Oct. 3, 1944. J. FRANCIA 2,359,552

SASH BALANCE

Filed Oct. 3, 1942

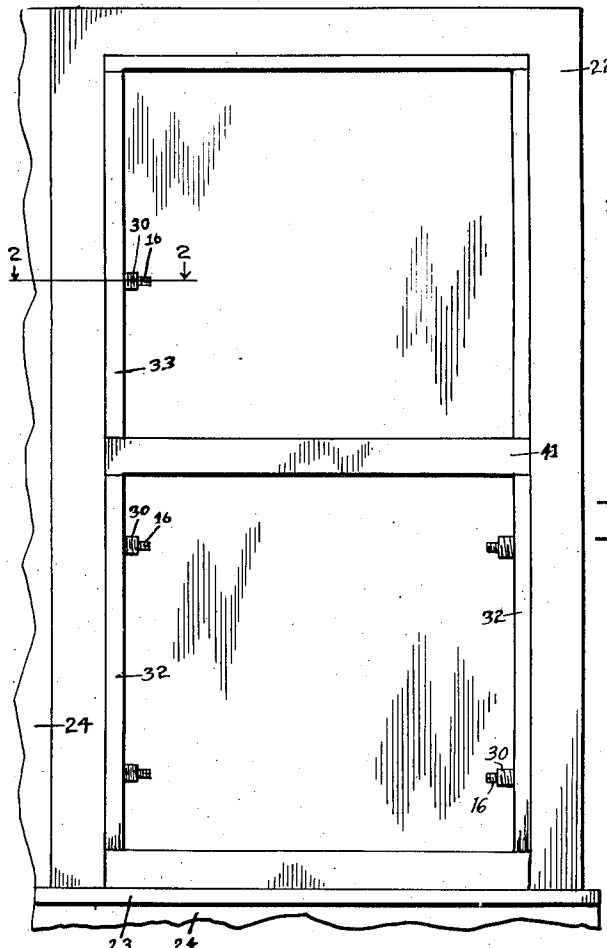



Fig-1

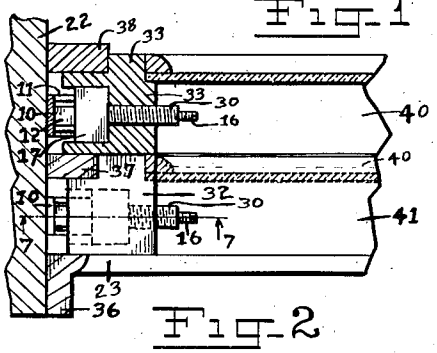



Fig-2

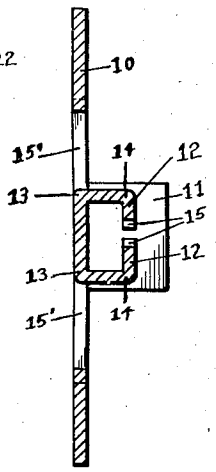



Fig-3

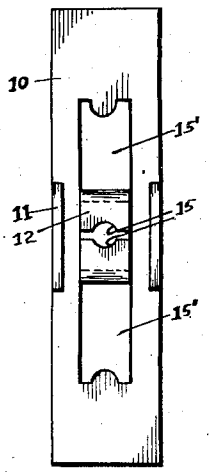



Fig-4

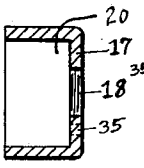



Fig-5

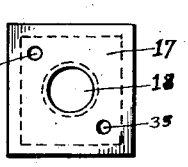



Fig-6

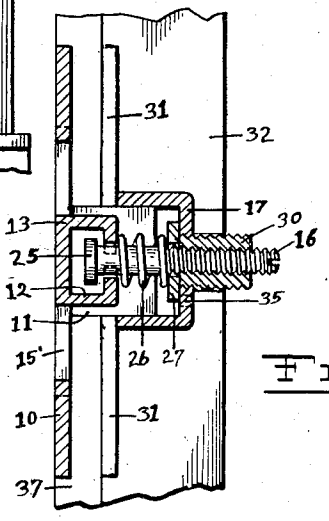



Fig-7

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## SASH BALANCE

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Application October 3, 1942, Serial No. 460,621

4 Claims. (Cl. 292—74)

This invention relates to means for holding slidably mounted window sash or the like in adjusted position.

One of the principal objects of the invention is to provide such a device, which shall serve instead of the conventional cord and weight, or other devices commonly used.

Another object is to provide such a device, which may be installed in a window which has no suitable space for a cord and weight, in or adjacent its frame.

