

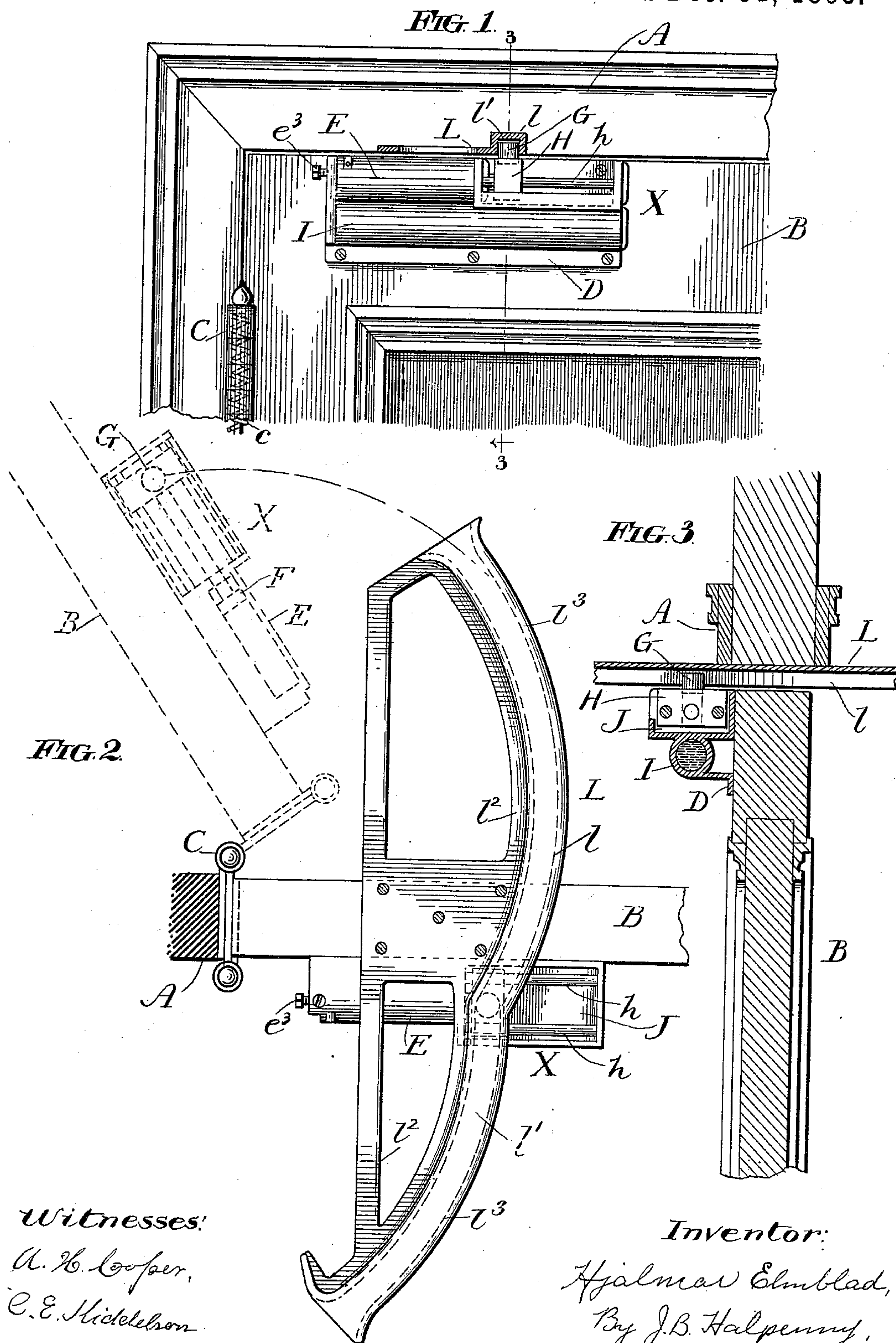
(No Model.)

3 Sheets—Sheet 1.

H. ELMBLAD.
DOOR CHECK.

No. 552,357.

Patented Dec. 31, 1895.



Witnesses:
A. B. Cooper,
C. E. Middleton.

Inventor:
Hjalmar Elmblad,
By J.B. Halpern,
Atty.

