Dec. 27, 1927. 1,653,654

H. A. MYERS

CLUTCH LOCK FOR WINDOW REGULATORS

Filed April 17, 1926 2 Sheets-Sheet 1

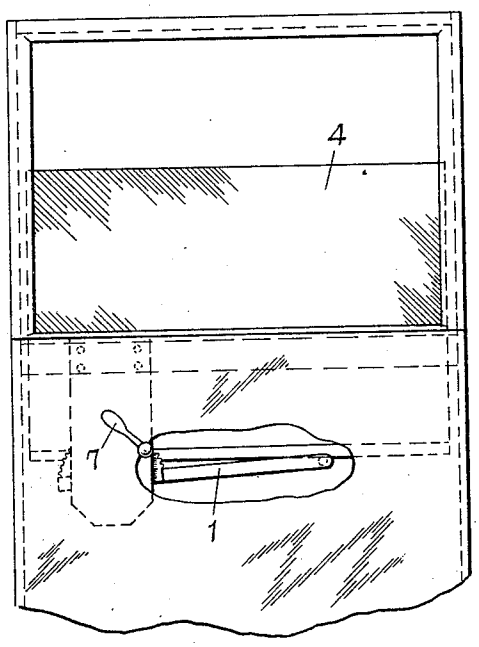


Fig 1

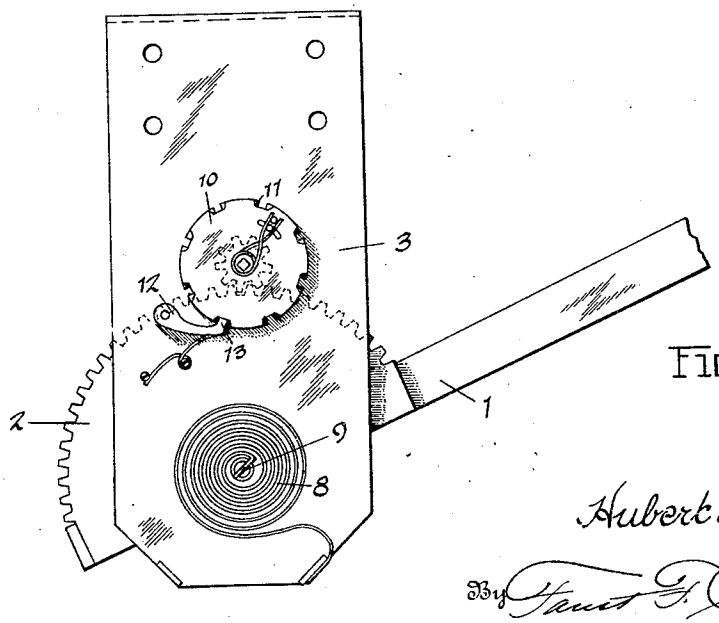


Fig 2

Inventor

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H. A. MYERS

CLUTCH LOCK FOR WINDOW REGULATORS

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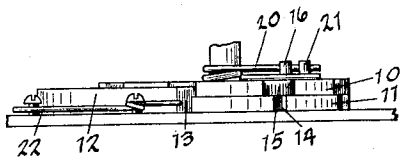