Another object is to provide such a device which is adjustable to firmly and resiliently hold the sash in desired position against the force of gravity, and at the same time to permit it to be moved manually to open or close the window.

Another object is to provide such a device which may be mounted and adjusted for sliding operation of the sash and also to permit removal of the same when desired without removing any portion of the surrounding frame.

Another object is to provide such a device which may be readily installed in an existing window of conventional construction.

Another object is to provide such a device which may be installed by a person having a moderate ability in the use of tools, and which shall not require the services of an expert carpenter or builder for installation.

Another device is to provide a device which may be adjusted to serve substantially as a lock.

Another object is to provide a device which is compact, strong in construction, not likely to get out of order, and inexpensive to manufacture.

Further objects and advantages of the invention will be set forth in what follows, or will be obvious to those skilled in the art to which my invention relates, without being particularly pointed out.

With the above and other objects of the invention in view, the invention consists in the novel construction, arrangement and combination of various devices, elements and parts, as set forth in the claims hereof, one embodiment of the same being illustrated in the accompanying drawing and described in this specification.

In the accompanying drawing, which forms part of this specification,

Fig. 1 is an elevational view of a window, showing one of my devices installed at one side of the upper sash, by which arrangement the sash is not removable, and showing two of my devices installed at each side of the lower sash, by which arrangement this sash may be made removable.

Fig. 2 is a fragmentary view on an enlarged scale and partly in section, taken on the line 2—2 of Fig. 1;

Figs. 3 and 4 are respectively a longitudinal sectional view and an elevational view, both on a further enlarged scale, of the slide member forming part of my device;

Figs. 5 and 6 are corresponding views of a cup member which fits over the central portion of the slide; and

Fig. 7 is a vertical sectional view, taken on the line 7—7 of Fig. 2, but on a scale similar to that of Figs. 3–6, and showing one of my devices installed in the sash frame, but not showing the portion of the window frame against which the slide abuts in use.

In carrying my invention into effect in this embodiment thereof, I provide first a metal blank, from which is formed the slide 10. At the sides of this blank are lateral wings which are bent up to form side pieces 11, and from the face of the blank are cut or stamped tongues 12, which are bent at 13 at right angles to the body of the slide 10 and again at right angles at 14 to extend toward each other. The ends of these tongues 12 are cut out in approximately semi-circular form at 15, thus providing together a substantially circular aperture for the stem of a screw 16 below described. The ends of the tongues 12 may fit closely together, or may merely approach each other as shown in the drawing.

A square cap 17, having a central perforation 18, fits over the side wings 11, the inside dimensions of the two side walls 20 of the cap being substantially equal to the dimensions of the wings 11, so that the cap may either rest against the ends of the wings 11 and the inner face of the slide 10, or may be spaced therefrom as shown in Fig. 7 or to such degree as desired, according to the adjustment of the parts.

The straight screw 16 has a flat head 25, which is placed within the small housing formed by the tongues 12, the stem of the screw passing through the aperture 15. The screw may be inserted before the ends of the tongues are brought close together. The stem of the screw fits loosely in the aperture 15, which is not threaded.

Around the screw 16 is placed a helical spring 26 and a washer 27, and the cap 17 is then placed over and encloses this assembly and the wings 11, as best indicated in Fig. 7. The pressure of the spring 26 against the tongues 12 and the washer 27, at its respective ends, urges the cap 17 away from the body of the slide 10.

Surrounding the outer portion of the screw 16 and extending through the perforation 18, is a sleeve 30, screw-threaded both externally and internally and which for convenience may be referred to herein as a screw. The internal threads engage the screw 16, and the external threads engage the threading of the perforation 18.

To install the device in a window, a socket 31 (see Fig. 7) is mortised in the outer edge of the sash frame 32, of a size to permit the plate 10 to lie flush with the surface of the sash frame. The slide 10 is, however, freely movable into and out of this socket 31, the extent of movement being controllable as below described.

A square socket of greater depth is also formed in the sash frame **32**, in which the cap **17** is firmly secured. The cap may be held in place frictionally, by closely wedging it into its socket, or it may be held by short screws passing through perforations **35** in the cap, or in any manner desired, as will be obvious.

The screws **16** and **30**, extend through a perforation from the cap-socket to the inside surface of the sash-frame side bar **32**, and extend slightly. The screw **30** cooperates with the cap **17** and the inner screw **16**, therefore it is immaterial whether or not the aperture through which it passes in the wooden sash-frame shall be threaded.

