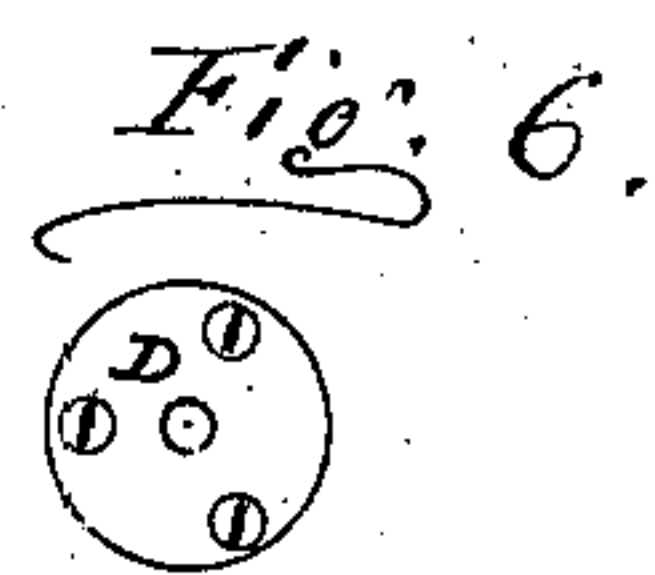
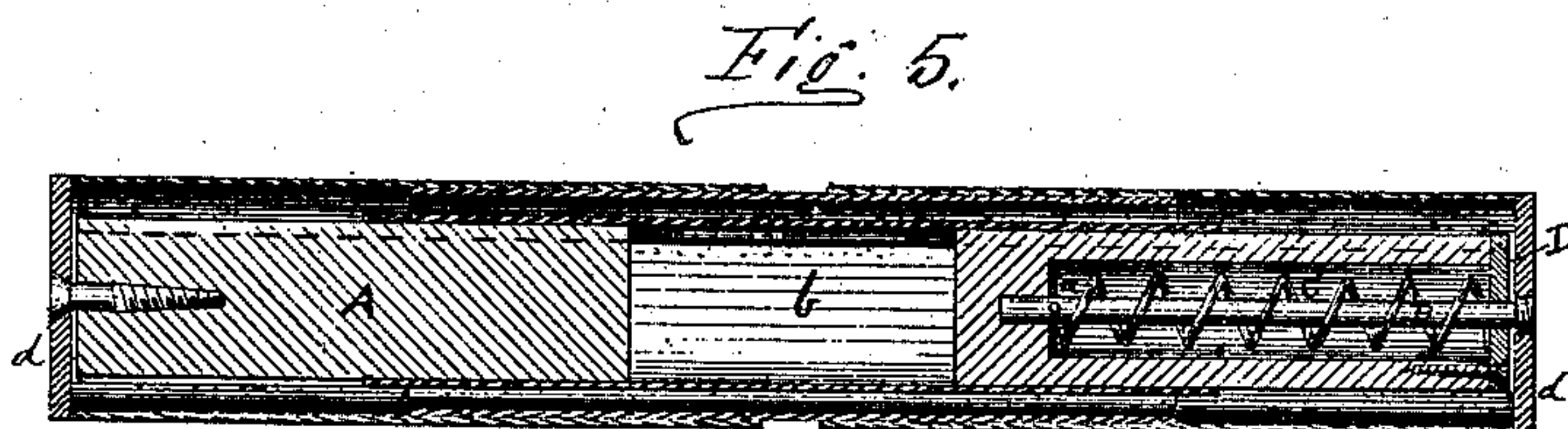
