Aug. 27, 1946. D. SEITZMAN 2,406,513

DOUBLE SASH WINDOW

Filed July 17, 1944 2 Sheets-Sheet 1

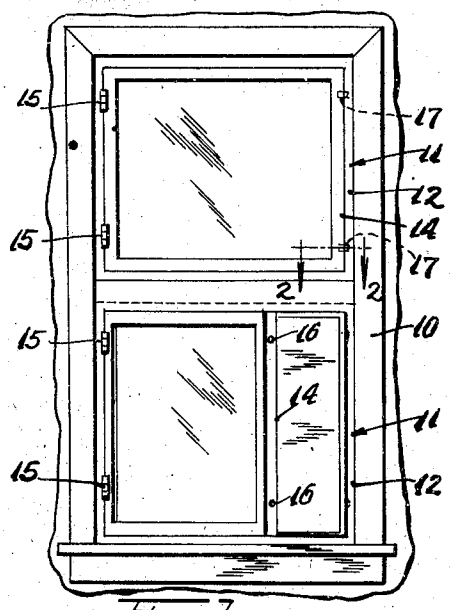


Fig. 1.

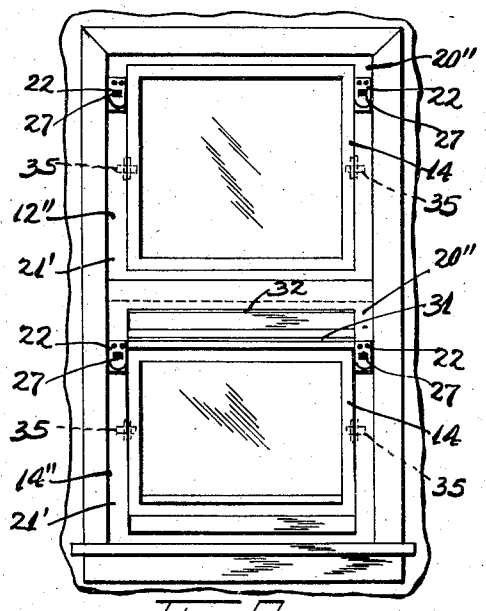


Fig. 9.

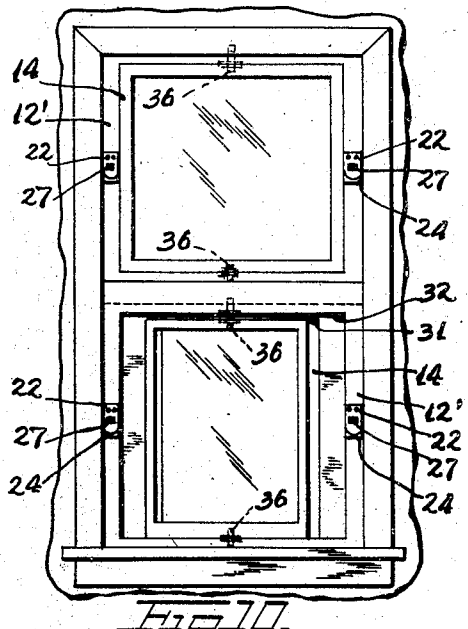


Fig. 10.

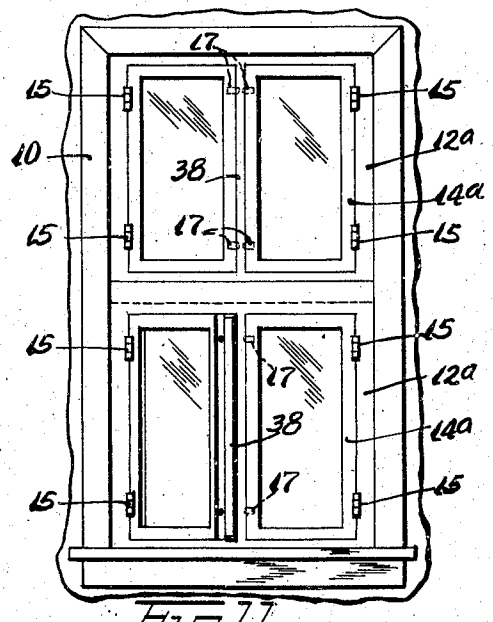


Fig. 11.

