June 27, 1961 J. G. PERRY 2,989,773

ANCHOR FOR WINDOW BALANCER SPRING

Filed July 6, 1959

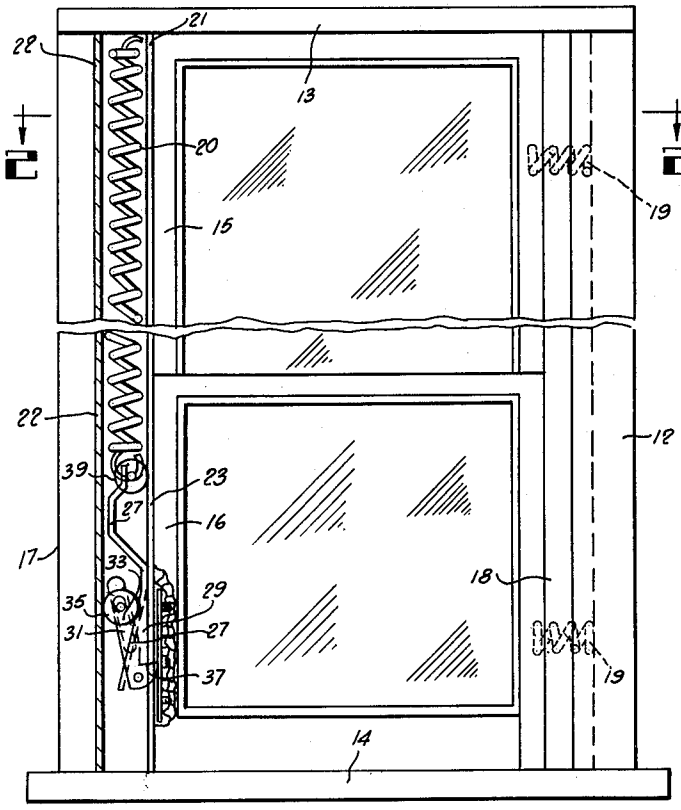


Fig. 1

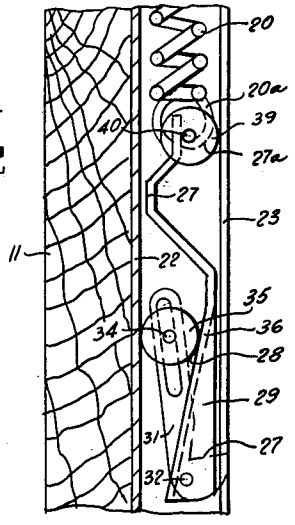


Fig. 4

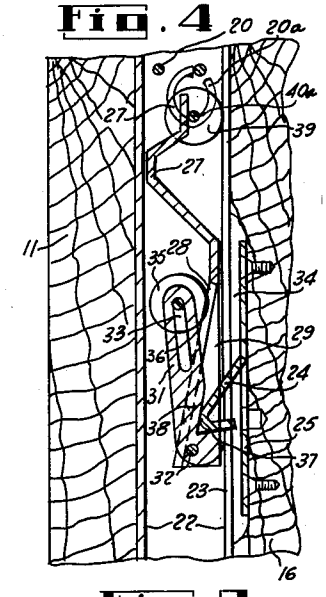


Fig. 3

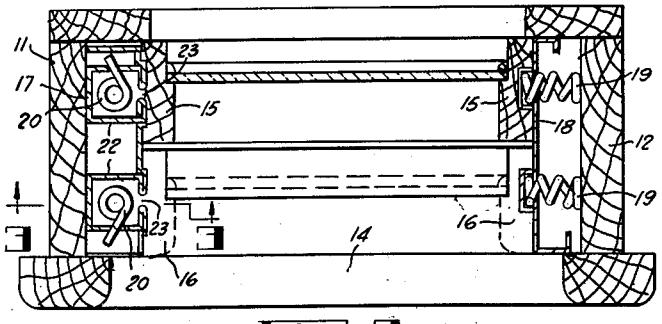


Fig. 2

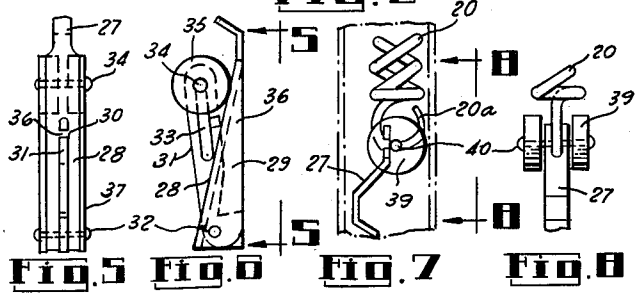


Fig. 5 Fig. 6 Fig. 7 Fig. 8

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ANCHOR FOR WINDOW BALANCER SPRING

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This invention relates to balancers for removable, double hung window sash, and has particular reference to an anchor, or stop, for preventing the balancer spring from violently contracting to the top of the window when a sash is removed.

