

No. 755,666.

PATENTED MAR. 29, 1904.

W. G. HORTON.
FIRE ESCAPE.

APPLICATION FILED MAR. 10, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

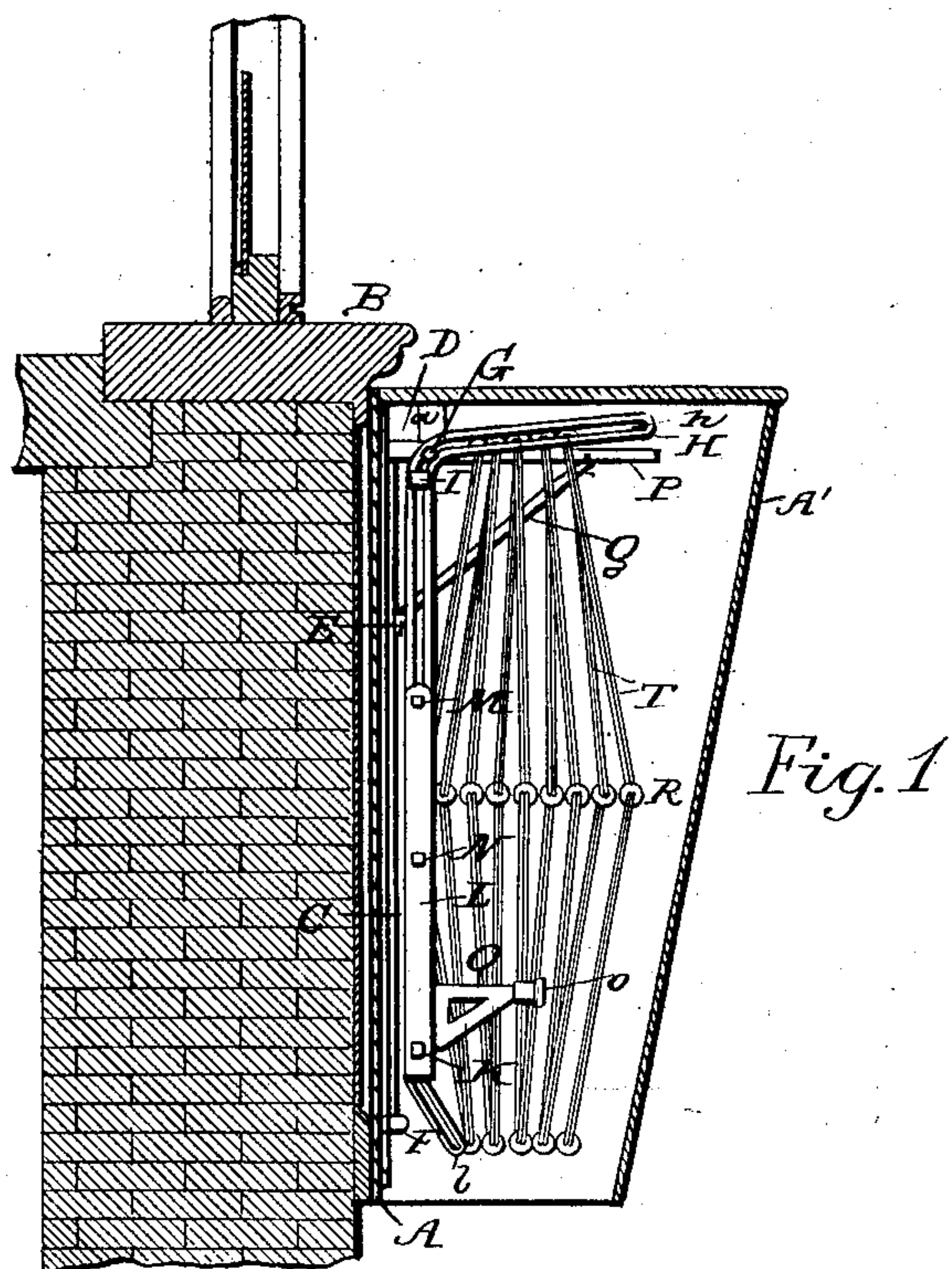