Fig 5

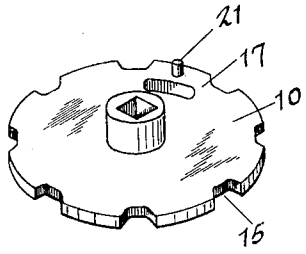


Fig 6

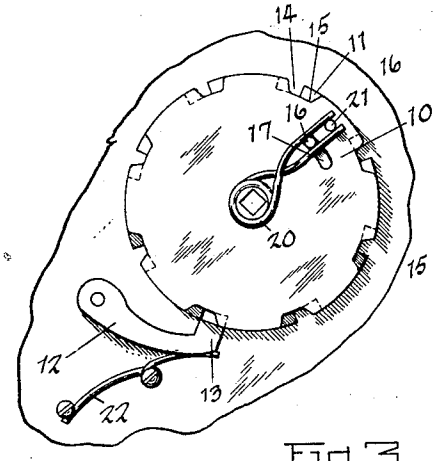


Fig 3

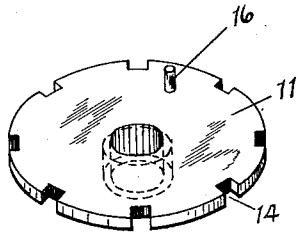


Fig 7

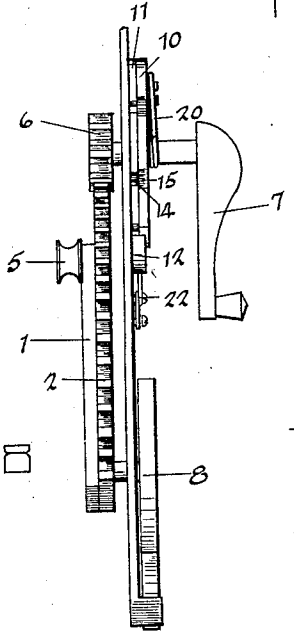


Fig 8

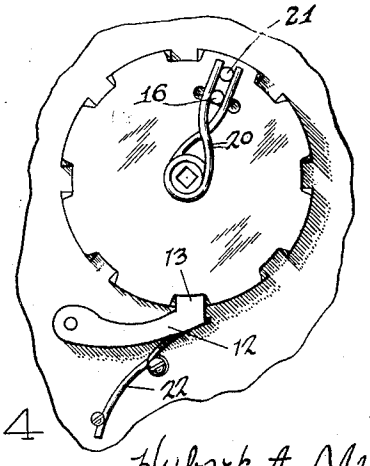


Fig 4

Inventor

Hubert A. Myers

By Faust F. Crumpton

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Patented Dec. 27, 1927. 1,653,654

UNITED STATES PATENT OFFICE.

HUBERT A. MYERS, OF TOLEDO, OHIO, ASSIGNOR TO THE MYERS REGULATOR COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

CLUTCH LOCK FOR WINDOW REGULATORS.

Application filed April 17, 1926. Serial No. 102,640.

My invention has for its object to provide an efficient means for automatically locking the window of an automobile in any position that it may be placed by the window raising and lowering means and also wherein the window will be automatically unlocked upon the operation of the window raising and lowering means in order that the raising and lowering movements may be performed.

The invention may be contained in structures of different forms and may be used for a variety of purposes and to illustrate a practical application of the invention I have selected an automobile window regulator having the invention applied thereto. The window regulator clutch lock selected for purposes of illustration is shown in the accompanying drawings and is described hereinafter.

Figure 1 of the drawings illustrates the invention applied to the arm and sector type of window regulator. Fig. 2 illustrates the supporting plate and a top view of the clutch lock in position on the supporting plate. Fig. 3 is a view of the clutch lock when the parts are in driving relation to each other. Fig. 4 is a view of the clutch lock showing the parts in locked relation. Fig. 5 is an edge view of the clutch lock. Fig. 6 is a perspective view of the release disk. Fig. 7 is a perspective view of the locking disk. Fig. 8 is an edge view of the assembled parts.

As shown in Figs. 1, 2, and 8, the window regulator is provided with an arm 1 that is secured to a sector gear 2 and they are together pivoted on the supporting plate 3 that is secured to a part of the door frame in which the window 4 is located. The arm 1 is provided with a roller 5 that engages the lower edge of the window glass 4 and as the arm 1 is raised and lowered the roller rolls beneath the edge of the glass 4 in raising and lowering the window. The sector 2 is driven by means of a pinion 6 which is driven by the crank 7. In order to counterbalance the weight of the glass 4, a counterbalancing spring 8 is connected to the shaft 9 of the sector 2 whereby the operation of the window may be performed by overcoming only the friction, particularly that friction that exists between the edges of the glass and its guiding channel, when the window is moved. Thus substantially the same pressure or force will raise the window that is used in lowering the window.

In order to prevent the window from being forcibly moved downward when it is partly open and particularly to prevent the lowering of the window by the jogging effect that is produced when the automobile travels on the road, I have provided an automatic locking means for locking the window in the position in which it is placed by the window regulator, means being provided for releasing the window upon movement of the crank 7. The crank 7 is keyed to a release disk 10 while the pinion 6 is keyed to the locking disk 11 and a dog, 12, is pivoted to the supporting plate 3 in such a position as to engage the locking disk 11 and to be disengaged from the locking disk 11 by the release disk 10. The dog 12 is provided with a nose 13 that will engage in any one of a plurality of notches or recesses 14 formed in the periphery of the disk 11. Preferably the sides of the recesses 14 extend parallel to each other and substantially radially and the end edges of the nose 13 extend substantially parallel to each other and consequently the dog will lock the disk 11 from rotation when the nose is located in any one of the recesses 14 and the pinion 6 will be locked from rotation. This will lock the window 4 owing to the fact that the pressure that it exerts is transmitted through the arm 1 and the sector 2 to the pinion 6.

