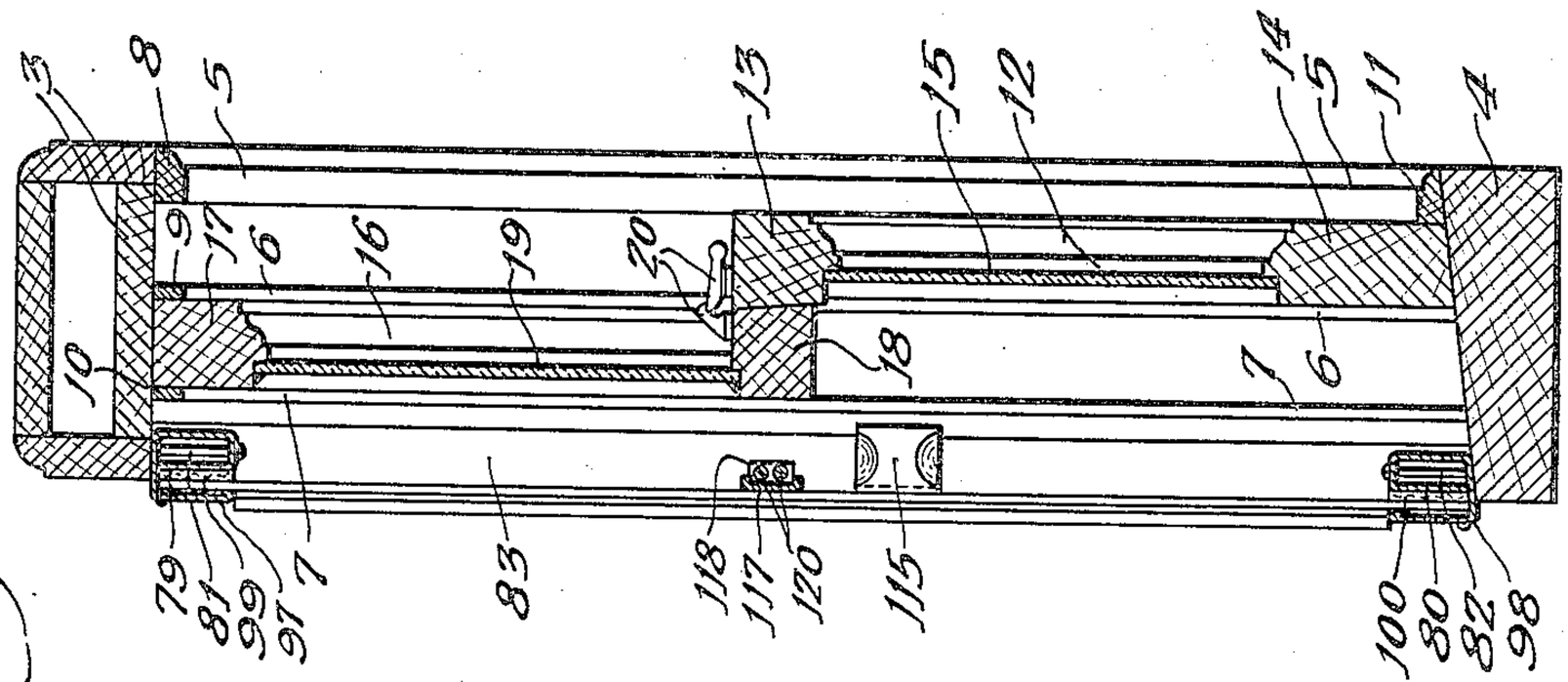
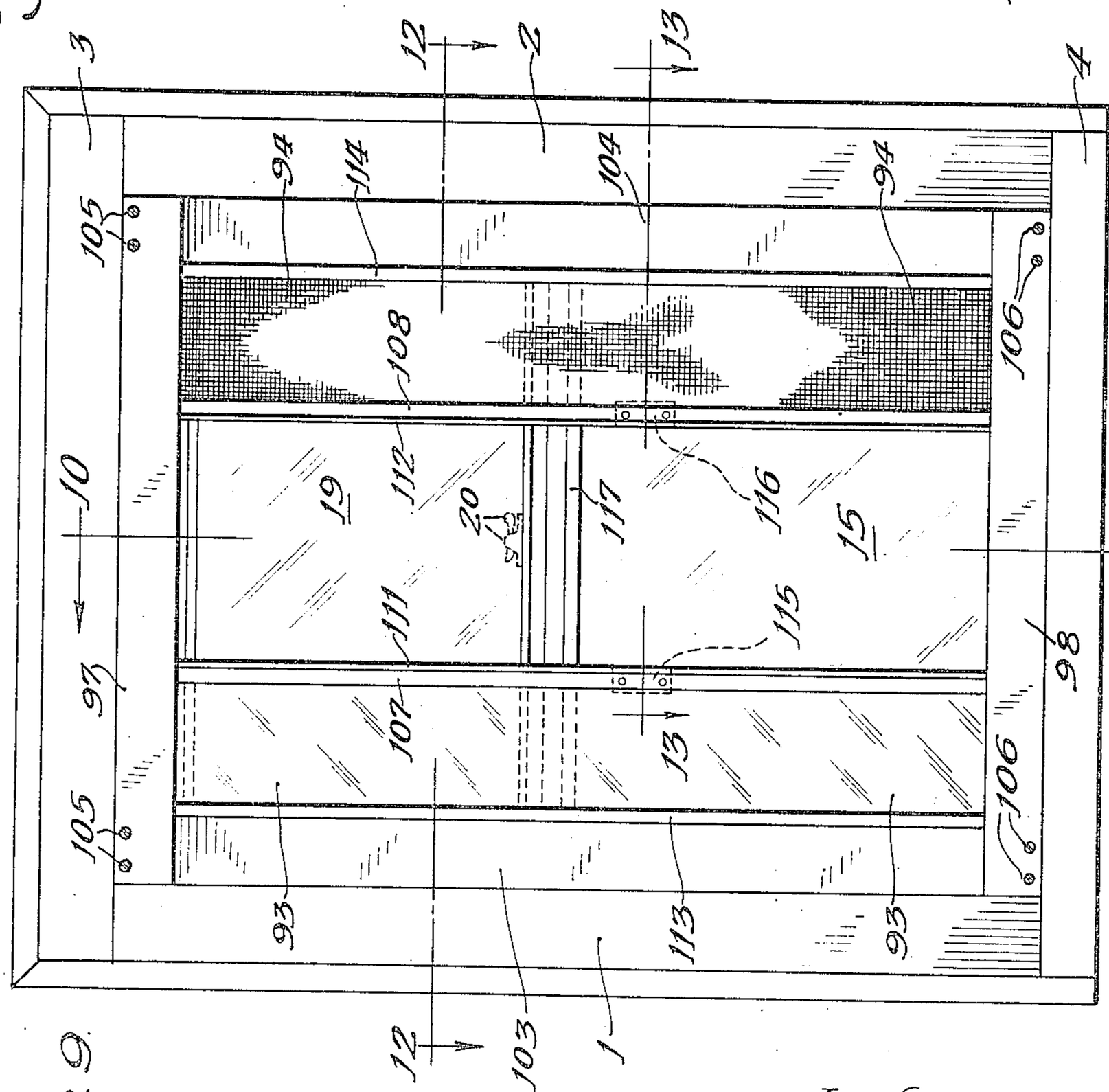


