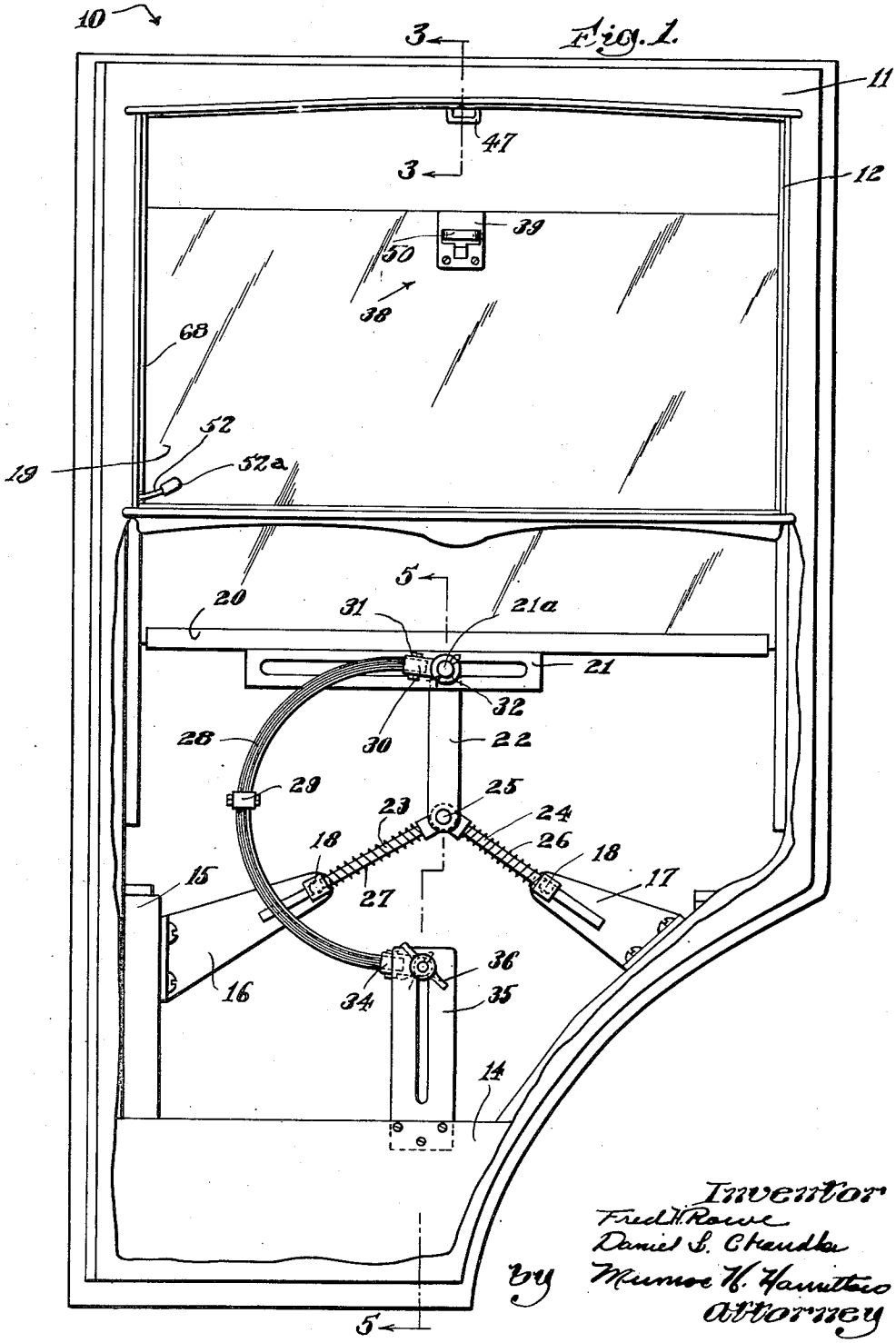
Aug. 10, 1937. F. H. ROWE ET AL 2,089,712

WINDOW CONTROL FOR DOORS

Filed May 24, 1935 2 Sheets-Sheet 1

Fig. 1.




