

F. J. TODD,
GEAR ACTUATING AND LOCKING MECHANISM.
APPLICATION FILED OCT. 12, 1917.

1,274,471.

Patented Aug. 6, 1918.

2 SHEETS—SHEET 1.

FIG. 1.

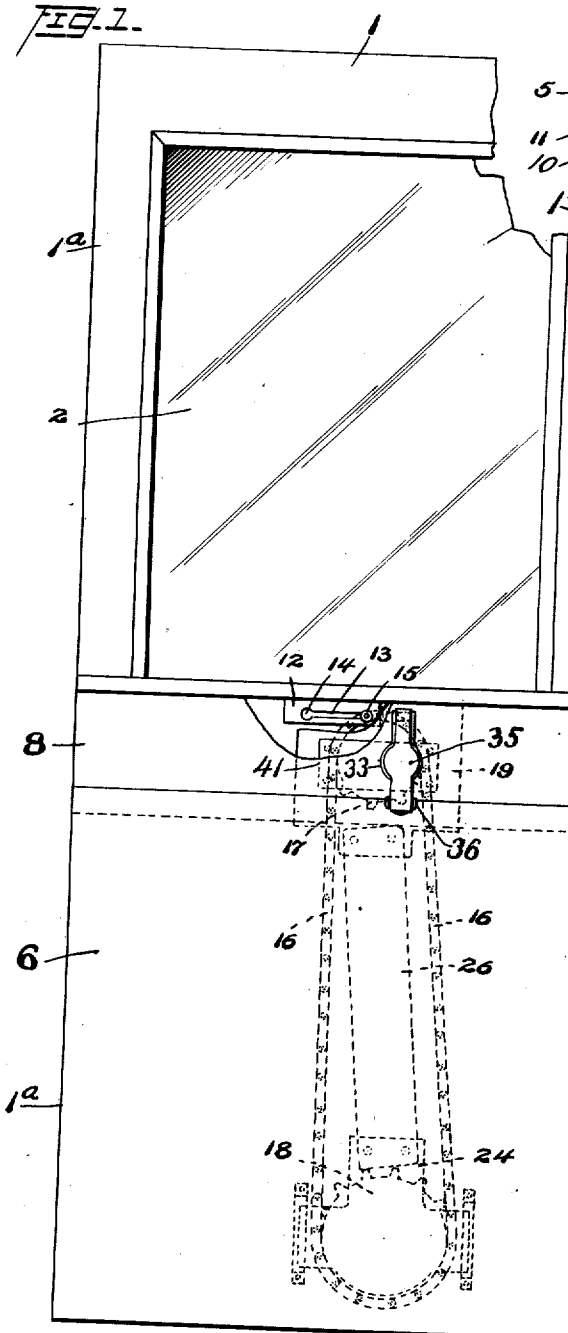


FIG. 2.

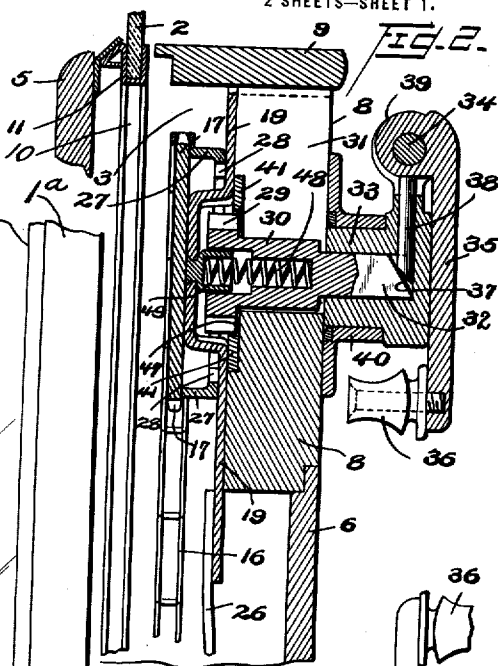
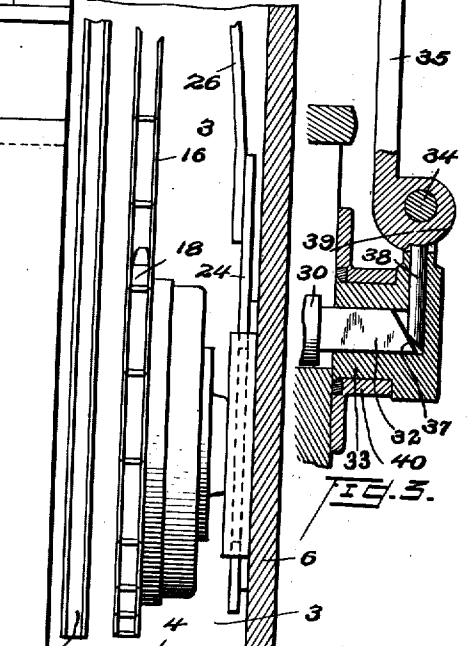


FIG. 3.



