

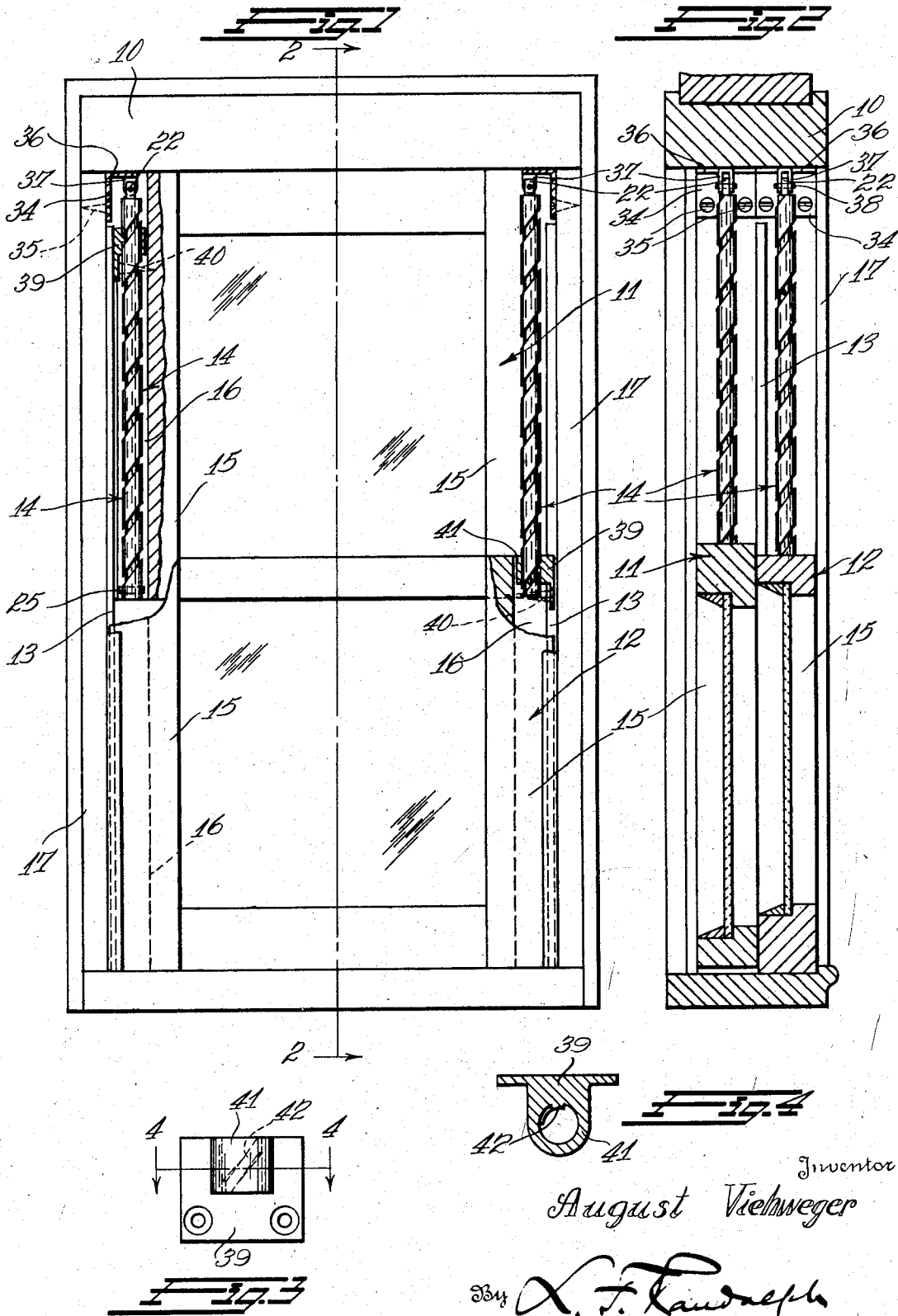
Oct. 22, 1940.

