Oct. 9, 1928. 1,687,238

W. F. COSTELLO

WINDOW REGULATOR MECHANISM

Filed March 24, 1927

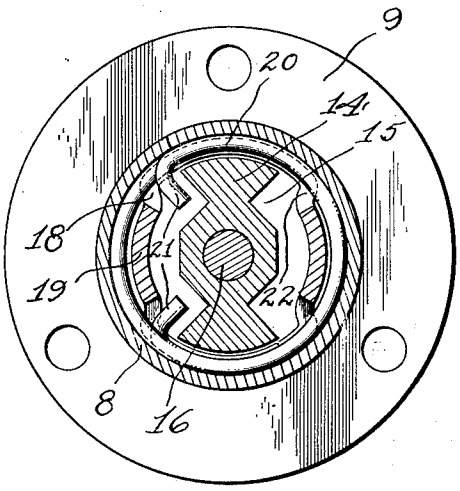


Fig. 4.

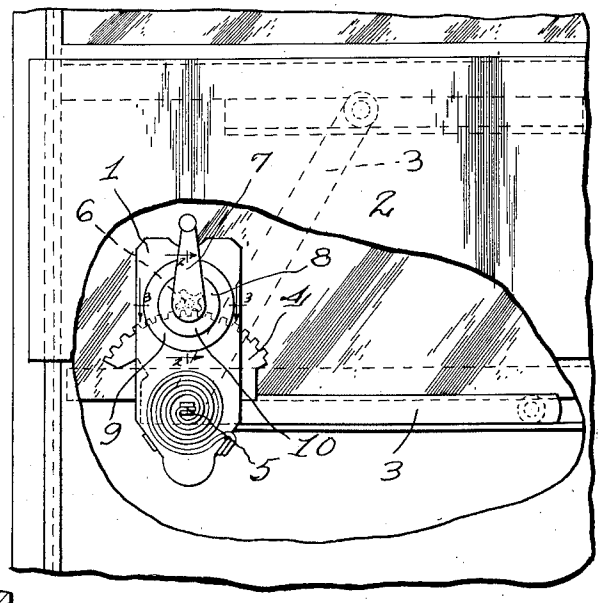


Fig. 1.

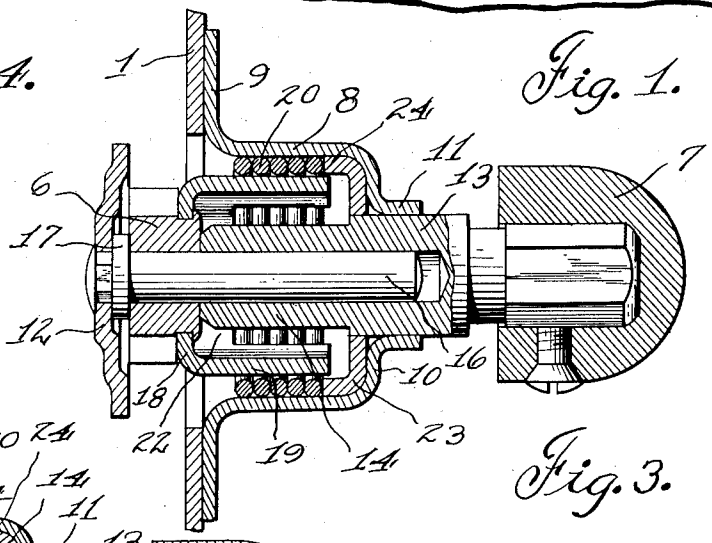


Fig. 3.

