

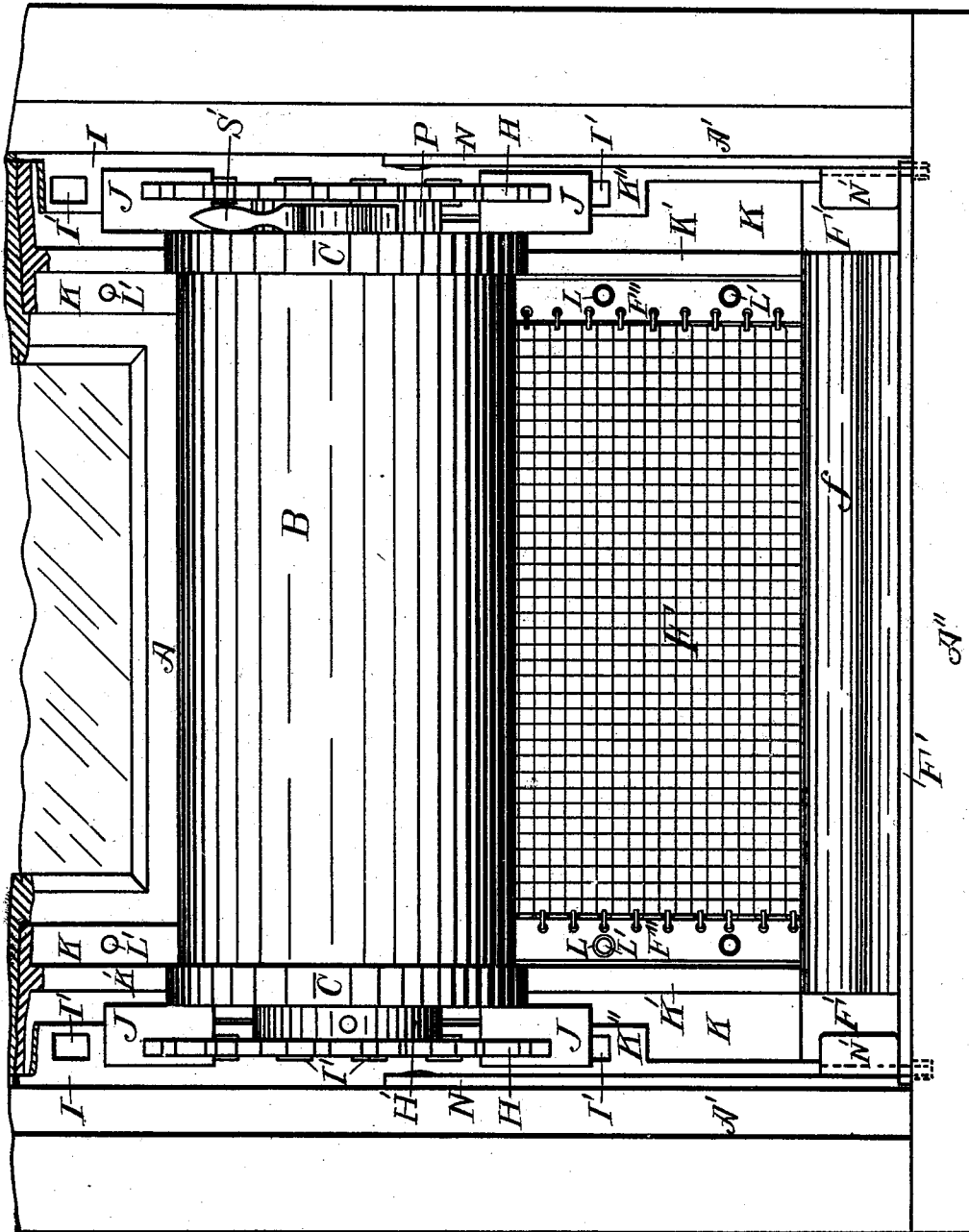
(No Model.)

4 Sheets—Sheet 1.

J. A. CROCKER.  
WINDOW SCREEN.

No. 549,495.

Patented Nov. 12, 1895.



WITNESSES:

E. A. Woodbury.

A. N. Donney.

FIG. 1.

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(No Model.)

