

No. 618,822.

Patented Feb. 7, 1899.

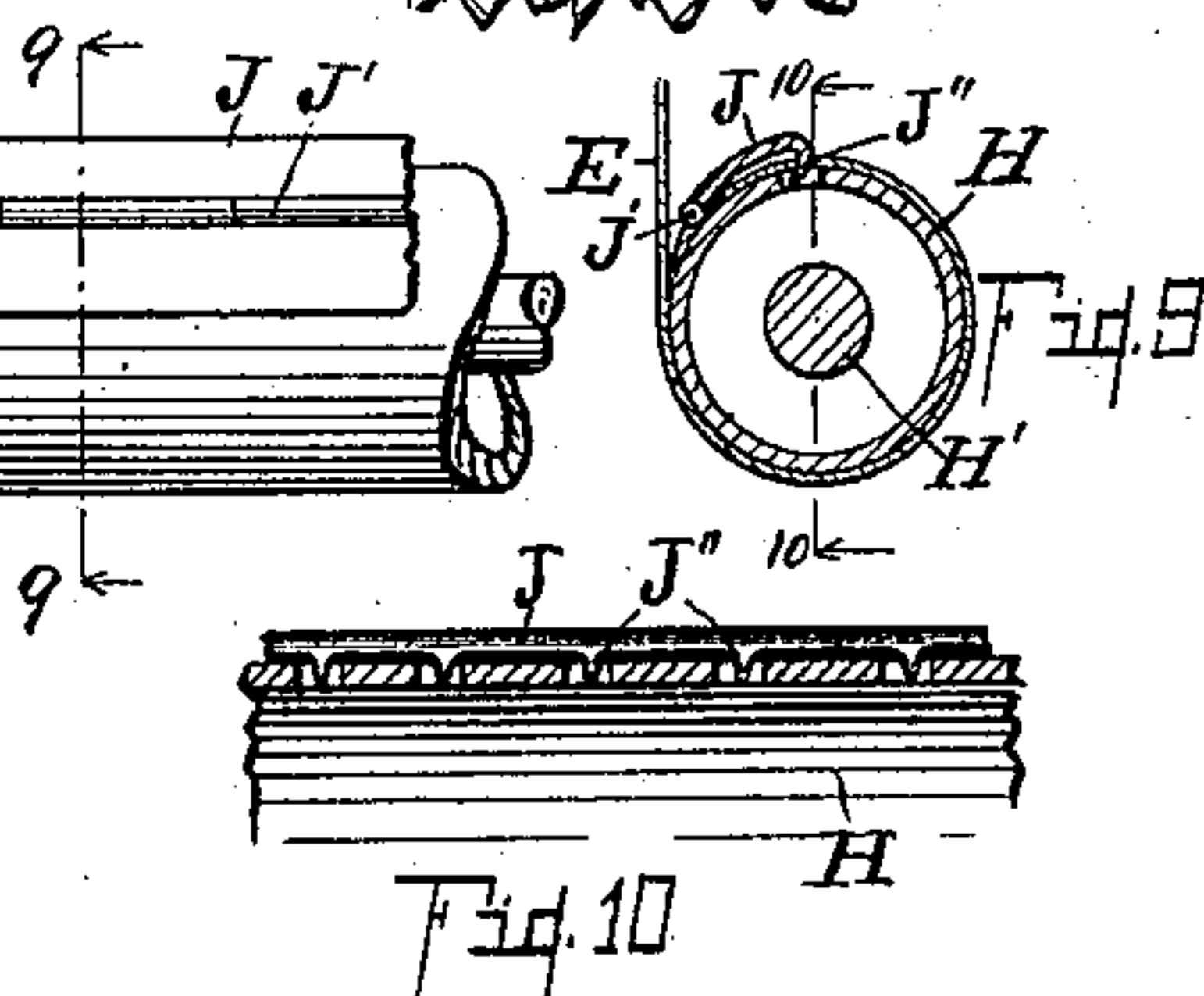
