

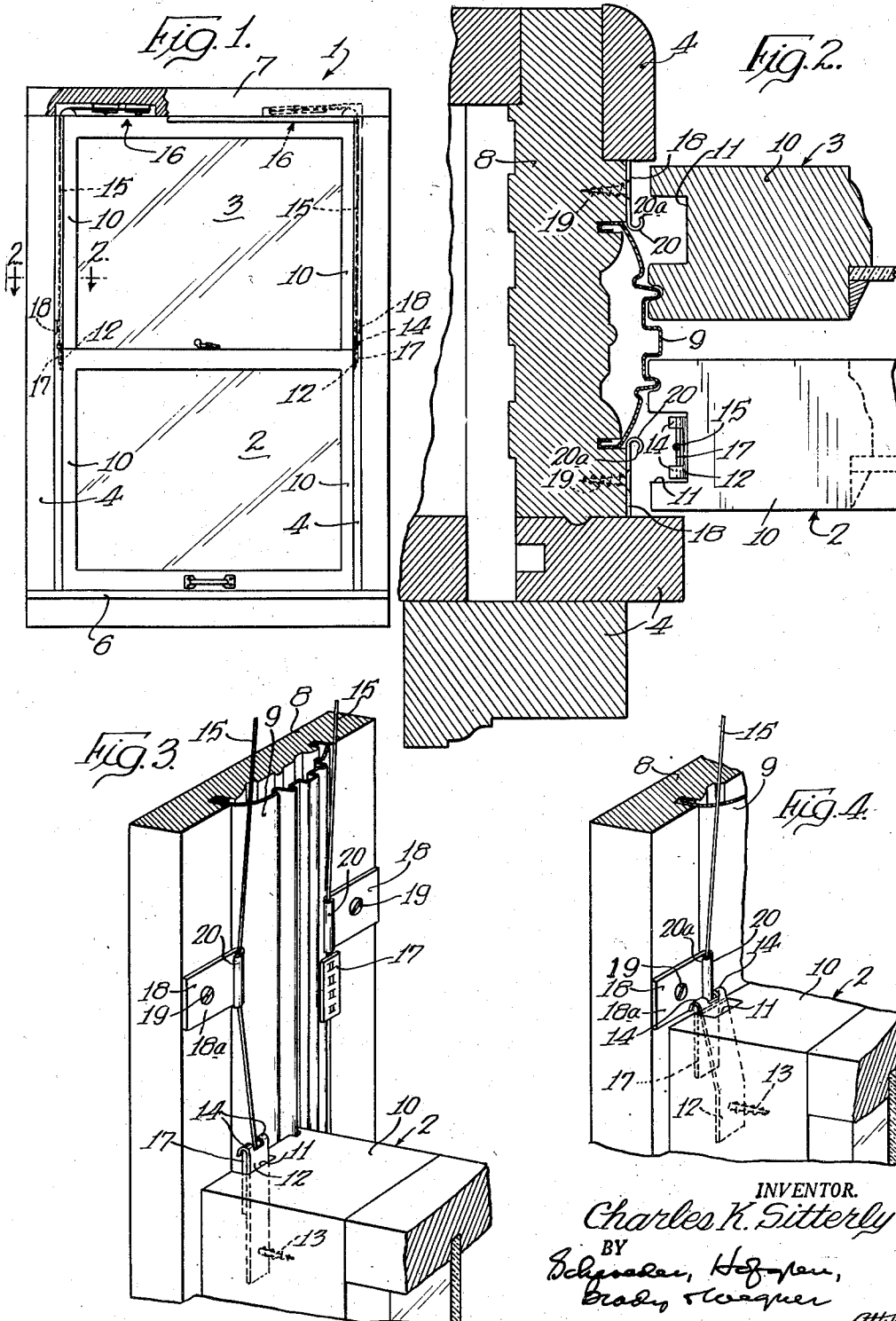
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DETACHABLE MECHANISM FOR DOUBLE HUNG WINDOW STRUCTURE

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DETACHABLE MECHANISM FOR DOUBLE HUNG WINDOW STRUCTURE

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This invention relates to a counterbalance mechanism for a window sash and, more particularly, to a new and improved means for releasably connecting a counterbalance cable to the sash.

