Oct. 31, 1944. A. B. GLENN ET AL 2,361,762

STORM WINDOW

Filed Dec. 3, 1943 2 Sheets-Sheet 1

Fig. 2.

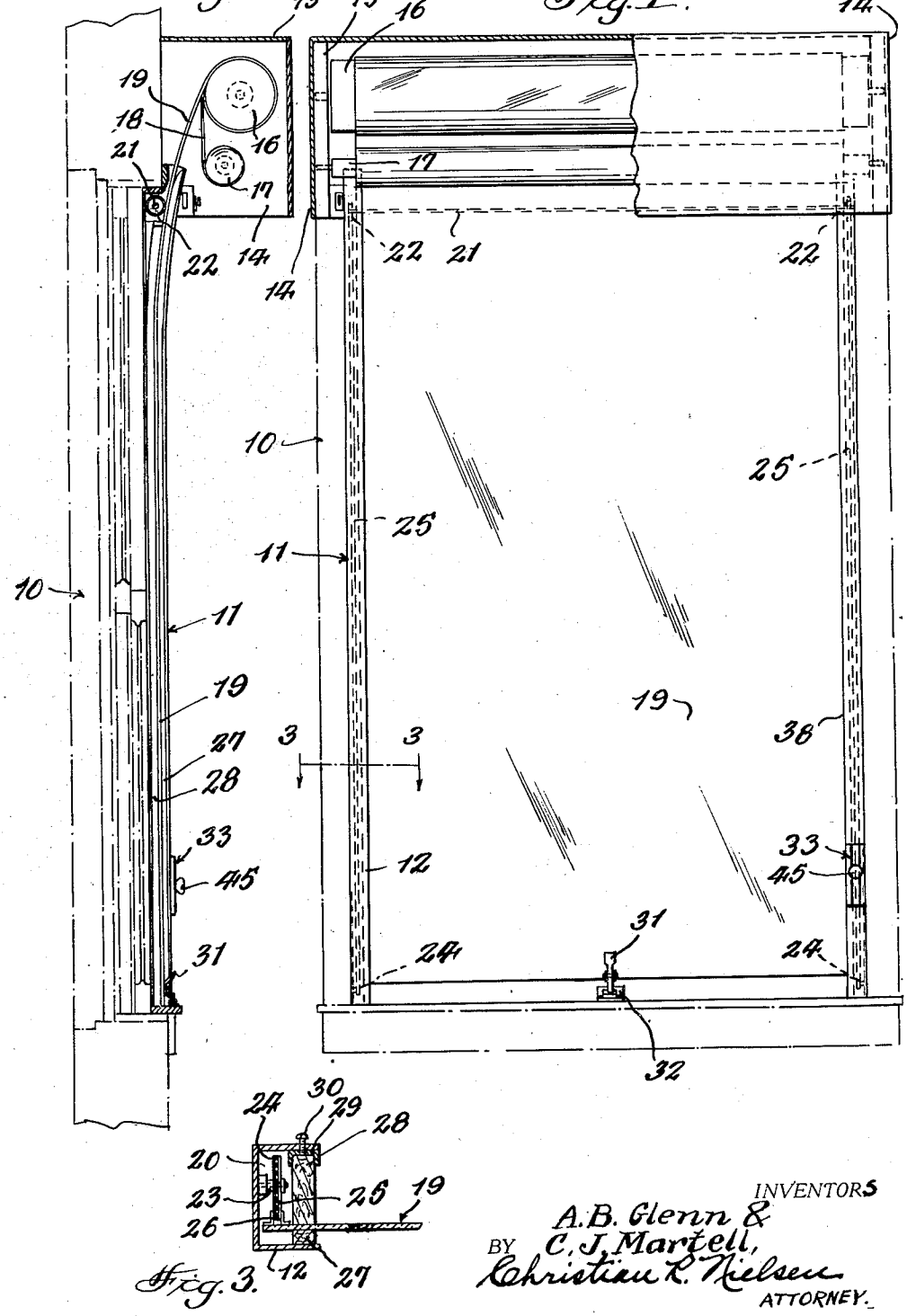


Fig. 1.

Fig. 3.

INVENTORS
A. B. Glenn &
BY C. J. Martell,
Christian R. Nielsen
ATTORNEY.

Oct. 31, 1944. A. B. GLENN ET AL 2,361,762

STORM WINDOW

Filed Dec. 3, 1943 2 Sheets-Sheet 2

Fig. 6.