Fig. 1

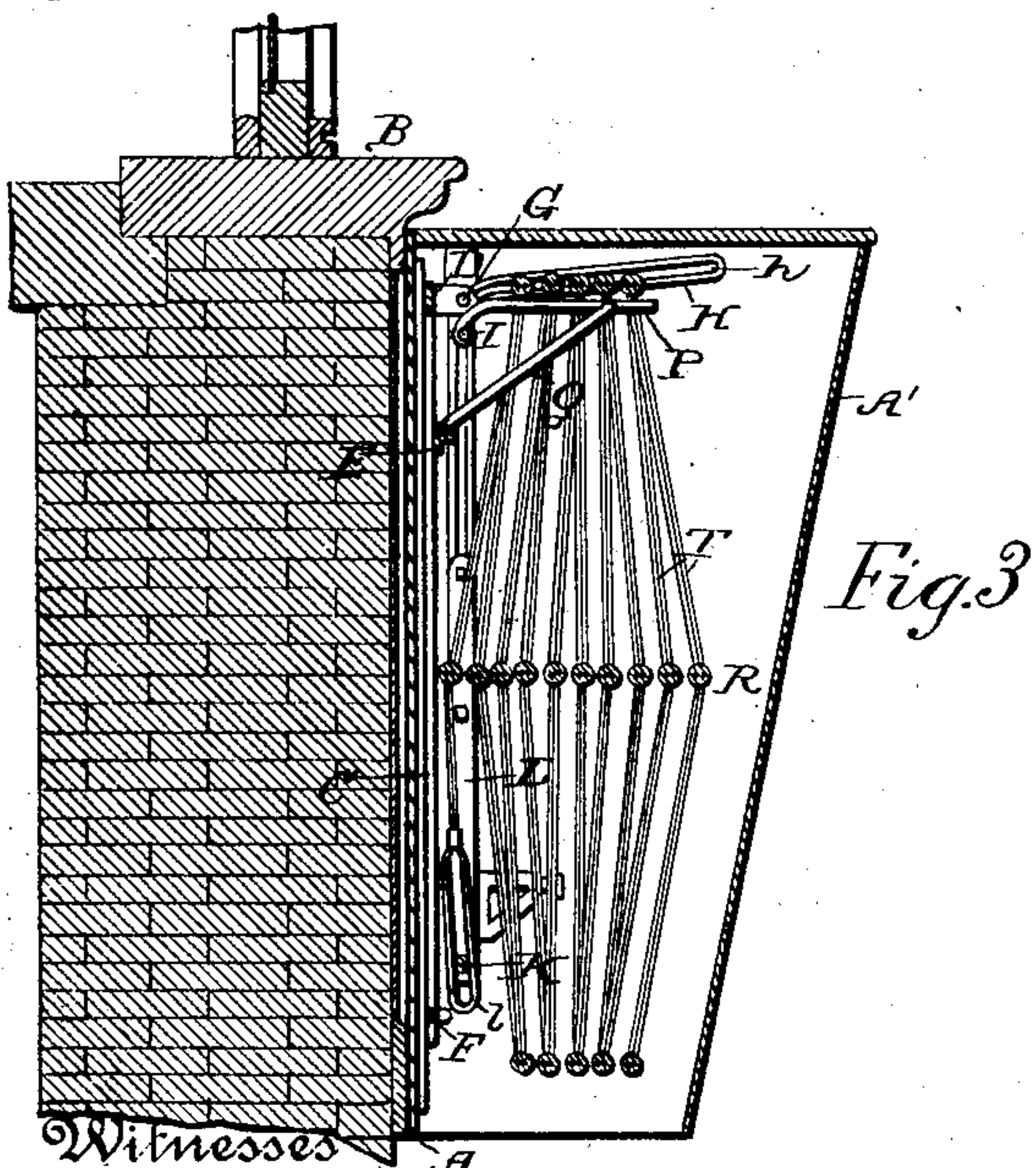


Fig. 3

Witnesses

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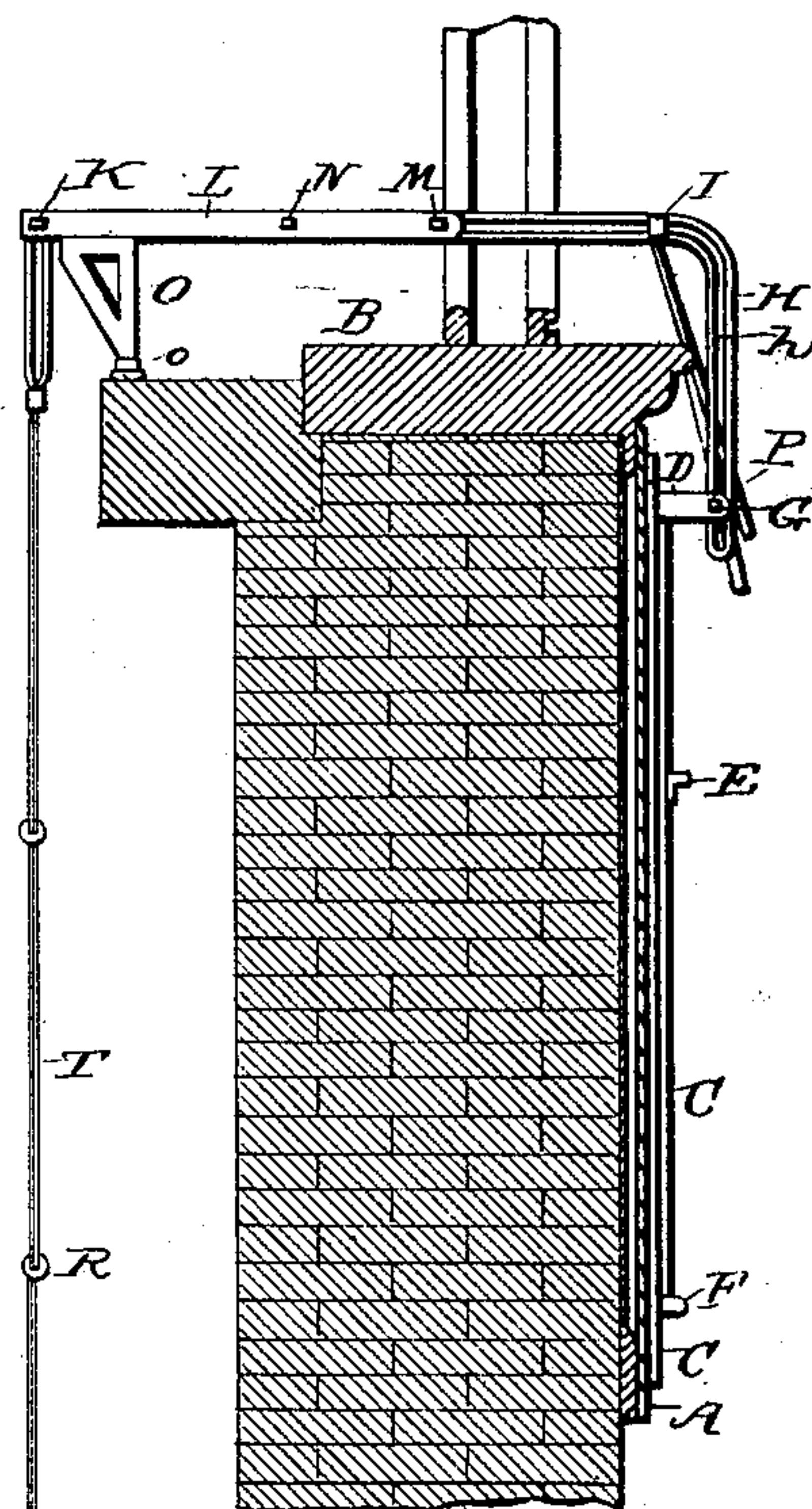