Fig. 9.



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COMBINED STORM AND SCREEN WINDOW UNIT

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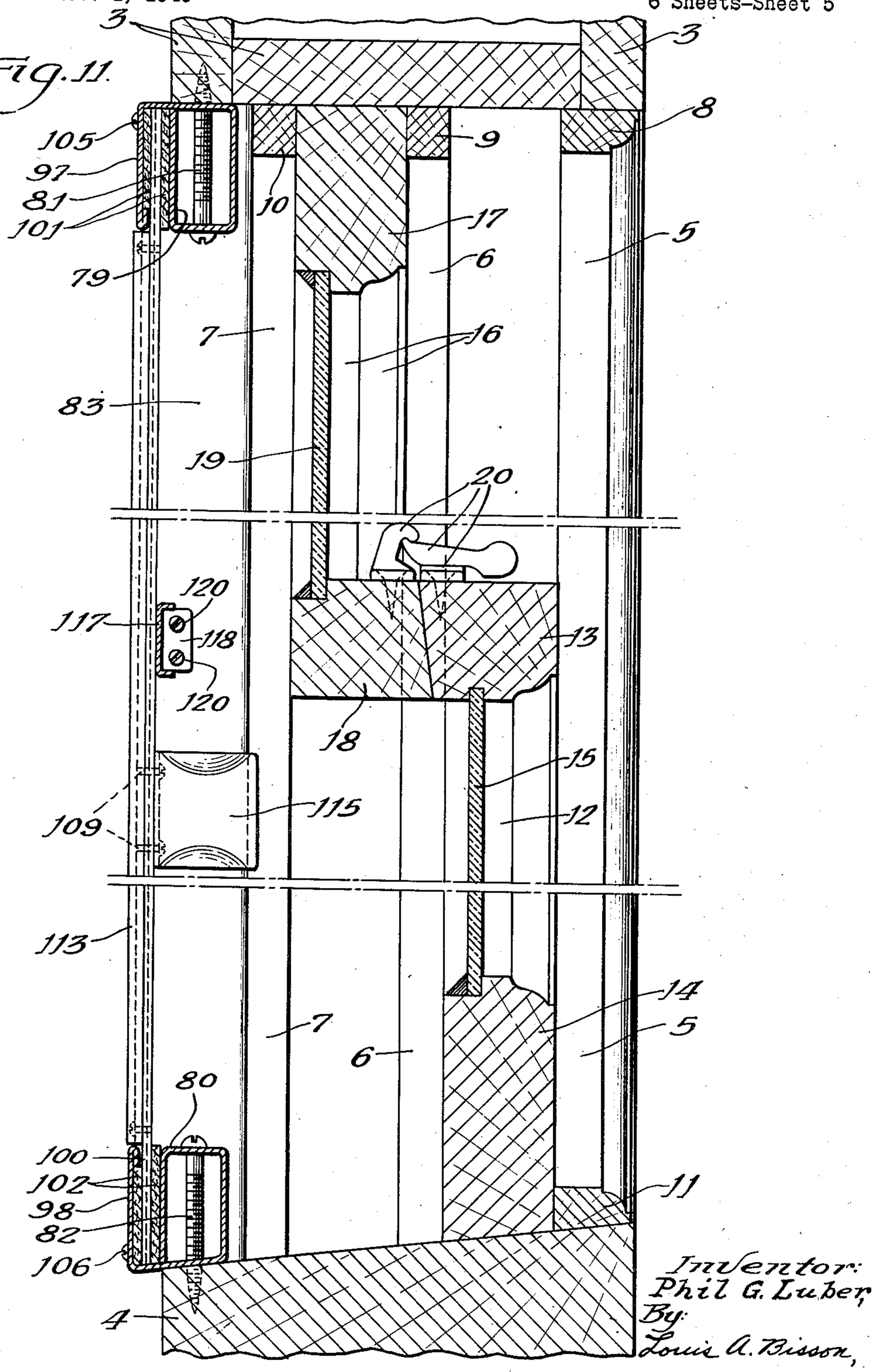
Fig. 11.



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COMBINED STORM AND SCREEN WINDOW UNIT

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Fig. 12.