The manner of installing all of the units in the sash-frame, whether the lower sash **32** or the upper sash **33**, is the same, therefore the same description applies to all; when desired to permit removal of a sash, a part of its frame is cut away before installing the unit, as below referred to. In the drawing, the upper sash is shown non-removably mounted, and the lower sash is equipped for both sliding movement and removal.

In the case of a lower sash, the slide **10** lies in the runway between the window-stop **36** and the parting strip **37**, and in the case of the upper sash it lies in the runway between the parting strip **37** and the screen stop **38**. The slide is resiliently urged outward by the pressure of the spring **26**, against the inner surface of the runway, the pressure being adjustable as below described.

If it is desired to use the device merely for holding the sash in vertically adjusted position in the runway, a single unit at one side will be sufficient for a light-weight sash, and two units at the same side will usually serve for a heavier sash. If the sash fits fairly closely in the frame, the slide may remain partly within its socket **31**, only a part of the thickness of the slide moving out to press the slide against the surface of the runway; if the window fits loosely, however, the slide may move out as far as necessary, always lying in a plane and in a longitudinal line parallel to the sash frame, even when outside of its own socket **31**.

In order to use the units in a manner to permit removal of the sash without removing any part of the window frame each time, the sash frame is first cut away at each side to reduce the width of the sash relatively to the window frame. The lower sash **32** is cut away in such case so that its distance from the runway on each side of the window frame is one-half the thickness of the window-stop **36**, and is thus shown in the drawings (see Fig. 2); the upper sash would be cut away at each side equal to one-half the thickness of the parting strip **37**, but in the present drawing the upper sash is shown mounted for sliding movement only and accordingly is not cut away. For removable mounting, two units are then installed at each side of each sash, in the same manner as above described. In such case, however, the slides **10** have obviously a much greater range of movement, when the sashes are in place in the frame. It will be understood that this cutting away of the sash frames permits the sash (when also permitted by adjustment of my units) to be moved manually to one side or the other, thereby clearing the window-stop **36** or the parting strip **37**, as the case may be, and allowing the sash to be lifted into the room, without removing the stop, the parting strip, or any other portion of the window frame.

Ordinarily the screen stop **38** has a greater thickness or projection than the parting strip **37**, and the parting strip has a greater projection than the window-stop **36**. Should the width of the screen stop or the parting strip, as the case may be, in any unusual instance, however, be such that when the pressure of the slides against the runways is released or lessened to permit the sash to be brought into the room there seems to be danger of the same falling outward, or difficulty is experienced in avoiding such a falling out, the screen stop may be made a little wider than the parting strip by replacing the existing screen stop with a wider one, which then remains permanently in place; the parting strip should also be somewhat wider than the window stop, but as this is usually the case, no change is generally required to prevent any outward fall or difficulty in the case of the lower sash.

The operation of the device is as follows. When installed to permit removal of the sash as above mentioned, the sash is first removed from the window frame, for the purpose of cutting down the width. For this purpose, it will ordinarily be necessary to remove the stop **36** or the parting strip **37**, or both, which are afterwards permanently replaced. The necessary sockets are formed, and the units assembled and attached as above described.

The manner of installation for non-removable operation is the same, except for the omission of the cutting away of the sash.

The device is then adjusted by turning the screws, and in ordinary course of use remains in such adjustment. The sash is first replaced in the window, with the slides **10** sufficiently retracted to permit easy handling. To make the adjustment for use, the inner screw is turned in one direction or the other to adjust the position of the slide relative to the sash, and the outer screw **30** is turned to adjust the pressure of the spring **26**. The maximum clearance between the head of the screw **16** when placed within the small housing formed by the tongues **12**, is preferably about $\frac{1}{8}$ or $\frac{3}{16}$ of an inch. Assuming that the adjustment is started from a position in which the slide **10** is retracted, the inner screw is first turned clockwise until it feels free, that is to say, the head has passed out of contact with the brackets **12** and is not yet in contact wth the face of the body of the plate **10**. This leaves the spring **26**, within the cup **17**, free to push the brackets **12** and thereby the slide **10**, against the runway. If there is no feeling of friction, the outer screw is turned to adjust the pressure of the spring. If the inner screw then does not feel free, because the brackets moving outward may have come in contact with the head **25**, the inner screw **16** is again turned clockwise until it feels free.

When the proper adjustment of the screws with relation to each other and to the other parts has been obtained, the plate **10** will bear resiliently against the runway with sufficient force to hold the sash in adjusted position. This adjustment ordinarily remains unchanged, but can easily be changed at any time if conditions require it.