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 2 SHEETS—SHEET 2.

FIG. 4.

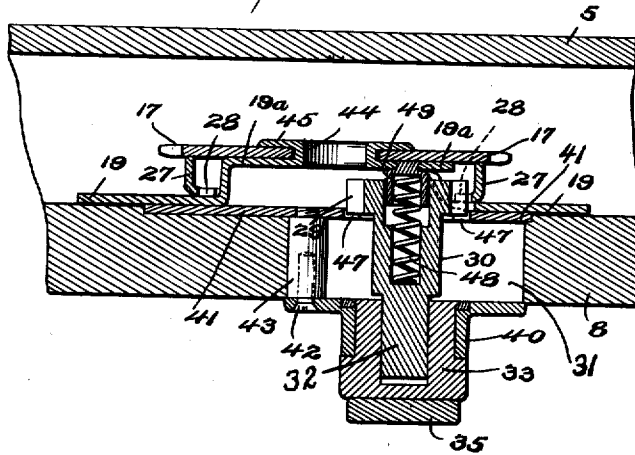


FIG. 5.

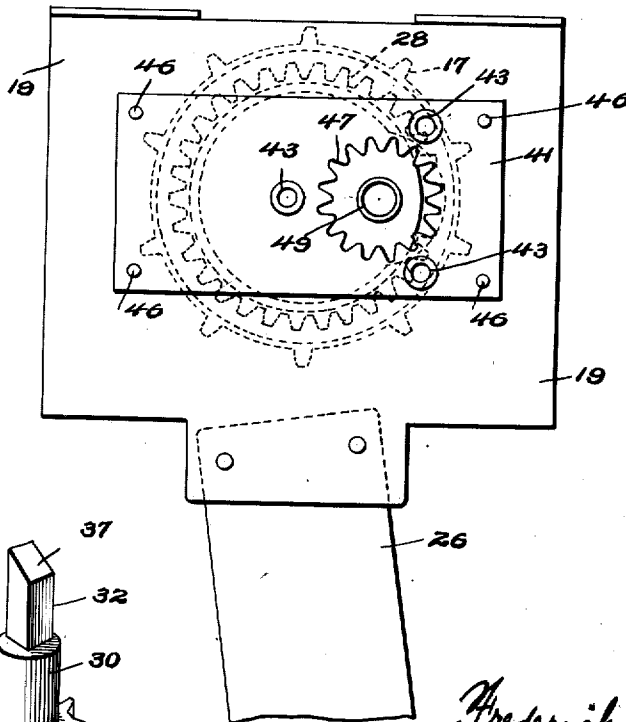
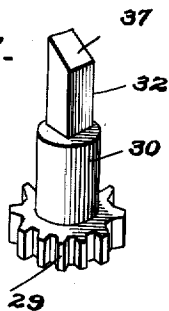


FIG. 6.



Inventor
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UNITED STATES PATENT OFFICE.

FREDERICK J. TODD, OF EGG HARBOR, NEW JERSEY.

GEAR ACTUATING AND LOCKING MECHANISM.

1,274,471.

Specification of Letters Patent.

Patented Aug. 6, 1918.

Application filed October 12, 1917. Serial No. 196,330.

To all whom it may concern:

Be it known that I, FREDERICK J. TODD, a subject of the King of Great Britain residing in Egg Harbor, county of Atlantic, and State of New Jersey, have invented a new and useful Gear Actuating and Locking Mechanism, of which the following is a specification.

My invention relates to means for operating and locking the gearing such as may be employed for regulating the position of a window member, such, for example, as employed in a vehicle, as an automobile, carriage or the like.

My invention resides in apparatus of the character referred to comprising a driving wheel or gear which is in turn driven by a pinion which is movable with respect to a locking member, whereby the pinion in one position is locked and locks the driving wheel or gear, and in another position is freed from the locking means and is free to drive the driving wheel or gear; and for rotating the pinion and for moving it longitudinally I provide a suitable handle, preferably in the form of a crank, which in movement to one position frees the pinion from the locking member and in movement to the other position causes or allows movement of the pinion to locking position.

