L. LEWANDOWSKI.

WINDOW OPERATOR.

APPLICATION FILED MAR. 4, 1912.

1,036,658.

Patented Aug. 27, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

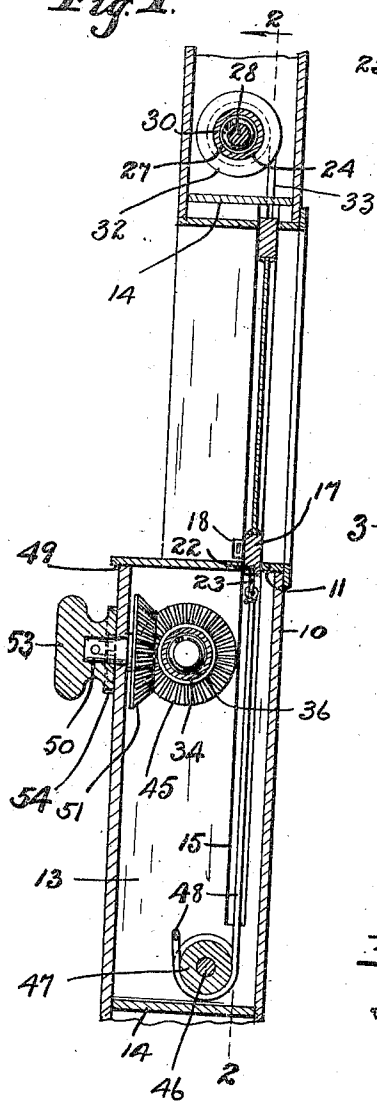


Fig. 2.

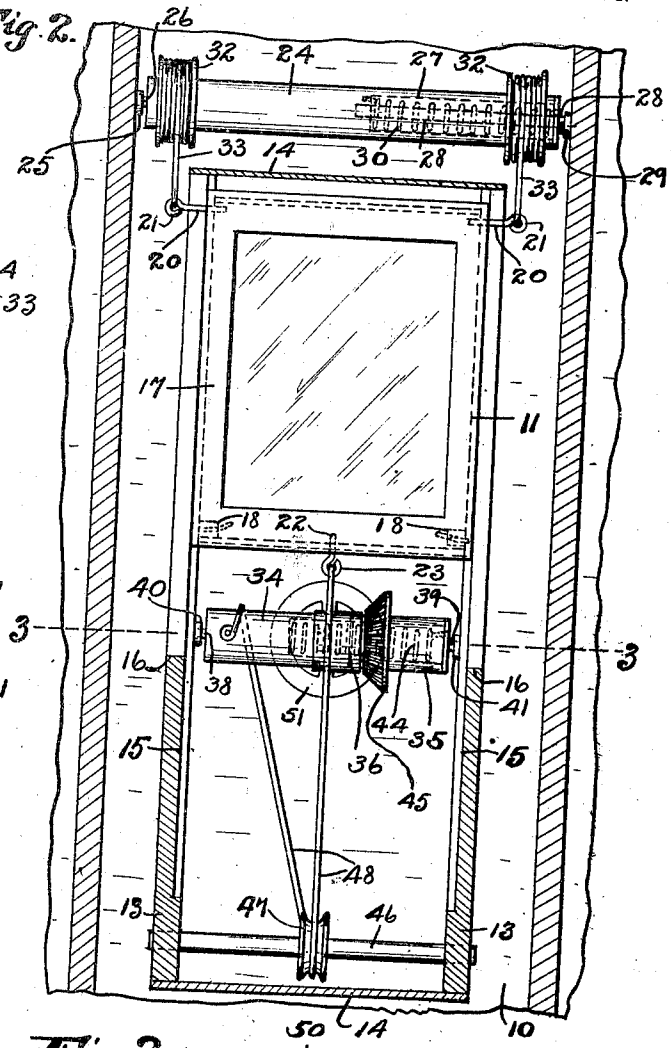
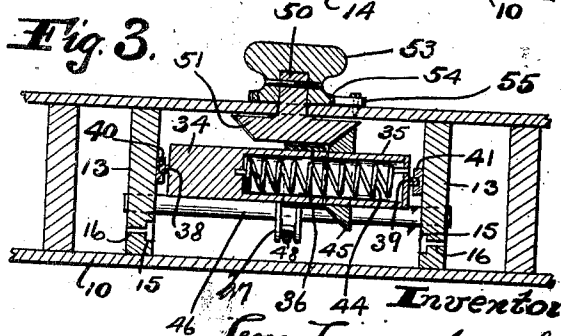


Fig. 3.