Inventor
Fred H. Rowe
Daniel S. Chandler
by Munroe H. Hamilton
Attorney

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Filed May 24, 1935 2 Sheets-Sheet 2

Fig. 2.

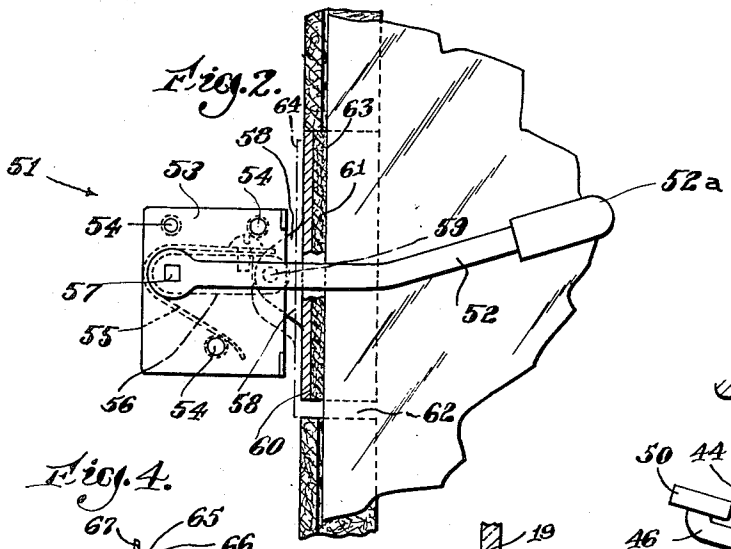



Fig. 3.

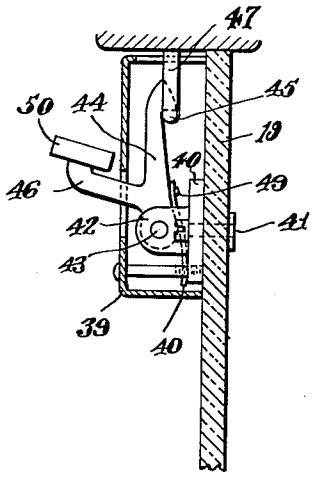
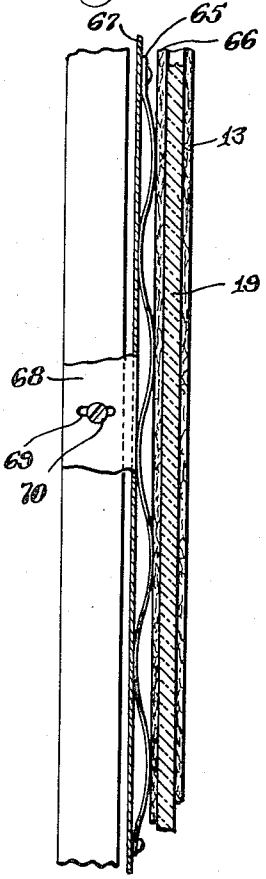



Fig. 4.



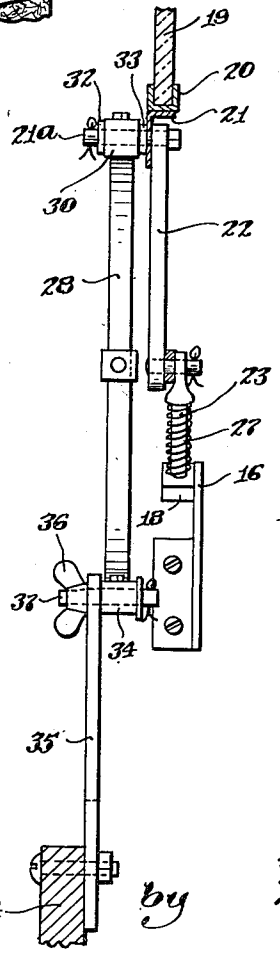




Fig. 5.

