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F. HAUSER

MULTISASH WINDOW

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2 Sheets-Sheet 1

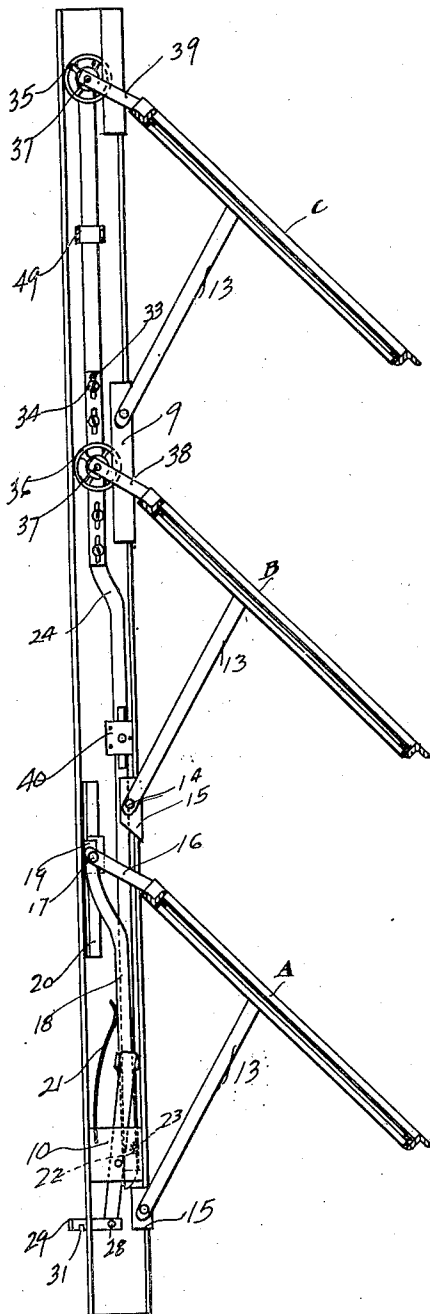


FIG I

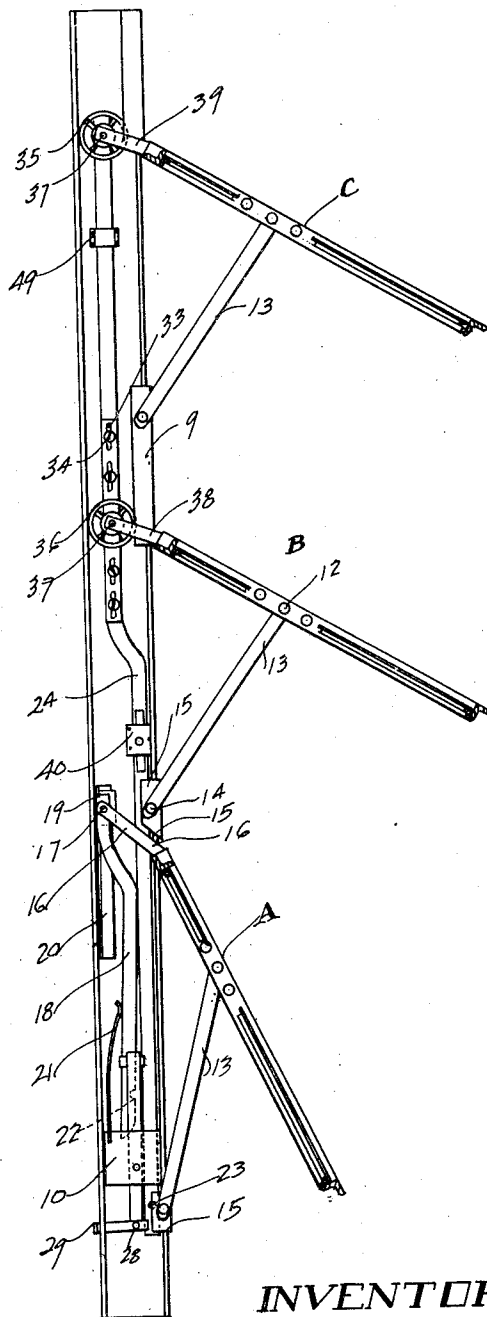


FIG II

INVENTOR
FREDERICK HAUSER

BY *Wright & Chum*
ATTYS

Feb. 14, 1928.

