

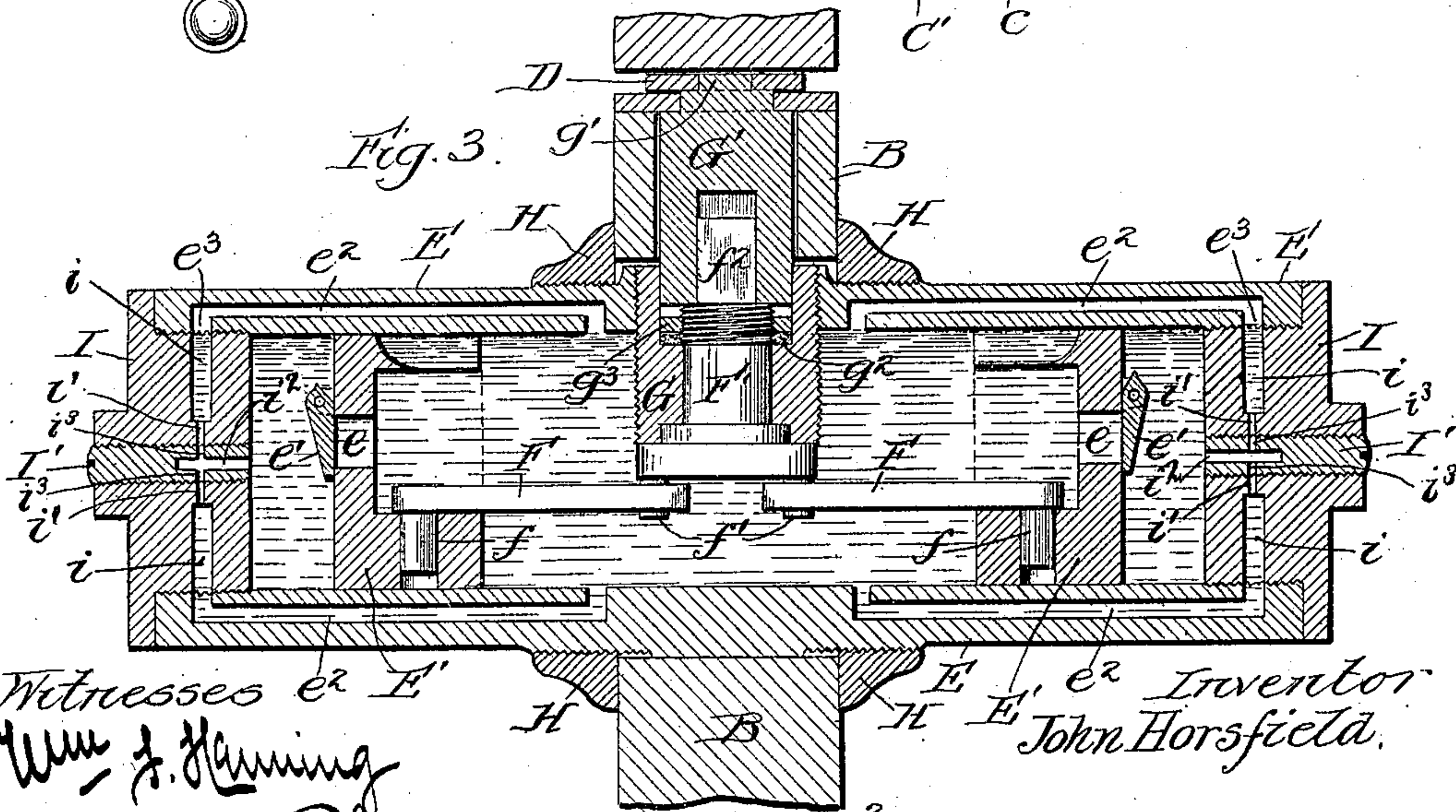
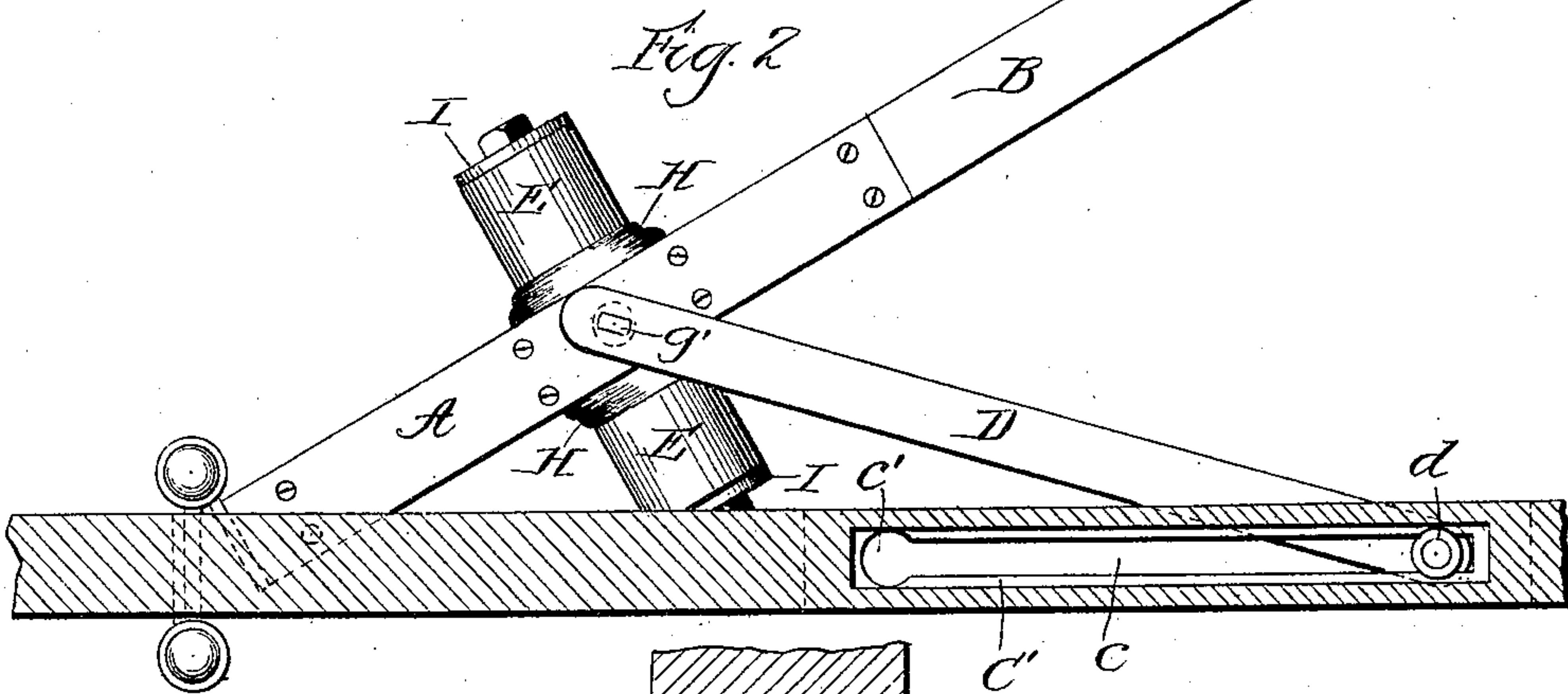
