Feb. 6, 1923. 1,444,223.

U. E. TUOMI.

WINDOW.

ORIGINAL FILED JUNE 13, 1919. 2 SHEETS—SHEET 1.

Fig. 1.

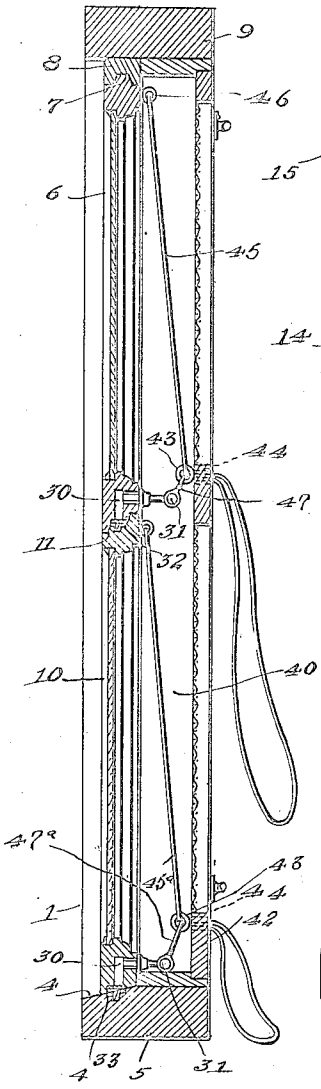


Fig. 8.

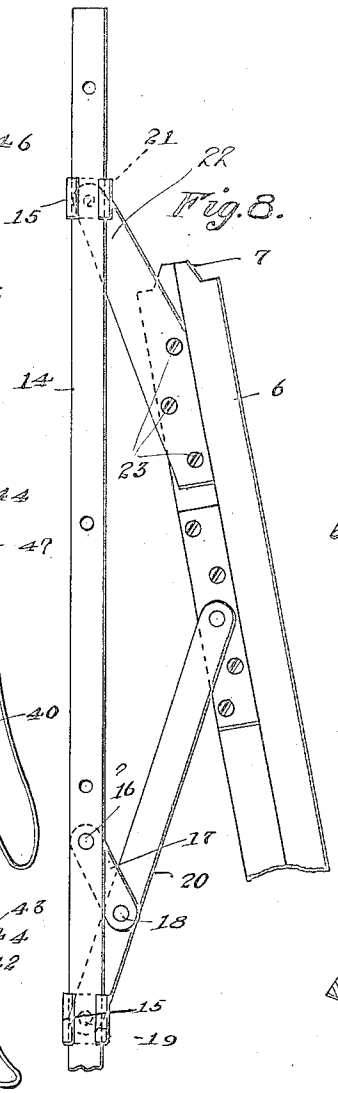


Fig. 2.

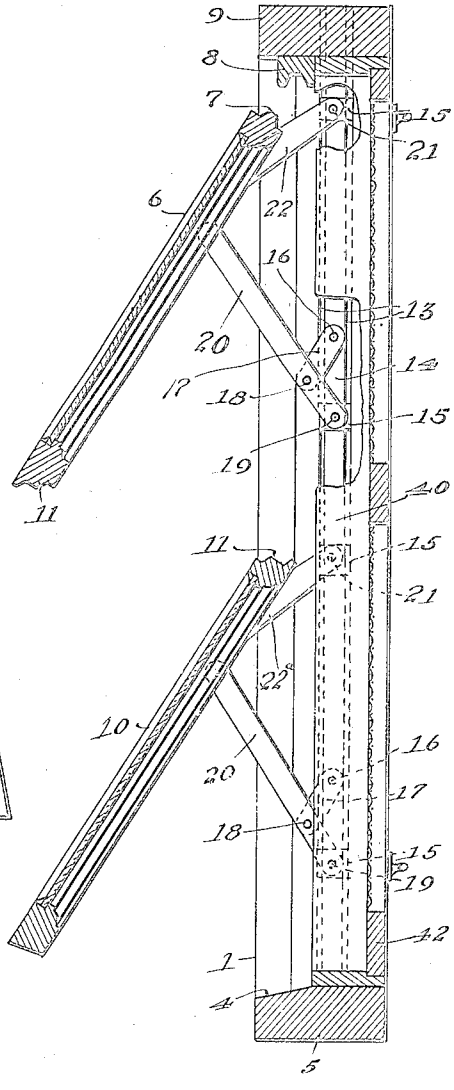
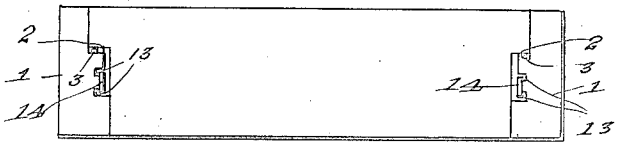


Fig. 4.