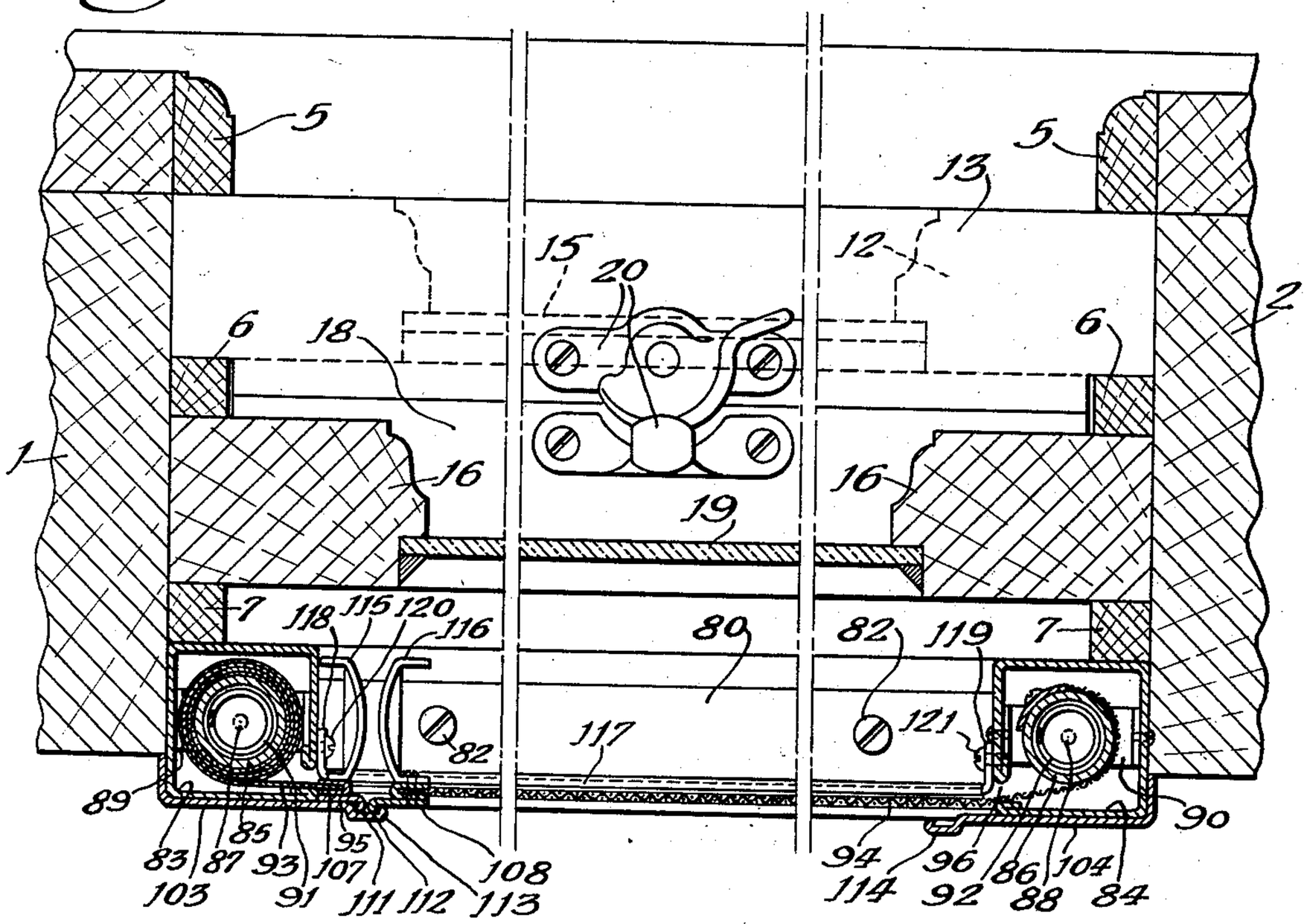