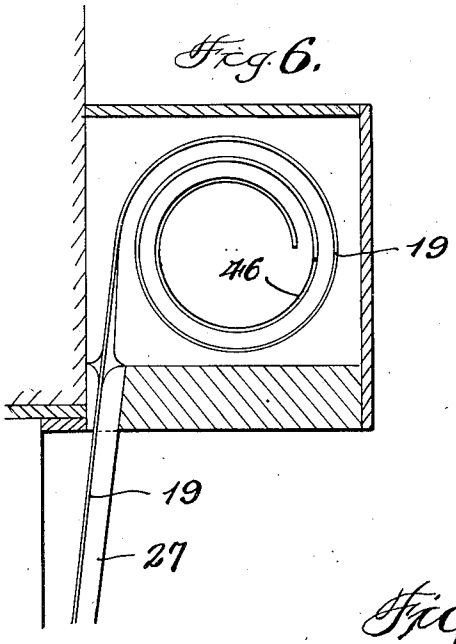


Fig. 7.

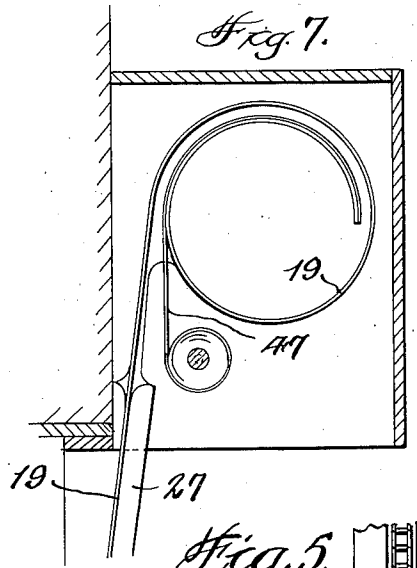


Fig. 8.

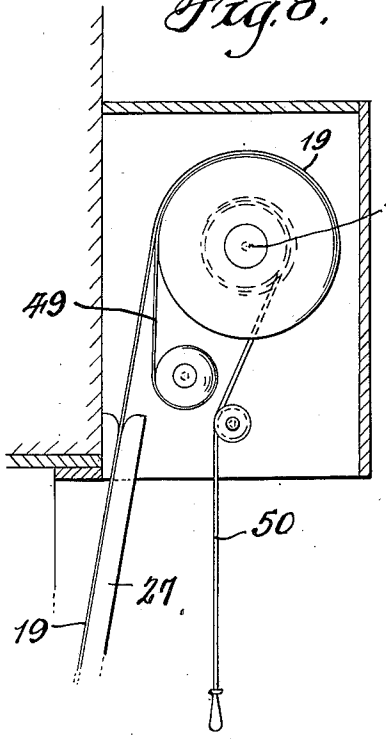


Fig. 4.

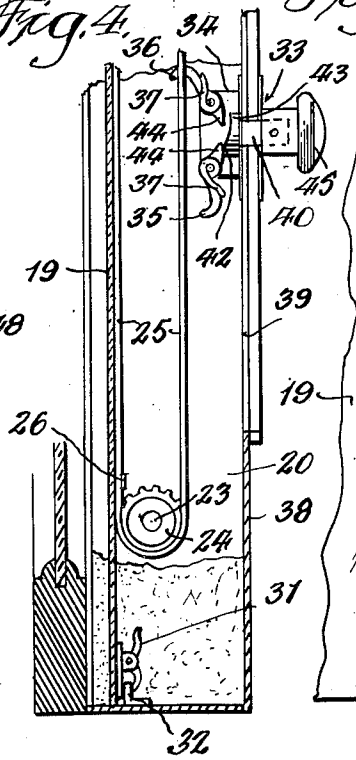
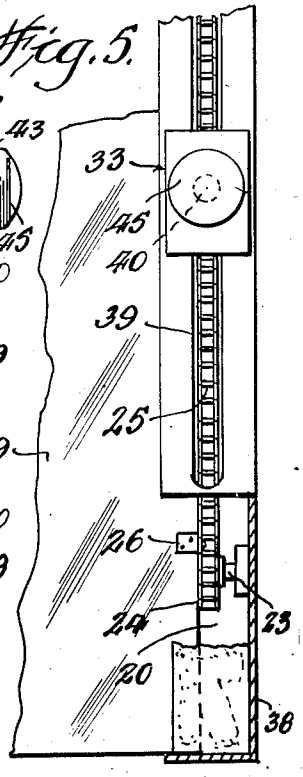


Fig. 5.



INVENTORS.
A. B. Glenn &
BY C. J. Martell,
Christian L. Nielsen,
ATTORNEY.

Patented Oct. 31, 1944 2,361,762

UNITED STATES PATENT OFFICE

2,361,762

STORM WINDOW

Albert B. Glenn, Brooklyn, N. Y., and Carl J. Martell, New Milford, N. J.