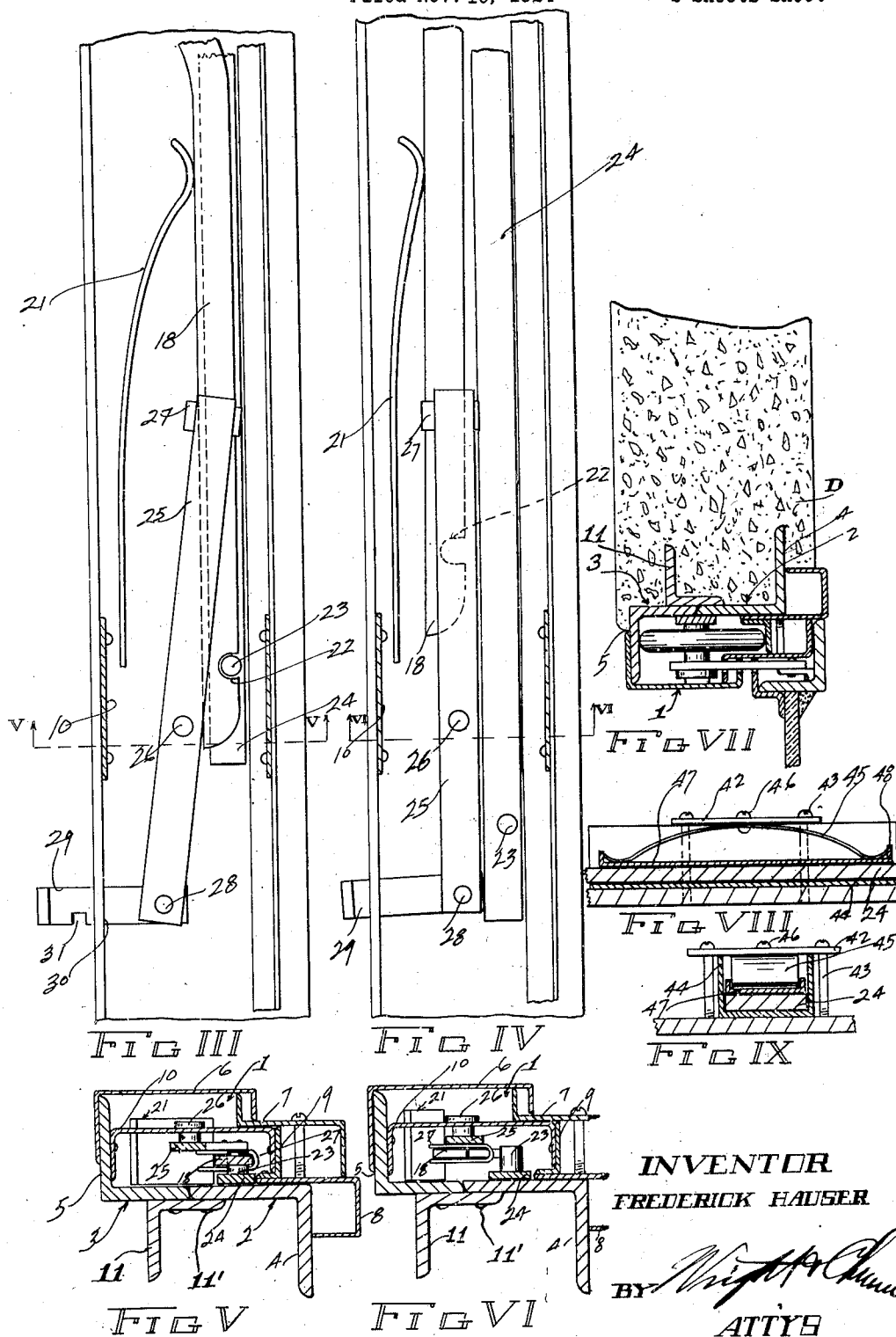
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UNITED STATES PATENT OFFICE.

FREDERICK HAUSER, OF SAN FRANCISCO, CALIFORNIA.

MULTISASH WINDOW.

Application filed November 10, 1924. Serial No. 748,955.

This invention relates to improvements in multi-sash windows of the type comprising a plurality of adjustable sashes mounted one above the other in a window frame.