Fig. 2

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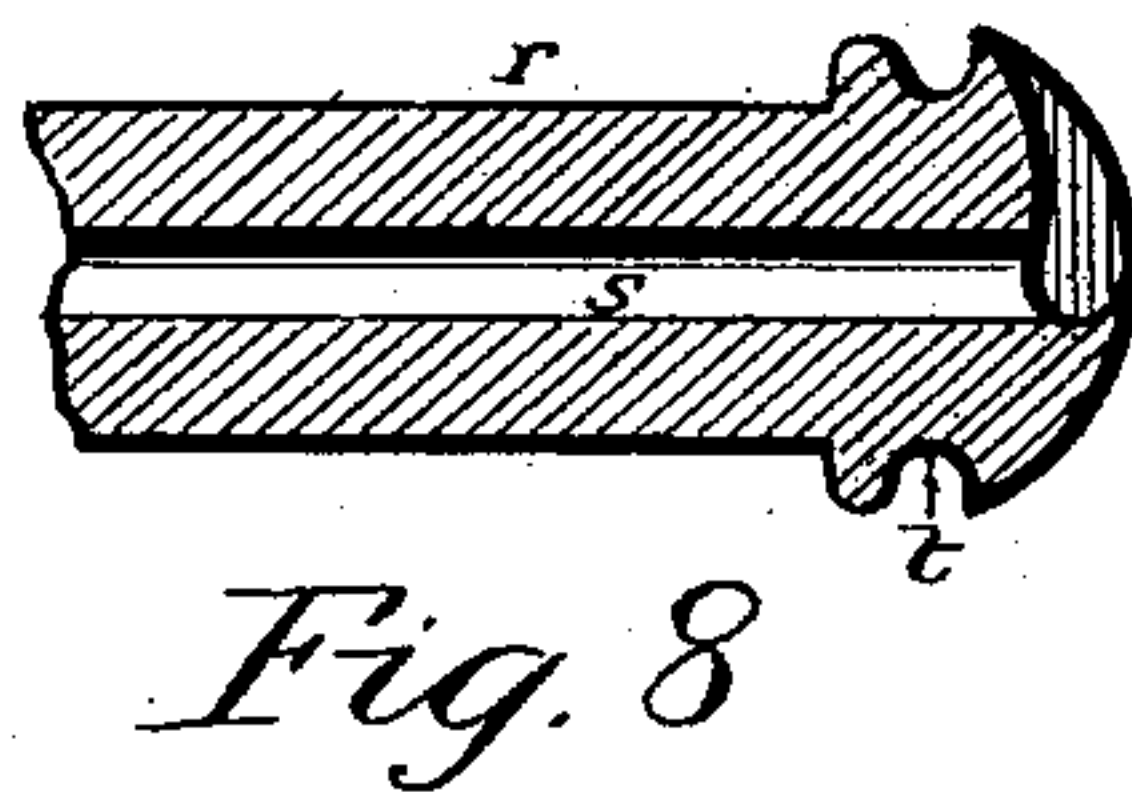
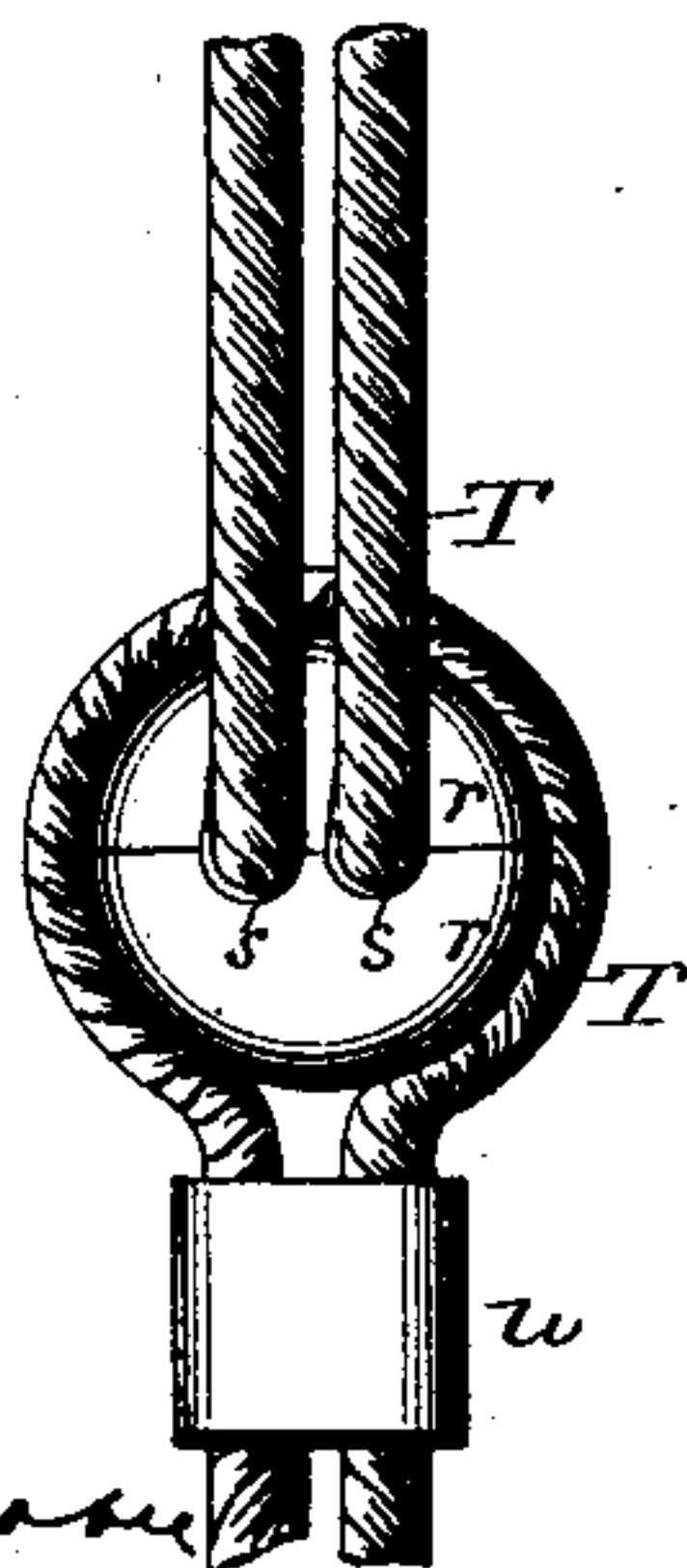