4 Sheets—Sheet 2.

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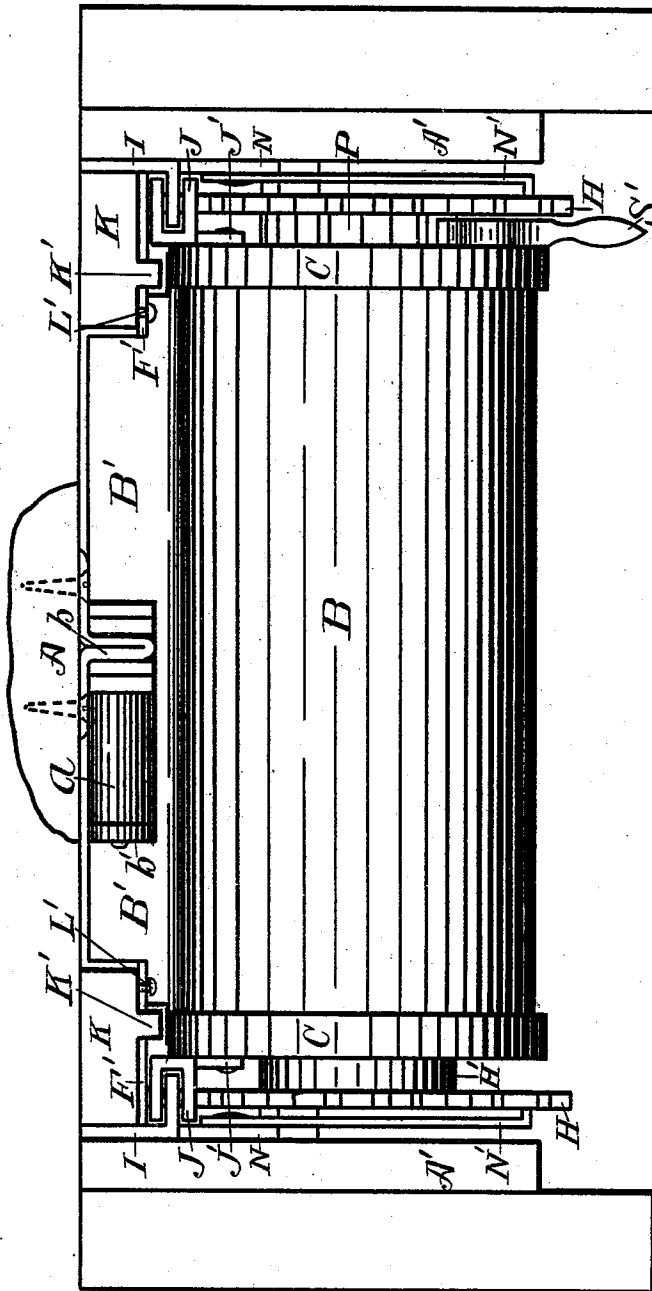


fig. 2.

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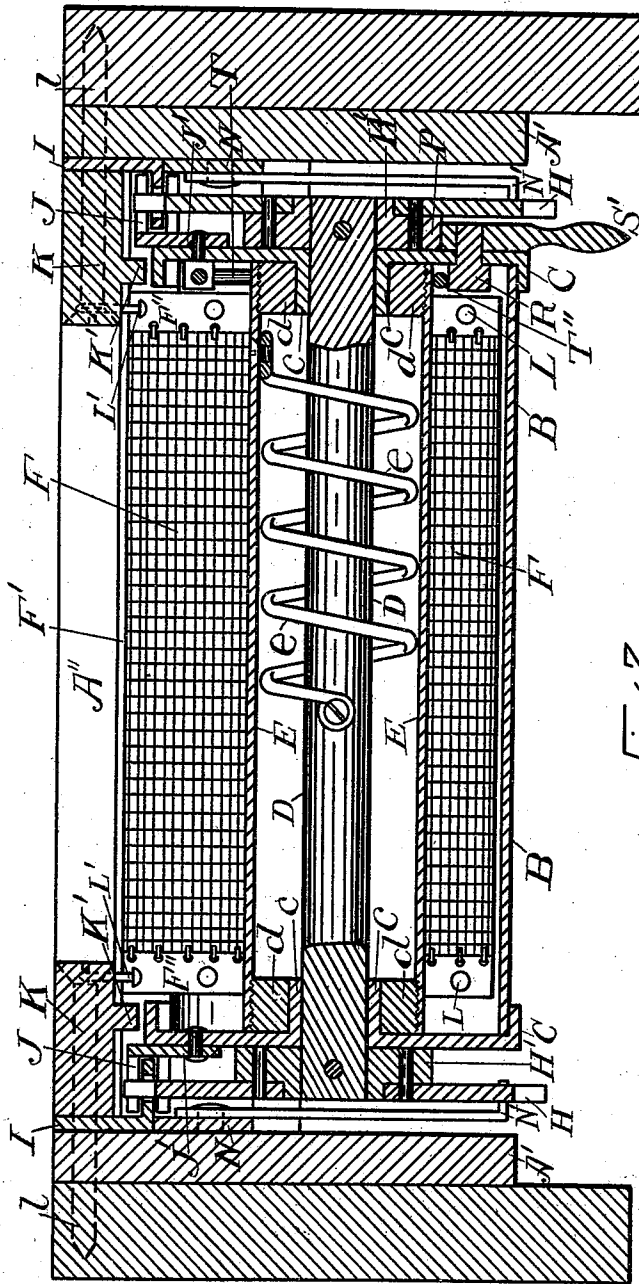