An object of this invention is to provide a new and improved mechanism for connecting and disconnecting a counterbalance cable to an associated window sash whereby the sash may be readily removed from the frame for cleaning or other purposes and again be made operative without manipulation of the cable.

Another object of this invention is to provide a new and improved mechanism for connecting a slidable window sash to an upwardly-urged counterbalance cable including an outwardly movable hook member carried at the upper edge of the sash adapted to engage a connecting member at the lower end of the cable so as to interconnect the sash and cable for movement together.

Still another object of the invention is to provide a mechanism for connecting a window sash slidably mounted between jamb members to a counterbalance cable for quick and simple connection and disconnection of the parts which includes an outwardly-facing outwardly flexible hook member positioned at an upper corner of a sash and adapted to engage with a tab on the lower end of the counterbalance cable whereby to connect the sash and cable for movement together and a retainer mounted on the adjacent jamb having means thereon for selectively guiding the cable out of its normal path of movement and for engaging and holding the tab at the lower end of the cable as the sash is elevated past said retainer, said retainer means permitting re-engagement between the tab and hook member as the sash is lowered past the retainer and the hook member is deflected outwardly into the plane of the tab as it is held by the retainer.

Other objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawings, in which:

Fig. 1 is a front elevation partly in section of a window frame construction utilizing this invention;

Fig. 2 is a horizontal section taken along line 2—2 of Fig. 1;

Fig. 3 is a partial perspective view showing one of the lower sash cables positioned in the retainer so that upward movement of the lower sash will disconnect the tab on the cable from the hook on the sash, and showing the upper sash cable in retained position after being disconnected from the upper sash; and

Fig. 4 is a perspective view similar to Fig. 3 but showing the displaced hook immediately prior to and subsequent to engagement between the tab and hook.

While the invention herein described is a preferred embodiment, it is not intended to limit the invention to the specific form and arrangements shown, it being contemplated that various changes may be made by those skilled in the art without departing from the spirit and scope of the appended claims.

Referring now to Fig. 1 wherein is shown a window frame, designated generally 1, and a lower sash 2 and

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an upper sash 3. Frame 1 is comprised of trim members 4, a sill member 6, an upper member 7, and side jambs 8. Secured to each jamb 8 and extending vertically the length thereof is a resilient weather strip guide means 9 adapted to readily allow removal of the sashes 2 and 3, slidably mounted therebetween, from the frame 1, as set forth hereinafter.

Each sash includes stiles 10 which have an outwardly-opening groove or recess 11 extending for at least a portion of their length. A tab holder or hook member 12 of spring steel is positioned in each groove 11 adjacent to and extending slightly beyond the upper surface of the associated stile 10. Each hook member 12 is fastened adjacent its lower end to the base of groove 11 by means of a screw 13 so that the upper end may be urged away from the groove 11 but on being released will return to its normal position adjacent the base of the groove 11. The upper portion of hook member 12 is bifurcated and bent outwardly and downwardly so as to form a pair of spaced hooks or prongs 14.

Counterbalancing means are provided for the sashes and include cables 15 extending downwardly adjacent side jambs 8, the upper ends of cables 15 being operably connected to a spring-urged pulley means, designated generally 16, which may be of any well-known type and function to exert an upward force on the cables so as to counterbalance the weight of the sash. A tab or connector 17 is secured to the lower end of each cable 15. Each tab 17 is adapted to be engaged by the pair of prongs 14 of the associated hook member 12 to interconnect the sashes 2 and 3 with the cables 15 for counterbalanced movement together, the engagement being such that cables 15 extend upwardly between the spaced prongs 14.

Retainer members 18, one associated with each cable 15, are positioned on jambs 8, being secured thereto by means of screws 19. Each retainer member 18 has a base 18a, a vertical cable guide means 20 in the form of a curved sleeve having an edge 20a spaced from base 18a and is disposed on one of the jambs 8 above an associated hook member 12 on sash 2 or 3 when the sash is in its lowermost position. Each guide sleeve 20 is aligned with its associated cable 15 but is spaced from the normal path of movement thereof so that the cable 15 may be deflected from its normal vertical path of movement and be selectively received by guide sleeve 20 for sliding movement therein.