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DOUBLE SASH WINDOW

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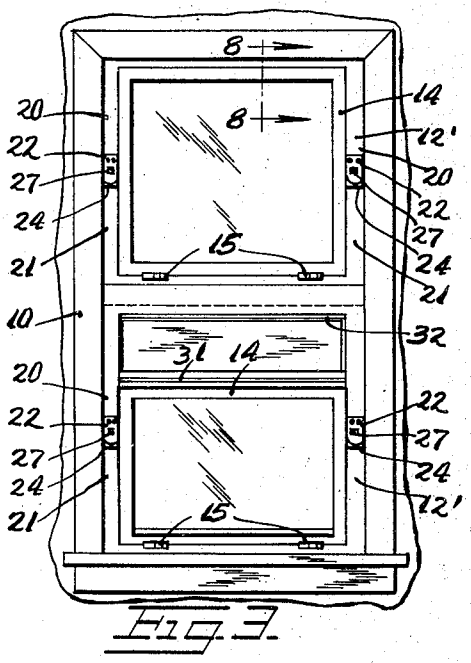


Fig. 3.

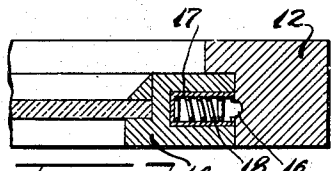


Fig. 2.

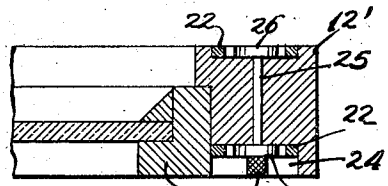


Fig. 7.

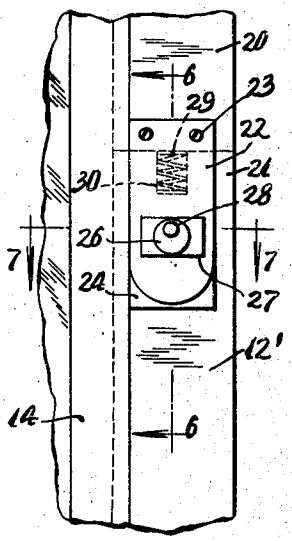


Fig. 4.

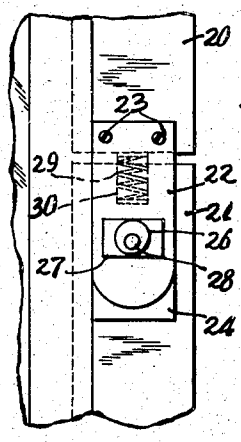


Fig. 5.

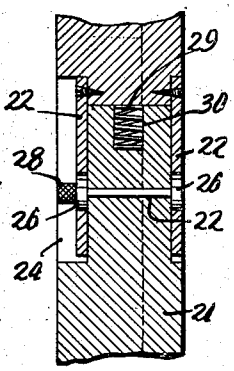


Fig. 6.

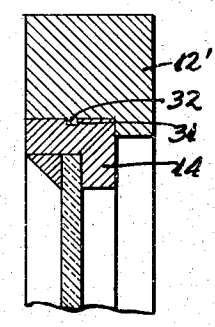


Fig. 8.

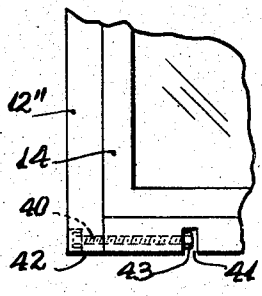


Fig. 12.

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UNITED STATES PATENT OFFICE

2,406,513

DOUBLE SASH WINDOW

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Application July 17, 1944, Serial No. 545,297

3 Claims. (Cl. 20—48)

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This invention relates to new and useful improvements in windows, and has more particular reference to a novel double sash window.

