

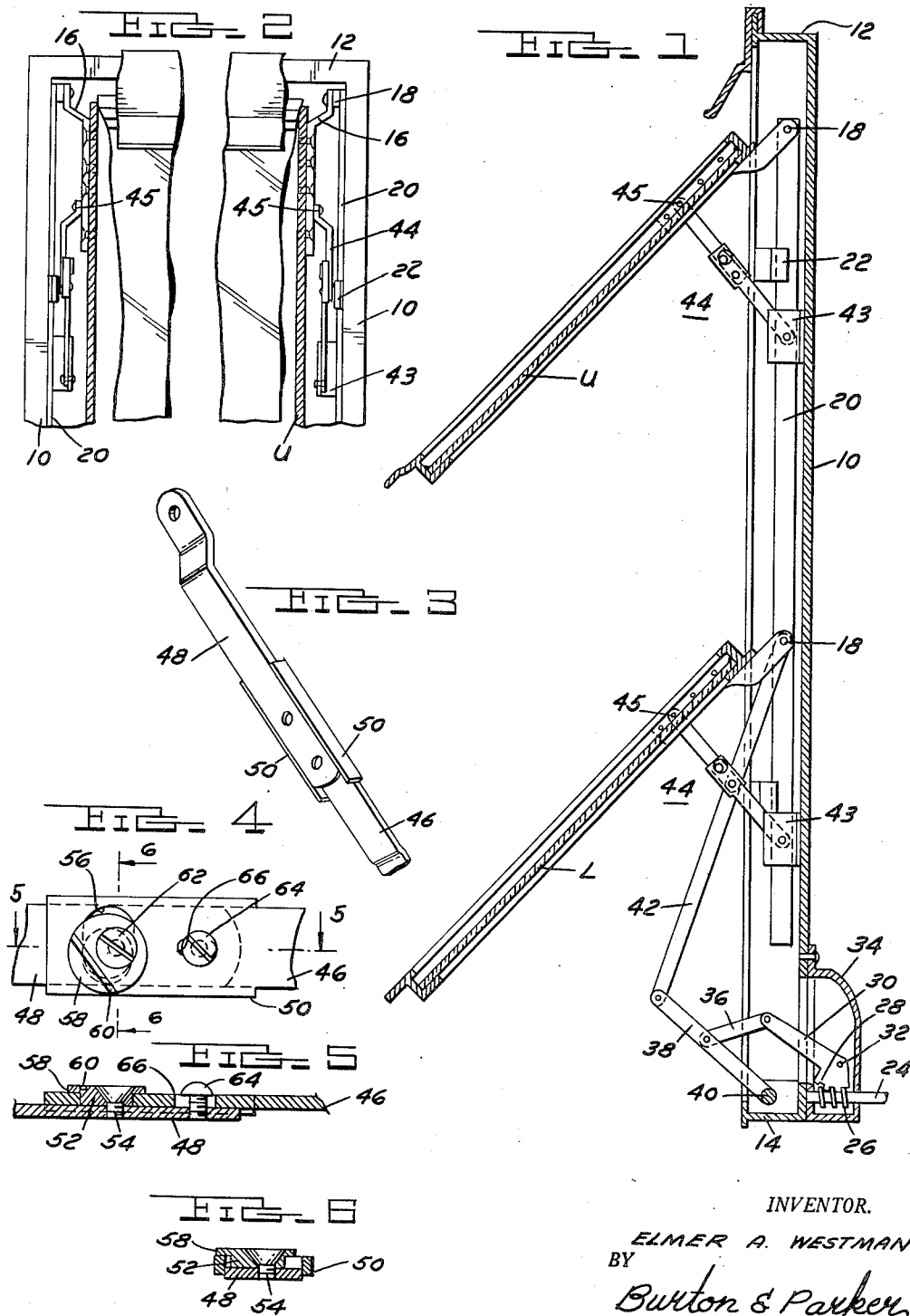
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EXTENSIBLE LINK MECHANISM

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EXTENSIBLE LINK MECHANISM

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1

This invention relates to an improved extensible link mechanism for a window assembly.