Inventor
Fred H. Rowe
Daniel L. Chandler
Merner H. Hamilton
by
Attorney

Patented Aug. 10, 1937 2,089,712

# UNITED STATES PATENT OFFICE

2,089,712

## WINDOW CONTROL FOR DOORS

**Fred H. Rowe, Gloucester, and Daniel L. Chandler, Somerville, Mass., assignors, by direct and mesne assignments, of thirty per cent to said Rowe and fifteen per cent to Edwin M. Bailey, Swampscott, Mass., twenty per cent to William H. Davis, Lynn, Mass., ten per cent to Henry W. Montague, Suffolk County, Mass., three per cent to Harry C. Batchelder, Peabody, Mass., ten per cent to Eugene B. Fraser, Lynn, Mass., and twelve per cent to Thomas H. Richardson, Brookline, Mass.**

**Application May 24, 1935, Serial No. 23,280**

**5 Claims. (Cl. 16—197)**

Our present invention relates to a window control for doors, and more particularly to an automatic control for windows in automobile doors or the like. The device is designed to eliminate the present mode of control which necessitates a winding mechanism for either raising or lowering the windows and has further been provided with structure which will tend to eliminate certain undesirable pinching effects which occur when the felt liner in which a window is recessed, is swelled or otherwise deformed, such as from wear and the like. Our device is provided with means for directly pulling the window downwards with a very little amount of force being required and has an automatic spring mechanism with a lever control which automatically lifts the window up into any desired position.

Also certain adjustments are possible for meeting certain conditions of size and wear and the simple construction of the device make possible a cost of manufacture favorably to be compared with conventional arrangement.

The principal object of our invention therefore, is an improved window control for doors.

Another object is a structure in a device of this character providing for direct manual lowering of a window.

Another object is a structure for automatically raising a window of such a device, to any desired point.

Still another object is an adjustment structure for regulating free passage of the window in its slideways.

And a still further object is a spring adjustment for regulating the speed of raising or lowering said window and for adapting said window control to various sizes of automobile doors.

Other objects and novel features comprising the construction and operation of our invention, will appear as the description of the same progresses.

In the drawings illustrating the preferred embodiment of our invention,

Fig. 1 is a view showing the inside of an automobile door with the lower portion cut away to reveal our device associated therewith.

Fig. 2 is an internal cross section taken through one side of the door frame and enlarged to more clearly illustrate control mechanism for our device.

Fig. 3 is a cross section taken on the line 3—3 of Fig. 1, with the only difference being that the cross section has been taken when the window is in a fully closed position and is intended to illustrate the locking mechanism for said window.

Fig. 4 is a cross section showing the inner edge at one side of a door frame with the glass and felt member located thereagainst, being shown in cross section and more particularly illustrating a reversely curved flat spring adjustment member.

Fig. 5 is a cross section taken on the line 5—5 of Fig. 1.

Referring more in detail to the drawings, **10** indicates generally an automobile door with which our device has preferably been shown associated. It should be understood that we intend to apply the present form of window control with various types of doors and also other construction where windows are mounted, but for present purposes the description herein will be confined to an automobile door with the present one shown in Fig. 1, comprising a rear door having a frame, which is constructed with recessed slideways **12**, which are lined with felt strips **13** in the conventional manner.

In the lower portion of the door **10**, we have solidly located a block member **14**, which may be constructed of wood or some other solid material, upon which is supported in a rigid manner, a standard **15**, to which has been securely bolted a lug **16**. Similarly at the other side of the door along its curved portion a second lug **17**, has been bolted and the two are angularly disposed toward each other and have located at their end portions, pivotally disposed bearing blocks, secured through said lugs **16**, and **17**.

The lower edge of the window **19**, has been provided with a channeled strip **20**, which is securely fixed thereto and has suspended from its middle portion a slotted plate **21**. The plate **21**, in turn suspends a strap **22** in a horizontally adjustable manner in the said slot by means of a pin **21***a*, and it should be noted that the location of the pin **21***a* and rocker arm **30** may be adjustably fixed in the slotted plate **21**, at any given point by means of a nut **33**. At the lower extremity of the strap **22**, we have pivotally pinned two rod members **23** and **24**, provided at their upper ends with bearing portions which rotate about the pin **25**. About the rods **23** and **24** are located coiled

springs 26 and 27 and the rods have their lower extremities entered through the pivoted bearing blocks 18, in such a manner that the coil springs 26 and 27 are held thereagainst.

