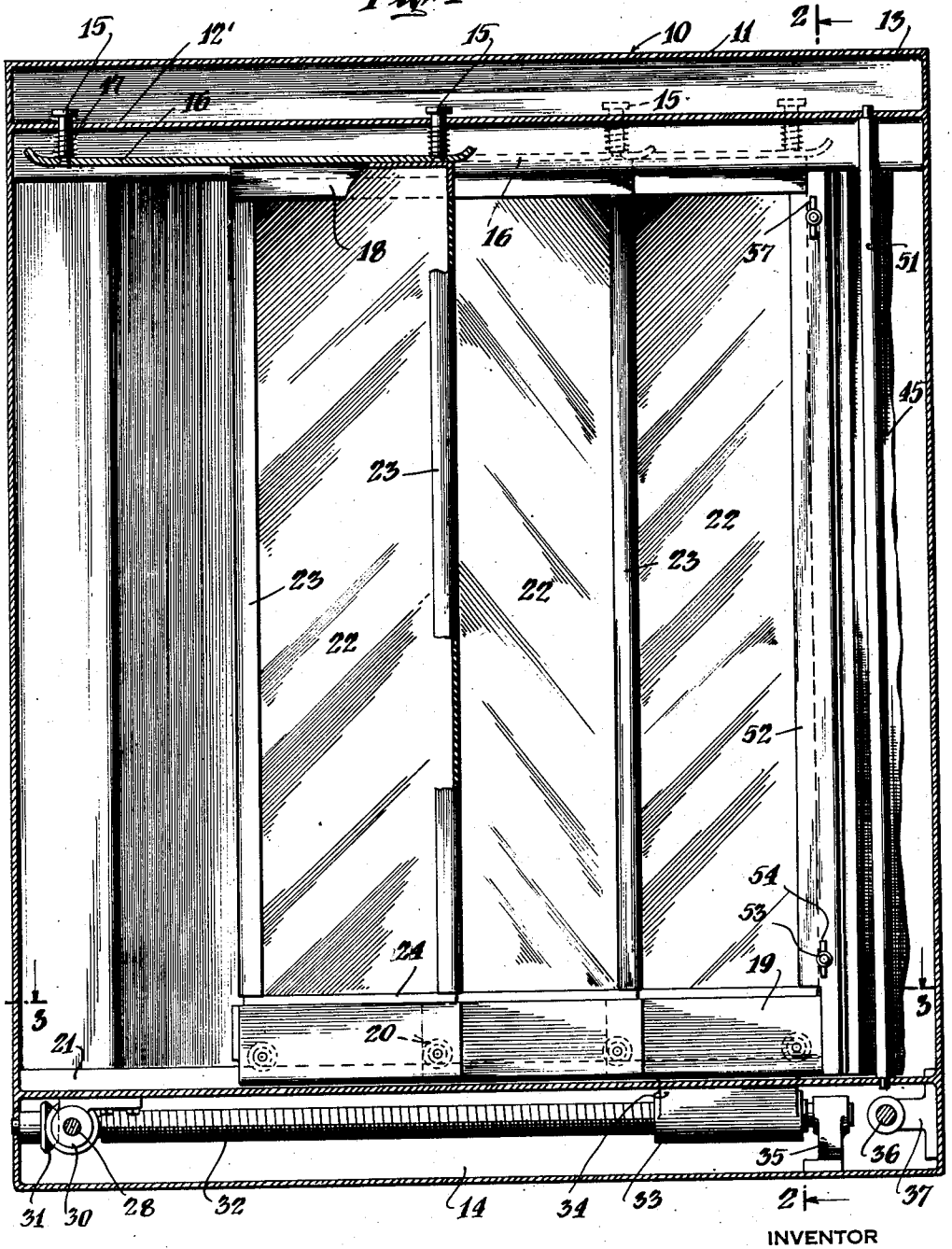
April 9, 1940. I. KRAMER 2,196,591

WINDOW CONSTRUCTION

Original Filed March 17, 1937 4 Sheets-Sheet 1

