

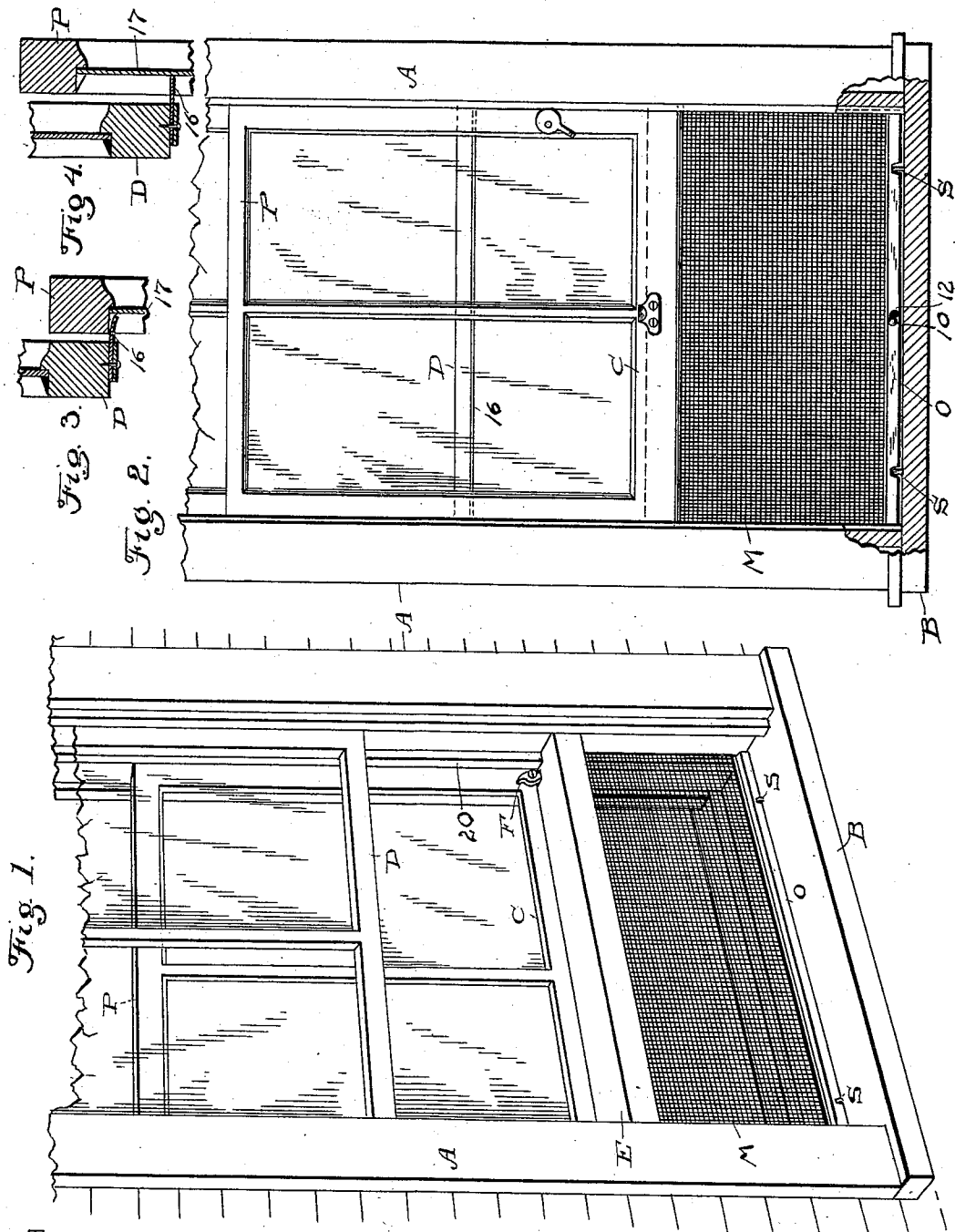
(No Model.)

2 Sheets—Sheet 1.

L. H. SHOLDER.
WINDOW SCREEN.

No. 528,992.

Patented Nov. 13, 1894.



ATTEST
R. B. Moser.
G. L. Schaffner

INVENTOR
Louis M. Sholder.

