

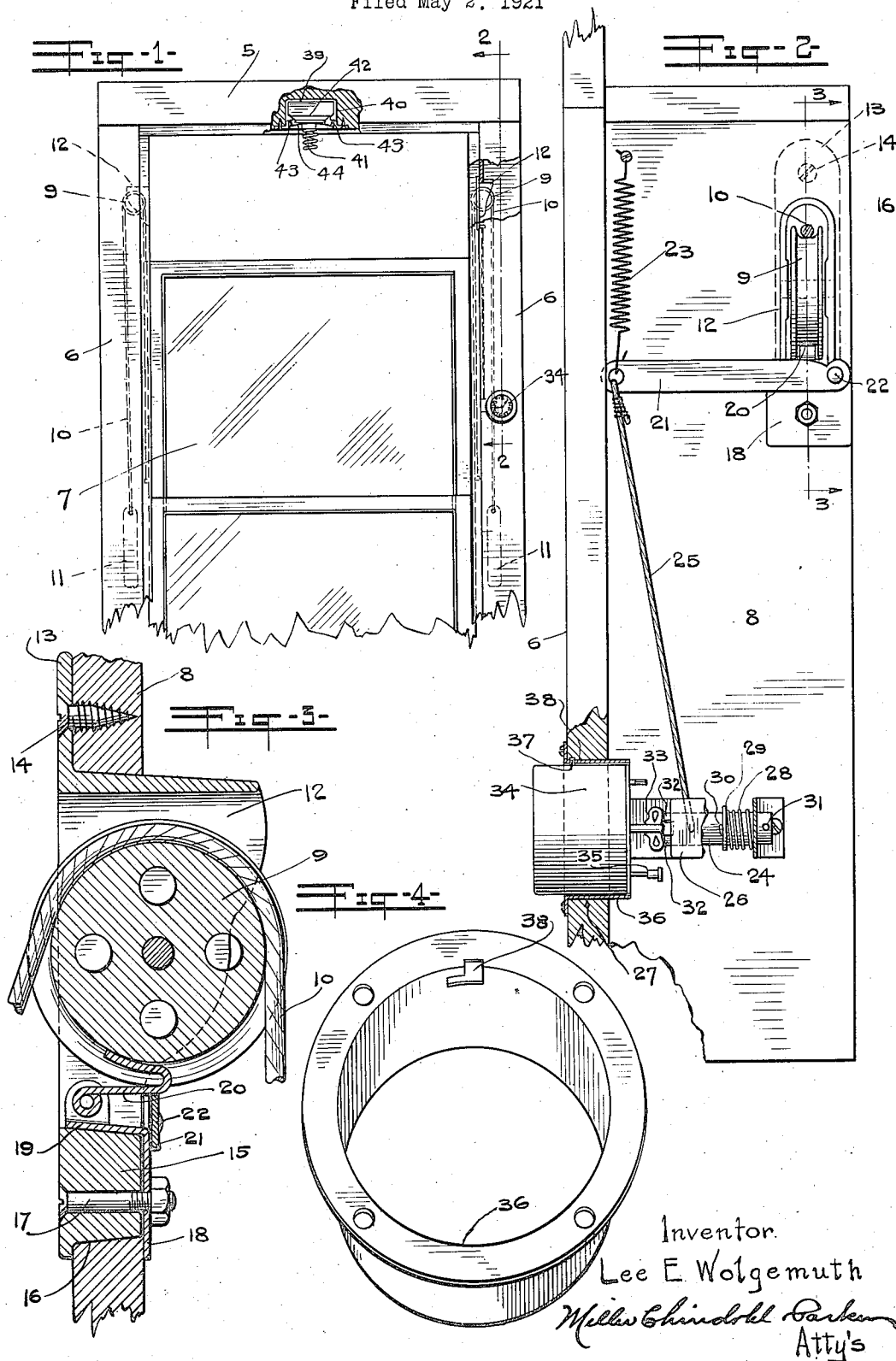
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L. E. WOLGEMUTH

WINDOW CLOSING DEVICE

Filed May 2, 1921



Inventor.
Lee E. Wolgemuth
William Chindoch Parkes
Atty's

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LEE E. WOLGEMUTH, OF CHICAGO, ILLINOIS, ASSIGNOR TO SEARS, ROEBUCK AND CO.,
OF CHICAGO, ILLINOIS, A CORPORATION OF NEW YORK.