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Feb. 6, 1923. 1,444,223.

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WINDOW.

ORIGINAL FILED JUNE 13, 1919. 2 SHEETS—SHEET 2.

Fig. 3.

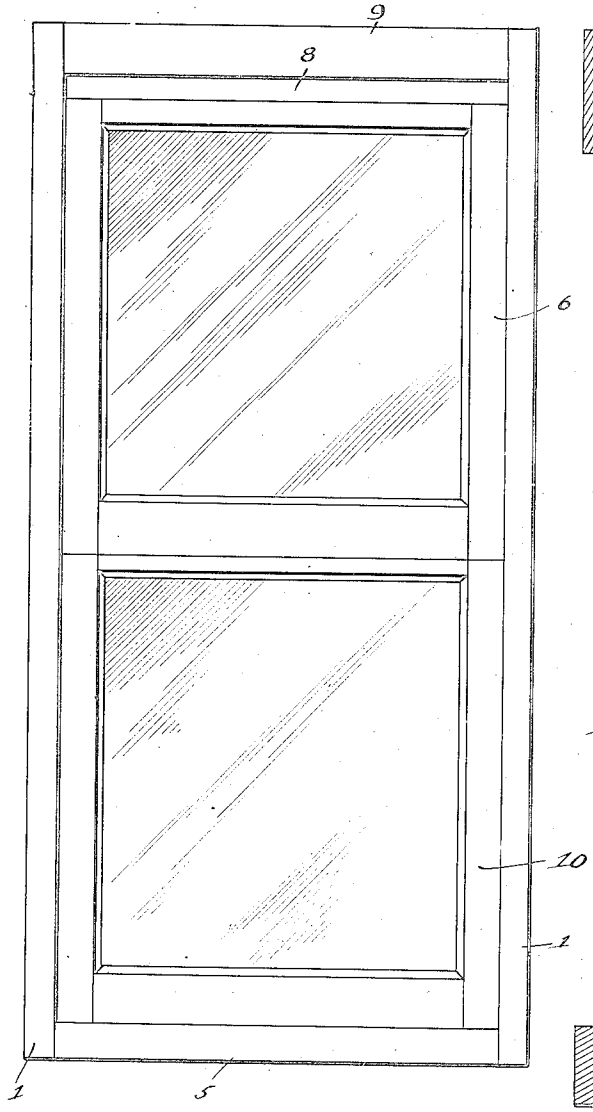


Fig. 5.

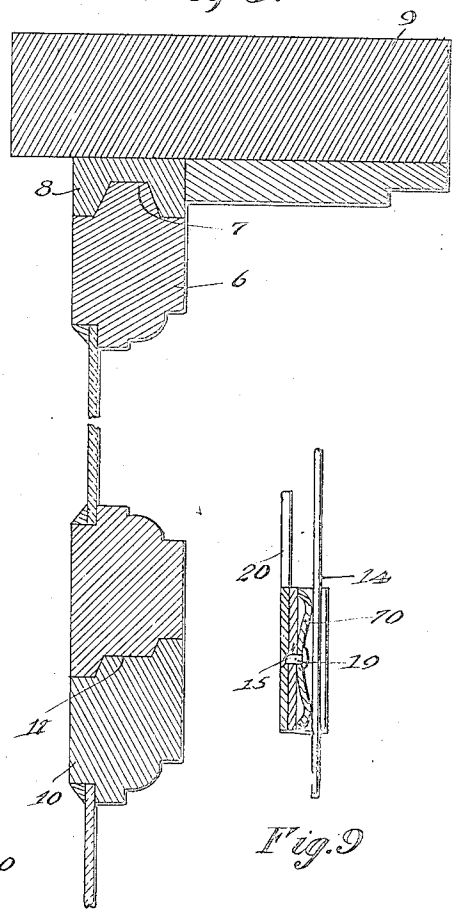


Fig. 9

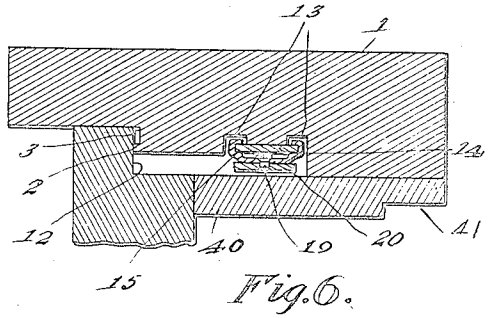


Fig. 6.