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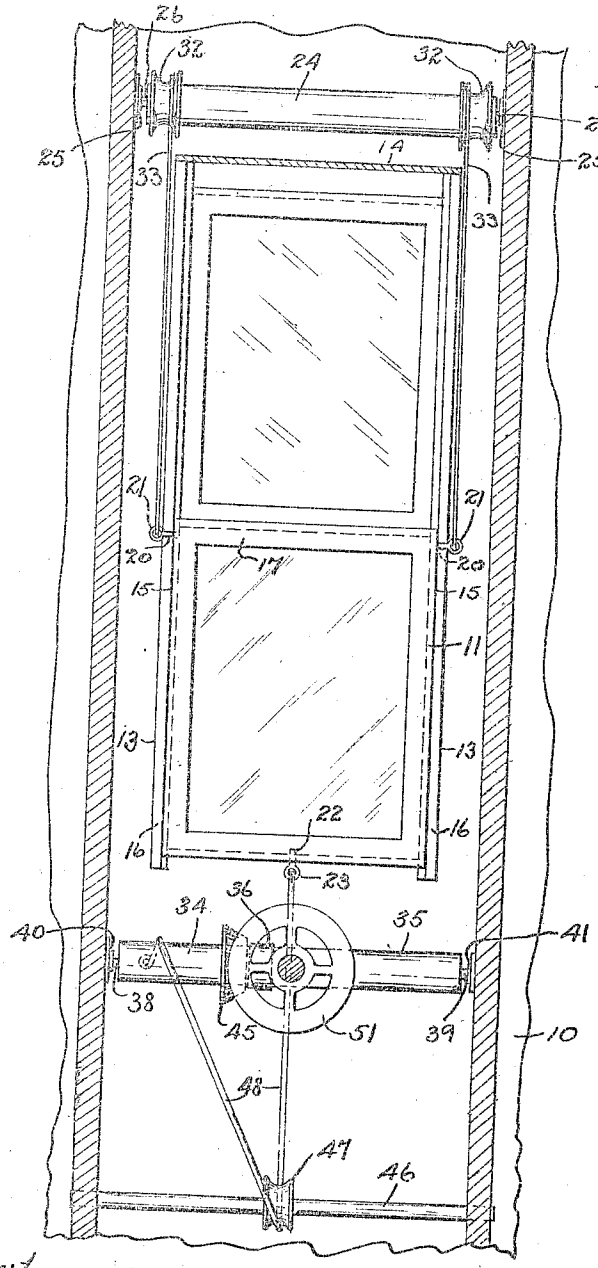
2 SHEETS—SHEET 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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WINDOW-OPERATOR.

1,036,658. Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed March 4, 1912. Serial No. 681,439.

To all whom it may concern:

Be it known that I, LEON LEWANDOWSKI, a citizen of the United States of America, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Window-Operators; and I hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to new and useful improvements in window operators and particularly to new and improved means for raising and lowering the window sash.

The object of this invention is to provide new and improved means for operating the window sashes of buildings, public conveyances, street-cars and the like, which will be simple in construction, easily installed and which will enable a sash to be raised and lowered very readily.

With these objects in view and with the intention of securing other advantages which will hereinafter appear, my invention consists in certain features of construction and combination of parts, described in the specification, pointed out in the claims and illustrated in the accompanying drawings.

In the accompanying drawings Figure 1 is a central vertical section through a window and casing embodying my invention. Fig. 2 is a section on line 2—2, Fig. 1. Fig. 3 is a section on line 3—3, Fig. 2. Fig. 4 is a front elevation of a window and window casing embodying my invention, the window having a stationary upper sash and a movable lower sash.

Again referring to the drawings 10 represents a wall in which is formed an opening 11 for a window. In the said opening is arranged a window casing consisting of vertically arranged side members 13 and horizontally arranged top and bottom members 14. In the side members 13 are formed guideways 15 for the sash and in each guideway is formed a slot 16, the object of which will appear later. The window sash, indicated at 17, is of the usual construction and is mounted so as to slide freely in the said guideways 15, and as shown, in order to open the window the sash is lowered and of course to close it the sash is raised from its lower position. In order to hold the sash against movement a small latch 18, of the usual construction, is provided at each side of the sash, the said latch also serving as a handle, by means of which the sash can be taken hold of. At each side of the sash near the upper end is secured a pin 20 which extends outwardly through the slot 16 in the adjacent side member of the window casing and each pin is provided with an eye 21, and at the center of the bottom of the sash is secured a pin 22 which has an eye 23. A roller 24 is arranged above the window casing and one end thereof is rotatably supported in a small bracket 25 by means of a stud 26. In the opposite end of the roller is formed a socket 27 and in the said socket is arranged a rod 28, the outer end of which projects beyond the roller and is supported against rotation in a small bracket 29. Around the rod 28 in the socket 27 is arranged a coil spring 30, one end of which is secured to the said rod and the other to the roller 24. It will therefore be seen that by turning the roller in one direction the spring will be put under tension, and unless the roller is held against rotation the spring will turn the roller back through the same number of turns that the roller was turned in putting the spring under tension. At each end of the roller is secured a sheave 32. A cord 33 is secured to each sheave and is wound thereon and the free ends of the cords are then secured in the eyes 21 of the pins 20.