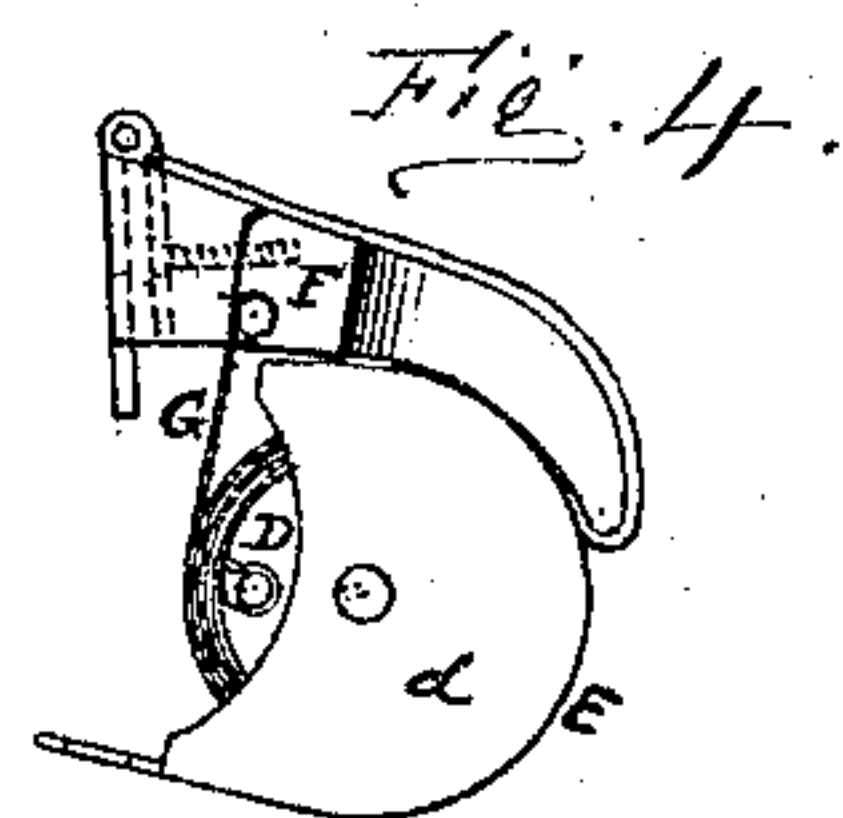
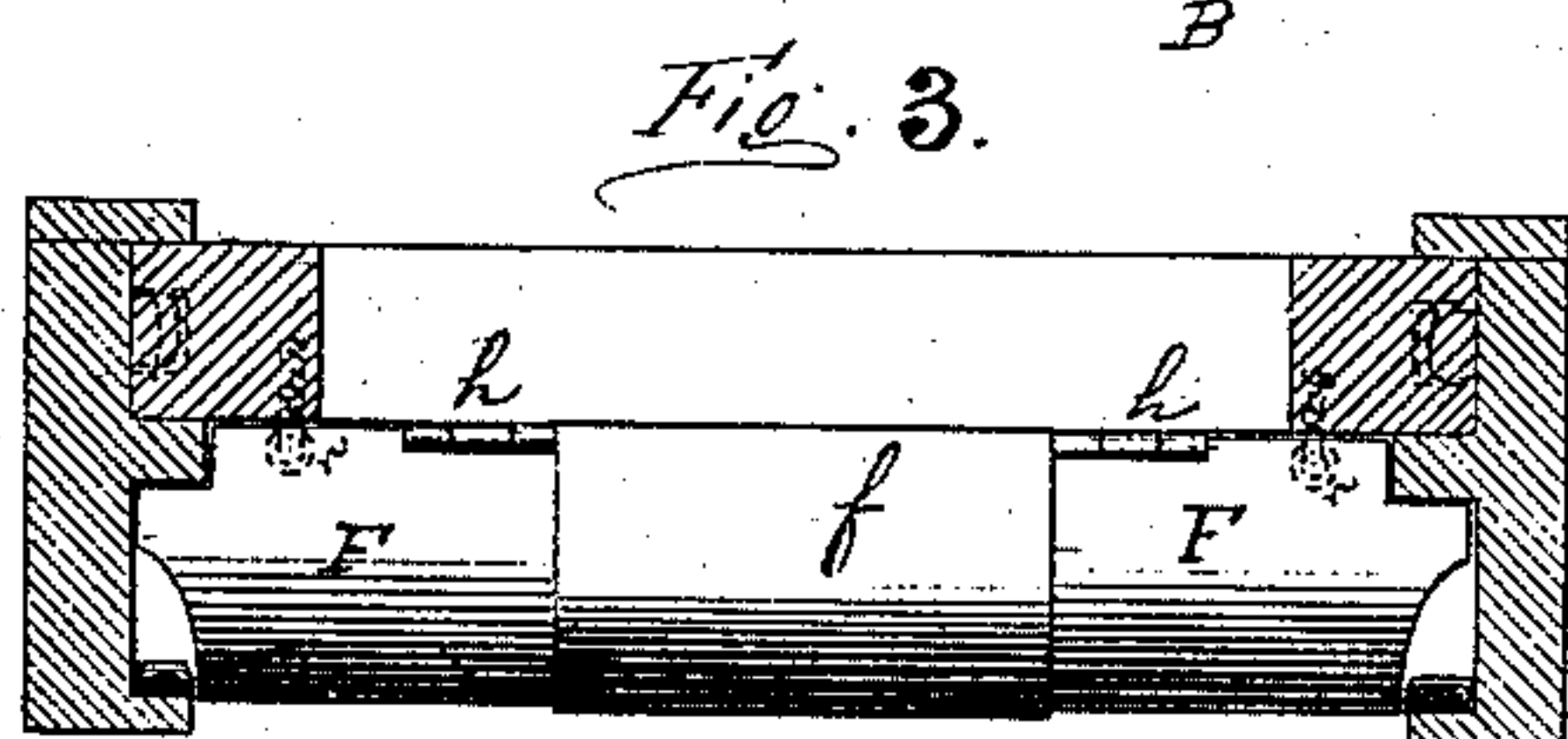