It is the present practice, in the installation of removable, double hung window sashes, to suspend the sash on springs, or the like, which are concealed in suitable channels, formed as parts of the weather stripping construction. Such springs are now used in place of the weights, cords and pulleys, previously used in balancing the window sashes. One difficulty, however, in the use of the springs as balancers, resides in the fact that the spring has a tendency to violently contract, toward the top of the window, when the weight of the sash is removed from a spring. Various means have been devised to hold the springs against such contraction. Such means now known to the public have various shortcomings. For example, such means include the use of slidable members, which dig into the walls of the channels housing the springs, with the result that the inner walls of the channels soon become so damaged, that it is difficult for the members to travel freely in the channels, during the operations of raising or lowering the window sash.

Others have taught the use of rods, on the interior of the channels housing the springs, with wedging devices slidable on such rods, and impinging against the rods, to lock the ends of the springs against displacement. Such devices also are soon rendered inoperative, because the rods become damaged, and the slidable members get stuck on the rods and prevent the proper functioning of the window balancers.

It is, therefore, an object of this invention to obviate the foregoing difficulties, and to provide a catch, or stop for the end of the spring, which will not damage the interior of the channel, will have a softer action during the raising of the window sash, and will provide a wedging action, which will hold the end of the spring against violent contraction, when the weight of the sash is removable from the end of the spring. The device embodying the invention also enables me to use thinner metal, for the spring housing channel, because there is little, if any, wear on the metal during the operation of the device.

Another object of the invention is to provide a catch for a window balancing spring, which enables me to easily connect and disconnect the sash from the balancer, with absolute safety, and without any danger of having the catch being dislodged during the removal, or re-installation, of the sash.

Another object of the invention is to provide a device of the character indicated, which will automatically engage means provided on the sash, regardless of the fact that the sash is replaced in the frame at a higher, or lower level than the level from which it was removed.

Another object of the invention is to provide a roller mounted wedging device, which will firmly anchor the free end of the balancing spring, under any and all operating conditions, during the removal and replacement of a double hung sash.

The foregoing and other objects and advantages of the invention will become more apparent as the description proceeds, reference being made from time to time to the accompanying drawing, forming part of the within disclosure, in which drawing:

FIG. 1 is a front elevational view, with parts broken away, and parts in section, illustrating a removable, double hung window equipped with the device embodying the invention.

FIG. 2 is a section taken substantially on the line 2—2 of FIG. 1.

FIG. 3 is a section taken substantially on the line 3—3 of FIG. 2.

FIG. 4 is a section similar to FIG. 3, but showing the device after the sash has been removed and the balancer in locked position.

FIG. 5 is a fragmentary top plan view of the device embodying the invention taken on the line 5—5 of FIG. 6.

FIG. 6 is a side elevational view of the device shown in FIG. 5.

FIG. 7 is an enlarged fragmentary detail, illustrating a side view of the upper end of the device shown in FIG. 5, with a second pair of rollers in position and attached to the spring.

FIG. 8 is a view taken on the line 8—8 of FIG. 7.

Referring now more particularly to the drawings, it will be understood that in the embodiment herein disclosed, the reference characters 11 and 12 indicate the side jams, and the reference characters 13 and 14 indicate the top and bottom members, of a window frame, in which is hung the upper and lower window sash 15 and 16, which are weather stripped as at 17 and 18, the weather strip 18 being spring backed, as at 19, whereby the sashes 15 and 16 may be removed from the frame, 11—14, by compressing the springs 19, in order that the left side of the sashes 15 and 16, may be swung out of contacting position with the weather stripping 17 and free of the frame, 11—14.

The foregoing conventional construction does not constitute any part of the invention, except as combined with the other structures hereinafter described.

Each sash 15 and 16 is suspended on the end of a spring 20, which is secured at one end, as at 21, to the top of a metal channel member 22, which comprises part of the weather stripping 17.

