

No. 702,077.

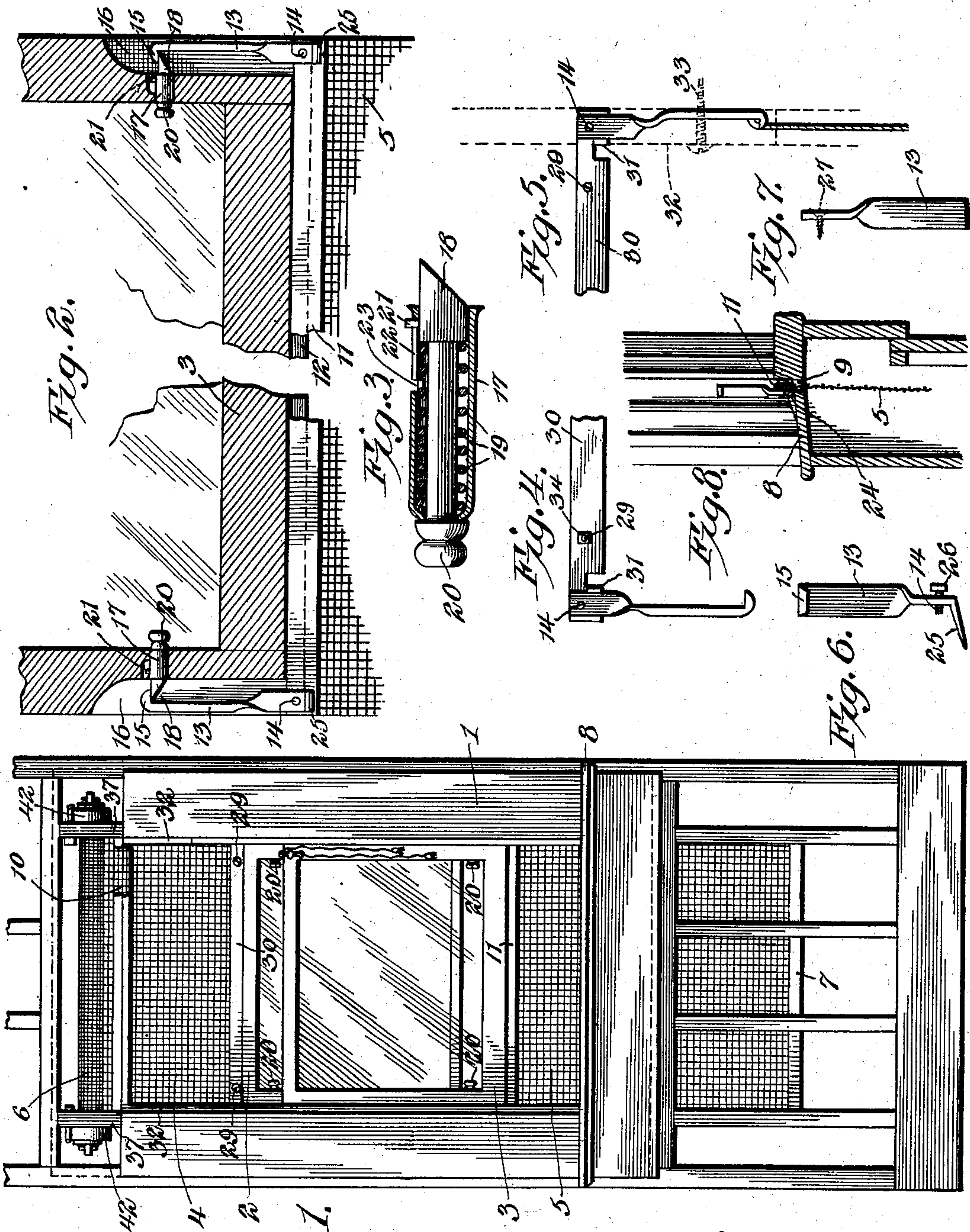
Patented June 10, 1902.

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WINDOW SCREEN.

(Application filed Nov. 20, 1901.)

(No Model.)

