No. 816,940. PATENTED APR. 3, 1906.

W. H. SAWVEL.

SELF ADJUSTING WINDOW SCREEN.

APPLICATION FILED JULY 18, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

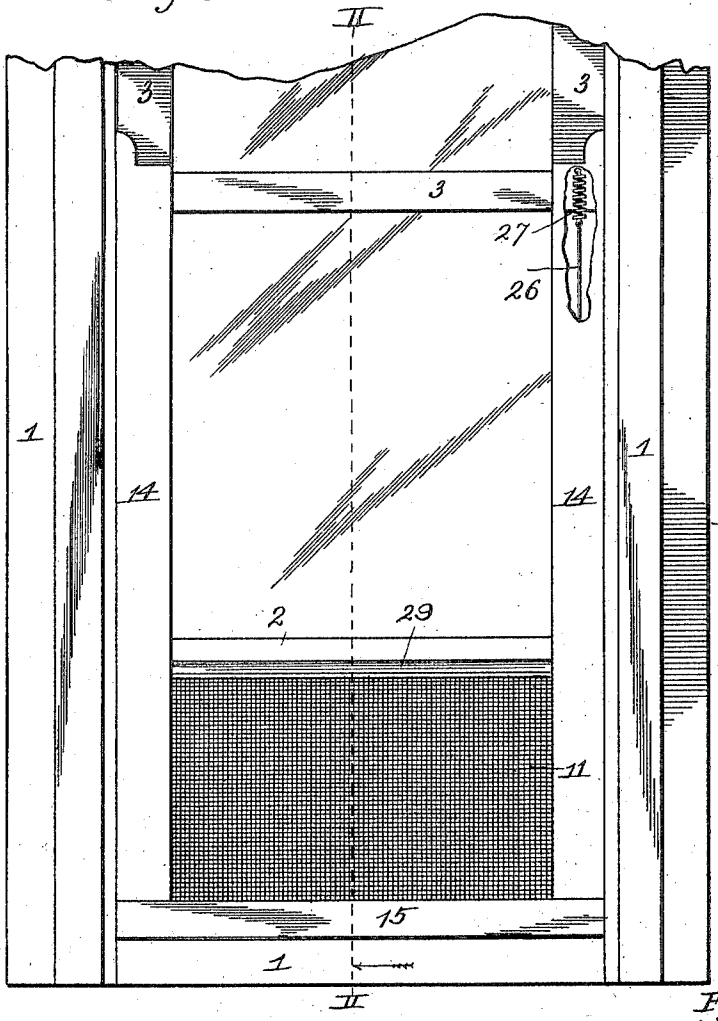


Fig. 2.

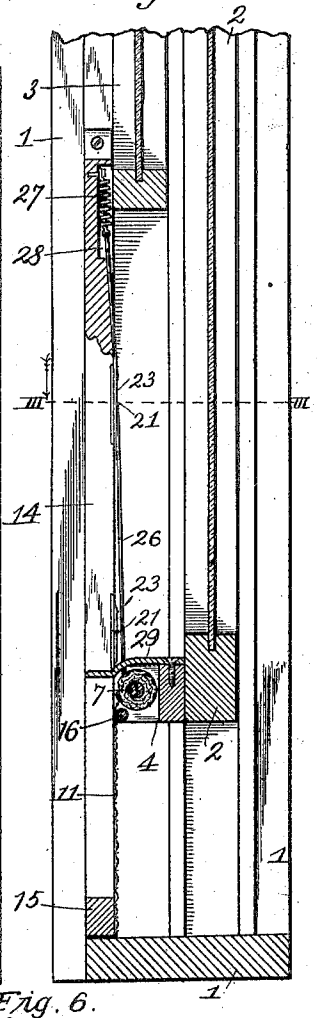


Fig. 3.

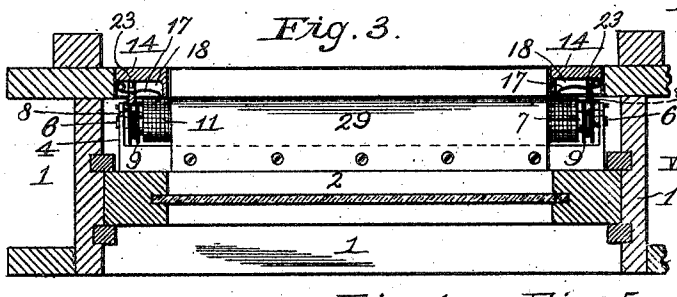


Fig. 6.