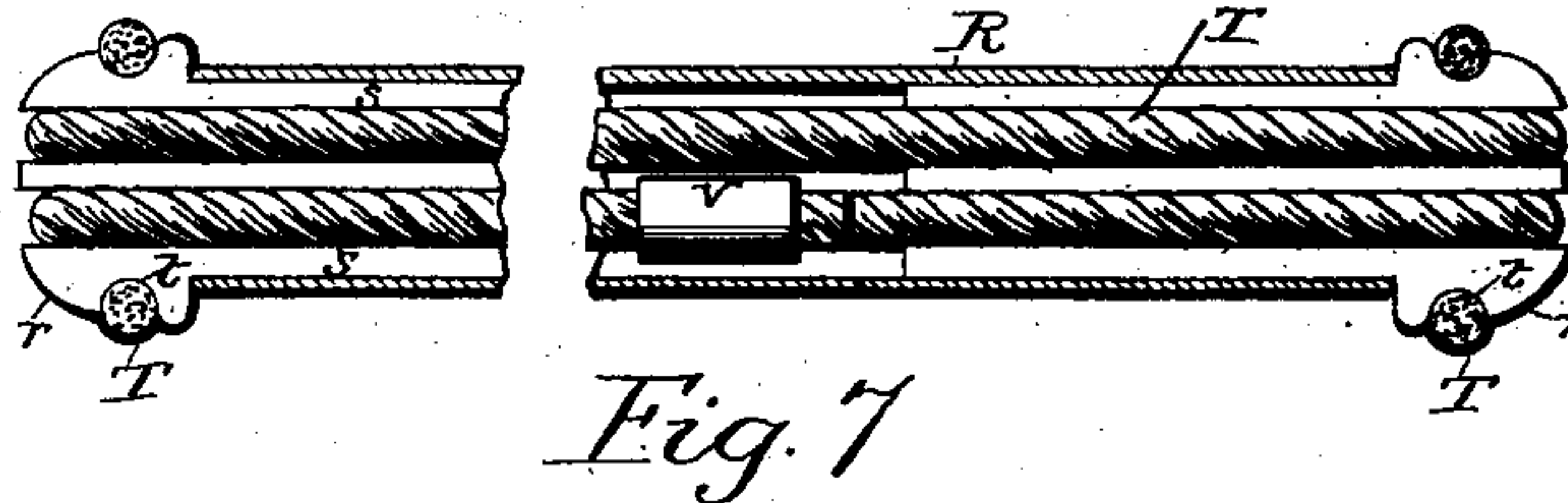
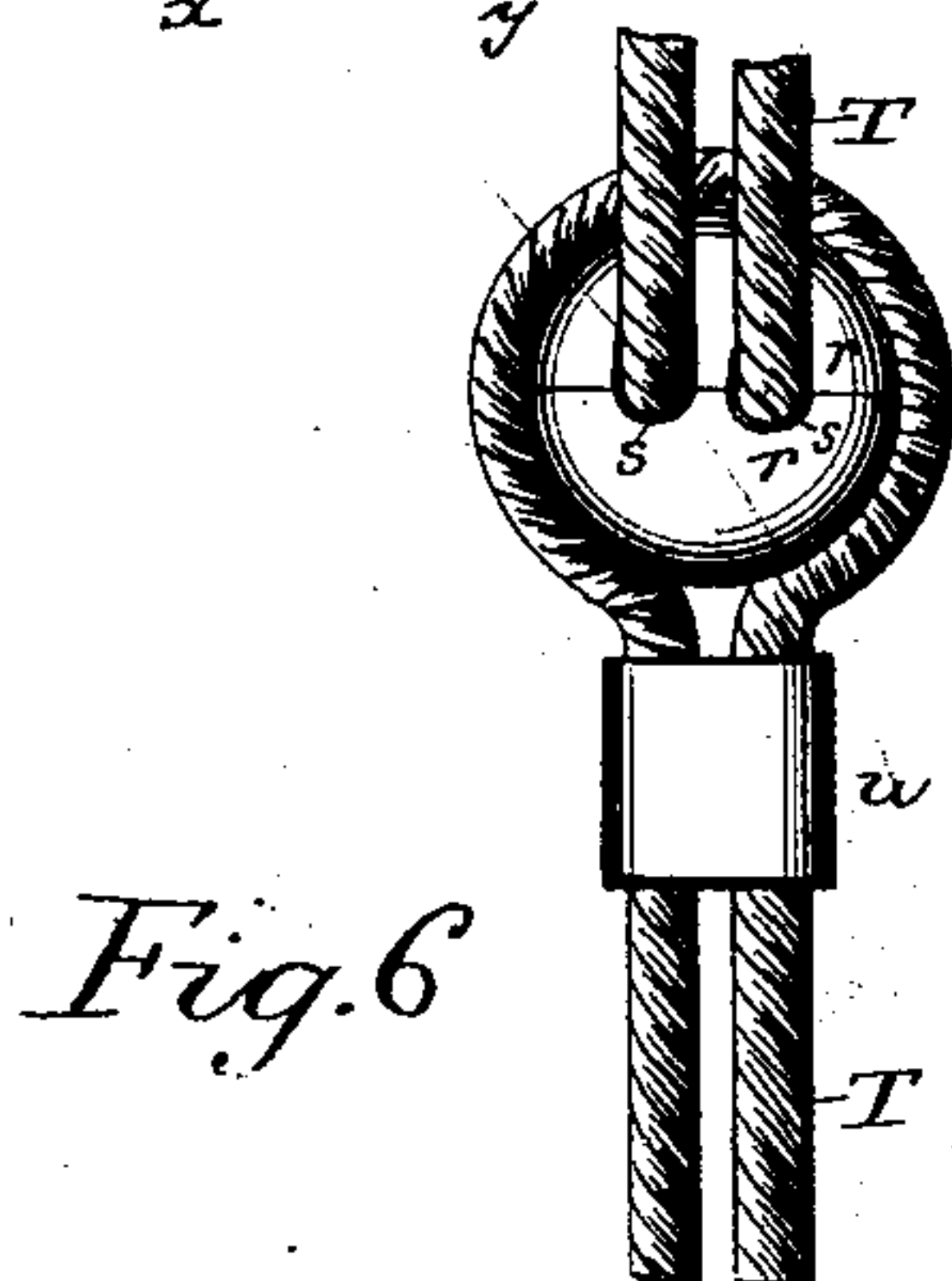
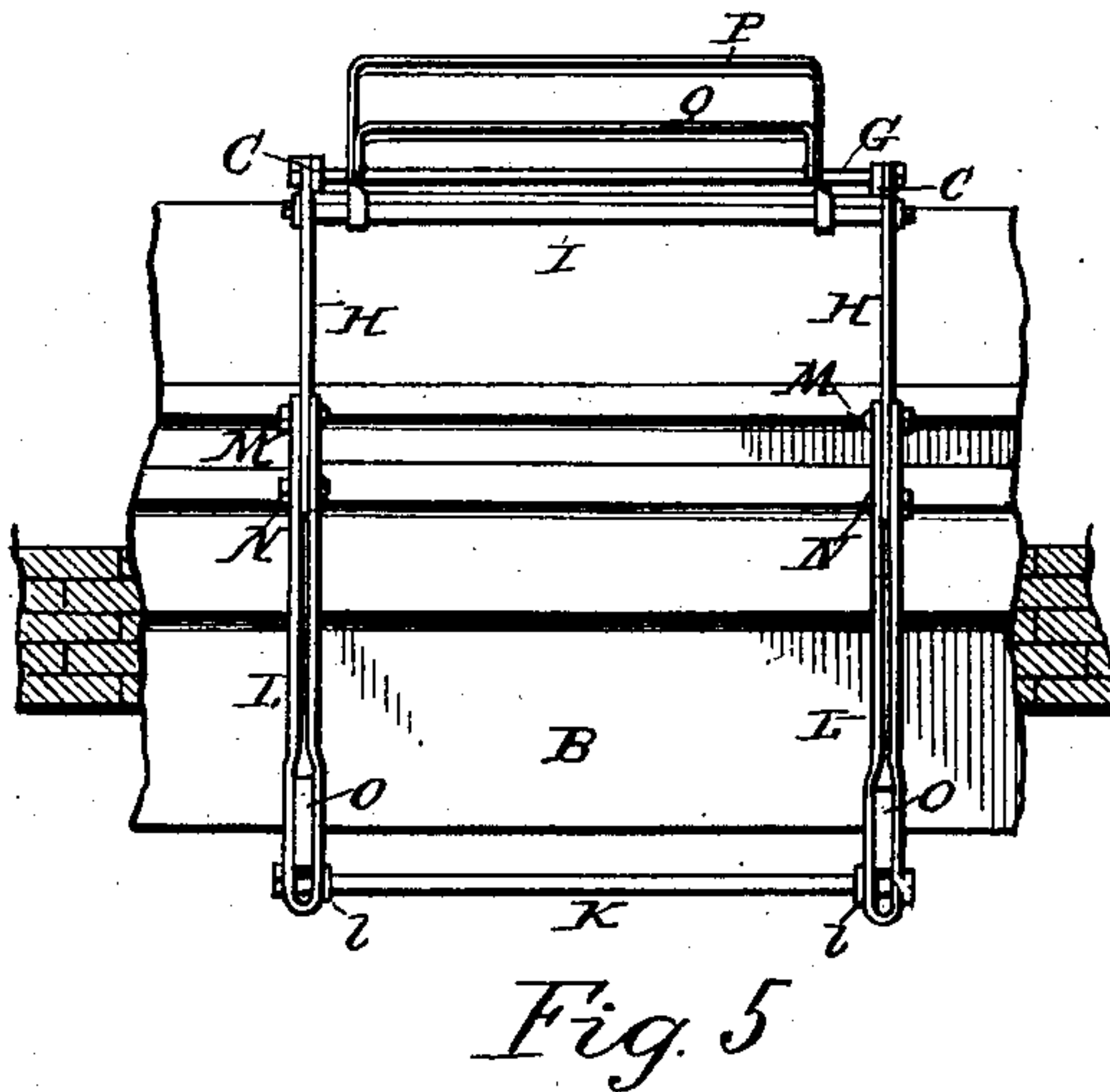
