

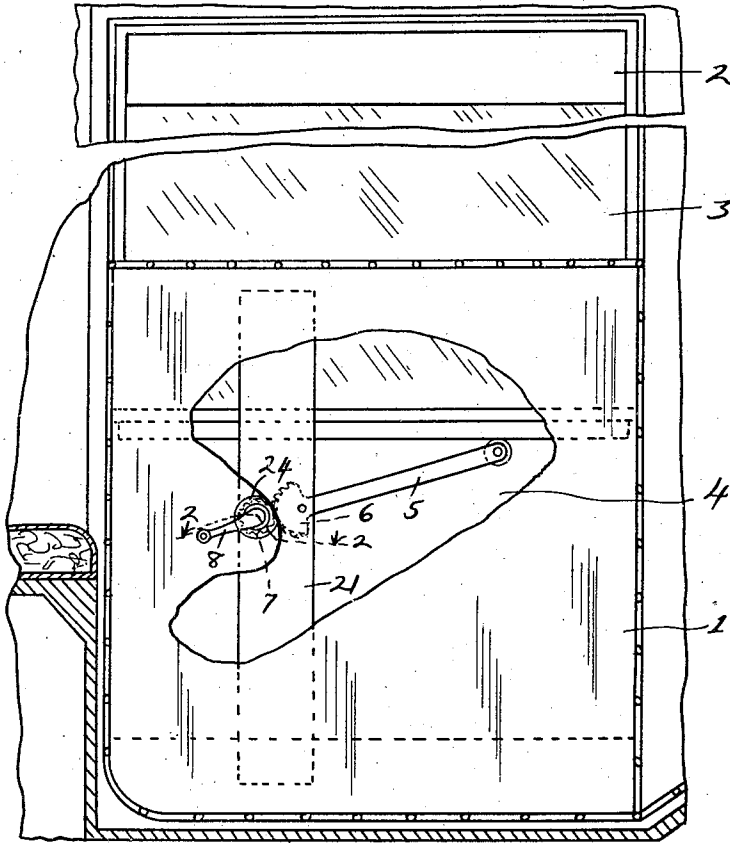
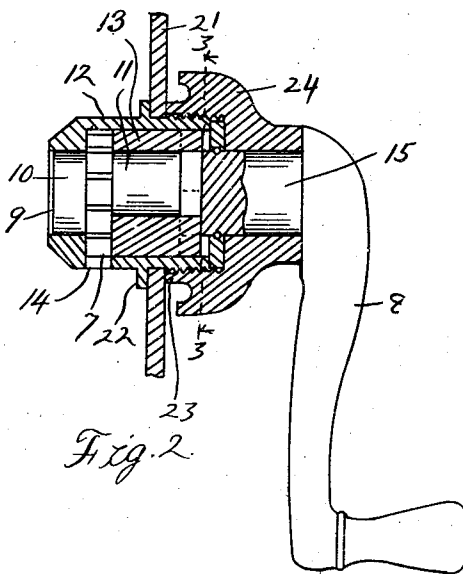
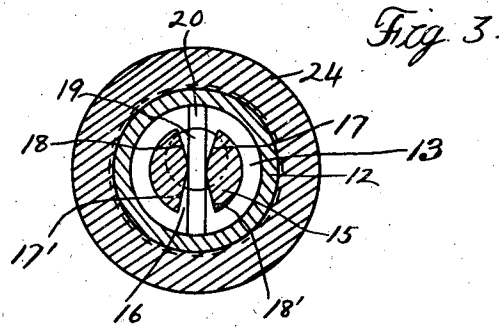
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WINDOW REGULATOR

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UNITED STATES PATENT OFFICE.

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WINDOW REGULATOR.

Application filed July 14, 1924. Serial No. 725,977.

The invention relates to window regulators and has for one of its objects the provision of an improved device for automatically locking the window in its adjusted positions. Other objects of the invention reside 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 interior elevation, partly broken away, of a vehicle door having applied thereto a window regulator embodying my invention;

Figure 2 is a cross section on the line 2—2 of Figure 1;

Figure 3 is a cross section on the line 3—3 of Figure 2.

The window regulator is particularly applicable to vehicles of the closed type for raising and lowering the closures. In the present instance 1 is the vehicle door having the opening 2 in its upper portion which is adapted to be closed by the window 3 and the pocket 4 in its lower portion into which the window may enter, this window being vertically slidable in guideways in the hinge and locking pillars of the door.

For raising and lowering the window I have provided the pivotal lifter arm 5 which is suitably connected at its outer end to the window and is provided at its pivotal end with the external gear segment 6 preferably integral therewith. This gear segment meshes with the pinion 7 which is connected to the handle 8.

To automatically lock the window in its adjusted position the pinion 7 is secured upon and preferably made integral with the crank member 9 having the main cylindrical portion 10 in axial alignment with the pinion and the axially offset cylindrical portion or crank 11. The main cylindrical portion 10 is journaled in the end of the housing 12 while the axially offset cylindrical portion 11 is journaled in the collar 13 which latter is in turn journaled in the housing 12 in axial alignment with the main cylindrical portion 10. The housing is cut away at 14 to permit entrance of the gear segment 6 into mesh with the pinion 7.

15 is the handle shaft provided with the transverse slot 16 having outwardly flaring end portions with their opposite walls 17 and 17' and 18 and 18' respectively extending substantially parallel to each other. 19

and 20 are diametrically extending ribs upon the corresponding ends of the axially offset cylindrical portion 11 and the collar 13 respectively, these ribs being adapted to enter the transverse slot 16.