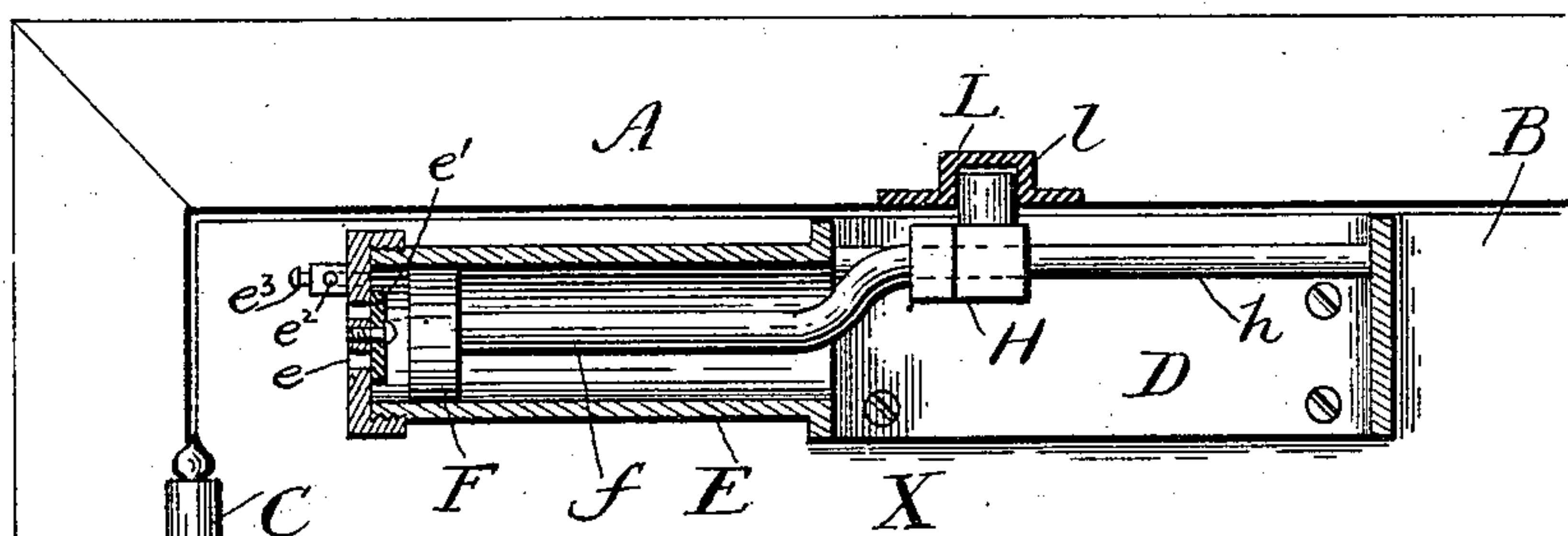
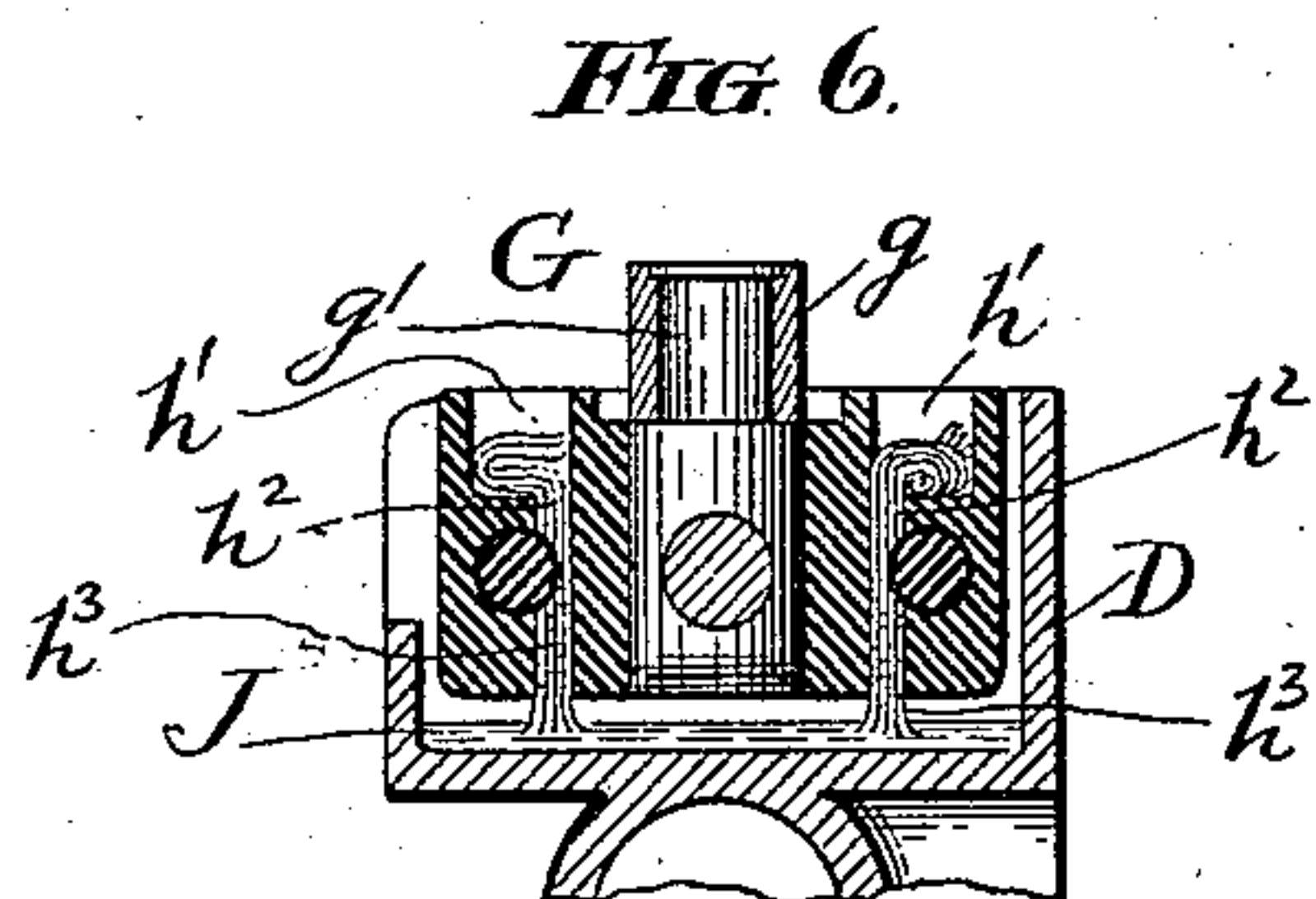