Application December 3, 1943, Serial No. 512,762

3 Claims. (Cl. 160—23)

This invention relates to a storm window, and it consists in the constructions, arrangements and combinations herein described and claimed.

It is an important object of the invention to provide a construction of storm window which may be readily incorporated in standard sash, either upon the inside of the building or outside thereof.

More particularly, it is an object of the invention to provide a storm window construction in which a sheet of flexible glass is employed, the structure embodying roller means whereby the flexible sheet may be readily drawn into position before a window, or be readily raised to an inoperative stored position.

It is a still further object of the invention to provide a storm window of the type stated in which means are provided for protecting the flexible transparent sheet against scratches, or abrasions during movement of the sheet from operative to inoperative position, or vice versa.

Additional objects, advantages and features of invention will be apparent from the following description considered in conjunction with the accompanying drawings, wherein

Figure 1 is a front elevation of the storm window, partly in section.

Figure 2 is a longitudinal section thereof.

Figure 3 is an enlarged cross section on the line 3—3 of Figure 1.

Figure 4 is an enlarged fragmentary vertical section illustrating an operating means for effecting raising and lowering of the transparent sheet.

Figure 5 is a front view thereof, a lower portion of the framing being broken away.

Figure 6 is a modified form of take-up means for the flexible sheet.

Figure 7 is a further modified form of the device.

Figure 8 is a still further form of the take-up means.

There is illustrated a window frame 10, indicated by dot and dash lines in Figures 1 and 2, since the construction of frames will vary and form no part of the present invention.

As shown in the present instance, the storm window 11 is mounted upon the interior of the building and consists of a substantially rectangular frame 12 of a dimension to fit within the opening defined by the window frame 10.

Upon the upper end of the frame 11 there is suitably mounted a canopy 13, having a closed top and front, the bottom of which is open for a purpose as will presently appear. As may be seen in Figure 1, the canopy is approximately the same width as the window frame and upon the inner faces of end walls 14 suitable brackets 15 are provided for revolubly mounting respective rollers 16 and 17. The rollers 16 and 17 employ a rewinding spring, such as found in conventional shade rollers, and since this is well understood, a detailed showing is not believed essential to the full understanding of the invention. It will be seen that the roller 17 is mounted below the roller 16 and to one side of the longitudinal axis thereof, and upon the roller 17, a protective sheet 18 is wound, the free end of which is interleaved or rolled between the flexible glass sheet 19 wound upon the roller 16. Thus the sheeting 18 will protect the glass sheet 19 when it is rolled upon the roller 16.

As may be seen from Figure 3, the vertical uprights of the frame 12 are channel shaped, the channels 20 being presented toward each other. Adjacent the upper ends of the channels 20, a shaft 21 is journalled, having respective sprockets 22 fixed at the ends thereof, and occupying a position within the channels. At the lower end of each channel a stud shaft 23 is mounted, having a sprocket 24 in alignment with respective sprockets 22. A ladder chain 25 is trained about each pair of sprockets 22 and 24.

The flexible glass sheet is of a width to present respective longitudinal edges within the channels 20, so as to be freely movable vertically thereof, and preferably lies quite close to a reach of the chains 25 so that it may be secured to the chains by means of a lug 26.

In order that an airtight relation may be maintained between the flexible sheet and the frame 11, a pair of felt strips 27 and 28 are disposed and retained within the channels, arranged in opposed relation upon the flexible sheet 19. In order that the pressure upon the sheet may be regulated, the felt strip 28 includes a mounting 29 having a screw stud 30 threadedly engaged in the frame 11. It will be apparent that by turning the stud 30, to advance the strip 28 toward the glass the pressure will be increased. The reverse movement of the stud will lessen the pressure. The adjusting means will be provided at both sides of the frame and at suitably spaced vertical points.

At the lower edge of the flexible sheet in the medial axis thereof, a latch 31 is provided, cooperable with a catch 32 on the lower rail of the frame for maintaining the sheet in its lowered operative position.

When it is desired to lower the flexible glass

sheet to its operative position, it being assumed that the lower end of the sheet is housed within the canopy, it is only necessary to grasp the latch 31 and draw downwardly upon the sheet until it reaches its final position, when the latch may be engaged with the catch 32. When the sheet 19 is being unwound from the roller 16, the roller 17 functions to re-wind the protecting sheet 18, but at no time does the sheet 18 become entirely disengaged from between the convolutions of the flexible sheet on the roller 16.

An even movement of the transparent sheet 19 is insured by reason of its securement to the chains 25 and sprockets 22 and 24. It will be understood that the sprockets 22 move in unison since these are secured upon the shaft 21 while the sprockets 24 are freely rotatable upon their respective studs 23.