2 Sheets—Sheet 1.



Merton R. Skinner, Inventor:

By

*E. G. Siggers*

Attorney

Witnesses

*Howard W. Orr.*  
*H. J. Shepard.*

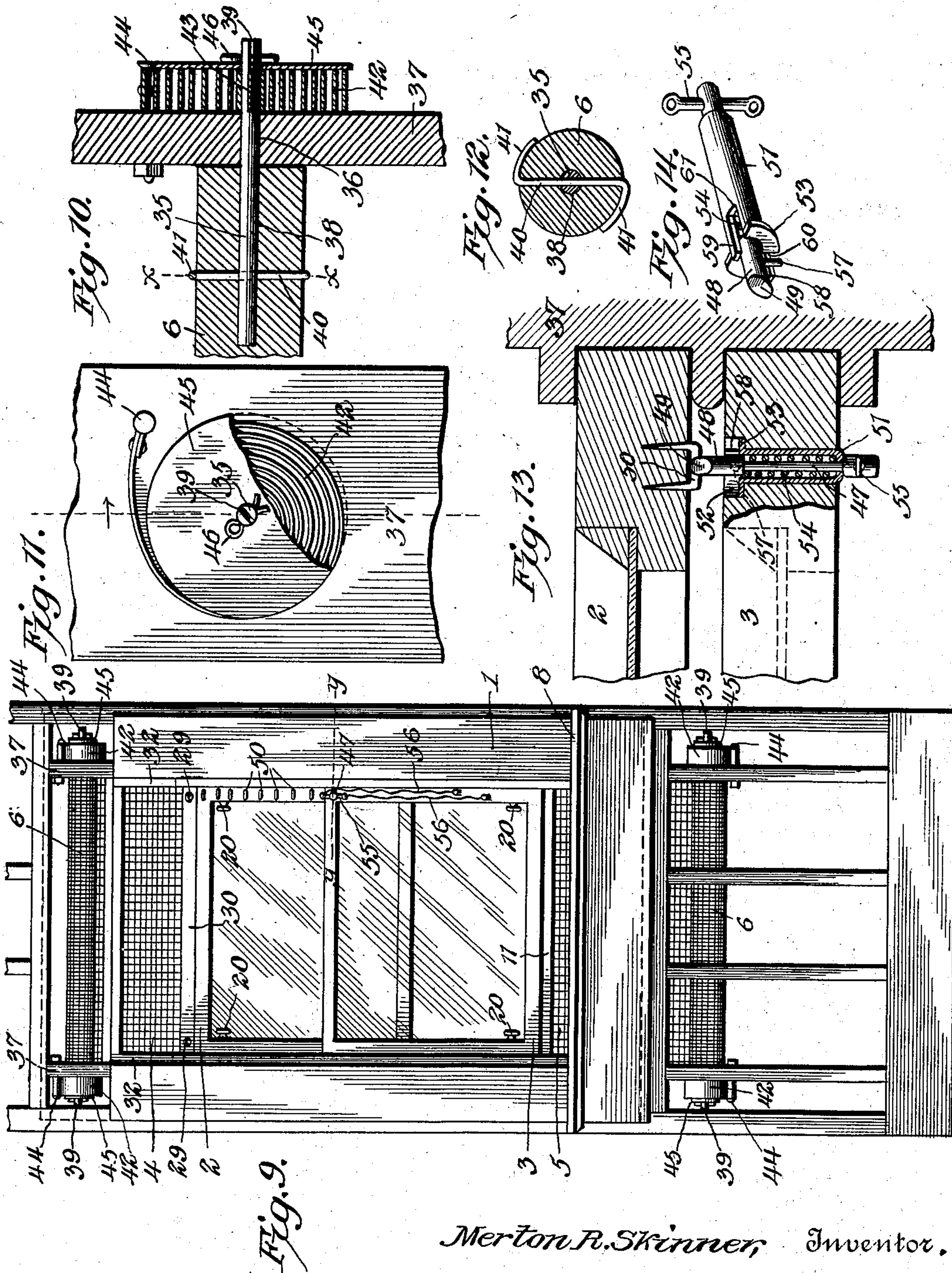


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Merton R. Skinner, Inventor.

By

*E. G. Siger*

Attorney

Witnesses

*Harvard D. Orr*  
*W. F. Shepard*



# UNITED STATES PATENT OFFICE.

MERTON ROSS SKINNER, OF LEROY, NEW YORK.