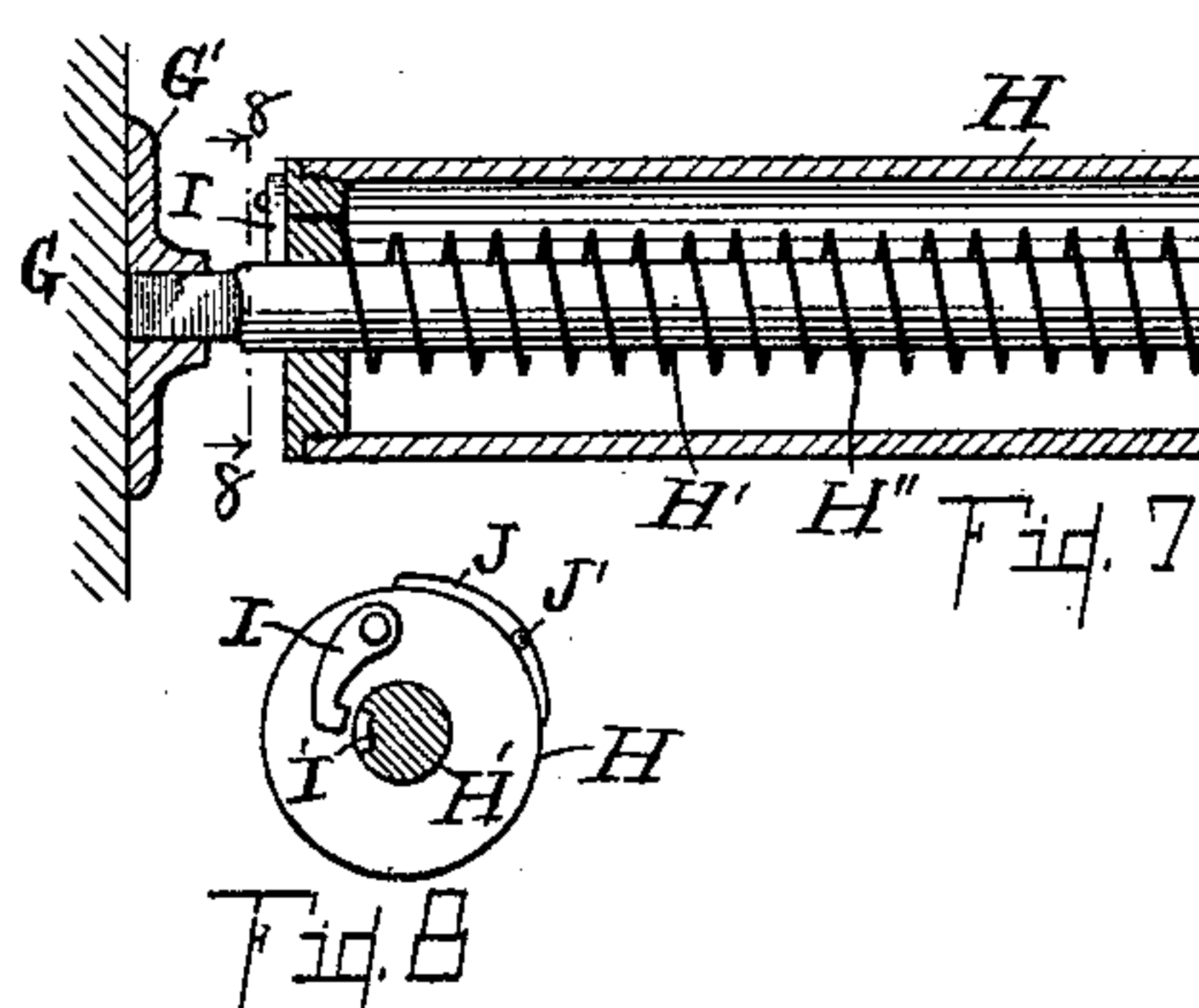
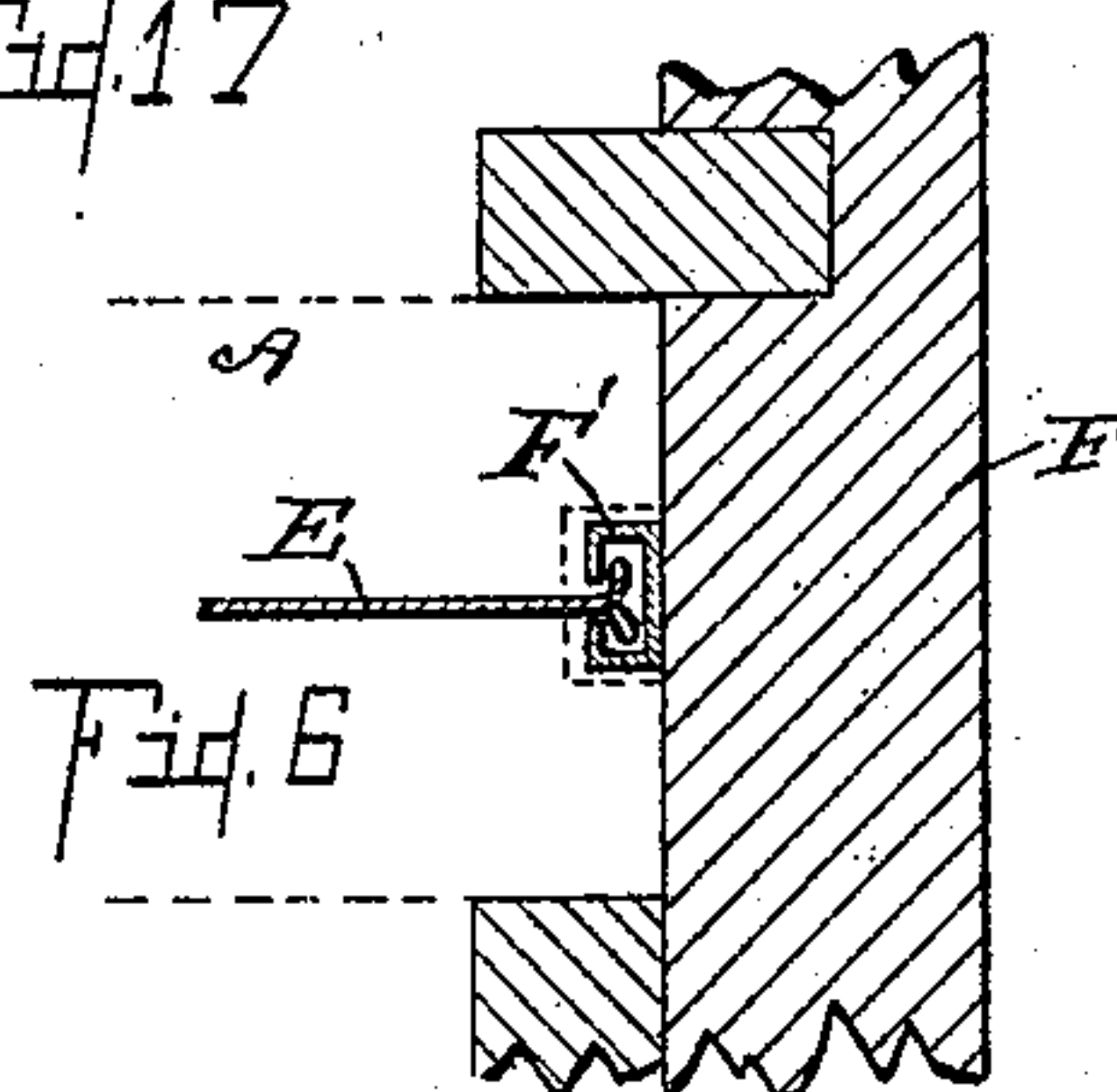
