June 4, 1963

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3,091,797

WINDOW STRUCTURE

Filed April 26, 1961

2 Sheets-Sheet 1

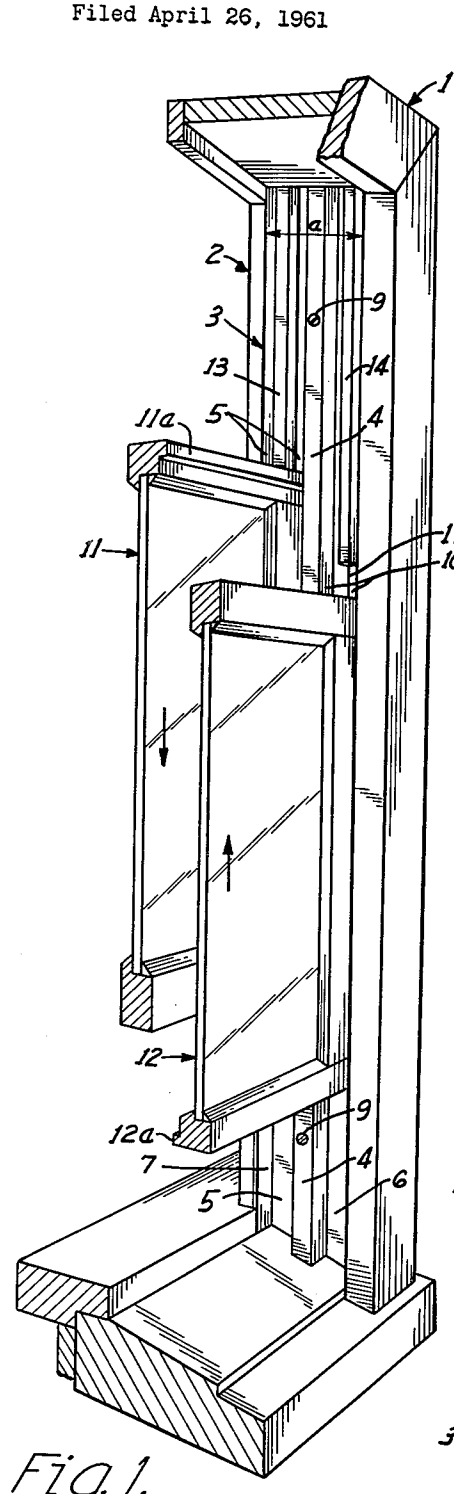


Fig. 1.

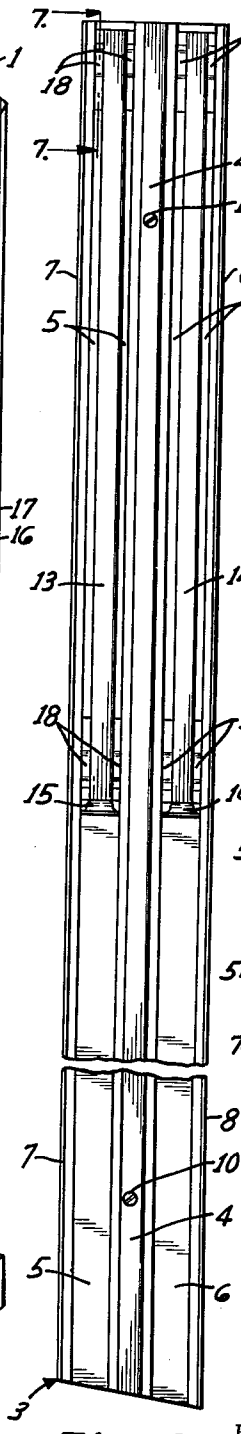


Fig. 2.