Fig. 3.

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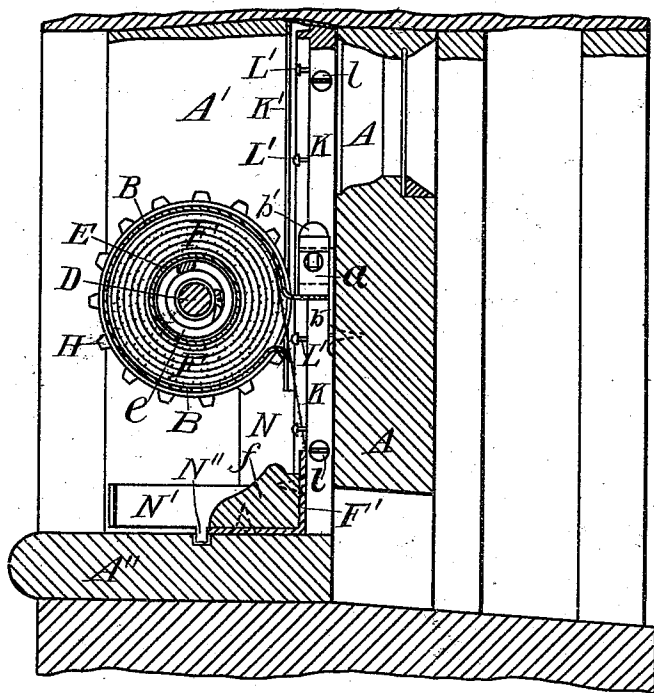


Fig. 4.

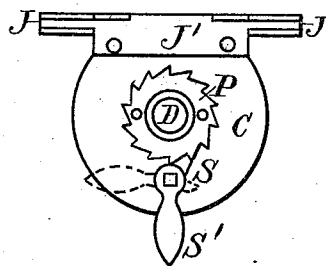


Fig. 5.

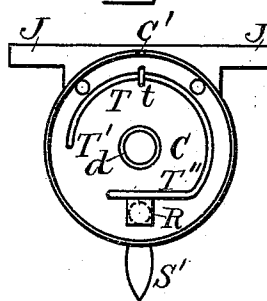


Fig. 6.

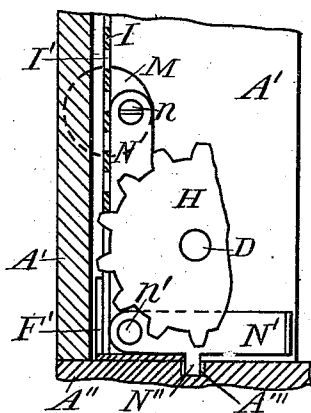


Fig. 7.

