

March 12, 1935.

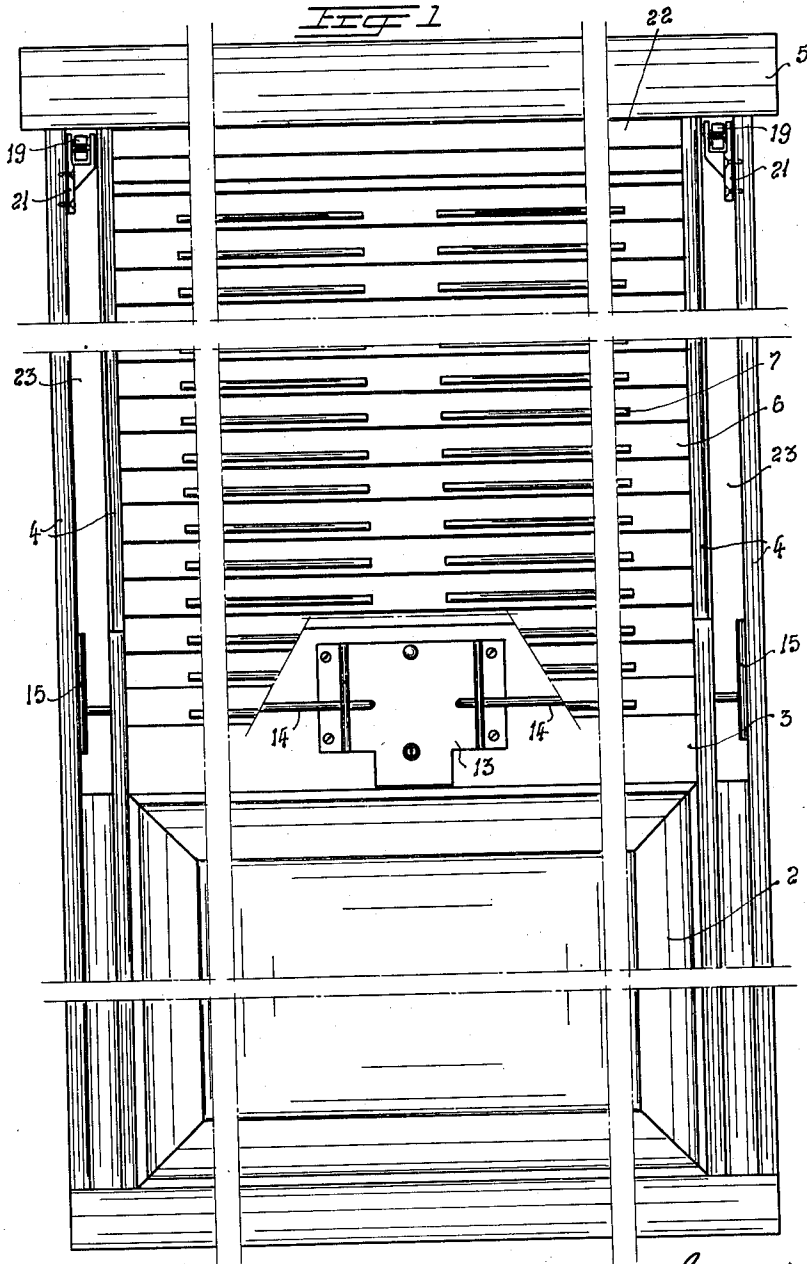
F. REPETTO ET AL

1,994,201

COMBINATION WINDOW

Filed Dec. 27, 1933

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG 2

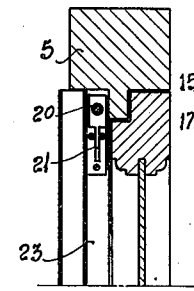
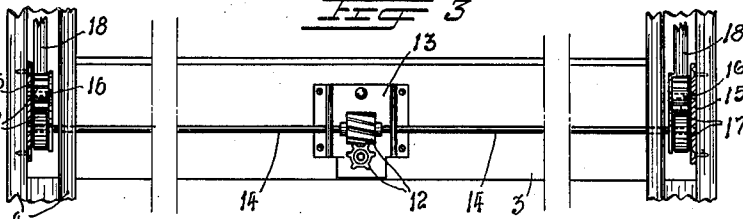