WINDOW-CLOSING DEVICE.

Application filed May 2, 1921. Serial No. 466,052.

To all whom it may concern:

Be it known that I, LEE E. WOLGEMUTH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Window-Closing Devices, of which the following is a specification.

This invention relates to window closing devices and particularly to devices of this character contained entirely within the window casing and operable from the side of the window to hold the window in its adjusted open position and thereafter at a predetermined time to release the window and permit it to move to closed position by propelling means mounted within the casing, a device being also provided preferably to cushion the impact of the window with the casing at the limit of its travel.

The principal object of this invention resides in the provision of a simple improved device of this kind, capable of producing the above-mentioned results, which consists of a comparatively small number of parts and which can be connected to the window by attachment in the casing without necessitating the removal of more than the finishing boards on the sides of the window casing.

Another object is to provide a device of this kind which operates entirely on one side of the window so that it may be easily installed and operated.

Further objects, advantages and uses of the invention will become apparent as the following detailed description progresses, reference being had to the accompanying drawing wherein Figure 1 is a front elevation of a window equipped with an automatic closing device embodying the novel features of this invention, certain portions of the window casing being broken away to reveal parts of the closing device and impact cushioning device contained within the casing. Fig. 2 is a vertical cross section on an enlarged scale of a part of the window casing, this view being taken on line 2—2 of Fig. 1. Fig. 3 is a vertical cross section, on an enlarged scale, taken on line 3—3 of Fig. 2, and Fig. 4 is an isometric detail of a socket element provided in a side face board of the window casing to receive the clock for operating the closing device.

In the four views the same reference numerals are used to indicate the same parts

and the sectional details are taken looking in the directions indicated by the arrows.

Referring to the drawings, the reference numeral 5 represents the window casing having finishing face boards 6 on opposite sides of a sash 7 which is movable between the usual beads in the sides 8 of the casing. A pair of sheaves 9 are fastened in the casing, and ropes or cables 10 pass over the sheaves and connect weights 11 with the window sash. In this embodiment of my invention these weights together are somewhat heavier than the window so that they are quite sufficient in themselves to lift the sash to closed position. The sheaves 9 are rotatably mounted in brackets 12 in the usual manner in the sides 8 of the casing. On one side of the window the bracket 12 is of a special construction, as illustrated in Fig. 3. It consists of an ear 13 at one end apertured to receive a screw 14 and at the opposite end an enlarged lug 15 having a depending lip overlying the lower edge of the opening 16 cut in the side of the casing to receive the bracket. The lug 15 is apertured to receive a small bolt 17 which receives a nut on the inner side of a plate 18 and thereby holds the lower end of the bracket in place. Plate 18 overlies the inner edges of the opening 16 and has an extension 19 to which is hinged a shoe 20 lying between the flanges of the sheave 9. A locking lever 21 is pivoted to the plate 18 on a stud 22 and passes beneath the shoe 20 and receives in an opening in its free end the hooked end of a tension spring 23 which is secured to the side 8 of the casing on the inside. This spring urges the lever normally upwardly to hold the shoe 20 in engagement with the sheave 9 to prevent rotation thereof.

The free end of the lever 21 is also connected to a drum or spindle 24 by means of a wire or cable 25. The drum 24 is mounted for rotation in a U-shaped bracket 26 secured to the side 8 of the window casing on the inside adjacent a circular opening 27 cut in one of the finishing face boards 6. The drum is slightly movable lengthwise in the bracket 26 and is urged forwardly toward the opening 27 by a compression spring 28 acting in back of a washer 29 which is prevented from lengthwise movement on the drum 24 by a pin 30 passing through the drum. A stop pin

31 on the outside of the bracket limits the movement of the drum. The forward end of the drum is notched to provide a pair of spaced lugs or jaws 32 which are adapted to receive between them a rigid key 33 which is the alarm key for the clock 34. This clock is of that type commonly known as alarm clocks wherein the alarm key, by means of which the alarm is wound, is rotated when the clock mechanism associated therewith has operated to advance the hour hand to the point selected by the setting of the set stem represented in the drawing at 35. This clock, however, has no audible alarm mechanism associated with the alarm wind stem which carries the key 33 so that there is no alarm sounded when the key 33 is rotated at the predetermined time fixed by the setting of the stem 35.

