H. N. RENTON.

POWER OPERATING DEVICE FOR WINDOW SASHES.

APPLICATION FILED DEC. 15, 1915.

1,190,671.

Patented July 11, 1916.

3 SHEETS—SHEET 1.

FIG. 1.

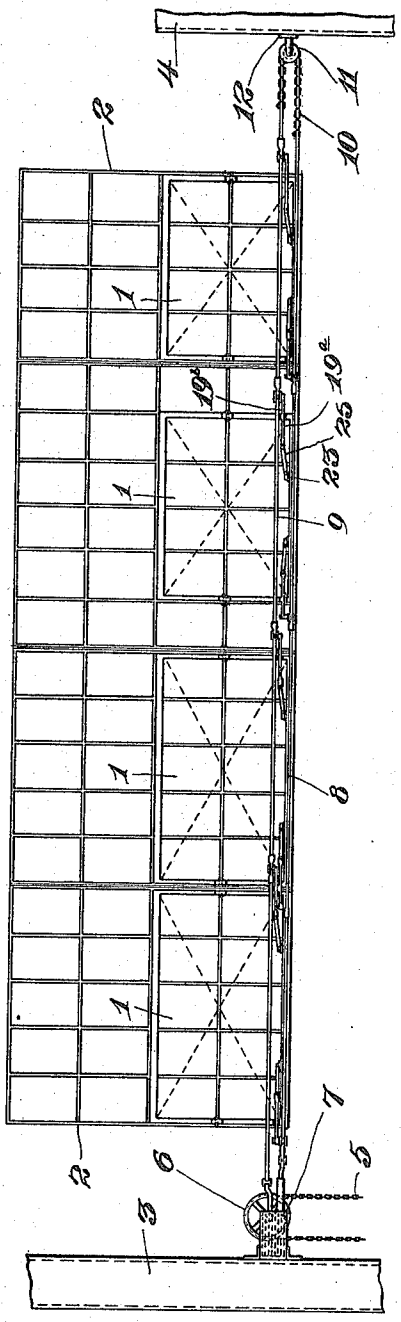
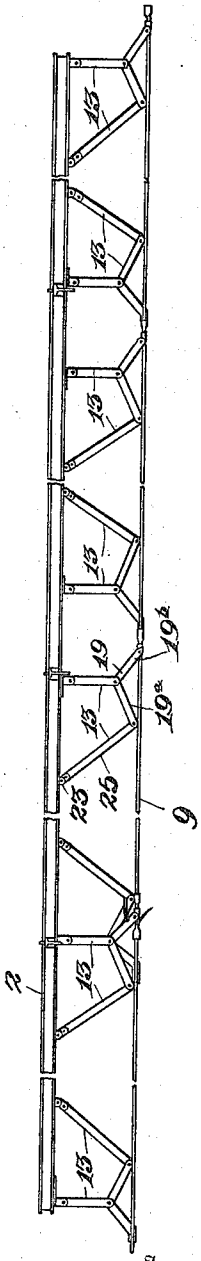


FIG. 2.



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3 SHEETS—SHEET 2.

FIG. 4.

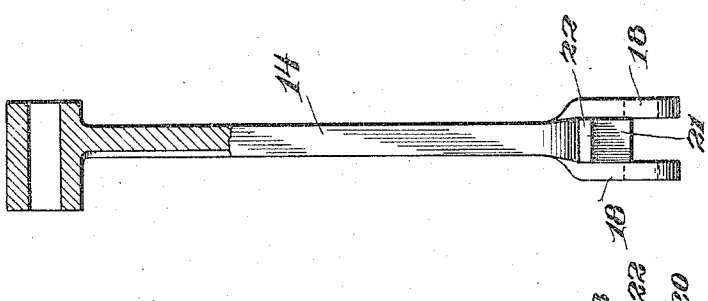


FIG. 3.

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3 SHEETS—SHEET 3.

