

(No Model.)

2 Sheets—Sheet 1.

G. W. LINCOLN.
WINDOW SCREEN.

No. 465,595.

Patented Dec. 22, 1891.

Fig. 1.

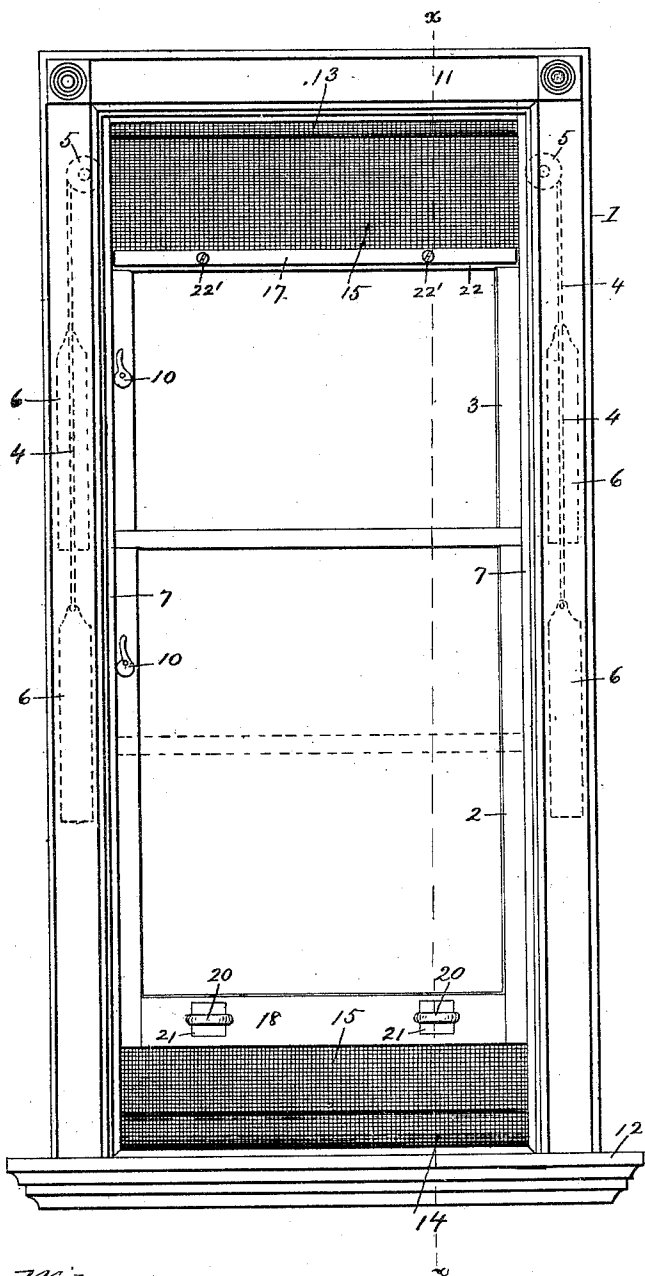
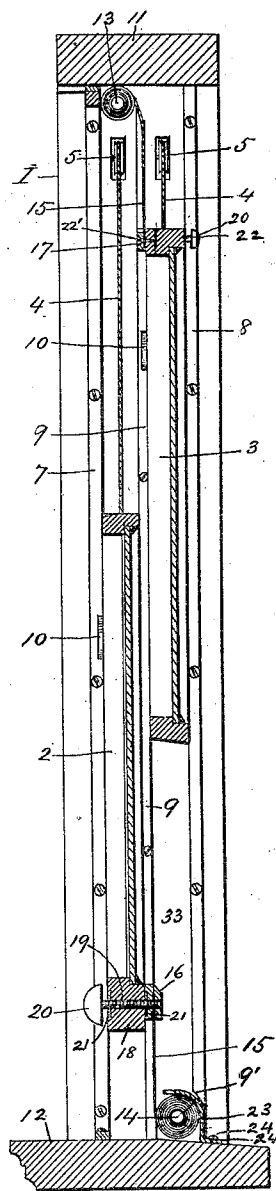


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3.

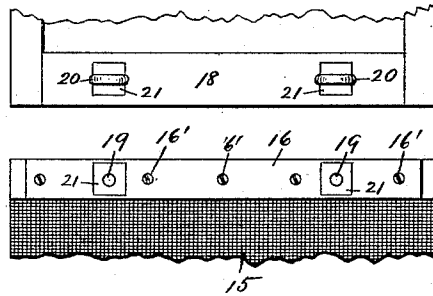


Fig. 4.

