

P. F. FITZ GERALD.
 OPERATING DEVICE FOR WINDOW SASHES.
 APPLICATION FILED JUNE 4, 1912.

1,055,156.

Patented Mar. 4, 1913.

2 SHEETS—SHEET 1.

Fig. 1.

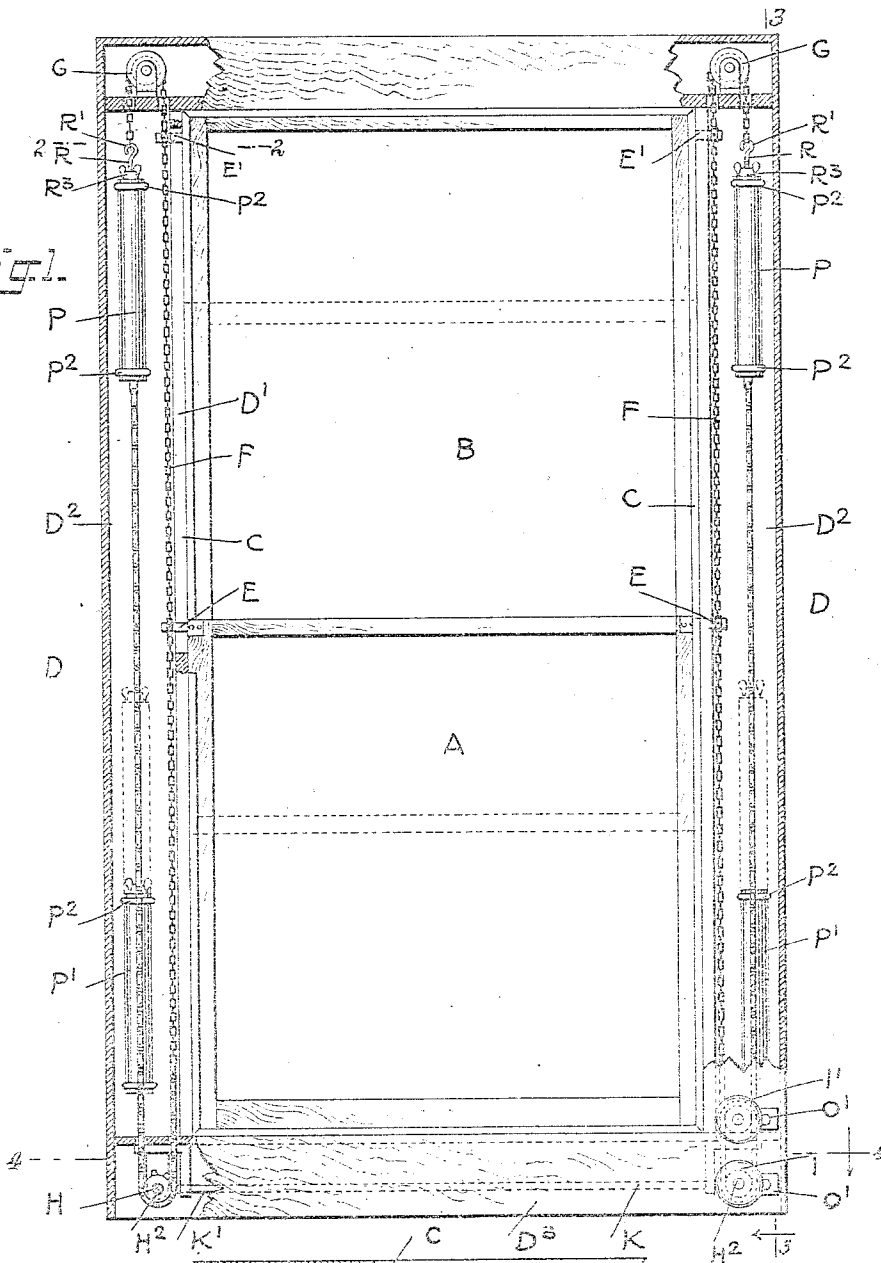
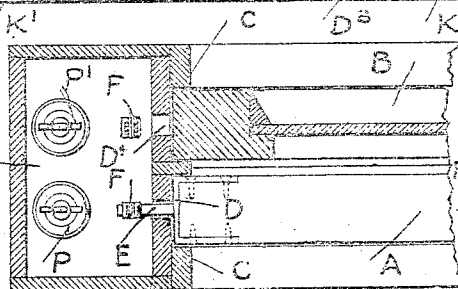


Fig. 2.



