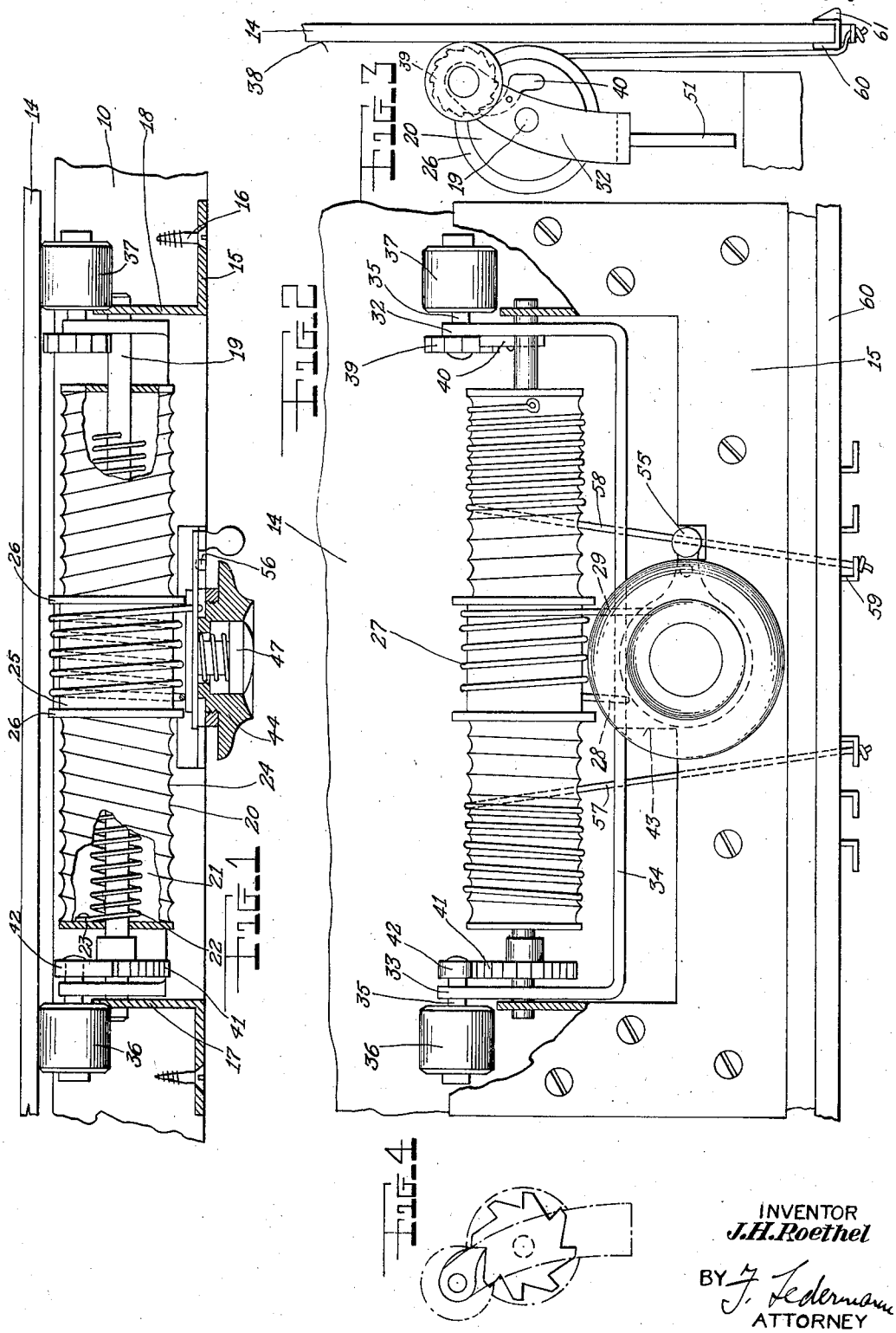
Oct. 18, 1927. 1,646,218

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WINDOW OPERATING MECHANISM

Filed Jan. 18. 1926 2 Sheets-Sheet 1



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WINDOW OPERATING MECHANISM

Filed Jan. 18. 1926 2 Sheets-Sheet 2

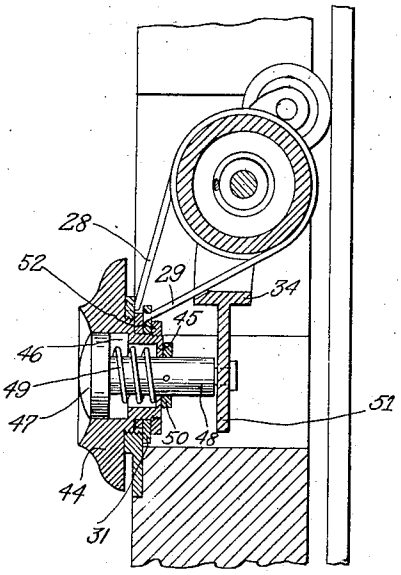


FIG. 5

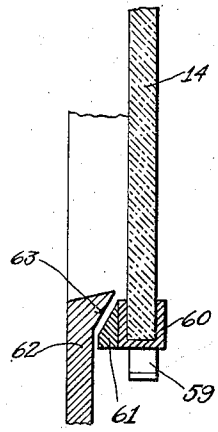


FIG. 6

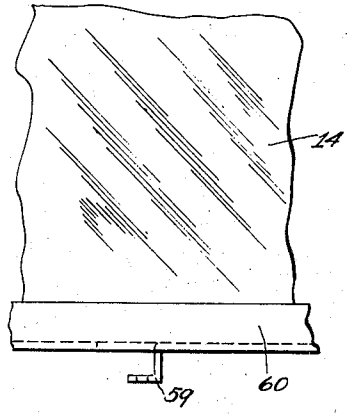


FIG. 7

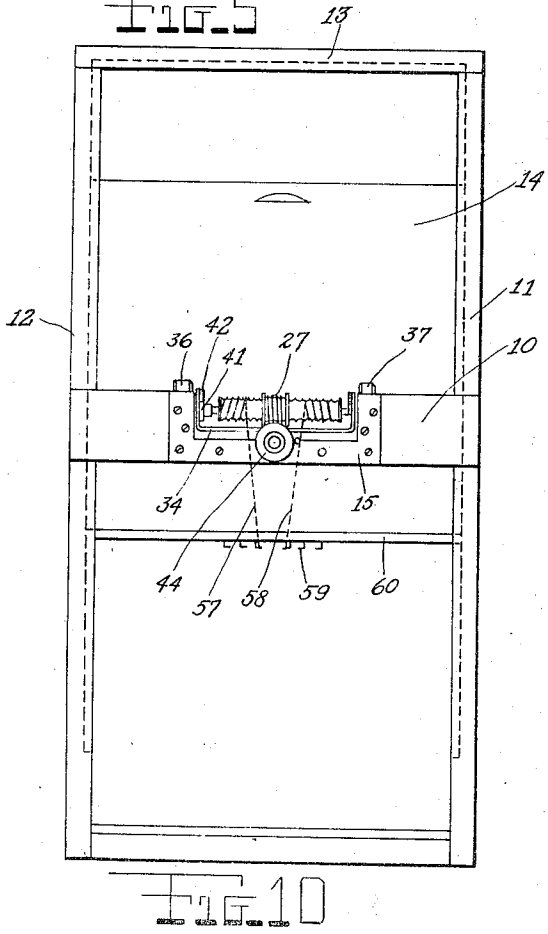


FIG. 10

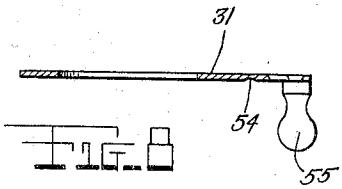


FIG. 8

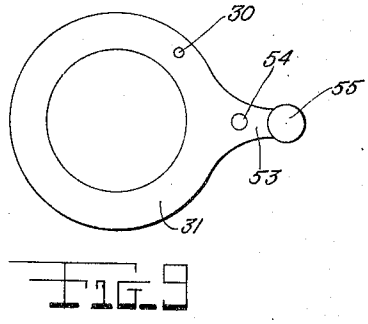


FIG. 9

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UNITED STATES PATENT OFFICE.

JOHN H. ROETHEL, OF BROOKLYN, NEW YORK.

WINDOW-OPERATING MECHANISM.

Application filed January 18, 1926. Serial No. 81,883.

The main object of this invention is to provide a window operating mechanism for opening and closing automobile windows either wholly or partly. The usual type of mechanism uses either a lever or a spring operated roller which is required to be manipulated by both hands. This device aims to provide a mechanism which may be lowered or raised by the use of one hand so that when a person driving a motor vehicle is busy, having one hand on the steering wheel, the remaining hand may manipulate the window opening mechanism so that the window can be lowered with this hand for the purpose of permitting signalling or the like.

The above and other objects will become apparent in the description below, in which characters of reference refer to like-named parts in the drawing.

Referring briefly to the drawing, Figure 1 is a partly sectioned top plan view of the window operating mechanism.

Figure 2 is a side elevational view of the same.

Figure 3 is an end elevational view, showing the window stop mechanism.

Figure 4 is an end elevational view of Figure 2, showing the tension ratchet and pawl.

Figure 5 is a longitudinal sectional elevational view, showing the means of braking rotation of the operating drum and release of the window stop rollers.

Figure 6 is a sectional elevational view of the bottom of the window of the casing, showing the method of forming a leak-proof fit between the window and door in which the window is mounted.

