May 12, 1925. 1,537,223

A. R. CLAS

WINDOW CONTROL MECHANISM

Filed Sept. 24, 1923

Fig 1

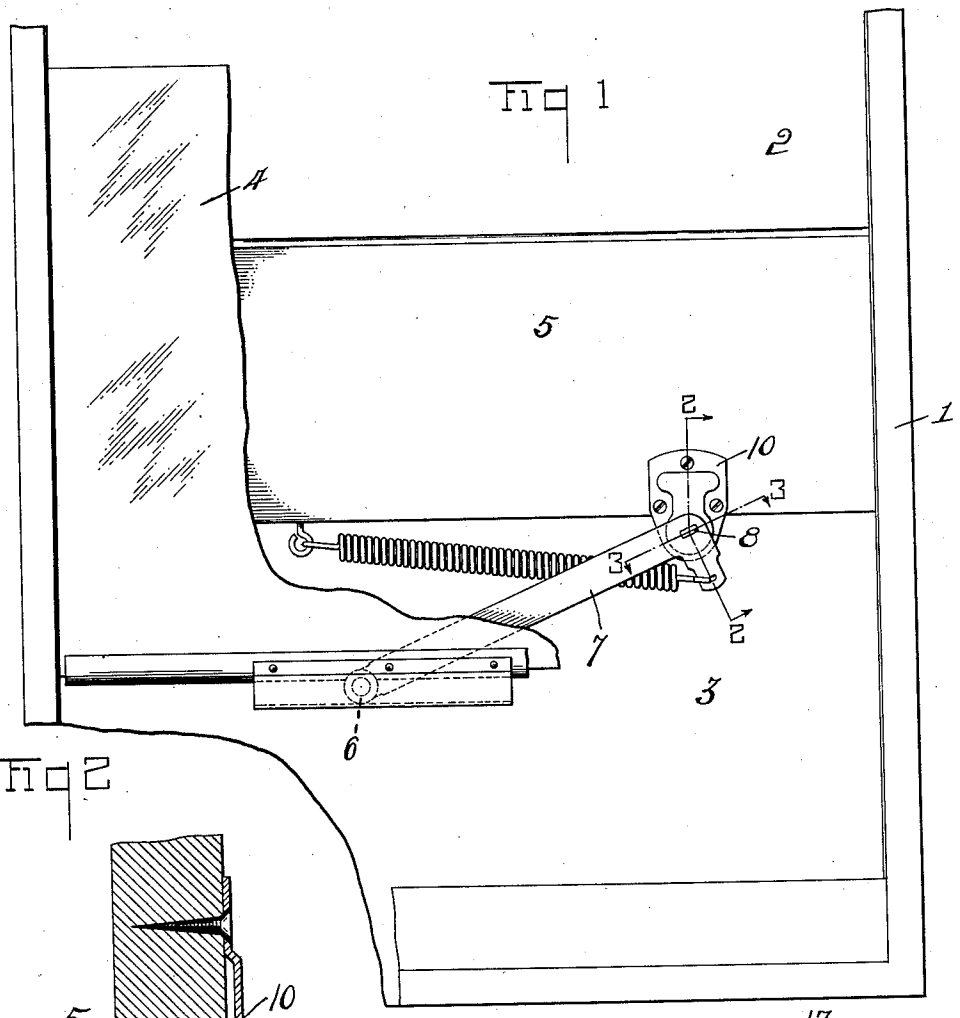


Fig 2

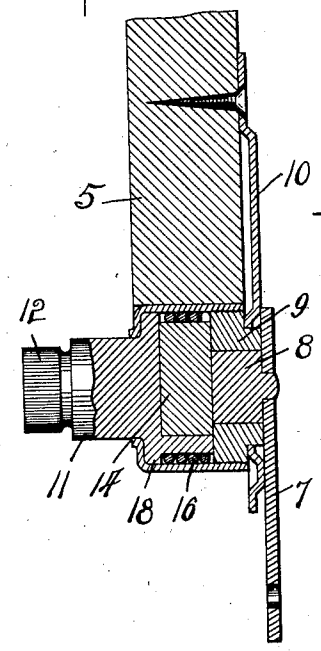


Fig 3

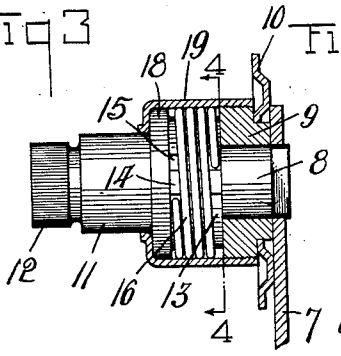
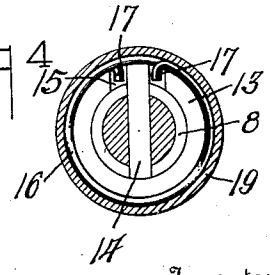


Fig 4



Inventor

Angelo Robert Clas.

By Awn Awn & Crampton.

Attorneys.

Patented May 12, 1925. 1,537,223

UNITED STATES PATENT OFFICE.

ANGELO ROBERT CLAS, OF TOLEDO, OHIO, ASSIGNOR TO THE TOLEDO AUTOMOTIVE PRODUCTS COMPANY, A CORPORATION OF OHIO.

WINDOW-CONTROL MECHANISM.

Application filed September 24, 1923. Serial No. 664,354.

To all whom it may concern:

Be it known that I, ANGELO ROBERT CLAS, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Window-Control Mechanism, which invention is fully set forth in the following specification.

This invention relates to window raising and lowering mechanisms of the type commonly used in automobiles and more particularly to a locking means therefor.

The primary object of the invention is the provision, in combination with the power or control shaft of a mechanism of the class described, of a simple, efficient and compact means in connection with said shaft, which means is adapted to permit a manual raising or lowering of the associated member through the control mechanism and which prevents any opening movement of the window member by pressure applied therethrough.

The invention is fully described in the following specification, and while, in its broader aspect it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Fig. 1 is a fragmentary outer side elevation of a window frame and its window member equipped with the invention and with the window member in partly lowered position. Fig. 2 is an enlarged section on the line 2—2 in Fig. 1. Fig. 3 is an enlarged section on the line 3—3 in Fig. 1, with parts in full, and Fig. 4 is a section on the line 4—4 in Fig. 3.

Referring to the drawings, 1 designates a door or window frame having a window opening 2 in its upper portion and a member 3 in its lower portion. A glass or window member 4 is slidingly mounted in the frame and movable down into the chamber 3 from closed position. A cross member 5, commonly termed a "lock-board" is provided in the frame below the window opening and at the inner side of the window member.

