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SASH BALANCE LOCKING DEVICE

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2 Sheets-Sheet 1

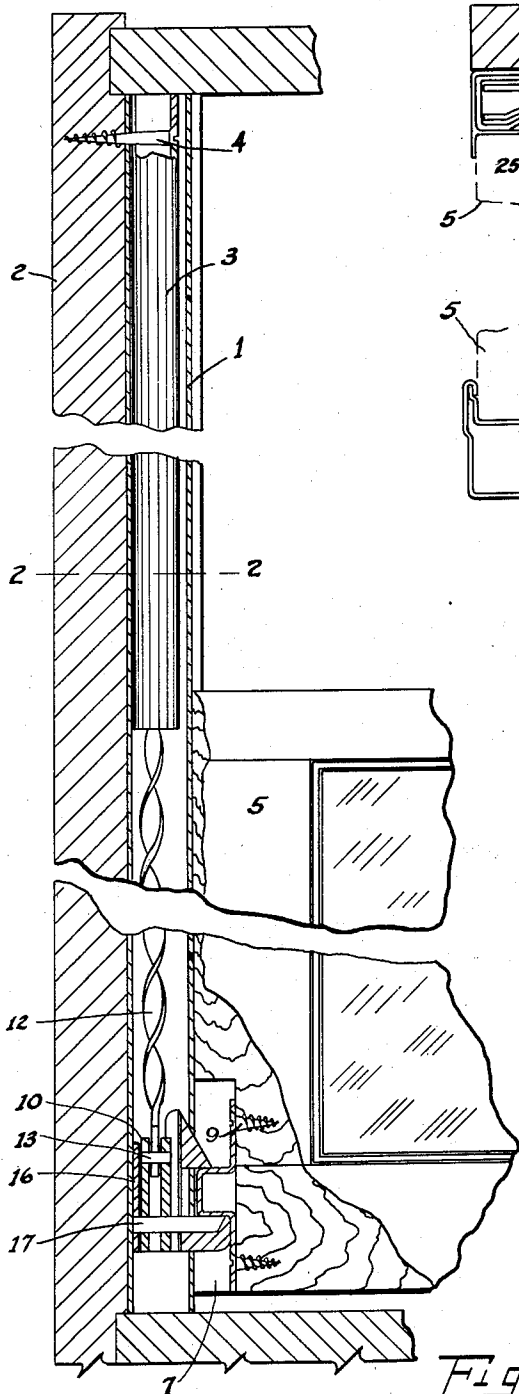


Fig. 1

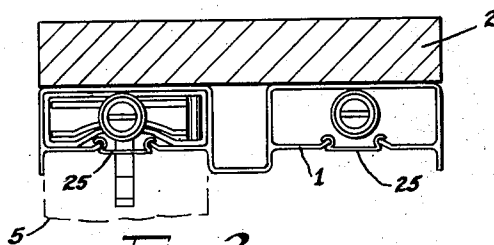


Fig. 2

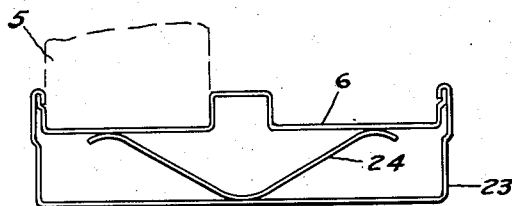


Fig. 3

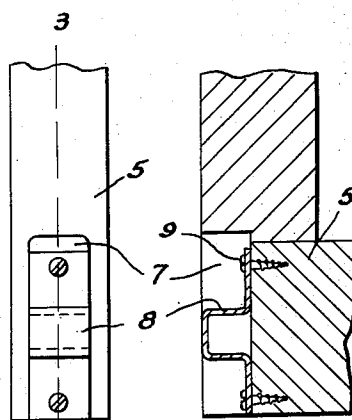


Fig. 4

Fig. 5

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2 Sheets-Sheet 2

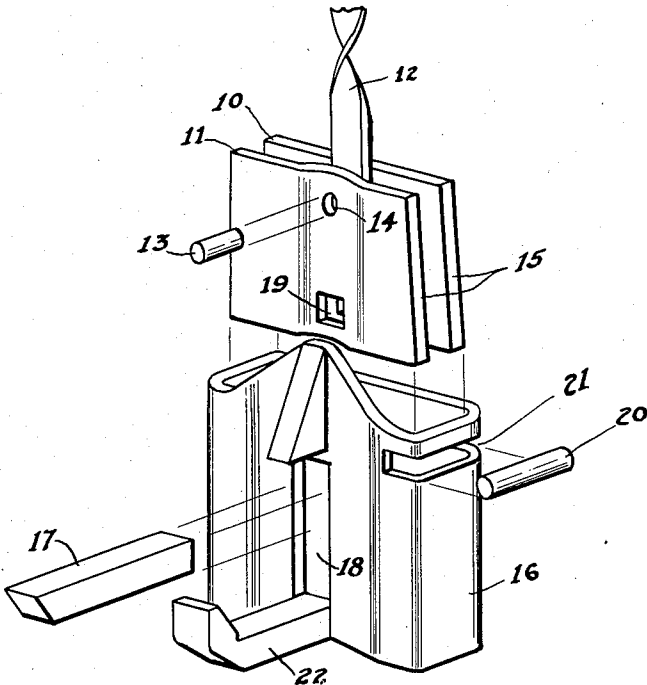


Fig. 6

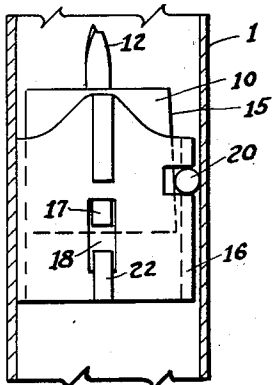


Fig. 7

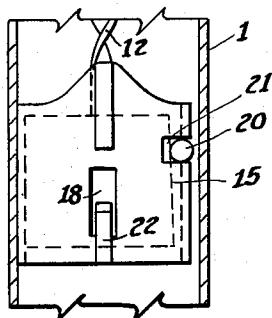


Fig. 9

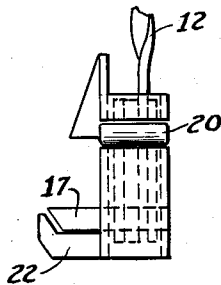


Fig. 10

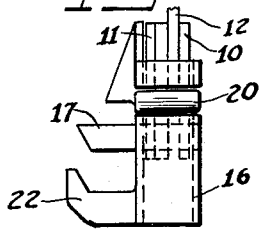


Fig. 8

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SASH BALANCE LOCKING DEVICE

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6 Claims. (Cl. 16—202)

This invention relates to a new and useful improvement in a window construction in which the sash is slidably mounted in a window frame. In this type of construction there are usually two or more sashes slidably mounted and the invention relates particularly to the slides which are supported by the window frame, having mounted therein a spiral-type sash balance. Such slides and sash balances engage the sashes in their sliding movement and provide a balance for the window.

The spiral type sash balances employed are the type wherein the longitudinal movement of a spiral rod through a nut in accordance with the raising and lowering of a window sash respectively decreases and increases torsional force in a spiral spring tending to hold the window sash in its last operated position and to assist in lifting the sash. More particularly, the invention relates to this type of sash balance for a take-out window where the sash and the balance operate as a unit, and where both the sash and the balance can be disengaged from the frame and removed for the purpose of cleaning the window, adjusting the balance, etc.

The main objects of the invention are:

First, to provide an improved sash balance for a take-out sash window, including a rotatable element having a spiral track and a torsion member adapted to be mounted for relative movement in which the parts are very economical to produce and may be easily assembled into the balance, and the balance and the sash are easily and quickly assembled in an operative relation in the window frame, and the sash is easily and quickly removed for cleaning or other purposes.

Second, to provide an improved and relatively inexpensive means for maintaining the balance in a fixed position on the frame when the window is removed from the frame while, at the same time, providing means for quickly disengaging the sash from the balance, so that the sash may be removed as a unit.

Third, to provide an improved window construction in which the sash may be quickly and easily removed, when desired, to permit cleaning the outside of the window glass, repainting et cetera, but in which the sashes are normally retained against removal.