Figure 7 is a side elevational view of Figure 6.

Figure 8 is an end elevational view of the spring brake operating lever.

Figure 9 is a top plan view of the same.

Figure 10 is an elevational view of a vehicle door, showing the application thereto of the window operating means.

Referring in detail to the drawing, the numeral 10 indicates the center horizontal panel which extends across a door commonly used in vehicles. This panel has its ends mortised into sides 11 and 12 of the door. The sides and the upper framing member 13 of the door are provided with grooves adapted to receive the side edges and the top of a glass 14 which serves as a window.

Intermediate its length, the panel 10 is recessed and this recess receives a frame 15. which is secured in place by screws 16. Said frame is provided with a pair of parallel aligned plates 17 and 18. These plates receive the ends of a spindle 19 which extends entirely across the distance between the plates 17 and 18 and is rigidly mounted in the latter so that said spindle cannot rotate. A drum 20 is rotatably mounted on the spindle 19 and provides a housing 21 within the drum. A coil spring 22 is wound about the spindle 19 within the housing 21. Said spring has one end fixed securely to the spindle 19, coils about the latter helically toward the opposite end of the drum, which latter end is rigidly secured to the drum at 23. The drum is divided into three sections, end sections which have helical grooves 24 on their peripheries which extend toward the center of the drum and an intermediate section 25 which has a smooth periphery and is divided from the grooved end sections by flanges 26. On the intermediate section of the drum 25, a plurality of turns or coils 27 of a relatively stiff spring are formed. One of the ends 28 of the coils 27 is rigidly secured to the frame 15. The opposite end 29 of the brake spring formed by the coils 27 is secured in an opening 30 formed in a disk 31 which is rotatably mounted on the frame 10 intermediate its length.

A pair of arms 32 and 33 are connected by a bar 34. The arms and bar form a U-shaped carriage. Said arms extend curvedly upward toward the window 14, the bar 34 being positioned below the drum 20. Midway the length of the arms, openings are formed thru which passes the spindle 19. The upper ends of the arms are provided with outwardly extending studs 35 upon which rubber rollers 36 and 37 are rotatably mounted. The rollers 36 and 37 are normally in rolling contact with the inner surface 38 of the window 14 when the window is being lowered and one of the rollers 37 serves as a brake for preventing the window from being automatically moved or slid upwardly by the tense spring 22 in the drum 20. The stud 35 which rotatably supports the roller 37 has a ratchet 39 fixed thereon, and this ratchet is engaged by a pawl 40 pivotally anchored to the arm 32. This pawl has a weighted end which causes the active end of the pawl to at all times

remain in engagement with the teeth of the ratchet 39.

One end of the spindle 19 has an additional ratchet 41 fixed thereto adjacent the arm 33. This ratchet is rigid with the spindle 19 and is engaged by a locking pawl 42, said pawl being pivotally mounted on the stud 35 supporting the roller 36.

A portion of the frame 15 intermediate the length of the recess is provided with an upwardly extending plate 43. Said plate has a threaded opening therein in which is fixed a sleeve 44. Said sleeve has a bottom 45 and a chamber 46 about said bottom in which the head 47 on a push button 48 is slidably mounted. Beneath the head 47, and between the head and bottom of the sleeve, a coiled spring 49 is mounted by being wound around the push button 48. A washer 50 secured to the push button below the bottom 45 of the sleeve prevents the push button from being entirely extracted from its place in the sleeve. The inner end of the push button 48 engages an ear 51, which latter forms part of and depends from the bar 34 of the trunnioned carriage. The disk 31, heretofore described, is mounted upon the sleeve 45 and is retained in place by a collar 52 which threadedly engages said sleeve. Said disk has a tongue 53 extending radially therefrom. This tongue is provided with a hemi-spherical depression 54 intermediate its length and a knob 55 at its outer end. The knob is adapted to be exposed from the frame adjacent the sleeve 44 and the depression in the sleeve is adapted to be engaged by a small round headed pin 56 which is mounted in the frame 15. Said pin, when the tongue 53 is riding over the former, causes flexing of said tongue until the depression 54 becomes aligned with the pin, in which position the disk finds itself locked.

A pair of cords or cables 57 and 58 are positioned in the helical grooves 24 of the drum, one end of said cables being secured to the drum while the opposite end is secured to one of a plurality of hooks 59 which are blanked out of the bottom of a channelled cradle member 60, the latter serving as a support for the window 14. On one of the sides of the channelled cradle 60, the outer side, a tapering rubber wedge 61 is fastened. This flexible wedge is adapted to form a leak-proof fit between the frame member 62, which forms part of the door and is adapted to come in contact with an inclined surface 63 on the frame member 62 when the window is completely closed so that during rainy weather, no moisture will seep into the chamber into which the window 14 slides when in lowered position.