The invention particularly proposes an improved window sash which is characterized by an outer sash frame for slidably engaging in a window frame, and an inner sash frame hingedly connected with the outer sash frame for closing the opening of the outer sash frame.

It is proposed that the new and improved window sash be used in conjunction with counterweights or other systems now generally used or known of for reducing the effort required in moving the window sash.

The invention contemplates numerous embodiments of improved window sashes. Specifically, it is proposed to vary the hinged arrangement of the inner sash within the outer sash, for example, by pivoting the inner sash frame at one side, or at the other side, or at the top, or at the bottom, or intermediate of its ends, etc.

The invention also proposes a novel means for securely holding the sash frames together to prevent rattling.

Another object of the invention is the construction of a device as mentioned which is simple and durable and which may be manufactured and sold at a reasonable cost.

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 a front elevational view of a window provided with sashes constructed in accordance with this invention.

Fig. 2 is a fragmentary enlarged horizontal sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is an elevational view of another window constructed in accordance with a modified form of this invention.

Fig. 4 is a fragmentary enlarged detailed view of a portion of Fig. 3.

Fig. 5 is a detailed view similar to Fig. 4 but illustrating certain of the parts in different positions.

Fig. 6 is a fragmentary vertical sectional view taken on the line 6—6 of Fig. 4.

Fig. 7 is a horizontal sectional view taken on the line 7—7 of Fig. 4.

Fig. 8 is a fragmentary enlarged vertical sectional view taken on the line 8—8 of Fig. 3.

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Fig. 9 is an elevational view of a window constructed in accordance with another form of this invention.

Fig. 10 is another elevational view of a window constructed in accordance with still another form of this invention.

Fig. 11 is still another window embodying this invention.

Fig. 12 is a fragmentary detailed view showing a further modification of the invention.

The double sash window, in accordance with that form of the invention disclosed in Figs. 1 and 2, includes the usual window frame 10 in which the sashes 11 are slidably mounted. These sashes may be connected with the usual counterweights (not shown) or other mechanism to reduce the effort required in moving them. Each sash 11 comprises an outer sash frame 12 slidably mounted in said window frame 10, and an inner sash frame 14 for closing the opening of the outer sash frame 12. The inner sash frame 14 is hingedly connected with the outer sash frame 12 by hinges 15 along one of their adjacent sides.

The sash frames 12 and 14 are associated with means for securely holding them together to prevent rattling. This means includes several dome-shaped members 16 slidably mounted on one of the sash frames and engageable with corresponding recesses on the adjacent sash frame. More particularly, each dome-shaped member 16 is slidably mounted in a casing 17 set into one of the sash frames. A spring 18 is housed within the casing 17 and normally resiliently urges the dome-shaped member 16 outwards.

The operation of the invention may be understood from the following.

The window sashes 11 when in their closed position may be moved upwards and downwards in the conventional way. If for any reason it is desired to conveniently reach the outer faces of the panes included in the window sash it is merely necessary to hinge open the inner sash frame 14. In Fig. 1 the upper sash is shown in its closed position, while the lower one is shown with its inner frame partially swung open.

In Figs. 3–8 inclusive a modified form of the invention has been disclosed which basically is similar to the first form of the invention, but differs in several respects. In the first place each inner sash frame 14 is hingedly connected with the outer sash frame 12' by hinges 15 positioned along the bottom edge portions of these frames. In the second place, each outer sash frame 12 has its side arms formed of two separate sections 20 and 21 in end alignment with each

other. Side plates 22 are attached to the section 20 by fastening elements 23. These side plates engage within recesses 24 formed along the faces of the section 21. A rod 25 is turnably mounted through each section 21 and is provided with a pair of cams 26 engaging complementary cutouts 27 formed in the side plates 22. The inner end of the rod 25 is provided with a knob 28 by which it may be turned. A spring 29 is housed within a cavity 30 in one of the sections, namely, the section 21, and engages against the section 20 for resiliently urging the sections apart.