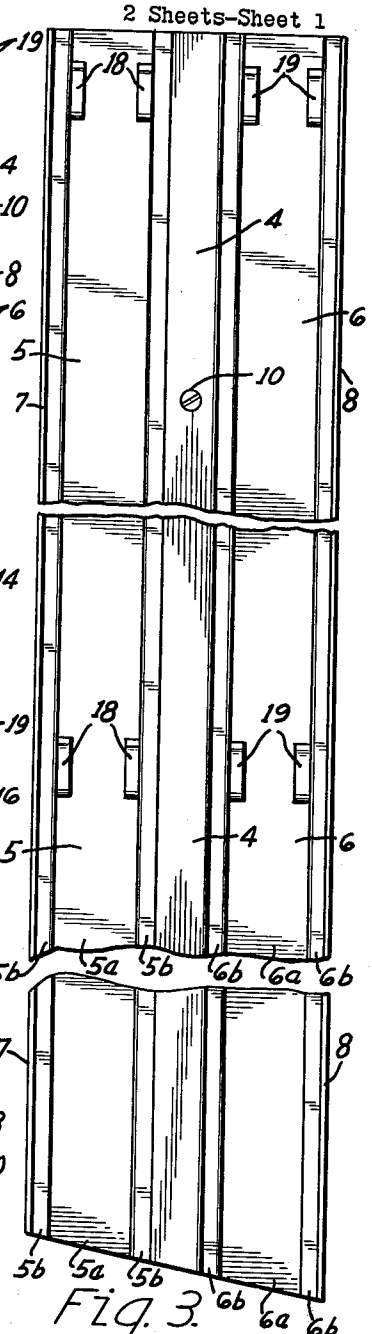


Fig. 3.

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2 Sheets-Sheet 2

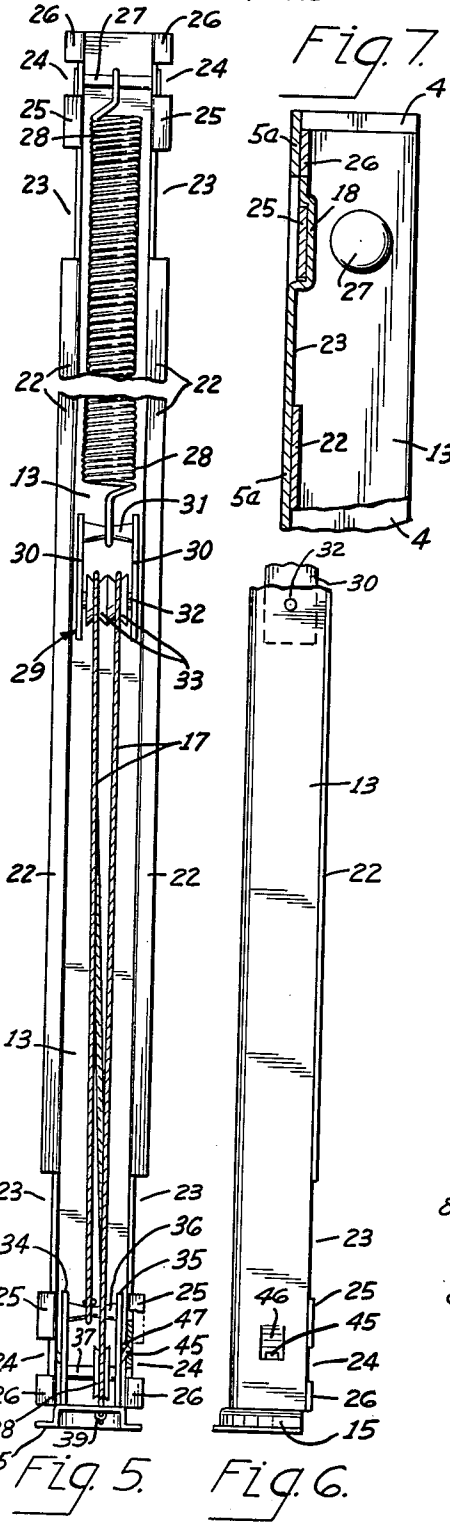


Fig. 5.

Fig. 6.

Fig. 7.