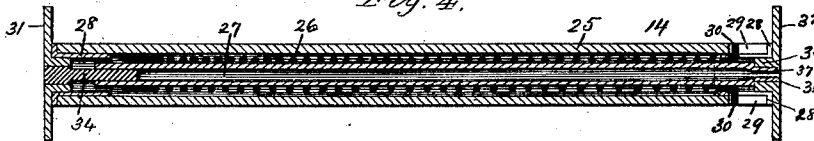


Fig. 5.

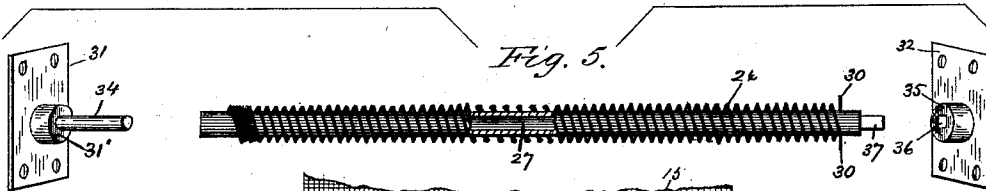
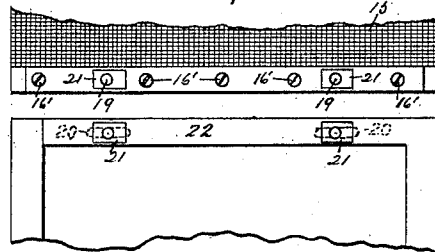


Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE W. LINCOLN, OF HONOLULU, HAWAII.

WINDOW-SCREEN.

SPECIFICATION forming part of Letters Patent No. 465,595, dated December 22, 1891.

Application filed October 11, 1889. Serial No. 326,711. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. LINCOLN, a citizen of the United States, residing at Honolulu, Hawaiian Islands, have invented certain new and useful Improvements in Window-Screens; and I do 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 appertains to make and use the same.

My invention relates, generally, to window-screens and particularly to improvements in that class thereof in which flexible wire-netting or other suitable reticulated material is wound upon and unwound from spring-actuated rollers which are mounted in the upper and lower portions of window-frames; and it consists of the improved construction and arrangement or combination of parts hereinafter fully disclosed in the description, drawings, and claims.

The objects of my invention are, first, to provide improved means for detachably securing the edges of the wire netting or screens to the bottom rail of the inner sash and the top rail of the outer sash; second, to provide novel or improved means or a combination of devices for holding the sashes and screens in different positions and against the resilient action or tendency to recoil of the spring-actuated rollers; third, to provide an improved construction of spring-actuated roller, and also an improved combination of the same with its adjacent parts, and, fourth, to provide the other novel constructions and combinations of parts hereinafter fully described and claimed. I accomplish these objects by the mechanism illustrated in the accompanying drawings, forming part of this specification, in which the same reference-numerals indicate the same or corresponding parts, and in which—

Figure 1 represents a front or inner view of a window-frame provided with my invention, the inner and outer sashes and the screens attached thereto being, respectively, slightly raised and lowered, the cords, guide-pulleys, and counterbalance-weights for the sashes being shown in dotted lines; Fig. 2, a vertical sectional view of the same, the section being taken on the dotted line *x x* of Fig. 1; Fig. 3, a detached detail front view of the bottom

rail of the inner sash and of the cross-piece to which the inner edge of the lower screen is attached, also showing the thumb-screws and re-enforcing plates which are used for detachably connecting said bottom rail and cross-piece; Fig. 4, a vertical longitudinal sectional detail view of one of the spring-actuated rollers and the bearing or supporting plates for its ends; Fig. 5, a detail partly-broken side elevation of the coiled spring and the hollow shaft within the same, the bearing or supporting plates being shown in detached perspective view; and Fig. 6, a view like that of Fig. 3, showing the top rail of the outer sash and the cross-piece to which the inner edge of the upper screen is attached.

In the drawings, the numeral 1 indicates the window-frame, 2 and 3 respectively the inner and outer sashes, 4 the cords, 5 the guide-pulleys, and 6 the counterbalance-weights for the sashes, all constructed and arranged in any ordinary or suitable manner, said window-frame being designed to be provided with inside or outside blinds, or both, as may be desired; also, to the sides or jambs of said window-frame are secured by screws the inside, outside, and central beads 7, 8, and 9 for supporting and guiding the sashes. To the sides or stiles of the latter are pivotally secured the cam-shaped sash-fasteners 10, which are adapted to be turned to bind against the inside and central beads 7 and 9 and assist the counterpoise-weights in firmly holding the sashes in whatever positions they may be made to assume.