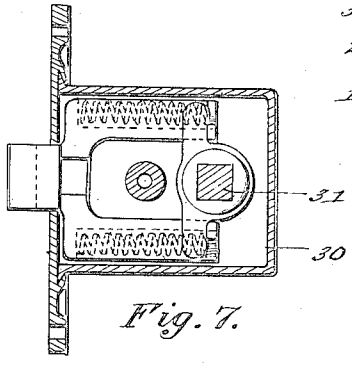


Fig. 7.

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Patented Feb. 6, 1923. 1,444,223

UNITED STATES PATENT OFFICE.

UNO E. TUOMI, OF DALLAS, TEXAS.

WINDOW.

Application filed June 13, 1919, Serial No. 303,990. Renewed August 8, 1922. Serial No. 580,564.

To all whom it may concern:

Be it known that I, UNO E. TUOMI, a citizen of the Republic of Finland, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Windows, of which the following is a specification.

One of the objects of my present invention is the provision of a window of the swinging sash type, in which when the sash or sashes are closed the sash-carrying or operating mechanism will be completely protected against the weather, and at the same time will be entirely hidden from view so that the inner side of the window will present a neat and finished appearance.

Another object of the invention is the provision of a window of the type stipulated in which the faces of the stops, with which the sash break joints when closed, are channeled in order to conduct water downwardly and in that way contribute toward preventing the water from reaching the sash-carrying or operating mechanism.

Another object is the provision of a window in which either the upper or the lower section may be swung open first as desired by the operator.

Another object is the provision of a construction in which the sash-carrying or operating mechanism is so devised that either sash may be swung open by pulling downwardly on its upper inner portion.

Another object is the provision in combination with the window casing and the swinging sashes, of a screen for barring the inner portion of the casing, and cables extended through and guided on the screen frame and connected with the sashes and with latches carried by the sashes in such manner that by pulling on one cable and then pulling on another cable, the operator is enabled, without removal of the screen, to first unlatch and then swing either sash into an open position, and the operator is also enabled by pulling on the first-named cable, to draw its respective sash to a closed position.

Other objects and practical advantages of the invention will be fully understood from the following description and claims when the same are read in connection with the drawing, accompanying and forming part of this specification, in which:

Figure 1 is a vertical section taken through the vertical center of the window constituting the best practical embodiment of my invention of which I am cognizant, and showing the sashes as closed, and also showing the screen as positioned in the inner portion of the window casing.

Figure 2 is a similar view with the sashes in open position.

Figure 3 is an elevation showing the outer side of the window.

Figure 4 is a top plan view of the window casing.

Figure 5 is an enlarged detail broken vertical section showing the joints of the upper sash, and one joint of the lower sash.

Figure 6 is a detail transverse section taken through a portion of one side stile of the window casing, and also through one track and one slide thereon.

Figure 7 is a detail section showing the construction of the latches that I prefer to employ on the sashes.

Figure 8 is a detail view of one sash and the carrying means connected with one edge thereof.

Figure 9 is a detail vertical section taken through one of the lower slides of one sash and showing the spring therein for preventing too free movement of the slide.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

In furtherance of my invention, the side stiles 1 of the window casing are provided at their inner sides with vertical stops 2, and in the faces of said stops are formed vertical channels 3 which extend down to and are adapted to discharge water upon the downwardly pitched outer portion 4 of the sill 5 of the casing, this with a view to lessening the liability of water reaching the operating mechanism of the sashes.