Fig. 1



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Fig. 2

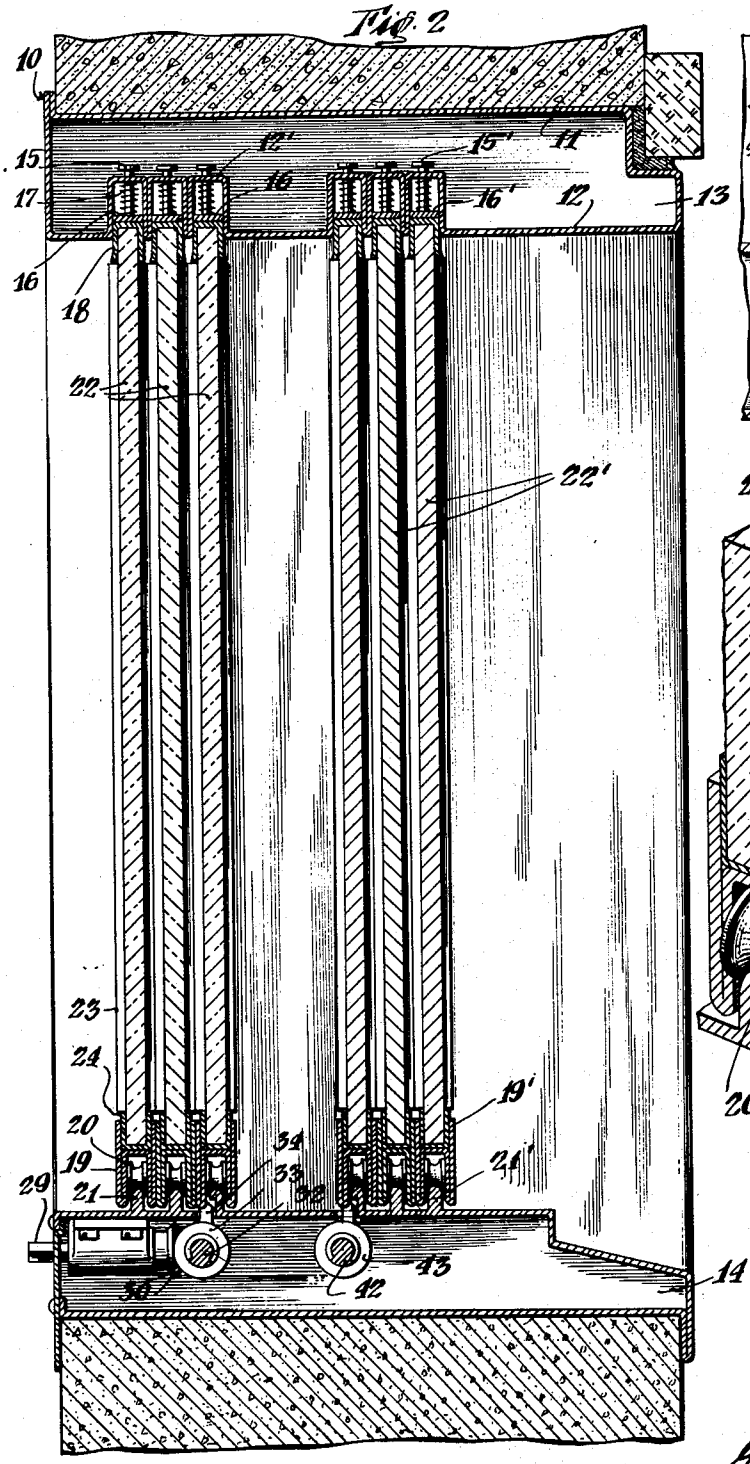
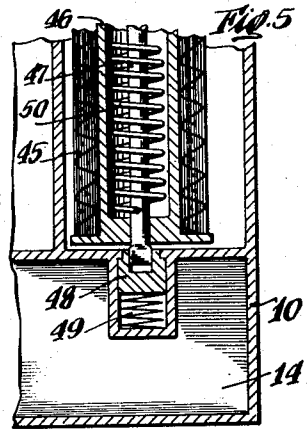