In the upper and lower portions of the window-frame, just below and above the top and base sills 11 and 12, are mounted the upper and lower spring-actuated rollers 13 and 14, which are provided with outer tubular cylinders, that are preferably, but not necessarily, made of wood, as they may be made of sheet metal, and to the peripheries of the rollers are suitably secured the outer edges of the sheets of flexible wire-netting or the screens 15, which are adapted to be wound upon and unwound from said rollers. The outer edges of the lower and upper screens are placed in longitudinal grooves formed in the under and upper sides of the lower and upper cross-pieces 16 and 17, which are formed in two parts and secured together, with the edge of said screen between

the same, by the small screws 16'. The lower two-part cross-piece extends entirely across the inner portion of the window-frame and is cut away at its ends to fit and slide upon the central bead 9. The upper cross-piece 17 is constructed in the same manner for holding the outer edge of the upper screen, as shown in Fig. 6.

For connecting the lower and upper screens to the bottom and top rails 18 and 22 of the inner and outer sashes, said rails and the cross-pieces 16 and 17 are formed with registering screw-threaded holes 19, through which are passed the thumb-screws 20. To prevent said thumb-screws from becoming loose and also to protect said screw-threaded holes in both the rail and cross-pieces from undue wear or enlargement, the latter are both provided with the apertured metallic plates 21, which are secured flush with the opposing surfaces of said rails and cross-pieces and over the front parts of said screw-threaded holes. It will be understood, of course, that by partially withdrawing the thumb-screws the bottom and top rails of the inner and outer sashes and the cross-pieces for the lower and upper screens can be readily separated or disconnected, as shown in Figs. 3 and 6.

For protecting the lower spring-actuated roller 14 and the screen wound thereon and for preventing the entrance of rain, wind, &c., between the bottom rail 18 of the inner sash and the base-sill 12 of the window-frame, I provide the forwardly-inclined curved or quadrant-shaped shield 23, which extends entirely across the outer portion and at the base of said window-frame and is formed of suitable sheet metal, which may be plain or ornamented in any desired manner. At the lower edge of this shield is provided an outwardly-extending flange 24, which is formed with a suitable number of holes for receiving the screws 24', by which said shield is detachably connected to the base-sill of the window-frame. This shield is also secured between the central and outside beads 8 and 9, the latter being recessed or cut away at their lower ends, as at 9', to conform to the curvature of said shield and prevent the same from spreading and losing its shape; also, for the purpose of preventing friction and wear upon the wire netting or screen passing to and from the upper roller the upper ends of the central beads 9 terminate a short distance from the top sill 11 of the window-frame and are beveled or curved in a forward direction, thereby permitting said screen to pass freely and smoothly over the same.

The upper and lower spring-actuated rollers 13 and 14 are respectively constructed of three principal parts—viz., the outer tubular cylinder 25, which is preferably made of wood, the coiled spring 26 within said cylinder, and the hollow shaft 27 within said spring, as shown in Figs. 4 and 5. The outer tubular cylinder 25 is provided at its ends with the anti-friction rings 28 and at its right end is

formed with two diametrically-opposite slots 29. The coiled spring 26 is rigidly secured at its left end by solder or other suitable means to the hollow shaft 27 near its left end, while the remainder of said spring is loose upon said shaft, and thus permits its whole length to be freely turned thereon. At its right end this spring is provided with the two diametrically-opposite pins 30, which project laterally from its periphery and enter the slots 29, formed in the end of the tubular cylinder 25. When the screen is unwound from the cylinder, these slots press against the pins and coil or wind the spring around the hollow shaft for its full length, the reactionary force of said spring corresponding to the length of screen that is unwound from said cylinder. The ends of the hollow shaft 27 are connected to the bearing or supporting plates 31 and 32, which are respectively screwed to the left and right sides or jambs 33 of the window-frame at their lower ends. The left supporting-plate 31 is provided with the collar 31', having the spindle 34, which projects within and supports the left end of said hollow shaft, while the right supporting-plate 32 is provided with the disk or annular collar 35, which is formed with a square or equivalently-shaped opening 36 for receiving the correspondingly-shaped right end 37 of said shaft, and thus preventing it from being turned or revolved by the winding thereon of the coiled spring 26, which is rigidly secured near the left end of said shaft, as stated. These disks or annular collars correspond in diameter to the bore of the outer tubular cylinder 25, and hence prevent all wobbling and rattling of the roller, and also the collar 35 prevents the pins 30 becoming disengaged from the slots 29 in the end of said cylinder.