Below the window opening within the window casing is a roller consisting of two hollow sections 34 and 35. The said sections being joined together by means of a loose sleeve 36 which permits each section to turn independently of the other section. The ends of said sections are supported by means of studs 38 and 39 which are rotatably mounted in brackets 40 and 41 respectively. Within the said roller sections is arranged a coil spring 44, one end of which is secured to the section 34 and the other end is secured to the section 35. On the section 35 is mounted a beveled gear 45 so as to turn therewith. Below the last-mentioned roller is mounted a small shaft 46 on which is mounted a pulley 47. A cord 48 is secured at one end to the roller section 34 and is then carried around the pulley 47 and the other end of said cord is secured in the eye 23 of the pin 22 in the bottom of the sash 17.

A housing 49 is arranged to conceal the roller sections 34 and 35 and in the front of this housing is mounted a stud 50 so as to be free to rotate. On the inner end of this stud is arranged a beveled gear 51 which meshes with the beveled gear 45. On the outer end of said stud is rigidly secured a handle or knob 53 which is provided with teeth or serrations 54 at its base. A pawl 55 is mounted in proximity to said handle and in its operative position is adapted to engage with the serrations thereon. It will be understood by rotating the handle 53 the beveled gear 34 on the inner end of the stud will be rotated which in turn will rotate the beveled gear 45 which in turn will revolve the roller section 35 and if the section 34 remains stationary the spring 44 will be wound up or put under tension.

The general operation of the window is as follows:—When the window is closed the sash is in the position shown in Fig. 2 and is held against movement by the catches 18. Now if it is desired to open the window or place the window in position so it will open, the knob 53 is turned and the turning of said knob will wind up the spring 44 because the roller section 34 is held against rotation by the cord 48. After the spring has been put under sufficient tension the window catches are loosened and the window will then be drawn down by the winding of the cord 48 on the roller 34 through the rotation of the roller 34 produced by the unwinding of the spring 44, the roller section 35 of course being held still by the locking of the knob 53 by the pawl 55. As the sash moves down it will unwind the cord from the sheaves 32 thereby rotating the roller 34 and placing the spring 28 under tension. Now if it is desired to raise the sash so as to close the window the pawl 55 is released from the knob 53 permitting the roller 35 to rotate freely which relieves the spring 44 of all tension and then the tension of the spring 28 will cause the roller 24 to turn in the opposite direction to that in which it is turned by the lowering of the sash and the cords 33 will be wound on the sheaves 32 and the sash will be drawn up into its closed position. After the sash has been brought to its closed position the latches will be operated to lock it therein and the pawl 55 will be caused to again engage with the knob 53 and the spring 44 may be wound up so that all it will be necessary to do when it is again desired to open the window will be to disengage the catches. The operation of the knob 53 will generally be attended to by the attendant in charge of the building or conveyance and the window will be at all times in condition to be readily operated.

In Fig. 4 I have shown my invention applied to a window having two sashes, the lower sash being movable and is arranged to raise in the usual manner when it is desired to open the window.

What I claim is,—

1. The combination with a window casing and a sash mounted so as to slide therein, of a roller mounted above said window, a spring connected with said roller and adaptation of the roller in one direction and adapted when under tension to rotate the roller in the opposite direction to that in which the roller rotated when placing the spring under tension, flexible means connecting said roller and said sash, a roller arranged below said sash, flexible means connecting said roller with said sash, a spring operatively connected with said roller and arranged so that when placed under tension it will tend to rotate said roller and means for placing said spring under tension without rotating said roller.

2. The combination with a window casing and a sash mounted so as to slide therein, of a roller arranged above said window, a spring connected with said roller and adapted to be placed under tension by the rotation of said roller in one direction and adapted when under tension to rotate said roller in the opposite direction to that in which said roller rotated when placing the spring under tension, flexible means connecting said roller and said sash and arranged to be wound on said roller when said roller is rotated under the action of said spring, a roller arranged below said sash and consisting of two hollow sections, a spring arranged in said sections and adapted to be placed under tension by the rotation of one of said sections, flexible means connecting one of said sections with said sash, means for rotating the other section so as to place said spring under tension and means for holding said last mentioned roller section against rotation.

3. The combination with a window casing and a sash mounted so as to slide therein, of a roller mounted above said window, a spring connected with said roller and adapted to be placed under tension by the rotation of said roller in one direction and adapted when under tension to rotate said roller in the opposite direction to that in which said roller rotated when placing the spring under tension, flexible means connecting said roller and said sash and arranged to be wound on said roller when said roller is rotated under the action of said spring, a roller arranged below said sash and consisting of two hollow sections, a spring arranged in said sections and adapted to be placed under tension by the rotation of one of said sections, flexible means connecting one of said sections with said sash, a beveled gear mounted on the other section, a stud arranged in proximity to

said beveled gear, a beveled gear mounted on said stud and arranged to mesh with the first-mentioned beveled gear, a knob secured on said stud and provided with serrations at its base and a pawl arranged in promimity to said knob and adapted to engage the serrations on the base of the knob, for the purpose set forth.

In testimony whereof, I sign the foregoing specification, in the presence of two witnesses.

LEON LEWANDOWSKI.

Witnesses:
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N. L. MCDONNELL.