WITNESSES:

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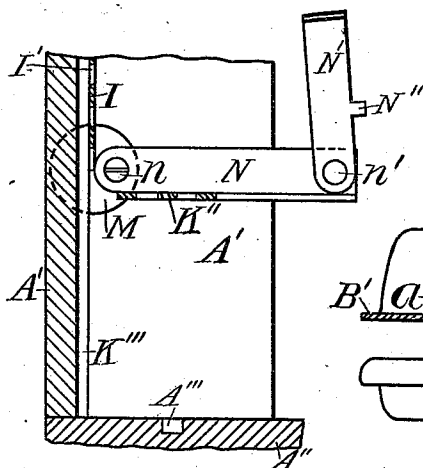


Fig. 8.

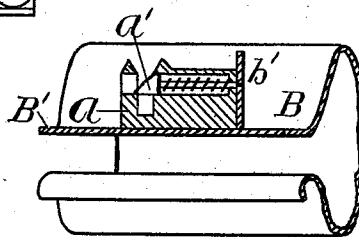


Fig. 9.

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# UNITED STATES PATENT OFFICE.

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INTERNATIONAL ROLLING SCREEN COMPANY, OF SAME PLACE.

## WINDOW-SCREEN.

SPECIFICATION forming part of Letters Patent No. 549,495, dated November 12, 1895.

Application filed January 24, 1895. Serial No. 536,054. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES ALLEN CROCKER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Window-Screens, of which the following is a specification.

This invention relates to that class of window-screens which are adapted to unwind or unroll when the window-sash is raised, and to fit or protect the space produced thereby for the purpose of preventing the entrance of insects into the apartment; and the invention is intended to be an improvement upon the window-screen illustrated and described in Letters Patent of the United States, granted September 4, 1894, to Samuel Abbott and numbered 525,381, to which reference is made.

The improvement relates especially to the construction and combination of parts hereinafter described, whereby the screen and casing thereof can be left at any height independently of the sash—as, for instance, if a person desires to raise a sash higher than the screen and look or lean out of said window over said screen; to the improved construction of the racks and adjacent parts, whereby they serve as guides as well as engaging mechanisms; to the construction whereby the tension of the spring is retained when the casing or roll is removed; to the construction of the foot-pieces in order that the casing or roll may be readily removable but securely locked while in position, and to other details of construction whereby the device is perfected in its operation.

The nature of the invention is fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of portions of a window-frame and lower sash with my improved window-screen applied thereto and the sash partly raised. Fig. 2 is a plan view of my device in position. Fig. 3 is a central horizontal section of the same, a portion of the minor shaft and the spring being shown in plan. Fig. 4 is a central vertical section taken transversely with the casing of the window-screen, the position being the same as indicated in Fig. 1. Fig. 5 is an elevation of one of the caps on the end of the casing, the pin-

ion having been removed. Fig. 6 is an inside view of one of said caps removed from the casing. Fig. 7 is a detail, in elevation and vertical section, of the mechanism at one end for permitting the removal of the casing and screen. Fig. 8 is a similar detail with the casing and screen removed. Fig. 9 is a vertical section taken longitudinally through the snap-catch which secures the casing to the sash, a portion of said casing being shown in rear elevation.

Similar letters of reference indicate corresponding parts.

A represents a portion of the lower sash of a window, A' the jambs, and A'' the sill, all constructed as usual.

B is a cylindrical casing substantially like that shown in the Letters Patent above referred to, but having a longitudinal horizontal opening B', Fig. 9, on its rear side, as shown. This casing is provided on its rear side next above said opening with a horizontal lip or ledge B', which serves two purposes: first, to prevent the admission of insects between the casing B and the sash A by extending horizontally from said casing to said sash to the full width of the space between them, and, second, to serve as a ledge or support for the snap-catch whereby the casing is secured to the sash automatically when the sash is dropped into engagement therewith. This snap-catch comprises a frame *a* and a spring-bolt *a'*, Fig. 9, which is pushed back by the projection *b*, Fig. 2, extending forward horizontally from the sash A, as said sash is lowered to the casing B, and which can be withdrawn by means of a handle *b'* when it is desired to release the sash. This casing B is provided at its ends with correspondingly-shaped caps C, which fit snugly thereon, and are slitted at their opposite ends at C', Fig. 6, to receive the oppositely-narrowed ends of the lip B'. These caps are bent inwardly centrally at *c* to form hubs or bearings for the minor shaft D. (See Fig. 3.) Around these hubs are bushings *d*, upon which is screwed the hollow roll or major shaft E. These two shafts D and E and the spring *e*, which connects them, are substantially similar to those shown in the Letters Patent above referred to.