To remove the sash (if cut away as above described) it is usually only necessary to turn the inner screw with relation to the outer screw, which retracts the slide. Both screws may be turned if necessary, however. The sash is then pushed to one side of the window, which enables

it to clear the window stop (or the parting strip, as the case may be) on the other side, and it may then be conveniently lifted out, and after cleaning, painting, re-glazing, or any other purpose for which it was removed, has been accomplished, it is easily replaced, and the screws again adjusted to the correct relation.

As pointed out, the adjustment is made according to the desired feeling of free movement together with necessary pressure, and therefore requires no skilled carpenter or mechanic.

The units may also be utilized to lock a window on occasion, as for instance when closing a house for a winter or summer season. This is done by turning the inner screw clockwise so that the slide is firmly jammed against the runway, thus eliminating the normal resilient action. If this is done, any one of the units becomes practically a lock, and the security is increased by tightening all of the units on each window.

Should the sash bind, due to any irregularity in the runway, or due to weather conditions, etc., the inner screw is loosened by counter-clockwise rotation.

Many of the advantages of the invention have been referred to above, and further advantages will be readily apparent. In normal use, the units prevent rattling of the window, while at the same time permitting sliding movement; this is not the same effect as a wedge, but is due to the resilient action of the spring which urges the plate outward.

It will be understood that the embodiment herein illustrated and described is one example of my invention, but that I do not limit myself to the particular details of construction and operation which have been herein described and illustrated, as it is obvious that the same may be modified, within the scope of the claims hereof, without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is as follows:

1. A device of the character described, comprising, in combination, a member adapted to slide in a sash runway of a window frame, a sleeve screw-threaded internally and externally and adapted to be rotatably positioned in a sash frame of the window, a screw extending within and engaging said sleeve, means loosely connecting said screw to said sliding member, and resilient means between said connecting means and said sleeve for urging said sliding member away from said sleeve, whereby rotation of said inner screw relative to said sleeve and thereby to said sash controls the range of free movement of said sliding member relative to said sash and rotation of said sleeve controls the resilient outward pressure of said sliding member and its engagement in the runway to position the sash.

2. A device of the character described, comprising, in combination, a member adapted to slide in a sash runway of a window frame, a member adapted to be secured in a socket formed in a side frame of a sash of said window and having a threaded perforation therein, bearing means carried by said sliding member and having an opening for a screw, a sleeve internally and externally screw-threaded and passing through said perforated member, a screw having one portion extending through said sleeve and another portion extending within and loosely engaged by said bearing means, and resilient means urging said sliding member outwards from the sash to cause sliding frictional engagement thereof in said runway to position the sash: the construction being such that the position of said slide relative to said sash and the pressure of said slide in the runway may be controlled by rotating said sleeve and said screw.

3. A device of the character described, comprising, in combination, an elongated plate adapted to slide in a sash runway of a window frame, said slide having a pair of lateral wings extending at right angles to the body thereof and having also a pair of brackets formed from the body thereof and extending therefrom and their ends extending towards each other and having an opening therebetween for loose engagement of a screw, a cap adapted to be secured in a socket formed in a side frame of a sash of the window and of a size and shape adapted to fit over and enclose said wings and brackets, and means for resiliently adjusting the position of said cap with relation to said slide, comprising a sleeve internally and externally screw-threaded and engaging the perforation in said cap, a screw having one portion extending through said sleeve and its head lying between said brackets to form a loose connection with said slide, and a spring surrounding said screw intermediate the brackets and the top of the cap, said screw and said sleeve being adapted to extend through the sash frame to permit convenient rotational adjustment thereof from within the room.

4. A device of the character described, comprising, in combination, an elongated plate adapted to slide in a sash runway of a window frame, said slide having a pair of lateral wings extending at right angles to the body thereof and having also a pair of brackets formed from the body thereof and extending therefrom and their ends extending towards each other and having an opening therebetween for loose engagement of a screw, a cap adapted to be secured in a socket formed in a side frame of a sash of the window and of a size and shape adapted to fit over and enclose said wings and brackets, and means for resiliently adjusting the position of said cap with relation to said slide, comprising a sleeve internally and externally screw-threaded and engaging the perforation in said cap, a screw having one portion extending through said sleeve and its head lying between said brackets to form a loose connection with said slide, and a spring surrounding said screw intermediate the brackets and the top of the cap, said screw and said sleeve being adapted to extend through the sash frame to permit convenient rotational adjustment thereof from within the room, said sliding member being formed from a blank having portions bent to provide the said wings and brackets, the said brackets when formed being positioned between said wings and their adjacent ends being cut away to form the aperture for loose engagement with the screw, said brackets being shorter than said wings, and together with a washer positioned between said spring and said sleeve.

JAMES FRANCIA.