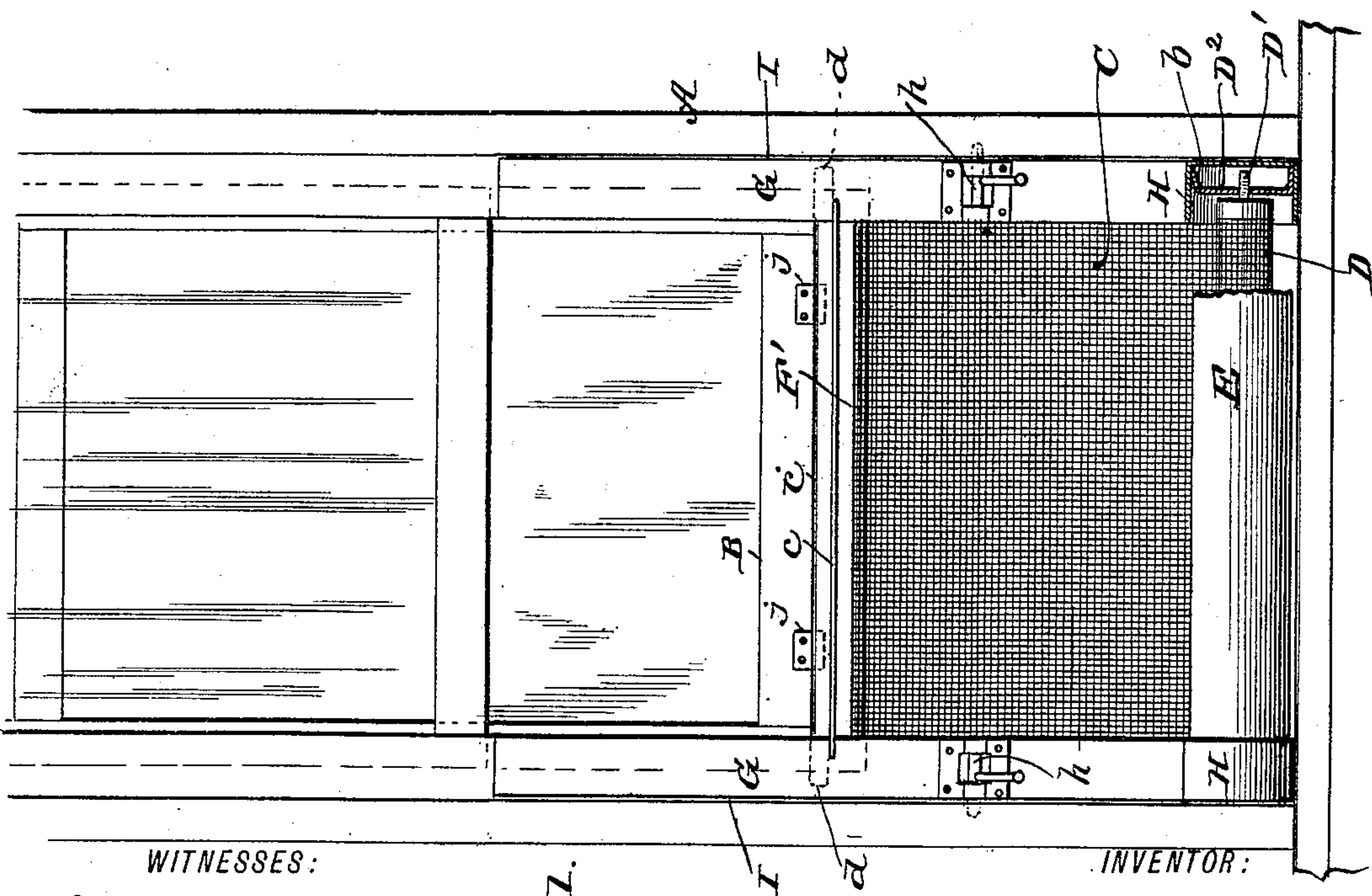
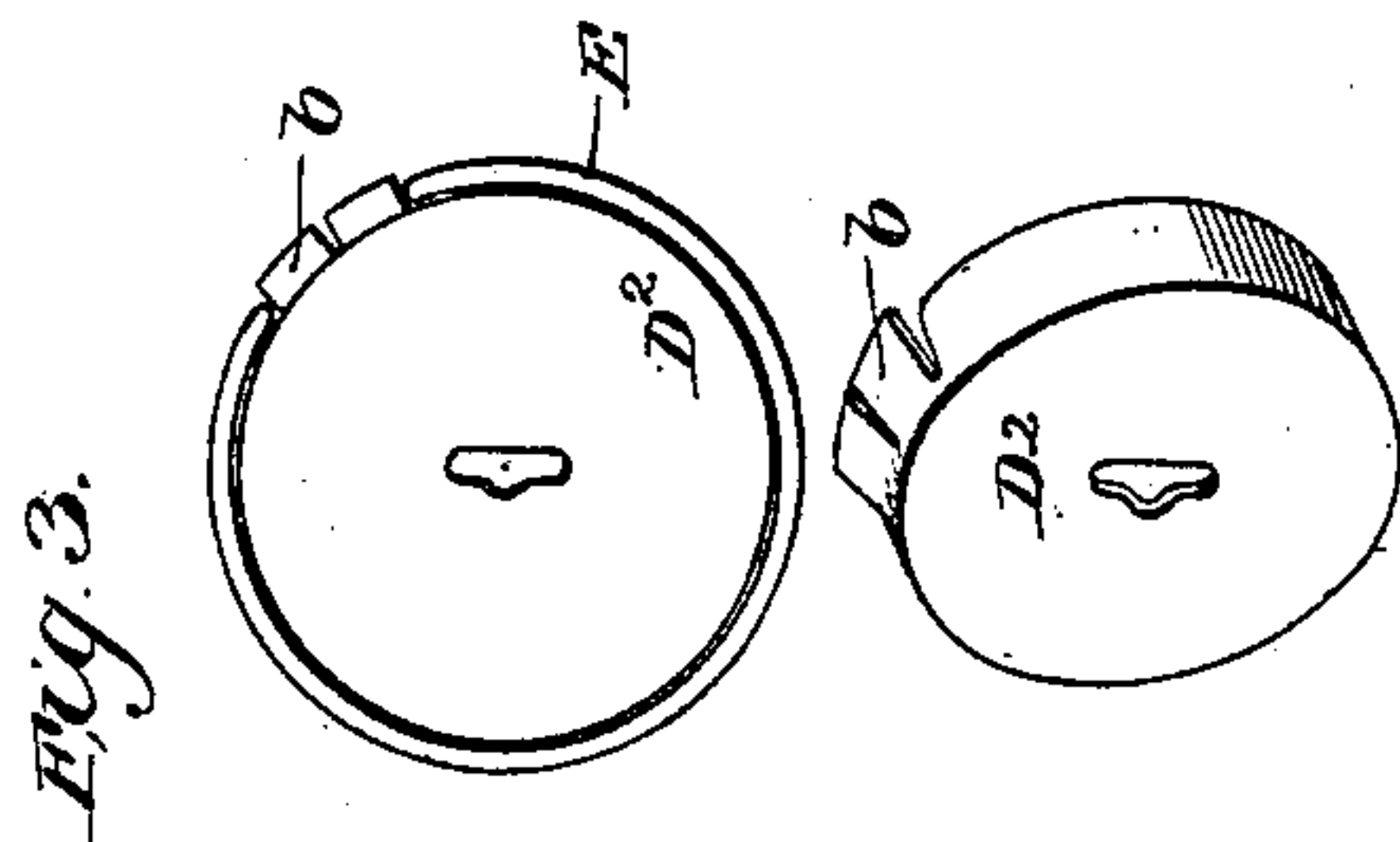