F is the netting, one end of which is rigidly

secured to the hollow shaft E, while the other end is rigidly secured to the corner or other suitable portion of the foot-piece F', which is provided for the sake of finish with the molding f, Figs. 1 and 4.

II are gear-wheels or pinions, whose hubs II' are rigidly secured to the opposite ends of the shaft D, Fig. 3. The teeth of these pinions engage in the openings or sockets I', formed in the vertical racks I, Figs. 7 and 8, next the opposite jambs. These racks are made in horizontal section of angle metal, as shown in Fig. 2, the face of one angle setting against the jamb and the other being embraced by bifurcated guides J, Figs. 1, 2, and 5, which extend outwardly from plates J', secured to the outer surfaces of the caps C. It will be noticed by reference to Fig. 7 that this pinion has its teeth quite far apart and each are between the teeth comes in contact as the spring is raised with the rack between its perforations or sockets, so that the pinion rolls on its peripheral arcs and travels on and pulls with the pitch-lines of its teeth, thus practically preventing noise, while the construction of the racks and pinions renders them cheap to manufacture. The actuating-faces of the racks extend inwardly over upright beads or moldings K, which extend between the front portions of the racks and the sash and beyond said racks toward the center of the sash, their outer edges being set next those portions of the racks which are next the jambs. The beads or moldings K are provided with central vertical ribs K', Figs. 2, 3, and 4, which serve to separate the racks from the ribbons F'', which are secured to the opposite vertical edges of the screen F. These ribbons are provided at regular intervals with perforations L, Fig. 1, which coincide as the screen is raised with pins L', extending horizontally from the surfaces of the beads K inside the ribs K'. By this means when the screen is raised with the sash it is impossible that it should become bulged centrally through the influence of wind or otherwise, and thus have its edges drag away from the beads, inasmuch as the perforations L slip over the pins L' as fast as the screen is unfolded and hold it taut. Suitable screws l, Figs. 3 and 4, secure the beads and racks to the jambs.

The foot-piece L' is made of the angle shape shown in Fig. 4, the vertical portion extending to the rear of the netting F and the horizontal portion lying on the sill A'' and receiving the molding f. The foot is held in position upon the sill and the netting thus prevented from flying up by means of the following construction: From each rack I there extends an ear or plate M, which lies against the jamb. The front plate of the rack is divided at that point, and also separated from its side plate, as shown in Fig. 8. The side plate below the joint is lettered K'', and the front plate below the joint is lettered K''' and is made integral with a bar N, pivoted at n to

the plate M and thus adapted to swing up forward next the jamb. The lower end of this bar has pivoted to it at n' a bar N', whose lower edge is provided with a bolt N''. These bars N are of such a length that when in their normal positions—that is, swung back against the moldings K—they will press the foot F' down upon the sill at its opposite ends. When in such position, the bars are prevented from being swung out by swinging the locking-bars N' down into the horizontal position shown in Fig. 7, in which position their bolts N'' are dropped into sockets or openings A''' in the sill. Thus the lower end of the netting is held down to the sill unless it is desired to allow it to coil up within the casing B, in which case the bars N N' are swung outward and upward to release the foot F'. The outer end of the locking-bar N' is preferably bent into a lip, as shown, for convenience in handling.

Fast to the pinion II at one end of the shaft D, between the cap C and said pinion, is the ratchet P, Figs. 1, 2, 3, and 5. A pawl S is integral with a handle S' fast on or rigid with a shaft which extends through the cap C, and is squared on its inner end, as shown at R, Fig. 6. A spring T has one end T' fastened to the inner surface of said cap, said spring passing through the eye t and having its end T'' bear against the squared shaft R, all as shown in Fig. 6. Thus the pawl is held into or out of engagement with the ratchet, as the case may be. The normal position of the pawl when the screen is in position in a window-frame is raised, as shown in Fig. 1. The ratchet is then free to rotate with the pinion and act as a compensating device upon the spring e in substantially the manner described in the Letters Patent above referred to.