28 indicates a laminated spring member made up of a plurality of flat strips which are yoked together at 29. The upper end of the laminated spring 28 has its extremity secured in the rocker arm 30, by means of a bolt 31, with the rocker arm 30 having its inner extremity pivotally secured about the pin 21a between a washer 32 and the nut 33. The outer members of the laminated spring assembly 28 will be the longest, with those at the inner sides gradually shortening a very little to provide for change of position therein. The lower end of the laminated spring 28, is similarly secured in a rocker arm 34, and the arm itself is again adjustably secured at the top of a slotted upright member 35, by means of pin 37. The lower end of the upright 35 has been bolted to the base 14. Rocker arm 34 may be adjustably positioned in a secure manner at any point in the upright 35 by means of loosening the set screw, 36. It should be noted that these adjustments at the ends of the laminated spring 28, comprise means for performing two functions. One function is that the given laminated spring 28 may be used for various sizes of doors with the present modification shown in Fig. 1, intended to comprise the largest size of door with which it would be desirable to incorporate our spring. The other function being that by varying the distance between the two extremities of the laminated spring, it is possible to increase or decrease the amount of pressure brought to bear against the window and thereby, the speed of the window, assuming that it rises against a given frictional force, may be increased or dropped down, as desired.

In Figs. 1 and 3, we have illustrated a combined handle and locking device indicated by the arrow 38, which comprises a box member 39, which is pinned to a retaining plate 40, solidly located against the window 19 and held by means of pin 41. Retaining plate 40, has been constructed at one side thereof with a horizontally protruding lug portion 42, and through the lug portion 42, has been pinned at 43, a dog member 44, which is formed with an engaging head 45 and a handle portion 46. The dog 44, is adapted to engage through a U member 47 suspended from the top of the door frame and which protrudes downwardly into the box 39, when the window 19 is in a closed position. Fig. 3 illustrates the normal position of the dog 44, with respect to the U 47, when the window is closed and further illustrates a spring member 48, pinned apainst the plate 40 and bolted to the dog at 49, to the effect that a downward pressure against the cap portion 50 of the handle 46, will spring the dog back out of engagement with the U member 47, thereby allowing the window to be pressed downward.

In Figs. 1 and 2, we have illustrated a control mechanism generally indicated by the numeral 51, for the laminated spring and rod assembly previously discussed. Internally recessed in the door frame is a rectangular plate 53, which is provided with studs 54. Located around the lower one of these studs 54, is a flat spring member 55 which passes upward and around the end of a squared shaft 52 compressibly retaining same and having its extremity bolted to a plate member 56 which in turn has its outer end pinned at 57 to the plate 56 and the other end pivotally secured in a trunnion 58, by a pin 59. The trunnion 58, is solidly secured to a section 60, of the metal door frame to which of course, in turn is attached a felt strip section 61. It will be observed that the lower portion of the metal section 60, has been cut away to leave an opening 62 and likewise it will be observed that the edge of the felt section 61 protrudes inwardly beyond the normal retaining edge of the slideways, as at 63. This indicates the closed position of the control with the felt member firmly engaged against the edge of the window 19 and preventing upward movement by friction.

We have further indicated in dotted lines the position which the metal section 60 will take when the squared shaft 52 is pressed downward at the broken line 64 when it will appear that the sections 60 and 61 will move inwardly and downwardly, so that the space 62 is filled up and the felt section 61 has been withdrawn from the edge of the glass 19, thereby, resulting in a normal slideway at all other points for the passage up and down of the window. Squared shaft 52 comprises a handle and has been shown with a cap 52a, although cap member 52a will preferably take the form of a button.

In Fig. 4, we have shown a window and felt slideways engaged in a door frame with only one side of the door frame appearing.