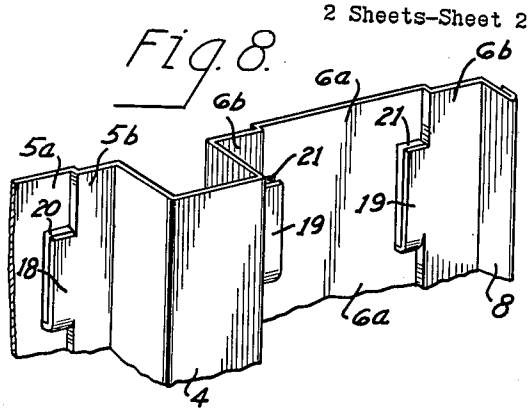


Fig. 8.

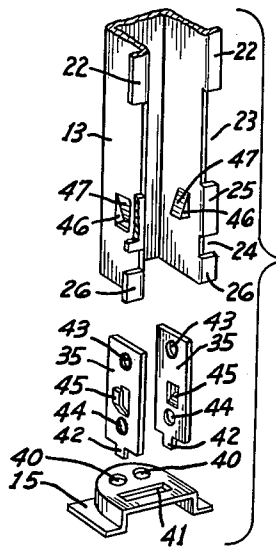


Fig. 9.

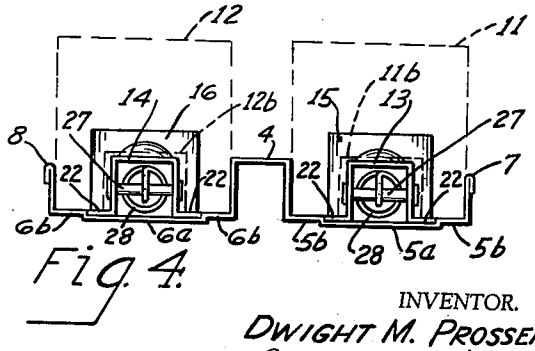


Fig. 4.

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3,091,797
WINDOW STRUCTURE

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3 Claims. (Cl. 16—197)

This invention relates to a window component, more particularly a jamb facing that has detachably secured thereto one or more housings incorporating spring-and-sheave assemblies.

A principal object of the invention is to provide an inexpensive jamb facing usable, inter alia, for weather stripping purposes in which jamb facing are incorporated the parting stop, the sash-receiving ways, and replaceable housings containing spring-and-sheave assemblies. The construction is such that when replacement of one or both of the housings becomes necessary, due, for example, to mechanical failure, the facing may be separated from the jamb by removing the screws by which it is held in place, after which, the facing being then in a more convenient position, the housing or housings may be manually detached. To this end, the invention provides tongue-and-slot connections for the housings, making it a simple matter to attach and detach them. Within the housings themselves, the invention further provides tongue-and-slot connections by which certain of the elements of the spring-and-sheave assembly are held in place.

Other objects, advantages and features of the invention will be apparent from the description which follows and from the accompanying drawings, in which:

FIGURE 1 is a perspective of a portion of a window structure in which the invention is incorporated, such figure showing the window frame, the jamb, the facing carried by the jamb, and the upper and lower sash elements.

FIGURE 2 is an elevation of the jamb facing showing the housings for the spring-and-sheave assemblies.

FIGURE 3 is a similar elevation of the jamb facing without the housings for the spring-and-sheave assemblies, the scale being twice that of FIGURE 2.

FIGURE 4 is a top plan on a still larger scale of the jamb facing and housings.

FIGURES 5 and 6 are, respectively, rear and side elevations of the housings, the scale being the same as that of FIGURE 4.

FIGURE 7 is an enlarged section on line 7—7 of FIGURE 2.

FIGURE 8 is an enlarged detail of the upper end of the jamb facing.

FIGURE 9 is an exploded view showing details of the lower end of one of the housings.

In the drawings, the window structure as a whole is designated 1. Along with conventional components that are not important for present purposes, it includes a jamb 2 of wood which in FIGURE 1 is largely concealed by a metal jamb facing 3. The latter is coextensive as regards length with the jamb itself, extending from end to end lengthwise of the jamb. It also extends laterally across the jamb as indicated at *a*, FIGURE 1, its width being somewhat less than that of the jamb. It is adapted to serve as a weatherstrip, if desired. Although it may be made of other materials, facing 3 may conveniently be made of a non-rusting sheet metal such as stainless steel, aluminum or the like. If of aluminum, it can be formed as an extrusion; preferably, however, it is made of rolled stock.