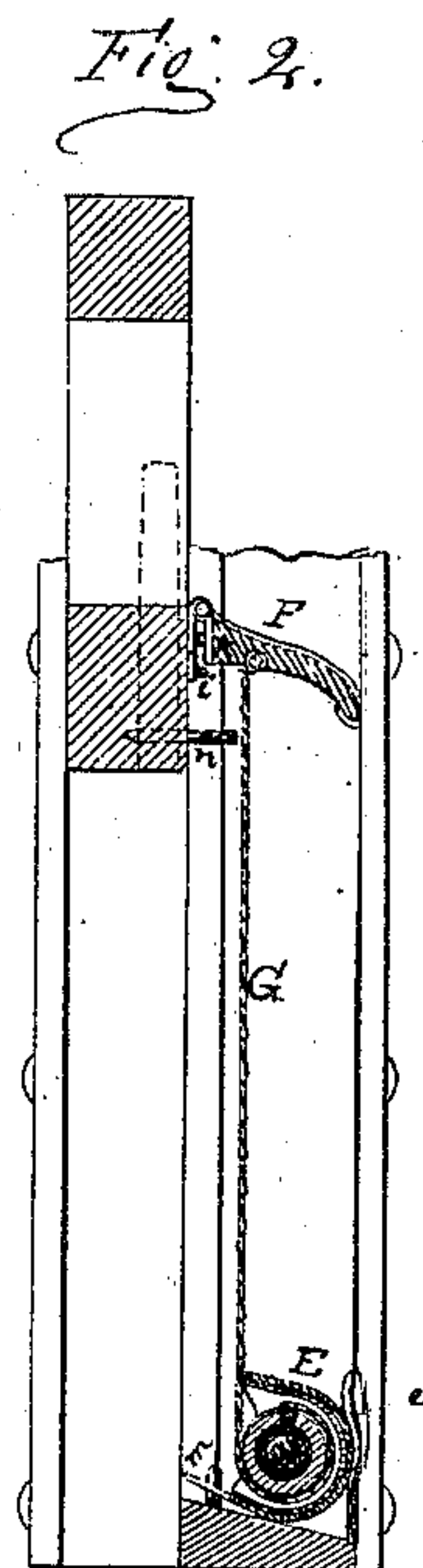
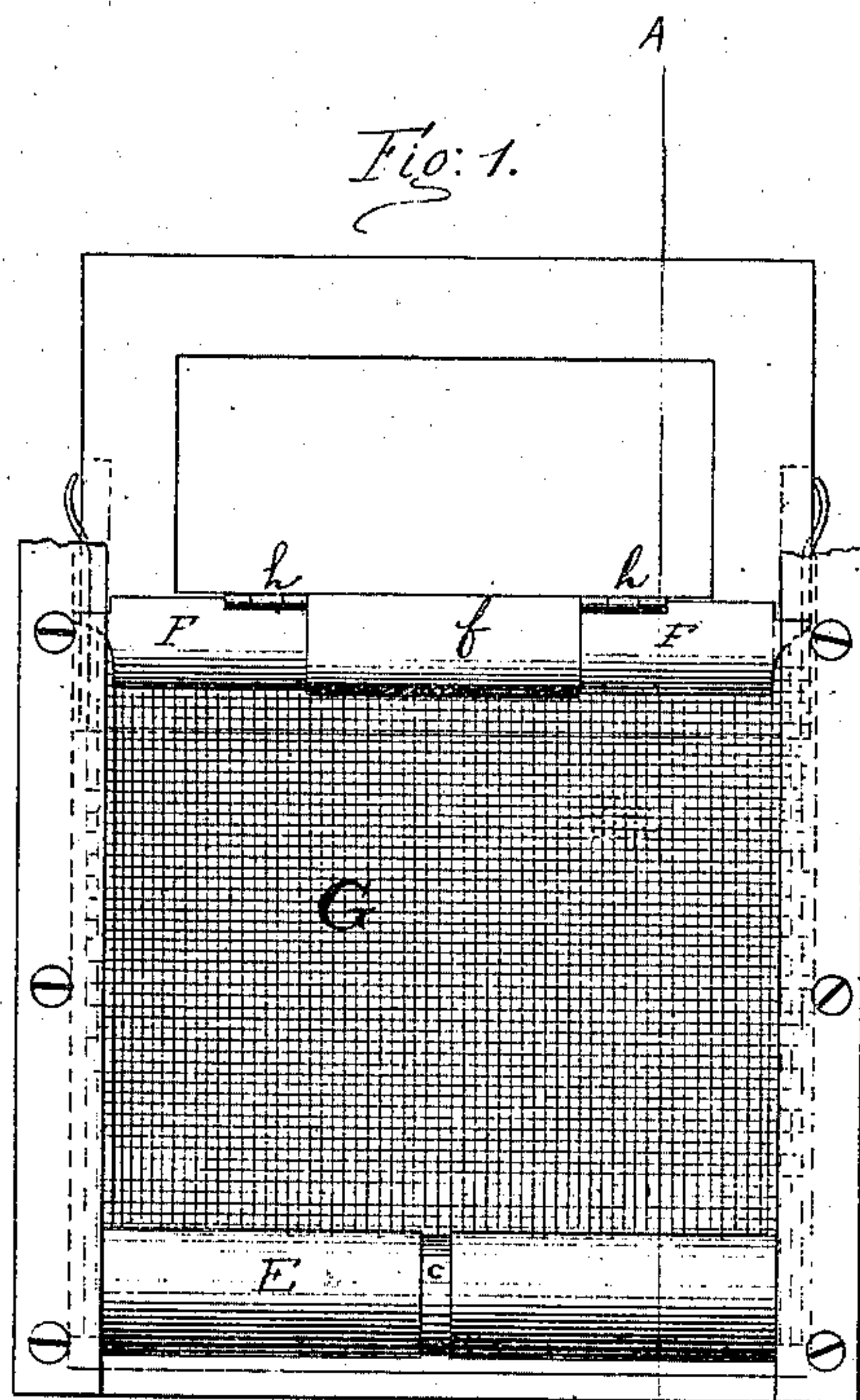