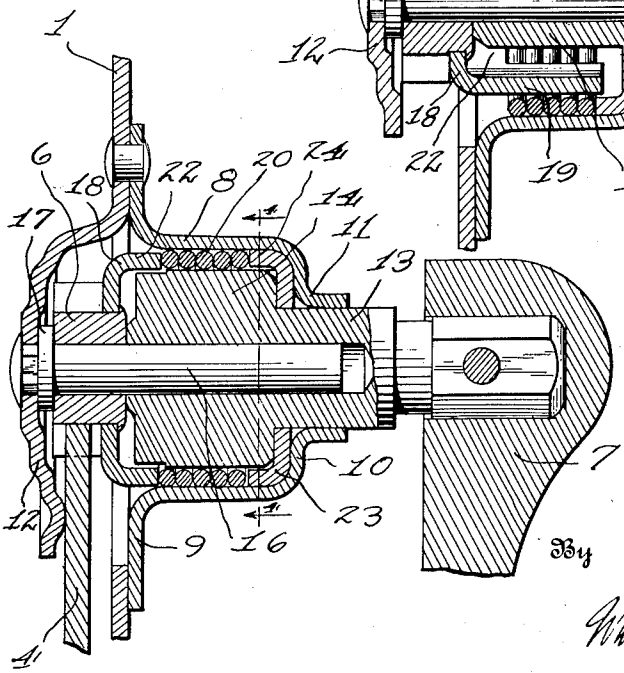


Fig. 2.

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UNITED STATES PATENT OFFICE.

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WINDOW-REGULATOR MECHANISM.

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The invention relates to window regulator mechanism and refers more particularly to window regulator clutches. One of the objects of the invention is to provide an improved mechanism which may be cheaply manufactured and assembled and which is so constructed that the driving and driven members of the clutch are effectively held in alignment. Another object is to so construct the mechanism that the driven member is journaled upon a pin secured to the support and forming a bearing for the driving member. With these as well as other objects in view, the invention resides in the novel features of construction and combinations and arrangements of parts as more fully hereinafter set forth.

In the drawings:—

Figure 1 is an inside elevation partly broken away of a portion of a motor vehicle door having applied thereto a window regulator mechanism embodying my invention;

Figures 2 and 3 are enlarged cross sections respectively on the lines 2—2 and 3—3 of Figure 1;

Figure 4 is a cross section on the line 4—4 of Figure 2.

The window regulator illustrated in the present instance has the mounting plate 1 which is secured to and depends from the lock board 2 of the door. 3 is the lifter arm of the window regulator rigidly secured to the gear segment 4 which is pivotally mounted at 5 upon the mounting plate 1. 6 is the pinion meshing with the gear segment and 7 is the handle or crank for actuating the pinion which in turn actuates the lifter arm through the gear segment.

For the purpose of locking the lifter arm in its various positions of angular adjustment when driving force is no longer applied through the handle or crank and at the same time to provide for releasing the lock when driving force is applied through the handle or crank, I have provided the following clutch mechanism. 8 is a cup having the annular flange 9 at its outer end secured to the lock board 2 and the annular flange 10 at its inner end terminating in the cylindrical flange 11. 12 is a lug either integral with or secured to the mounting plate 1 and located on the opposite side of the mounting plate from the cup 8 and spaced from the latter. 13 is the driving member to the inner end of which is secured the handle or crank 7. This driving member is journaled in the cylindrical flange 11 of the cup and has the head 14 within the cup and preferably provided with the diametrically opposite peripheral recesses 15. 16 is a pin in axial alignment with the driving member 13 and also the cup 8 and preferably fixedly secured at its outer end to the lug 12 as by being riveted over thereagainst to clamp the lug against the annular flange 17 upon the pin. This pin extends axially into the head 14 of the driving member and terminates preferably within the cylindrical flange 11, the head being journaled upon the pin. As a result, it will be seen that the driving member is journaled at spaced points so that it will be properly held from movement relative to the cup.

The pinion 6 is also journaled upon the pin 16 and is located between the lug 12 and the outer end of the head 14. For driving this pinion from the driving member, I have provided the cup-shaped member 18 which is preferably formed of sheet metal and has its base rigidly secured to the pinion. This cup-shaped member is provided with the diametrically opposite lateral projections or arms 19, either of which is adapted to extend into the recess 15 formed in the head 14, the other at this time being located on the opposite side of the head. Both the lateral projections 19 and the ends of the head 14 are rounded to present peripheral faces concentric of the cup 8 and spaced therefrom a distance to receive the coil spring 20 and further provide clearance between this spring and the cup or this spring and the peripheral faces. The spring has the inturned ends 21 engaging in the recess 15 of the head 14 and at opposite sides of the lateral projection 19, the arrangement being such that upon driving force being applied through the handle or crank 7 the head 14 engaging one of the inturned ends 21 of the coil spring 20 contracts this spring and releases the lock, after which this inturned end engages the lateral projection 19 engaging in the recess in the head and through the cup-shaped member 18 rotates the pinion 6 to angularly adjust the lifter arm. However, when driving pressure upon the handle or crank is released and driving pressure is applied upon the pinion