FIG 3



IV

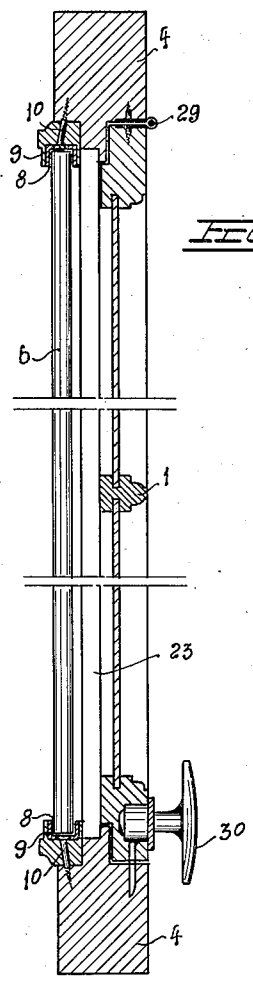
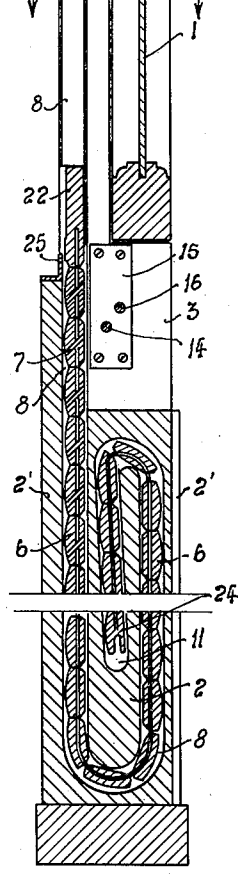
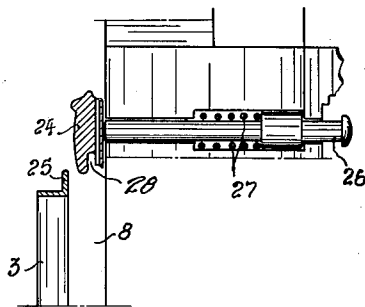


FIG 4

FIG 5



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UNITED STATES PATENT OFFICE

1,994,201

COMBINATION WINDOW

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5 Claims. (Cl. 20—40)

The present invention refers to combination windows, and more particularly relates to a new type of windows, constructed of any suitable material, such as wood, metal, and the like, and adapted to comprise, incorporated therein, a slid-
5 able, flexible shutter and the shutter operating mechanism.

It is known to protect windows by means of separate shutters or blinds which, however, in prac-
10 tice have proved to present various disadvantages as far as their application, construction and operation is concerned.

The principal object of our invention consists in the provision of a new type of window adapted
15 to comprise incorporated therein a slidable, flexible shutter and to constitute in combination therewith but one single element. According to this feature, the whole structure may be completely manufactured and finished in the factory,
20 and as such may be readily applied to the respective somewhat enlarged window opening in a house or building without there being further special arrangements to be made.

Another object of the invention is to provide
25 a combination window having incorporated therein a slidable, flexible shutter and having, in spite of the incorporated shutter, the appearance of an ordinary window, thus permitting its application also to such rooms, in which hitherto such windows have been rejected in view of their
30 strange appearance due to the existence of projecting handles and other operating means likely to cause uncomfotableness. According to our invention, there are no such projecting elements
35 at all, because for the operation of the slidable shutter we provide a detachable handle and the proper shutter operating mechanism is arranged within the new structure, in which we also hide the slidable shutter in its lowered position.

In connection therewith, a further important
40 object of the invention is to provide special elongated side elements of the window casing which extend into the parapet beyond the sill-board, whereby the elongated portions of said
45 side elements in combination with the proper sill-board and with suitable panels on the front and rear sides thereof form a casing for receiving and hiding the slidable shutter when it is moved into its lowered position.

Another object of our invention is to provide
50 guide members on the inner surface of the side elements of the window casing for conducting the slidable shutter from the lowered to the lifted position and vice-versa so as to avoid any dif-
55 ficulty in its operation.