Fig. 5



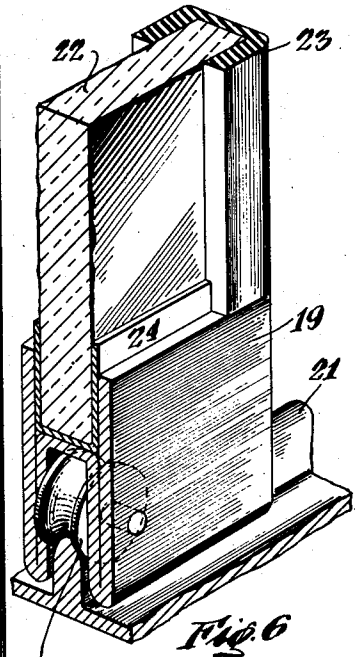


Fig. 6

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Fig. 3

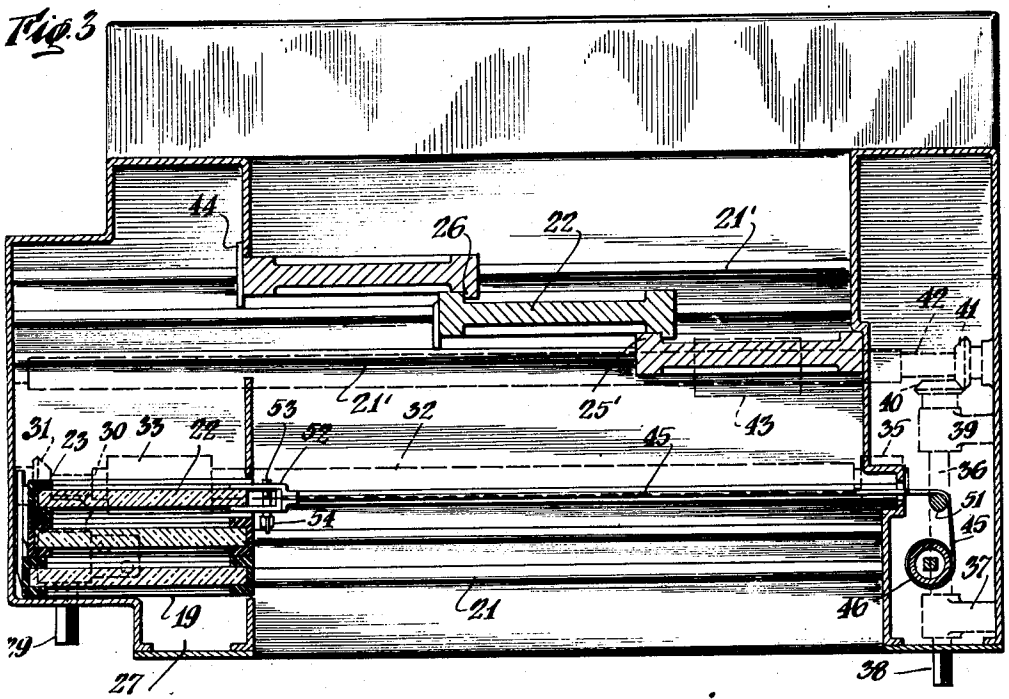
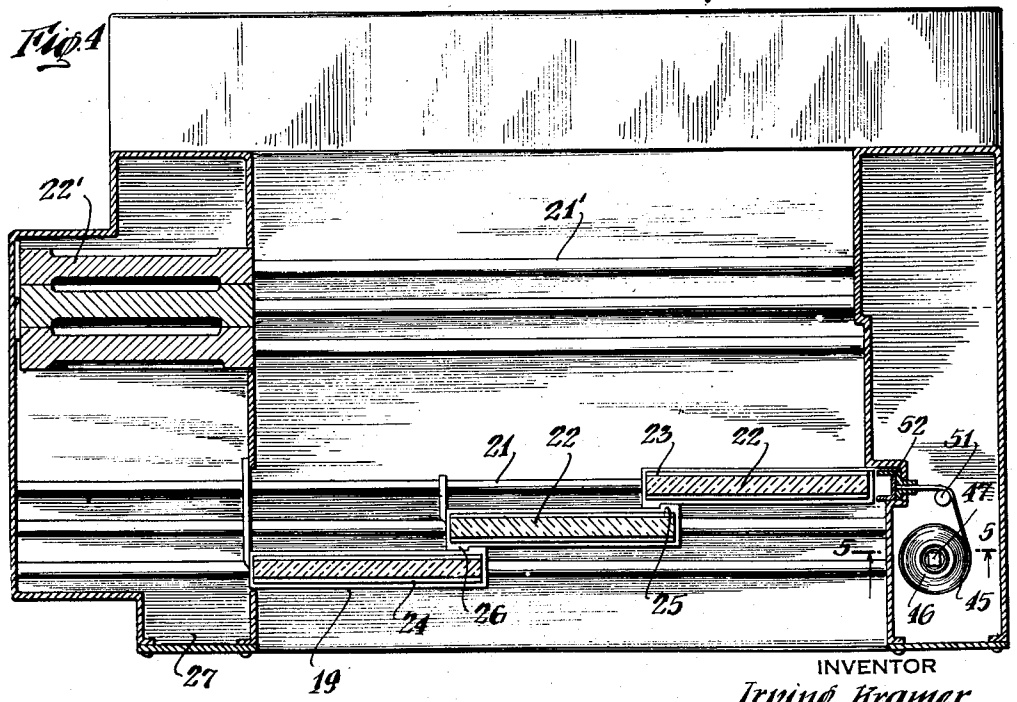