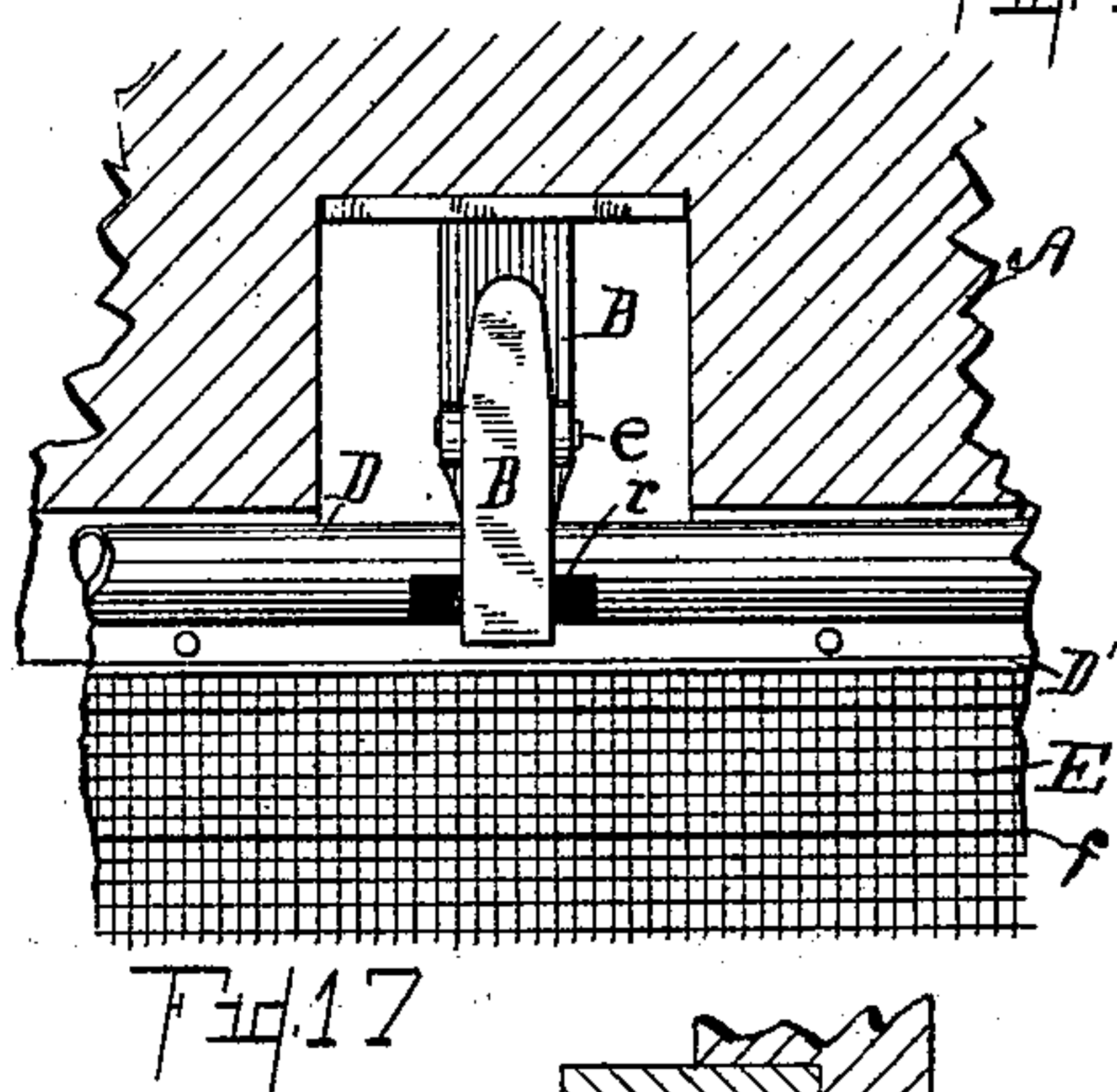