Another object of our invention consists in the provision of special U-shaped metal bars serving as guide members for the slidable shutter, in case that the respective guide groves can not be cut
5 directly in the material of the side elements of the window casing.

A further object of the invention is to provide means to prevent water or the like from entering the casing formed in the lower portion of the window structure, said means consisting of an
10 angle iron fixed to the sill-board and adapted to retain the lower end of the lifted shutter in an outwardly inclined position, there being provided a suitable device for effecting the desired
15 displacement of the lower shutter end so as to engage said angle iron.

Still another object of the present invention is to provide sufficient space in the upper portion of the window structure, between the proper window and the lifted shutter or its guide mem-
20 bers, to permit the application of an insertable frame comprising a metallic screen, and to provide the necessary space and sufficient support for the mechanism destined for the operation of the slidable shutter, said mechanism being pref-
25 erably of the class adapted to lift and lower said shutter by means of bands or belts.

With such objects in view, and others which will appear as the specification proceeds, the in-
30 vention comprises various novel features of construction and arrangement of parts which will be set forth with particularity in the following description and claims appended thereto.

In the accompanying drawings which, by way of an example, illustrate the invention, and
35 wherein like numerals of reference indicate corresponding parts in the different views:

Figure 1 is a front elevation of the window according to our invention, with the shutter in
40 lifted position;

Figure 2 is an elevation showing the inner surface of one of the side elements of the window casing, indicating also the shutter in lowered
45 position;

Figure 3 is a detail view of the shutter operat-
45 ing or lifting mechanism;

Figure 4 is a cross section taken along the line IV—IV of Figure 2;

Figure 5 is a detail sectional view of the device provided for the displacement of the lower shut-
50 ter end in lifted position.

Referring to the annexed drawings, and more particularly to Figures 1, 2 and 4, the window structure according to our invention comprises
55 an upper portion constituting the proper win-

dow 1 and a lower portion or parapet 2, both portions being connected to each other by a cross bar or sill-board 3, extending transversally between the side elements 4 of the window casing, which latter is completed by the upper cross bar 5. The side elements 4 are elongated downwardly beyond the sill-board 3 constituting an additional frame which is covered by panels 2' so as to form a hollow parapet serving to completely receive and hide a slidable, flexible shutter 6 of any convenient form when the same is moved into its lowered position.

The shutter as shown in Figures 1 and 2 is of the class comprising a plurality of horizontal rods conveniently connected to each other and having longitudinal mortices 7 for ventilation purposes.

The slidable shutter 6 is disposed at the outer face of the window, and when it is lowered, it remains completely hidden within the hollow parapet 2. In order to secure an easy operation of the shutter and for the purpose of avoiding any difficulty in lifting and lowering the same, its side end portions extend into the guide groves 8 provided on the inner surface of the side elements 4 at both sides of the window. The guide groves may be constituted either by special U-shaped metal bars 9 conveniently attached to the side elements 4 by means of screws 10 or like fastening means, or the same are cut directly in the material of said side elements, as preferably done in the lower portion of the window structure. These guide groves 8 start immediately below the upper cross bar 5, go straight down traversing the sill-board 3 into the parapet 2 and therein form a double loop as properly shown in Figure 2.

It will be appreciated that the length of these guide groves 8 within the parapet 2 is identical to the distance of the upper cross bar 5 and the sill-board 3, so that the downward movement of the shutter 6 will be limited by the end point 11 of the guide groves 8 and that the shutter in its lowered position will remain hidden in the parapet.

The sill-board 3 is also made partially hollow so as to provide the necessary space for hiding and fixing therein the shutter operating mechanism, composed of an angular gear 12 conveniently mounted in a bracket or like support 13 and transmitting the motion of a detachable handle (not shown) to the elongated shaft 14 supported by plates 15 fixed to the side elements 4 of the window casing. On said shaft 14, near the ends thereof, on each side of the structure there is provided a gear 17 operating an endless belt 18, one of the gear forming wheels being mounted on a supplementary shaft 16. Said belt passes over a loose pulley 19 secured to the side elements 4, by means of the shaft 20 and a supporting plate 21, immediately below the upper cross bar 5. This belt is connected to the upper shutter rod 22 in any suitable manner, preferably by means of a conveniently bent metal bar (not shown). Said pulley 19 determines the way of said endless belt 18 from the gear 17, Figure 3, to the head portion of the window structure, Figures 1 and 2.