As best seen in Figs. 2 and 4, the space between hooks or prongs 14 is sufficient to allow them to pass on opposite sides of curved guide sleeve 20 when deflected outwardly from groove 11 and moved vertically past retainer member 18.

In the operation of this detach mechanism, to disconnect a sash from its counterbalancing cables 15, the sash is first moved to a position wherein the hook members 12 thereon are positioned beneath their associated retainer members 18. Portions of the cables 15 on the sash are then manually moved out of the normal vertical paths of movement of the cables and positioned in the guide sleeves 20 of the associated retainer members 18. The sash is then raised toward the retainer members 18. The operation of both hook members 12 is similar and only one will be described. As the sash is moved upwardly the upper portion of hook member 12 is gradually pulled away from the base of the groove 11 by displaced cable 15 and eventually into alignment with guide sleeve 20 on retainer member 18 as the tab 17 is engaged by guide means 20 and the tab is thereafter retained in such position as the sash is moved still further upward. The further upward movement of the sash disengages the deflected hook member 12 from tab 17, allowing hook member 12 to spring back to its normal

position against the base of groove 11. The sash may now be moved freely upwardly and downwardly without any counterbalancing effect or re-engagement with the tab 17 because the hook member 12 has sprung back to its position adjacent the base of stile groove 11. The sash in this condition may be readily removed from the frame in any vertical position by a sideways movement of the sash against one of the resilient weather strip guide means 9 which disengages the other side of the sash from the other weather strip guide means 9 and, therefore, permits removal of the sash.

To re-engage the sash with its counterbalancing means, the sash is first raised to a position wherein the hook members 12 are above the retainer members 18. The hook members 12 are then manually urged outwardly from their normal positions and into the plane of the cable tabs 17 retained by the retainer members 18. The sash is then moved downwardly so that the hooks 14 move past guide sleeves 20 on retainer members 18 and into engagement with retained cable tabs 17, the sash now being again connected to its counterbalancing means. The cables 15 are then manually removed from guide sleeves 20 so that they are no longer deflected from their normal vertical paths of movement, the movement of the sash now being properly counterbalanced as desired.

I claim:

1. A double hung window sash construction having upper and lower sashes mounted within a frame including side jambs for vertical sliding movement, the window sashes including stiles with each stile having a vertically-extending groove on the side thereof adjacent the associated jamb, a resilient tab hook of springy material mounted adjacent the top of each of said grooves and having a pair of spaced-apart, downwardly-turned prongs, a vertically-extending flexible counterbalance connector having an end operatively connected to the frame adjacent the top thereof and a tab at its lower end associated with each of said tab hooks with the tab engaged by the pair of prongs and the connector extending upwardly therebetween and means for removing the tab from engagement with the tab hook and holding the tab after release by the tab hook to permit removal of the sash including a tab retainer attached to a side jamb and associated one with each sash stile and mounted adjacent to said stile grooves and above and to one side of each sash when in its lower position and having a vertically-extending, outwardly-curved guide sleeve for selectively receiving the connector and deflecting the connector out of its vertical path so as to flex the tab hook outwardly as the window sash is moved upwardly beyond the retainer and positioned to pass between said prongs during said movement, the guide sleeve engaging a portion of the tab and holding the tab while the hook is released therefrom, the resilient tab hook permitting movement of the tab to a position underlying the retainer and return of the hook to a position free of engagement with the tab to permit vertical sliding movement of the sash without engagement with the tab and manual movement of the hook outwardly as the sash is moved downwardly when it is desired to re-engage the tab with the tab hook.