## WINDOW-SCREEN.

SPECIFICATION forming part of Letters Patent No. 702,077, dated June 10, 1902.

Application filed November 20, 1901. Serial No. 83,034. (No model.)

*To all whom it may concern:*

Be it known that I, MERTON ROSS SKINNER, a citizen of the United States, residing at Leroy, in the county of Genesee and State of New York, have invented a new and useful Window-Screen, of which the following is a specification.

This invention relates to window-screens, and has for its object to arrange for mounting the screens upon the top and bottom of a window, so as to coöperate with the respective sashes to screen the adjacent portions of the window when the sashes are open. It is furthermore designed to have the screens work up and down with the sash, so as to be effectually housed and out of sight when the sashes are closed and also to provide for the convenient disconnection of the screens from the sashes whenever desired.

Another object resides in providing for automatically connecting the sash to the respective screens by moving the sashes to their closed limits, whereby either screen may be brought into operative position by closing either sash and then opening the same to any desired extent.

A further object is to normally maintain the free edges of the screens in position to be readily engaged by the sashes without obstructing the opening in the window-frame.

Another object is to provide an improved spring-mounting of the screen, so as to facilitate the placing of the spring-roller within the window-frame and also to automatically wind up the screen when the latter has been detached from the sash.

A final object is to provide for interlocking the two sashes, so as to overcome the combined action of the sash-weights and the spring-roller, and thereby to hold either sash in an open position.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be herein- after more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is an elevation of the inner side of a window-frame having the present invention applied thereto, parts being broken away to illustrate the mounting of the screens. Fig. 2 is an enlarged detail sectional view illustrating the connection of the upper free edge of the lower screen with the lower end of the lower sash. Fig. 3 is a detail sectional view of one of the latches carried by the window-sash. Fig. 4 is a detail view showing the manner of connecting one of the catches to the upper screen. Fig. 5 is a similar view illustrating the manner of gaining access to said catch. Figs. 6 and 7 are detail views of the upper and lower catches. Fig. 8 is a detail sectional view taken transversely through the window-sill. Fig. 9 is a view similar to Fig. 1, showing both screens mounted upon spring-rollers. Fig. 10 is an enlarged detail longitudinal sectional view taken through one end of one of the spring-rollers to illustrate the mounting of the spring thereof. Fig. 11 is a detail elevation of one end of the spring-roller. Fig. 12 is a detail cross-sectional view on the line *xx* of Fig. 10. Fig. 13 is an enlarged detail cross-sectional view taken on the line *yy* of Fig. 9. Fig. 14 is a detail perspective view of the fastening for interlocking the two sashes.

Like characters of reference designate corresponding parts in all the figures of the drawings.

Referring at first more particularly to Figs. 1 to 8, inclusive, of the accompanying drawings, 1 designates an ordinary window-frame, having the usual upper and lower sashes 2 and 3, respectively, these parts being common and well known and shown in the drawings merely to more adequately illustrate the application and operation of the present invention.

It will be understood that it is designed to provide a screen-closure for the openings between the window-sill and the lower sash and the upper end of the frame and the upper sash when the sashes are open, and to accomplish this purpose there are provided the upper and lower screens 4 and 5, respectively, of which the upper screen is carried by a spring-roller 6, mounted within the wall of the building and above the top of the window-frame, while the lower screen 5 is adapted to slide



vertically in a suitable space provided in the wall and having its lower edge provided with a weight-strip 7 to insure a proper movement of the screen. While it is preferable to  
 5 mount the lower screen so as to slide vertically, it may also be carried by a spring-roller mounted within or below the window-sill, such construction being shown in Fig. 9 of the drawings.

