

ROLLER SCREEN.

Patented Mar. 29, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

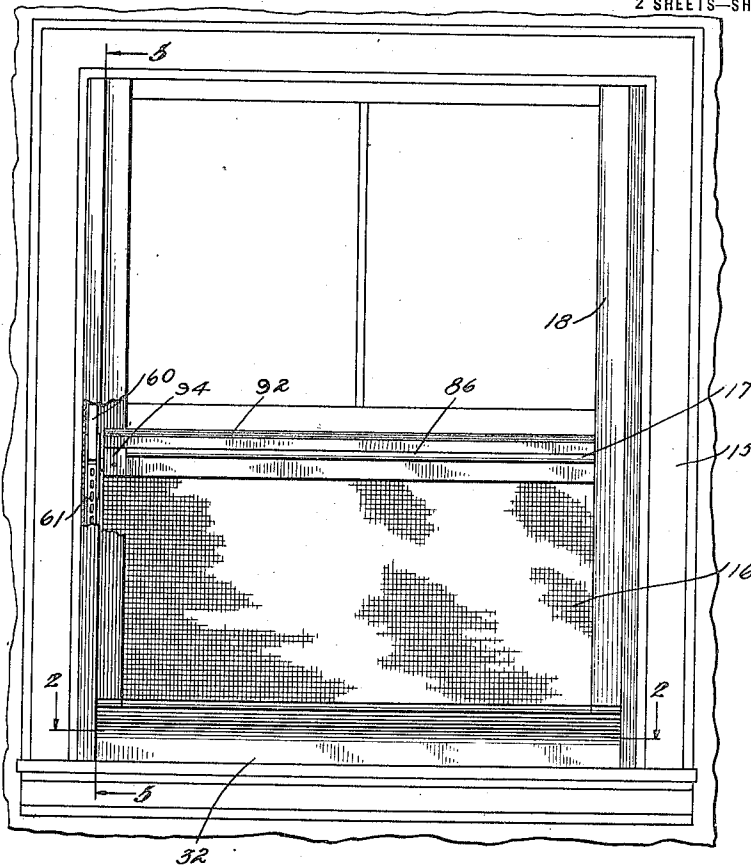


Fig. 2.

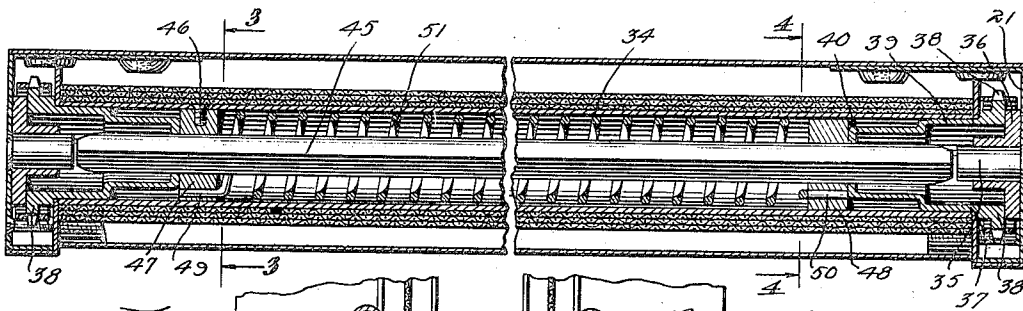


Fig. 3.

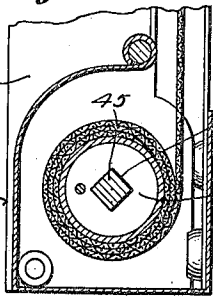
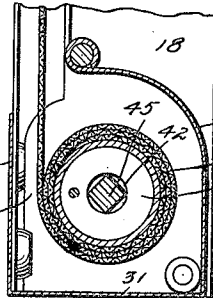


Fig. 4.



