April 15, 1952 V. BREUER 2,593,258

WINDOW

Filed July 30, 1948 3 Sheets-Sheet 1

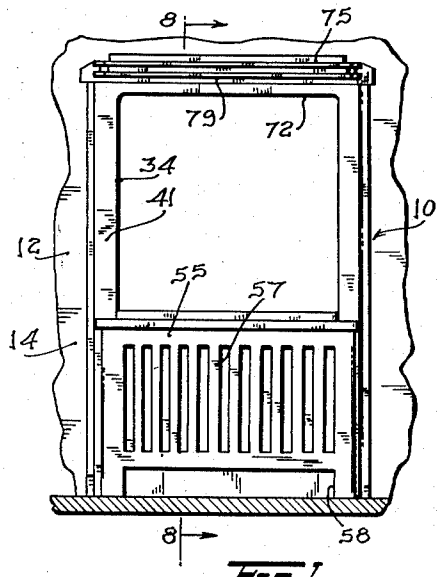


Fig. 1.

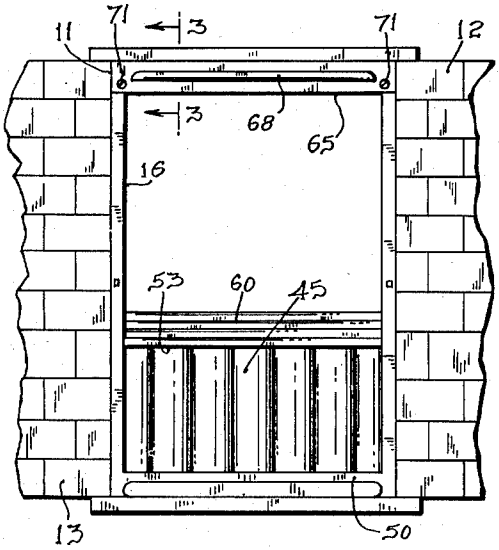


Fig. 2.

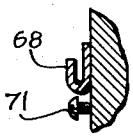
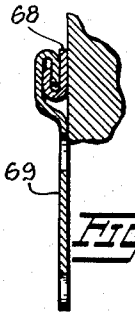


Fig. 3.



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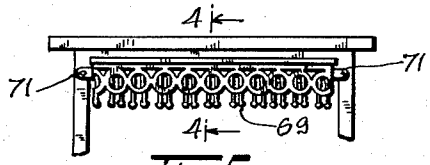

Fig. 5.

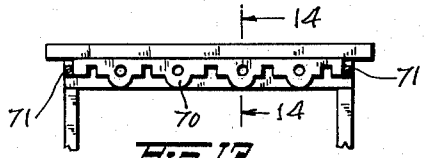

Fig. 13.

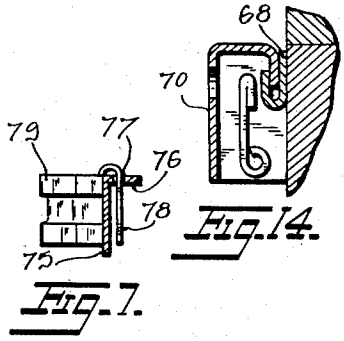

Fig. 14.

Fig. 7.

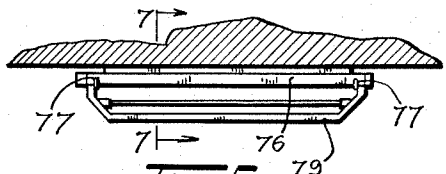

Fig. 6.