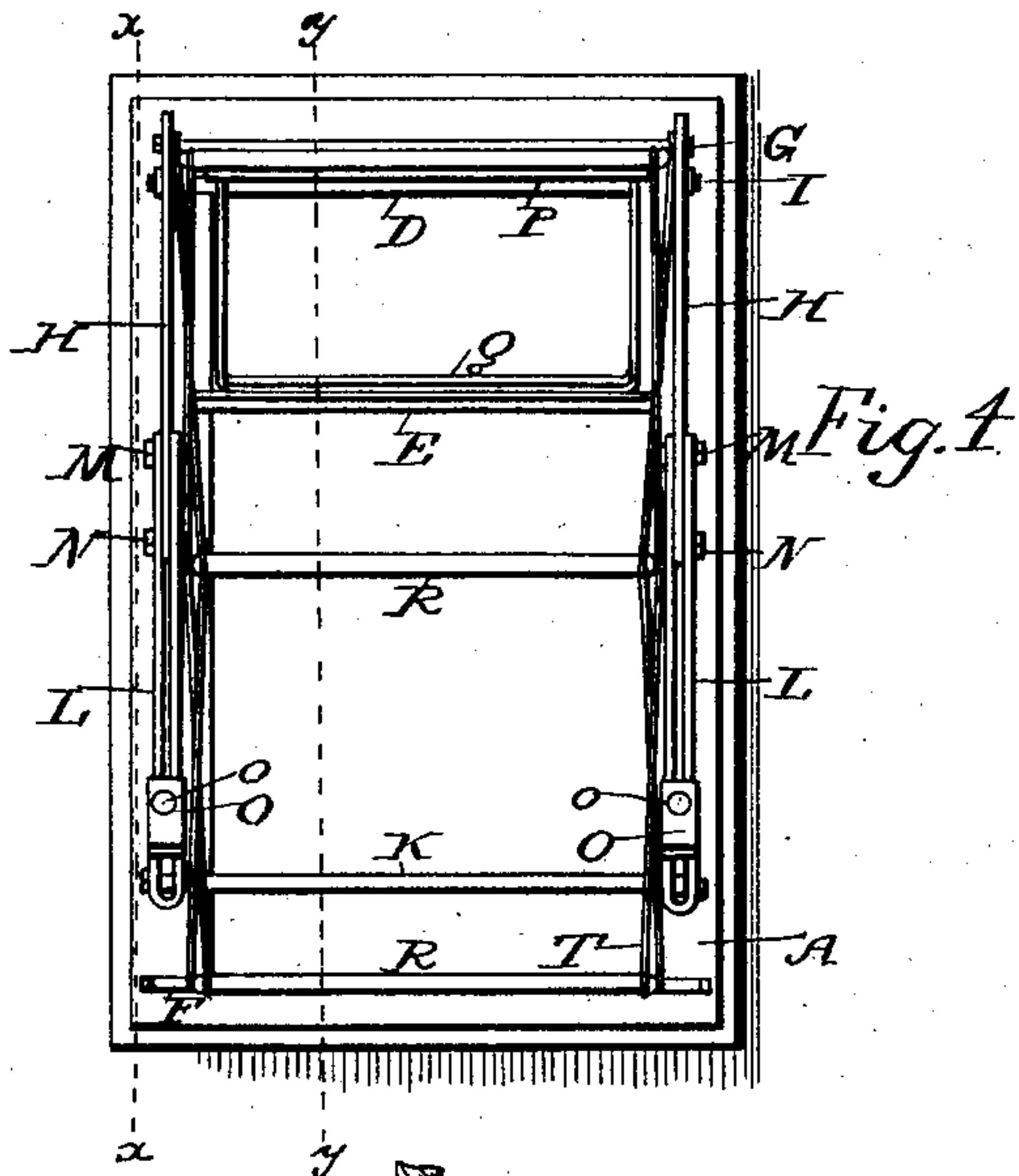
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3 SHEETS—SHEET 2.