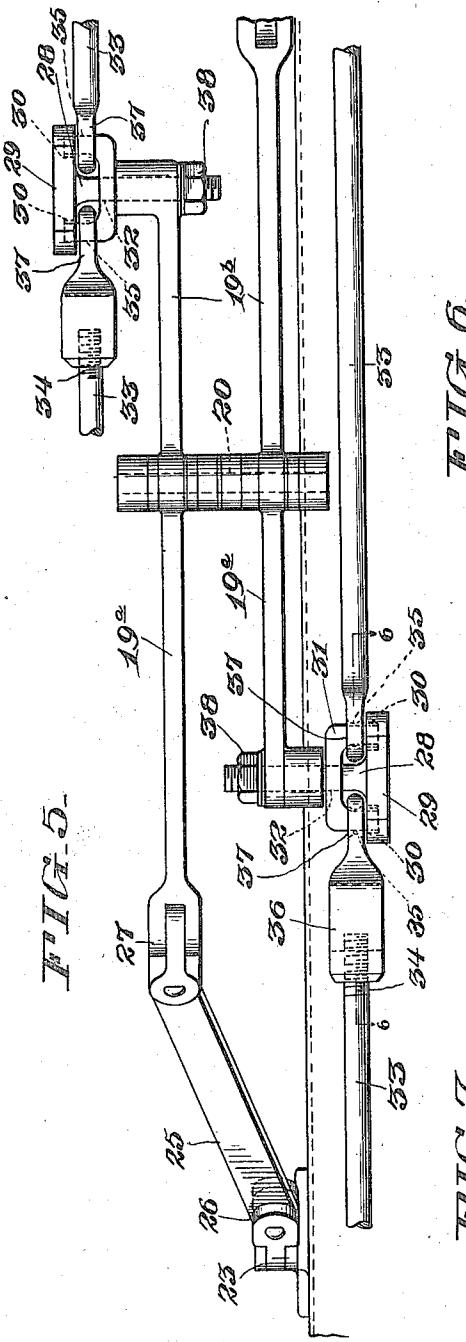


FIG. 5.

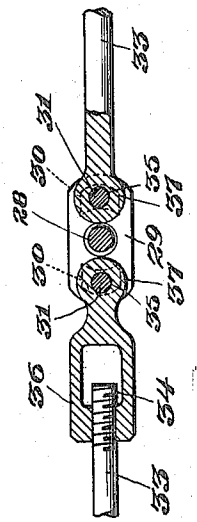


FIG. 6.

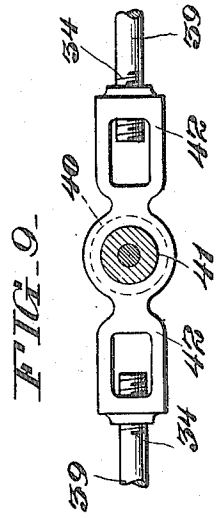


FIG. 9.

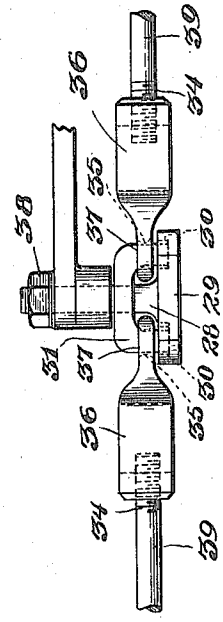


FIG. 7.

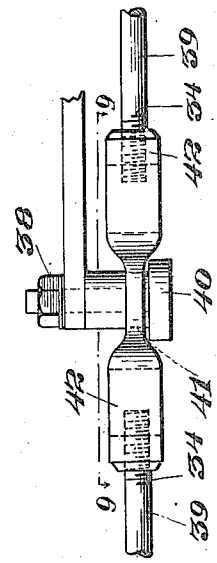


FIG. 8.

Witnesses

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UNITED STATES PATENT OFFICE.

HENRY N. RENTON, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO WILLIAM ROPER AND ONE-THIRD TO THEODORE F. OECHSLE, BOTH OF PHILADELPHIA, PENNSYLVANIA.

POWER-OPERATING DEVICE FOR WINDOW-SASHES.

1,190,671. Specification of Letters Patent. Patented July 11, 1916.

Application filed December 15, 1915. Serial No. 66,983.

To all whom it may concern:

Be it known that I, HENRY N. RENTON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Power-Operating Devices for Window-Sashes, of which the following is a specification.

My invention relates to improvements in power operating devices for window sashes, the object of the invention being to provide improved means for simultaneously operating a plurality of pivoted sashes or transoms such as commonly used in metal frames, and which will insure a strong leverage to open and close the sashes.