The dog 12 is released automatically from disengagement with the disk 11 by means of the disk 10 which is provided with recesses 15 formed in the edge portion of the disk. The end edges of the recesses 15 are inclined to the radii of the disk. Also the disk 11 has a pin 16 and the disk 10 has a slot 17 for receiving the pin 16. The two disks are mounted side by side and movement of one relative to the other is limited by the pin 16 and the length of the slot 17. The number of the recesses 15 in the plate 10 are the same as the number of recesses 14 in the plate 11 and the pin 16 and the slot 17 are so located relative to each other that the recesses 14 and 15 will substantially register one with the other. The nose 13 of the dog 12 also is made of sufficient width so that when it is in position to lock the window it will be located in a recess of each disk. The plate 10 being keyed to the crank 7, rotation of the crank will cause the disk

10 to move relative to the disk 11 and the inclined ends of the recess 15, in which the nose of the dog may be located, will push the nose of the dog out of the recess 14 of the plate 11 and upon continued rotative movement of the disk 10, will cause the end of the slot 17 to engage the pin 16 and rotate the pinion 6.

In order to permit the dog 12 to again enter the recesses of the disks 10 and 11, a relatively strong spring 20 has end portions that engage the pin 16 and a pin 21 that is located substantially in the radius that passes through substantially the center of the slot 17 and operates to place the pins 16 and 21 in radial alinement with each other as soon as the locking plate 11 has been released from the dog 12, and when the crank ceases to rotate the plate 10. Upon cessation of the pressure on the crank, the plate 10 will be rotated in a reverse direction within the limitation of the end of the slot 17 and its center by the elasticity of the spring 20 so as to place the pins 16 and 21 in radial alinement and at the same time cause the recesses 15 to register with the recesses 14. This will permit the dog 12 to enter the succeeding recess 14 and lock the disk 11 and consequently lock the window in the position to which it has been raised.

The dog 20 may be spring pressed by means of the spring 22 so as to press the nose 13 against the edges of the disks 10 and 11 when it has been forced from the recesses 14 and 15 and to cause it to enter the recesses 14 and 15 when the spring 20 has been permitted by releasement of the crank to cause the recesses 14 and 15 to register with each other. The spring 20 may be wound about the hub of the disk 10 in order to secure it in position and to give opportunity for its elastic operation on the disks.

I claim:

1. In a clutch lock, a support for the lock, a driven member and a driving member, the said members interconnected for limited movement one relative to the other, a spring for maintaining the members in a normal intermediate position with reference to their said limited movements and for yieldingly resisting movement in either direction from the said normal relative intermediate position, a locking part connected to the said support for engaging one of the members, the other of the members having means for disengaging the said part to unlock the same on movement from the said normal position relative to the other member.

2. In a clutch lock, a support for the lock, a driven member and a driving member, the said members interconnected for limited movement one relative to the other, a spring for maintaining the members in a normal intermediate position with reference to their said limited movements and for yieldingly resisting movement in either direction from the said normal relative intermediate position, a locking part connected to the said support for engaging the driven member, the driving member having means for disengaging the said part to unlock the same on movement from the said normal position relative to the other member.

3. In a clutch lock, a support for the lock, a driven member and a driving member, the said members having radially extending teeth, the sides of the teeth of the driven member being substantially radial, and the sides of the teeth of the driving member sloping with reference to the radii of the teeth, the said members having a pair of laterally protruding parts extending in the same direction from the members, a spring interconnecting the said laterally extending parts, means for limiting the movement of one of the parts relative to the other, the interconnecting spring operating to maintain the members in a normal intermediate position with reference to their said limited movements, and for yieldingly resisting movement of one of the members relative to the other member in either direction from the said normal intermediate position, a locking dog connected to the said support and having a part adapted to enter between the teeth of the said members, the teeth of the driving member when moved within the said limitations operating to disengage the said part to move the said part from between the teeth of the driven member.

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

HUBERT A. MYERS.