It will be obvious from the foregoing that the screens and their cross-pieces can be quickly attached to and detached from the top and bottom rails of the sashes by merely operating the screws; that the inner and outer sashes and their screens when raised and lowered can be rigidly held in any desired positions by the counterpoise-weights when assisted by the sash-fasteners, and also that said weights and fasteners will hold said screens under proper tension and also prevent them from being accidentally drawn back or wound upon the rollers by the resilience or normal tendency of the springs to recoil; that the spring-actuated rollers are mounted at short distances from the top and base sills of the window-frame; that the upper and lower rollers can be readily removed and replaced by taking out their bearing or supporting plates and the inside and outside beads and restoring the same to their normal positions, and that all of these capabilities are due to the fact that the parts named are held in place by mere screws; that my improved window-screens are strong, durable, and not liable to get out of order, and that they are comparatively inexpensive to manufacture.

Having thus fully described the construction and arrangement or combination of the several parts of my invention, the manner of operating the same, and its advantages, what I claim as new is—

1. In a window-frame, the combination, with the upper and lower spring-actuated rollers and the inner and outer sashes, of the screens attached at their inner edges to said rollers, the upper and lower cross-pieces arranged, respectively, upon the front and rear sides of the top and bottom rails of said sashes and formed in two parts and with longitudinal grooves in their under sides, the thumb-screws for removably securing said cross-pieces to said rails, and the sets of small screws for removably securing the outer edges of said screens to said cross-pieces, substantially as described.

2. In a window-frame, the combination, with the lower and upper spring-actuated rollers and the inner and outer sashes, of the lower and upper screens attached at their inner edges to said rollers, the lower and upper two-part cross-pieces attached to the outer edges of said screens, said cross-pieces and the bottom and top rails of said sashes being formed with the registering screw-threaded holes and provided with the apertured metallic plates around the entrances of said holes, and the thumb-screws for securing together said cross-pieces and the bottom and top rails of said sashes, substantially as described.

3. In a window-frame, the combination, with the sides or jambs thereof and the bearing or supporting plates secured thereto, of the spring-actuated roller consisting of an outer tubular cylinder formed with slots in one end and having anti-friction rings at both ends, a coiled spring arranged within said cylinder and provided with laterally-projecting pins, which fit within said slots, and a hollow shaft fitted within said spring, said spring being rigidly secured to said shaft near one end thereof and loosely mounted thereon the remainder of its length, substantially as described.

4. In a window-frame, the combination, with the sides or jambs thereof and the bearing or supporting plates secured thereto and provided, respectively, with a spindle and with a polygonally-shaped opening, of the spring-actuated roller provided with the hollow shaft, which is fitted at one end upon

said spindle and at its other end into said polygonally-shaped opening, substantially as and for the purpose described.

5. In a window-frame, the combination, with the sides or jambs thereof and the bearing or supporting plates secured thereto and provided with annular collars having respectively a spindle and a polygonally-shaped opening, of the spring-actuated roller consisting of the outer tubular cylinder and the hollow shaft, which is polygonally-shaped at one end for fitting into said opening and mounted at its opposite end upon said spindle, said annular collars projecting within and closely fitting the bores in the ends of said cylinder, substantially as and for the purpose described.

6. In a window-frame, the combination, with the sides or jambs thereof and the bearing or supporting plates secured thereto and provided with annular collars having respectively a spindle and a polygonally-shaped opening, of the spring-actuated roller consisting of the outer tubular cylinder formed with slots in one end and having anti-friction rings at both ends, the coiled spring having the laterally-projecting pins which fit within said slots, and a hollow shaft, which is polygonally-shaped at one end, for fitting into said opening and mounted at its opposite end upon said spindle, said annular collars projecting within and closely fitting the bores in the ends of said cylinder, one of said collars also preventing said pins from becoming disengaged from said slots, substantially as and for the purpose described.

7. In a window-frame, the combination, with the lower spring-actuated roller and its screen, the forwardly-inclined curved shield, and the outside beads recessed or cut away and curved at their lower ends to conform to the shape of said shield, of the upper spring-actuated roller and its screen and the central beads, which terminate a short distance from the top-sill of said window-frame and which are formed with beveled or forwardly-curved upper ends, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. LINCOLN.

Witnesses:

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CHAS. T. GULICK.