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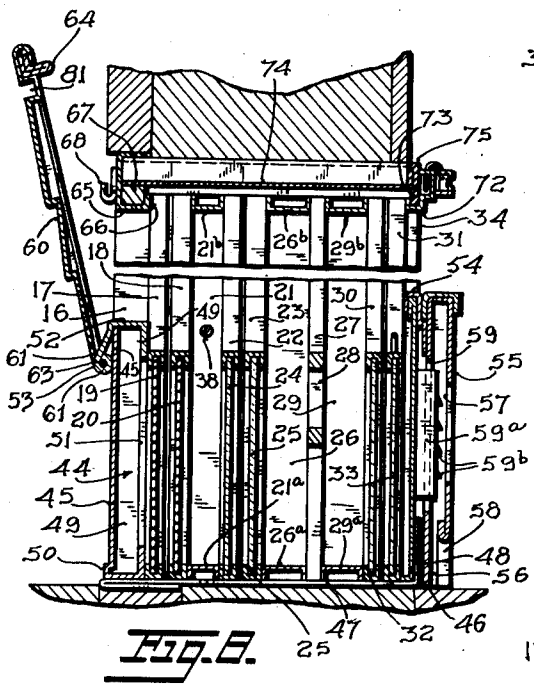

Fig. 8.

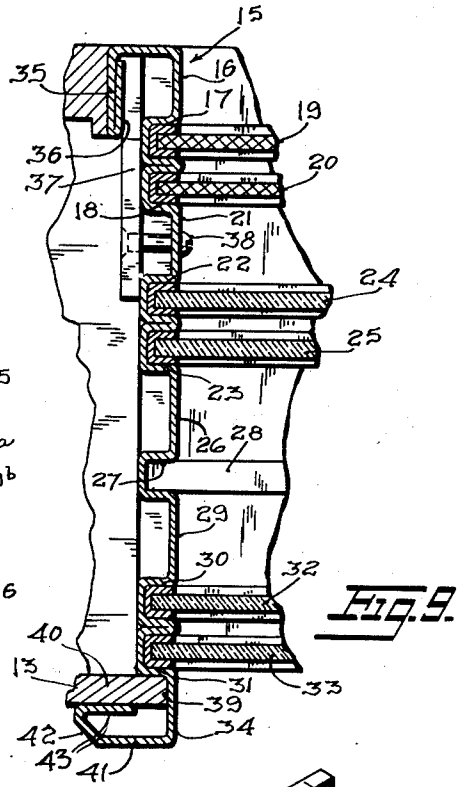

Fig. 9.

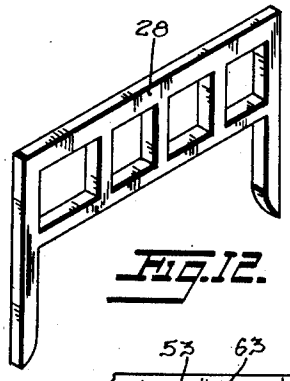

Fig. 12.

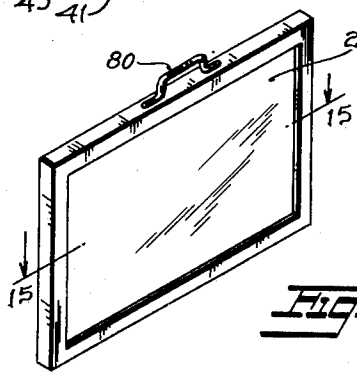

Fig. 11.

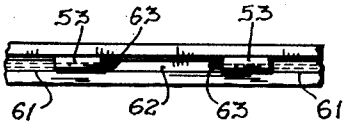

Fig. 10.

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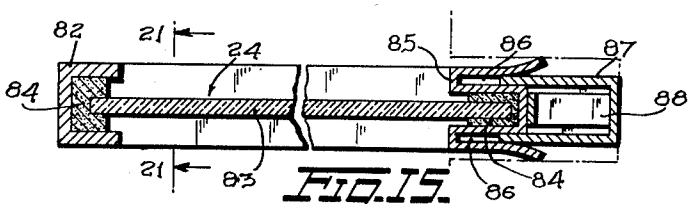

Fig. 15.

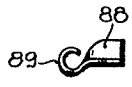

Fig. 17.

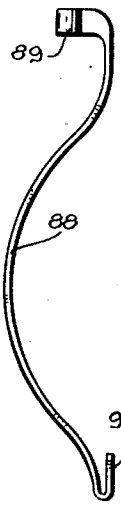

Fig. 16.