An object is to provide improved extensible link mechanism designed particularly for use in connection with a window sash swingably supported within a window frame. This improved extensible link mechanism is adapted for adjustment to vary the length thereof by exceedingly small increments of adjustment. It is so constructed that it will maintain its adjusted positions against accidental displacement. It is capable of being readily and easily adjusted manually without the aid of tools.

In a window assembly comprising a swingable window sash mounted within a frame and adapted to be swung outwardly somewhat after the manner of an awning, it is desirable that the swinging sash to be so supported that when it is drawn down to a closed position it closes evenly and snugly against the frame at both ends of the sash. To insure this result it is essential that the sash be so supported for swinging movement and that the supporting mechanism be so constructed that the both ends of the sash may be drawn tightly against the frame. The construction may be such that both ends may be drawn simultaneously against the frame, or, if desired, one end of the sash may be drawn against the frame slightly ahead of the opposite end, said opposite end being thereafter tightened down. The construction will depend upon the manner in which pressure is exerted to accomplish the closing of the sash against the frame.

My adjustable link mechanism is provided with means whereby telescopically connected end portions may be easily adjusted to vary the total length of the linkage and may be easily secured to releasably hold any adjusted position.

My construction includes link portions coupled together with cam mechanism whereby the adjustment may be carried out in minute increments.

Various other objects, advantages and desirable features will appear more fully from the following description, claims and accompanying drawings, wherein:

Fig. 1 is a vertical sectional view through a window frame assembly provided with my improved linkage;

Fig. 2 is a fragmentary elevation partly broken away of a window assembly provided with my improved linkage, a portion of the assembly being sectioned to show the mounting of the sash and the linkage in the elevation;

Fig. 3 is a perspective partly broken away of a linkage structure embodying the invention;

2

Fig. 4 is an elevation partly broken away of a portion of the linkage illustrated in Fig. 3 but taken from the opposite side;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4; and

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

This improved linkage is illustrated in the drawing in connection with a window assembly of the awning type. In such an assembly a plurality of sash elements are commonly hinged within a window frame. Operating mechanism is provided to swingably actuate the sash as shown in Fig. 1. The operating mechanism includes adjustable linkage which pivotally couple the sash elements at opposite ends with the adjacent jamb members of the frame. The manual operator which is provided to swingably actuate the sash is commonly coupled with the sash at one end and due to the length of the sash horizontally and the torsion in the horizontal shaft of the operator, it is common for one end of the sash to be advanced somewhat ahead of the opposite end in the swingable movement of the sash to an open or a closed position. This manner of functioning does not matter in the swinging of the sash to an open position, but in the swinging of the sash to a closed position, if the end of the sash to which the operator is coupled is first brought down against the frame, it then becomes very difficult to continue any movement to close the opposite end of the sash against the frame. It is, therefore, desirable that the linkage which pivotally couples the opposite ends of the sash with the frame be capable of adjustment by minute increments. It is also desirable that such adjustment be available without the employment of special tools or the like. The linkage of this application is of such a character that it serves such purpose.

The window frame which is mounted within the opening in the wall of the building is here shown as a frame formed of metal comprising side frame members 10 connected at the top by a header 12 and at the bottom by a sill member 14. These frame members are angular in cross-section as is common practice.

An upper sash element U and a lower sash element L are provided to close the window opening. Each of these sash elements is pivotally supported within the frame. Each sash element is shown as having a pair of brackets 16 secured to the upper side rails of the sash. These brackets are pivoted at 18 to a sliding bar 20. Such a bar 20 is shown slidably disposed within each side frame member being held in place by lugs

3

22 which are fixed to the side frame member and overhang the bar to guide it.