Facing 3 incorporates a channel-shaped parting stop 4, the opening in which faces toward the jamb; i.e., away from the sash elements. Flanking parting stop 4 are two similar sash-receiving ways 5 and 6 the bottoms of which

(5*a* and 6*a*) are depressed to provide laterally spaced tracks (5*b* and 6*b*) for the sash elements. Parting stop 4 and end flanges 7 and 8 determine the effective widths of sash-receiving ways 5 and 6. Where feasible, as, for example, in a rolled facing, parting stop 4, sash-receiving ways 5 and 6, and end flanges 7 and 8 will normally be formed in one piece: see FIGURES 4 and 8.

Facing 3 is held to jamb 2 by means of screws 9, which, if desired, may pass through holes 10 in parting stop 4 (FIGURES 2 and 3); however, they may be located elsewhere, if preferred.

As shown in FIGURE 1, the usual lower and upper sash elements, respectively designated 11 and 12, are in their open positions. They should be understood to have been moved to these positions from closed positions which, respectively, are at the bottom and top of the window structure. The arrows in FIGURE 1 indicate the direction of movement bringing the two sash elements into their closed positions, at which time check rail 11*a* on sash element 11 will engage check rail 12*a* on sash element 12. For reasons that will be apparent, sash elements 11 and 12 are cut away as indicated at 11*b* and 12*b* (FIGURE 4).

Fixed to jamb facing 3 in the path of travel of sash elements 11 and 12 are channel-shaped housings 13 and 14 for the spring-and-sheave assemblies. At the lower ends of housings 13 and 14, respectively, are stepped bottom plates 15 and 16, constructed as shown in FIGURE 9, each of which forms part of one of the spring-and-sheave assemblies. Bottom plates 15 and 16 are connected to the remainder of the spring-and-sheave assemblies by cables 17, one of which appears in FIGURE 1. They engage the lowermost portions of sash elements 11 and 12 and move up or down, as the case may be, in conformity with the movements of the sash elements which they respectively engage.

Housings 13 and 14 are held detachably in place in sash-receiving ways 5 and 6 by means of tongue-and-slot connections. To this end, there are slots in the upper portions and other slots near the middle portions of each of sash-receiving ways 5 and 6. In the case of sash-receiving way 5, the slots are formed by off-setting rectangular tabs from the general plane of depressed area 5*a*; similarly, in the case of sash-receiving way 6, the slots are formed by off-setting rectangular tabs 19 from the general plane of depressed area 6*a*. As best seen in FIGURE 8, the result of so offsetting tabs 18 and 19, respectively, is to form L-shaped slots 20 and 21. Appropriately located tongues on housings 13 and 14 can enter into and will be retained in place in these slots.

In order to provide suitably located tongues, housings 13 and 14 are formed with laterally extending flanges 22: see FIGURES 5 and 6, which show housing 13 as seen from the rear and one side. Those parts which appear in FIGURES 5 and 6 occur also in housing 14, which is identical with housing 13. It will be noted from FIGURE 4 that flanges 22 on housings 13 and 14 are so proportioned as to fit snugly within depressed areas 5*a* and 6*a* of sash-receiving ways 5 and 6, respectively.

Flanges 22 are interrupted near their upper and lower ends by relatively long cut-away portions 23 and by relatively short cut-away portions 24: see FIGURE 5. By introducing cut-away portions 23 and 24, four tongues 25 and four stops 26 are formed in flanges 22. Tongues 25, of which there is a first pair at the upper end and a second pair at the lower end of each of hosuings 13 and 14, are adapted to enter into L-shaped slots 20 and 21 and, when they do enter into them, interlock with rectangular tabs 18 and 19. The manner in which this is accomplished with be apparent from FIGURE 7.