The window member 4 is supported at its lower edge by a roller 6 carried at the free or swinging end of an arm 7 which is mounted for vertical swinging movements in a plane parallel to the window member, whereby said member may be raised and lowered by swinging movements of the arm. The arm is fixed at its inner end to a short shaft 8 that is journaled in a bearing 9 carried by a bracket plate 10 secured to the inner side of the lock-board 5 and projecting down from its lower edge.

A control member 11 for the shaft 8 is shown, in the present instance, as being of knob form, having a knurled head 12 at its outer end to facilitate grasping and turning the same and having its inner end portion 13 enlarged and axially socketed to sleeve over the adjacent end of the shaft 8 at the inner side of the bearing 9 in a manner to permit a free turning of one on the other. A key 14 is set in a recess provided transversely in the portion of the shaft 8 disposed within the sleeve 13, and a portion of the key projects radially from the shaft 8 into a recess or slot 15 in the sleeve, said recess being of greater width than the key to provide a space between the key and each wall of the recess, as shown.

A helical spring 16, having one or more convolutions is mounted around the sleeve portion 13 of the member 11 in close embracing relation thereto and has its ends terminating adjacent to the key 14 at the opposite sides of its projected end and each is inwardly angled to provide a tongue 17 for projecting into the recess 15 of the sleeve at the adjacent side of the key. Each tongue 17, however, is normally spaced a short distance from the adjacent wall of the recess so that, upon a turning of the key 14 toward either wall of the recess 15, it will engage the interposed tongue 17 and force it toward such wall. The end of the bearing 9 in the inner sleeve 13 is made slightly larger in diameter than said sleeve, and the control member 11 is provided at the end of the spring opposed to the bearing 9 with an annular flange or enlargement 18 thereby forming a circumferential recess between the bearing 9 and enlargement 18 for receiving the spring 16.