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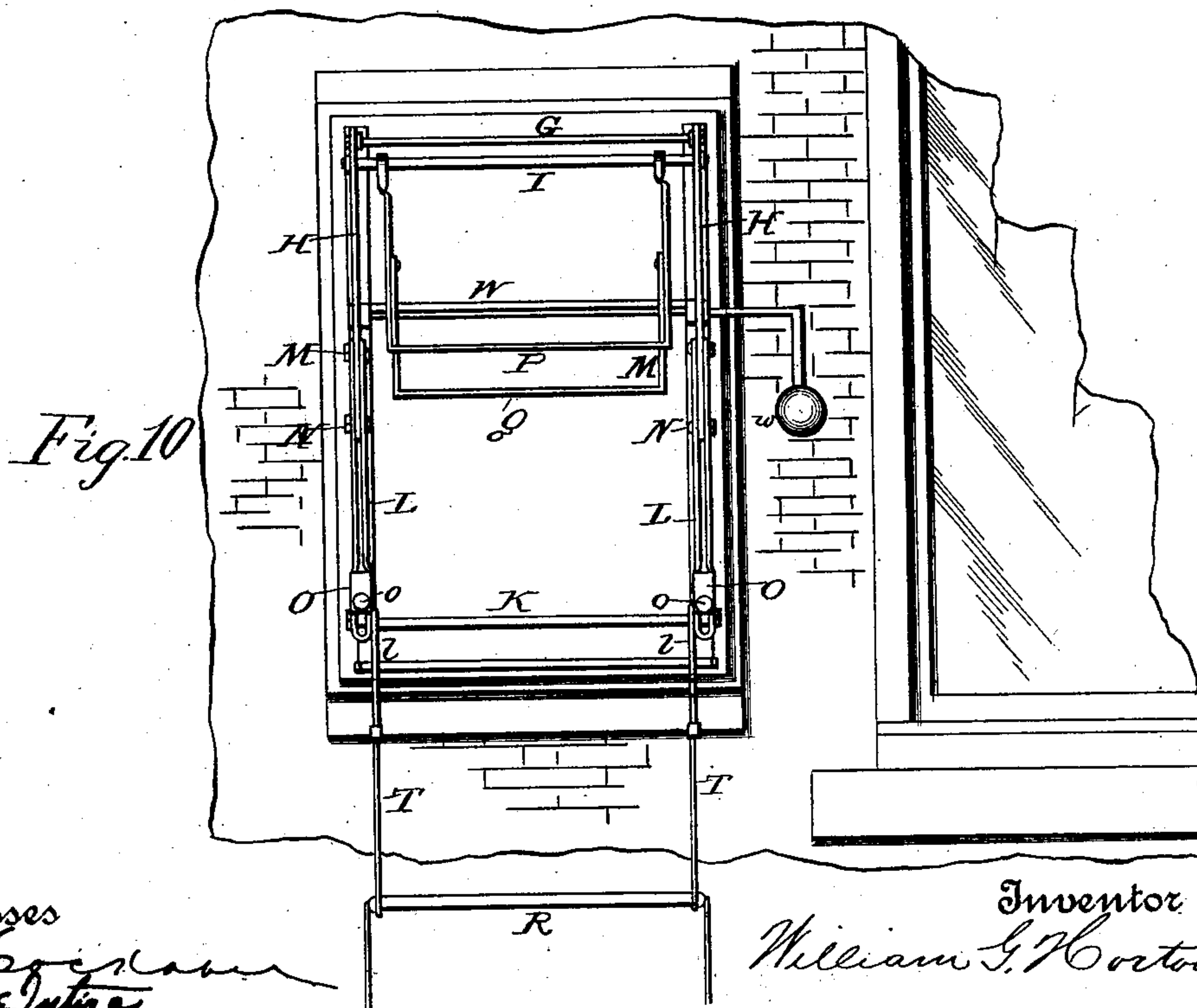
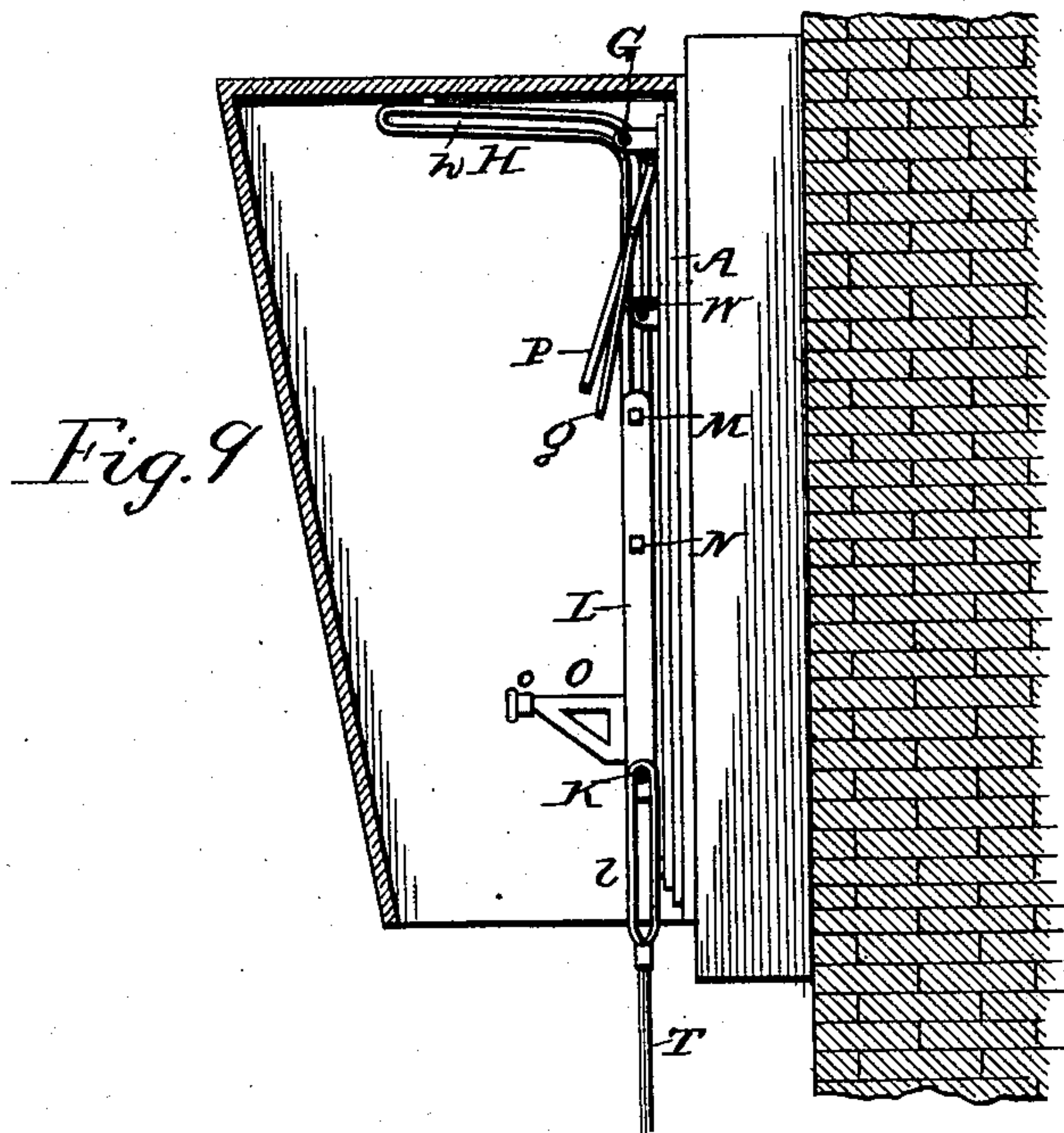
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

