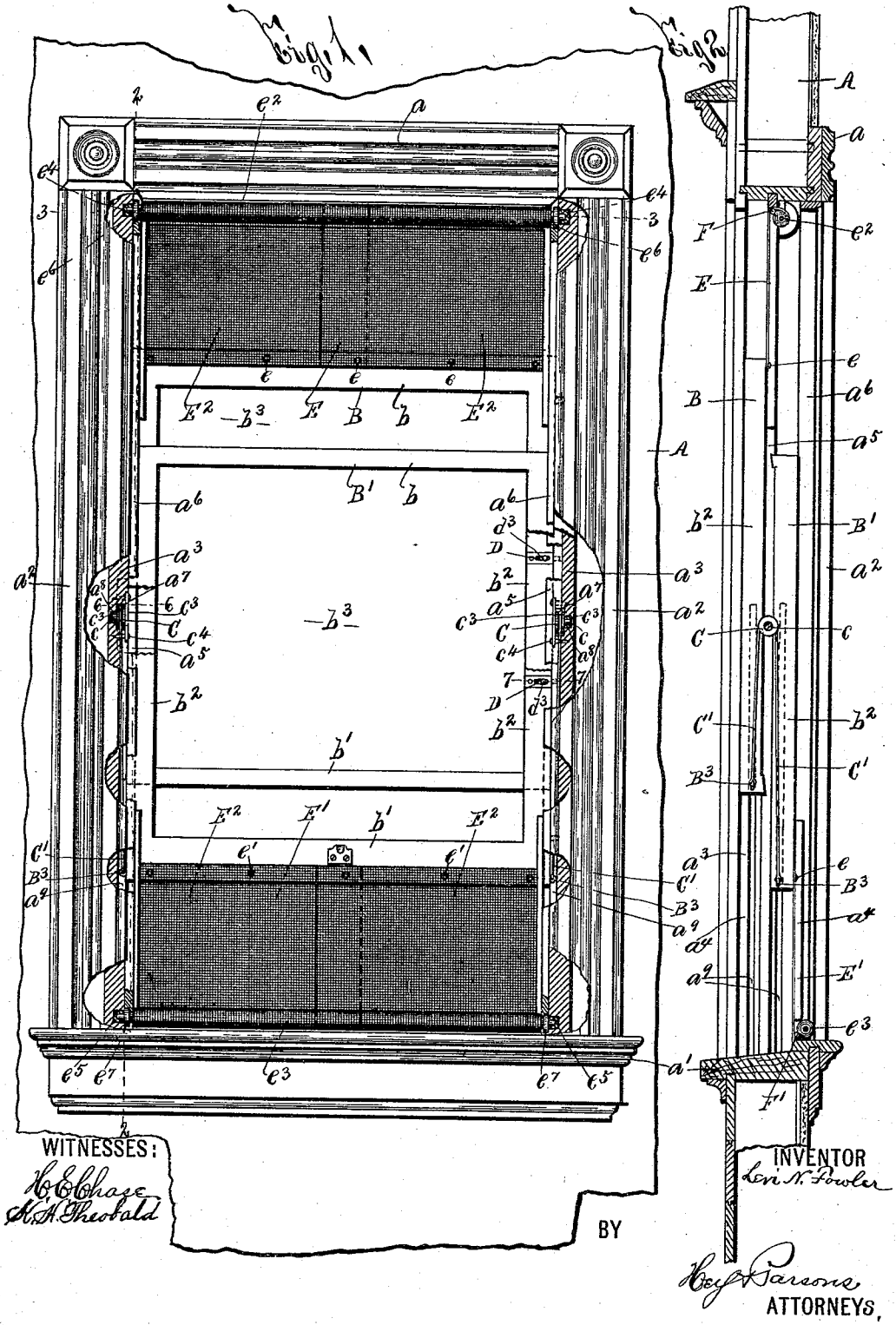
(No Model.)

2 Sheets—Sheet 1.

L. N. FOWLER.

WINDOW.

No. 543,380. Patented July 23, 1895.



(No Model.) 2 Sheets—Sheet 2.

L. N. FOWLER.

WINDOW.

No. 543,380. Patented July 23, 1895.

Fig. 3.