When the screen is to be removed from the window, the casing B is first lowered to the sill. Then the pawl S is disengaged from the ratchet by swinging the handle S' forward into the position shown in Figs. 2, 3, 5, and 6, so as to retain the tension of the spring e. Then the sash is raised after disengaging it by withdrawing the bolt a'. The locking-bars N are then swung out of engagement with the sill and the bars N N' swung up and forward, carrying with them, of course, the lower sections K'' of the racks; and the casing and screen can then be removed by drawing the sliding guides J off the lower sections K'' of the racks, upon which they were moved when the casing was pushed down to the sill. To apply the casing, the operation is reversed, the sash, however, being moved into engagement with the casing by simply dropping it into the snap-catch, as above described. Thus it will be seen that the screen and casing may be left at any height and the sash moved independently thereof, that the racks serve not only as means of engagement with the pinions, but as guides for the casing, that the tension of the spring is held when the casing is removed from the window, and that

the casing and screen are easily removable, as the latter is not secured to the sill nor to any portion of the window-frame, while in various details the efficiency of the screen and its operation is improved.

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

1. In a window-screen of the character described, the casing, comprising the cylindrical or body portion B and the end-caps C, said cylindrical portion being provided with the horizontal ledge B', and said caps being provided on their rear edges with the slits C' for receiving the ends of the said ledge, substantially as described.

2. In a window-screen of the character described, the casing B, the screen proper or net work F adapted to roll within and extend downward from said casing, an independent foot piece to which the lower end of said screen is secured, and mechanism attached to and extending down from the jamb of the window-frame for holding said foot piece detachably down upon the sill, substantially as set forth.

3. In a window-screen of the character described, in combination, vertical racks secured to opposite sides of the window-casing, the cylinder or casing B provided with slides engaging said racks and adapted to move up and down thereon with the casing, and pinions engaging said racks and engaged by a shaft within said casing, substantially as described.

4. In a window-screen of the character described, the combination of the casing B provided with the cap C on its end, the upright racks I made angle shaped in cross section and having one surface secured to the jambs and the other provided with sockets and engaged by pinions secured to a shaft supported by the casing, and the plates J' secured to the outer surface of the caps and provided with the bifurcated guides J embracing the inner edges of the racks, substantially as described.

5. In a window-screen of the character described, the upright moldings K provided with the vertical ribs K' on their front surfaces, and racks situated in front of said moldings and between said ribs and the jambs of the window-frame, whereby divisions or partitions are produced between the outer edges of the window-screen and said racks, said racks and moldings being secured to the jambs, substantially as set forth.

6. In a window-screen of the character described, a casing provided with the roll of net work and suitable pinions at its ends, racks secured to the window-frame and engaged by said pinions, and guides traveling on said racks and extending from said casing, said racks being jointed near their lower ends whereby said lower ends may be swung outward to facilitate the disengagement of the casing from the racks, substantially as set forth.

7. In a window-screen of the character described, in combination, a foot or cross piece secured to the screen and adapted to rest on the sill, a rack secured to the window-frame and adapted to engage the pinion of the screen-roll, and a bar swinging within the window-frame and provided with a rack which forms when the bar is swung to a vertical position a continuation of the rack first named, said bar being adapted to swing down upon and hold said foot, substantially as set forth.

8. In a window-screen of the character described, the combination of the foot F' to which the lower end of the screen is secured, the bars N swinging vertically from the jambs, and the locking bars N' pivoted to the lower ends of said bars N and adapted to engage with the window sill and thus lock the foot in position upon said sill, and prevent it from forward as well as vertical movement, substantially as described.

9. In a window-screen of the character described, the combination of uprights set in the window frame next the side edges of the screen and provided with horizontal projecting pins L', and the screen or net-work F provided with the side ribbons K perforated at L coincidently with said pins, whereby as the screen is unrolled it is engaged by said pins, substantially as set forth.

10. In a window-screen of the character described, in combination, the casing B provided with the end-caps C, the shaft D extending through said casing and having its bearings in the end caps, the hollow shaft E to which the screen is secured, the ratchet P fast on the shaft D, the pawl S and handle S' fast on the squared shaft R having bearings in one of the caps C, and the spring T bearing on said squared shaft, substantially as described.

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Witnesses:

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