Fig. 4



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WINDOW CONSTRUCTION

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Fig. 7

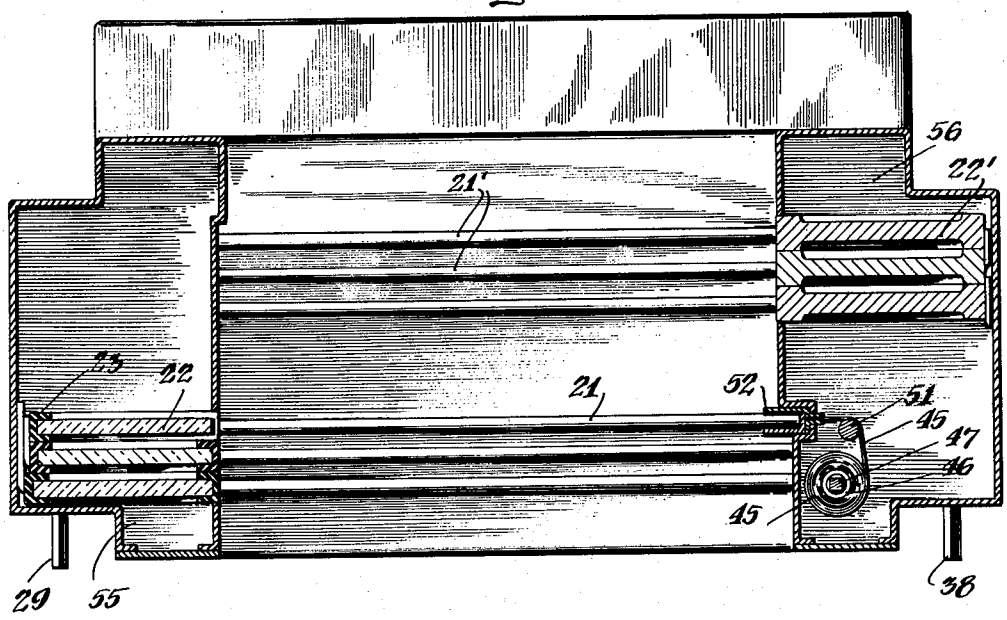
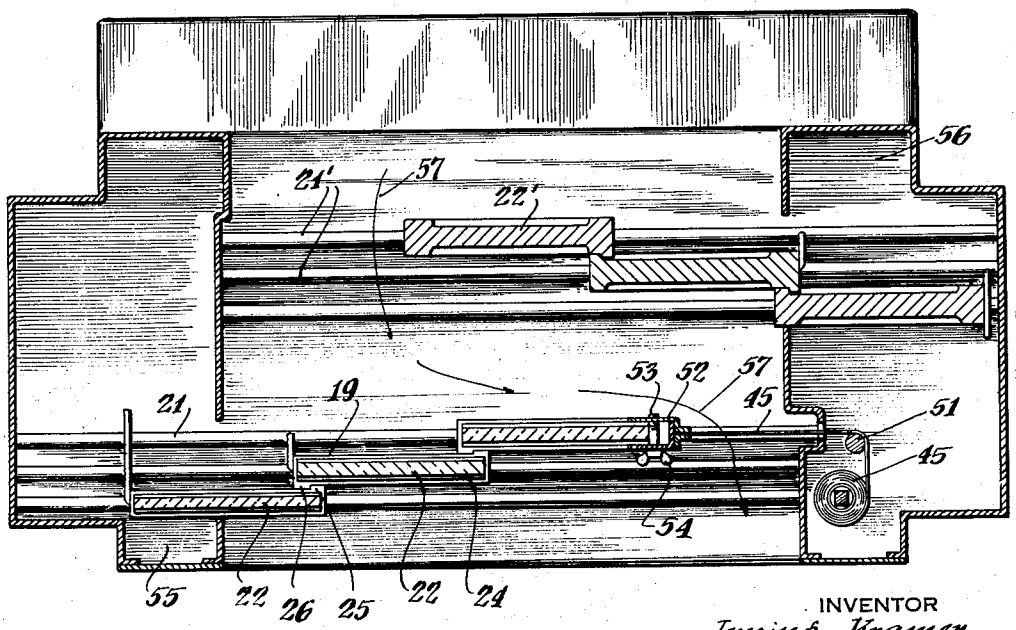