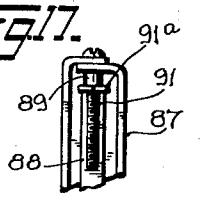

Fig. 18.

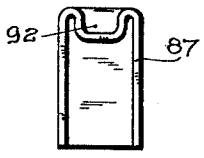

Fig. 19.

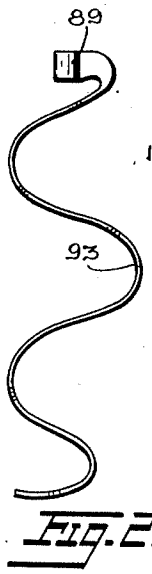

Fig. 22.

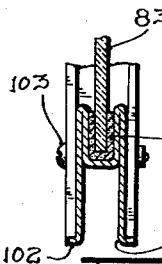

Fig. 21.

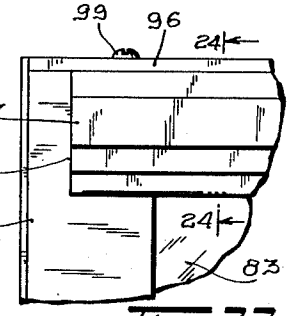

Fig. 23.

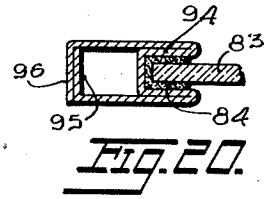

Fig. 20.

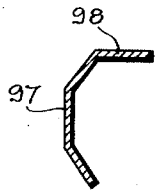

Fig. 25.

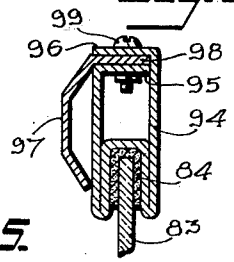

Fig. 24.

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Patented Apr. 15, 1952

2,593,258

UNITED STATES PATENT OFFICE

2,593,258

WINDOW

Vladimir Breuer, Flushing, N. Y.

Application July 30, 1948, Serial No. 41,519

3 Claims. (Cl. 20—52.4)

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This invention relates to a window, and more particularly to a window having, as integral parts thereof, regular sliding sashes, sliding screens, sliding storm sashes, and a sliding grill.

The window, according to the present invention, is a unitary structure which can be placed into a regular window opening, such as the opening in the masonry of apartment houses or of individual residences. The window is constructed, as largely as possible, out of metal shapes especially designed for the instant window. The window has novel decorative trim with means for detachably mounting same. It also has a well in which are disposed, when desired, seven sliding elements, consisting of top and bottom window sashes, top and bottom storm sashes, top and bottom screens and a grill, any one of which, or any combination of which, can be moved into operative position.

A further object is to provide a window as aforesaid in which means are provided in each sliding element for holding it at any adjusted vertical position.

Another object is to provide a window of the aforesaid type provided with a well cover which is both useful and decorative.

Still another object is to provide the window unit with a radiator grill for use where the window is over a heating radiator.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is an inside view of a window constructed in accordance with this invention, with a portion of the building inner wall shown fragmentally.

Fig. 2 is an outside view of the structure of Fig. 1.

Fig. 3 is an enlarged section on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged sectional view, taken on the line 4—4 of Fig. 5, of an outside ornament of the window.

Fig. 5 is a fragmentary view of the outside ornament, in place.

Fig. 6 is a fragmentary plan of the inside of the window.

Fig. 7 is an enlarged section on the line 7—7 of Fig. 6.

Fig. 8 is an enlarged section on the line 8—8 of Fig 1.

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Fig. 9 is an enlarged horizontal section at one side of the window, taken through the well thereof.

Fig. 10 is an enlarged fragmentary detail of the well cover hinge.

Fig. 11 is a perspective view of a sash.