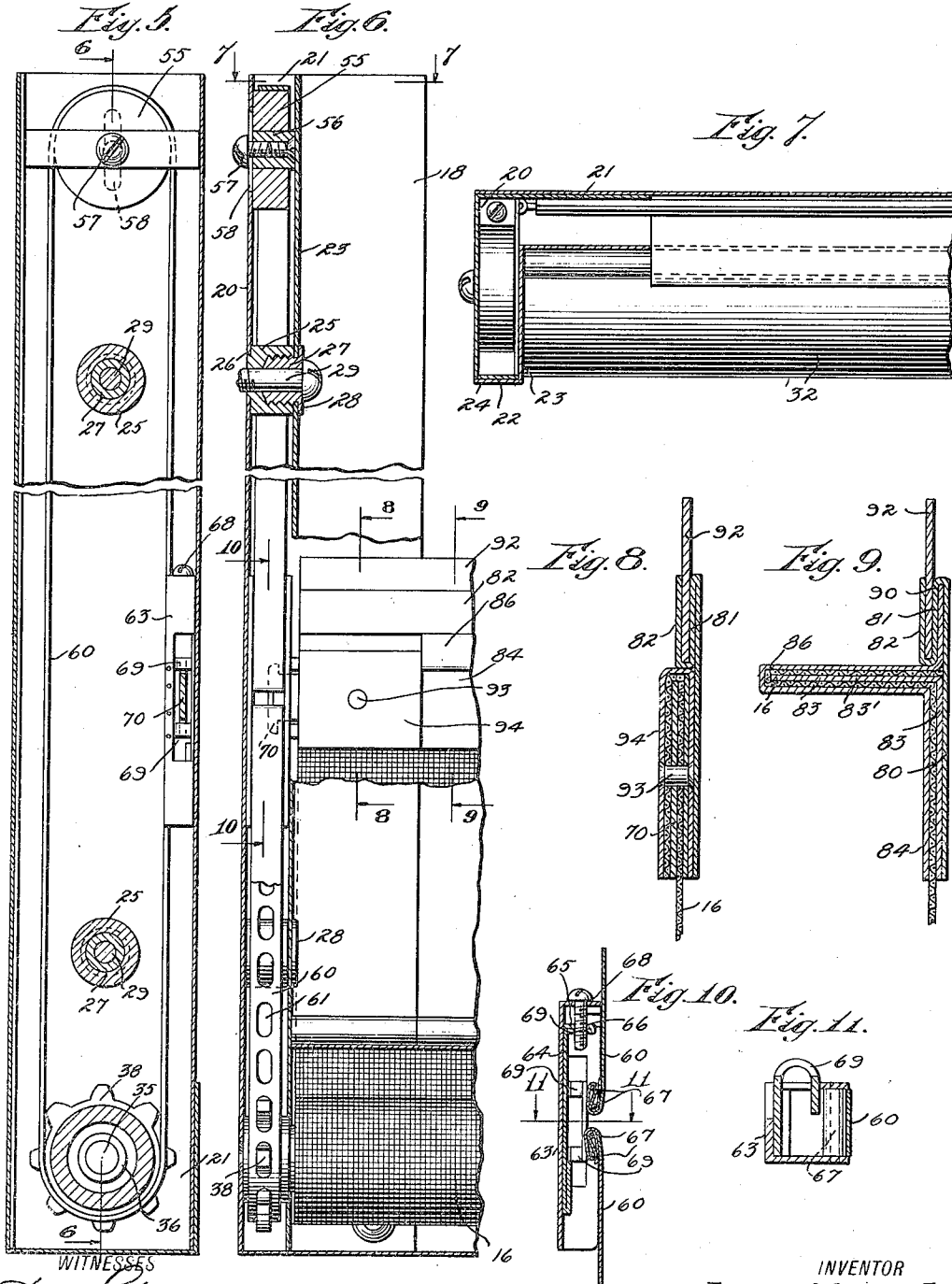
WITNESSES
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1,373,256.

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2 SHEETS—SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH MUGNO, JR., OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO MODERN ROLLING WINDOW SCREEN CO., INC., OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

ROLLER-SCREEN.