My invention resides in structure of the character hereinafter described and pointed out in the claims.

For an illustration of some of the forms my invention may take, reference is to be had to the accompanying drawings, in which:

Figure 1 is an elevational view of a window structure having applied thereto mechanism embodying my invention.

Fig. 2 is a vertical sectional view, on enlarged scale, of part of the window structure shown in Fig. 1 and of my improved mechanism.

Fig. 3 is a fragmentary sectional view showing parts of Fig. 2 in another position.

Fig. 4 is a horizontal sectional view through a fragment of the window structure and through my improved mechanism.

Fig. 5 is a fragmentary elevational view of part of the driving mechanism.

Fig. 6 is a perspective view of the pinion member.

Referring to the drawings, 1 represents a

window casing or frame, such as an automobile door or the like, in which is vertically slidable in suitable guides 10 the glass window pane or window member 2. In the lower portion of the frame 1 is the pocket 3 formed between the side members 1^a of the window frame, the bottom 4, the outside wall 5 and the inside wall 6, which latter is joined at its upper end to the transverse member 8 upon whose upper edge is the sill 9. The sill 9 is spaced from the outside wall member 5 to form a passage through which the window member 2 may be raised and lowered from and into the pocket 3. The lower edge of the window pane or member 2 is received in the metallic channel member 11, which holds it frictionally and from which it is readily removed. Secured to the channel member 11 is a plate 12 having the horizontally extending slot 13 enlarged at one end at 14 to allow insertion and removal of the headed pin 15 secured to the sprocket chain 16 driven by the sprocket wheel 17 and passing over the idler sprocket wheel 18. A plate 19 carries sprocket wheel 17 and is joined by a strap or plate 26 to the plate 24, on which the lower sprocket 18 has a bearing.

Secured to the sprocket wheel 17 is the gear wheel 27 having the internal gear teeth 28, with which is constantly in mesh with the pinion 29, formed upon or secured to the rotatable and longitudinally movable shaft 30, which extends through the slot 31, which extends downwardly from the upper end of the frame member 8 to a point just below the shaft 30. The shaft 30 has the ex- but which may be of any other suitable section to move longitudinally in the similarly shaped socket in the rotatable member 33, upon which is pivoted at 34 the crank member 35 having the handle 36. The outer end of the extension 32 is beveled or otherwise suitably shaped, as indicated at 37. This beveled surface 37 is in effect a cam surface with which is adapted to engage one end of the pin 38, which may also be beveled or have a suitable cam shape. The pin 38 is slidable transversely in the member 33, and is engaged by the eccentric or cam surface 39 on the crank member 35. The member 33 is rotatable in the stationary sleeve 40 secured to the member 8 or to any other suitable stationary part, as to

the locking plate 41 by means of screws 42, the flange of the member 40 being spaced from the plate 41 by the spacer members 43.

The plate 19 has the inwardly projecting portion 19^a disposed within the internal gear 27, and the member 19^a forms a bearing at 44 for the sprocket wheel 17 and attached gear 27, and a flange 45 serves to hold the wheel 17 against longitudinal movement, the wheel 17 being rotatable between the plate 19^a and the flange 45. The locking plate 41 is secured upon the plate 19, as by rivets or screws 46. The locking plate 41 has formed within it the notches 47, forming in effect an internal stationary gear or pinion with which the teeth of the pinion 29 are adapted to mesh, and when meshed with the internal teeth on the plate 41 the pinion 29 is held against rotation, and being simultaneously in mesh with the internal gear 27 prevents rotation of that gear and the attached sprocket wheel 17 and therefore also prevents movement of the chain 16 and the pin 15, which therefore holds the window member 2 locked in any desired position.

In a socket or hole in the gear member 29 is disposed a spring 48, whose one end bears against the bottom of the hole and at its other end engages in the socket member 49 carried by the part 19^a, the outer end of the hole or socket in the member 29 being enlarged to receive the socket member 49.

The operation is as follows:

With the parts in the positions indicated in Figs. 2 and 4, the window member 2 is locked against either upward or downward movement from the fact that the pinion 29 is in mesh with the locking plate 41, thereby locking the sprocket wheel 17, the chain 16 and the pinion 15, plate 12 and member 2.