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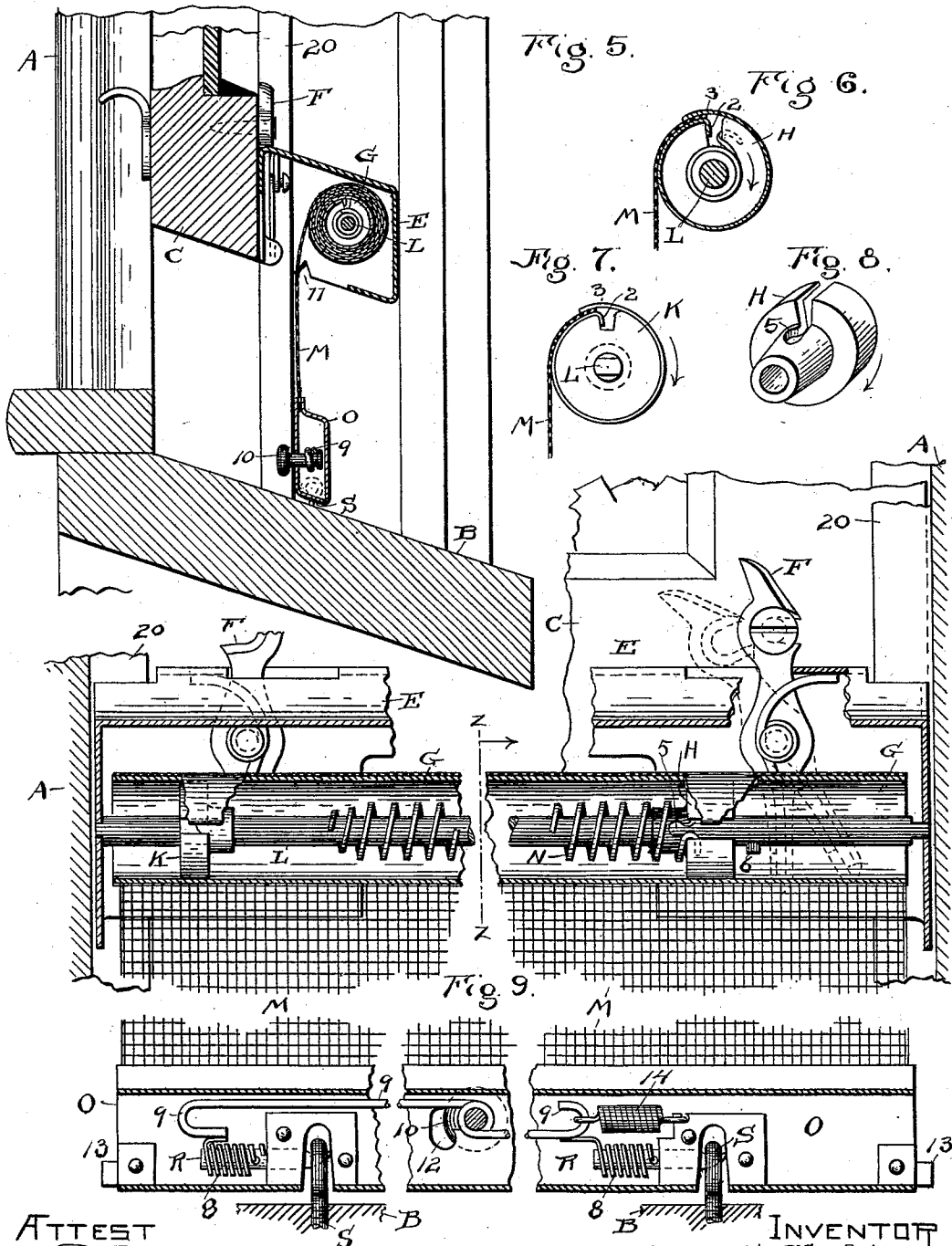
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UNITED STATES PATENT OFFICE.

LOUIS H. SHOLDER, OF CLEVELAND, OHIO.

WINDOW-SCREEN.

SPECIFICATION forming part of Letters Patent No. 528,992, dated November 13, 1894.

Application filed January 27, 1894. Serial No. 498,232. (No model.)