A further object is to provide devices of the character stated which can be manufactured and sold at a reasonably low price, which are capable of a wide range of adjustment to accommodate themselves to varying conditions, and which are of extreme simplicity, yet strong and durable in use.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1 is a view in front elevation illustrating a series of pivoted sashes equipped with my improved operating devices. Fig. 2 is a broken view of Fig. 1. Fig. 3 is an enlarged plan view illustrating a single unit. Fig. 4 is a view on an enlarged scale partly in elevation and partly in longitudinal section showing the link 14. Fig. 5 is an enlarged view in side elevation illustrating the operating mechanism shown in Fig. 3. Fig. 6 is a view in longitudinal section on the line 6—6 of Fig. 5. Fig. 7 is a view in elevation illustrating a modified form of rod connecting mechanism. Fig. 8 is a view similar to Fig. 7 illustrating another modification, and Fig. 9 is a view in section on the line 9—9 of Fig. 8.

1 represents pivoted sashes which are mounted in a metal frame 2, and which may be of any desired construction.

3 and 4 represent supports which constitute a part of the building or structure, and 5 is an operating chain adapted to be operated from a distance to turn a wheel 6, and the latter operatively connected to a spool or drum 7 which causes the movement in opposite directions of two rods 8 and 9. The rods 8 and 9, at their ends farthest removed from the spool 7 are connected by a chain 10, passed around a pulley 11 on a bracket 12 fixed to support 4.

As the particular means for operating the rods 8 and 9 form no part of the present invention, it is unnecessary to go into detail further concerning the same, except to say that some means is provided for imparting a movement to the rods which will cause them to move in opposite directions.

Each pivoted sash 1 is provided with a pair of operating devices 13 as shown clearly in Figs. 1 and 2. One of each pair of operating devices is connected to and moved by the rod 9, and the other of each pair of operating devices is connected to and operated by the rod 8. As all of these operating devices are precisely alike, the description of one will apply alike to all, and attention is especially directed to Figs. 3, 4, and 5, which show on an enlarged scale the detail structure of one of such operating devices.

Each operating device is provided with a link 14 pivotally connected at one end by a pin 15 to a bracket 16, the latter secured to the mullion 17 of the metal frame 2. The free end of the link 14 is bifurcated, and the perforated ears 18 forming the bifurcated end receive between them, an angle lever 19, and a pin 20, pivotally connects the angle lever at its angle to the bifurcated ears 18. Link 14, at its free end, is provided with two shoulders 21 and 22 which limit the pivotal movement of the angle lever 19, and while they allow a certain amount of pivotal movement, such independent movement is slight and is for a purpose which will hereinafter appear. A bracket 23 is secured to the lower bar 24 of sash 1, and a bar 25 is pivotally connected by couplings 26 and 27 at its respective ends with bracket 23 and lever 19 respectively. The lever 19 is so shaped that its two members 19^a and 19^b are at an angle slightly greater than a right angle, and member 19^a is preferably longer than the member 19^b, the end of the longer member 19^a being con-

nected to the bar 25, while the end of the shorter member 19b is pivotally connected to one of the rods 8 or 9 as the case may be, and we will assume for the purposes of illustration that the rod referred to is the rod 9. Rods 8 and 9 are composed of sections which are connected by coupling bolts 28, the latter also pivotally connected to the shorter ends of the levers 19. A preferred form of coupling bolt and coöperating parts is shown in Figs. 5 and 6. This bolt 28 is formed with a T-head 29 having recesses 30 at opposite sides to receive the ends of a yoke 31, the latter having a central opening 32 positioned on the bolt 28. In this preferred form, the sections 33 which form the rods 8 and 9 above referred to are screw-threaded at one end as shown at 34, and have eyes 35 at their opposite ends.

A coupling 36 is screwed onto the threaded end 34, and has an eye 37 at its free end. The yoke 31 is projected through the eyes 35 and 37, and when the parts are secured by means of the nut 38 screwed onto the bolt 28, the parts are firmly yet pivotally connected. The coupling member 36 allows of a certain amount of adjustment to properly fit the parts together.