Fourth, to provide a spiral type rod sash balance for a take-out window, whereby the balance may be installed in the frame and torsional force applied to the spring of the balance, and whereby the balance is held in a disengageably fixed position to receive the sash.

Further objects relating to details and economies of the invention will appear from the description to follow. The invention is defined in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

Figure 1 is a front elevated view, partly in section, with parts broken away, showing a window frame having slide rails fixedly mounted in said frame, said rails having recesses for receiving a sash balance secured at the upper end to the slide rails and the frame, the balance having a

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balance lock attached to the lower end of the rod of the balance, and a window sash having a lug recessed in its lower end, adapted to engage the balance lock.

Figure 2 is a top sectional plan view taken at line 2—2 of Figure 1 and indicating the position of the bottom sash by broken lines.

Figure 3 is a sectional view of the movable slide which is on the opposite casing from the side shown in Figure 2 showing a spring member for holding the sash against the slide. The bottom sash is indicated by broken lines.

Figure 4 is a partial end view showing the lower corner of the bottom sash and a recess in which a lug is mounted.

Figure 5 is a section taken on line 3—3 of Figure 4, further showing the recess and lug.

Figure 6 is an exploded view of the parts of the balance locking device.

Figure 7 is a front elevation in section of the balance locking device in a locked position.

Figure 8 is a side elevation of the balance locking device in a locked position.

Figure 9 is a front elevation of the balance locking device in the free sliding position.

Figure 10 is a side elevation of the balance locking device in the free sliding position.

Referring to Figure 1, an immovable metal slide rail 1 is fastened to a window casing 2 and inside the metal slide 1 is mounted a conventional type of window balance 3 secured to the casing by a screw 4.

The bottom sash 5 slides up and down between the immovable metal slide 1, also shown in Figure 2, and the movable slide 6, shown in Figure 3, which is mounted on the opposite side of the casing.

In the bottom corner of sash 5, Figure 1, is a recess 7 and a lug 8, both shown in Figures 4 and 5. Screws 9 secure the lug 8 to sash 5 in the recess 7.

The balance locking device shown in Figures 7 through 10 is fastened to the lower end of the spiral balance and engages the lug 8 in the recess 7 of the sash to hold the sash at any desired level, as shown in Figure 1.

With reference to Figure 6, internal segments 10 and 11 are attached to the spiral rod 12 of the balance 3 by a pin 13 which is inserted in the hole 14 through the segments 10 and 11 and the spiral rod 12. The segments 10 and 11 have a two degree taper along one edge at 15.

The tapered segments are then pushed into the assembly case 16. Latch bar 17 is inserted through slot 18 of assembly case 16 and the square holes 19 in the segments 10 and 11 and through a slot similar to 18 which is located in the back of the assembly case 16. A roller 20 is pushed into slot 21. Sash support bar 22 protrudes from the assembly case 16 and carries the weight of the sash 5 engaging with the lug 8.

In Figure 7 and Figure 8 the complete lock assembly 16 is inserted in the channel of the immovable metal slide 1. The spiral rod 12 is pulled up by spring tension of the balance 3, thus moving elements 10 and 11 up until latch bar 17 moves toward the top of slot 18. The tapered edges 15 of the segments 10 and 11 force the roller 20 out of the case and against the side of the channel which causes the other side of the assembly case 16 to exert friction on the channel and remains in a fixed position.

When the sash 5 is moved into the position shown in Figure 1, the lug 8 forces the latch bar 17 down, causing the balance lock 16 to be in a free position, as shown in Figure 9 and Figure 10. The latch bar 17 moves down, moving segments 10 and 11 down. The tapered edges 15 allow the roller 20 to move back into the assembly case 16, which loosens up the casing 16 in the channel held by friction, thus leaving it free to move up and down with the window sash 5.

Figure 3 shows the movable slide 6, which is held in place by spring 24 and casing 23, which houses the spring 24, which extends the full length of the casing 23. When sash 5 is forced against this movable slide 6, spring 24 is deflected, allowing the window sash 5 to be removed.

When the window sash 5 is removed, then the balance lock 16 will hold the end of the spiral rod 12 at any level.

A cover 25 is provided to cover the exposed slot in the channel.