Referring again to FIGURES 5 and 6, it will be noted

that there is a transversely extending spring anchor **27** at the upper end of housing **13** at substantially the level of cut-away portions **24**. Spring anchor **27** takes the form of a pin the ends of which are headed over against the side walls of housing **13**. The upper end of a stout coil spring **28** is hooked over spring anchor **27**, such spring comprising one of the principal components of the spring-and-sheave assembly. It is attached at its lower end to a movable sheave holder **29** made up of two spaced plates **30**, a first connecting pin **31** over which the end of the spring is hooked, a second connecting pin **32**, and two nylon sheaves **33**.

Cable **17**, to which reference has already been made, passes a number of times between movable sheave holder **29** and a stationary sheave holder **34** at the lower end of housing **13**. Sheave holder **34** is made up of two spaced plates **35**, a first connecting pin **36**, a second connecting pin **37**, and a single nylon sheave **38**. One end of cable **17** is made fast to pin **36**; the other end extends through bottom plate **15**, being knotted against its lower face. When bottom plate **15** moves with sash element **11** on movement of the latter toward closed position, the spring-and-sheaves assembly releases the needed length of cable. It is taken up by the spring-and-sheave assembly on movement of the sash element **11** in the opposite direction.

As will be apparent from FIGURES 5, 6 and 9, stationary sheave holder **34** is intended to coact with bottom plate **15** when the bottom plate is in its retracted position. To this end, bottom plate **15** is provided with a hole for cable **17** (one of two holes **40**) and an elongated slot **41** for receiving two end tangs **42** that depend from the lower ends of plates **35**. Plates **35** are further provided with holes **43** and **44** for pins **36** and **37**, respectively. At their outer ends, pins **36** and **37** are headed over against the exposed outer faces of plates **35**, thus forming a rigid assembly.

Each of the two plates **35** is provided with an outwardly projecting tongue **45** in the space between holes **43** and **44**. These tongues, which are offset from the planes of the stock of which plates **35** are formed, are adapted to enter into slots **46** in the side walls of housing **13**. As appears from FIGURE 9, these slots are produced by slitting plates **35** and pressing inwardly tab-like portions **47**. The manner in which tongues **45** and tabs **47** cooperate is shown in FIGURE 5. Inasmuch as cable **17** exerts a constant upward pull on pin **36**, there is little likelihood of displacement of sheave housing **34**.

Thus the invention provides a sash balancing system

in and by which one or more spring-and-sheave assemblies are held in place in suitable housings by means of tongue-and-slot connections. Each such housing is itself held in place in one of the sash receiving ways by means of tongue-and-slot connections at the upper and lower ends of the housing. These tongue-and-slot connections permit of easy replacement of worn or defective parts in the spring-and-sheave assembly and, if desired, of replacement of the housing itself. Once the necessary replacement has been accomplished, the housing may be returned to its position on jamb facing **3** and the latter restored to its intended position in the window structure.

It is evident that changes in and departures from what has been described may readily be made by those skilled in the art. For example, it is not necessary that the facing be formed in one piece, as shown. Being made of sheet metal, it may be built up of a plurality of pieces attached to each other in suitable fashion. At the sides of the facing, the end flanges may, if desired, project toward rather than away from the jamb. Numerous other changes of like nature can be expected from those versed in the art to which the invention relates.

It is intended that the patent shall cover, by summarization in appended claims, all features of patentable novelty residing in the invention.

What is claimed is:

1. A window component comprising a metal housing of channel-shaped cross-section; a spring-and-sheave assembly in the housing, said spring-and-sheave assembly extending lengthwise from one end of the housing to the other; an anchor for one end of the spring-and-sheave assembly at one end of the housing; and, at the opposite end of the housing, tongue-and-slot connections for holding in place the opposite end of the spring-and-sheave assembly, the slots being in the housing and the tongues forming part of a sheave holder that itself forms part of the spring-and-sheave assembly.

2. A window component according to claim 1 in which the sheave holder takes the form of spaced side pieces held together by pins.

3. A window component according to claim 2 in which the side pieces are provided with end tanks that project out of the housing into a movable end plate.

References Cited in the file of this patent

UNITED STATES PATENTS

2,715,747	Prosser et al.	Aug. 23, 1955
2,722,723	Mears	Nov. 8, 1955
2,912,726	Goellner	Nov. 17, 1959