

June 23, 1953

A. MAURO
WINDOW CONSTRUCTION

2,642,631

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2 Sheets-Sheet 1

FIG. 4

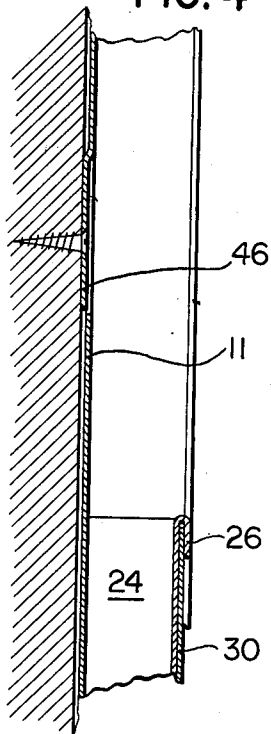


FIG. 5

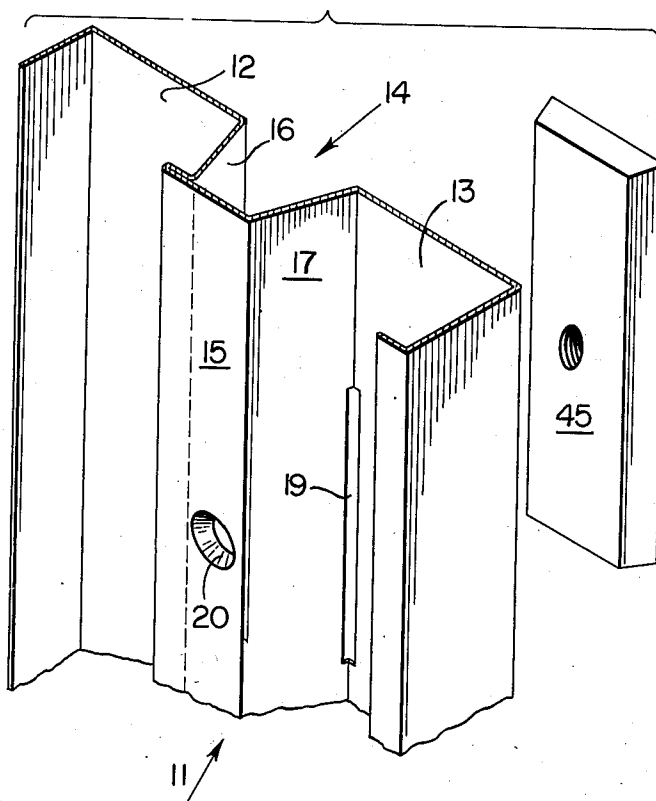
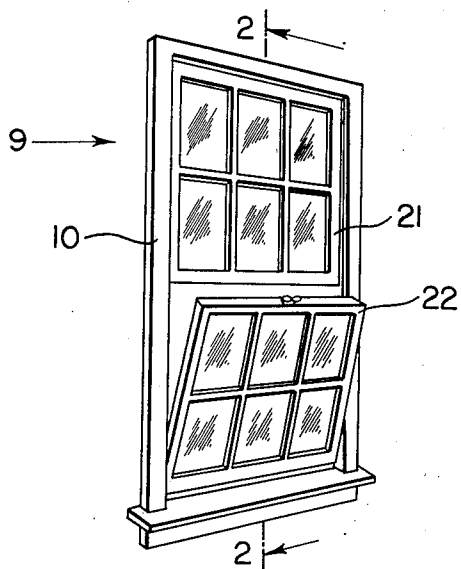