2. A double hung window sash construction comprising, in combination, a frame having side jambs, guide means secured to each side jamb and extending vertically the length thereof, an upper and a lower sash each having side stiles slidably mounted in said guide means for movement of said sashes in said frame along said side jambs, a resilient hook member secured to each of the stiles adjacent to and extending slightly above the upper surface of the sash, each hook member having an upper bifurcated portion bent outwardly and downwardly to form a pair of spaced prongs, a cable extending downwardly adjacent each sash stile and having the upper end thereof secured to a spring-urged counterbalancing means positioned in the upper portion of the frame, a connector secured to the lower end of each cable and

adapted to be engaged by a pair of the spaced prongs on an associated hook member with the cable extending upwardly between the prongs, and retainer members associated one with each cable secured to the jambs adjacent to said cables and positioned vertically on the jambs above the hook members on the sashes when the sashes are in their lowermost position, each retainer member having a guide sleeve extending therefrom spaced from the path of movement of the adjacent cable, said cable connectors being disengageable from said hook members by positioning the cables in the retainer guide sleeves and moving the sash upwardly past the retainers, such movement flexing said hook members away from said stiles so that the engaged cable connectors are intercepted and retained by the retainer guide sleeves, the hook members springing back to their normal positions after being disengaged from the cable connectors, said hook members being readily engageable to the retained cable connectors by manually deflecting the resilient hook members into the plane of the retainer guide sleeves and lowering the sash past said guide sleeves, removal of the cables from the retainer guide sleeves then allowing normal vertical counterbalanced movement of the sash.

3. A window construction comprising, in combination, a frame, a sash slidably mounted therein, an outwardly deflectable tab holder mounted on the sash and having a pair of spaced, downwardly curved hooks, a vertical guide sleeve positioned on the frame above and to one side of said tab holder when the sash is in its lowest position, an upwardly-urged cable extending adjacent the sash with the upper end operatively connected to the frame adjacent the top thereof, and a tab secured to the lower end of said cable and adapted to be engaged by said pair of spaced hooks; with the cable extending upwardly therebetween, to restrain the upward movement of the cable and provide a counterbalance for the sash, said guide sleeve adapted to selectively receive said cable out of its normal vertical path of travel whereupon upward movement of the sash past the guide sleeve deflects said tab holders into the plane of said guide sleeve and disengages the tab holder from the tab, said tab being restrained from further upward movement by said guide sleeve.

4. A window construction comprising, in combination, a frame including side jambs, upper and lower sashes, means for slidably mounting said sashes in said frame, counterbalance means for said sashes secured adjacent to the top of said frame and including upwardly-urged cables extending vertically adjacent said sashes, means for releasably engaging said sashes to said counterbalance means including flexible hook members mounted on the upper portions of said sashes and tabs secured to the lower ends of said cables adapted to be releasably engaged by said hook members, and means for disengagement of said tabs from said hook members upon upward movement of the sash and re-engagement of said hook members with said tabs on downward movement of the sash including a cable-guide and tab-retaining member associated with each hook member and secured to the jambs adjacent to, but away from the path of movement of said cables, each guide and retaining member being adapted for selectively receiving one of said cables and deflecting it and its associated tab and hook member out of their vertical straight line path of movement and for retaining said cable tab immobile after disengagement from said hook member.

5. A window construction comprising, in combination, a frame including side jambs, a window sash having stiles, means for slidably mounting the sash in said frame, counterbalance means for said sash secured adjacent to the top of said frame and including an upwardly-urged movable cable extending vertically adjacent said sash, means for releasably engaging said sash to said counterbalance means including a tab member and a hook member engageable in hooked relation with the tab member, one of said members being secured to said sash stile adjacent to the top thereof and the other being secured to the lower

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end of said cable, the member secured to the sash stile being outwardly deflectable away from the sash stile, and means for disengagement of said tab member from said hook member upon upward movement of the sash and reengagement of said hook member with said tab member on downward movement of the sash including a cable-guide and retaining member in the form of a vertical guide sleeve secured to one of said jambs adjacent to, but away from the path of movement of said cable, said guide and retaining member being formed to selectively receive said cable and deflect it and the member secured to the lower end thereof out of the vertical straight line path of movement and for retaining said cable and member secured thereto immobile after disengagement from said other member secured to the sash stile.

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