10 As plainly illustrated in Fig. 8, it will be seen that the window-sill 8 is provided with a longitudinal slot 9, through which the screen 5 is adapted to work, and it will of course be understood that the upper end of the win-  
 15 dow-frame is also provided with a similar slot for the reception of the upper screen, as indicated at 10 in Fig. 1 of the drawings. The connection between the screens and the respective sashes being the same in each case, a de-  
 20 scription of one of these fastenings is deemed sufficient. As best illustrated in Fig. 2, it will be seen that the upper free edge of the screen 5 is provided with a metallic stiffening and strengthening strip 11, which is designed  
 25 to fit within a groove or seat 12 formed in the lower edge of the bottom of the lower sash. At each upper corner of the screen there is provided a catch 13, which is formed from a flat strip of metal that is twisted intermedi-  
 30 ate of its ends, so that the latter may lie in planes at substantially right angles to each other, the lower end being applied flat against the adjacent strip 11 and secured thereto by means of a suitable fastening 14, the opposite  
 35 upper end of the strip being provided with a catch projection 15, which is directed laterally inward. The lower portion of the outer edge of the adjacent sash 3 is provided with  
 40 a vertical recess 16 for the reception of the catch, and the latter is connected to the sash by means of a latch 17, consisting of a casing which is projected through the inner edge of the sash and has an endwise-movable bolt 18,  
 45 that extends into the recess 16 and engages with the catch-head 15. Within the casing and bearing in opposite directions against the latter and the bolt there is a helical spring 19 to normally force the beveled end of the bolt  
 50 outwardly into the recess, the opposite end of the bolt being provided with a knob or finger-piece 20, which is projected at the inner edge of the adjacent side rail of the sash, so as to be in position for convenient manipulation to disengage the bolt from the catch.

55 As clearly indicated in Fig. 3, it will be seen that the bolt is provided with a lateral pin or projection 21, which works in a longitudinal slot 22, formed in the casing, so as to form a guide to prevent accidental rotation  
 60 of the bolt, and a transverse notch 23 is formed in the casing and communicates with the inner end of the slot 22, so that when the bolt has been retracted it may be rotated to turn the projection 21 into the notch 23, and  
 65 thereby lock the bolt in its retracted position, so that it may not engage with the adjacent catch of the screen. It will of course be un-

derstood that each side of the screen is provided with a catch, and each side of the sash is provided with a spring-actuated latch-bolt, 70  
 so that the screen may be effectually connected to the sash. By reason of the fact that the bolts and catches are beveled the same will be automatically engaged when the sash has been pushed down to its lowermost 75  
 limit, whereby it is not necessary to manipulate the fastenings to engage the screen with the sash.

Upon reference to Fig. 8 of the drawings it will be seen that the window-sill is provided 80  
 with an upstanding strip 24, located at the outer side of the slot 9, so as to form a weather-strip for the latter and also designed to enter the groove or recess in the bottom of the sash  
 85 when the latter is closed, so as to form a tight joint between the sash and the window-sill for the exclusion of dampness, &c.

To prevent the lower screen from passing entirely through the slot in the sill when the screen and sash are disconnected, the lower 90  
 end of each catch 13 is provided with a lateral outwardly-directed and downwardly-inclined foot 25 to rest upon the similarly-inclined sill, and a stop projection 26 is provided upon the opposite side of the catch and 95  
 is formed by a head on the fastening 14, whereby this foot and the projection form stops to limit the downward movement of the screen, and thereby prevent the latter from passing downwardly through the slot. The 100  
 catch shown in Fig. 7 is designed for the upper screen and is provided with a screw-threaded fastening 27, that is countersunk in the upper end of the catch and designed for connection with the metallic strip 30 of the 105  
 upper screen, so as to avoid projections. At a suitable distance inwardly from each upper catch a screw or bolt 29 pierces the metallic strip 30 and is provided with a nut 34, located upon the opposite side of the strip and 110  
 designed to form a stop for engagement with the upper end of the window-frame to prevent the screen from passing through the slot therein. Each catch may be braced by means  
 115 of an ear or portion 31 cut from the adjacent stiffening-strip and bent outwardly against the catch, as indicated in Fig. 4.

It will be understood that the catches of the upper screen travel in front of the part- 120  
 ing strip or bead carried by the window-frame, and in order that access may be had to these catches the upper portion of said strip or bead is made separate from the remaining portion, as indicated at 32 in Fig. 1 and also indicated  
 125 by dotted lines in Fig. 5, said separate portion being held in place by means of the fastening 33, whereby this section may be removed to give access to the catch for applying and removing the same.