FIG. 1



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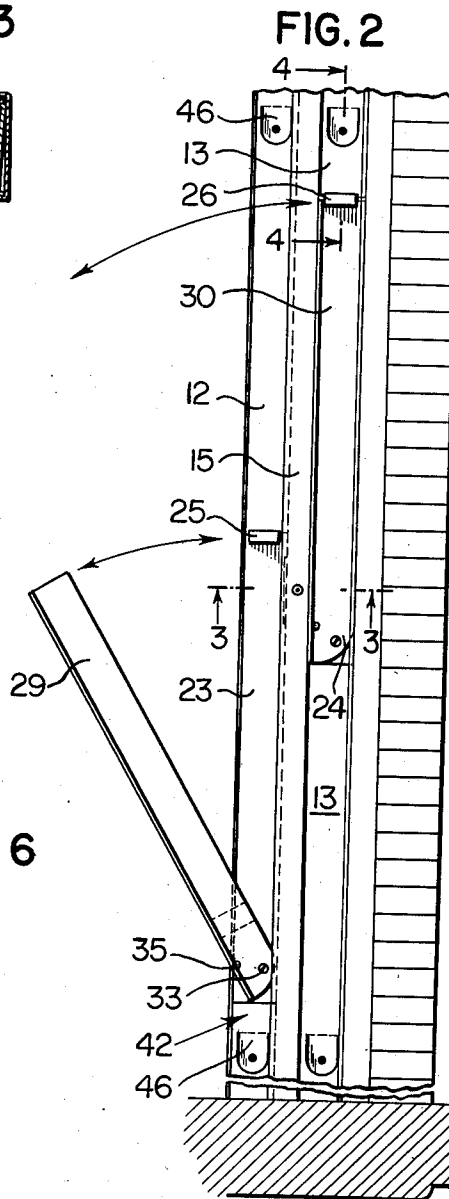
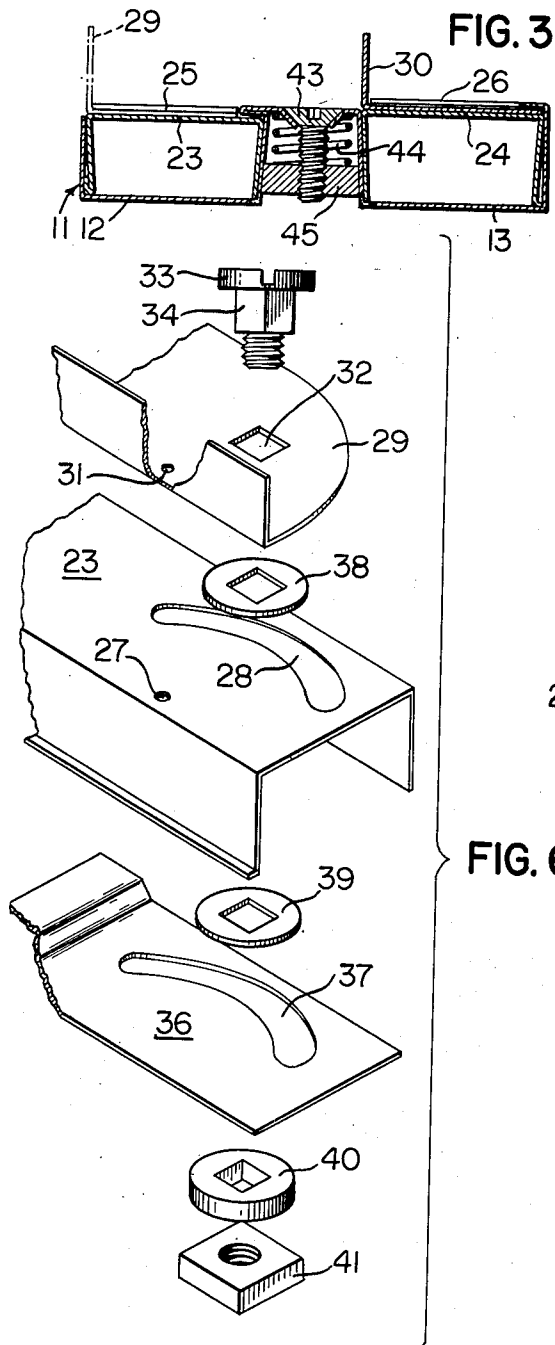


FIG. 6

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WINDOW CONSTRUCTION

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5 Claims. (Cl. 20-49)

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The present invention relates to windows and refers more particularly to windows comprising sash which are both slidable in a vertical direction and tiltable on a substantially horizontal axis.

In windows of the above described type, an example of which is illustrated in my Patent 2,061,914, the horizontally disposed pivots protrude from the sash into the room.

An object of the present invention is the provision of pivots mounted within the plane of the sash so as to be invisible from the room.

Another object is the provision of improved friction means associated with the said pivots so as to provide durable and efficient construction permitting the sash to maintain any angular position to which they may be tilted.

Still another object is the provision of means for adjusting the tilt lock to compensate for wear.