The upper end of the upper sash 6 is preferably stepped, as indicated by 7, to form a break joint with the similarly stepped forward and lower portion 8 of crown-bar 9 of the casing, and the meeting ends of the upper sash 6 and the lower sash 10 are similarly stepped at 11, in order to form a break joint between the said ends when the sashes are closed. The side edges of the sashes 6 and 10 are rabbeted, as indicated by 12, and consequently when the sashes are closed, the outer portions of the said rabbets 12 will bear against the faces of the stops 2, and thereby contribute toward preventing water from working past the sashes and the stops,

with the result that the operating mechanism of the sashes is adequately protected against the weather.

Formed in the inner sides of the side stiles of the casing and in rear of the stops 2 are vertical grooves 13, and fastened in the said grooves 13 are vertical track bars 14 on each of which are four slides 15, two for each of the sashes 6 and 10. Pivotally connected at 16 to each of the track bars 14 are vertically-swinging arms 17, and pivotally connected at 18 to the said arms 17, and at 19 to the slides 15, just below the pivotal connection 16, are links 20, while pivotally connected at 21 to the upper slides 15 are upper swinging arms 22, which latter are made comparatively thin, and are therefore possessed of considerable resiliency, with the result that they are adapted to accommodate themselves to their pivotal connections to the upper slides 15 and to the fixed connections at 23 to the walls of the rabbets at the side edges of the upper sash 6. Links 22^a are similarly interposed between and connected to the next to the lowest slides 15 and the lower sash 10. The vertically swinging links 20 are pivotally connected in pairs to the upper sash and the lower sash, respectively. When the sashes 6 and 10 are in fully closed position as shown in Figure 1, the pivotal connections of the links 20 to the sashes will rest in vertical planes in front of the pivotal connections of the said links to the arms 17 and certain of the slides 15. At the same time the connections of the arms 22 and links 22^a to the upper and lower sashes, respectively, will rest in planes in front of the pivotal connections of the said arms 22 and links 22^a to their respective slides 15. In consequence of this arrangement it will be observed that when the upper inner portion of either sash is subjected to downward pull, the sash will be moved into open position. It will also be observed that the relative arrangement of the meeting portions of the sashes is such that either the upper or the lower sash may be opened first.

Each of the sashes is provided at its lower portion with a spring-pressed latch 30 having a crank handle 31; the latch 30 of the upper sash being adapted to take into a keeper 32 in the upper end of the lower sash, and the latch 30 of the lower sash being adapted to take into a keeper 33 in the sill of the casing.

Fastened against the inner sides of the side stiles 1 of the casing are stop bars 40 which, when the sashes are closed, cooperate with the sashes in entirely hiding from view the cooperating mechanism of the sashes, so as to materially enhance the finished appearance of the interior of the window. The said stop bars are rabbeted at 41 in order to form stops for a screen frame 42 which is designed to be removably positioned in the inner portion of the window casing, as shown. The said screen frame 42 is provided on its forward side with guides 43, preferably, though not necessarily, in the form of eyes. The screen frame 42 is also provided with lower and upper apertures 44. A cable 45 is connected to an eye 46 that projects from the upper portion of the upper sash 6, and a cable 47 is connected to the crank handle 31 of the upper latch 30. These cables are extended through the upper guide 43 of the screen frame 42, and also through the upper aperture 44 of said screen frame. When the operator pulls on the cable 47, the upper sash will be unlocked, and when he pulls on the cable 45, the upper sash will be swung into open position. To close the said upper sash, the operator simply pulls upon the cable 47 until the latch 30 carried by the upper sash snaps into engagement with the keeper in the upper end of the lower sash. Similar cables 45^a and 47^a are employed in conjunction with the lower sash and the screen frame 42. Of course, when the screen 42 is not employed, the cables will be altogether omitted, as will also the means for connecting two of the same to the upper portions of the sashes.

It will be apparent from the foregoing that I have provided a window construction of the swinging sash type that is inexpensive in construction, is neat in appearance, is reliable and easy in operation, is adequate in excluding the weather, and is so arranged that access may be readily gained to the sash-carrying or operating mechanism of the sashes whenever the same is necessary. It will also be apparent that a salient feature of my invention resides in the fact that when the sashes are closed, water is effectually prevented from finding its way to and deteriorating the sash-carrying or operating mechanism, with the result that the usefulness and ease of operation of said mechanism are materially prolonged.

Manifestly the arms 22, because of their resiliency, will prevent too free movement of the upper slides of each sash on the track bars. Too free movement of the lower slides of each sash is prevented by springs 70, such as shown in Figure 9.