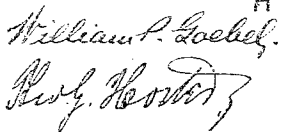
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1,055,156.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

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OPERATING DEVICE FOR WINDOW-SASHES.

1,055,156.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed June 4, 1912. Serial No. 701,557.

To all whom it may concern:

Be it known that I, PATRICK F. FITZ GERALD, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Operating Device for Window-Sashes, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved operating device for window sashes, arranged to enable the operator to readily raise or lower the sashes one independent of the other and without much physical exertion on the part of the operator, to securely hold the sashes in their adjusted positions and to prevent the sashes from sticking or canting while being raised or lowered.

For the purpose mentioned use is made of a pair of sidewise-extending brackets secured on the sides of the sashes at or near the upper ends thereof, the brackets projecting into the weight chambers or pockets of the window frame through vertical slots formed in the sides of the window-casing, a pair of endless chains connected at their inner runs with the sash brackets, the other run of each chain having interposed therein a counterbalancing weight and the said chains passing over guide pulleys in the upper portion of the window casing and around sprocket wheels arranged in the lower portion of the window casing, the said sprocket wheels being journaled on transversely-extending shafts connected by bevel gear wheels with a longitudinally-extending shaft journaled in the sill of the window casing, one of the said transverse shafts being extended into the room and the extended end of the shaft being provided with a handle for turning the said transverse shaft simultaneously to cause a simultaneous traveling of the said chains to raise and lower the window according to the direction in which the said handle is turned.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of the operating mechanism as applied to a window, parts being shown in section; Fig. 2 is an enlarged sectional plan view of the same on the line 2—2 of Fig. 1; Fig. 3 is a trans-

verse section of the same on the line 3—3 of Fig. 1; Fig. 4 is an enlarged sectional plan view of the same on the line 4—4 of Fig. 1; Fig. 5 is an enlarged sectional side elevation of the connection between one of the brackets on a sash and the corresponding chain, part of the guideway for the window sash being shown in section; Fig. 6 is a perspective view of one of the brackets; and Fig. 7 is an enlarged sectional side elevation, with part of one of the sash weights and its turnbuckle connection with the operating chain in elevation.

The lower and upper sashes A and B of the window are mounted to slide up and down in the usual guideways C of a window casing D of the usual construction. The stiles of the sashes A and B are provided at or near their upper ends with sidewise-extending brackets E, E' passing through vertical slots D' formed in the window casing D and leading into the pockets or chambers D², as plainly shown in Figs. 1, 2 and 3. The ends of the brackets E of the lower sash A are attached to the inner runs of endless chains F disposed vertically in the weight pockets D², and the brackets E' of the upper sash B are similarly attached to the inner runs of endless chains F' likewise arranged vertically and located within the pockets or chambers D² and in the rear of the chains F. The upper ends of the endless chains F, F and F', F' pass over pulleys G, G and G', G' journaled in the upper portion of the window casing D, and the lower ends of the chains F, F and F', F' pass around sprocket wheels H, H and H', H' journaled in the lower or sill portion D³ of the window casing D. The sprocket wheels H, H are secured on transversely-extending shafts H² journaled in the sill D³, and the sprocket wheels H', H' are secured on transverse shafts H³ likewise journaled in the sill D³ of the window casing immediately in the rear of the shafts H, H, as will be readily understood by reference to Figs. 3 and 4. One of the shafts H², preferably the one on the right-hand side of the window casing is extended into the room and on the extended end of the shaft H² is secured a hand wheel or a knob I under the control of the operator for turning the said shaft whenever it is desired to raise or lower the lower sash A, as hereinafter more fully explained. On the shafts H², H² are secured bevel gear wheels J, J in mesh with

bevel gear wheels J' , J' secured on the end of a longitudinally-extending shaft K journaled in suitable bearings in the sill D^3 of the window casing. Now when the hand wheel or knob I is turned then the corresponding shaft H^2 is rotated and a like rotary motion is given to the other transverse shaft H^2 owing to the gearing connecting the two shafts H^2 with each other and consequently both chains F receive a simultaneous traveling movement to raise or lower the lower sash A according to the direction in which the handle or knob I is turned at the time. The shafts H^3 , H^3 are similarly connected with each other by the use of bevel gear wheels J^2 secured on the shafts H^3 and in mesh with bevel gear wheels J^3 , J^3 secured on the ends of a longitudinally extended shaft K' extending in the sill D^3 and journaled in suitable bearings arranged therein as plainly indicated in the drawings. On one of the shafts H^3 , preferably the one in the rear of the shaft H^2 carrying the main wheel or knob I , is secured a sprocket wheel L connected by a sprocket chain L' with a sprocket wheel L^2 secured on a transversely-extending shaft N arranged in the right-hand pocket D^2 and journaled in suitable bearings carried by the window casing D . The shaft N is located directly above the shaft H^2 carrying the hand wheel or knob I and the said shaft N is extended into the room and is provided at the extended end with a hand wheel or knob I' to permit of turning the shaft N with a view to rotate the right-hand shaft H^3 which by the gearing described rotates the other shaft H^3 at the left-hand side of the window simultaneously with it, to cause a simultaneous traveling of the chains F' , F' to raise or lower the upper sash B according to the direction in which the hand wheel or knob I' is turned at the time.