Fig. 8



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Patented Apr. 9, 1940 2,196,591

UNITED STATES PATENT OFFICE

2,196,591

WINDOW CONSTRUCTION

Irving Kramer, Lawrence, N. Y., assignor of twenty-five per cent to Morris Gold, Brooklyn, N. Y., and twenty-five per cent to Benjamin Levine, Rockaway Beach, N. Y.

Application March 17, 1937, Serial No. 131,351
Renewed August 1, 1939

6 Claims. (Cl. 189—64)

My invention relates to improvements in window construction, particularly to windows having a plurality of window sashes horizontally slidable on rollers running on rails, and it is the principal object of my invention to provide an inner set of such windows, and an outer set of so-called storm windows, the sashes of which are spring pressed and are adapted to slide into suitable pockets or chambers formed in the window casement or frame by readily operated means, so that the windows may assume any number of desired relative positions for either closing the window entirely or partly, or opening the same for ventilating purposes or the like, while the operation of the inner window sashes will simultaneously also operate a screen to protect the window when the sashes are in their pockets.

Another object of my invention is the provision of a window of this type, the panes of which are readily removable from their frames or exchangeable, so that broken glass may readily be replaced without the necessity of employing skilled help.

Still another object of my invention is the provision of a window requiring no special care for its maintenance, no sashes of a permanent nature or ropes or weights for its operation, and which does away with the hanging of storm windows and screens seasonally, while requiring no material change in the construction of a building.

A further object of my invention is the provision of a window of the character above described which ensures a tight closure at all times requiring no weather stripping or similar tightening means to prevent leaking or the entrance of snow or moisture, while the painting of the sash frames, glazing of the panes as well as the cleaning of the windows by unskilled labor is greatly facilitated and can easily be done from the inside of a room, as each pane may readily be removed with unusual ease.

A still further object of my invention is the provision of a window which will allow an efficient ventilation of a room by the adjustment of the relative positions between the inner windows and the outer storm windows, compelling the air to follow a sinuous or serpentine path.

Further objects and advantages of my invention reside in the protection of the screen from unnecessary exposure, as it is rolled up and protected or concealed when the window is closed completely, while the screen may be operated simultaneously with the operation of the sashes or, as it is detachably secured to the same, may also be operated by hand.

My window besides, will allow the admittance of plenty of fresh air to any desired degree, when for instance completely open with the sashes in their pockets, and in this position, missiles thrown through the window will not be apt to do any damage to the window panes.

Furthermore, by means of its tight closure and by virtue of the double window construction, a decided saving in fuel for heating purposes will be obtained.

I may moreover, build my window frames in double or triple casements, and single windows may be constructed in a building as close as for instance 10 inches apart from glass to glass. I may use the screen at will to any extent, as the same is detachable from the sash to which it is secured, while a simple handling of the devices for operating the windows will allow the regulation of the opening of the windows and storm windows to any desired degree without undue strain on the operator, and the finish and trim of the window frame may be selected at the discretion of the owner or user, while the ready installment and removal of the windows may be effected without the necessity of employing specially skilled help, as for instance the services of a carpenter or the like mechanic.