Fig. 12 is a perspective view of the grill.

Fig. 13 is a fragmentary view of a modified form of outside ornament.

Fig. 14 is an enlarged section on the line 14—14 of Fig. 13.

Fig. 15 is an enlarged foreshortened section on the line 15—15 of Fig. 11.

Fig. 16 is an elevation of a spring used with the sliding elements.

Fig. 17 is a plan of the top portion of the spring only.

Fig. 18 is a view looking into the top portion of the spring housing, with the spring attached.

Fig. 19 is an inverted plan of the spring housing alone.

Fig. 20 is a sectional view, taken similar to Fig. 15, showing a modified form of window glass channel to take the place of that shown at the left side of Fig. 15.

Fig. 21 is a section on the line 21—21 of Fig. 15.

Fig. 22 is an elevation view, similar to Fig. 16, of a modified type of spring.

Fig. 23 is a top left corner view of a modified type of sash.

Fig. 24 is a section on the line 24—24 of Fig. 23.

Fig. 25 is a view of a part removed from Fig. 24.

The window 10, according to the present invention, fits in the window opening 11 of the masonry or other structure of a building 12. The brick exterior 13 of the building is shown in Fig. 2. The plaster interior 14 is shown in Fig. 1.

The window is a rectangular structure, its side members 15, see Fig. 9, each consisting of a square post 16 at the outer edge, then two screen sash grooves 17—18 for sliding screens 19—20 respectively, then a spacer 21, then two window sash grooves 22—23 for window sashes 24—25 respectively, then a spacer 26, then a groove 27 for a sliding grille 28, then a spacer 29, then grooves 30—31 for sliding storm sashes 32—33 respectively, and then an inner vertical structural member 34.

The side members are pressed out of a single sheet of metal. The laterally outer wall 35 of the post 16 is two ply and this wall 35 is spaced from the bottom of groove 17, providing a space 36 for a board 37 to which the window structure is fastened by means of bolts 38 passing through spacers 21. The member 34 overlaps the edge face 39 of the adjacent finish board 40, then has

a part 41 parallel to and spaced from the board. At the laterally outer edge of part 41 is an integral bevel member 42, and then a part 43 in engagement with board 40 and parallel to and spaced from part 41.

The various grooves for the sliding members extend the full height of the window. There is a well 44 at the bottom of the window for storing the seven sliding members. This well is best shown in Fig. 8. It is fabricated of sheet metal to have a front or outer wall 45 and a rear or inner wall 46. A bottom wall 47 underlies walls 45 and 46 and is bent at its forward end to be of a two-ply thickness and is bent at its rear end to provide an upstanding flange 48. The front wall 45 is part of a plate of metal bent to provide a box-like structure 49 having a foot 50 at its bottom, an opening 51 at its inner side, a top wall 52 and depending hinge parts 53 at its outer edge. Spacers 21, 26 and 29 have corresponding parts 21a, 26a, 29a at the bottom of the window and 21b, 26b, and 29b at the top of the window.

The rear wall 46 is bent at its top into a two-ply rim on which is hung a hook bar 54 forming part of a radiator hood 55. This hood has an open bottom 56. Its inner wall is provided with a central window 57 and a bottom window 58. The edge defining the top of the window 58 is bent inwardly to form a two-ply rim. The front wall has an opening 59 through which extends a humidifier 59a attached to the wall 45. The humidifier 59a is provided with louvre openings 59b to provide a desired degree of ventilation.

The tops of the sliding members are below the wall 52 and hook bar 54. A door 60 is removably hinged to the lugs 53, the door having lugs 61 interfitting with lugs 53. Between lugs 53 is a space 62, see Fig. 10. Two separate pintles 63 are employed, the adjacent ends of which are bent into hook-like handles. When these handles are moved into contact at the middle of the space 62, the pintles will be free of the lugs 61, unhinging the door 60 and permitting its removal. The top wall of the door is corrugated to provide depressions as will presently appear. Hook bar 54 is above wall 52 so that the door, when swung inwardly over the well, lies flush with hook bar 54. The inner edge of the door is bent into a channel opening outwardly in which is disposed an angle flange 64, formed of sheet metal bent into two-plies, and this flange 64 fits between sashes 32 and 33.