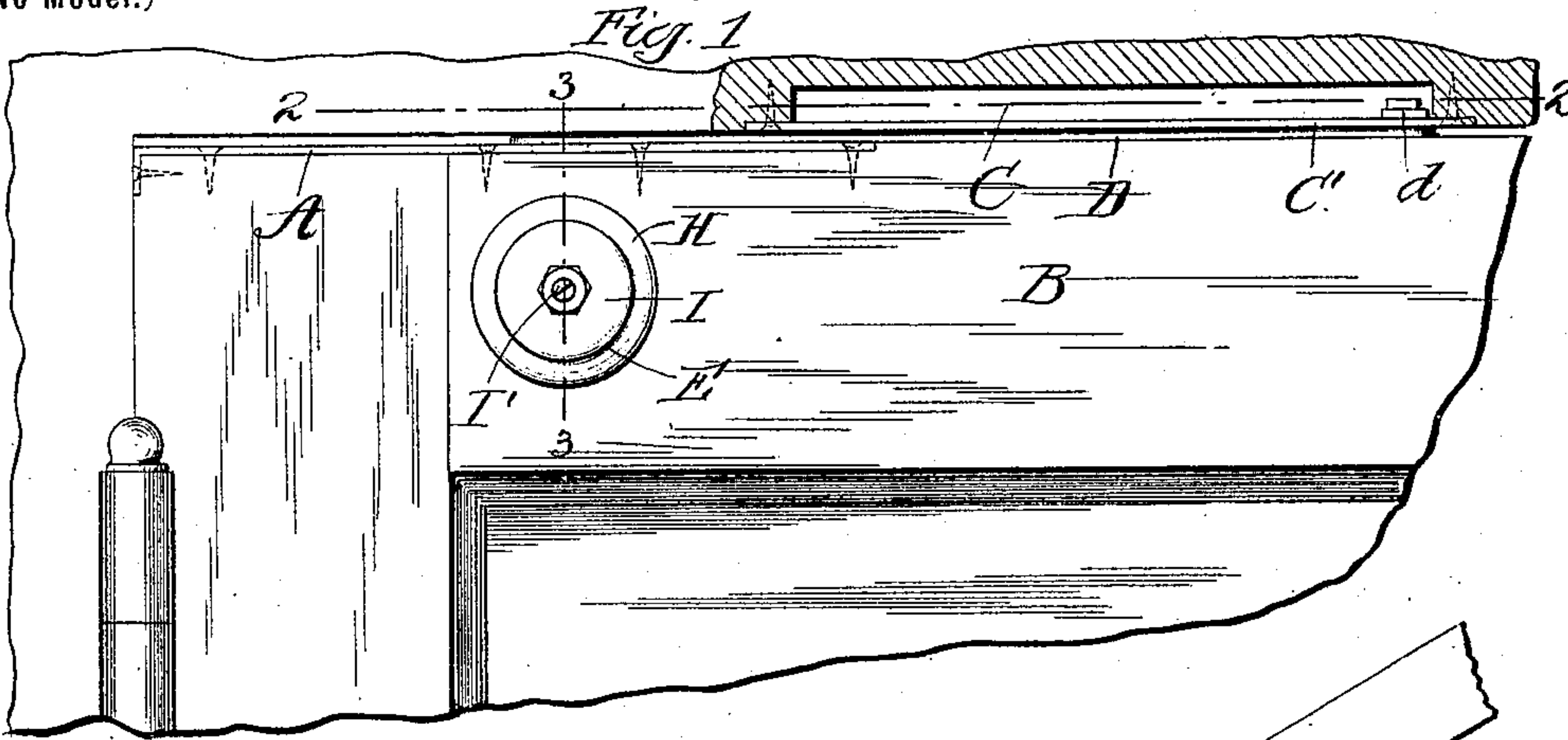
No. 615,707.