A socket member 36 is preferably fitted in the opening 27 and receives the clock 34 which carries a pin 37 projecting from its side and received in a bayonet slot 38 formed in the member 36. The clock, after the alarm key is wound four or five turns and the stem 35 properly set, is entered into the socket so that the pin 37 engages in the slot 38 whereupon a further inward and rotary movement locks the clock in position. The operator need not concern himself about positioning the key 33 with respect to the notch in the drum. He inserts the clock substantially as illustrated in Fig. 2 and the key may assume a position transverse to and out of engagement with the notch in the drum as shown. The inward movement of the clock in inserting the same moves the drum inwardly against tension of its spring 28 which thereupon tends to move the same outwardly so that when the key 33 rotates as the alarm unwinds the drum clutches the key so as to be rotated therewith. The wire 25 is wound upon the drum 24 and thus moves the lever 21 down to release the shoe 20. When the shoe is released the sash 7 is free to move upwardly, which it does under propulsion of its weights 11.

It will be understood further that so far as the present invention is concerned it is immaterial whether the device is fitted to an upper or lower sash. The application to an upper sash is in most instances more practical and desirable. Where the device is applied to a lower sash the sash is preferably underweighted so that it will tend of itself to move by gravity from its set position to closed position when released.

When the window is fully open or is set at a point midway open, for example, it will when released gain considerable momentum by the time it approaches its closed position. This is especially noticeable where the sash fits loosely in its casing. The impact of the sash with the upper

end of the casing would under such conditions occasion considerable noise besides perhaps injuring the casing or sash, or even breaking the pane of glass in the window. To take care of this contingency an impact cushioning device 39 is preferably provided. The device 39 is only diagrammatically illustrated inasmuch as any cushioning means suitable for the purpose might be used. Excepting as this device cooperates in the novel combination herein disclosed it forms no part of the present invention, but is described and claimed in the copending application of Ralph H. Kingdon, Serial No. 470,041, filed May 16, 1921.

Briefly the device comprises a housing 40 forming a socket in the upper end of the casing. A compression spring 41 projects downwardly through an opening in the bottom wall thereof into the path of the sash 7, and is secured to a channel frame 42 movable in the housing 40 in which are mounted a pair of dogs 43. These dogs are adapted to engage projections on the side walls of the housing 40 when the sash 7, with considerable momentum, engages the spring 41, the dogs being associated with an inertia element which urges them apart into engagement with the projections against tension of an underlying leaf spring 44 normally holding them upwardly out of the path of the projections. The spring 41 after having been compressed to break the force of the impact expands again and moves the sash downwardly a short distance, whereupon the aforesaid dogs are retracted by the leaf spring 44 and moved out of the path of the projections so that the window on its return closes, pushing the spring, frame and parts mounted therein upwardly into the housing 40.

The operation of the device will have become apparent from the foregoing description. The clock 34 is removed from its socket to be wound and set. This is usually done by the operator when he retires for the night. He pulls the window down the desired distance at that time and winds, sets and replaces the clock. He, of course, sets the clock for a time, say one hour before rising, so that the window will close at that time and permit the room to become heated to a comfortable degree by the time he must be about. He may, if desired, have a second clock to provide an audible alarm to awaken him, say an hour after the window closes.

The wire 25 is of course wound partly upon the drum 24 by the time the spring on the alarm has spent its energy. The spring 28 under all circumstances prevents possible slippage of the clutch provided by the jaws 32, and when the clock 34 is removed at a subsequent time for another winding and setting, the spring 23 retracts the lever 21 and at the same time unreels the wire 25

from the drum. The spring under these and all other operating conditions places a slight drag on the drum and thus secures smooth and noiseless operation thereof.

From the foregoing it will be seen that the invention provides an especially serviceable device of this character, the installation of which is a comparatively simple matter and that because of the very few parts required the device can be manufactured very cheaply. It will be understood that although certain elements in particular arrangements are herein shown, these elements and the arrangements thereof are merely illustrative and may be varied within wide limits without departing substantially from the spirit and scope of the appended claims.