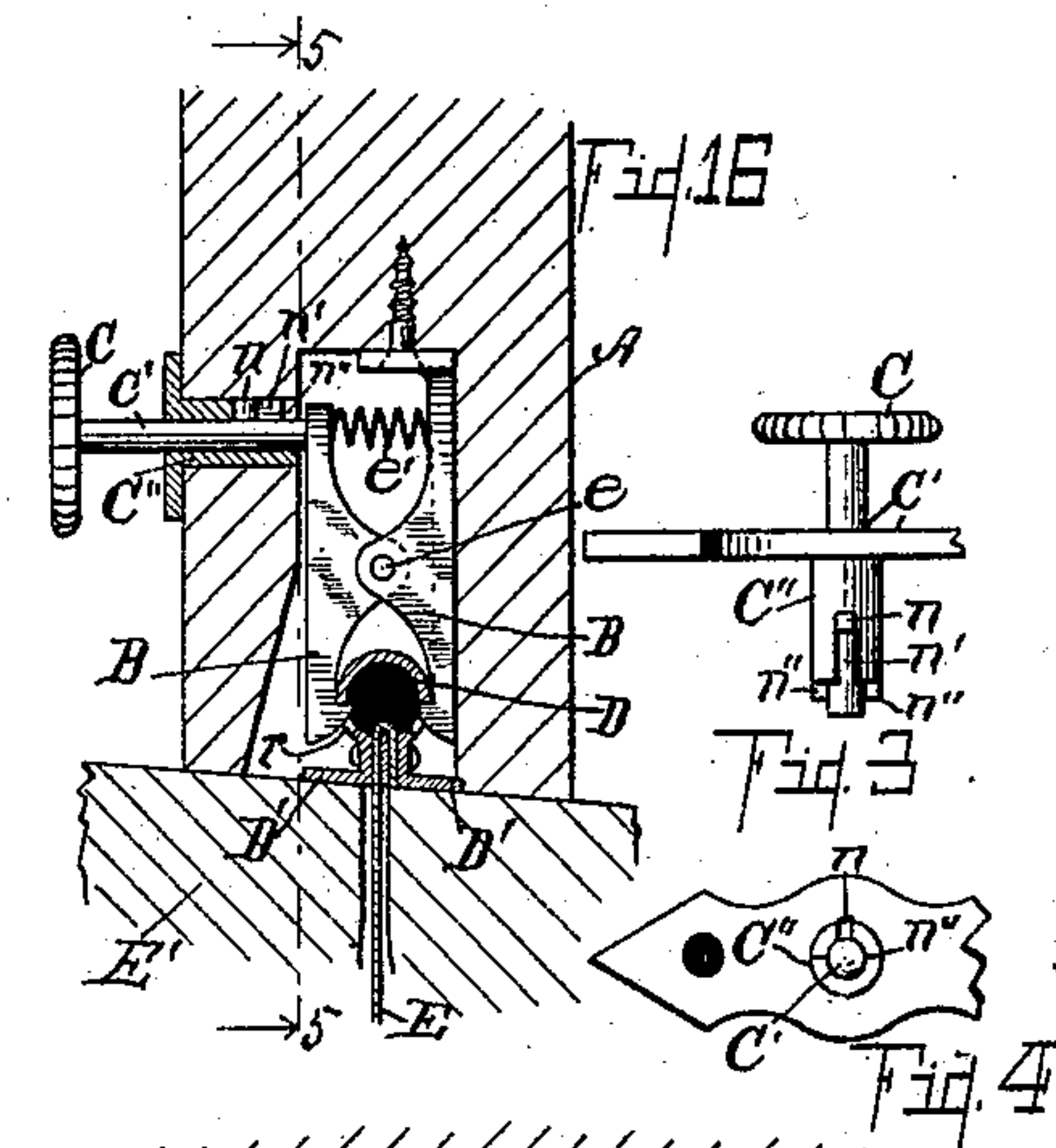
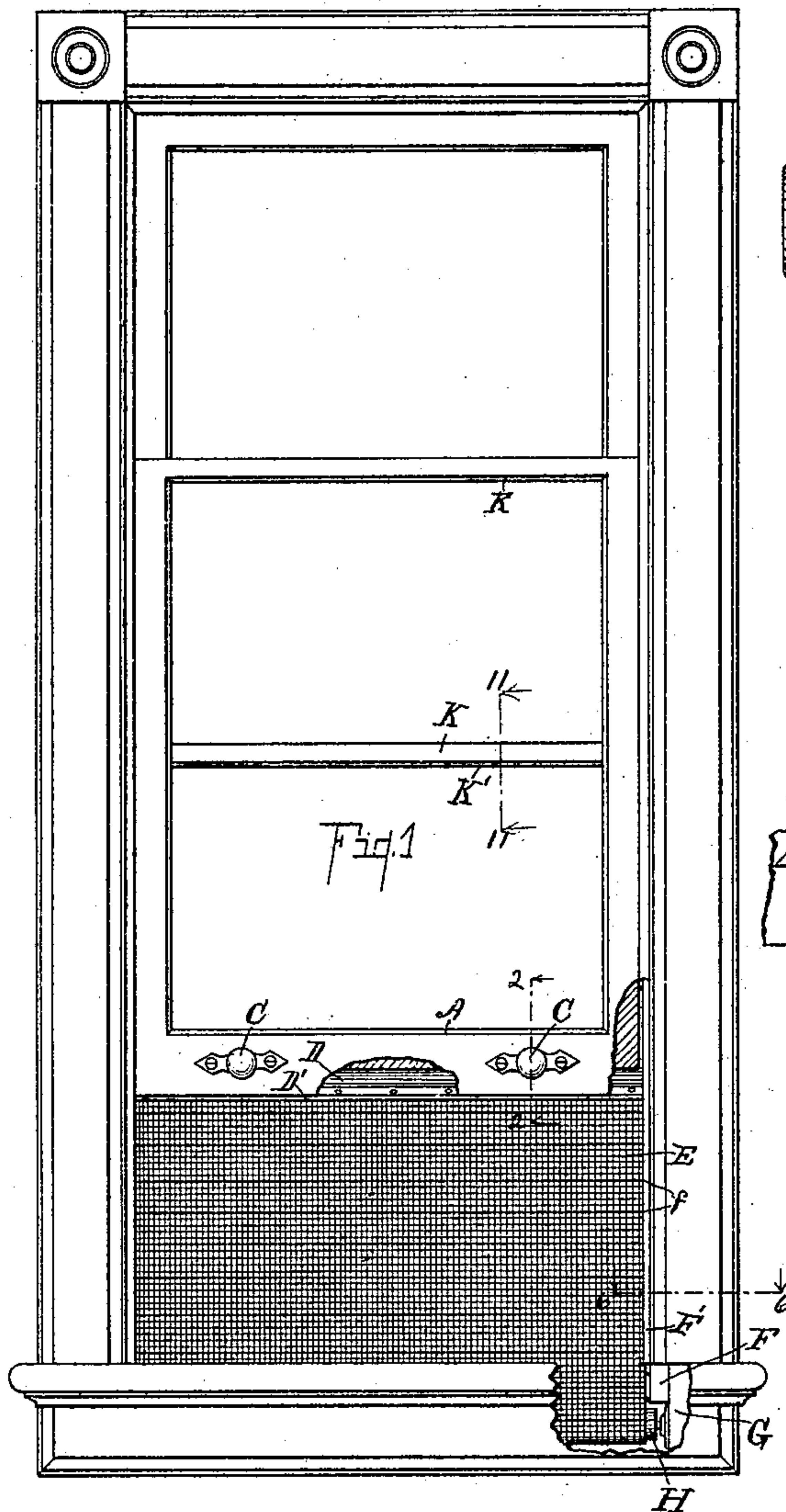
T. E. BARR.