These and other objects and advantages of my invention will become more fully known as the description thereof proceeds, and will then be particularly defined in the appended claims.

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

Fig. 1 is a front elevation of a window constructed according to my invention, partly in section, with the window closed.

Fig. 2 is a section on line 2—2 of Figure 1.

Fig. 3 is a section on line 3—3 of Figure 1, with the storm window closed, and the inner window open and protected by the screen.

Fig. 4 is a sectional view similar to Figure 3, with the inner window open and the storm windows in their pocket.

Fig. 5 is a fragmentary, sectional view, the section being taken on line 5—5 of Figure 4.

Fig. 6 is a perspective, fragmentary, sectional view of a corner of the window illustrating the means for holding the panes and for moving the window.

Fig. 7 is a sectional plan view of a modified form of my window with the windows open.

Fig. 8 is a view, similar to Figure 7 with the

outer and inner windows in different positions for ventilating purposes.

As illustrated in Figures 1 to 6, a window frame or casement 10 has formed therewith by means of the parallel partition walls 11 and 12, an upper chamber 13 and a lower chamber 14. The lower partition wall in chamber 13 has recesses 12' with openings formed therein through which the shanks of headed bolts 15 extend, secured at their lower ends in presser bars 16, while springs 17 between partition 11 and bars 16 wound about the shanks of the bolts cushion the movements of the same and are normally tending to engage the presser bars 16 with the upper sash frame bars 18 to keep the lower sash frame bars in engagement with the housings 19 for the rollers 20 running along rails 21 formed with the partition 12.

The glass panes 22 are tightly held in their frame bars by means of the rubber sheathings 23 so that they can readily be lifted with their sash frame bars 24 out of the housings 19. These housings 19 have shoulders 25 formed at their inner ends to firmly engage similar shoulders 26 formed with the casing of the next adjoining window. Pockets 27 are provided at the left hand side of the window casement into which the rails 21 extend on which the casings 19 slide in staggered relation to one another.

A shaft 28 extends from the casement, and has its outer end squared, as at 29, for the attachment of a suitable crank handle, and this shaft carries a bevel gear 30 in mesh with a bevel gear 31 on a shaft 32 journaled in the casement wall and extending lengthwise in chamber 14 where it is provided with a worm thread. The inner end of this shaft carries a sleeve 33 to which the outermost housing 19 is attached, as at 34. The inner end of the shaft 32 is journaled in a bearing formed with a bracket 35 secured within the casement.

In a similar manner the housings 19' for the storm windows 22' slide on rails 21', and the windows are arranged in staggered relation to one another on these parallel rails and have also shoulders 25' formed therewith to engage firmly similar shoulders 26' on the housings 19' of the next adjoining window. Also the panes of these windows are exchangeably held in their frames and sheathings as described with respect to the inner windows.

The storm windows are operated by the following mechanism: A shaft 36 journaled in a bracket 37 in the casement has its outer end squared, as at 38, for the attachment of a suitable crank handle, and its inner end supported in a bracket 39 carries a bevel gear 40 in mesh with a bevel gear 41 on a shaft 42 on which the sleeve 43 is longitudinally displaceable attached to the housing 19'. The innermost window housing has attached thereto a plate 44 to limit the movements of the storm windows.

A screen 45 is wound about a hollow roller 46 journaled at its lower end with its inner rod 47 in a block 48 supported by a spring 49 in a depression in the chamber 14, while the spring 50 wound about the rod 47 in roller 46 acts in the same manner as the well known spring rollers for curtains and shades with the upper end of the roller 46 having the usual tenon journaled in partition wall 11. The screen is guided over a guide 51, and its outer end or edge is detachably secured by means of a forked element 52 and clamping bolt 53 and nut 54 to the outer end of the innermost window housing 19.