A. VIEHWEGER  
SASH BALANCE

2,218,777

Filed May 2, 1939

2 Sheets-Sheet 1.



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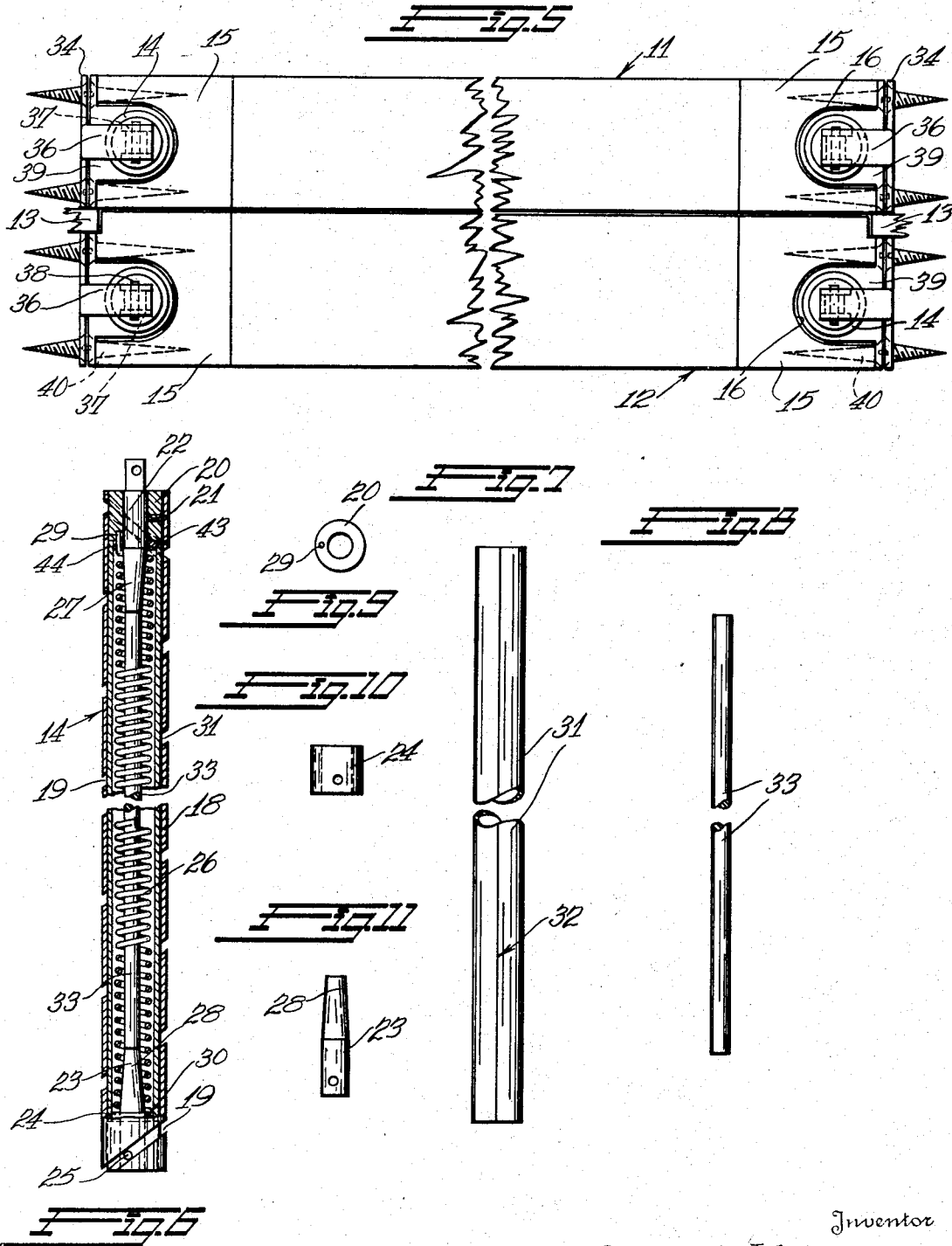
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# UNITED STATES PATENT OFFICE

2,218,777

## SASH BALANCE

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4 Claims. (Cl. 16—197)

This invention relates to a window sash balance.

The invention is of the general type disclosed in my Letters Patent for a Window-sash balance, No. 2,178,533, dated October 31, 1939.

The present invention primarily aims to provide a novel construction wherein the balance for both upper and lower sashes may be secured adjacent the top of the window frame and while the sashes are lowered.

It is also aimed to provide a novel structure as a liner tube within the spiral element closing the same against entrance of foreign matter and enabling the same to be exposed above a sash, a construction which is more silent than heretofore and a construction having a stop pin in the spiral way, and one having novel bushings and mountings.

More specific objects and advantages will become apparent from a consideration of the description following taken in connection with the accompanying drawings illustrating an operative embodiment.

In said drawings:

Figure 1 is a view in elevation, partly broken away, showing my improvements applied to a window construction;

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1;

Figure 3 is an elevation of one of the sash brackets;

Figure 4 is a horizontal section taken on the line 4—4 of Figure 3;

Figure 5 is a view in plan showing my improvements in connection with sashes;

Figure 6 is an enlarged vertical longitudinal sectional view of the improved sash balance;

Figure 7 is an elevation of the liner tube thereof;

Figure 8 is an elevation of the silencing rod;

Figure 9 is an end view of one of the washers;

Figure 10 is an elevation of one of the spring anchor sleeves, and

Figure 11 is an elevation of one of the spring mounting pins.

Referring specifically to the drawings wherein like reference characters designate like or similar parts, 10 designates a window frame in which upper and lower sashes 11 and 12 are mounted in any suitable way for sliding movement. 13 represents parting strips.