WINDOW SCREEN AND CONTROLLING APPARATUS.

(Application filed Dec. 26, 1895. Renewed June 18, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:  
Walter S. Wood  
Vern E. Lappell.

Inventor,  
Thomas E. Barr  
By Fred L. Chappell  
Att'y.



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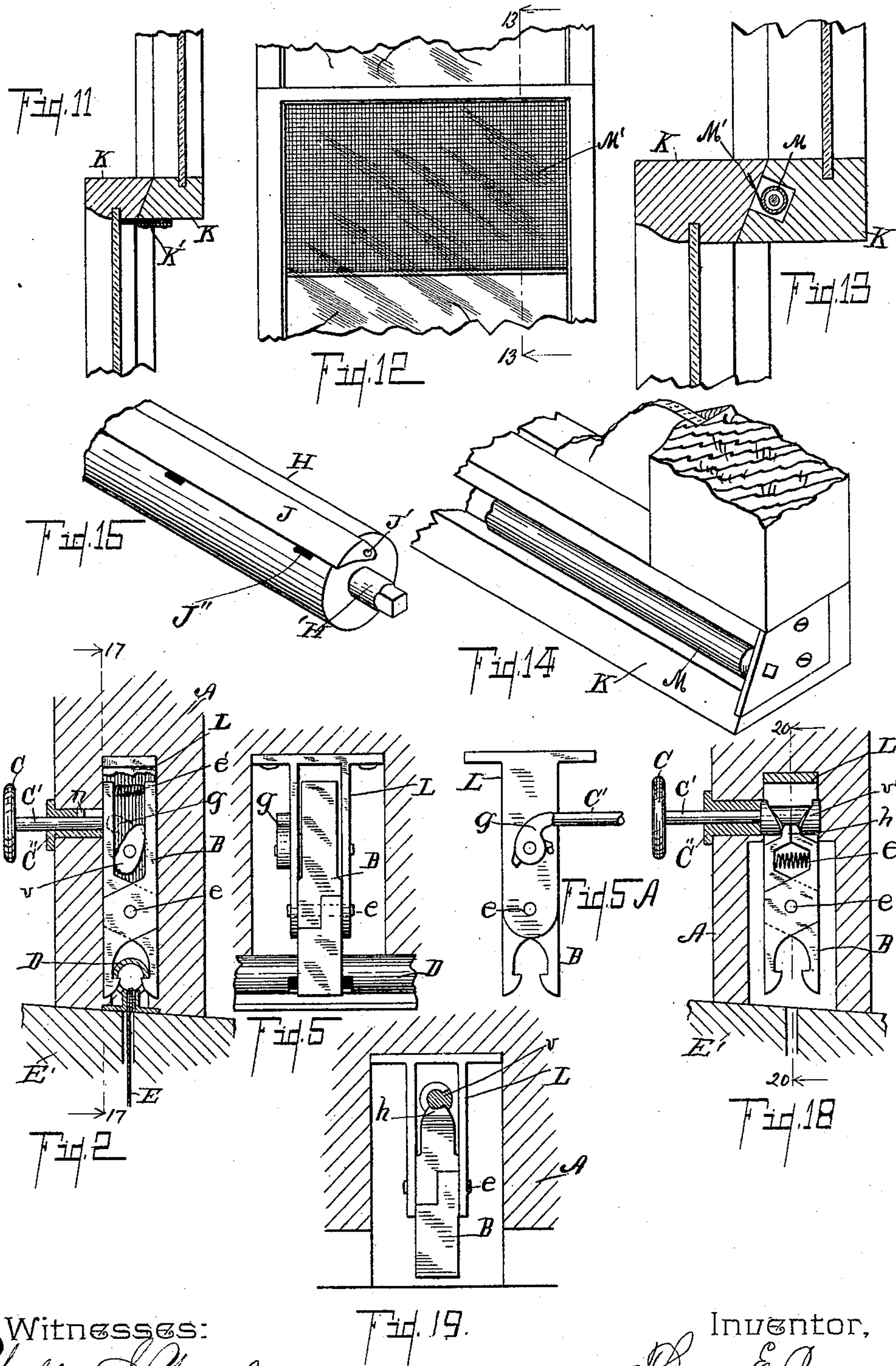
T. E. BARR.