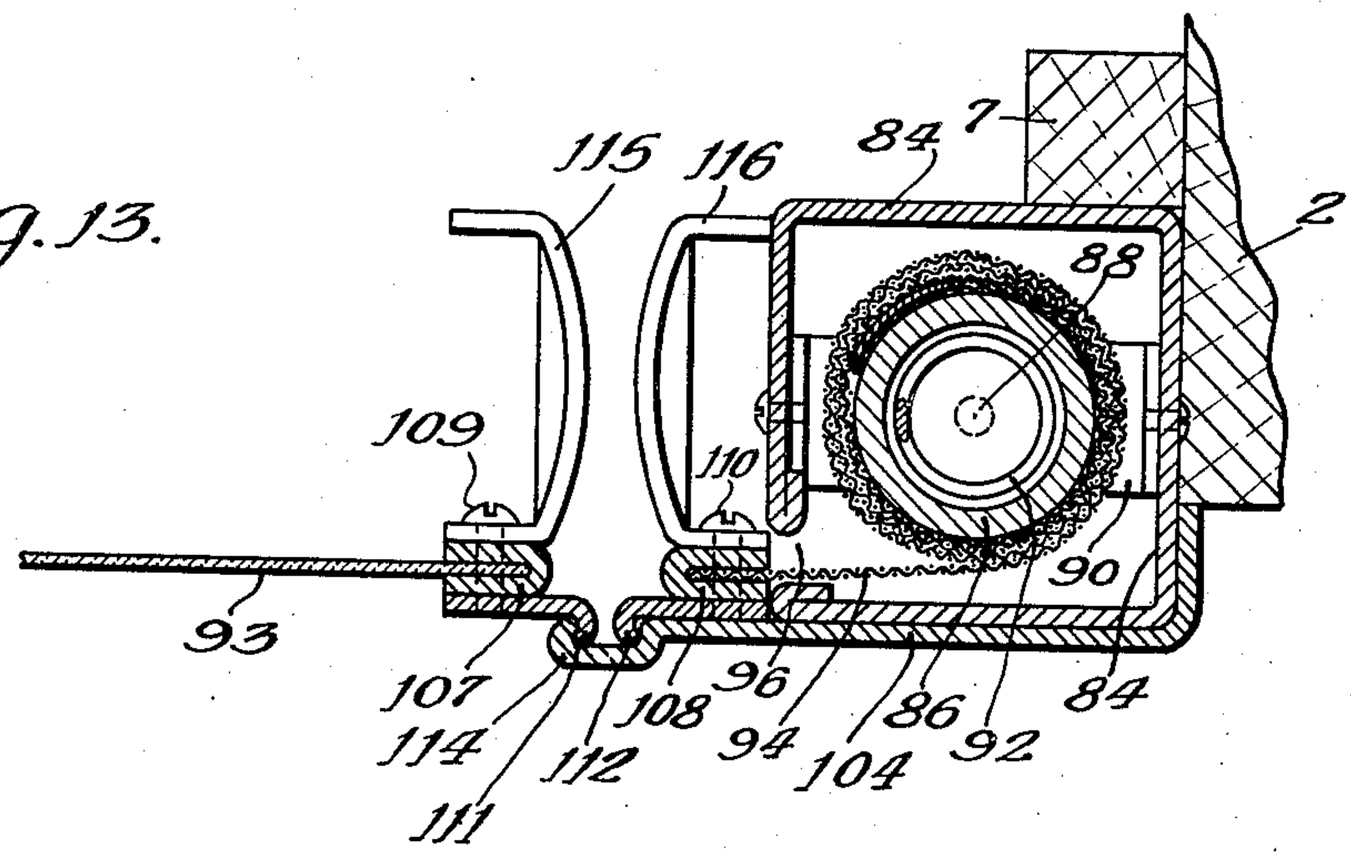