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FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 755,666, dated March 29, 1904.

Application filed March 10, 1903. Serial No. 147,180. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. HORTON, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has relation to fire-escapes, and has for its object the provision of a neat, simple, strong, and efficient apparatus that may be arranged within a room or upon a wall outside of a window and which can in a few seconds be lowered alongside the wall, so as to afford a safe means of descent.

In carrying my invention into effect I provide a flexible ladder composed of strands of thin but strong wire cable with hollow metallic rungs, and I arrange this ladder within a case or box that may be secured in position either within a room adjacent to a window or other opening in the wall or upon the wall outside the window or other opening, one end of the ladder being securely fastened to a framework within the casing and the other end being free, so that the ladder may be dropped out the window or down the wall when the casing is arranged outside the window and provide a safe means of descent for a person or persons from the window to the ground or other place of safety. The framework to which the end of the ladder is secured is so constructed and arranged that when the apparatus is arranged within the building the framework can be manipulated so as to project beyond the window-sill and sustain the ladder at some little distance from the wall, so as to permit the persons using the ladder to place their feet on the rungs as they descend without striking them against the wall. The casing within which the ladder and its supporting-framework are folded and contained within a room may be draped, colored, or ornamented in any suitable manner to conform to the furnishing of the room, and the casing may be used as a window-seat, shelf, or stand.

My invention consists in the novel construc-

tion, combination, and arrangement of parts hereinafter described and claimed.

Referring to the accompanying drawings, Figure 1 is a vertical sectional view of my improvement arranged within a window, the ladder and its supporting-framework being shown folded within a suitable cover or casing. Fig. 2 is a similar view with the casing removed and the ladder depending from the framework outside the window. Fig. 3 is a vertical sectional view of the apparatus in the same position as in Fig. 1, the view in this figure being on the line *y y* of Fig. 4, whereas the view Fig. 1 is on the line *x x* of Fig. 4. Fig. 4 is a front view with the ladder and framework in the position shown in Fig. 1 and the casing removed. Fig. 5 is a plan view of the apparatus in the position shown in Fig. 2; Figs. 6, 7, and 8, details of parts in section; Fig. 9, a vertical sectional view of a modification, showing the modified form of apparatus arranged outside a window; and Fig. 10, a front view of the apparatus shown in Fig. 9.

In the several views like letters of reference indicate corresponding parts, and A designates an upright board or plate, which is firmly secured in position beneath a window-ledge B and serves as an anchorage for the framework to which the ladder is attached. This framework is composed of a stationary part and a movable part, which is hinged or pivoted to the stationary part and is adapted to project through the window when the apparatus is being used and sustain the flexible ladder at some distance from the wall, so that a person descending the ladder may place their feet well in on the rungs of the ladder without striking them against the wall.

The stationary part of the framework is composed of the upright bars C and the cross-bars D, E, and F, all bolted or riveted together and firmly attached to the board or plate A, which is, as before said, securely attached to the wall of the building below the window-sill. The upper cross-bar D has its ends bent at right angles, so as to project outwardly from the board or plate A, and bolt G passes through holes in the outwardly-extending ends of cross-bar D and is provided

with nuts on its ends which serve to hold in position on the bolt an outrigger that is pivotally supported by and movable lengthwise on the bolt, as will be presently described.

5 The cross-piece E is formed of angle-iron and serves to support a hanger-brace that is attached to a hanger forming part of the movable portion of the framework when the ladder and framework are folded up within the
10 case.

The movable or outrigger part of the framework is composed of the L-shaped side bars H H, which are slotted at *h*, as shown, and through which slots pass the bolt G, the parallel bars L L on each side, and the cross-bolts K and I.