A further object is the provision of a window stile of resilient channel construction and having means for adjusting the friction between the stile and the sash so that the sash may frictionally maintain any vertical position to which it may be set, without the use of balance means.

Still another object is the provision of means for mounting the resilient stile in the window frame in such manner that it can maintain its operative relationship with the sash despite settling of the house which may throw the window frame out of true rectangular shape.

Other objects will appear as the description proceeds.

In accomplishing the objects of the present invention, a window construction is provided having a tilting angle member which cradles the sash, said channel being freely pivotally mounted on the runner, said runner being vertically slidable in the stile. The pivots are located within the plane of the sash in closed position, and thus never protrude into the room.

Friction means for maintaining the sash at any angle to which it may be tilted are also located within the plane of the sash in closed position, but in substantially spaced relation to the pivots. Such means are called a tilt lock and may be adjusted to compensate for wear by a screw adjustment, all of the above being concealed and yet readily accessible.

The sash are maintained at any height to which they may be set by frictional engagement between the resilient stile and resilient runner. Friction between the two may be increased or decreased by turning a screw located in the

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parting strip and engaging a tapered nut inside the parting strip so as to distend the parting strip laterally against both runners.

A floating mounting of the window stiles in the window frame is accomplished by striking out tongues from the portions of the stile which engage the pulley stile of the conventional window frame. The upper ends of the tongues are integral with the stiles of the improved window, and nailing or otherwise fastening the tongues to the pulley stiles of the window frame permits smooth operation of the sash even if the window frame should settle out of square.

Other objects of this invention will in part be obvious and in part hereinafter be pointed out. The invention accordingly consists in the features of construction combinations of elements and arrangements of parts which will be exemplified in the constructions hereinafter described. In the accompanying drawing, in which is shown one of the various possible illustrative embodiments of this invention:

Figure 1 is a perspective view of a window embodying the present invention.

Figure 2 is a section on the line 2-2 of Figure 1.

Figure 3 is a section on the line 3-3 of Figure 2.

Figure 4 is a section on the line 4-4 of Figure 2.

Figure 5 is an exploded perspective view of the stile friction mechanism.

Figure 6 is an exploded perspective view of the tilt lock friction mechanism.

Referring now in detail to the drawings, my improved window 9 is shown in perspective in Figure 1 in which the general appearance of the window complete with inside trim is shown.

Two stile members 11 are mounted on the pulley stiles of the conventional window frame 10. In Figures 2, 3, 4 and 5 is illustrated the left stile of the window frame looking at the window from the room. Stile 11 is of sheet metal such as aluminum or steel and is therefore quite springy or resilient. The cross sectional shape of stile 11 is shown clearly in Figures 3 and 5 as defining a channel 12 for the lower sash and channel 13 for the upper sash, and a hollow parting strip 14 comprising a face portion 15 and side wall portions 16, 17.

Side wall portions 16, 17 are relieved at their rear boundaries by the slots 18, 19, which are about six inches long and extend for equal distances above and below the countersunk hole

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20 which is substantially at the height of the meeting rail of the sashes 21, 22.

Referring to Figure 2, in which sash 21, 22 have been omitted, a runner 23 is slidably mounted in channel 12 and a similar runner 24 is slidably mounted in channel 13. Runners 23, 24 have integral flanges 25, 26 which are bent so as to form a U shape with the body of the runner, as best shown in Figure 4.

Runner 23 is further formed with the pivot hole 27 and the arcuate slot 28.

The tilters 29, 30 are metal members of L cross section, a pair of tilters on opposite sides of the window constituting mounting means for a sash 21 or 22, which are preferably permanently mounted in the pair of tilters by screws or other conventional means.

Tilter 29 is formed with the pivot hole 31 and the square hole 32 at a substantial distance therefrom.

The bolt 33 has a square shank portion 34 which fits nonrotatably in hole 32 and rides in the slot 28 when tilter 29 is tilted on pivot 35.

Inside of runner 23 and on the opposite side thereof from tilter 29 is firmly mounted, as by welding, the friction plate 36 formed with the arcuate slot 37 coincident with slot 28.

Washers 38, 39, 40 are mounted on bolt 33 between tilter and runner, runner and friction plate, and friction plate and nut 41 respectively, washers 38, 39, 40 being formed with holes complementary to the square shank portion 34 so as to be nonrotatable thereon. It is evident from the above that bolt 33 also extends through slot 37 of friction plate 36 and that nut 41 threadedly engages bolt 33.