From the foregoing it will be seen that by the arrangement described the operator on turning either of the hand wheels I or I' can raise or lower the lower sash A or the upper sash B .

On the extended shafts H^2 or N are secured notched wheels O adapted to be engaged by manually-controlled catches or bolts O' secured to the face of the window casing to permit of locking either shaft H^2 or N with a view to hold the sashes A or B locked in the adjusted position, that is, whether completely open, partly open or closed.

The sashes A and B are counterbalanced, and for this purpose counterbalancing weights P , P and P' , P' are employed, of which the weights P , P are interposed in the outer runs of the chains F , F and the weights P' are interposed in the outer runs of the chains F' , F' . By the arrangement described it requires but a little power on

the part of the operator turning either hand wheel or knob I or I' to raise or lower the corresponding sash A or B , as the latter are completely counterbalanced. It will also be noticed that by the arrangement described the sashes A and B are evenly lifted or lowered on both sides thereof so that the sashes are not liable to cant or stick in the guideways C of the window casing.

In order to hold each of the chains F , F and F' , F' taut with the desired degree, the counterbalancing weights P are used as turnbuckles, and for this purpose the lower end of each weight P or P' has a swivel connection Q with the corresponding end of the chain F , and the upper end of each weight P is provided with a screw rod R terminating in a hook R' engaging a corresponding end of the chain F or F' . The screw rod R screws in a nut R^2 secured to the top of the weight P or P' so that when the weight P is turned the screw rod R is screwed in or out to shorten or lengthen the chain F or F' with a view to hold the chain as taut as desired. A jam nut R^3 screws on the screw rod R against the nut R^2 to lock the screw rod R in position after the chain has been lengthened or shortened. Each weight P is also preferably provided near the ends with rings P^2 of rubber or other suitable material to deaden the noise in case a weight should accidentally bump against the interior walls of the pockets D^2 .

It is understood that by using the counterbalancing weights P and P' as turnbuckles, the sashes A and B can be accurately hung on the chains F and F' to insure an easy up and down movement of the sashes without danger of bending or canting of the sashes in the guideways, especially as both chains F , F or F' , F' for the sashes A and B are moved in unison by the mechanism described.

The operating mechanism shown and described is very simple and durable in construction, not liable easily to get out of order, and on account of being for the most part within the window frame it is protected against dust and other matter.

Having thus described by invention, I claim as new and desire to secure by Letters Patent:

1. An operating device for a window sash, comprising a pair of sidewise-extending brackets on the upper ends of the stiles of the sash, the brackets projecting into the weight pockets of the window frame through vertical slots formed in the sides of the window casing, a pair of endless chains for the sash and each connected at one run with the corresponding sash bracket, a counterbalancing weight interposed in the other run of each of the said

chains, the said weight having at one end a swivel connection with the chain, guide pulleys in the upper portion of the window casing and over which pass the upper ends
5 of the said chains, sprocket wheels around which pass the lower ends of the said chains, transverse shafts journaled in the lower portions of the sides of the window casing and carrying the said sprocket
10 wheels, a longitudinally-extending shaft journaled in the sill of the window casing, pairs of beveled meshing gear wheels connecting the ends of the said longitudinal shaft with the said transverse shafts, one
15 of the latter extending into the room, and a handle on the outer end of the said extended transverse shaft.

2. In a window sash balance an endless chain connected at one run with the sash, and a counter-balancing weight interposed
20 in the other run of the chain, the said counterbalancing weight having at one end a swivel connection with the chain and having at the other end an adjustable screw and nut connection with the chain to permit
25 of taking up slack in the chain.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PATRICK F. FITZ GERALD.

Witnesses:

A. H. DAVIS,
PHILIP D. ROLLHAUS.

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