When it is desired to raise the flexible window, the latch 31 is released and a slight downward pull on the window will effect rewinding of the window upon the roller 16, the operation being similar to that employed in raising a conventional window shade.

A mechanical means for raising and lowering the flexible sheet 19 is provided, cooperable with one of the chains 25 as clearly shown in detail in Figures 4 and 5. An operating means is indicated generally by the reference character 33, and consists of a frame 34 upon which there are mounted a pair of dogs 35 and 36, each of which is provided with a spring 37 tending to force the dogs into an engaged position with links of the chain 25. The upright 38 of the frame 11 is slotted vertically as at 39, and extended transversely through the slot there is a shaft 40 having a cam 41 upon the inner end thereof disposed within the frame 34. The cam 41 is provided with a high cam face 42 and a low cam face 43, the former adapted to engage rearward extensions 44 of the dogs when the cam is rotated by means of the hand knob 45. As shown in Figure 4, the dog 35 is held in inoperative position against the tension of the spring 37, due to engagement between the high cam face 42 and the rear extension 44 of the dog. Thus the dog 36 is free to engage the chain 25, and in this position downward pressure on the knob 45 will cause a corresponding movement of the frame 34 and associated dogs 35 and 36 effecting movement of the chain 25 in a direction to raise the flexible glass sheet 19. A rotary movement of the knob 45 and associated shaft 40 will effect rotation of the cam, releasing the dog 35 so that it will be in operative engagement with chain 25. At the same time, the high cam face 42 will have engaged the extension 44 of the dog 36, effecting release thereof. Thus, upward sliding movement of the operating means 33 will cause a lowering of the flexible sheet glass. The cam face 42 should be of an area whereby at one position of its rotation, both extensions 44 will be engaged, thus freeing both dogs from engagement with the chain. This position of the dogs will be required when the glass is to be moved by manual downward pull at the latch 31.

In Figure 6, the flexible glass sheet is shown as coiled within itself by means of a spiral groove 46 formed in respective end walls 14 of the canopy. In this form the operating mechanism for actuating the window as well as the protective sheeting may be eliminated, the flexible sheet being protected by reason of the spaced convolutions of the groove 46.

The form shown in Figure 7 contemplates coiling the flexible sheet within itself solely, a protective sheeting 47 being interwound so as to protect the facing of the sheet.

In Figure 8, a take-up roll 48 is employed upon which the flexible window is wound, a protective sheet 49 being fed between the convolutions of the glass sheet, similar to that described in connection with Figures 1 and 2. The roll 48 includes a pull cord 50 for rotating the roll for raising the flexible window. When the window is lowered, the pull cord will wind upon the roll in position for raising the window.

While we have shown and described preferred forms of the invention, this is by way of illustration only, and we consider as our own all such modifications as fairly fall within the scope of the appended claims.

We claim:

1. A storm window consisting of a frame having parallel upright channel members and a canopy at the top thereof, a roll of flexible transparent sheet material revolubly mounted in the canopy, a roll of protective sheeting within the canopy and interleaved between convolutions of the transparent sheet material, said frame being adapted to fit within a window opening, the edges of said transparent sheet extending into said channel members upon withdrawal of said transparent sheet from said canopy, a shaft revolubly mounted between the uprights adjacent the upper ends thereof, a sprocket fixed to each end of the shaft and disposed within the channels of the uprights, a stud shaft in each channel adjacent the lower ends thereof, a sprocket revolubly mounted on each stud shaft, the sprockets in each channel being in alignment, a chain trained about each pair of aligned sprockets, means interconnecting one reach of the chains with said flexible transparent sheet material, said channels each having felt strips arranged in opposed relation for passage of said flexible transparent sheet therebetween, means for regulating the pressure of said strips upon said transparent sheet.

2. A storm window consisting of a frame constructed and adapted to fit within a window opening, a canopy at the top thereof, the ends of said canopy having a convolute groove formed therein, and a flexible transparent sheet of a width to present the longitudinal edges within respective grooves, said sheet being movable to a position before the window opening, and guide and retaining means on the frame for holding the transparent sheet in lowered extended position.

3. A storm window consisting of a frame having parallel upright channel members and a canopy at the top thereof, a roll of flexible sheet material revolubly mounted in the canopy, a roll of protective sheeting within the canopy and interleaved between convolutions of the transparent sheet material, said frame being constructed and adapted to fit within a window opening, the edges of said transparent sheet extending into said channel members upon withdrawal of said transparent sheet from said canopy, said channel members including felt guide strips between which the flexible transparent sheet is movable and means for adjusting the pressure of the strips upon said transparent sheet.

ALBERT B. GLENN.
CARL J. MARTELL.