If it is desired to either raise or lower the the window member 2, the operator swings the crank member 35 in counter-clockwise direction, as viewed in Fig. 2, upon its pivot 34 to a position indicated in Fig. 3. In so operating the member 35 the eccentric or cam 39 pushes inwardly upon the pin 38, which in turn forces the member 31 toward the left, as viewed in Fig. 2, in opposition to spring 48, withdrawing the pinion from mesh with the plate 41. The crank member 35 may now be rotated in suitable direction, thereby rotating the member 33, which in turn rotates the member 31 and the pinion 29, which latter rotates the internal gear 27 which drives the sprocket wheel 17, which in turn drives the chain 16, causing the pin 15 to move the plate 12 and the attached window member 2 either upwardly or downwardly, according to the direction of rotation of the crank member 35.

When the window member 2 has been moved to the desired position, the crank member 35 is returned to the position shown in Fig. 2, and as a result of such movement

the spring 48 in expanding moves the pinion 29 toward the right, Fig. 2, bringing it again into mesh with the plate 41 and thereby locking the window member 2 in its new position.

By the above described structure neither the crank member 35 nor the rotatable member 33 moves longitudinally for the purpose of locking or unlocking the driving mechanism. It is the movement of the crank member 35 upon its pivot 34 which effects the locking or unlocking of the pinion 29 with the locking plate 41.

This application is in part a continuation of my prior application Serial Number 80 184,476, filed August 4, 1917.

What I claim is:

1. The combination with a window member, of means for moving the same comprising a driving wheel, a gear for driving said wheel, a pinion meshing with said gear for driving the same, a locking plate with which said pinion is adapted to engage, and means for rotating said pinion and for moving the same longitudinally with respect to said locking plate while remaining in mesh with said gear.

2. The combination with a window member, of means for moving the same comprising a driving wheel, a gear for driving said wheel, a pinion meshing with said gear for driving the same, a locking plate having teeth with which said pinion is adapted to mesh, and means for moving said pinion longitudinally to disengage from said locking plate and for rotating said pinion to rotate said gear.

3. The combination with a window member, of means for moving the same comprising a driving wheel, a gear secured to said wheel for driving the same, a pinion mounted eccentrically with respect to said wheel and meshing with said gear, a locking plate with which said pinion is adapted to engage, and means for moving said pinion longitudinally to disengage from said locking plate and for rotating said pinion to drive said gear.

4. The combination with a window member, of means for moving the same comprising a driving wheel, an internal gear secured to said wheel, a pinion meshing with said gear, a locking plate with which said pinion is adapted to engage, and means for moving said pinion longitudinally to disengage from said locking plate and to rotate said pinion to drive said gear.

5. The combination with a window member, of means for moving the same comprising a gear, connections from said gear to said window member, a pinion constantly in mesh with said gear, a locking plate with which said pinion is adapted to engage to prevent rotation of said pinion and of said gear, and means for moving said pinion

longitudinally to disengage the same from said locking plate and for rotating said pinion.

6. The combination with a window member, of means for actuating the same comprising a gear, a locking plate, a pinion constantly in mesh with said gear and adapted to engage said locking plate, a rotatable member for rotating said pinion, an operating member pivoted to said rotating member, and means controlled in response to pivotal movement of said operating member for shifting said pinion longitudinally with respect to said locking plate.

7. The combination with a window member, of means for actuating the same comprising a gear, a locking plate, a pinion constantly in mesh with said gear and adapted to engage said locking plate, a rotatable member for rotating said pinion, an operating member pivoted to said rotating member, and means controlled in response to pivotal movement of said operating member for shifting said pinion longitudinally with respect to said locking plate and said rotatable member.

8. The combination with a window member, of means for actuating the same comprising a gear, a locking plate, a pinion constantly in mesh with said gear and adapted to engage said locking plate, a rotatable member for rotating said pinion, a projection on said pinion engaged by said rotatable member, said projection having a cam surface, an operating member pivoted to said rotatable member, and means actuated by said operating member and engaging said cam surface for shifting said pinion in response to pivotal movement of said operating member.

9. The combination with a window member, of means for actuating the same comprising a gear, a locking plate, a pinion constantly in mesh with said gear and adapted to engage said locking plate, a rotatable member for rotating said pinion, a projection on said pinion engaged by said rotatable member, said projection having a cam surface, an operating member pivoted to said rotatable member, and a member actuated by said operating member and slidable in said rotatable member and adapted to engage said cam surface to move said pinion with respect to said locking plate.

10. The combination with a window member, of means for actuating the same comprising a gear, a locking plate, a pinion constantly in mesh with said gear and adapted to engage said locking plate, a rotatable member for rotating said pinion, a projection on said pinion engaged by said rotatable member, said projection having a cam surface, an operating member pivoted to said rotatable member, and a member slidable in said rotatable member and adapted

to engage said cam surface, said operating member having a cam surface engaging said slidable member for actuating the same in response to pivotal movement of said operating member.