6 The main purpose of this invention is to provide in a multi-sash window of the character described, a simple, inexpensive, reliable and easily operable means for simultaneously opening and closing the several
10 sashes through manipulation of one of the sashes, which means also provides for independent opening and closing of the said operating sash while other of the sashes are maintained in open position. By this ar-
15 rangement the necessity of using sticks or poles or operating a plurality of control members to manipulate the sashes of a long or high window is eliminated and a great deal of time and effort is saved in the ad-
20 justment and operation of the sashes.

The particular mechanism above referred to is specially constructed to eliminate friction and to insure reliability and ease of operation, said operating means being capable of being readily and easily set up in a
25 window frame and maintained in proper working condition while practically concealed from view.

30 The invention provides for the adjustment of the several sashes into and the maintaining of the sashes in any one of a plurality of positions between the fully closed and opened positions.

35 With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and set forth in the claims hereto appended, it being understood
40 that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

45 Referring to the drawings:

Fig. 1 represents a vertical sectional view taken through the sashes of a window constructed in accordance with the invention and showing in elevation the operating
50 mechanism for the sashes, a part of the casing containing said operating mechanism being removed.

Fig. 2 is a view similar to Fig. 1 but showing the windows and operating mechanism
55 in different positions.

Fig. 3 represents an enlarged fragmentary

elevation of a detail of the mechanism as when arranged to cause simultaneous operation of the sashes, the cover of the casing being removed.

Fig. 4 is a view similar to Fig. 3 but showing the operating mechanism in position assumed when the lower sash is to be operated independent of the upper sashes.

Fig. 5 represents a sectional view taken on the plane of line 5—5 of Fig. 3.

Fig. 6 represents a sectional view taken on the plane of line 6—6 of Fig. 4.

Fig. 7 represents a horizontal sectional view as taken through one side of a window constructed in accordance with the present invention showing portions of the wall and one of the glass panes.

Fig. 8 represents an enlarged horizontal sectional view of a detail of the friction clamp.

Fig. 9 represents a sectional view of the clamp taken at right angles to the showing of Fig. 8.

The invention as shown in the accompanying drawings comprises a window frame, the vertical members of which are each in the form of casings designated 1. In the frame a plurality of sashes, designated A, B and C, are mounted so as to be swung into and out of closed position, the operating mechanism for said windows being contained in said frame. The rear wall of each casing of the frame comprises angle iron bars 2 and 3, laid edge to edge and so that the portion 4 of the bar 2 may be anchored in the wall D, and the corresponding portion 5 of the bar 3 will project into the frame opening and serve as one of the walls of the casing. The other walls of the casing are provided by flanged facing strips 6, 7 and 8, of which the one 6 is fastened to the angle iron bar 3 and the ones 7 and 8 to the bar 2. An angle iron strip 9 is fastened to the bar 2 and to it is anchored a channel strip 10 which is also fastened to the portion 5 of the bar 3. An angle iron bar 11 is fastened as at 11' to the bars 2 and 3 adjacent to the point where the latter abut one another. This angle iron strip is adapted to be embedded in the wall surrounding the window frame opening, as shown in Fig. 7.

Sashes A, B and C are pivoted as at 12 intermediate of their upper and lower ends to arms 13 which are in turn pivoted as at 14 to members 15 on the window frame. The sash A is provided with arms 16 ex-

tending from its upper end into the casings of the window frame and pivoted as at 17 to slide bars 18. The slide bars 18 in addition to being vertically slidable in the window frame are adapted to be moved into and out of position to be locked with other slide bars which will be later described, in order that one of the sashes may be operated independent of other of the sashes. In the present embodiment of the invention these slide bars 18 are pivoted at their upper ends to shoes 19 which slide on tracks 20 fixed within the casings. When the lower sash is swung outward into open position, the members 16 push downward, the slide members 18. The slide members 18 are adapted to swing on their pivotal mountings and are urged towards the front sides of the casings by springs 21 so that the notches 22 at the lower ends of said members will be caused to receive projections 23 provided on slide bars 24 which are slidable vertically within the casings. The slide bars 18 are operated by levers 25 pivoted intermediate of their ends as at 26 to the channel strip 10 and extending below said strip within the casings of the window frame. The upper ends of these levers carrying clips 27 which loosely embrace the bars 18 and permit said bars to slide freely while providing for the desired connection between the levers and bars. The lower ends of the levers are pivoted as at 28 to operating members 29 that extend through openings 30 in the casings of the window frame so that their outer ends will be accessible to the operator. On the pushing inwardly of these members 29, the levers will be rocked so as to move the bars 18 out of engagement with the projections 23, thus permitting free movement of the slide members 18 relative to the slide members 24. The members 29 are provided on their lower sides with notches 31 adapted to receive portions of the lower edges of the openings 30 to lock the members 29, levers 25 and bars 18 in position shown in Fig. 4, free from locking engagement with the slide bars 24. On release of the members 29, the springs will move the bars 18 into position such that the projections 23 on the bars 24 will engage in the notches 22 when said slide members are moved into certain positions.