To all whom it may concern:

Be it known that I, LOUIS H. SHOLDER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Window-Screens; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to window screens, and the invention consists in an improvement on the screen mechanism set forth in Letters Patent of the United States, No. 364,309, granted June 1, 1886, all substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a window looking from the outside, and showing the inner or lower sash in a partly raised position, and the screen unrolled and attached to the side as in service. Fig. 2 is a front inside elevation of a window, with the lower sash locked in the position substantially as shown in Fig. 1, and the window sill sectioned longitudinally on the line of the screen attachments thereto. Fig. 3 is a cross section of the meeting rails of the two sashes as they appear when the window is closed and showing the strip on the bottom of the outer sash which overlaps the space between it and the glass on the lower sash to close said space when the window is open, and Fig. 4 is a corresponding view to Fig. 3, but showing the lower sash partly raised, or it may be the upper sash partly lowered, all as hereinafter more fully set forth. Fig. 5 is a cross section of a window sill and of the lower cross rail of the lower window sash partly raised, and a cross section of the screen attachment connected with the sash and with the sill, respectively, and showing the screen as partly unrolled, all as hereinafter more fully described. Fig. 6 is a cross section of the screen supporting cylinder or roll, and of its rod or shaft looking to the right on the line *z, z*, Fig. 9. Fig. 7 is an end view of the cylinder and parts looking in from the end at the left in Fig. 9. Fig. 8 is a perspective view of the sleeve shown at the right in Fig. 9, and substantially the same as the sleeve at the left in said figure, and consti-

tuting the immediate support for the cylinder on the shaft. Fig. 9 is an enlarged longitudinal substantially central sectional elevation of the cylinder casing and the cylinder therein, and showing the screen partly unrolled substantially as in Fig. 5, and at the bottom of the screen a similar longitudinal central sectional view of the box and mechanism adapted to fix the screen to the window sill, all substantially as hereinafter described.

The invention herein comprises a window screen which is adapted to be automatically rolled and unrolled and attached or detached from the window sill at pleasure, the principle of operation being the same substantially as that shown and described in the patent above referred to, but differing therefrom in some of the essentials of construction. Certain parts and details in said patent were found, in the practical development and operation of the invention, to be defective or insufficient, and the invention herein is designed to render the apparatus not only thoroughly practical but simple in construction and convenient in operation, and on the whole to produce an apparatus which can be profitably substituted for the various kinds of window screen hitherto used and which usually are set into rigid or adjustable frames.

In the accompanying drawings, A represents the casing or frame of the window, and B the base or window sill.

C is the lower or bottom cross rail of the lower sash, and D is the lower or meeting rail of the upper sash.

The screen casing E is shown here as connected with the cross rail or piece C of the lower sash upon the outside of the window, but it may be attached beneath this rail, or it may be employed in connection with the upper sash and the upper part of the window. This casing or housing is made of suitable sheet metal and is removably attached to the said cross rail C by means of spring pressed catches or locks F, the purpose of this construction being to effect an easy engagement and disengagement with the window sash, whereby the casing and its contents may be quickly and easily removed or as quickly and easily placed in working position. The special mechanism by which this is effected is not set

up in this application as novel, it being substantially shown and claimed in the patent above referred to.

Supported in the casing E is a cylindrical roll G, preferably formed of sheet metal and supported upon the sleeves H and K sleeved upon the shaft or rod L. This rod is constructed to lock in the ends of the casing E, as clearly seen in Fig. 9, and is held from turning by said construction. The sleeves H and K are adapted to turn upon the shaft L, and the cylinder or tube forming the roller G is wound upon these sleeves and its edges overlap the upper edge of the screen M, as seen in Figs. 6 and 7. Each of said sleeves has a notch or recess in its periphery in which the inner edge—2—of the cylinder is turned and bent to engage substantially as seen in Figs. 6 and 7, while the edge—3—overlaps this space and also the upper edge of the screen, and the edges of the parts are soldered or otherwise rigidly united, so that the screen is held securely upon the cylinder and can be rolled up thereon or drawn down like a window curtain, as occasion may require. A coiled spring N is wound about the shaft L and one end is fixed to said shaft and the other to the sleeve H, the function of the spring being to turn the cylinder and to roll up the screen when the screen has been released from the window sill as well as to keep the screen stretched when it is drawn out in use, and the tension of the spring is exerted at all times when the screen is in use.