Patented Dec. 13, 1898.

J. HORSFIELD.
DOOR CHECK.

(Application filed Feb. 17, 1898.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN HORSFIELD, OF CHICAGO, ILLINOIS.

DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 615,707, dated December 13, 1898.

Application filed February 17, 1898. Serial No. 670,608. (No model.)

To all whom it may concern:

Be it known that I, JOHN HORSFIELD, a citizen of the United States, residing at Chicago, Illinois, have invented certain new and useful Improvements in Door-Checks, of which the following is a specification.

The object of my invention is to make a check-valve applicable to self-closing doors, and particularly to double-acting as well as single-acting doors; and my invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of the top of the door, with the door-casing broken away in part. Fig. 2 is a plan view of a section taken in line 2 of Fig. 1, and Fig. 3 a side elevation of a transverse section taken in line 3 of Fig. 1.

In making my improvement in door-checks I arrange a plate A on the top of the door B, which is preferably set in so as to be flush with the top of the door when in place. This plate may be fastened to the door by screws, as shown, or in any other desired way. I make a channel or slot C in the under side of the door-casing above the door and arrange under it a plate C', which may be fastened to the door-casing by screws or otherwise, so as to inclose the channel or slot. This plate is provided with a longitudinal groove c, as shown in Fig. 2. Immediately under this plate I arrange an arm D, which carries a wheel or roll d, inserted in the channel or slot in the door-casing through an enlargement c' in the plate C'. When the parts are in place, the wheel or roll d occupies the channel or slot above the plate C', with the spindle by which it is connected to the arm D extending through the slot c of the plate C'. This permits the wheel or roll to travel back and forth along the channel or slot in the door-casing. I arrange a cylinder E in the door through a hole made in it, so as to project on each side of the door, as shown in Fig. 2. This cylinder is provided with piston-heads E', one toward each of its ends. These piston-heads are provided with ports or holes e, closed by flap-valves e', openable outwardly, as shown in Fig. 3. In order to move these piston-heads in and out in the cylinder, I arrange in the cylinder piston-rods F, connected to the piston-heads by pins f, as shown in the draw-