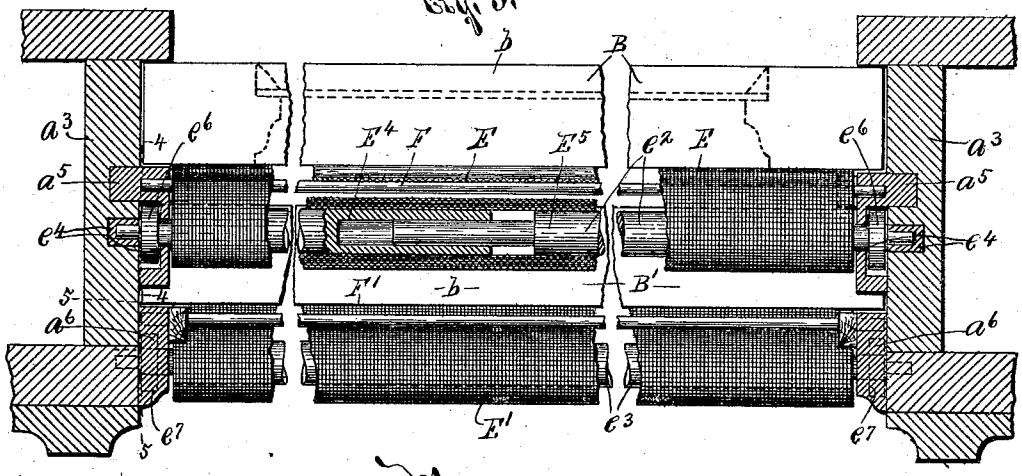


Fig. 4.

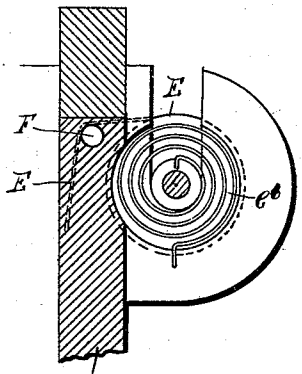


Fig. 6.

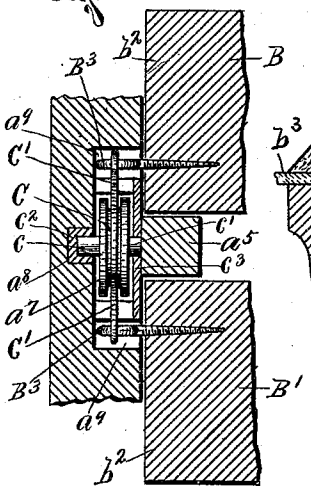


Fig. 7.

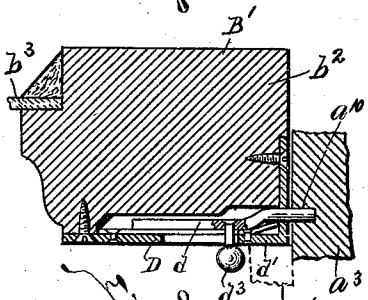


Fig. 8.

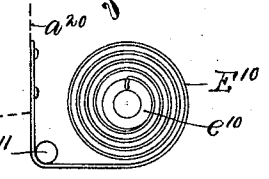


Fig. 5.

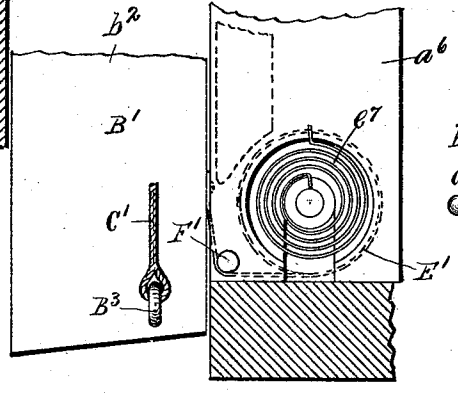
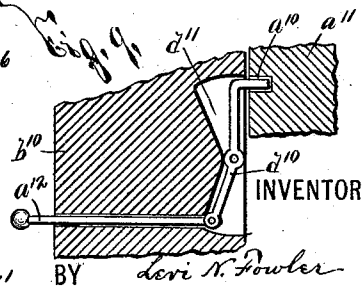


Fig. 9.



WITNESSES:

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LEVI N. FOWLER, OF SYRACUSE, NEW YORK.

WINDOW.

SPECIFICATION forming part of Letters Patent No. 543,380, dated July 23, 1895.

Application filed December 6, 1894. Serial No. 530,985. (No model.)

To all whom it may concern:

Be it known that I, LEVI N. FOWLER, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Windows, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in windows, and has for its object the production of a simple and practical device for raising and lowering the window-sashes and preventing the entrance of flies and other insects, which is particularly pleasing in appearance, economical in manufacture, and efficient in operation; and to this end it consists, essentially, in the general construction and novel arrangement of the parts, all as will be hereinafter fully described, and particularly pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 is an elevation of a detached sash-frame, adjacent parts of a supporting-wall for the frame, upper and lower sashes, and my improved invention operatively connected to the frame and sashes, portions of the frame being broken away for more clearly illustrating the invention. Fig. 2 is a longitudinal vertical sectional view taken on line 2 2, Fig. 1. Fig. 3 is an enlarged transverse sectional view taken on line 3 3, Fig. 1, portions thereof being broken away for permitting increase in the scale. Figs. 4 and 5 are detail vertical sectional views taken respectively on lines 4 4 and 5 5, Fig. 3. Figs. 6 and 7 are detail horizontal sectional views taken respectively on lines 6 6 and 7 7, Fig. 1; and Figs. 8 and 9 are detail sectional views of slightly-modified features of construction of my invention.