1,373,256.

Specification of Letters Patent.

Patented Mar. 29, 1921.

Application filed December 6, 1919. Serial No. 342,909.

To all whom it may concern:

Be it known that I, JOSEPH MUGNO, JR., 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 Roller-Screen, of which the following is a full, clear, and exact description.

The present invention relates to new and useful improvements in window screens, and it pertains more particularly to window screens of the rolling type. Heretofore in screens of this character great difficulty has been experienced in preventing the cross bar of these screens from sagging or dropping away from the window sash, and it is the primary object of this invention to so construct a rolling screen that the cross bar thereof will remain in the position in which it is released and without sagging.

It is a further object of the invention to so construct a screen of this character that the roll is at all times under sufficient tension to cause the screen to stretch and lie perfectly flat throughout the window space.

It is a further object of the invention to construct a device of this character so that its installation is greatly facilitated, provision being made for the installation screws in a new and novel manner.

With the above and other objects in view, reference is had to the accompanying drawings, in which—

Figure 1 is a view in elevation of a window showing the improved screen in position thereon;

Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2;

Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 2;

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 1;

Fig. 6 is a fragmentary vertical sectional view taken on the line 6—6 of Fig. 5;

Fig. 7 is a horizontal sectional view taken on the line 7—7 of Fig. 6;

Fig. 8 is a detail sectional view taken on the line 8—8 of Fig. 6;

Fig. 9 is a detail sectional view on the line 9—9 of Fig. 6;

Fig. 10 is a detail sectional view taken on the line 10—10 of Fig. 6;

Fig. 11 is a transverse sectional view taken on the line 11—11 of Fig. 10.

Referring more particularly to the drawings, the reference character 15 designates a window frame, and 16 designates the screen, the upper end of which is provided with a cross bar 17, the ends of which slide in guide members 18, which guide members also receive the side edges of the screen 16. These guide members 18 each comprise an outer side member 20, which is provided on its inner edge with a right-angular extension 21, and on its outer edge with a right-angular extension 22. The reference character 23 designates an inner right-angular member, which is provided with an extension wall 24 adapted to engage the right-angular member 22 of the member 20. The members 20 and 23 are retained in spaced relation by means of an internally screw-threaded member 25, which is adapted to be secured to the member 20, as indicated by the reference character 26. Threaded into the member 23, is a screw-threaded member 27, which is provided with an annular flange 28, adapted to engage the member 23 and clamp it between the flange and the member 25. After this has been accomplished, the installation screw 29 is passed through the members 25 and 27, to secure the guides in place within the window frame.

It is to be understood that the foregoing described structure is duplicated near the bottom of the guides, and that one of the guides is employed on each of the opposite sides of the window and extends throughout the length of window sash, as shown in Fig. 1.

Secured to the guide members 18 at their lower ends, is a housing 30, and said housing comprises a bottom wall 31, a curved front wall 32, and a rear wall 33, these walls being secured to the guide members 18 by solder or in any other desired manner. This housing 30 is employed for inclosing the screen when rolled upon a hollow metallic roller 34.

Rigidly secured to each of the walls 21 of the guide members 18, by means of pintles or the like 35, are bearings 36. The members 23 of the guide members 18 are cut out, as at 37, and mounted in said cut-out portions 37 and engaging the bearings 36, are sprocket wheels 38, the hub portion of each

of which is extended as at 39, and reduced as at 40. The hub portions 39 of the sprocket wheels 38 are adapted to receive the open ends of the metallic roller 34 to form the means by which said roller is mounted within the housing 30. The reference character 45 designates a squared spindle, which spindle extends through the hub portions of the sprocket wheels 38, each of which is provided with a squared opening which receives said spindle in a manner to cause it to rotate with the sprocket wheels as they in turn are rotated in a manner to be hereinafter described.