We have provided means for adjustably maintaining the felt member against the glass. These means comprise a reversely bent flat spring 65 located between the felt 66 and a metal frame 67. The metal frame 67 comprises a right angularly bent edge of the panel finish 68. Through the panel 68, at various points along its surface up and down, we have provided elongated slots 69, through which passes adjustment screws 70. It may be readily seen, that by loosening the screws 70, and forcing the panel slightly inwardly the metal edge 67 will compress the flat spring 65 against the felt 66 to provide snugger contact of said felt with the glass and if the opposite of this feature is desired, a more loosely contacting felt surface may be had by slightly impelling the edge 67 in against the frame.

In operation, assuming the window is in a closed position, as shown in Fig. 3, the operator will press downward on cap 50, releasing the lock and pushing the window down into any position desired, with the laminated spring mechanism being compressed upon itself and the control mechanism shown in Fig. 2 acting to maintain the glass against upward movements at any of the positions through which it passes. When it is desired to raise the window all that is necessary is for the operator to press downward on the button 52a, shown in Fig. 2, and the control mechanism will release the sections 60 and 61, providing a clear slideway, while the laminated spring assembly and rod assembly will provide the necessary force to raise the window upward at a given rate of speed. Attention is directed more particularly at this time to the particular mode of spring lifting mechanism. In the operation of the window lifting mechanism, as shown in Fig. 1 of the drawings it will be noted that the laminated spring 28 compresses as the sash is lowered and consequently the pressure required to force the sash down increases more and more as the sash is lowered. At a certain position in the downward movement of the sash the springs 26 and 27 straighten out so that their major axes are in the same plane and a further downward movement of the sash reverses the angle

of the major axes of the springs 26 and 27, as shown in Fig. 1 to the effect that the increased pressure required to compress the laminated spring 28 is lessened. When the window sash is raised, as shown in Fig. 1, the reverse takes place. As the laminated spring 28 straightens out it exerts less lifting force on the window sash but is compensated for by means of the springs 26 and 27. By properly designing the structure and spring strength a uniform pressure on the window sash is maintained throughout its travel.

While we have shown in more or less detail, the construction of our device, it is to be understood that various modifications in the construction thereof are intended in the keeping of the spirit of our invention.

Having thus described our invention, what we claim is:

1. A compensating spring assembly for raising a window in a frame comprising a support member engaged with the lower edge of said window, a depending portion rigidly secured to said support member, rod members pivotally engaged with said depending member at their upper ends and provided with springs located there around, the lower ends of said rod members being slidably engaged through pivot members supported from the sides of said window frame, a laminated spring having one end pivotally engaged with said supporting member and having its lower end pivotally fixed at a supporting point extending upward from the bottom of said door frame.

2. A window lifting mechanism adapted to be located in the lower most portion of a casing for the said window, comprising a flat spring member having one end associated with the lower edge of said window and having the other end secured in the bottom of said casing, depending swiveled rod members, provided with coil spring members located there around, associated with said window and having their outer ends rotatively journaled at either side of said casing.

3. A sliding window elevating mechanism comprising in combination, a plurality of bunched flat springs anchored to the bottom of a window frame in which said window is slidably mounted, the upper ends of said springs being secured to the bottom edge of said sliding window, rods pivoted to said window at their upper ends, the lower ends of said rods being journalled in rotatable guide members mounted upon angularly disposed brackets attached to said window frame, compression springs surrounding said rods between their pivoted and journalled ends.

4. Elevating mechanism for sliding window sashes comprising in combination, a U shaped flat spring one end of which is anchored to the frame of said window and the other end of which is pivoted to the lower edge of said window sash, compensating coil springs surrounding rod members the lower ends of which are journalled in pivoted guide members attached to the two lower opposite sides of said window frame, the tops of said rod members being angularly disposed to each other and having a common pivot point attached to the bottom edge of said sash.

5. Elevating mechanism for sliding window sashes comprising in combination, pivoted rod members attached to the bottom of said sash, the free ends of said rods being journalled in pivoted guide members attached to the frame of said window, compression coil spring members surrounding each rod member between the pivoted end and guide member, a flat spring member also pivoted to the bottom of said sash the bottom end being anchored to the lower portion of said window frame.

FRED H. ROWE.
DANIEL L. CHANDLER.