I claim as my invention:

1. In a window closing device the combination with a window casing, a window movable therein, means adapted normally to move said window to closed position, comprising weights heavier than said window operating within said casing, sheaves in said casing, and flexible means connecting said weights and said window, releasable means for holding said window fixedly in open position comprising a shoe hinged adjacent a sheave and normally out of engagement therewith, and a lever passing beneath said shoe pivoted at one end to the casing and provided at its opposite free end with a spring normally urging said lever upwardly to cause frictional engagement of said shoe and sheave to prevent rotation of the latter, means for controlling the operation of said last mentioned means comprising a drum mounted in said casing, flexible means connected to the free end of said lever and adapted to be wound on said drum to release said shoe, and means adapted to rotate said drum at a predetermined interval.

2. In a window closing device the combination with a window casing, a window movable therein, said window being adapted when free to move to one end of said casing, releasable means for holding said window stationary comprising a shoe adapted to engage a window sheave and normally out of engagement therewith, and a lever passing beneath said shoe and provided with means for normally urging said lever upwardly to cause engagement of said shoe and sheave to prevent rotation of the latter, and means for controlling the operation of said last mentioned means.

3. In a window closing device the combination with a window casing, a window movable therein, said window being adapted when free to move in a predetermined direction, releasable means for holding said window in adjusted position comprising a shoe adapted to engage a window sheave and a lever for operating said shoe, said lever being provided with means to urge

said shoe normally into engagement with said sheave to prevent rotation of the latter, means for controlling the operation of said last mentioned means comprising a drum mounted in said casing, flexible means connected to the free end of said lever and adapted to be wound on said drum to release said shoe, and means adapted to operate at a predetermined interval to rotate said drum.

4. In a window closing device the combination with a window casing, a window movable therein, said window being adapted normally to move in one direction, releasable means for holding said window in adjusted position comprising a shoe adapted to engage a window sheave and means normally urging said shoe into engagement with said sheave to prevent rotation thereof and means for controlling the operation of said last mentioned means.

5. In a window closing device the combination with a window casing, a window movable therein, means for moving said window to closed position comprising weights operating in said casing, window sheaves, and means connecting said weights with said window, releasable means engaging one of the sheaves for holding said window in any open adjusted position, and devices for controlling the operation of said last mentioned means comprising means adapted to operate at a predetermined interval to cause the release of said last mentioned means.

6. In a window closing device the combination with a window casing, a window movable therein, said window being adapted normally to move toward one end of said casing, releasable means for holding said window in adjusted position comprising a shoe adapted to engage a window sheave and means normally urging said shoe into engagement with said sheave to prevent rotation of the latter and devices for controlling the operation of said last mentioned means comprising a drum, means adapted to be wound on said drum to cause the release of said shoe and means adapted to be operated at a predetermined interval to cause the rotation of said drum.

7. In a window closing device the combination with a window casing, a window movable therein normally to closed position, releasable means for holding said window in adjusted position, comprising a braking element adapted to control the operation of a window sheave and means normally urging said element into operative position to prevent rotation of the latter, and devices for controlling the operation of said last mentioned means.

8. The combination with a window casing and an overweighted window mounted therein adapted normally to move upwardly

to closed position, of means mounted within said casing and controllable at one side outside thereof adapted to be interposed between said window and its operating means to hold said window stationary in any desired position, and devices adapted to be operated at a predetermined interval to control the operation of said last mentioned means.

10 9. In a device of the class described, the combination with a window casing and a window movable vertically therein, of means for automatically moving said window in a predetermined direction comprising a weight disproportionate to the weight of said window operating in said casing, a sheave mounted in said casing, releasable means engaging the sheave frictionally to

prevent rotation thereof thereby to prevent said window moving, and devices capable of being operated at a predetermined interval to cause the release of said last mentioned means.

10. In a window closing device, the combination with a window casing, a window mounted therein and adapted normally to move to a closed position, means positioned within said casing operable to frictionally hold said window in any adjusted position, and means mounted in said casing and operable at a predetermined time to render said first-mentioned means ineffectual.

In testimony whereof, I have hereunto set my hand,

LEE E. WOLGEMUTH.