Each channel 22 is formed with a slot 23, in which is arranged to travel a detent 24 (FIG. 3), carried by a plate 25, which is secured, as at 26, to the side edge of each sash 15 and 16. The detent 24 is intended to rest upon a portion of the locking device embodying the invention, which is mounted at the free end of the spring 20, as I will now describe.

The locking device embodying the invention is a simple stamping having a curved portion 27, which has an aperture 27A which engages a hook 20A formed on the lower end of the spring 20. The device also has a flat face 28, and tapered side walls 29, the edges 29A (FIG. 5) of which tapered side walls 29, when resting against the vertical walls of the channel 22, causes the flat face 28 to be inclined from the vertical as shown in FIGS. 3 and 4. The face 28 is slotted as at 30, FIG. 5 to accommodate an arm 31, which is pivoted as at 32, for movement in the slot 30. The arm 31 is slotted as at 33, FIG. 6, in which slot is mounted the axle 34 of a pair of rollers 35, which rollers are arranged to roll on the face 28. The arm 31 is also slotted, as at 36, to aid in assembling the pair of rollers 35 on the arm 31. The arm 31 is provided with a shoulder 37, which is intended to receive the detent 24 as shown in FIG. 3. It will be noted that the detent 24, FIG. 3, has an inclined portion 38, which permits it to ride around the lower end of the arm 31 in the event that the window sash is replaced at a level where the detent 24 would be below the end of the arm 31. Under such a condition it would only be necessary to lift the sash 16 until the detent 24 passed about the shoulder 37, whereupon the weight of the sash could then be brought downwardly to bear on the shoulder 37, in which condition the sash could then be raised and lowered in its normal balanced condition, at the end of the spring 20.

In order to prevent the spring **20** from dragging on the channel **22** during the raising and lowering of the sash, I provide a pair of rollers **39**, which have an axle **40**, which also engages the hook **20A** at the lower end of the spring **20**. The rollers **39** hold the spring **20** away from the channel **22** when the sash load is on the end of the spring.

In operation the device embodying the invention would normally be in the position shown in FIGS. 1 and 3, when the sash is in the frame, and the balancing spring **20** is in operation as shown. However, as the sash **16** is being removed from the frame, **11—14**, the weight of the sash, carried by the detent **24**, will be released from the shoulder **37** on the arm **31**, thereby upsetting the balance on the spring **20**. The spring **20** would then have the tendency to contract violently, moving the device **27—37**, embodying the invention, upwardly. At the instant the weight of the sash is removed from the shoulder **37**, the arm **31** will rock on the pivot **32**, under the weight of the rollers **35**, causing the free end of the arm **31** (FIG. 4), to swing to the left. At the same time, the inclined face **28** of the device will be moved upwardly under the influence of the spring **20**, thereby causing a wedging action, putting the rollers **35** in contact with the face **28** and the side of the channel **22**. The pressure on the spring **20** is such that the wedging action is almost instantaneous, when the weight of the sash is removed from the shoulder **37** of the arm **31**; the wedging action just described will automatically lock the device and the end of the spring **20**, from any appreciable upward movement.

The sash **16** may be re-installed in the frame **11—14**, by the reverse action, and after the sash **16** is returned to the frame **11—14**, it may then be adjusted upwardly or downwardly, whichever is necessary to bring the detent **24** into active engagement with the shoulder **37**. When the weight of the sash again rests on the end of the arm **31**, the spring **20** will expand, thereby lowering the device sufficient to release the wedging action and again placing the sash and spring **20** in balance, so that the sash may again freely move up and down in the frame **11—14**, under a balanced condition.

It is believed that the operation of the device is obvious from the foregoing description.

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

1. An anchor for a removable sash balancer spring positioned in the channel of a window weather strip, comprising a body member having an angular extension for attaching said spring, a flat front face and a pair of rearwardly directed triangular walls on said body, said flat face having a longitudinal slot therein, in which is positioned an arm arranged for pivotable movement, said arm having an upturned hook-like projection for receiving the weight of the said sash, a slot in said arm in which is positioned the axle of a pair of rollers, said rollers being arranged to wedge between said front face and an adjacent wall of said weather strip, to anchor the lower end of said spring against upward movement, when the weight of said sash is removed from said arm projection.

2. The structure of claim 1, in which said angular extension on said body member is provided with spacers for holding the lower end of said spring away from the weather strip during the raising and lowering of said sash.

3. The structure of claim 1, including a detent on said sash for engaging the hook-like projection on said arm during the downward movement of said sash, said detent having an inclined face which deflects said hook-like projection on said arm during the upward movement of said sash.

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