Fig. 13.



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Patented Feb. 6, 1951

2,540,270

UNITED STATES PATENT OFFICE

2,540,270

COMBINED STORM AND SCREEN WINDOW UNIT

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Application November 1, 1946, Serial No. 707,111

2 Claims. (Cl. 160—239)

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The present invention relates to combined storm and screen window units adapted to be permanently associated with any standard, usual, or other type of window structures of buildings and the like.

It is the present custom at certain seasons of the year, as in the spring and fall, to attach to a window structure a screen or storm unit, respectively, while at the same time removing the previous attached storm or screen units, respectively, and storing them until the following season arrives for reinstalling them. In the meanwhile, it is necessary to clean, paint, and otherwise treat the units preparatory to the next installing of them.

The present invention relates to a novel device which avoids the above referred to inconveniences and which, depending on the particular season existing, can be facilely operated to bring the storm or screen window part or pane into position to remain there until the season is over and such part operated into a nested and closed position while the other part may be brought from its nested or closed position into its position of intended utility, as across the sight or opening of the window.

It comprises briefly of a holder or frame-like structure attached to the window structure, as its frame, and carries a roller or rollers of the usual curtain type roller upon which may be rolled and from which may be unrolled a sheet-like material, such as a pliant or flexible transparent continuous non-perforate sheet to serve as the storm window part or pane, or a similar porous or reticulated sheet to serve as a screen, with means to facilely engage the free end or border of the sheet with a part of the window structure for holding the sheet in extended condition, and also to have a close or practically sealing relation to prevent entry of foreign material through the structure.

Other objects, advantages, capabilities, features, and the like are comprehended by the invention as will later appear, and as are inherently possessed by the invention.

Referring briefly to the drawings:

Fig. 1 is a view in elevation of an embodiment of the invention with a usual type of window structure;

Fig. 2 is a vertical sectional view taken in a plane represented by line 2—2 in Fig. 1 of the drawings;

Fig. 3 is an enlarged horizontal sectional view, with parts broken away, taken in a plane represented by line 3—3 in Fig. 1 of the drawings;

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Fig. 4 is a similar view taken in a plane represented by line 4—4 in Fig. 1 of the drawings;

Fig. 5 is a fragmentary longitudinal vertical central sectional view through one end of the upper roller housing and taken in a plane represented by line 5—5 in Fig. 4 of the drawings;

Fig. 6 is a similar view at the other end of the upper roller and taken in a plane represented by line 6—6 in Fig. 4 of the drawings;

Fig. 7 is a broken view similar to Fig. 2 on an enlarged scale;

Fig. 8 is a view of a detail feature used with the invention;

Fig. 9 is a view in elevation of an alternative embodiment of the invention;

Fig. 10 is a vertical sectional view taken in a plane represented by line 10—10 in Fig. 9 of the drawings;

Fig. 11 is a similar view broken and on an enlarged scale;

Fig. 12 is a fragmentary horizontal sectional view, on an enlarged scale, taken in a plane represented by line 12—12 in Fig. 9 of the drawings with the screen fully extended; and,

Fig. 13 is a similar fragmentary view taken in a plane represented by line 13—13 in Fig. 9 of the drawings with the rollable storm window fully extended.