For the correct understanding of the arrangement of the gear 17, belt 18, and loose pulley 19 with respect to the shutter 6, the side end portions of which extend into the guide groove 8 (Figure 2), it may be mentioned that the latter in the upper portion of the structure comprises the U-shaped metal bar 9, and beside this bar there is a second longitudinal groove 23, in which at the

upper end thereof the support 21 is fixed and which provides the necessary passage for the belt 18, this groove communicating with the cavity in the sill-board 3, in which the gear 17 and its bracket 15 are mounted.

The U-shaped groove member 9, at its lower end near the sill-board 3, is uncompleted in as far as its outer wall is recut for a short distance and the groove thus is left open, so that at this point the shutter may be moved outwardly, if the same is in its lifted position and the lower shutter rod 24 is found at the level of an angle iron 25 provided on the sill-board 3, as shown in Figure 5. The displacement of the lower shutter end or of the lower shutter rod 24 may be effected by means of a bolt or other push member 26 provided with a return spring 27 to such an extent that the longitudinal groove 23 provided in the rod 24 may engage the angle iron 25, which thus retains the lower shutter rod or shutter end in an outwardly inclined position and prevents water or the like from entering the lower portion of the window structure, if the shutter is in lifted position.

Referring particularly to Figure 4, showing a cross section of the upper portion of the window structure and the proper window to be opened around the hinge 29 and to be firmly closed by means of the handle 30, it will be noted from this view that the additional groove 23 leaves a free space between the window and the guide members 8, said space being sufficient for inserting therein a removable frame comprising a metallic screen (not shown), which will be considered useful for preventing gnats and mosquitoes from entering the house when the window is open, the shutter being either in lifted or lowered position.

It has to be understood that the present invention is by no means limited to the specific embodiment as hereinbefore described and as shown on the accompanying drawings, but that modifications may be introduced as to the arrangement and form of the different component parts of the device and in other respects, without departing from the scope of the invention as set forth in the following claims.

Having now particularly described the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:

1. A combination window, adapted to have a slidable, flexible shutter which consists of a plurality of interconnected horizontal rods and a mechanism adapted to be operated by means of a detachable handle for lifting and lowering said shutter incorporated therein in such manner that after said handle is detached there are no projecting elements on the window structure, the said mechanism as well as the shutter, when the latter is in its lowered position, being completely hidden within the window structure; comprising upper and lower window portions, a partially hollow intermediate cross bar between said upper and lower window portions, the latter portion being formed by elongated side elements of the window frame, the said side elements being provided with loop-forming guide grooves on the inner surface thereof for conducting said shutter in its up and down movements, the lower window portion being half the length of the upper window portion so that the appearance will be that of a usual window structure, means in said structure constituting the mechanical connection between the slidable, flexible shutter and the shutter-lifting mecha-

nism, means in the upper portion of the window structure for conducting said shutter and mechanism-connecting means, and means for preventing water and the like from entering the lower portion of the window structure.

2. A combination window, adapted to have a slidable, flexible shutter which consists of a plurality of interconnected horizontal rods and a mechanism adapted to be operated by means of a detachable handle for lifting and lowering said shutter incorporated therein in such manner that after said handle is detached, there are no projecting elements on the window structure, the said mechanism as well as the shutter, when the latter is in its lowered position, being completely hidden within the window structure; comprising upper and lower window portions, a partially hollow intermediate cross bar between said upper and lower window portions for fixing therein said shutter-lifting mechanism, said lower window portion being formed by elongated side elements of the window frame, the said side elements being provided with double loop-forming guide grooves on the inner surface thereof for conducting said slidable shutter in its up and down movements, the lower window portion being less than half the length of the upper window portion so that the appearance will be that of a usual window structure, and said grooves extending through said intermediate cross bar into the upper window portion in the form of U-shaped metal bars fixed to the inner surface of said side elements in the upper window portion, means in said window structure constituting the mechanical connection between the slidable, flexible shutter and the shutter-lifting mechanism, means in the upper window portion for conducting said shutter and mechanism connecting means, and means for preventing water and the like from entering the lower portion of the window structure.