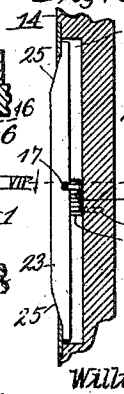


Fig. 7.

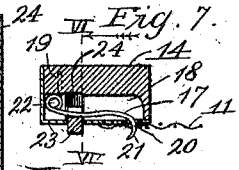


Fig. 8.

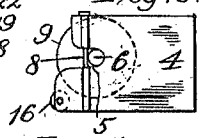


Fig. 4.

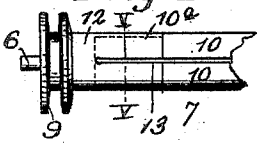
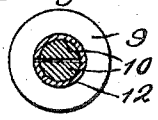


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 12.

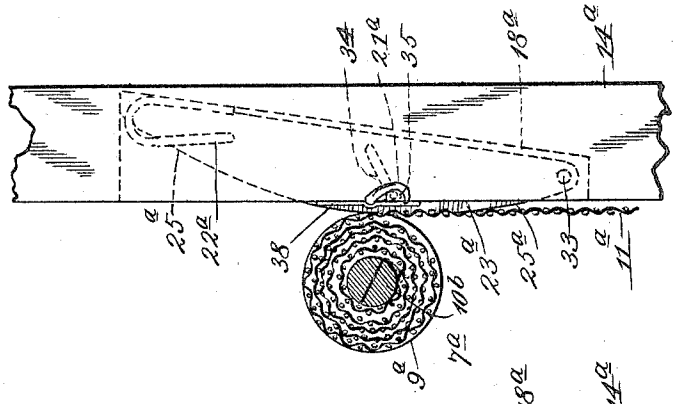


Fig. 11.

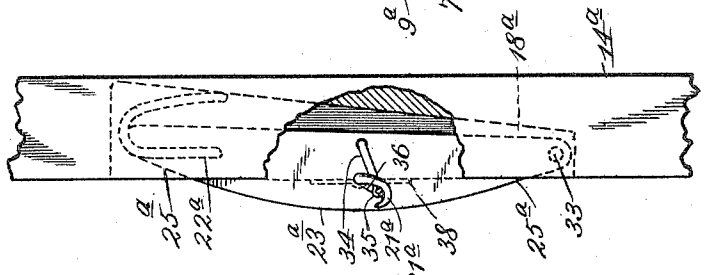
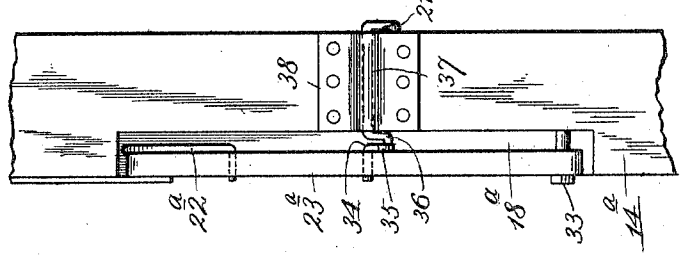


Fig. 10.



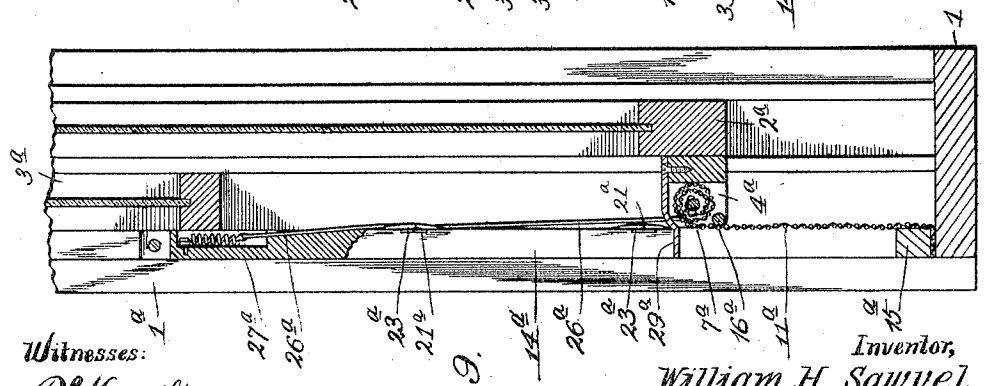


Fig. 9.