The slide members 24 are made up of sections adjustably connected by means of providing slots 33 in certain sections and having screws 34 extending through the slots and joining the sections together. This adjustment of the slide bars provides for setting the sashes so that they may be only partly opened or closed. Rotatably mounted on slide bars 24 are anti-friction wheels 35 and 36. Attached to the pins 37 on these rollers are mounted arms 38 and 39 which extend from the upper ends of the windows B and C. The wheels engage be-

tween and ride on the portions 5 of the bars 2 and angle iron pieces 9 attached to the bars 3. On movement of the slide bars 24 up and down, the windows B and C will be closed and opened due to the connection of the windows with the bars, through the arms 38 and 39.

As a means for holding the windows in position into which they are moved, whether fully or partly opened or closed, there is provided a friction clamping means generally designated 40, which means comprises plates 42 supported in the frame casings by screws 43 and engaging on channel pieces 44 fastened in the casings. A bowed leaf spring 45 is fastened centrally of its ends as at 46 to the plates 42 and at its ends bears upon friction plates 47, the ends of which plates are provided with flanges 48 to engage the ends of the spring. These plates in turn press on the slide bars 24 and the pressure is sufficient to maintain the bars in position into which they are moved. Adjacent their upper ends the slide bars 24 extend through guides 49 which are fastened within the casings of the window frame.

When the sashes are closed and the members 29 are in position shown in Fig. 3, the slide bars 18 for the lower sash are locked with the slide bars 24, the projections 23 on the last named bars engaging in the notches 22 on the bars 18. On now grasping the lower sash and pushing the same into open position, the several sashes will be opened simultaneously. The movement of the lower sash into open position causes the arms 16 to press downwardly on the bars 18, sliding said bars 18, also the bars 24, downward exerting an influence on the windows B and C through the arms 38 and 39 so as to open said windows. The friction clamping means 40 acts as described; to maintain the windows in any position into which they are moved by holding the bars 24 against unintentional movement. If it is now desired to operate the lowermost sash independent of the other sashes, or in other words to close the lowermost sash while permitting the upper sashes to remain open, the operator pushes inwardly on the members 29 until the notches 31 receive the portions of the casing through which the members 29 slide, and said members 29 are locked in position shown in Fig. 4. On moving the members 29 inwardly, the levers 25 are rocked and swing the slide members 18 so that the notches 22 will move clear of the projections 23 on the bars 24, said bars 18 being moved to one side and clear of the bars 24 as shown in Fig. 4. Thus, on now swinging the sash A into closed position, the bars 18 move relative to the bars 24 and the lowermost sash may be operated as desired without changing the positions of the upper sashes.

When it is desired to operate the upper

sashes through movement of the lower sash, the members 29 are moved inwardly and the springs 21 urge the bars 18 forwardly. On now moving the lower sash into open position, the notches 22 move opposite the projections 23 on the bars 24 and said projections are received in said notches, thus locking the slide bars 18 and 24 for simultaneous movement. On pulling inward or closing of the lower sash following this locking of the two sets of slide bars, the slide bars 24 are pushed upwardly through the arms 16 and all of the windows are simultaneously moved into closed position.

15 It will thus be seen that through the simple, easily operable means of this invention, a plurality of sashes may be readily and easily controlled as desired, through manipulation of one of the sashes. One of the important features of this invention is the provision of the simply constructed, strong and durable operating means as illustrated and described in this application, which operating means is practically concealed within the casings of the window frame and may be readily and easily operated to control the several sashes as desired without the annoyances and difficulties which usually attend the operation of multi-sash windows of the type to which this invention relates. The construction of this invention provides for ready and easy installation of multi-sash windows.