Referring more in detail to the drawings, the embodiments chosen to illustrate the invention are shown in association with a window structure of usual construction and having a frame or casing comprising at the lateral sides stiles or jambs 1 and 2, and at the upper and lower sides a head or lintel 3 and a sole or sill 4 and within this frame or casing are provided stops having guide parts 5, 6, 7, upper head pieces 8, 9 and 10, and base part 11, and along these stops are slideable sashes of which the lower sash comprises upright side parts 12, head part or munnion 13, and base part 14, enclosing a pane or light 15; and of which the upper sash comprises upright parts 16, head part 17, and base part or munnion 18, enclosing a pane or light 19. On the munnions or sash rails 13 and 18 is a lock means 20 of any desired type.

Referring to Figs. 1–7, there is attached to and within the outside part of the window frame a casing forming part of the invention, this casing comprising upright members 21 and 22 adjacent the frame sides 1 and 2, these members 21 and 22 being preferably hollow as shown in Figs. 3 and 4, and held firmly to the frame sides 1 and 2 by attaching or securing elements, as screws 23 and 24, and at the upper ends of these members 21

and 22 is a transverse roller box part 25 in which is rotatably supported a curtain type of roller 26 having the usual trunnions or the like 28 and 29 rotatable in saddle pieces 27a and 28a suitably fastened or secured to the ends of the roller box 27 (see Figs. 5 and 6); and within which roller is a usual curtain roller spring 29 (see Fig. 7), and on which is wound a flexible transparent sheet 30 constituting the storm window pane or the like for the device, this sheet 30 being adapted to pass down through a slot or opening 31 provided in the bottom of the roller box 25. Along a vertical side of the upright parts 21 and 22 are flanged parts 32 and 33 (see Fig. 4) forming between such flanges and the sides of the parts 21 and 22 upright channels in which are disposed sealing strips 34 and 35, such as fibrous material, as felt and the like, or rubber, or similar compositions, or the like, and which strips are held close together but to provide therebetween channels 36 and 37 along which the side border portions of the transparency 30 may sealingly slide, the strips 34 and 35 being suitably fixed, as adhering to the sides of the members 21 and 22, and the flanges 32 and 33, as shown in Figs. 3 and 4.

To the upper and the lower ends of the flanges 32 and 33 are secured upper and lower cross pieces 38 and 39 by suitable securing elements, such as screws 40 and 41, so that these cross pieces 38 and 39 together with the flanges 32 and 33 of the parts 21 and 22 and the roller box 25 form a rigid frame-like structure which can be inserted or removed as a unit in or from the window frame or casing. The cross piece 38 (see Figs. 2 and 7) preferably forms a rigid or integral part of the roller box 21, and in the event of desiring to remove the roller box 25, the screws 40 may be disconnected and the box 25 with the cross piece 38 accordingly removed, without disturbing the upright parts 21 and 22. The lower cross piece (see Fig. 7) has a flanged part 42 fitting on the sill 4 and secured thereto by suitable means, such as screws 43, and the upper portion of the cross piece 39 has a lip 44.

At the free end of the storm sheet or transparency 30 is a bar 45 bent to clamp the end of the sheet 30 (see Fig. 7) and held clamped by suitable means, such as screws 46. Connected to and by these screws 46 is a finger-engaging strip 47 (see Figs. 7 and 8) which may be of angular form with a leg fixed to the clamp bar 45 by the screws 46, and a lateral extended leg for engagement by the fingers of the user of the window device to open or close the storm sheet 30. To an intermediate locus of the strip 47 is secured a latch piece 48 having a leg secured, as by screws 49, to a leg of the bar or strip 47 (see Figs. 7 and 8) and a leg 50 provided with a hole 51 in which may be hooked the bent end portion 52 of a hand rod 53, as later explained in connection with the operation and use of the invention. The clamp member 45 (see Fig. 7) has an outer extending lip 54 for engaging with the lip 44 at the lower end of the device (see Fig. 7) when the sheet 30 is fully extended.

To prevent warping or similar distortion of the storm sheet 30 under wind stresses or the like, the device may have a bracing means, such as a strip or bar 55, adapted to abut the inner face of the storm sheet 30 when it is in window closing condition, and as shown in the dotted line portion thereof in Fig. 7. This bar 55 has end legs 56 pivotally mounted on pivot screws 57 secured to the upright members 21 and 22. Also secured to the upright members 21 and 22 are provided

limit stop elements 58 which may be in the form of screws secured to the upright members 21 and 22, as shown in Figs. 3 and 7 for limiting the downward movement of the brace member 55, as shown in dotted lines in Fig. 7.