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UNITED STATES PATENT OFFICE.

WILLIAM H. SAWVEL, OF KANSAS CITY, MISSOURI.

SELF-ADJUSTING WINDOW-SCREEN.

No. 816,940. Specification of Letters Patent. Patented April 3, 1906.

Application filed July 18, 1905. Serial No. 270,180.

To all whom it may concern:

Be it known that I, WILLIAM H. SAWVEL, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Self-Adjusting Window-Screens, of which the following is a specification.

My invention relates to improvements in self-adjusting window-screens; and it consists in the novel construction, combination, and arrangement of parts hereinafter described, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 represents a broken front elevation of a window-frame provided with my improved self-adjusting screen. Fig. 2 is a vertical central section of same, taken on line II II of Fig. 1. Fig. 3 is a transverse section taken on line III III of Fig. 2. Fig. 4 is a broken elevation of one end of a roller employed in carrying out the invention. Fig. 5 is a transverse section taken on line V V of Fig. 4. Fig. 6 is a vertical section taken on line VI VI of Fig. 7, showing one of the retainers for holding the screen against the screen-frame. Fig. 7 is a transverse section of same, taken on line VII VII of Fig. 6. Fig. 8 is a side elevation of a bracket and a roller carried thereby. Fig. 9 is a broken vertical section of the window frame and screen provided with a modified form of retainer. Fig. 10 is an enlarged broken front elevation of one of the side pieces provided with the modified form of retainer. Fig. 11 is a broken side elevation of same, showing the retainer in its normal position. Fig. 12 is a side elevation of same, showing the retainer pushed backwardly out of engagement with the screen by means of the screen-roller.

In said drawings, 1 designates a window-frame.

2 designates a lower sash, and 3 designates an upper sash, slidably arranged in the window-frame in the ordinary manner.

4 designates a bracket secured to the lower rail of sash 2 and provided at its opposite ends with bearings 5, in which trunnions 6, projecting from the opposite ends of a roller 7, are journaled, said trunnions being held in position by vertical pins 8, extending through the bearings. Roller 7 comprises two drums 9 and two sections 10, between which latter the upper end of the wire screen 11 is clamped.

12 designates sleeves formed integral with the inner sides of the drums for the reception of the reduced ends 10^a of the sections and are provided with slots 13, arranged in alinement with the joint between sections 10 for the reception of the sides of screen 11. The lower end of screen 11 is secured to the lower end of a frame consisting of two vertical side pieces 14 and a lower transverse rail 15, all of which are secured to the window-frame. When the lower sash is raised, the screen unwinds from the roller, and thus prevents flies, mosquitoes, or other insects from passing through the opening left by said sash, as the screen is held closely in contact with the inner surface of side pieces 14 by a small roller 16, arranged beneath roller 7 and journaled in the ends of bracket 4. After the screen has been unrolled it is prevented from bulging inwardly away from side pieces 14 by means of retainers 17, arranged in pairs in said side pieces 14, which latter have recesses 18 for their reception. Said retainers consist of spring-wire and are secured to side pieces 14 by their inner ends 19, while their outer ends extend through openings 20 in said side pieces and are formed into hooks 21, which engage and hold the screen against the side pieces, as shown in Fig. 7. Hooks 21 are normally held in an outward position by means of coil-springs 22, formed integral with said retainers; but in order to prevent either of rollers 7 16 from contacting with and bending said hooks I provide means in the form of arms 23 for depressing them out of the way of said rollers. Arms 23 are located in grooves 24 in side pieces 14 and have their rear sides arranged in contact with the retainers 20, so that when they are pressed backwardly into their grooves by either of the rollers they will force the hook ends of the retainers back into recesses 18 and hold them there until the rollers have passed. When the hooks are forced backwardly into their recesses, they become disengaged from the screen, so that the latter will be free to wind upon roller 7 when the sash is moved downwardly. When the rollers pass out of engagement with the arms, the latter are forced outwardly to their normal position (see Figs. 6 and 7) by the retainers. The end portions of the arms have beveled surfaces 25, so that when the rollers contact therewith said arms will be gradually forced back into their grooves. The ends of the arms are arranged about equal distance from the retainers, so the latter will be depressed in ample time to prevent the rollers