11. The combination with a window member, of means for actuating the same comprising a gear, a locking plate, a pinion constantly in mesh with said gear and adapted to engage said locking plate, a rotatable member for rotating said pinion and with respect to which said pinion has longitudinal movement, a crank member pivoted on said rotatable member, and means actuated by said crank member in movement upon its pivot for shifting said pinion longitudinally.

12. Gear actuating and locking mechanism comprising a gear, a pinion meshing with said gear for driving the same, a locking member with which said pinion is adapted to engage, and means for rotating said pinion and for moving the same longitudinally with respect to said locking member while in mesh with said gear.

13. Gear actuating and locking mechanism comprising a gear, a locking member, a pinion meshing with said gear and adapted to engage said locking member, a rotatable member for rotating said pinion, an operating member movable with respect to said rotatable member, and means controlled in response to movement of said operating member with respect to said rotatable member for shifting said pinion longitudinally with respect to said locking member.

14. Gear actuating and locking mechanism comprising a gear, a pinion constantly in mesh with said gear for driving the same, a locking member for locking said pinion against rotation, a rotatable member for rotating said pinion, an operating member carried by and movable with respect to said rotatable member, and means controlled in response to movement of said operating member with respect to said rotatable member for shifting said pinion longitudinally to free the same from said locking member while in mesh with said gear.

15. Gear actuating and locking mechanism comprising a gear, a pinion constantly in mesh with said gear for driving the same, a locking member for locking said pinion against rotation, a rotatable member for rotating said pinion, means holding said rotatable member against longitudinal movement, an operating member carried by and movable with respect to said rotatable member, and means controlled in response to movement of said operating member with respect to said rotatable member for shifting said pinion longitudinally to free the same from said locking member while in mesh with said gear.

16. Gear actuating and locking mechanism comprising a gear, a locking member,

a pinion meshing with said gear and adapted to engage said locking member, a rotatable member for rotating said pinion, means for holding said rotatable member against longitudinal movement, an operating member movable with respect to said rotatable member, and means controlled in response to movement of said operating member with respect to said rotatable member for shifting said pinion longitudinally with respect to said locking member.

17. Gear actuating and locking mechanism comprising a gear, a pinion meshing with said gear for driving the same, a locking member for locking said pinion against rotation, a rotatable member for rotating said pinion, a projection on said pinion engaged by said rotatable member, said projection having a cam surface, an operating member carried by and movable with respect to said rotatable member, and a member carried by and movable transversely of said rotatable member and actuated by movement of said operating member with respect to said rotatable member for engaging said cam surface to shift said pinion longitudinally to free the same from said locking member.

18. Gear actuating and locking mechanism comprising a gear, a pinion meshing with said gear for driving the same, a locking member for locking said pinion against rotation, a rotatable member for rotating said pinion, means holding said rotatable member against longitudinal movement, a

projection on said pinion engaged by said rotatable member, said projection having a cam surface, an operating member carried by and movable with respect to said rotatable member, and a member carried by and movable transversely of said rotatable member and actuated by movement of said operating member with respect to said rotatable member for engaging said cam surface to shift said pinion longitudinally to free the same from said locking member.

19. Gear actuating and locking mechanism comprising a gear, a pinion meshing with said gear for driving the same, a locking member with which said pinion is adapted to engage, a rotatable member for rotating said pinion, means for holding said rotatable member against longitudinal movement, and means for shifting said pinion longitudinally with respect to said rotatable member and said locking member to free the same from said locking member.

20. Gear actuating and locking mechanism comprising a gear, a locking member, a pinion meshing with said gear and adapted to be locked against rotation by said locking member, a rotatable member for rotating said pinion, a crank pivoted on said rotatable member, and means actuated by said crank in movement upon its pivot for shifting said pinion longitudinally.

In testimony whereof I have hereunto affixed my signature this tenth day of October, 1917.

FREDERICK J. TODD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

It is hereby certified that in Letters Patent No. 1,274,471, granted August 6, 1918, upon the application of Frederick J. Todd, of Egg Harbor, New Jersey, for an improvement in "Gear Actuating and Locking Mechanism," errors appear in the printed specification requiring correction as follows: Page 1, line 85, strike out the word "with," second occurrence; same page, after line 91 insert the syllables and words *tension 52, here shown as of square section*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of October, A. D., 1918.

[SEAL.]

R. F. WHITEHEAD,

Acting Commissioner of Patents.