For an understanding of the mounting of 130  
 the spring-roller reference is had to Figs. 10, 11, and 12, inclusive, wherein it will be seen that each end of the roller is provided with a journal 35, which is passed inwardly through



an opening 36 in the adjacent side piece 37 of the window-frame and into a longitudinal opening 38, formed in the end of the roller, the outer end of the journal being projected a suitable distance at the outer side of the window-frame and provided with a longitudinal slit or bifurcation 39. A wire pin or key 40 is driven transversely through the roller and the journal 35 and has its opposite ends bent or upset against the opposite sides of the roller, thereby connecting the journal to the roller to prevent independent movements thereof. A coiled spring 42 has its inner end portion 43 fitted in the slit or bifurcation in the outer end of the journal and its opposite outer end connected to the adjacent frame portion 37 by means of a bolt or other suitable fastening 44. A plate 45 is applied to the outer end of the journal, so as to cover the outer edges of the spring-coils, and a suitable split key 46 is passed through a transverse opening in the outer end of the journal, so as to hold the plate in place. By this means each spring-roller may be conveniently mounted in place without requiring any particularly-adapted roller-brackets.

In view of the combined tension of each spring-roller and the sash-weights it is apparent that it is necessary to lock the sashes to hold them in their open positions, and to accomplish this result there has been provided a locking-bolt 47, which is mounted to slide in an endwise direction through the upper end of the lower sash and adapted to engage the upper sash, so as to interlock the two sashes, and thereby offset the action of the two spring-rollers, and thus hold the sashes stationary in any open position. The locking-bolt is provided with an enlarged inner end portion 48, which is beveled upon one side, as indicated at 49, said beveled end being adapted to cooperate with a plurality of keepers 50, carried by the adjacent side piece of the upper sash, and preferably in the form of staples driven into the sash. The bolt is mounted within a suitable tubular casing 51, which is snugly fitted in an opening formed through the lower sash, the inner end of said opening being enlarged, as at 52, for the reception of the outwardly-directed marginal flange 53 at the inner end of the casing. A helical spring 54 encircles the bolt and bears in opposite directions against the outer end of the casing and the enlarged inner end of the bolt, thereby to normally hold the latter projected into engagement with the upper sash. The bolt is also rotatably adjustable, so as to change the position of its beveled inner end, and for this purpose it is provided at its outer end with a cross-head or cross-bar 55, to the opposite ends of which are connected suitable operating-cords 56, which depend from the bolt and are designed for convenience in rotating the bolt by pulling downwardly upon either cord. The projected inner end of the bolt is provided with a lateral stud or projection 57, and the inner end of

the casing is provided with longitudinally-disposed stop projections 58 and 59, which are located in the path of the movement of the stud or projection 57, so as to form stops to limit the rotatable movement of the bolt to a semirotation, the casing being provided with slots 60 and 61, located next to the respective stop projections, so as to receive the stud 57 when the bolt is withdrawn out of engagement with the keepers of the upper sash. In the position shown in Fig. 13 the locking-bolt is disposed with its beveled face 49 upwardly, whereby the sashes are interlocked, so as to prevent independent upward movement of the upper sash and downward movement of the lower sash. Should it be desired to close either sash, the bolt is rotated so as to bring the beveled face thereof into engagement with the adjacent keeper, whereby the sashes may then be moved in opposite directions, as the beveled end of the bolt will work over the keepers.

What I claim is—

1. The combination with a window-frame, and a sash mounted therein, of a screen movable with the sash, opposite catches carried by the free end of the screen and working between the sash and the respective sides of the window-frame, and endwise-movable bolts carried by the sash for engagement with the catches to detachably connect the screen to the sash.

2. The combination with a window-frame, and a sash mounted therein and provided with open-ended recesses in its opposite outer edges, of a screen movable with the sash, opposite catches carried by and projected from the screen and normally lying within the recesses in the opposite edges of the sash, and locking-bolts piercing the respective side rails of the sash from the inner to the outer edges thereof, the outer ends of the bolts working in the recesses for engagement with the adjacent catches, and the inner ends of the bolts being accessible for adjustment at the inner edges of the side rails.