The invention also comprehends the provision of a porous flexible sheet, such as a screen 59, carried on a roller 60 rotatably supported in a roller box 61 seated on the sill 4 at the lower ends of the upright parts or posts 62 secured, as by screws 63, to the sides or stiles 1 and 2 of the window frame or casing. The roller 60 may be of a curtain roller type with a spring 64 in it and having trunnions 65 rotatable in brackets or saddles 66 fixed at the ends of the box 61. The box 61 has an opening or slot 67 through which the sheet 59 may pass when moving the sheet 59 to or from closing condition.

At the free end of the sheet 59 is connected a clamp bar or strip 68 so formed or bent as to clamp the end of the sheet 59, as shown in Fig. 7, and connected together and to the end of the sheet 59 by suitable means, such as screws or bolts 69. To the strip 68, connected, as by the screws 69, is a finger-engaging piece or strip 70 by which the sheet may be moved to or from closed position, as shown in Fig. 7. The strip 68 preferably has a lip 71 for engaging with a lip 72 of the cross piece or bar 73 extending between the sides 1 and 2 of the window structure and above the ends of the upright pieces or posts 62. This cross piece 72 may be attached to an upper part of the window structure, for full height of extension of the sheet 59, or, as shown in Fig. 7, to the lower sash rail or bar 18 of the upper sash, for a lesser height, by way of suitable securing elements, such as screws 74. The upright member 62 may have flanges 75 to provide, if desired, channel spaces for the disposition of sealing strips 76 and 77, such as felt or the like, between which the border or edge portions of the sheet 59 may slide when moved to and from closing position. The box 61 may have holes 78 for draining out any water that might enter the box 61.

Referring to Figs. 9–13, a similar device is shown wherein the storm and screen sheets or panes are mounted to be opened and closed transversely of the window structure in lieu of up and down. It comprises an attachable unit having transverse members 79 and 80 connected or secured respectively to the upper and lower frame pieces, as the lintel 3 and the sill 4, as shown in Fig. 11, by way of suitable securing elements, such as screws 81 and 82. Extending along the inside of the side parts 1 and 2 of the window frame or casing are disposed roller boxes 83 and 84 with the upper ends of these boxes abutting the lintel 3 and disposed at the ends of the cross piece or member 79, as also abutting the stops 7 and 10, and with the roller ends of these boxes abutting or seating on the ledge or sill 4 and disposed at the ends of the cross piece or member 80, as also abutting these stops 7. In these boxes 83 and 84 are rotatably supported rollers 85 and 86 of the curtain roller type and having trunnions 87 and 88 rotatable in suitable brackets or saddles or the like 89 and 90 suitably secured to the end portions of the roller boxes 83 and 84. Inside the rollers 85 and 86 are springs 91 and 92 as usual in this type of roller. On the roller is wound a transparent storm sheet 93 and on the roller 86 is wound a screen sheet 94, and the roller boxes 83 and 84 having slots or openings 95 and 96 through

which the sheets 93 and 94 may be drawn as desired.

The cross members 79 and 80 have flanges 97 and 98 spaced from the box of the cross members to provide thin channels or the like 99 and 100 for holding sealing strips 101 and 102, such as felt strips or the like, between which the upper and lower borders of the sheets 93 and 94 may pass when moving them to and from opened or closed conditions. Along the outer faces of the roller boxes 83 and 84 are strips or bars 103 and 104, the upper and lower ends of which are connected or secured to the end parts of the cross members 79 and 80 by suitable means, such as screws 105 and 106, so that the parts; that is, the cross members 79 and 80, the roller boxes 83 and 84, and the strips 103 and 104 will form a rigid unitary structure adapted as a unit to be applied to a window frame or casing.

To the free ends of the sheets 93 and 94 are clamp strips or bars 107 and 108 suitably connected to the end parts of the sheets 93 and 94, as by way of screws or bolts 109 and 110 or the like (see Fig. 13) and to these strips or bars 107 and 108 are attached lip or hook parts 111 and 112 adapted to engage with catch parts or portions 113 and 114 provided along the edges of the strips 103 and 104 when the sheets 93 and 94 are drawn to one side or another of the structure. When the screen sheet 94 is drawn across the opening of the structure, as shown in Fig. 12, the hook 112 will engage the catch 113 and at the same time the hook 111 of the storm sheet 93 will also engage the catch 113 to prevent the sheet 93 from being drawn into the roller box 83 under the force of the spring 91, and likewise when the storm sheet 93 is drawn (see Fig. 13) across the opening of the structure, the hook 111 will engage the catch 114 and at the same time the hook 112 of the screen sheet 94 will also engage the catch 114 to prevent the sheet 94 from being drawn into the roller box 84 under the force of the spring 92.