I claim:

35 1. A multi-sash window comprising a window frame, a plurality of sashes disposed one above the other, arms pivoted to the sides of the window frame at certain ends and pivoted to the sides of the sashes at their other ends, slide members on the sides of the window frame, arms connected with the lower-most sash and pivotally connected with said slide members, other slide members on the sides of the window frame, arms on to the other sashes and pivotally connected with said second named slide members, said first named slide members being slidable relative to the second named slide members and means for locking the first named slide members with the second named slide members including means for swinging said first named slide members into and out of position to be locked with the second named slide members.

55 2. A multi-sash window comprising a window frame having casing-like side members, a plurality of sashes disposed one above the other with respect to the frame, arms pivoted to the frame and to the sides of the sashes, slide members on the sides of the window frame, members slidable on the sides of the frame to which said slide members are mounted so as to swing, arms extending upwardly from one of the sashes and being pivoted to said slide members, other members slidable vertically in the frame, arms extending upwardly from the other sashes and

pivoted to said second named slide members, projections on said second named slide members, said first named slide members having notches therein adapted to receive the projections to lock the slide members together, spring means normally urging the first named slide members into position to cause the notches to receive the projections, levers pivoted on the sides of the frame intermediate of their ends, means slidably connecting the upper ends of the levers with said first named slide members and means for rocking said levers to move the first named slide members out of position to cause the projections to engage in the notches.

80 3. A multi-sash window comprising a window frame having side members, a plurality of sashes disposed one above the other with respect to said frame, arms pivoted to the side of the window frame at certain ends and pivoted to the sides of the sashes at their other ends, slide members on the side members of the window frame, arms rigidly connected with one of the sashes and pivoted to said slide members, other slide members within the casings of the window frame, arms fixed to the other sashes and pivotally connected with said second named slide members, said first named slide members being slidable relative to the second named slide members, means for locking the first named slide members with the second named slide members and anti-friction wheels attached to the second named slide members and riding on the side members of the frame.

105 4. A multi-sash window comprising a window frame having side members, a plurality of sashes disposed one above the other with respect to said frame, arms pivoted to the side of the window frame at certain ends and pivoted to the sides of the sashes at their other ends, slide members on the side members of the window frame, arms rigidly connected with one of the sashes and pivoted to said slide members, other slide members within the casings of the window frame, arms fixed to the other sashes and pivotally connected with said second named slide members, said first named slide members being slidable relative to the second named slide members, means for locking the first named slide members with the second named slide members, clamp members engaging the second named slide members and spring means forcing said clamp members into frictional engagement with said slide members.

125 5. A multi-sash window comprising a window frame having side members, a plurality of sashes disposed one above the other with respect to said frame, arms pivoted to the side of the window frame at certain ends and pivoted to the sides of the sashes at their other ends, slide members on the

side members of the window frame, arms rigidly connected with one of the sashes and pivoted to said slide members, other slide members within the casings of the window frame, arms fixed to the other sashes and pivotally connected with said second named slide members, said first named slide members being slidable relative to the second named slide members, means for locking the first named slide members with the second named slide members, said second named slide members being made up in sections and means for adjustably connecting the sections one with the other.

15 6. A multi-sash window comprising a window frame including side members, a plurality of sashes, arms pivoted to the sides of the window frame and to the side members of the sashes, members slidable on the sides of the window frame, bars pivoted to and slidable with said members, arms extending from one of the sashes and being pivotally connected with said bars, other slide bars on the sides of the window frame, 25 arms extending from the other sashes and

pivotally connected with the other side bars, means providing for locking of the first and second named slide bars upon movement of said slide bars into predetermined positions and means for swinging the first named slide bars into and out of position to be locked with the second named slide bars. 30

7. A multi-sash window comprising a window frame including side members, a plurality of sashes, arms pivoted to the side members of the window frame and to the sides of the sashes, bars slidable longitudinally on the side members of the frame and movable laterally as well as longitudinally, arms rigidly connected with one of the sashes and pivotally connected with the slide bars, other slide bars slidable longitudinally on the side members, arms rigidly connected with the other sashes and pivotally connected with the second named slide bars, and means locking the first and second named slide bars on movement of said first named slide bars laterally into and out of position to be locked with the second named slide bars. 40 45

FREDERICK HAUSER.