*Kimball & Hebard,*

*Window Screen.*

*No. 98601.*

*Patented Jan. 4. 1870.*



*Witnesses:*

*Joseph H. Verge*  
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*Inventors:*

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# United States Patent Office.

JOHN T. KIMBALL AND BENJAMIN F. HEBARD, OF BOSTON, MASSACHUSETTS.

*Letters Patent No. 98,601, dated January 4, 1870.*

## IMPROVED EXTENSION WINDOW-SCREEN.

The Schedule referred to in these Letters Patent and making part of the same.

We, JOHN T. KIMBALL and BENJAMIN F. HEBARD, of Boston, in the county of Suffolk, and State of Massachusetts, have invented certain Improvements in Window-Shades and Mosquito-Bars, of which the following is a specification.

Figure 1, of the accompanying drawing, represents an ordinary window, having our improvement applied thereto.

Figure 2 is a vertical transverse section on the line A B of fig. 1.

Figure 3 is a horizontal section, showing the top of the shelter-bar, with its sheath.

Figure 4 shows an end view of the screen, when closed, and the peculiar shape of the end-plates *d*.

Figure 5 is a central longitudinal section of the screen-roll, showing the spring-shaft, with its slot, in which one end of the spring is fastened; also the case-plates, for end-supports of the roll, and metal sheath or slide, which connects the two parts of the roll.