The posts 16 are connected at the top by a channel member 65, opening rearwardly and having an upstanding lip 66 from its rear bottom edge. In the channel formed by the lip 66 is a square rod 67. On the outer vertical face of member 65 is a hook bar 68 on which may be hung a finish piece, such as the trim 69 shown in Fig. 5, or the trim 70 shown in Fig. 13. While hung on the hook bar 68, the trim is also fastened by screws 71.

The members 34 are connected by a bent metal structure 72 providing a channel for a rectangular bar 73, the top of which is in line with the top of the rod 67. On these is supported a top wall 74 having a two-ply inner vertical flange 75. Member 72 has a top wall 76, see Fig. 7, provided with holes 77 in which are hung the hooks 78 of structures 79 which may be curtain rods, drape rods or cornices.

The window sashes and storm sashes are all similar, the window sash 24 being shown in Fig. 11. They all have lifting handles 80. Recesses are provided at the top of the window for the handles 80 so that they do not interfere with the lifting of the sashes. The screens are similar to the sashes, but have wire cloth instead of glass. The grille is shown in Fig. 12.

The operation of the window is as follows:

With all of the sliding members down in the well and covered by the door 60, the window looks as it is shown in Fig. 1, which is a position which might be used on a warm spring or fall day.

Normally the window may have its space closed by the top and bottom sashes 24—25. In winter this may be augmented by the top and bottom storm sashes 32—33. In summer the top and bottom screens 19—20 will be used. The grille 28 may be used when children are present. The storm sash is the inwardmost element.

To raise any element, the door 60 must be swung back. Assuming that it is desired to close the window by the sashes 24—25, both must be raised to full height so that door 60 can be swung back over the well. Then sash 25 is lowered until it rests in the adjacent corrugation of the door 60. Sashes 24—25 will then overlap and close the window. They may be operated as are ordinary windows. The other elements are operated the same way. Each time that an element is to be raised out of the well, the door 60 must be opened and all elements out of the well must be raised full height. The door has a channel 81 for the innermost element.

Each of the elements must have, of course, some device for holding them against falling by gravity. This device is shown in Fig. 15. The window sash 24 is shown in Fig. 15 but it will be understood that all the elements may have one side constructed in like manner.

The sash 24 consists of three channel sides and a fourth vertical side (right side as viewed in Fig. 15) with the spring mechanism. The channels 82 hold the glass 83 which is packed in the channel by a felt channel 84. At the right side is a channel 85 which differs from the channel 82 in that its legs are provided with outwardly opening slots 86 in which is telescoped a channel 87. A spring 88 is compressed between the channels forcing channel 87 outwardly so that it can hold the window, by friction, in any raised position.

The spring 88 is best shown in Figs. 16–19. It is formed of strip metal. At its top it has a vertical eye 89 and at its bottom it has a hook 90. Channel 87 has overlapping top walls (Fig. 18) to which the eye 89 is attached by a bolt 91 and adjusting nut 91a by means of which the length and strength of the spring may be adjusted as desired. The bottom of the channel 87 contains an indent 92 over which the hook 90 is hooked. Instead of spring 88, a spring 93, see Fig. 22, may be employed if desired.

Channel 82 at the left side of Fig. 15 may be replaced by the channel of Fig. 20 if desired. Here the channel 94 is formed of sheet metal bent to form a box-like structure having overlapped outer walls 95—96. The top member of each sash may consist of a channel 94 also. If desired a strip of trim 97, see Fig. 25, may be attached to the channel 94, see Fig. 24. This trim has a leg 98 which can be fitted between walls 95—96 and fastened by a bolt 99.