from contacting therewith when said rollers are passing either upwardly or downwardly. When sash 2 is lowered, roller 7 is rotated to wind up the screen by means of two cables 26, secured at their lower ends to drums 9 and at their upper ends to compensating springs 27, which latter keep the cables taut, so they will not slip upon the drums and fail to properly perform their work of rotating said drums fast enough to keep the screens taut at all times. Said springs compensate through their retractive and expansive action for the difference in speed between the winding and unwinding of the screen and the cables. For instance, as sash 2 is lowered the screen will wind upon itself, while the cables will unwind until a point is reached where the screen will wind up faster than the cables unwind. When the sash is raised, the above operation will be reversed. Springs 27 are arranged in recesses 28 in the upper ends of side pieces 14, so they will be out of the way of sash 3 when the latter is lowered. Roller 7 and that portion of the screen wound thereon will be protected from rain, sleet, or snow by means of a hood 29, secured to bracket 4.

Referring now to the modified form of retainer illustrated in Figs. 9 to 12, inclusive, 1^a designates the window-frame, 2^a designates the lower sash, and 3^a the upper sash. 4^a designates a pair of brackets secured to the lower sash in which rollers 7^a and 16^a are journaled. 11^a designates the screen which is attached at its ends to roller 7^a and a lower transverse rail 15^a, which latter is secured to the lower portion of the window-frame. 14^a designates side pieces against which the screen is adapted to abut when the lower sash is open. 46^a designates cables attached to the ends of rollers 7^a and compensating springs 27^a, which latter are secured to the upper ends of side pieces 14^a. As the construction of the above parts is similar to that disclosed in Figs. 1 to 5, inclusive, further description thereof is deemed unnecessary, so that I will now proceed to describe in detail the construction and operation of the modified form of retainer. Attention is therefore called to Figs. 10 to 12, inclusive, in which 23^a designates an arm tapering toward its opposite ends 25^a and pivotally mounted at its lower end upon a pin 33, located in a groove 18^a, provided in the adjacent side piece 14^a for the reception of said arm when the latter is pressed backwardly by the rollers. The upper free end of the arm is normally held in an outward position by a spring 22^a. (See Fig. 11.) 34 designates a link pivotally secured at one end to arm 23^a and provided at its opposite end with an eye 35 for the pivotal reception of the free end of a crank-arm 36, formed integral at one end with a rocker-bar 37, provided at its opposite end with an integral hook 21^a, adapted to perform the function of hook 21—*i. e.*, that of holding the screen in contact with the inner surface of side pieces 14. When arm 23^a is pressed backwardly into groove 18^a by rollers 7^a 16^a, it is obvious that it will draw link 34 backwardly and through the instrumentality of rocker-bar 37 and its crank-arm rotate hook 21^a downwardly and forward past the inner surface of side piece 14^a, so that the rollers will not contact with said hook. (See Fig. 12.) After said rollers have passed out of engagement with the arm the latter will spring outwardly, causing hook 21^a to rotate upwardly and engage the screen.

From the above description it is apparent that I have produced a self-adjusting screen which is simple in construction, reliable in operation, and thoroughly effective for the purpose intended.

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

1. The combination with a window-frame and a sash operatively arranged therein, of a roller, a screen secured at its ends to said roller and the window-frame, cables attached to the roller to rotate the latter while the sash is being closed, side pieces secured to the window-frame, retainers which automatically engage the longitudinal edges of the screen and hold them against the side pieces, and arms suitably connected to the side pieces and yieldingly held in the path of the roller, said arms being arranged to swing the retainers out of engagement with the screen when the roller contacts with said arms.

2. The combination with a window-frame and a sash operatively arranged therein, of a bracket secured to said sash and provided with bearings, a roller journaled in said bearings, a screen secured at its ends to said roller and the window-frame, cables attached to the roller to rotate the latter while the sash is being closed, side pieces secured to the window-frame, retainers which automatically engage the longitudinal edges of the screen and hold them against the side pieces, and arms suitably connected to the side pieces and yieldingly held in the path of the roller, said arms being arranged to swing the retainers out of engagement with the screen when the roller contacts with said arms.