With this arrangement and upon rotation of the handle 8 in either direction the walls of the transverse slot of the handle shaft come into contact with both ribs to align the same thereby axially aligning the main cylindrical portion 10 and the collar 13 and subsequently rotating both parts in unison. However, with the handle 8 stationary and the lifter arm 5 exerting a force in either direction to rotate the main cylindrical portion 10 relative to the collar 13 the axial alignment of these two parts is destroyed and the main cylindrical portion binds in its bearing in the end of the housing to thereby hold the window in its adjusted position. The outwardly flaring end portions of the transverse slot 16 permit the relative rotation of the ribs 19 and 20 out of alignment and the relative rotation of the main cylindrical portion 10 and collar 13 out of axial alignment.

The housing 12 and also the handle and associated parts are preferably carried upon the support 21 of the door this support being apertured for the housing 12 and clamped between the annular flange 22 upon the housing and the cylindrical flange 23 of the escutcheon 24 which latter flange is threadedly engaged in by the end of the housing. The escutcheon also forms a bearing for the handle shaft 15.

What I claim as my invention is:

1. In a window regulator, the combination with driving and driven members, of a pair of relatively rotatable eccentrically connected members between said driving and driven members for actuating the latter from the former, bearings for said relatively rotatable members, and a lost motion connection between said driving member and relatively rotatable members.

2. In a window regulator, the combination with driving and driven members, of an intermediate member provided with a main cylindrical portion and an axially offset cylindrical portion, a stationary bearing for said main cylindrical portion, a rotatable bearing for said axially offset cylindrical portion, a second stationary bearing for said rotatable bearing, and a lost motion con-

nection between said driving member and intermediate member and rotatable bearing adapted to rotate said intermediate member and rotatable bearing in unison.

3. In a window regulator, the combination with a toothed member operatively connected to a closure and an actuating member, of relatively rotatable members between said toothed and said actuating members, one of said relatively rotatable members having a toothed portion engaging said toothed member, a main cylindrical portion in axial alignment with the other of said relatively rotatable members and an axially offset cylindrical portion journaled in the other of said relatively rotatable members, axially aligned bearings for said main cylindrical portion and the other of said relatively rotatable members, and means having a lost motion connection with said axially offset cylindrical portion and the other of said relatively movable members for axially aligning said main cylindrical portion and the other of said relatively movable members and rotating the same in unison.

4. In a window regulator, the combination with driving and driven members of a housing, cooperating locking members journaled within said housing for moving said driven member from said driving member, a support for said housing and an escutcheon detachably engageable with said housing and clamped against said support.

5. In a window regulator, the combination with driving and driven members, of cooperating locking members for moving said driven member from said driving member, a housing for said locking members having an opening and a driving connection between said driven member and one of said members extending through the opening.

6. In a window regulator, the combination with driving and driven members, of a pair of relatively rotatable eccentrically connected members between said driving and driven members, a housing for said relatively rotatable members having an opening, a driving connection between said driven member and one of said relatively rotatable members extending through the opening and a lost motion connection between said driving member and relatively rotatable members.

7. In a window regulator, the combination with driving and driven members, of an intermediate member provided with a main cylindrical portion and an axially offset cylindrical portion, a stationary bearing for said main cylindrical portion, a rotatable bearing for said axially offset cylindrical portion, a second stationary bearing for said rotatable bearing, said driving member being provided with a groove and a lost motion connection between said driving member, intermediate member and rotatable

bearing including ribs projecting from said axially offset cylindrical portion and said rotatable bearing adapted to seat within said groove for rotating said intermediate member and rotatable bearing in unison.

8. In a window regulator, the combination with driving and driven members, of an intermediate member provided with a main cylindrical portion and an axially offset cylindrical portion, a stationary bearing for said main cylindrical portion, a rotatable bearing for said axially offset cylindrical portion, normally in axial alignment with said main cylindrical portion, a second stationary bearing for said rotatable bearing, said driving member being provided with a transverse groove, and a lost motion connection between said driving member, intermediate member and rotatable bearing including diametrically extending ribs projecting from said axially offset cylindrical portion and said rotatable bearing adapted to seat within said groove for rotating said intermediate and rotatable bearing in unison, said ribs also being adapted to be moved relative to each other for placing said main cylindrical portion out of axial alignment with said rotatable bearing when the said driven member is rotated.

9. In a window regulator, the combination with driving and driven members, of an intermediate member provided with a main cylindrical portion and an axially offset cylindrical portion, a stationary bearing for said main cylindrical portion, a rotatable bearing for said axially offset cylindrical portion, a second stationary bearing for said rotatable bearing, said driving member being provided with a transverse groove having flared end portions with the walls of one flared portion extending substantially parallel to the walls of the other flared end portion, and a lost motion connection between said driving member, intermediate member and rotatable bearing including diametrically extending ribs projecting from said axially offset cylindrical portion and said rotatable bearing adapted to seat within said transverse groove for rotating said intermediate member and rotatable bearing in unison.

10. In a window regulator, the combination with driving and driven members, of an intermediate member provided with a main cylindrical portion and an axially offset cylindrical portion having a rib projecting therefrom, a stationary bearing for said main cylindrical portion, a rotatable bearing for said axially offset cylindrical portion having a pair of spaced ribs between which said first mentioned rib is adapted to seat, a second stationary bearing for said rotatable bearing, said driving member being provided with a transverse groove having flared end portions with the walls of one end flared portion extending substantially

parallel to the walls of the other flared end portion, the substantially parallel walls being in planes spaced from each other approximately the width of the said ribs whereby a lost motion connection between said driving member and intermediate member and rotatable bearing is provided for rotating said intermediate member and ro-

tatable bearing in unison when the driving member is operated and for rotating said intermediate member and rotatable bearing out of unison when said driven member is operated.

In testimony whereof I affix my signature.

STANLEY W. NICHOLSON.