In the modification illustrated in Fig. 7, the bolt construction is precisely like that above described, but the rod sections 39, corresponding to the sections 33 are screw-threaded at both ends, and coupling members 36 are located on both ends of the rod section.

In the modification illustrated in Figs. 8 and 9, the yoke 31 is dispensed with, and the bolt 40 corresponding to bolt 28, extends through a central eye 41 in a turn buckle 42, the latter receiving the screw-threaded ends of the rod sections 39, and permitting the necessary adjustment.

The operation of my improvements is as follows:—In Fig. 3, the normal position when the sash is closed is shown in full lines. When the rod 9 is drawn to the left, link 4 will swing on the pivot 15, and lever 19 will turn on the pivot 20 until its member 19b engages the shoulder 22, when there can be no further pivotal movement of the lever, and the lever 19 and link 14 operate as a single member with the pivot 15 as the fulcrum, and exert a strong direct push on the bar 25 to move the sash to open position. An intermediate position of the parts is shown in dotted lines in Fig. 3, but it must be understood that these pivotal connections are constantly changing their positions except the pivotal connection of lever 19 and link 14, the shoulders 21 and 22 serving to limit independent pivotal movement of these parts.

As each sash 1 is preferably provided with two operating devices such as above described, a strong leverage and direct pushing force is had to open the sash and they can be opened and closed at will from any ordinary distance at a minimum expenditure of power.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

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

1. The combination with a frame, and a pivoted sash therein, of a link pivotally connected to the frame, a lever pivotally connected to the link and operatively connected to the sash, and means limiting the independent pivotal movement of the lever in both directions relative to the link, substantially as described.

2. An operating device for pivoted sashes comprising a link adapted to be pivotally connected to a sash frame, an angle lever pivotally connected at its angle to the free end of the link, means on the link limiting the pivotal movement of the lever in both directions, means connecting one end of the lever with the sash to be operated, and operating means connected to the other end of the lever, substantially as described.

3. An operating device for pivoted sashes comprising a link adapted to be pivotally connected to a sash frame, an angle lever pivotally connected at its angle to the free end of the link, means connecting one end of the lever with the sash to be operated, operating means connected to the other end of the lever, and means on the link limiting the pivotal movement of the lever relative to the link, substantially as described.

4. An operating device for pivoted sashes comprising a link adapted to be pivotally connected to a sash frame, an angle lever pivotally connected at its angle to the free end of the link, means connecting one end of the lever with the sash to be operated, operating means connected to the other end of the lever, said link at its free end having shoulders at opposite sides limiting the pivotal movement of the lever, substantially as described.

5. An operating device for pivoted sashes, comprising a link pivotally connected at one end to a fixed part, an angle lever pivotally connected at its angle to the free end of the link, means on the link limiting the pivotal movement of the lever in both directions, an operating rod pivotally connected to one end of the lever, and a bar pivotally connecting the other end of the lever with the sash, substantially as described.

6. An operating device for pivoted sashes,

comprising a link pivotally connected at one end to a fixed part, an angle lever pivotally connected at its angle to the free end of the link, means on the link limiting the pivotal movement of the lever in both directions, an operating rod pivotally connected to one end of the lever, bracket adapted to be secured to the sash to be moved, a bar, and couplings pivotally connecting the bar at its respective ends to the bracket and to one end of the lever, substantially as described.

7. The combination with a frame, and a pivoted sash therein, of a bracket secured to the frame, a link pivotally connected at one end to the bracket and having a bifurcated free end, an angle lever pivotally connected at its angle to the bifurcated end of the link, shoulders on the link limiting the pivotal movement of the lever, a bar connecting one end of the lever with the sash, and operating means connected to the other end of the lever, substantially as described.

8. The combination with a plurality of pivoted sashes, and a pair of operating rods movable in opposite directions, of a pair of operating devices for each sash, each operating device comprising a link pivotally connected to a fixed part, an angle lever pivotally connected at its angle to the link, and at one end pivotally connected to one of said rods, means on the link limiting the pivotal movement of the lever in both directions, and a bar pivotally connecting the other end of said lever with the sash, all of said operating devices moved simultaneously by the movement of the rods, substantially as described.

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

HENRY N. RENTON.

Witnesses:
CHAS. E. POTTS,
MARIE JACKSON.

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