Figure 6, shaft-plate, attached to and covering one end of the roll.

Our invention relates to that class of screens, the object of which is the exclusion of mosquitoes and other insects, and at the same time allow a comparatively free circulation of air, and consists in combination and arrangement of devices, by means of which, screens may be readily adjusted to windows of different widths; also, in the novel arrangement of the various parts of the fixture for the purpose of rendering its action more perfect than has heretofore been done.

In constructing and applying our improved window-screen, we first take an ordinary roll and bore a hole in one end, about five inches deep, and at the bottom of this another smaller one, half an inch deep, which forms, in connection with the plate *a*, the bearing for the inner end of the shaft.

The spiral spring *O* winds around the shaft and furnishes the power for turning the roll to wind up the screen. One end of the spring is attached to the inner end of the shaft by being inserted in a slot in the end of the shaft, which is then pinched up, securing the spring firmly.

The opposite end of the spring is bent at a right angle, and driven into the end of the roll, and held firmly in that position by the plate *D*, which also serves as a bearing for the outer end of the shaft *B*.

A metal collar, *a*, is placed on the inner end of the shaft. Back of this collar is a pin through the shaft, and the spring presses against the opposite side, thus keeping the parts in their proper position.

The roll is then divided in the middle of its length,

and the inner ends thereof inserted in a metal sheath, *b*, bent to conform to the shape of the roll. The two parts can be pushed into the sheath or drawn out at pleasure.

The case or cover *E* is made of sheet-metal, rounded to conform to the roll.

It is made in three parts, the central part *c* being a little smaller than the two outer parts, so that it can slide within them. The edges of the outer parts are turned inward, thus forming a groove in which the central part slides.

To the outer ends of these plates are soldered the plates *d*, which form the end-supports of the roll.

It will be observed that the peculiar form of these plates admits of great economy in the material from which they are cut, and also allows the screen to be removed from the roll, without detaching the latter.

The plate *d* has the outer end of the shaft *B* screwed into a corresponding nut, formed in its centre. The shaft is thus held stationary while the roll turns upon it.

The case *E* has two holes in the lower part, which rests on the sill of the window, and two pins, *m*, are driven into the sill, which pass through the holes in the case.

In the lower rail of the sash, two loop-screws, *n*, are placed, so that when the sash is lowered, the loops shut over the pins, thus firmly fastening the screen to the window.

When the window is raised, the unwinding of the screen from the roll would necessarily reduce the size, and carry the screen from instead of toward the parting-bead of the window-frame.

To obviate this difficulty, the spring *e* is attached to the window-casing, between it and the case of the screen, thus keeping the screen pressed firmly against the parting-bead.

The shelter-bar *F* is of wood, made concave on the under side, and convex form on its upper surface, the edge next the sash being bevelled. The inside corners are cut out to fit the parting-bead of the window-frame, while the opposite corners are sloped away from the same, so as to allow free action. It is grooved on the under side to receive the end of the screen, in the usual way. It is also divided in the middle of its length, and a metal sheath, *f*, curved to the proper shape for embracing the top and edges of the bar, receives the inner ends of the two pieces of the bar. The whole can, therefore, be extended or contracted at pleasure.

The bar is fastened to the lower rail of the sash by the tongued hinges *h h* and hooks *i*. One part of these hinges is like an ordinary hinge, and is secured

to the bar F by screws; the other part is formed with a tongue, which slides back of the hooks, and holds the bar to the sash.

A pin, *k*, is driven into the shelter-bar, through an aperture in one part of the hinge, and forms a bearing for the tongue of the hinge, preventing the bar from binding on the sash.

We are aware that rolling window-screens have been used, the roll being operated by a coiled spring, and that such screens have been made attachable and detachable by various methods; also, that rolling screens have been formed to cover the opening made by raising the sash; but this we do not broadly claim.

What we do claim, and desire to secure by Letters Patent, is—

1. The combination of the extension screen-case E and extension-roll A, constructed and arranged to operate in connection with the screen G, as shown and described.

2. In combination with the above, the springs *e*, for the purpose specified.

3. The extension shelter-bar F, hinged to the window-sash, and used in connection with the screen G, as and for the purpose specified.

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BENJAMIN F. HEBARD.

Witnesses:

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