It will be noted that sash weights and cords have been entirely eliminated with our improved construction as described, and the sash 5 may be easily moved upwardly and downwardly to any desired position. Moreover, the slide rail springs 24 may be of any desired number and adjusted longitudinally in the slide rails 23 to apply more or less pressure in different parts of the rails, for example, adjacent the top portions of the rails 23 for holding the sash 5 in raised position.

In order to remove the sash 5 from the frame 2, it is only necessary to force the sash 5 and one of the movable slide rails in one direction, while at the same time the other movable slide rail is pushed back in the opposite direction. This will enable removal of the sash 5, providing the sash 5 is at a position between the intermediate and uppermost securing screws of the slide rails 23. At other positions of the sash 5, the heads of the securing screws or nails holding the slide rails 23 will prevent sufficient movement of the slide rails 23 to give the proper clearance for removal of the sash 5.

In addition, it will be apparent that when the sash 5 is removed it is disengaged from the balance 3 at whatever point the balance 3 is located, and the balance 3 is retained in that position without moving upward as a result of the tension on the balance 3.

It will become readily apparent that a sash balance locking device constructed as described carries out the objects of this inventive concept. The roller 20 acting cooperatively with the tapered surface of the segments 10 and 11 forms a wedging element having a rolling surface, which element is adapted to be pressed against the wall of the slide rail by the segments, whereby the locking device is adapted to frictionally engage the slide rail and maintain the balance in position when the sash is removed.

While we have illustrated and described the preferred form of construction, we do not wish to limit ourselves to the precise details of structure shown, but desire to avail ourselves of such variations and modifications as may come within the scope and spirit of the appended claims.

We claim:

1. A sash balance locking device and a sash balance cooperating with a removable sash slidable in a fixed rail mounted on a window frame, said locking device comprising; a housing slidably disposed in said rail, a segment having a tapered edge and slidably contained in said housing and movable relative to said housing, said sash balance being connected to said segment, a wedging element carried by said housing, said sash balance moving said segment and thereby pressing said wedging element into engagement between said segment and the side of said rail.

2. A sash balance locking device and a sash balance cooperating with a removable sash slidable in a rail

mounted on a window frame comprising; a housing slidably disposed on said rail, a segment having a tapered edge and slidably contained in said housing and movable relative to said housing, said sash balance being connected to said segment, a wedging element having a rolling surface carried in said housing, a support bar protruding from said housing engaging the sash, said sash balance moving said segment and thereby pressing said wedging element into engagement between said segment and the side of said rail.

3. A sash balance locking device and a sash balance cooperating with a removable sash slidable in a rail mounted on a window frame; comprising a housing slidably disposed on said rail, a tapered segment slidably contained in said housing, said sash balance being connected to said segment, a wedging element having a rolling surface carried in said housing, said housing having a support bar protruding therefrom for engaging the sash and supporting the sash, said tapered segment having a latch bar extending therefrom through the end of a slot in said housing opposite said balance for engaging said sash; whereby when the sash is removed from said rail, said latch bar is disengaged from said sash allowing said tapered segment to press said wedging element into engagement between said segment and the side of said rail for causing said housing to frictionally engage the side of said rail, and whereby when the sash is replaced in the rail, said latch bar is adapted to be engaged by said sash and cause said segment to release said wedging element from engagement between said segment and said rail for releasing said housing from frictional engagement with the side of said rail.

4. A sash balance locking device according to claim 3, said wedging element being a roller.

5. A sash balance locking device and a sash balance cooperating with a removable sash slidable in a rail mounted on a window frame comprising a housing slidably disposed on said rail, a roller carried in said housing, a tapered segment slidably carried in said housing, said segment being connected to a sash balance, said segment being adapted to move upwardly and downwardly in said housing, a latch bar extending from said segment through the end of a slot in said housing opposite said balance for engaging said sash, said latch bar being adapted to be disengaged from a sash when the sash is removed from said rail, whereby said segment is caused to move and press said roller into engagement between said segment and the side of said rail for causing said housing to frictionally engage the side of said rail.

6. A sash balance locking device according to claim 5, said latch bar being adapted to be engaged with a sash when the sash is placed in said rail, whereby said segment is caused to move downwardly and release said roller from engagement between said segment and the side of said rail for causing said housing to become frictionally disengaged from the side of said rail.

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