The modified form of my invention, illustrated in Figures 7 and 8 is generally of the identical construction as aforedescribed with respect to the preferred form of my window construction, except for the arrangement of a pocket 55 on the left hand side of the casement for the reception of the individual inner windows, while a similar pocket 56 is provided on the right hand side of the window casement for the reception of the storm windows, so that the windows may assume a relative position or positions to one another, as indicated for instance in Figure 8 by the arrows 57 compelling the air to pass through a sinuous path. Upper and lower locking handles may suitably be arranged to operate the windows by hand if so desired, and to lock the same.

The device operates as follows:

If it is desired to open the window fully, the storm windows are shifted on their rails into the pocket at the left hand side by the operation of the handle-spindle 38, and the inner windows are shifted into the pocket at the left by the operation of handle spindle 29. This operation will carry the screen attached to the outermost window along into the position shown in Figure 3, or if the screen is not desired, it may first be disconnected from the window by removing the bolt and nut from the clamp 52. Thus a fully opened window will admit the greatest desirable amount of fresh air to a room.

If ventilation to any desired degree is desired, the storm windows are partly moved into the pocket 56 at the right (Fig. 8), and the inner windows are partly moved into the pocket 55 at the left (Fig. 8), so that the air will be compelled to follow a serpentine or sinuous course indicated by the arrows 57. It will be clear that in this manner more or less air can be admitted into a room according to the relative positions which the outer and inner windows assume to one another.

If a cleaning, glazing or painting of the windows from the inside of a room is desired, or an exchange of broken glass, it will only be necessary to remove the sash frames out of their sheathings, while the springs and bolts will hold the sash frames in place and the rollers in permanent engagement with the rails when the windows are mounted as such.

It will be understood that I have described and shown the preferred forms of my invention only as a few examples of the many possible ways to practically construct the window, and that I may make such changes in the general arrangement of the construction and in the making of the minor parts thereof as come within the scope of the appended claims without departure from the spirit of my invention, and the principles involved.

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

1. A window construction as described comprising a plurality of laterally displaceable, inner and outer windows arranged in staggered relation to one another, housings for said windows and their sashes on parallel rails, rollers running on said rails and attached to said housings, said rails leading into pockets in the window casement to conceal the windows therein when the window is to be opened, and means to operate the windows and spring equipped presser bars to hold the window frames in engagement with the roller housings.

2. A window construction comprising a plurality of laterally displaceable inner and outer windows and their sashes, frame bars for said sashes containing removably the window panes, housings for said frame bars, and rubber sheathings for said sashes to provide an air- and moisture-proof closure, said housings on rollers running on rails and arranged in staggered relation to one another, shoulders on said housings, one of the shoulders on one housing tightly engaging the shoulder on the next adjoining housing on each two adjoining rails.

3. In a window construction as described, a plurality of laterally displaceable inner and outer windows, removable sash frame bars for each of said windows, housing for said frame bars displaceable on rollers running on rails, presser bars engaging the upper frame bars of each window, and spring controlled bolts engaging said presser bars to hold the same in position in their housings on said rails.

4. In a window construction as described, a window casement having pockets formed at opposite sides, and a set of inner, laterally diplaceable windows arranged in staggered relation to one another, a set of outer, laterally displaceable windows arranged in staggered relation to one another, and means to operate said sets of windows to assume such relative positions to one another that the inner window is open at one end of the casement and the outer window is open at the other end of the casement to compel the air to follow a sinuous or serpentine course for ventilating purposes, housings on rollers for the guidance of the lower sash bars of the windows, means to removably hold the sashes in said housings, presser bars in engagement with the upper window frame bars, and spring equipped bolts for pressing said presser bars into engagement with said windows to hold the windows in said housings.

5. In a window construction as described, a plurality of laterally displaceable inner and outer windows, removable sash frame bars for each of said windows, housings for said frame bars displaceable on rollers running on rails, presser bars engaging the upper frame bars of each window, and spring controlled bolts engaging said presser bars to hold the same in position in their housings on said rails, and a screen detachably secured at one end to the window frame by means of a forked element, clamping bolt and nut, and wound at its other end about a hollow spring roller journaled in a block of the window casement.

6. In a window construction as described, a plurality of windows arranged in parallel, staggered relation and having their lower sash frame bars engaged removably in housings displaceable on rollers, and spring controlled presser plates engaging the upper sash bars of the window to keep the lower sash frame bars in engagement with said housings.

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