The window-casing is supported in the usual manner by a wall A, and consists of the head or top rail a, the sill a', and the sides or casings a^2, which are of any suitable form, size, and construction. The upper and lower sashes B B′ are also of suitable form, size, or construction, and consist of upper and lower rails b b', side pieces or stiles b^2 b^2, and panes b^3. The inner pieces or pulley-stiles a^3 a^3 of the sides or casings a^2 a^2 are formed with grooves or guides a^4 a^4, in which the outer side edges of the sash-stiles are guided, and are provided with the usual parting-strips a^5 a^5 and front stops a^6 a^6. The inner faces of the pulley-stiles a^3 a^3 are formed with opposite sockets a^7 a^7, aligned with the parting-strips a^5 a^5 and arranged in proximity to the normal positions of the opposite ends of the meeting-rails of the sashes B B′. The sockets a^7 a^7 may be formed by a suitable boring-bit, and supported therein are pulleys C C, movable on substantially horizontal axes for guiding suitable connections between the sashes B B′, as cords C′ C′. The pulleys C C are provided with trunnions c c', the outer trunnions c c being journaled in socket-bearings c^2 c^2, formed of metal or other suitable material and arranged in sockets a^8 a^8, extending inwardly from the inner walls of the sockets a^7 a^7, and formed, preferably, by a boring-bit of smaller size than the one for forming said sockets a^7 a^7. The inner or adjacent trunnions c' c' are journaled in supporting-plates c^3 c^3, secured to the inner faces of the pulley-stiles a^3 a^3 by screws or other fastening means c^4 c^4.

The lower extremities of the opposite sides or longitudinal edges of the sashes B B′ are provided with projecting arms B^3 B^3, movable in grooves a^9 a^9, formed in the inner faces of the pulley-stiles a^3 a^3 at opposite sides of the parting-strips a^5 a^5. The grooves a^9 a^9 extend downwardly to the sill a from points in proximity to the meeting-rails, and movable therein are suitable connections, as cords C′ C′, passed over the pulleys C C, and having their opposite ends removably secured to the arms B^3 B^3. It is thus obvious that there are no grooves in the upper halves of the pulley-stiles and moving cords or other connections between the sashes at the upper extremity of the sash-frame, and that consequently my invention is very pleasing in appearance.

The sashes B B′ are each provided with a suitable fastener D, (best seen at Figs. 1 and 7,) which preferably consists of a sliding bolt d guided in a frame d' secured to the inner side face of one of the stiles b^2. The outer ends of the bolts engage perforations a^{10} a^{10} in the adjacent stile a^3 and their intermediate portions are provided with thumb-pieces

d^3 d^3 for permitting of their ready operation. Said fasteners firmly lock the sashes in their adjusted position, and, as is obvious, if the fastener for the upper sash is engaged with the pulley-stile the lower sash may be raised a limited distance when required without necessitating movement of the upper sash.

At Fig. 9 I have shown a modified construction of fastener consisting of a pivoted locking-bolt d^{10}, hinged in a cut-out d^{11} in the outer faces of a sash-stile b^{10}, and formed at one end with an outturned extremity for engaging a perforation a^{10} in the adjacent pulley-stile a^{11}. A reciprocating operating piece a^{12} is passed through the sash-stile b^{10}, and one of its extremities is hinged to the locking-bolt d^{10} and its opposite extremity is extended beyond the inner edge of said sash-stile. It is obvious, however, that any desired form of fastener may be used with my invention and that it is not limited to the described constructions thereof.

The sashes B B′ are preferably of substantially equal weight, the lower sash being usually a trifle heavier than the other, and, as is obvious to one skilled in the art, said sashes are raised or lowered with a minimum degree of labor, and permit the practical entrance of cold air at the bottom of the window and the escape of hot air at its top. No weights or pulleys are required with my invention for raising and lowering the sashes, and consequently the construction of pockets in the sides or casings of the sash-frame are entirely obviated. The application of my invention to windows unprovided with sash weights or springs for raising and lowering the sashes is also very simple and requires but a minimum degree of labor and skill, as it is only necessary to withdraw the parting-strips, form the grooves for the cords and the sockets for the reception of the pulleys and the metallic socket-bearings, whereupon the cords and pulleys may be placed in operative position and the parting-strips replaced.