It will be noticed in Fig. 5 that the casing E is open along its bottom part way back, and the screen M has its attaching mechanism in a suitable boxing O fixed to its lower edge. This box O is adapted to be drawn up into the casing E through its bottom opening, and the parts may then remain in that position on the sash or be removed together, as may be desired. The boxing along the lower edge of the screen in a full sized construction for a window is usually less than an inch in height and less than half an inch across so that it is small and light and unobstructive and at the same time large enough to carry the attaching mechanism and to serve the other purposes for which it is intended. This attaching mechanism should be simple in both construction and operation, so that with a very slight movement the attachment of the screen to the sill can be effected or released. Such mechanism is shown on Fig. 9 at the bottom thereof, and consists in bolts R to engage the staples S in the windowsill and having eyes entered by the bolts. These bolts have coiled wire springs—8—attached thereto at one end and at the other end to the operating rod—9—controlled by the knob—10—extending through the boxing O. When the screen is in use, as in Figs. 5 and 9, the bolts R are engaged with the staples S. Now, suppose the window to be up, and upon closing you desire to raise it without the screen. Then the person simply pushes the

knob—10—to the left and down into the notch or recess—12—before closing the window; but it will be seen that the bolts R are slightly hook shape at their engaging ends, and the tension of the springs—8—is such that they will not withdraw the said bolts from the staples even though the knob—10—be carried back into notch—12—, because the pull upon the screen is sufficient to hold the bolts in engagement with said staples notwithstanding the pull of their own springs. However, when the window is closed down and the notches—11—, Fig. 5, in the ends of casing E engage the projections—13—, Fig. 9, on the ends of the box O and bear the said box down slightly, as occurs when the window is closed, the bolts R are released from the said staples and the box O remains up in the said casing. The window can then be raised and lowered without withdrawing the screen as long as the bolts R are thus withdrawn, and the whole attachment is out of the way and out of sight, and can remain in the window all winter, if preferred. However, it is easily removed and should be removed and put away until the warm season returns.

Having the window raised, and assuming that it is desirable to again use the screen, the knob—10—is simply released from the notch—12— and the bolts take their normal place of engagement with the staples S the instant that they are lowered. The spring—14—throws the two bolts into their engaging positions, while the springs—8—serve simply to withdraw the said bolts after the mechanism has been set to make disengagement, as hereinbefore described. The facility with which these several operations are effected is one of the points of great advantage and value in this invention, because I am thus enabled at one moment to have a screened window and at another to have an unscreened window, and to effect either position of the screen with ease and certainty.

In Figs. 3 and 4, I show what is preferably a thin sheet or strip—16—which is attached to the bottom of the meeting rail D on the upper sash and extends inward to overlap the space between the rail D and the rail P, and practically reaches to the glass—17—. This strip or sheet may be made of wire screening or its equivalent, and is designed to close the space between the outer sash and the window glass on the lower sash when the lower sash is raised as shown in Fig. 4. If something of this kind were not used in conjunction with the screen M, the flies and insects would enter the room through this otherwise open space.

In Fig. 9 I show a pin or projection—6—on the shaft L, and a notch or recess—5—in the sleeve H. The purpose of this construction is to lock the spring N after it has been turned to give it sufficient tension in order that the parts may be placed in their operating position. Thus, assuming that the shaft L and its spring are removed from the cylinder, the said shaft is turned by any suitable means

while the sleeve H is held from turning, and this turning of the shaft L continues until the spring is compressed to such an extent as to meet the needs of the screen. When this occurs the sleeve H is forced forward toward the pin —6— and the sleeve is engaged with said pin through the notch —5—. Both ends of the spring are thereby locked upon the shaft L, and said shaft may now be handled with the spring under its required tension. I then place the cylinder thereon over the sleeves H and K, attach the screen M to the cylinder, place the cylinder and its shaft in position, and when all this is done and the screen is stretched as it would be when fully open, I disengage the sleeve H in its notch —5— from the pin —6— by sliding the parts together on the shaft sufficiently to make this disengagement. The spring N is then raised so that it can exercise a pull on the screen, and if allowed to work will immediately wind the screen M upon the cylinder.