This device is adapted to be operated when opening or closing the window with the aid of one hand. The disk 31 to which the end 29 of the coil spring 27 is attached is adapted to prevent or permit rotation of the drum when the window is lifted or lowered. In rotating the tongue 53 upwardly by lifting the knob 55, the end 29 of the brake spring 27 is also lifted, releasing the tendency which the brake spring has of frictionally binding on the surface 25 of the drum 20. When the window is completely closed and the tongue 53 has been lifted, as described, and the brake spring released from contact with the drum, the hand of the operator may then lower the window, assuming that it is in closed position. As the window 14 is being lowered in its door frame manually, the rollers 36 and 37 rotate in one direction and are thru this lowering operation in contact with the surface 38 of the window. When the window has been lowered, the tendency of the spring 22 is to immediately lift the window again. This tendency is checked by the frictional contact between the periphery of the roller 37 and the surface of the glass 38. This roller 37 can only rotate in one direction, and in order to permit the glass to be lifted by the aid of the tense spring 22 in the drum 20, the roller 37 must be released from contact with the glass as the ratchet wheel 39 cooperates with the weighted pawl 40, prevents rotation of the roller 37 in the direction in which it would permit the window 14 to be automatically raised by the spring 22. When desiring to lift the window by the mechanism means presented in the specification, the tongue 53 is rotated upwardly or retained in such position and the head 47 of the push button 48 is depressed against the tension of the spring 49. Depression of the push button causes the latter to engage the ear 51 and rotate the entire carriage consisting of the arms 33 and 32 on which the rollers 36 and 37 are mounted and the bar 34 about the axis of the spindle 19 until both rollers 36 and 37 are released from contact with the surface 38 of the window, after which the latter is mechanically lifted by the tense spring 22, rotating the drum in a direction in which the cables are wound upon the helical grooved portions of said drum. To stop the window movement at any position of its travel, the button is released. This button immediately causes the trunnion carriage to return the rollers 36 and 37 into contact with the surface 38 of the window 14 and in this manner the brake is applied, stopping further movement of the window. It will be noted that the brake spring 27 performs the same function as the rollers 36 and 37, that of tending to stop movement of the window pane at any position during its travel. This, however, has a distinct purpose. The double system of braking movement of the drum renders the apparatus fool proof. When the window is fully or partly lowered, and a person within the car were to tamper and depress

the push button while the tongue 53 finds itself in lowered position, no response of the mechanism would be had, as the coil spring also finds itself in a locked position. To prevent injury to a person within the car who may inadvertently depress the button, two brake mechanisms are applied so that if the one were actuated, the remaining one would accomplish the purpose of still holding the mechanism inactive.

The travel of the window 14 in various makes of cars differs. The angle of the cables 58 and 57 varies accordingly, as said cables are entirely wound upon the drum or paid out therefrom. It is to provide the smallest angle of inclination and at the same time eliminate the necessity of changing the pitch of the helical grooves 24 to suit the needs of different sizes of windows to which the device is to be applied, that a plurality of hooks 59 are provided.

I claim:—

1. In a window operating mechanism having a vertically movable window, a spring tensioned roller and flexible means connecting said roller and window, means for locking the window in lowered or partly lowered position comprising a U-shaped bar pivoted about the axis of the roller, additional brake rollers mounted rotatably on said bar, said brake rollers normally engaging the window, finger depressed means for lifting the brake rollers from the window, and means adjacent said brake rollers for locking said brake rollers against rotation in one direction.

2. In a window operating mechanism having a vertically operated window, a spindle supporting a spring tensioned roller, and cords connecting the roller and the window, means for locking the window in any lowered position comprising a U-shaped bar pivoted on said spindle having its free ends projecting above said spindle, brake rollers mounted rotatably on said free ends normally engaging the window, ratchets secured to and rotatable with said brake rollers, and means pivoted on the free ends of the bar engaging said ratchets for locking the brake rollers against rotation in one direction.

3. In a window operating mechanism having a vertically movable window, a spindle supporting a spring tensioned roller, and cords connecting the roller and window, means for releasing or locking the window at any position of its travel comprising a U-shaped bar having vertical arms thereon, said arms swinging on said spindle, the spindle passing thru said arms intermediate their length, brake rollers mounted rotatably at the upper ends of said arms, a ratchet secured to each brake roller and rotatable with the latter, a pawl on each arm normally engaging the teeth of the ratchets, said pawls having a weighted lower end for retaining the pawls in engagement with the ratchets, and a spring projected push button engaging the U-shaped bar normally urging the upper ends of the arms toward the window to cause the brake rollers to engage the window and brake the same.

In testimony whereof I affix my signature.

JOHN H. ROETHEL.