15 The parallel bars L L embrace the ends of the slotted bars H H, and the bolts M and N pass through the parallel bars and through the slots *h h* and serve to adjustably secure the parallel bars and the slotted bars of the outrigger together. Between the parallel bars L L on each side of the outrigger are secured legs O O, that have cushioned feet
20 *o o*, that rest upon the window-ledge when the outrigger is extending out the window, as in Fig. 1, and serve to sustain the outrigger above the window-ledge, so as to enable a person descending the ladder to more readily
25 grasp the cross-bolt K at the outer end.

P designates a hanger composed of a piece of flat metal bent to a right angle at each end and with eyes on the bent ends, through which pass the cross-bolt I, and Q a hanger-brace
30 pivotally attached to the hanger P and adapted when the outrigger is folded within the case to rest on the cross-piece E, the hanger serving to support the ladder within the casing in the position shown in Figs. 1 and 3.

40 The ladder is composed of metallic rungs joined together by strands of comparatively thin but strong wire cable, and the details of construction of this part of my invention will be best understood by referring to Figs. 6, 7, and 8 of the drawings. Each rung is composed of a single piece of metallic tubing R, having fitted in each end a split plug composed of the half-sections *r r*, which have each two grooves *s s* of semicircular form, so that
50 when the plugs are in position in the ends of the rungs the grooves will form holes for the passage of the strands T of the wire cable. The plugs have rounded ends somewhat larger than the rungs, and the rounded ends of the
55 plugs are formed with circumferential grooves *t*, around which the cable T passes, the two strands of the cable being united below the plugs by a clip *u*, so as to prevent the cable from slipping out of the grooves in the plugs.

60 The cable passes through the rung and through the hole in the plug at each end, then up and around the plug of the rung above, then down and through the second hole in each plug, and then the meeting ends are secured together by
65 a clip *v* inside of the rung. This construction

provides a practically continuous double loop and renders the ladder safe and strong and at the same time flexible, the loops turning easily on the plugs as the ladder is folded up in the casing. 70

In the modification shown in Figs. 9 and 10 the apparatus is fixed outside of the window and is set out a little distance from the wall, so as to let the ladder swing clear of the wall, and the stationary cross-bar E is replaced by
75 a pivoted cross-bar W, having a shaft extending out beyond the side of the casing and provided with a pendent weight *w*, the cross-bar and weight serving to hold the hanger-brace Q and the hanger P in upright position, as in
80 Fig. 1, but allowing the hanger to drop when the weight is swung to one side, and thus allowing the ladder to drop down alongside the wall, as shown in Fig. 10.

In other respects the device shown in Figs. 10 and 11 is the same as that shown in the other figures of the drawings and need not be more particularly described. 85

Operation: When the apparatus is arranged within a room, as shown in Figs. 1, 2, and 3, and it is desired to put it in service, the casing A, which has notched lugs *a*, that engage with the bolt G, is removed and the hanger grasped and drawn out. This motion releases the hanger-brace and allows the ladder to drop
90 on the floor. The outrigger is then swung over and out the window, and the ladder, which swings by loops *ll* from the cross-bolt K, is allowed to drop down alongside the wall, the outrigger resting on its feet *o o*, which
95 bear on top of the window-ledge, as shown in Fig. 2. The slots *h h* in the side bars of the outrigger permit of the outrigger being swung over in the manner described, so as to project out of the window, and these slots, in connection with the bolts M N, permit of the outrigger being adjusted in length to fit window-
100 ledges of various width, so as to insure the resting of the feet *o o* on the window-ledge.

In the modification shown in Figs. 9 and 10 the outrigger is not moved from its position in the casing, as any movement would be useless, and the ladder simply depends from the cross-bolt K, which in this case is at the bottom of the casing. 105

While my invention is particularly adapted for use at a window, it can also be used in other positions—for instance, as a terminal ladder for balcony fire-escapes and in other positions that will readily suggest themselves. 110

The parallel bars L L may be composed of a single bar bent back on itself, as shown, or may consist of two bars bolted or riveted together.

Having described my invention, I claim— 125

1. In a fire-escape, the combination with a stationary frame located within a building and an outrigger having L-shaped side bars pivotally attached to said stationary frame and movable lengthwise on its pivot and adapted 130

to be swung over so as to project beyond a window-ledge, of a flexible ladder attached to the outer end of the outrigger.

2. In a fire-escape, the combination with a stationary frame located within a building, of an outrigger pivotally attached to said stationary frame and movable lengthwise on its pivots, means for longitudinally adjusting said outrigger and locking it in its adjusted position, said means comprising parallel bars embracing the slotted side bars of the outrigger and bolts passing through the parallel bars and the slots in the side bars; and a flexible ladder attached to said outrigger.

3. In a fire-escape, the combination with an outrigger pivotally secured to a stationary part and a folding ladder attached to said outrigger, of a pivoted hanger attached to said stationary part and adapted to pass between the ropes of and support the ladder when folded, said hanger being provided with means for supporting it in a horizontal position when raised.

4. In a fire-escape, the combination with an outrigger, a stationary part to which said outrigger is pivotally attached and a folding ladder attached to said outrigger, of a hanger pivotally attached to the outrigger, a hanger-brace, and a step or support for said hanger-brace located on the stationary part.

5. In a fire-escape, the combination with a stationary frame, of an outrigger having L-shaped side bars with slots following the con-

tour of the side bars, a cross-bolt on the stationary frame passing through the slots in the side bars and a ladder attached to said outrigger.

6. In a fire-escape, the combination with a stationary part adapted to be attached to a building and a flexible ladder, of a hanger, a brace pivotally attached to said hanger and a pivoted step or support for said hanger-brace arranged on the stationary part and provided with a counterweight.

7. In a fire-escape, a flexible ladder composed of hollow rungs and cable sides, the cable being in sections of double strands which pass through one rung and are looped over the ends of the rung above.

8. In a fire-escape, a flexible ladder composed of tubular rungs having split plugs in their ends, each formed with two holes and a circumferential groove, and cable-sections each of which passes through one hole in the plug at each end of a rung thence up and around the grooves in the plugs of the next rung, then down and through the other holes in the plugs and into the rung, where its ends are secured together.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM G. HORTON.

Witnesses:

J. N. MARLEY,
W. F. FRASER.