3. The combination with a window-sash having opposite terminal open-ended recesses formed in the opposite outer edges thereof, of a screen having opposite catches projected beyond the free end thereof and normally received within the recesses of the sash, a bolt-casing piercing each side rail of the sash from the inner to the outer edges thereof, and having a longitudinal slot and a transverse notch communicating therewith, and an endwise-movable spring-actuated bolt working within the casing and having a lateral projection working in the slot and adapted to enter the notch to hold the bolt retracted, the outer end of the bolt working in the recesses in the sash and beveled to automatically engage the catch at the closed limit of the sash, and the opposite end of the bolt being accessible at the inner edge of the side rail.

4. The combination with a window-frame, and a sash mounted therein and provided with



open-ended recesses in the opposite outer edges thereof, of a screen detachably connected to the sash, opposite catches carried by the screen, each catch being formed of a metal strap having one end secured to the screen, its intermediate portion being twisted to dispose its opposite ends at substantially right angles to each other, the outer end of the strap being provided with a lateral inwardly-directed catch-head to be received in the adjacent recess of the sash, and fastening devices carried by the opposite side rails of the sash and working in the respective recesses for engagement with the catch-heads.

5. The combination with upper and lower window-sashes, of upper and lower screens connected thereto and movable therewith, spring-rollers for the respective screens, and means for interlocking the two sashes when either sash is open.

6. The combination with upper and lower sashes, of upper and lower screens connected thereto, spring-rollers for the respective screens, and means for interlocking the two sashes in differently-adjusted relations.

7. The combination with upper and lower window-sashes, of upper and lower screens connected to the respective sashes, spring-rollers for the screens, a plurality of keepers carried by the upper sash, and a spring-actuated bolt carried by the lower sash and in operative relation to the keepers.

8. The combination with upper and lower window-sashes, of upper and lower screens connected thereto, spring-rollers for the screens, keepers carried by the upper sash, and a spring-actuated and rotatably-adjustable locking-bolt working transversely through the lower sash and in operative relation to the keepers, the inner end of the bolt being beveled.

9. The combination with upper and lower window-sashes, of upper and lower screens connected thereto, spring-rollers for the screens, a plurality of keepers carried by the upper sash, a tubular bolt-casing transversely piercing the lower sash, the inner end of the casing having diametrically opposite longitudinal slots and stop projections at the outer ends of the slots, an endwise-movable and rotatably-adjustable locking-bolt working in the casing and having an enlarged beveled inner end cooperating with the keepers, the outer end of the bolt having a head for rotating the same, the inner end of the bolt having a lateral stud for engagement with the stop projections, and a coiled spring embracing the bolt and bearing in opposite directions against the outer end of the casing and the enlarged inner end of the bolt.

10. The combination with a window-frame having a longitudinal slot in one end piece thereof, and a window-sash, of a screen working through the slot and connected to the sash, a roller located between the opposite sides of the frame at the outer side of the slotted end piece and having the screen connected thereto, opposite roller-journals mounted in and projected through openings in the respective sides of the frame, and a coiled spring embracing the projected end of one of the journals with its inner end connected thereto and its outer end connected to the window-frame.

11. The combination with a window-frame, and a sash, of a screen connected to the sash, a roller located within the frame and having the screen connected thereto, a journal projected through one side of the frame and into the roller, the outer end of the journal being projected beyond the side piece and provided with a longitudinal bifurcation, a coiled spring embracing the projected end of the journal with its inner end seated in the bifurcation and its outer end connected to the frame, a plate fitted to the outer end of the journal and covering the spring, and a key piercing the journal to hold the plate in place.

12. The combination with a window-frame, of a screen, a roller located within the frame and having the screen connected thereto, a journal carried by the roller and projected through the adjacent side of the window-frame, a coiled spring embracing the projected end of the journal with its inner end connected thereto and its outer end connected to the window-frame, a plate fitted to the outer end of the journal and covering the outer edges of the convolutions of the spring, and a device carried by the outer end of the journal to hold the plate in place thereon.

13. The combination with a window-frame having a longitudinal slot formed in one end piece thereof, of a sash working in the frame, a screen working through the slot, opposite catches secured to the screen and projected outwardly beyond the same, the inner ends of the catches being provided with lateral stop projections for engagement with the slotted end piece of the frame to prevent the screen from passing entirely through the slot thereof, and locking devices carried by the sash in operative relation to the catches.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MERTON ROSS SKINNER.

Witnesses:

IRVING H. WALKER,  
SCOTT W. SKINNER.