April 16, 1946. A. VIEHWEGER 2,398,456

SASH BALANCE

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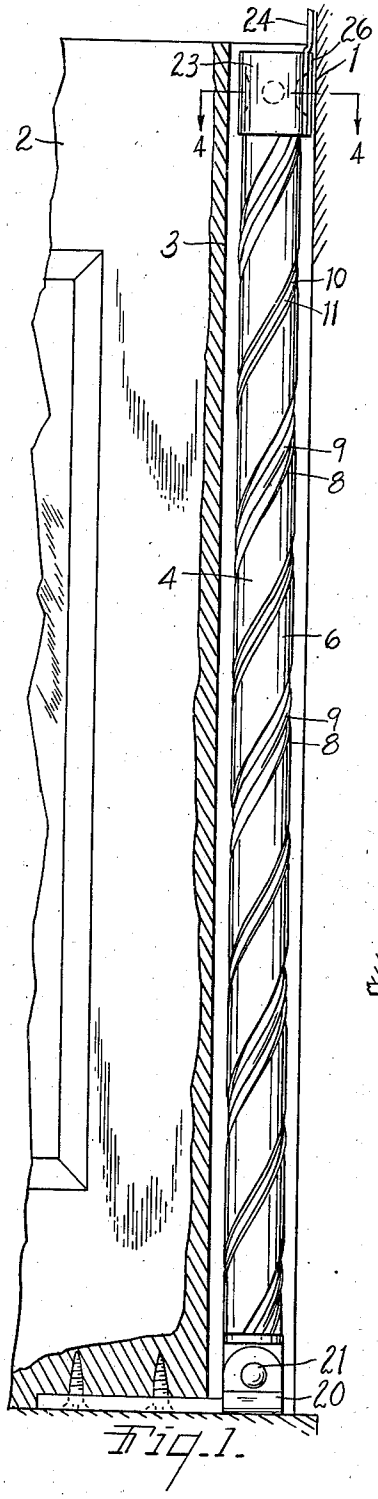


Fig. 1.

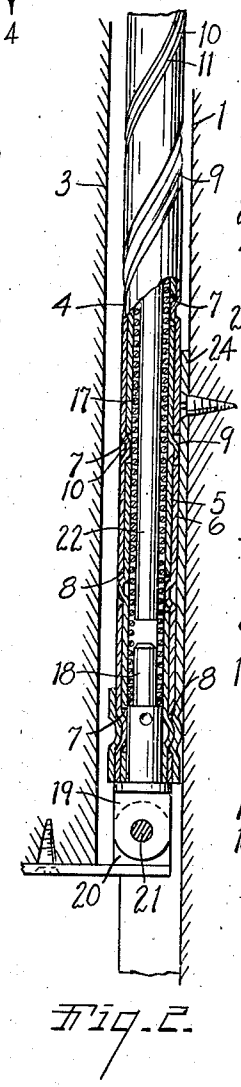


Fig. 2.

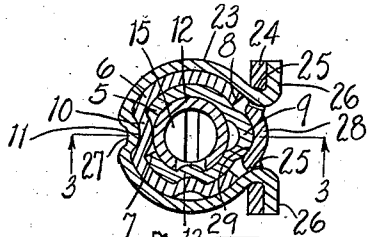


Fig. 3.

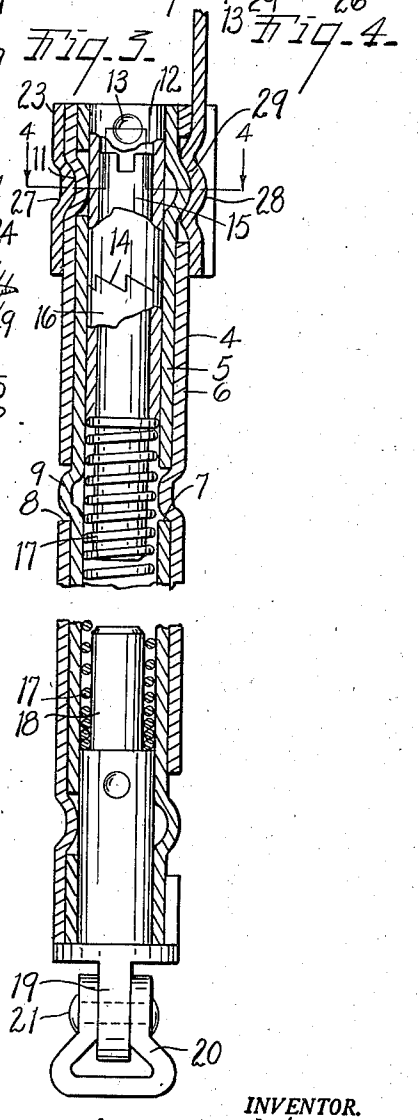


Fig. 4.