3. A combination window, adapted to have a slidable, flexible shutter which consists of a plurality of interconnected horizontal rods and a mechanism adapted to be operated by means of a detachable handle for lifting and lowering said shutter incorporated therein in such manner that after said handle is detached, there are no projecting elements on the window structure, the said mechanism as well as the shutter, when the latter is in its lowered position, being completely hidden within the window structure; comprising upper and lower window portions, a partially hollow intermediate cross bar between said upper and lower window portions for fixing therein said shutter-lifting mechanism, said lower window portion being formed by elongated side elements of the window frame, provided with double loop forming guide grooves on the inner surface thereof for conducting said slidable shutter in its up and down movements, the lower window portion being less than half the length of the upper window portion so that the appearance will be that of a usual window structure, and said guide grooves extending through the intermediate cross bar into the upper window portion in the form of U-shaped metal bars fixed to the inner surface of said side elements in said upper window portion, thus determining the complete path to be taken by the slidable shutter, two endless belts constituting the mechanical connection between said slidable, flexible shutter and the shutter-lifting mechanism, means in

the upper window portion for conducting said two endless belts, and means for preventing water and the like from entering the lower portion of the window structure.

4. A combination window, adapted to have a slidable, flexible shutter which consists of a plurality of interconnected horizontal rods and a mechanism adapted to be operated by means of a detachable handle for lifting and lowering said shutter incorporated therein in such manner that after said handle is detached, there are no projecting elements on the window structure, the said mechanism as well as the shutter, when the latter is in its lowered position, being completely hidden within the window structure; comprising upper and lower window portions, a partially hollow intermediate cross bar between said upper and lower window portions for fixing therein said shutter-lifting mechanism, said lower window portion being formed by elongated side elements of the window frame, provided with double loop forming guide grooves on the inner surface thereof for conducting said slidable shutter in its up and down movements, the lower window portion being less than half the length of the upper window portion so that the appearance will be that of a usual window structure, and said guide groove extending through said intermediate cross bar into the upper window portion in the form of U-shaped metal bars fixed to the inner surface of said side elements in said upper window portion, thus determining the complete path to be taken by the slidable shutter, two endless belts constituting the mechanical connection between said slidable, flexible shutter and the shutter-lifting mechanism, a groove being provided on the inner surface of said side elements in the upper window portion beside said U-shaped metal bars serving for the passage of said endless belts, a loose pulley fixed at the upper end of said last-mentioned grooves for conducting said belts, and means for preventing water and the like from entering the lower portion of the window structure.

5. A combination window, adapted to have a slidable, flexible shutter which consists of a plurality of interconnected horizontal rods and a mechanism adapted to be operated by means of a detachable handle for lifting and lowering said shutter incorporated therein in such manner that after said handle is detached, there are no projecting elements on the window structure, the said mechanism as well as the shutter, when the latter is in its lowered position being completely hidden within the window structure; comprising upper and lower window portions, a partially hollow intermediate cross bar between said upper and lower window portions for fixing therein said shutter-lifting mechanism, said lower window portion being formed by elongated side elements of the window frame, provided with double loop forming guide grooves on the inner surface thereof for conducting said slidable shutter in its up and down movements, the lower window portion being less than half the length of the upper window portion so that the appearance will be that of a usual window structure, and said guide grooves extending through said intermediate cross bar into the upper window portion in the form of U-shaped metal bars fixed to the inner surface of said side elements in said upper window portion, thus determining the complete path to be taken by the slidable shutter, two endless belts constituting the mechanical connection between said

slidable, flexible shutter and said shutter-lifting mechanism, a groove being provided on the inner surface of said side elements in the upper window portion beside said U-shaped metal bars

5 serving for the passage of said endless belts, a loose pulley fixed at the upper end of said last-mentioned grooves for conducting said belts, means consisting of an angle iron provided on the outer side of said intermediate cross bar and

10 adapted to engage a corresponding longitudinal groove in the lower end of the slidable shutter,

and a push member provided with a return spring for moving the lower shutter end outwardly into engagement with said angle iron so as to be retained in an outwardly inclined position and in such condition to prevent wa-

5 ter and the like from entering said lower portion of the window structure.

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