A cylindrical case 19 fits over the enlargement 18 of the member 11, the spring 16 and the adjacent end portion of the bearing 9 being threaded, in the present instance, to the latter and has its outer end inwardly flanged to engage around the outer side of the flange 18, thereby retaining the control member 11 in operative engagement with the shaft 8 and serving as an enclosing member for the spring and the portions of the

shaft 8 and member 11 with which it is associated. The spring 16 when in normal position has free sliding engagement at its outer side with the inner side of the case 19 and when expanded the convolutions of the spring have frictional clutch engagement with the case 19 and prevents a turning of the control sleeve 13 and associated parts relative to the case.

The operation of the control lock is as follows: When a turning stress is applied to the control member 11 to impart a raising or lowering movement to the window member 4, the rear walls of the sleeve slot 15 in the direction in which the control member is being turned engages the adjacent inturned end 17 of the spring 16 and forces it against the key 14 so that a turning movement is communicated to the shaft 8 through the inturned end of the spring and the key. This action does not effect any expansion of the spring, but acts to draw the spring freely around with the sleeve 13 within the case 19 so that the desired swinging movement may be imparted to the arm 17 to raise or lower the window member. When, however, a turning stress is applied to the shaft 8 to the control member 11, as is the case when an opening pressure is applied to the window member 4, the key 14 pushes on the inturned end of the spring 16 toward which it is moving and effects an expansion of the spring and a frictional clutch engagement of the same with the inner wall of the case 19, thereby locking the parts against turning in such direction. This provides a very effective lock which permits a driving of one rotatable member by another, but prevents the reverse action taking place.

It will be understood that while I have illustrated the locking feature embodying the present invention in connection with a simple form of window control mechanism, it may be used in connection with other forms of such mechanism or in other connections as may be desired.

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

1. In a window control mechanism, a driven shaft in operative connection with an associated window member and having a peripheral projection on a part thereof, a rotatable control member sleeved over the shaft and having an opening in which the shaft projection extends for limited movements in either direction relative to the sleeve, a helical spring encircling the sleeve portion of the control member and having its ends inturned into the sleeve opening at opposite sides of the shaft projection, the normal space in said opening at each side of said projection being greater than the thickness of the inturned portion of the spring, whereby such portion may have limited circumferential movement in the opening to permit an expansion of the spring by the action of the shaft projection thereagainst when the shaft is turned to effect a turning of the control member, and stationary means enclosing the spring and with which the spring frictionally engages to prevent a turning of the control member when the spring is expanded.

2. In a window control mechanism, a shaft mounted for rotary movements and having a peripherally projecting portion and operative connection with an associated window member, a control member having a portion sleeved over the shaft and provided in its side with an opening in which the shaft projection extends to permit limited relative rotary movements of the control member and shaft, a helical spring encircling the sleeve portion of the member and having each end provided with an inturned portion projecting into the sleeve opening at the rear side of the shaft projection and in normal spaced relation to the adjacent wall of the sleeve opening whereby a turning of the control member imparts a pulling action on the spring and a turning of the shaft and whereby a driving through the shaft causes its projection to act on one end of the spring to push such end and cause an expansion of the spring, and a stationary encasing member enclosing the spring and sleeve portion of the control member and with which the spring frictionally engages when expanded to prevent a turning of the control member, said encasing member serving to retain the control member in engagement with the shaft.

3. In combination, a rotatable driven member, a rotatable drive member sleeved on a portion of the driven member, said members having interengaged portions which permit limited relative rotary movements thereof, a helical spring encircling the sleeve portion of the drive member and having inturned ends for engagement with the interengaging parts of the drive and driven members when relatively turned, whereby a turning of the driven member by the drive member causes a free turning of the spring without expansion and a turning of the drive member by the driven member causes an expansion of the spring, and a stationary enclosing case with which the spring frictionally engages when expanded to lock the drive member against turning.

In testimony whereof I have hereunto signed my name to this specification.

ANGELO ROBERT CLAS.