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SASH BALANCE

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Application January 15, 1945, Serial No. 572,831

8 Claims. (Cl. 16—197)

This invention relates to improvements in sash balances.

The main objects of this invention are:

First, to provide a sash balance of the enclosed spiral spring type in which the tubular element while light in weight is very rigid and constitutes a lubricant retaining housing for the enclosed parts.

Second, to provide a sash balance which may be easily installed and has wide adaptation and use.

Third, to provide a structure having these advantages in which the tendency for the torsion element to clutchingly engage the tubular element is minimized.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

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

Fig. 1 is a fragmentary view of a window and casing with one of my improved sash balances installed therein.

Fig. 2 is a fragmentary view partially in longitudinal section showing certain of the structural details.

Fig. 3 is an enlarged fragmentary view partially in section on line 3—3 of Fig. 4 showing further details.

Fig. 4 is a transverse section on line 4—4 of Figs. 1 and 3.

Reference being had to the accompanying drawing, 1 represents a window casing and 2 a sash having a longitudinal groove 3 in the edge thereof. The tubular track or way element designated generally by the numeral 4 is formed of inner and outer spirally coiled members 5 and 6 formed of spirally wound strips of metal preferably mild steel. These strips are wound to provide spiral slots, the spiral slot of the inner member 5 being designated 7 and the spiral slot of the outer member being designated 8. These slots are of the same pitch.

The inner member is provided with a spiral rib 9 which is disposed in the spiral slot of the outer member to constitute a spiral track. The outer member has a spiral groove 10 disposed in the spiral slot of the inner member and providing a spiral groove-like track 11. The edges of the spiral corrugation 10 are preferably in engagement with the edges of the slot 7 which acts to prevent relative movement of the members. The members are formed in closely embracing relation preferably by means of the machine illustrated in my application for Letters Patent filed January 15, 1945, Serial No. 572,830.

A bushing 12 is fixedly secured within the upper ends of the tubular members at 13, this bushing being provided with ratchet teeth 14 at its inner end, the bushing receiving the torsion rod 15 having a ratchet head 16 at its inner end coacting with the ratchet teeth 14.

The torsion rod projects inwardly to receive the end of the helically coiled torsion spring 17 which clutchingly engages the torsion rod. The other end of the spring clutchingly engages the end of the anchoring rod 18 which is provided with a projecting ear 19 pivoted to the bracket 20 at 21, the bracket being adapted for attachment to the window sash.

The spring acts to urge the clutch into engaging position. It may be disengaged, however, by pressing inwardly on the torsion rod by means of a screw driver or the like and rotating the torsion rod to increase or decrease the tension of the spring.

In the embodiment illustrated, a rod 22 preferably of non-metallic material is arranged within the spring between the torsion rod and the anchoring rod to prevent kinking of the spring and the clicking of the coils.

The parts described provide an enclosed chamber for the enclosed parts adapted to receive a lubricant such as a suitable grease which is introduced when the structure is assembled and is effectively retained. This arrangement of the parts constituting the tubular element provides a rib-like spiral track 9 and a groove-like spiral track 11, the tracks being of the same pitch.

The torsion element in this embodiment illustrated comprises the annular member 23 and the arm member 24, the arm member having opposed slots 25 receiving the ends of the member 23 which is formed of a strip of metal, the ends 26 being turned outwardly into retaining engagement with the inner side of the mounting arm.

The member 23 has an indented part forming a track-engaging lug 27 engaging the groove-like track 11 while the member 24 has a part 28 struck out therefrom providing a recess 29 receiving the rib-like track 9. It will be noted that these parts engage the tubular member in opposed relation so that there is little tendency for the parts to closely engage. The tubular member being very rigid further minimizes this tendency.

The tubular member may be formed of relatively light stock and is at the same time strong and rigid and, as stated, constitutes an effective lubricant retaining element.