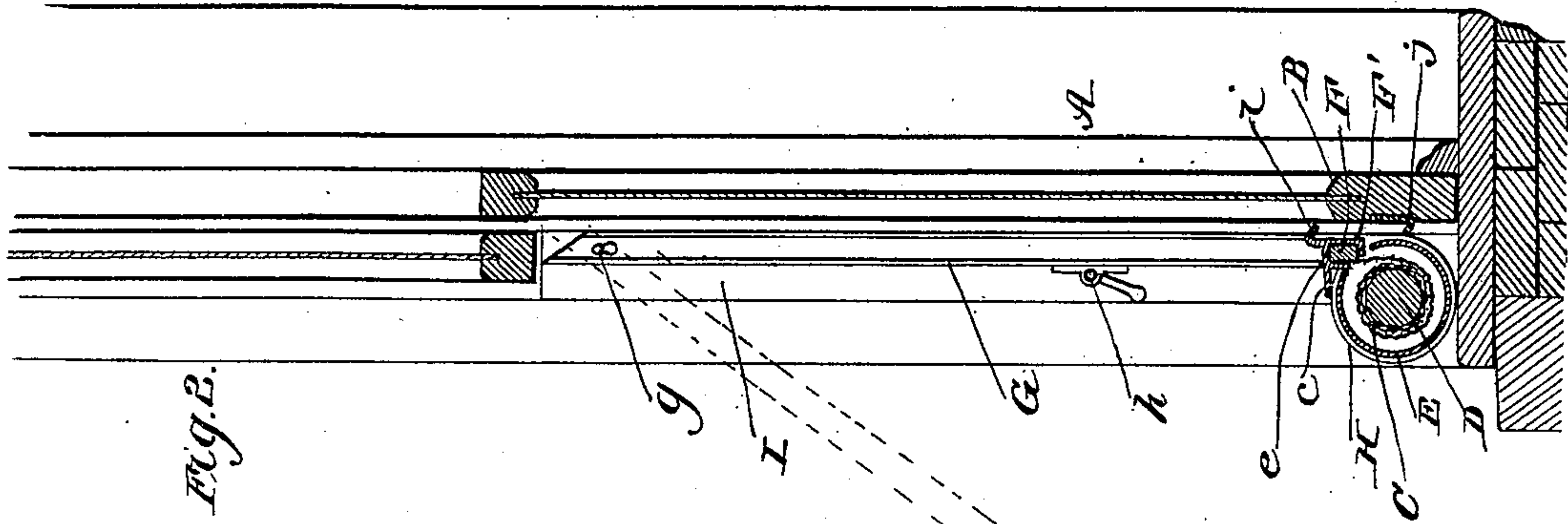