ings. The other ends of the piston-rods are pivotally connected with pins f' on the head of a spindle F', preferably arranged in a plug G, centrally located in the upper wall of the cylinder and projecting into the interior thereof and so arranged, as hereinafter explained, to prevent leakage of the liquid, as might be the case if the spindle passed directly up through the side of the cylinder without use of such plug. This spindle F' is preferably made in two parts. The lower part thereof, or that inside of the cylinder, is provided with an angular portion, as shown at f², which fits into a hole of corresponding size and shape to receive it in the upper portion G' of the spindle. The upper portion G' of the spindle terminates above the top of the door in a square or angular hub g', which passes through a hole made in the arm D of corresponding size and shape to receive it. The top of the plug G is provided with a recess, as shown in Fig. 3, and a ring or washer g² is arranged in and held in place by a nut g³, secured onto a threaded portion of the spindle F'. This arrangement enables the cylinder and its associated parts to be inserted in place in the door by providing it with two holes—one horizontal and passed through the door from side to side and the other vertical and down through the top of the door. The cylinder after it is arranged in place is adjusted and held in position by nuts H, screwed onto a threaded portion of the exterior of the cylinder, so as to conceal the horizontal cut through the door, as shown in Fig. 3. This enables the cylinder to be attached to doors of different thicknesses. I arrange in the side walls of the cylinder grooves or channels e², communicating with the interior of the cylinder on each side of the pistons. The ends of the cylinder are closed by plugs I, preferably screwed into the ends of the cylinder as the means of connecting them thereto. These plugs are provided with a circumferential groove or channel i, with a small hole i' drilled through the central stem left by the circumferential groove or channel, so as to make a channel of communication there-through from one side to the other. This circumferential groove or channel and transverse hole form an inwardly-directed opening. The plugs are also provided with holes

running from the outside to the interior of the cylinder, preferably screw-threaded, which are filled by screws I' , also screw-threaded and provided with longitudinal holes i^2 in their inner ends. The screws are also provided with transverse holes i^3 , intersecting the longitudinal holes, as shown in Fig. 3. The ports e^3 , running from the channels e^2 , open into the circumferential grooves or channels i .

There is thus afforded a means of communication to the interior of the cylinder outside of the pistons through the hole i' , the hole i^2 and the hole i^3 making complete communication from the interior of the cylinder on the inside of the pistons to the interior of the cylinder on the outside of the pistons. The passage of communication through the transverse holes i^3 is of course only open when it registers with the hole i' . By turning the screw I' , therefore, the passage can be opened, closed, or regulated in size and adjusted at will. The cylinder is filled with liquid, preferably of a kind and nature that will not congeal or cause the parts to corrode.

After the parts are arranged in place, as above described, the opening of the door in the one direction or the other will cause the spindle F' to be turned to the right or to the left, as the case may be. This will draw the piston-rods F and the piston-heads in toward the center of the cylinder, causing the liquid to be forced out through the flap-valves e' into the outer ends of the cylinder. As soon as the force applied to the opening of the door ceases the spring closing the door will act to bring it back to its closed position. This will cause the spindle F' to turn in a reverse direction and cause the piston-rods and piston-heads to move out toward the ends of the cylinder, causing the flap-valve to close, so that the liquid is forced through the longitudinal hole i^2 and the transverse holes i^3 and i' and through the circumferential groove or channel i into the channel e^2 and so into the interior of the cylinder on the inside of the piston-heads. As the size of the channel of communication through which the liquid must pass may be adjusted and regulated as above explained, the time occupied for the flow of the liquid back through the channels may be regulated so that the door will close

with greater or less rapidity, as may be desired. In this way I am able to effectually check the rapid shutting of a self-closing door and cause it to be closed with such degree of slowness as may be desired.

While I have described the construction and arrangement of the parts with considerable detail, yet I wish it to be understood that I do not propose to limit myself to precise details of construction and arrangement further than as I may call for the same in my claims. I wish also to say that while I have shown the cylinder as extending out on each side of the door and as provided with two piston-heads it may be made so as to extend to but one side of the door and be provided with but a single piston-head where desired for use in connection with light doors.

What I regard as new, and desire to secure by Letters Patent, is—

1. The combination of a cylinder having longitudinal by-passes provided with inner and outer ports, a piston in the cylinder between the inner and outer ports of the by-passes provided with a valve openable under pressure from the inside, means connected with a door for actuating the piston, a plug closing the end of the cylinder and provided with an axial hole, and a screw passing through the axial hole of the plug and provided with a transverse hole having communication laterally through the plug with the outer port, substantially as described.

2. The combination of a cylinder having longitudinal by-passes provided with inner and outer ports, a piston in the cylinder between the inner and outer ports of the by-passes, means connected with a door for actuating the piston, a plug closing the end of the cylinder and provided with a circumferential groove into which the outer port opens, and a screw passing through the plug and provided with a longitudinal hole in its inner end and a transverse hole opening into the circumferential groove in the plug, substantially as described.

JOHN HORSFIELD.

Witnesses:

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