The top edge of the inner sash frame 14 is formed with a groove 31 extending its full length. The outer sash frame 12' is provided with a tongue 32 engageable into the groove 31.

The operation of this form of the invention is similar to the prior form. When the inner sash frame is closed in relation to the outer sash frame the windows may be moved in a conventional manner. If it is desired to open the inner sash frame 14 it is first necessary that the knobs 28 be turned, to turn the cams 26 from their locking positions, illustrated by Fig. 4, to their open positions illustrated by Fig. 5. In the latter position, the sections 20 and 21 of the side arms of the outer frame 12' are slightly separated. This separation will move the tongue 32 out of the groove 31. Now the inner sash frame is free to be hinged open.

In Fig. 3 the lower window sash is illustrated with its inner sash frame partially swung open. The upper window sash is illustrated with its sash frames closed in relation to each other. When the tongue 32 and groove 31 of the sash frames engage each other the sash frames will be securely held against rattling.

In Fig. 9 still another modified form of the invention is disclosed, which is very similar to the form shown in Fig. 3, distinguishing however, in the fact that the outer sash frame 12'' has its side arms 20'' and 21'' of separate sections separated above its horizontal center. The inner sash frame 14 is hingedly or pivotally mounted within the outer sash frame 12'' by pivots 35 at the sides.

In other respects this form of the invention is identical to the previous form and like parts are indicated by like reference numerals.

In Fig. 10 still another form of the invention is disclosed which is very similar to the form shown in Fig. 3, distinguishing in the fact that the inner sash frames 14 are hingedly or pivotally connected with the outer sash frames 12' by pivots 36 at the centers of the horizontal arms thereof.

In other respects this form of the invention is similar to that previously shown and like reference numerals identify like parts in each of the several views.

In Fig. 11 another form of the invention has been disclosed which is very similar to the one shown in Fig. 1, distinguishing merely in the fact that the outer sash frames 12^a are formed with central vertical arms 38 dividing them into two panels each. The inner sash frame is in the nature of separate inner sash frames 14^a hingedly connected at their outer sides by the hinges 15 with the inner sash frame. These inner sash frames 14^a close the openings of the outer sash frame.

In other respects this form of the invention is similar to that previously shown and like reference numerals identify like parts in each of the several views.

In Fig. 12 a reinforcing bolt 40 is shown in the bottom portion of the outer sash frame 12''. A slot 41 is formed to be extending inwardly from the edge 42 of the outer sash frame 12''. This slot is adapted to receive a nut 43 which engages over the threaded end of the bolt 40. When this nut is secured on the bolt, it reinforces the window sash and prevents the windows from sagging, warping or loosening on their joints.

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. In a window, a window sash, comprising an outer sash frame for sliding in a window frame, an inner sash frame for closing the opening of said outer sash frame, and means for hingedly connecting said inner sash frame with said outer sash frame, said outer sash frame having its side arms formed of separate sections in end alignment with each other, and means for selectively drawing said sections together or slightly separating the sections for clamping the inner sash frame within the outer sash frame.

2. In a window, a window sash, comprising an outer sash frame for sliding in a window frame, an inner sash frame for closing the opening of said outer sash frame, and means for hingedly connecting said inner sash frame with said outer sash frame, said outer sash frame having its side arms formed of separate sections in end alignment with each other, and means for selectively drawing said sections together or slightly separating the sections for clamping the inner sash frame within the outer sash frame, one of said sash frames being provided with a tongue along its top side engageable with a complementary groove in the other frame.

3. In a window, a window sash, comprising an outer sash frame for sliding in a window frame, an inner sash frame for closing the opening of said outer sash frame, and means for hingedly connecting said inner sash frame with said outer sash frame, said outer sash frame having its side arms formed of separate sections in end alignment with each other, and means for selectively drawing said sections together or slightly separating the sections for clamping the inner sash frame within the outer sash frame, said latter means including rods turnably mounted on one of the sections, side plates mounted on the other of the sections, and cams on said turnable rods cooperative with openings in said side plates for moving the side arms as specified.

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