6 through attempted movement of the window, the lateral projection 19 of the cup-shaped member 18 engages one of the inturned ends 21 of the coil spring 20 to more completely expand this coil spring, thereby effectively locking the mechanism from movement. For longitudinally positioning the coil spring 20 within the cup 8, the annular flange portion 22 of the cup-shaped member between the lateral arms 19 is extended outwardly to a position opposite the outer end of the coil spring but clearing the cup 8. There is also the cup-shaped member 23 within the cup 8 adjacent its annular flange 10 and preferably secured to the driving member 13 at the inner end of its head 14, this cup-shaped member having the annular flange portion 24 opposite the inner end of the coil spring.

What I claim as my invention is:

1. In a window regulator mechanism, the combination with a support, of a driving member journaled upon said support, a pin upon said support and forming an internal bearing for said driving member, and a driven member rotatably mounted upon said pin, said driving and driven members operating to effect locking when driving effort is exerted through one member and to permit turning when driving effort is exerted through the other member.

2. In a window regulator mechanism, the combination with a support, of a driving member journaled in said support, a stationary pin secured to said support and extending axially into said driving member and forming a bearing therefor, and a driven member journaled upon said pin, said driving and driven members operating to effect locking when driving effort is exerted through one member and to permit turning when driving effort is exerted through the other member.

3. In a window regulator mechanism, the combination with a support including a cup, of a driving member journaled in said cup and having a portion within said cup provided with a recess, a pin upon said support and forming a bearing within said cup for said driving member, a driven member journaled upon said pin and having a projection extending into the recess of said driving member, and a coil spring within said cup and arranged to be expanded thereagainst, said coil spring having inturned ends engaging in the recess in said driving member upon opposite sides of said projection.

4. In a window regulator mechanism, the combination with a support including a cup and a lug, of a driving member journaled in said cup, a pin upon said lug and extending into said cup and forming a bearing for said driving member, and a driven member journaled upon said pin, said driving and driven members operating to effect locking when driving effort is exerted through said member and to permit turning when driving effort is exerted through the other member.

5. In a window regulator mechanism, the combination with a support including a cup and a lug spaced from said cup, of a driving member journaled in said cup and extending therewithin, a pin secured to said lug and extending axially into said driving member and forming a bearing therefor within said cup, and a driven member journaled upon said pin between said lug and driving member, said driving and driven members operating to effect locking when driving effort is exerted through one member and to permit turning when driving effort is exerted through the other member.

6. In a window regulator mechanism, the combination with a support including a cup and a lug spaced from an end of said cup, a driving member journaled in the opposite end of said cup and extending therewithin, a stationary pin secured to said lug and extending into said cup and axially into said driving member and forming a bearing therefor, a pinion journaled upon said pin between said lug and driving member, and means secured to said pinion for driving the same from said driving member.

7. In a window regulator mechanism, the combination with a support and a lug spaced from an end thereof, of a driving member journaled in the opposite end of said cup and having a head within said cup formed with a peripheral recess, a pin secured to said lug and extending axially into said head and forming a bearing for said driving member, a pinion journaled upon said pin between said lug and head, a member secured to said pinion and provided with a lateral projection extending into the recess in said head, and a coil spring arranged within said cup and adapted to be expanded into locking engagement therewith, said coil spring having inturned ends engaging in the recess in said head on opposite sides of said lateral projection.

8. In a window regulator mechanism, the combination with a support including a cup, of a driving member journaled in said cup and having a plurality of spaced driving portions within said cup, a pin upon said support forming a bearing within said cup for said driving member, a driven member journaled upon said pin and having a plurality of projections alternatively engageable in the spaces between said driving portions, and a coil spring within said cup and arranged to be expanded thereagainst, said coil spring having inturned ends engaging in one of the spaces between said driving portions upon opposite sides of the projection engaging in this space.

9. In a window regulator mechanism, the combination with a support including a cup,

of a driving member journaled in said cup and having a portion therein provided with a recess, a driven member having a projection extending into the recess of said driving member, means extending axially of said driving member and engaging said support, said means rotatably supporting said driven member, and a coil spring within said cup and arranged to be expanded thereagainst, said coil spring having inturned ends engaging in the recess in said driving member upon opposite sides of said projection.

In testimony whereof I affix my signature.

WILLIAM F. COSTELLO.