(No Model.)

J. KNOWLES.
WINDOW SCREEN.

No. 448,965.

Patented Mar. 24, 1891.



WITNESSES:

Fred G. Dieterich
Jos. A. Ryan

Fig. 1.

INVENTOR:

James Knowles.

BY

Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES KNOWLES, OF JAMESTOWN, NEW YORK.

WINDOW-SCREEN.

SPECIFICATION forming part of Letters Patent No. 448,965, dated March 24, 1891.

Application filed August 12, 1890. Serial No. 361,845. (No model.)

To all whom it may concern:

Be it known that I, JAMES KNOWLES, of Jamestown, in the county of Chautauqua and State of New York, have invented a new and useful Improvement in Window-Screens, of which the following is a specification.

My invention relates to that form of window-screen in which a spring-roller is arranged at the bottom of the sash and is provided with a roll of netting wound around the same and moving in guides at the sides, the netting being attached to the lower edge of the sash, so that when the latter is raised it carries the netting with it, and, unwinding said netting from the roller, distends it across the open space beneath the sash.

My improvement consists in the peculiar construction and arrangement of parts for adjusting the netting, roller, and guides to the window frame and sash, as will be hereinafter fully described.

Figure 1 is a front elevation with one end of the roller-casing broken away and the sash raised. Fig. 2 is a vertical longitudinal section with the sash down and the screen-frame swung out in dotted lines, and Fig. 3 is an end view of the casing with the cap off.

A represents the window-frame, and B the sash sliding in the usual grooves in the frame. C is the netting, which may be made of fabric, painted to give it strength and stiffness, or fine wire. This netting is at its lower end attached to and wound upon a roller D, which is provided with a spiral spring after the manner of a curtain-roller, and whose tension serves to wind up the netting upon the roller. This roller turns loosely upon journals D', one of whose ends is flattened and fixed rigidly in the head D². These heads are locked in the cylindrical casing E, which incloses the roller, and said heads and journals form an attaching-point for one end of the spring, the other end being connected to the revolving roller. The casing E has a longitudinal opening at its rear side to permit the entrance and egress of the netting as it is wound upon or drawn out from the roller. This opening also receives the outwardly-bent lugs b on the heads D², which prevent the turning of the heads in the casing.

The upper end of the netting is attached

to a cross-bar, which is composed of a wooden strip F and a metal frame F'. This metal frame has an overhanging lip c, projecting ends d, which guide the cross-bar, and a hollow chamber e, open at its lower corner. The netting is wound around the wooden strip, and the strip then slipped with the netting longitudinally into the chamber e, thus forming an easy means of connecting the netting to the cross-bar and disconnecting it again when desired.

The ends d of the cross-bar and the sides of the netting are guided in the channel-bars G G, which at their lower ends are connected to the caps H H, which fit over the ends of the cylindrical casing E. These channel-bars have a key-hole slot at their upper ends, which are slipped over headed screws or nails g in the sides of the frame-work, while bolts h on the channel-bars enter holes in the window-frame and hold the lower end of the channel-bars and the roller to position. When these bolts are withdrawn, the roller and lower ends of the channel-bars may be swung outwardly about the screws g as a pivotal point, as shown by dotted lines, thus giving access to the window sash and sill for dusting and cleaning.

To connect the cross-bar of the netting to the sash, the edge of the cross-bar is formed with a downwardly-projecting flange i, and hooks j on the lower edge of the sash engage therewith when the sash is lifted. This connection may, however, be easily severed by simply raising the cross-bar a short distance.

When the sash is raised, it will be seen that the netting is distended across the open space, the netting unrolling from the roller below as fast as the sash rises, and the tension of the spring-roller serving to hold the netting always taut and true.

To hold the sash up against the downward pull of the roller, any suitable sash-lock may be used.

I is a metal facing on the inside of the window-frame, which may be used or omitted, as desired.

Having thus described my invention, what I claim as new is—

1. The combination, with the window-frame having pivotal screws or nails g at its upper end, of the channel-bars G, hung thereupon

and provided with bolts *h*, and the spring-roller and netting carried upon the lower ends of said channel-bars and adapted to be swung out about its upper pivotal point, substantially as shown and described.

2. The combination, with the channel-bars *G G*, the spring-roller, and the netting wound thereon, of the cross-bar composed of wooden

strip *F* and metal frame *F'*, having lip *c*, hollow chamber *e*, and projecting ends *d d*, sliding on the channel-bars, substantially as shown and described.

JAMES KNOWLES.

Witnesses:

HENRY JAMES,
HERBERT BARKER.