The trim 97 does not extend to the outer edge of the side member 82 but stops short thereof at 100, see Fig. 23, leaving room for the side member 82 to slide in its guide. The same is true at the other side of the sash, not shown, which is provided with the telescoped side as shown in Fig. 15.

As aforesaid, each of the seven sliding members is provided at at least one side with the telescoped spring-pressed construction shown at the right of Fig. 15. Thus the overall width of the sliding member is adjustable from a certain minimum when the spring is fully compressed to a certain maximum whereafter any more outward telescopic movement would result in the disengagement of the telescoped parts. When the sliding member is at its minimum width, it is of a narrower width than the width betwen the bottom of one of its guides and the top of the other, and can be removed bodily from the window. To accomplish this, the sliding member to be removed is first raised out of the well, it is then moved laterally in the direction to compress its telescopic side member until the other side member is out of its guide. The sash or sliding member can then be swung into the room and removed entirely from the window. This does not affect the other sliding members.

An alternate bottom channel 101 is formed of sheet metal, see Fig. 21, and has flanges 102 which underlie the edges of the side members. The side members and channel 101 are connected by bolts 103.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

1. Means for frictionally retaining a window sash in any desired vertically raised position in its respective guide grooves of a window frame, comprising a channel member extended vertically along one side of the sash with the free ends of its side arms extended toward the said one side of the sash and the outer face of its intermediate arm bearing against the wall of the frame defining the inner end of the respective guide groove, the said one side of the sash having spaced parallel vertically extended slots into which the side arms of said channel member slidably extend, an elongated serpentine leaf spring within said channel member and operating between the said one side of said sash and the inner face of said intermediate arm urging said channel member outward and into frictional contact with the wall of the frame defining the inner end of the respective guide groove, means anchoring the lower end of said spring in said channel member, and means adjustably connecting the top end of said spring to said channel member for controlling the tension of said spring, said anchoring means comprising an inwardly directed indent formed at the lower end of said intermediate arm of said channel member, and a hook formed on the lower end of said spring and hooked over the bottom edge of said indent.

2. Means for frictionally retaining a window sash in any desired vertically raised position in its respective guide grooves of a window frame, comprising a channel member extended vertically along one side of the sash with the free ends of its side arms extended toward the said one side of the sash and the outer face of its intermediate arm bearing against the wall of the frame defining the inner end of the respective guide groove, the said one side of the sash having spaced parallel vertically extended slots into which the side arms of said channel member slidably extend, an elongated serpentine leaf spring within said channel member and operating between the said one side of said sash and the inner face of said intermediate arm urging said channel member outward and into frictional contact with the wall of the frame defining the inner end of the respective guide groove, means anchoring the lower end of said spring in said channel member, and means adjustably connecting the top end of said spring to said channel member for controlling the tension of said spring, said adjustable connecting means comprising a wall closing the top end of said channel member, a fixedly mounted bolt depended from said wall into said channel member, a vertically extended eye on the top end of said spring and slidably engaging said bolt, and an adjustment nut threaded on said bolt and engaging the top end of said eye.

3. Means for frictionally retaining a window sash in any desired vertically raised position in its respective guide grooves of a window frame, comprising a channel member extended vertically along one side of the sash with the free ends of its side arms extended toward the said one side of the sash and the outer face of its intermediate arm bearing against the wall of the frame defining the inner end of the respective guide groove, the said one side of the sash having spaced parallel vertically extended slots into which the side arms of said channel member slidably extend, an elongated serpentine leaf spring within said channel member and operating between the said one side of said sash and the inner face of said intermediate arm urging said channel member outward and into frictional contact with the wall of the frame defining the inner end of the respective guide groove, an inwardly directed indent formed at the lower end of said intermediate arm of said channel member, a hook formed on the lower end of said spring and engaged over the bottom edge of said indent, a wall closing the top end of said channel member, a fixedly mounted bolt depended from said wall into said channel member, a vertically extended eye on the top end of said spring and slidably engaging said bolt, an adjustment nut threaded on said bolt and engaging the top end of said eye.

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