The construction herein described provides for an exclusive mechanical release of the window screen after the screen itself has been wound upon its roller. It will be understood that there is a constant tendency in the screen itself to spring out and become in a sense uncontrollable, if it be released at the bottom when the window sash is up. Efforts have been made to overcome this tendency by confining the edges of the screen in guide-ways, but for numerous reasons this is not found practicable nor desirable and special guide-ways have to be provided. It has also been found impracticable to wind the spring by hand as a curtain is wound upon its roller because the screen is springy and has a tendency to fly away from the roll and to become unmanageable in rolling it up. For these reasons I have provided for purely mechanical rolling of the spring and thereafter a mechanical disengagement thereof. For example, referring to Fig. 5, we see that the window sash is raised part way. Let us assume now that the knob —10— has been carried into the notch —12— for disengagement of the box from the window sill when the window is lowered. This being done and the window being lowered, the screen roller automatically and uniformly winds up the screen thereon and the box O is carried into the casing E. Now, having reached this point and the screen being entirely wound up, the release of the box O is effected by the notched ends of the case striking the projections —13— on the box and bearing it down just enough to permit the bolts R to be withdrawn by their springs.

It will be seen in Fig. 5 that I have provided a space beneath the box O for this downward movement, but this space is so slight that flies could not enter therein. Now, the box is released and carried into this casing, the spring is wound and when the window is raised again the screen remains up and all the parts are out of the way and out of sight

from the inside. They will remain in this relation until it be desired to use them again, when the window is raised sufficient to reach the knob —10— with the fingers from beneath and press it up and disengage it from the notch —12—. The bolts are then thrust forward and when the window is closed down they automatically lock upon the staples S. It therefore occurs that the spring is automatically wound and unwound, and the locking mechanism is automatically engaged and disengaged, and that the person has nothing to do at any time but to engage the knob —10— with the notch —12—, or to release it therefrom, as the case may require. This reduces the invention to the utmost simplicity in operation and renders it exceedingly convenient for use. Again, by reason of the springy character of the screen and notwithstanding the tension exerted by the spring N upon its roller, it naturally stands out somewhat from the roller and by reason of this construction it comes against the guard strips —20— on the sash casing upon the outside of the sash and thus prevents an opening at that point through which flies could enter.

The screen is designed to be as wide as the window outside of these guard strips and bears against them all the way down from the roll to the box. The entire window is therefore guarded and protected as effectually as it can be by a screen.

Having thus described my invention, what I claim is—

1. The screen roller mechanism, comprising a shaft, sleeves on said shaft having recesses in their periphery, the roller plate having one edge engaged in said recess and the other edge overlapping the same, and a screen fixed to said parts, substantially as set forth.

2. The roller shaft and the sleeves free to turn thereon, the cylinder on said sleeves, the screen secured to said cylinder, a spring about the shaft secured to one of said sleeves and to said shaft, and said sleeves constructed to lock on the shaft, substantially as set forth.

3. The shaft having a projection thereon, the cylinder and the sleeves on said shaft and one of the sleeves constructed to lock on said projection, and a spring fixed to said shaft and to one of said sleeves substantially as set forth.

4. The window screen and the supporting roller therefor and the box attached to the lower end of the screen, separate locking bolts near the ends of said box and the rod to operate the said bolts supported therein, substantially as set forth.

5. The box connected with the lower end of the screen, the separate locking bolts and the rod to operate said bolts in said box, and the springs connected with said bolts, and the catches engaged by said bolts, substantially as set forth.

6. The screen box provided with locking bolts connected by an operating rod, a spring for said rod, a separate spring for each bolt

and means to lock said rod when moved to give tension to the bolt springs, substantially as set forth.

7. The screen box, the locking bolts having each a separate retracting spring and a rod to which the springs are attached, in combination with the staples for the bolts, the screen and mechanism to stretch the screen, substantially as set forth.

8. The screen and the roller therefor, in combination with the box to which the lower end of the screen is attached, and the locking mechanism housed in said box, substantially as set forth.

9. The roller and screen and the box for the same having an opening along its bottom, in combination with a box attached to the lower end of the screen and constructed to enter into and occupy the said opening in the roller box when the screen is rolled up, substantially as set forth.

10. The construction described, consisting of the casing for the screen roller and the screen box and the locking mechanism therein, having bolts and springs to hold the bolts under tension, and the said box having projections engaged by said casing, whereby the parts are released, substantially as set forth.

11. The window sash and the screen and the roller therein, in combination with the screen box on the lower end of the screen, and mechanism to lock said box to the sill, said mechanism constructed to release the box when the sash is lowered, substantially as set forth.

Witness my hand to the foregoing specification this 15th day of December, 1893.

LOUIS H. SHOLDER.

Witnesses:

H. T. FISHER,
GEORGIA SCHAEFFER.