Secured to the tubular roller 34, by means of a set screw 46, is a washer 47, and said washer 47 is provided with a centrally disposed square opening 43, which is adapted to receive the spindle 45 in such a manner that as the spindle is rotated through the medium of the sprockets 38, said roller will likewise be rotated through the medium of the washer 47 and the screw 46. Secured to the squared spindle 45, near its opposite end, is a washer 48, and said washer 48 is provided with a circular opening 42, in which the spindle 45 is free to rotate. Connected as at 49, to the washer 47, and as at 50, to the washer 48, is a coil spring 51, which serves to provide the necessary tension to maintain the wire fabric of the screen at all times tightly stretched in such a manner as to prevent sagging.

Secured in each of the guide members near its upper end, is a pulley 55, said pulley freely rotating about a bearing 56, which is secured to the guide members by means of a screw or the like 57, which operates to adjustably secure the pulley 55 in place by means of the elongated slot 58 in which the screw 57 engages. One of these pulleys is mounted in each of the guides 18, and passing around said pulleys and their respective sprocket wheels 38, is a steel tape 60. As best seen in Fig. 6, the steel tape 60 is provided with openings 61, and said openings are adapted to receive the teeth of the sprockets 38. The openings 61 in the tape 60 extend throughout only a portion of the length of said tape, since it is not necessary to provide openings throughout the whole length thereof, for the reason that only a portion of said tape passes over the sprocket wheels 38 in the travel of the screen from one extreme to the other of the window space.

The reference character 63 designates a shuttle, and said shuttle is more clearly shown in Figs. 10 and 11. This shuttle comprises a sheet metal member, within which is slidably mounted a member 64, one end of which is bent backwardly upon itself as indicated at 65, and provided with a screw-threaded opening 66. The ends of the tape 60 are secured to the shuttle by looping them

around transversely extending pins or rods 67, as best shown in Fig. 10, the tension of the tape 60 serving to secure the ends about the said pins. The shuttle is provided with an opening 68, and passing through the opening 68 is a screw 69, the threaded portion of which engages the opening 66 in the sliding member 64. This sliding member 64 is provided with spaced lugs 69, and said spaced lugs 69 are adapted to receive the T-head 70 of the cross bar 17. This cross bar 17 comprises a sheet metal member 80, the upper end of which is bent in S form, as indicated by the reference characters 81 and 82. The reference character 83 designates a right-angular member, one leg of which is adapted to lie parallel to the portion 80 of the cross bar 17. The screen 16 is placed exterior of the right-angular member 83, and is secured thereto by means of the member 84, which is provided with a channel 86 to receive the leg of the right-angular member 83, as clearly shown in Fig. 9. The free end of one of the legs of the channel member 86 is bent at right angles, as indicated by the reference character 90, and lies between the member 80 and one of the legs 81 of the S-shaped portion thereof, to secure the channel member in position. The reference character 92 designates a strip of pliable material, which is adapted to engage the window to form a tight joint between said window and the upper end of the screen 16.

The heretofore mentioned T-shaped member 70 is secured between the folds of the screen 16, by means of a rivet 93, the rivet 93 also serving to retain a plate 94 in place at the ends of the cross bar 17, the channel member 86 and the leg 83' of the right-angular member 83 being cut away in order that the ends of the cross bar may slide within the guide members 18, as shown in Fig. 6.

The operation of the device is as follows: When the right-angular member 86 is grasped and moved longitudinally of the window opening, the screen 16 is unrolled from the tubular roller 34, it being understood that the spring 51 is placed under a slight tension when the mechanism is assembled. Upon continued rotation of the roller 34, owing to an unrolling of the screen contained thereon, the tension of the spring 51 increases. When said tension reaches a predetermined point, the washer 48 will move around the spindle 45, thus relieving the excess pressure of the spring 51. If as the screen is brought upwardly to a position where it engages the roller rail of the window sash, it is found that the flexible strip 92 does not engage with the window sash throughout its entire length, the said strip 92 may be adjusted by moving either of the members 64 longitudinally of

its respective shuttle by means of the screw 68. By this construction it is apparent that the angular disposition of the cross bar 17 may be varied to meet requirements owing to a warping or distortion of the window sash or frame. When the screen 16 is lowered by moving the cross bar 17 longitudinally of the window frame, the tension of the spring 51 serves to wind the screen upon the roller 34 and maintain the same thereon.