WINDOW SCREEN AND CONTROLLING APPARATUS.

(Application filed Dec. 26, 1895. Renewed June 16, 1898.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:

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# UNITED STATES PATENT OFFICE.

THOMAS E. BARR, OF KALAMAZOO, MICHIGAN.

## WINDOW-SCREEN AND CONTROLLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 618,822, dated February 7, 1899.

Application filed December 26, 1895. Renewed June 18, 1898. Serial No. 683,867. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS E. BARR, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Window-Screens and Apparatus for Controlling the Same, of which the following is a specification.

My invention relates to improvements in window-screens, and especially to improvements applicable to roller window-screens and controlling apparatus therefor.

The objects of this invention are, first, to provide improved means of attaching window-screens to a roller; second, to provide improved means of securing the window-screen to the bottom of the sash; third, to provide improved means of controlling the attaching devices on the bottom of the window-sash; fourth, to provide an improved means of screening between the meeting-rails of the sash when the window is open, and further objects appearing definitely in the detailed description. I accomplish these objects of my invention by the devices and means described in the following specification and shown in the accompanying drawings, in which—

Figure 1 is a front elevation of an entire window, showing my improved screen in place, portions of the casing and sash being broken away to show details of construction. Fig. 2 is an enlarged detail sectional view on line 2 2 of Fig. 1, the attaching-levers being shown in full lines and the operating-lever *g* for the cam in dotted lines. Fig. 3 is an enlarged detail perspective view of the push-button *C* and means of adjusting the same. Fig. 4 is a bottom plan view of Fig. 3. Fig. 5 is an enlarged detail sectional view on line 17 17 of Fig. 2. Fig. 5<sup>A</sup> is an enlarged detail perspective view of the gripping mechanism shown in Figs. 2 and 5. Fig. 6 is an enlarged detail sectional view on line 6 6 of Fig. 1. Fig. 7 is an enlarged detail view of one end of the roller, a part of the shell of the roller being broken away to show the attachment of the spring. Fig. 8 is an enlarged detail sectional view on line 8 8 of Fig. 7. Fig. 9 is an enlarged detail view on line 9 9 of Fig. 7. Fig. 10 is an enlarged detail sectional view on line 10 10 of Fig. 9. Fig. 11 is a sectional

view through the meeting-rails of the sash, showing a method of screening at that point. Fig. 12 is a view of my improved method of screening the window at the meeting-rails of the sash. Fig. 13 is an enlarged detail sectional view on line 13 13 of Fig. 12, showing the sash in the closed position. Fig. 14 is an enlarged detail perspective view of the lower corner of the upper sash shown in Figs. 12 and 13. Fig. 15 is an enlarged detail view of a slight modification of my improved device for attaching the screen to the roller. Fig. 16 is a view of a slightly-modified construction of the attaching mechanism of the sash to the screen below, taken on a line corresponding to line 2 2 of Fig. 1. Fig. 17 is an enlarged detail sectional view on line 17 17 of Fig. 2. Fig. 18 is an enlarged detail sectional view of another modified form of the gripping mechanism between the sash and the screen, taken on a line corresponding to line 2 2 of Fig. 1. Fig. 19 is an enlarged detail sectional view on line 20 20 of Fig. 18.

In the drawings all of the section views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the lettered parts of the drawings, *A* represents the bottom rail of the sash; *F*, the window-frame; *E'*, the window-sill.

Supported beneath the window-sill is the hollow roller *H*. This is borne on the spindle *H'*, which is supported at each end by suitable brackets *G'* on the frame *G*. The ends of the spindle *H'* are squared and are inserted into square sockets in the bracket *G'*. The hollow roller *H* is supported with solid ends, which are revoluble on the spindle *H'*. A coiled spring *H''* is on the spindle *H'*, within the roll *H*. The inner end of the spring *H''* is secured to the spindle and the outer end is secured to the end of the roll *H* to put tension upon the roll when it is turned in either direction. On the end of the roll *H* is supported a dog *I* in position to engage upon a notch *I'*, formed in the spindle, so that the roll can be wound up and locked against the spring after it is placed in position. On the outside of the roll *H* is hinged a strip of metal *J* at *J'*, which conforms to the outer surface of the roll and bears teeth *J''* on its free edge,



which pass through the screen and enter little apertures in the roll when the strip J is closed against the same. The bottom edge of the netting or screen E is inserted between the strip J and the roll H and is engaged by the teeth J'' automatically.