At suitable and convenient points along the strips 107 and 108 are provided handles or finger grasping members 115 and 116 by which the sheets 93 and 94 may be manually drawn or returned, and manipulated as desired. These members 115 and 116 may be attached to the strips 107 and 108, as by the screws 109 and 110. See Fig. 13 in particular.

To brace the sheet 93 or 94 when in drawn position in the opening of the structure against bowing or warping, as by the force of the wind, or otherwise the device may also have a bracing or backing bar or the like 117 extending transversely across the opening of the structure and at an intermediate level in the opening, and against which the sheet 93 or 94 may contact when in drawn position. This bar has end flanges 118 and 119 which are suitably connected or secured to the side walls of the roller boxes 83 and 85 by suitable means, such as screws 120 and 121.

The device is of unitary construction and may be attached as a unit to an existing window structure by simply inserting it in place and applying a few securing elements, such as screws. It takes the place of the usual storm windows and screens; it may be left in place permanently and it avoids the work of changing from one to the other at the change in seasons, and the attendant care of the stored storm window when the screens are in, and the like of the stored screens when the storm windows are in place.

With the present invention it is very convenient and easy to change from one to the other; that is, from a storm window to the screen or conversely, when desired, by simply causing a rolling up of the one and the withdrawing of the other.

These structures of the present invention have the novel feature of affording facile adjustment or setting of the storm and screen sheets for various purposes, such as when desiring to obtain ventilation, as at night time, or for washing or cleaning the outer and inner faces of the panes in the sashes. Because of using rollers of the curtain roller type, the storm, and screw sheets may be partly drawn to any extent desired and will remain so drawn without any catches or connecting means, the usual pawls or catches in the roller acting to hold the roller set against the tension of the spring in the roller, until they are released by a pull on the sheet the same as when operating the usual curtain or shade sheet in the usual curtain or shade device.

When it is desired to obtain ventilation the storm sheet will be drawn to the point desired to leave an opening beyond the free end of the storm sheet, and the screen sheet may or may not be drawn across the opening of the screen structure as may be desired.

When desiring to wash the panes in the sashes, access to the outer faces of such panes may be had from inside the building, as for example, to wash the outer face of the upper sash, the storm sheet will be released into stored condition and the upper sash lowered whereby the washer may reach through the upper opening and reach over with the washing or cleansing cloth or the like to clean the outer face of the pane of the upper sash; or, alternatively, the lower sash may be raised and the washer can reach through the lower opening of the window to wash the outer face of the pane. A similar procedure may be used to clean the outer face of the lower sash pane by cleaning the lower portion of it when the lower sash is partly up, and then clean the upper portion after lowering the upper sash and partly raising the lower sash.

Thus it will be seen that by my invention it is only necessary to open or roll-up in part or wholly the storm sheet for the effecting of the purposes referred to above.

While I have herein described and upon the drawings shown a few illustrative embodiments of my invention, it is to be understood that the invention is not limited thereto but comprehends other constructions, arrangements of parts, details, features, and the like, without departing from the spirit of the invention.

Having thus disclosed the invention,

I claim:

1. A combination storm and screen window unit for association with an existing window structure having a casing, comprising a frame structure having upright and transverse parts for abutting with parts of the window casing and for providing an opening in said unit, certain of said frame parts having means for attaching the unit to the window casing, and certain of said frame parts having a roller means, a sheet part wound on said roller means, and means attached to said sheet part by which the sheet part may be moved across the opening of the unit, and a bracing member carried by the frame of the unit and located adjacent the path of movement of the sheet part in the opening of the unit to brace

said sheet part against bowing or warping, said bracing member having pivot means for pivotally supporting said bracing member in said frame of the unit.

2. A combination storm and screen window unit for assocation with an existing window structure having a casing, comprising a frame structure having upright and transverse parts for abutting with parts of the window casing and for providing an opening in said unit, certain of said frame parts having means for attaching the unit to the window casing, and certain of said frame parts having a roller means, a sheet part wound on said roller means, and means attached to said sheet part by which the sheet part may be moved across the opening of the unit, and a bracing member carried by the frame of the unit and located adjacent the path of movement of the sheet part in the opening of the unit to brace said sheet part against bowing or warping, said bracing member being pivotally supported in said

frame of the unit and being swingable on the support into contact with said sheet, and stops carried by the frame of the unit, to limit the swinging movements of the brace to the contact position.

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