Having described my invention what I claim and desire to secure by Letters Patent, is.

1. In a window, the combination of a casing, a swinging sash, and operating mechanism for the said sash; the said mechanism comprising vertical track bars fixed to the inner sides of the side stiles of the casing, upper and lower slides movable vertically on said track bars, links interposed between and pivotally connected to the edge portions of the sash and the lower slides, arms interposed between and pivotally connected to the track bars and said links, and upper arms

fixedly connected to the edge portions of the sash and pivotally connected to the upper slides; the pivotal connections of the links to the sash and the fixed connections of the arms to the sash resting when the sash is closed in a vertical plane outwardly beyond the vertical plane of the pivotal connections of the links to their respective slides, whereby the sash may be swung outwardly by exerting downward pull on its inner upper portion.

2. In a window, the combination of a casing, a swinging sash, and operating mechanism for the said sash; the said mechanism comprising vertical track bars fixed to the inner sides of the side stiles of the casing, upper and lower slides movable vertically on said track bars, links interposed between and pivotally connected to the edge portions of the sash and the lower slides, arms interposed between and pivotally connected to the track bars and said links, and upper comparatively thin and resilient arms fixedly connected to the edge portions of the sash and pivotally connected to the upper slides, the pivotal connections of the links to the sash and the fixed connections of the upper arms to the sash resting when the sash is closed in a vertical plane outwardly beyond the vertical plane of the pivotal connections of the links and arms to their respective slides.

3. The combination of a window casing, a swinging sash, sash-carrying mechanism interposed between the sash and the casing and constructed and arranged relatively to the casing and sash to permit of opening of the sash when the upper inner portion thereof is subjected to downward pull, a screen frame positioned in the inner portion of the window casing and apertured, and a cable passed through the aperture in the screen frame and carried upwardly and connected with the upper inner portion of the sash.

4. The combination of a window casing, a swinging sash, sash-carrying mechanism interposed between the sash and the casing and constructed and arranged relatively to the casing and sash to permit of opening of the sash when the upper inner portion thereof is subjected to downward pull, a latch on the lower portion of the sash and having a crank handle, a screen frame positioned in the inner portion of the window casing and apertured and having a guide disposed adjacent to the crank handle of the sash latch, a cable connected to the upper inner portion of the sash, and a cable connected to the crank handle of the latch; said cable being extended through the guide and aperture of the screen frame.

5. The combination of a window casing having vertical stops at the inner sides of its side stiles, vertical track bars fixed to the inner sides of the side stiles and located in rear of and in spaced relation to the faces of said stops, slides on said track bars, a swinging sash and means interposed between and connecting the slides and the edge portions of the sash to cause said sash to simultaneously slide vertically and swing outwardly to the open position, said track bar, slides and means being protected from the weather by the sash and the stop, when said sash is closed.

6. The combination of a window casing having vertical stops at the inner sides of its side stiles, the faces of which stops are vertically grooved, a swinging sash having rabbeted edge portions to fit within the stops and against the faces of said stops, and sash-carrying mechanism interposed between and connected with the side stiles of the casing and the sash; said mechanism comprising vertical track bars fixed to the side stiles in rear of and spaced from the faces of the stops, upper and lower slides on said track bars, links interposed between and pivotally connected to the lower slides and the edge portions of the sash, arms interposed between and pivotally connected to the track bars and the links and upper arms interposed between and pivotally connected to the uper slides and fixed to the edge portions of the sash.

7. The combination of a window casing having vertical stops at the inner sides of its side stiles, the faces of which stops are vertically grooved, a swinging sash having rabbeted edge portions to fit within the stops and against the faces of said stops, and sash-carrying mechanism interposed between and connected with the side stiles of the casing and the sash; said mechanism comprising vertical track bars fixed to the side stiles in rear of and spaced from the faces of the stops, upper and lower slides on said track bars, lower links interposed between and pivotally connected to the lower slides and the edge portions of the sash and upper links interposed between and pivotally connected to the upper slides and fixed to the edge portions of the sash, and stop bars attached to the inner sides of the side stiles and opposed to the inner side of the sash and cooperating with the sash in hiding from view the said sash-carrying mechanism.

In testimony whereof I affix my signature.

UNO E. TUOMI.