In Fig. 15 a modified method of hinging the strip is shown by pivots at the end.

The screen E projects up through a slot in the bottom of the sill. On the upper edge of the screen is secured a strip of metal, which is folded into a tube D at the top, with outwardly-projecting flanges D' D' at the bottom, and clamps the screen between the two flanges D' D' at the bottom. Little openings *r r* are cut into the under side of the tube portion D.

Supported on the inner sides of the window-frame F are vertical tubes F', with a slot cut on their inner side to receive the edges of the netting E. The longitudinal strands of the netting E are made of soft annealed wire, which will wrap around the roller H readily to make a compact roll. Transverse strands *f* are made of tempered steel wire to make the netting stiff in the transverse direction. These tempered wires should be inserted at short intervals through the entire screen. Where the window is very large, all of the transverse strands should be made up of this material. The ends of the stiff transverse wires are kinked sharply from side to side to cause them to be retained in the tube F', as indicated in Fig. 6.

The bottom rail of the sash A is grooved to receive the tubular binding D on the upper edge of the screen.

At intervals gripping devices B B are inserted to engage the binding D in the apertures *r r* on its under side. These for ordinary purposes are best made as shown in Figs. 2, 5, and 5<sup>A</sup>, where the bracket L is fastened at the top of suitable mortises cut into the bottom rail of the sash, and on this bracket are supported the oppositely-facing levers B, which are pivoted at *e*, having hooks at the bottom. These levers cross like the blades of a pair of shears and are held together at the top by the coiled spring *e'*, which holds the hooks at the bottom normally in engagement with the binding D of the screen below. The hooks at the bottom are rounded, so as to pass easily over the tubular binding D.

Between the upper ends of the levers B is supported a little cam *v* for opening the same. This is actuated from the push-button C, with its shank C' projecting through a suitable socket C'' on the bottom rail of the sash. The pin C' strikes against the little curved lever *g*, which is on the little shaft of the cam *v* and actuates the same. When the push-button C is pushed in and turned in a little to one side, the lug *n* passes through the slot *n'* and engages one or the other of the little notches *n''*, which retains the same in the unlocked position. In Figs. 16 and 17 a modification of this attaching device is shown in which the levers B B do not cross. One of the levers is rigidly

secured to the sash and the other is pivoted thereto, and in this instance the little spring *e'* holds the same always in engagement with the binding at the top of the screen and the push-button actuates the same to release them.

In Figs. 18 and 19 a construction is shown which is preferred for large windows. In this construction a spring holds the levers and hooks normally out of engagement with the binding, and a double cam *v'* is put upon the shank C', which is rotated. The cams *v'* engage the levers and hooks and lock them very securely in position until the same is turned to release them. Little projections *h* are at the top of the levers to engage the cams *v'*.

On the under side of the meeting-bar of the top sash may be secured a strip or strips of rubber K', (see Fig. 11,) which project forward next to the glass to close the opening at that point formed by the opening of the sash and prevent the entrance of insects at that point. A more perfect protection at that point is shown in Figs. 12, 13, and 14, in which a small roller M is placed in one of the meeting-rails, and a light screen M' will unwind at that point and prevent the passage of any insects at that point between the sash. It will be noted from this description that my device can be greatly varied in its details without departing from my invention.

The special screen M' will be used only in very heavy windows, the excluder K' (indicated in Fig. 11) being the most convenient, though not so effective. I might enumerate other variations, but it is unnecessary, as they would occur to the skilled mechanic in this class of work from intimations and statements contained in the foregoing description.

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

1. In a window-screen the combination of the hollow roller, H, beneath the window-sill; a coiled spring in the same to actuate it; suitable means of attaching the window-screen thereto to be wound upon it; a window-screen connected thereto and extending upwardly through a slot in the window-sill; a tubing F', on the window-frame with slots on its inner side to receive the edge of the said screen E; a strip of metal folded into a tube D, at the top containing slots *r*, on the under side and having laterally-projecting flanges D', D', clamped to the upper end of said window-screen; levers B, B, supported in a groove within the bottom rail of said sash with hooks at the bottom to engage in the slots *r, r*; the push-button C, with shank C' to actuate said levers B; a lug *n*, on said push-button adapted to turn into a notch *n'* to hold the said push-button in the depressed position, all co-acting together substantially as described for the purpose specified.

2. In a window-screen the combination of a screen, suitable roller for winding the same, a continuous hinged strip J, conforming to



the outer surface of said roller and bearing inwardly-hooked teeth  $J''$  to the outer edge thereof set at a retreating angle to engage the screen and project into cavities in the roller to clasp the edge of the screen by a continuous clamping edge and hold the same securely, as specified.

3. In a window-screen, the combination of a screen; suitable roller for winding the same; a continuous strip  $J$ , conforming to the surface of the roller and bearing inwardly-hooked teeth  $J''$ , to engage the roller, and clamping the screen by a continuous clamping edge, and pivots  $J'$ , on the end of the roller to engage projecting ears on the strip to clasp the screen and retain it upon the roller as specified.