3. The combination with a window-frame and a sash operatively arranged therein, of a roller, drums forming the ends of said roller, a screen secured at its ends to said roller and the window-frame, cables attached to the drums to rotate the roller while the sash is being closed, side pieces secured to the window-frame, retainers which automatically engage the longitudinal edges of the screen and hold them against the side pieces, and arms suitably connected to the side pieces and yieldingly held in the path of the roller, said arms being arranged to swing the re-

tainers out of engagement with the screen when the roller contacts with said arms.

4. The combination with a window-frame and a sash operatively arranged therein, of a roller, a screen secured at its ends to said roller and the window-frame, cables attached to the roller to rotate the latter while the sash is being closed, side pieces secured to the window-frame, retainers which automatically engage the longitudinal edges of the screen and hold them against the side pieces, arms suitably connected to the side pieces and yieldingly held in the path of the roller, said arms being arranged to swing the retainers out of engagement with the screen when the roller contacts with said arms, and a hood secured to the sash a slight distance above the roller, substantially as described.

5. The combination with a window-frame and a sash operatively arranged therein, of a roller, a screen secured at its ends to the roller and the window-frame, side pieces secured to the window-frame, springs secured to said side pieces, cables attached to the roller and the springs, retainers which automatically engage the longitudinal edges of the screen and hold them against the side pieces, and arms suitably connected to the side pieces and yieldingly held in the path of the roller, said arms being arranged to swing the retainers out of engagement with the screen when the roller contacts with said arms.

6. The combination with a window-frame and a sash operatively arranged therein, of a roller, a screen secured at its ends to said roller and the window-frame, cables attached to the roller to rotate the latter while the sash is being closed, side pieces secured to the window-frame, retainers which automatically engage the longitudinal edges of the screen and hold them against the side pieces, arms suitably connected to the side pieces and yieldingly held in the path of the roller, said arms being arranged to swing the retainers out of engagement with the screen when the roller contacts with said arms, and a small roller 16 for holding the screen in contact with the side pieces.

7. The combination with a window-frame and a sash operatively arranged therein, of a roller, a screen secured at its ends to said roller and the window-frame, cables attached to the roller to rotate the latter while the sash is being closed, side pieces secured to the window-frame, arms pivotally secured to said side pieces, means for normally holding said arms in the path of the roller, rocker-bars mounted upon the side pieces, hooks carried by said rocker-bars and adapted to engage and hold the longitudinal edges of the screen in contact with the side pieces, and means connecting said rocker-bars to the arms whereby the hooks will be disengaged from the screen when the arms are forced out of the path of the roller.

8. The combination with a window-frame and a sash operatively arranged therein, of a roller, a screen secured at its ends to said roller and the window-frame, cables attached to the roller to rotate the latter while the sash is being closed, side pieces secured to the window-frame, arms pivotally secured to said side pieces, means for normally holding said arms in the path of the roller, rocker-bars mounted upon the side pieces, hooks carried by said rocker-bars and adapted to engage and hold the longitudinal edges of the screen in contact with the side pieces, crank-arms carried by the rocker-bars, and means connecting the crank-arms to the pivoted arms whereby the hooks will be disengaged from the screen when said pivoted arms are forced out of the path of the roller.

9. The combination with a window-frame and a sash operatively arranged therein, of a roller, a screen secured at its ends to said roller and the window-frame, cables attached to the roller to rotate the latter while the sash is being closed, side pieces secured to the window-frame, arms pivotally secured to said side pieces, means for normally holding said arms in the path of the roller, rocker-bars mounted upon the side pieces, hooks carried by said rocker-bars and adapted to engage and hold the longitudinal edges of the screen in contact with the side pieces, crank-arms carried by the rocker-bars, and links connecting said crank-arms to the pivoted arms whereby the hooks will be disengaged from the screen when said pivoted arms are forced out of the path of the roller.

10. The combination with a window-frame and a sash operatively arranged therein, of a roller, a screen secured at its ends to said roller and the window-frame, cables attached to the roller to rotate the latter while the sash is being closed, side pieces secured to the window-frame, retainers for engaging the screen, arms pivotally secured to said side pieces and tapering toward their opposite ends, and means for normally holding said arms in the path of the roller, said arms being arranged to swing the retainers out of engagement with the screen when the roller contacts with said arms.

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

WILLIAM H. SAWVEL.

Witnesses:
G. C. GRAY,
J. H. KERR.