The above described mechanism constitutes a tilt lock which by adjustment of nut 41 on bolt 33 by insertion of a wrench into the lower end of runner 23 as indicated by arrow 42 permits the development of any desired degree of sliding friction between tilter 29 and runner 23 so that the tilter can maintain any angular position to which it is set relative to runner 23.

Screw 43 passes through countersunk hole 20 in face portion 15 of parting strip 14. Compression coil spring 44 is mounted concentrically on screw 43 between face portion 15 and tapered, elongated nut 45 which is threadedly engaged by screw 43.

Nut 45 engages the side wall portions 16, 17 to distend the same laterally when screw 43 is taken up, thus creating frictional engagement between portions 16, 17 and the runners 23, 24 of both upper and lower sash, thus providing easy adjustment of the sliding friction between runners and stile 11 so that the runners maintain any vertical position to which they may be set.

The flanges 25, 26 overlie the upper extremities of the tilters when the latter are in closed position, as illustrated re tilter 30, Figures 2 and 4, while an open position of tilter 29 is also illustrated in Figure 2.

Means for floatingly mounting the stiles 11 in the window frame 10 are provided in the tongues 46 struck out of the material of 11, one tongue 46 being located about one foot from the end of each channel 12, 13. Tongues 46 are integral with stile 11, being connected thereto at their upper end, and free standing along their side and bottom boundaries. A nail or screw driven through each tongue 46 into the conventional pulley stile serves to mount the stiles 11 in the frame 10 and guards against poor sliding

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of the sash due to compressive deforming of frame 10 by settling of the wall which may cause the opening to get out of square. Slight settling of the window opening is enough to deform a frame 10 conventionally mounted therein, but the present invention permits stile 11 to maintain its correct relation to the sash, thus permitting normal functioning of the window.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use. As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. In a window construction of the type comprising slidable and tiltable sash, a runner member slidable in the window stile, a tilter member constituting mounting means for said sash and a pivot connecting said tilter to said runner, the improvement comprising said runner member being formed with a slot, said slot describing a segment of a circle around the center of said pivot, and said tilter member being formed with a hole, a bolt passing through said slot and hole and a nut engaging said bolt and thereby drawing said tilter and runner into frictional engagement to constitute a tilt lock.

2. Tilt lock means for tiltable and slidable sash comprising the combination with a tilter member firmly connected to said sash, a runner member slidably engaging the window frame and a pivot connecting said members, of a third member firmly mounted on said runner member on the opposite side thereof from said tilter member, said tilter member being formed with a hole, said runner and third members being formed with slots, said slots describing a segment of a circle around the center of said pivot, a bolt passing through said hole and said slots, and a nut on said bolt in back of said third member.

3. Tilt lock means for a tiltable and slidable sash comprising the combination with a tilter member firmly connected to said sash, a runner member slidably engaging the window frame and a pivot connecting said members, of a third member firmly mounted on said runner member on the opposite side thereof from said tilter member, said tilter member being formed with a hole, said runner and third members being formed with slots, said slots describing a segment of a circle around the center of said pivot, a bolt passing through said hole and said slots, a nut on said bolt in back of said third member, and washers on said bolt between said tilter and said runner member and between said runner and third member and between said third member and said nut.

4. In a tilt lock means according to claim 3, said bolt comprising a portion of noncircular cross section and said washers being shaped complementary to said portion.

5. Tilt lock means for a window with slidable and tiltable sash, said means comprising, in combination, a tilter member firmly connected to said sash, a runner member of U-cross section, the bight of the U abutting said tilter member and the arms of the U slidably engaging the window frame, said runner member further being open at its lower end, a third member mounted

on the bight of said runner member adjacent the lower end thereof and on the opposite side thereof from said tilter member, said tilter member being formed adjacent its lower end with a hole for a pivot, said runner and said third members being formed with slots, said slots describing a segment of a circle around the center of said pivot, a bolt passing through said hole and said slots, a nut on said bolt in back of said third member, and washers on said bolt between said tilter and said runner members, and between said runner and said third members and between said third member and said nut, said nut being accessible for adjustment via the open lower end of said runner member.

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