The bars are adapted to be raised and lowered by an operator of known construction. The operator comprises a manually operable shaft 24 which has a worm portion 26 that engages with a gear segment 28. This segment 28 is formed on an angular arm 30 which is pivoted at 32 to a support 34 as shown in Fig. 1. The outer end of this arm is coupled by a link 36 with a lever 38 which lever is mounted on a cross-shaft 40 as shown in Fig. 1. This cross-shaft extends horizontally across the window frame adjacent to the sill. The outer end of the lever 38 is coupled by a long link 42 with a bar 20. It is understood that this operator will be provided on one side of the window frame but that the links 38 and 42 are provided at both sides of the window frame and connect the cross-shaft 40 with both of the sliding bars 20. The construction so far described is known.

This particular invention relates to the adjustable linkage. Such adjustable linkage is shown particularly in Figs. 3, 4 and 5. The linkage is indicated generally in Figs. 1 and 2 by the numeral 44. Such linkage is pivoted at one end as at 45 to an upper or lower sash as the case may be. It is pivoted at the opposite end to a bracket 43 mounted on the side frame member 10 as shown in Figs. 1 and 2.

This linkage comprises a pair of end members or sections 46 and 48. The member 46 is shown in Fig. 3 as having side flanges 50 at one end which establish a guide channel within which the member 48 is slidably disposed. These two members are coupled together for telescopic adjustment. An eccentric cam 52 is rotatably secured to member 48 by a screw 54. This cam is disposed within a slot 56 formed in member 46 as shown in Figs. 4 and 5. The cam has a plate portion 58 which overhangs the margin of the slot as shown in Figs. 4 and 5. The cam is provided with a kerf 60 to receive a screw driver or a coin which can be used as a screw driver to rotate the cam. The screw 54 is, of course, also provided with a kerf shown in Fig. 4 as 62. Fit of the eccentric cam within the slot 56 is such that as the cam is rotated the link members are actuated lengthwise with respect to each other.

In addition to the cam there is provided a retaining screw 64 which is threaded into the member 48 as is the screw 54. This screw 64 extends through a slot 66 in the member 46. The head of the screw 64 overhangs the slot 62 as shown in Figs. 4 and 5. To accomplish an adjustment, both screws are loosened. The cam is

4

then rotated to move the elements 46 and 48 to the desired adjusted position. The cam screw 54 may then be tightened down and the retaining screw is then tightened to securely hold these end portions of the link at such adjusted positions.

What I claim is:

1. An extensible link for a sash swingably supported within a window frame assembly, said link connected at one end with the sash and connected at the opposite end with the frame assembly and consisting of two cooperating end members linearly telescopically coupled together, a cam rotatably supported upon one member and disposed within a slot in the other member, said cam operable upon its rotation to actuate said members lengthwise relative to each other, said cam provided with a plate portion overlying the margin of said slot and an adjustable screw securing said cam to its supporting member operable to urge the plate portion of the cam against the margin of the slot in the cooperating member or to relieve the plate portion therefrom.

2. An extensible link for a sash swingably supported within a window frame assembly, said link connected at one end with the sash and connected at the opposite end with the frame assembly and consisting of two cooperating end members telescopically coupled together, one end member provided with a guideway extending lengthwise thereof, the other end member being disposed for lengthwise slidable movement within said guideway, a cam rotatably supported upon one end member and disposed within a transverse slot in the cooperating member, said cam adapted upon its rotation to actuate said members lengthwise relative to each other, said cam including a plate portion overlying the margin of the slot, a screw securing the cam to the one end member upon which it is mounted and adjustable to tighten the plate portion of the cam against the cooperating member about the margin of said slot, said cooperating end member provided with a second slot extending lengthwise thereof and a screw extending through said second slot into the first end member and adjustable to releasably secure the members together.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
439,000	Goodwin	Oct. 21, 1890
2,209,540	Ruopp	July 30, 1940
2,478,061	Stearns	Aug. 2, 1949
2,570,054	Gardner	Oct. 2, 1951