From the foregoing description, it will be noted that the spring 51 is not placed under tension by a rolling of the screen 16 on the roller 34. The tension of the spring 51 is obtained through the medium of the steel tapes 60 passing around the sprockets 38, which sprockets in turn drive the squared spindle 45, and said spindle 45, through the medium of the washer 47, which is secured to the roller 34, transmits the tension of the spring 51 to the roller 34.

The screen 16 is maintained in a tightly rolled condition on the roller 34 by means of the increased diameter of said roller as the screen rolls thereon, which together with the tension of the spring 51, serves to maintain the screen in a tightly rolled condition upon the roller 34, which serves as its carrier.

By this construction it will be apparent that the present invention provides a rolling screen in which when the tension of the screen roller has reached a certain point, it is spent automatically, thus preventing said increase of tension in the spring roller as would cause the cross bar 17 to drop away from the window when it is moved thereto. Furthermore, by so relieving the tension of the spring 51 and driving the same in the opposite direction, when it is desired to wind the screen on the roller 34, it will be seen that the screen is always tightly wrapped around said roller.

I claim:

1. A roller screen comprising a plurality of guides, a transversely extending member movable longitudinally of said guides, tapes, said tapes being connected to said transversely extending member, a tension roller, sprockets carried by said tension roller and engaging the said tapes, a spindle carried by said sprockets and connected to said tension roller, and a coil spring mounted interiorly of said roller and connected at one of its ends thereto, the other end of said coil spring being connected to a member freely rotatable on the spindle connecting the sprockets and within the tension roller.

2. A tension roller for roller screens, comprising a tubular member, a plurality of spaced washers mounted interiorly of said tubular member, means for securing one of said washers to said tubular member, a coil spring connected at one of its ends to the washer secured to the tubular member and

at its other end to the washer movable within the tubular member, a standard passing through said washers and operatively connected with the washer secured to the tubular member and freely rotatable within the other washers, and means for rotating said fixed washer to place the spring and roller under tension, substantially as described.

3. In combination with a tension roller, a plurality of sprockets, perforated tapes passing around said sprockets and having one of their ends immovably secured to a shuttle member, a bolt carried by said shuttle member, a sliding member movable longitudinally of the shuttle member by said bolt, and means carried by the sliding member for attaching the opposite end of said tapes to their respective sliding members for adjusting the tension thereof.

4. The combination with a roller screen having a transversely extending operating member connected to its free end, of a shuttle member for adjusting said transversely extending member, and comprising a metallic body portion, and means for engaging the transversely extending member of the screen, said means being movable with respect to the body portion, whereby said transversely extending member may be angularly adjusted, substantially as described.

5. A tension roller comprising a tubular member, a shaft for supporting said tubular member, a washer mounted within said tubular member and keyed thereto and having driving connection with said shaft, a second washer mounted internally of said tubular member and freely rotatable therein and on said shaft, and a coil spring connected at one end to said fixed washer and at the other end to said loose washer whereby the loose washer will slip to relieve the tension of said spring when it reaches a predetermined point.

6. A tension roller for screens and the like comprising a roller, a spring contained within said roller, means for positively connecting one end of said spring to the roller to transmit the power of the spring to the roller, and means having a slipping contact with the interior of the roller and connected to the opposite end of said spring whereby the power transmitted from the spring to the roller is periodically relieved.

7. In a screen of the roller type, a screen roller, a tension spring contained within said roller and adapted to transmit power thereto when the screen is unrolled from said roller, separate means for causing said spring to transmit power to said roller when the screen is being wound upon said roller, and means for periodically relieving the tension of said spring when the roller is being operated in either direction.

JOSEPH MUGNO, JR.