The sash balances employed are designated as a whole at 14, one being provided at each side of the frame for both the upper and the lower

sashes, and all of the balances, both for both upper and lower sashes preferably being mounted at the top of the window space. The side stiles 15 of the sashes, being rabbeted, grooved or recessed as at 16 to accommodate the balances 14 and movement of the sashes relatively thereto. The vertical stiles or side members of the frame 10 are designated 17.

Said sash balances 14 constitute units and consist of spiral elements 18, of suitable length, 10 wound from a single strip of material and having a spiral groove or slot 19 extending from end to end. One end of the spiral element, namely the upper end is rotatably journaled on a bushing 20 secured to the fixed mounting pin or stud 22 by a set screw 21.

At the lower end, a pin 23 is provided which is surrounded by a bushing 24 extending into the spiral element. Such spiral element 18, pin 23 and bushing 24 are connected together by a fastening such as a pin 25 and the latter projects into the slot 19 to serve as a stop. A coil spring 26 is located within the spiral element and surrounds the tapering portions 27 and 28 of the pins 22 and 23, respectively, having one terminal fastened at 29 in the fixed bushing 20 and having the other terminal fastened as at 30 in the rotating bushing 24. A liner tube 31 is disposed within the spiral element outwardly of the spring so as to close the slot 19, such liner tube preferably being made of a single piece of metal stamped into tubular form with the edges thereof in contact as shown at 32 in Figure 7.

The opposite ends of pins 22 and 23 are engaged by and spring 26 surrounds a silencing rod 33 which may be of wood, or other material which greatly reduces the noise, especially kinking of the spring, in operation.

An attaching bracket 34 may be screwed or otherwise fastened as at 35 to the inner surface of the adjacent stile 17 near the top of the latter. Such brackets have inwardly extending leaves 36 from which portions 37 depend and in which the pins 22 are fastened against rotation as by fastening elements 38.

Slide brackets 39 are secured to the sashes as by means of screws at 40 and such brackets have sleeves 41 thereon surrounding the spiral elements, and in whose bores a partial thread or the like 42 is provided which is engaged in the slot 19 or spiral way. It will be understood, that the parts are operated to place the spring under the desired tension before engagement of brackets 39 and attachment to a sash, to the end that the

sash when operated, will remain in any adjusted position by friction.

The aforesaid pin 25 as previously mentioned serves as a stop in the spiral way 19, as it is arranged for engagement by the rib 42 to limit or prevent detaching movement of the brackets from the balance.

The spring 36 will be wound or unwound through the sliding movement of the associated sash, as the case may be, controlling the tension of the spring and the balancing of the sash. The spiral element 18 is a spring and hence it has a tendency to give and take in any movement up and down of the sash.

A washer 43 may be engaged by the upper end of the spring 26 and surround the pin 22. The terminal of the spring 29 may pass through an opening or cut-away portion 44 of such washer.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:

1. A sash balance of the class described having a rotatable element provided with a spiral slot, a relatively fixed pin about which the element rotates, a pin extending into the other end of the element and rotatable with the element, a spiral spring within the element having its ends anchored to each of said pins respectively, and a bracket having means movable in said slot to control the tension of the spring, and a silencing rod enclosed by the spring to prevent kinking thereof and disposed between the ends of said pins and rotatable with reference to at least one thereof.

2. A sash balance of the class described having a rotatable element provided with a spiral slot, a relatively fixed pin, a bushing on which said element is rotatably mounted secured to said pin and disposed in one end of the element, a pin extending into and secured to the other end of the

element for rotation therewith, a spiral spring within the element having its ends surrounding said pins and anchored to said bushings, a bracket having means movable in said slot to control the tension of the spring, and a silencing means enclosed by the spring to prevent kinking thereof and disposed between and abutting the ends of said pins and rotatable with reference to at least one thereof, and of non-metallic material.

3. A sash balance of the class described having a rotatable element provided with a spiral slot, a relatively fixed pin extending into said element around which the element rotates, a pin extending into the other end of the element and rotatable with the element, and a spiral spring within the element having its ends surrounding said pins, said spring having one of its ends anchored with reference to the fixed pin and the other of its ends rotating with the rotatable pin, and a bracket having means movable in said slot to control the tension of the spring, and a silencing rod enclosed by the spring in abutment with the ends of said pins and rotatable with reference to at least one thereof.

4. A sash balance of the class described having a rotatable element provided with a spiral slot, a relatively fixed pin about which said element rotates at one end, a pin extending into the other end of the element and rotatable with the element, a spiral spring within the element having one of its ends anchored to said first pin, a bracket having means movable in said slot to control the tension of the spring, a bushing secured to the second pin and the spiral element, the adjacent end of the spring being secured to said bushing, and a fastening securing the bushing, element and second pin together said pin extending into the spiral slot of the element to form a stop for coaction with said bracket.

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