The sashes are removed with equal facility, it being merely necessary to remove one of the front stops, and thus permit access to the adjacent end of the adjacent connecting-cord C′, whereupon the same is readily detached from the corresponding arm B^3, and the window may be swung or moved outwardly, and, if desired, may be readily detached from the opposite connecting-cord. If access is desired to the upper sash one of the parting-strips is removed, and said sash may then be quickly removed in like manner. Access is also permitted to the pulleys C C by removing the plate c^3 c^3.

My invention is preferably provided with upper and lower screens E E′ for preventing the entrance of flies, insects, &c., and these screens are so arranged as to be automatically brought into operative position by the opening of the sashes. Corresponding ends of the screens E E′ are secured to the adjacent extremities of the sashes B B′ by any suitable form of fastening means e e', and their opposite ends are wound around rollers e^2 e^3, arranged, respectively, beneath the head or top rail a and above the sill a'. The opposite extremities of the rollers e^2 e^3 are journaled in suitable bearings e^4 e^5, secured to the upper ends of the parting-strips a^5 a^5 and the lower ends of the front stops a^6 a^6, and also in the pulley-stiles of the sash-frame, and suitable springs e^6 e^7 are secured to said rollers for normally winding the screens thereupon.

At Fig. 8 I have shown a screen E^{10} formed of spring metal and having one extremity wound around a roller e^{10} and its opposite extremity passed beneath a roller e^{11} and secured to a sash-rail a^{30}. (Shown by dotted lines.) With this construction of screen no springs are necessary for winding the screen upon its roller, as the spring of the screen is sufficient.

The screens E E′ and their rollers e^2 e^3 are preferably adjustable in order to facilitate their securement in position, and I have here shown the screens as consisting of opposite sections E^2 E^2, having their adjacent edges lapped upon each other, and the rollers as composed of opposite sections E^4 E^5, having their adjacent ends formed with interlocking projections and sockets. It is evident, however, that the screens may be cut to the desired width and the rollers formed of suitable length, if desired. In order to render the screens E E′ more effective in operation I arrange idler-rollers F F′ of smaller diameter than the screen-rolls in close proximity to the vertical planes of the adjacent faces of the upper and lower sashes, and pass the screens between said rollers and the adjacent faces of the head or top rail a and the sill a'.

The operation of my invention will be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be particularly noted that the sashes are readily raised and lowered, the entrance of flies and other insects absolutely prevented, and that the means for effecting upward and downward movement of the sashes is particularly simple in construction, economical in manufacture, efficient in operation, and is pleasing in appearance.

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

1. The combination with a sash frame having the inner faces of its pulley stiles provided with parallel grooves a^4, and sockets a^7 interposed between the grooves, socket bearings c^2 of less diameter than the sockets a^7 inserted into the end walls of said sockets, supporting plates c^3 of greater length than the diameter of the sockets extending lengthwise of the pulley stiles and having their opposite ends secured thereto, upper and lower sashes B B′ movable in the grooves a^4, parting strips a^5 interposed between the sashes projecting from the inner faces of the pulley stiles and aligned with the sockets a^7 for concealing said supporting plates and sockets, pulleys C ar-

ranged in the sockets a^7 and provided with trunnions c journaled in the bearings c^2 and trunnions c' journaled in the supporting plates c^3, and cords C′ passed over the pulleys C and having their opposite ends movable on opposite sides of the parting strips and connected to the sashes, substantially as and for the purpose described.

2. The combination with a sash frame having sockets in the inner faces of the pulley stiles, supporting plates at the outer ends of the sockets, upper and lower sashes, parting strips between said sashes projecting from the inner faces of the pulley stiles and aligned with the sockets for concealing the supporting plates and sockets, pulleys arranged in the sockets and provided with outer trunnions supported by the end walls of the sockets and inner trunnions supported by said plates, cords passed over the pulleys and having their opposite ends movable on opposite sides of the parting strips and connected to the sashes, a roller journaled beneath the head or top rail of the frame at the inner side of the upper extremity of the upper sash, a guide roller of smaller diameter than the screen roller arranged between the vertical plane of the upper sash and the former roller and having its axis nearer the lower face of the head or top rail than the axis of the former roller, and a screen passed over the guide roller and having one extremity wound around the former roller and its opposite extremity secured to the adjacent end of the upper sash, substantially as and for the purpose described.

3. The combination with a sash frame, and upper and lower sashes reciprocally movable; of a longitudinal adjustable roller journaled in proximity to one of the rails of the frame, and a screen adjustable widthwise and having one extremity wound around said roller and its opposite extremity secured to the adjacent edge of one of the sashes, substantially as and for the purpose specified.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 20th day of November, 1894.

LEVI N. FOWLER.

Witnesses:
K. H. THEOBALD,
H. E. CHASE.