I have illustrated and described my invention in a very practical embodiment thereof. I have not attempted to illustrate or describe other embodiments or adaptations which I contemplate as it is believed that this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

Having thus described my invention, what I

claim as new and desire to secure by Letters Patent is:

1. In a sash balance, the combination of a tubular element comprising inner and outer members, the outer member closely embracing the inner, each member having a spiral longitudinal slot, the inner member also having a spiral rib disposed within the slot of the outer member and constituting a spiral track, the outer member having a spiral corrugation disposed within the spiral slot of the inner member and providing a groove-like second spiral track, the spiral corrugation being in engagement with the edges of the slot of the inner member and acting to prevent relative movement of the members, a spring housed within said tubular element and connected thereto at one end of the spring, an anchoring means for the other end of the spring projecting into said tubular element, means coacting with said tubular element for torsioning the spring comprising an annular member embracing and slidably receiving the tubular element and having an inwardly projecting lug at one side thereof coacting with said groove-like track, and an attaching arm for said annular member having spaced slots receiving end portions thereof and having a recess therein disposed opposite said lug and coacting with said rib-like track.

2. In a sash balance, the combination of a tubular element comprising inner and outer members, each member having a spiral longitudinal slot, the inner member also having a spiral rib disposed within the slot of the outer member and constituting a spiral track, the outer member having a spiral corrugation disposed within the spiral slot of the inner member and providing a groove-like second spiral track, a spring housed within said tubular element and connected thereto at one end of the spring, an anchoring means for the other end of the spring projecting into said tubular element, means coacting with said tubular element for torsioning the spring comprising an annular member embracing and slidably receiving the tubular element and having an inwardly projecting lug at one side thereof coacting with said groove-like track, and an attaching arm for said annular member having spaced slots receiving end portions thereof and having a recess therein disposed opposite said lug and coacting with said rib-like track.

3. In a sash balance, the combination of a tubular element comprising inner and outer members, the outer member closely embracing the inner, each member having a spiral longitudinal slot, the inner member also having a spiral rib disposed within the slot of the outer member and constituting a spiral track, the outer member having a spiral corrugation disposed within the spiral slot of the inner member and providing a groove-like second spiral track, the spiral corrugation being in engagement with the edges of the slot of the inner member and acting to prevent relative movement of the members, a spring housed within said tubular element and connected thereto at one end of the spring, an anchoring means for the other end of the spring projecting into said tubular element, and a torsion member slidably engaging the tubular element and having an inwardly projecting lug coacting with said groove-like track and coacting with said rib-like track.

4. In a sash balance, the combination of a tubular element comprising inner and outer members, each member having a spiral longitudinal slot, the inner member also having a spiral rib disposed within the slot of the outer member and constituting a spiral track, the outer member having a spiral corrugation disposed within the spiral slot of the inner member and providing a groove-like second spiral track, a spring housed within said tubular element and connected thereto at one end of the spring, an anchoring means for the other end of the spring projecting into said tubular element, and a torsion member slidably engaging the tubular element and having an inwardly projecting lug coacting with said groove-like track and coacting with said rib-like track.

5. In a sash balance, the combination of a tubular element comprising inner and outer members each consisting of a spirally coiled strip, the edges of the strip being in spaced relation providing a longitudinal slot, the inner member having a spiral rib disposed within the slot of the outer member and constituting a spiral rib-like track, the outer member having a spiral corrugation disposed within the spiral slot of the inner member and providing an outwardly facing groove-like second spiral track, a spiral spring housed within said tubular element and connected thereto at one end, an anchoring means for the other end of said spring, and a torsion element embracing and slidably receiving the tubular element and having an inwardly projecting lug coacting with said groove-like track and an opposed recess coacting with said rib-like track.

6. A tubular element for sash balances comprising inner and outer members, the outer member closely embracing the inner, each member having a spiral longitudinal slot, the inner member also having a spiral rib disposed within the slot of the outer member and constituting a spiral track, the outer member having a spiral corrugation disposed within the spiral slot of the inner member and providing a groove-like second spiral track, the spiral corrugations being in engagement with the edges of the slot of the inner member and acting to prevent relative movement of the members.

7. A tubular element for sash balances comprising inner and outer members, each member having a spiral longitudinal slot, the inner member also having a spiral rib disposed within the slot of the outer member and constituting a spiral track, the outer member having a spiral corrugation disposed within the spiral slot of the inner member and providing a groove-like second spiral track.

8. A tubular element for sash balances comprising inner and outer members each consisting of a spirally coiled strip, the edges of the strip being in spaced relation providing a longitudinal slot, the inner member having a spiral rib disposed within the slot of the outer member and constituting a spiral rib-like track, the outer member having a spiral corrugation disposed within the spiral slot of the inner member and providing an outwardly facing groove-like second track.

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