4. In a window-screen apparatus the combination of the screen; a roller beneath the window-sill for winding the same; a sash with a groove in the bottom thereof, a strip of sheet metal  $D$ , at the top of said sheet folded to project into the groove in the said sash, with flanges  $D'$ ,  $D'$ , projecting laterally to each side to form a cap to shut down over the opening in the window-sill when the screen is left in the lower position to prevent the entrance of water at that point, as specified.

5. In a window-screen the combination of the screen projecting through a slot in the window-sill; a binding on the upper end thereof formed of a folded strip of metal containing slots  $r$ , double levers  $B, B$ , with hooks at the bottom supported within the lower edge of the window-sash with the hooks in position to engage the slots  $r$ ; push-buttons  $C$ , with shanks  $C'$ , for actuating said hook-levers; and a lug  $n$ , on the shank  $C'$ , in position to be turned into a notch  $n'$ , to hold the push-button in the depressed position for the purpose specified.

6. In a window-screen, the combination of the screen projecting through a slot in the window-sill; a binding in the upper end thereof containing slots  $r$ , toward its under side; oppositely-facing double levers  $B, B$ , with hooks at the bottom supported within the lower edge of the window-sash to engage the binding in the slots  $r$ , as specified.

7. In a window-screen, the combination of the screen  $E$ , projecting through a slot in a window-sill; a binding at the top of said window-screen containing slots  $r$ , in its under side; oppositely-facing double levers  $B, B$ , supported on the bracket  $L$ , secured in the base-rail of the window-sash; a spring  $e'$  to draw the upper ends of the said levers together to cause them to normally engage in the binding in the top of the window-screen; cams  $v$  between the upper ends of said levers for actuating the same; a curved lever  $g$  on the pivot carrying said cams, a push-button  $C$  with a shank  $C'$  for actuating said lever  $g$ ; a pin  $n$  on the shank  $C'$  in position to turn in the notches  $n''$  to retain the push-button in the depressed position to hold the hooks on

the levers  $B$ , in the disengaged position as specified.

8. In a window-screen, the combination of the screen  $E$ , a binding at the edge of said screen containing slots  $r$ , oppositely-facing double levers  $B, B$ , supported on the bracket  $L$ , secured in the sash-rail of the window-sash; spring  $e'$ , to draw the ends of the said levers together to cause them to normally engage in the binding of the window-screen; cams  $v$ , between the ends of said levers for actuating the same; a curved lever  $g$ , on the pivot carrying said cams; a push-button  $C$ , with a shank  $C'$  for actuating said lever  $g$ ; a pin,  $n$ , on the shank  $C'$ , in position to turn in the notches  $n''$  to retain the push-button in the depressed position to hold the hooks on the levers  $B$ , in the disengaged position.

9. In a window-screen, the combination of the screen  $E$ ; a binding at the edge of said screen containing slots  $r$ , oppositely-facing double levers  $B, B$ , supported on the bracket  $L$  secured in the base-rail of the window-sash; spring  $e'$  to draw the ends of the said levers together to cause them to normally engage in the binding of the window-screen; cams  $v$ , between the ends of said levers for actuating the same as specified.

10. In a window-screen, the combination of a suitable screen attached to the window-sash to cover the space when the window is open and a roller  $M$ , in one of the meeting-rails of the sash bearing the screen  $M'$  which is attached to the opposite meeting-rail to screen the space between the sash when the window is open as specified.

11. In a window-screen apparatus, the combination of a slotted window-casing, a window-sash grooved on its edge next to the slotted casing, a screen housed in the window-casing and projecting through the slot therein, a cap provided with a longitudinal central ridge adapted to be received by the groove in the window-sash and provided with lateral flange or flanges to cover the slot in the window-casing, and means for detachably securing the screen and sash together.

12. In a window-screen apparatus, the combination of a window-casing slotted on one of its sides and provided with slotted guideways projecting from its parallel sides at right angles to its first-mentioned side, a window-sash grooved on its edge next to the slotted casing and on its parallel edges at right angles to its first-mentioned edge, the grooves of the parallel edges of the sash receiving and inclosing the projected slotted guideways, a screen housed in the window-casing and projecting through the slot therein and having its side edges inclosed to travel in the slots of the projecting guideways and means for detachably securing the screen and sash together.

13. In a window-screen apparatus, the combination of a slotted window-casing, a window-sash grooved on its edge next to the slot-



ted casing, a screen housed in the window-casing and projecting through the slot therein, a cap adapted to be received by the groove in the window-sash and of sufficient width to  
5 cover the slot in the window-casing, and means for detachably securing the screen and sash together.

14. In a window-screen apparatus, the combination of a slotted window-casing, a screen  
10 housed in the window-casing and projecting through the slot therein, a cap provided with a longitudinal central ridge adapted to be received by the groove in the window-sash and of sufficient width to cover the slot in the  
15 window-casing, and means for detachably securing the screen and sash together.

15. In a window-screen apparatus, the combination of a slotted window-casing, the rail of the sash grooved on its edge next to the slotted casing; a screen projecting through  
20 the window-casing with a binding thereon folded into a cap over the top, with an extending flange to each side to close over the slot in the casing; a suitable means of connecting the said screen to the window-sash,  
25 as specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

THOMAS E. BARR. [L. S.]

Witnesses:

V. E. CHAPPELL,

W. S. WOOD.