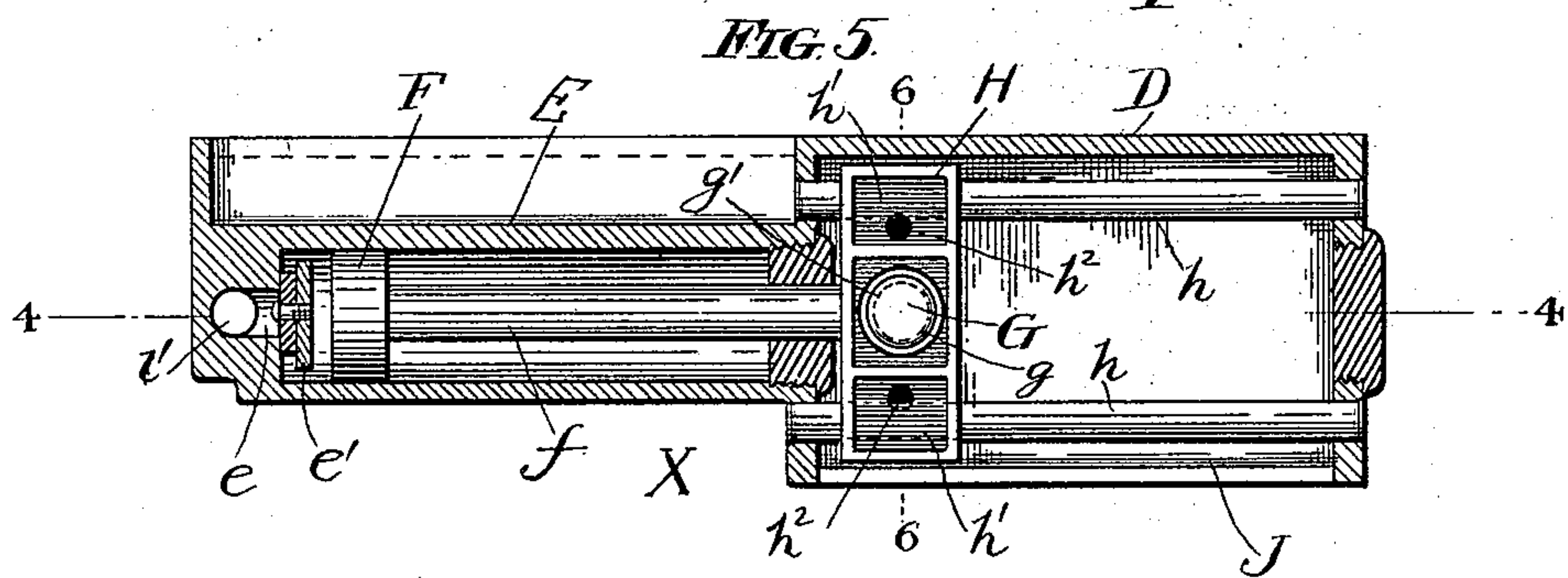
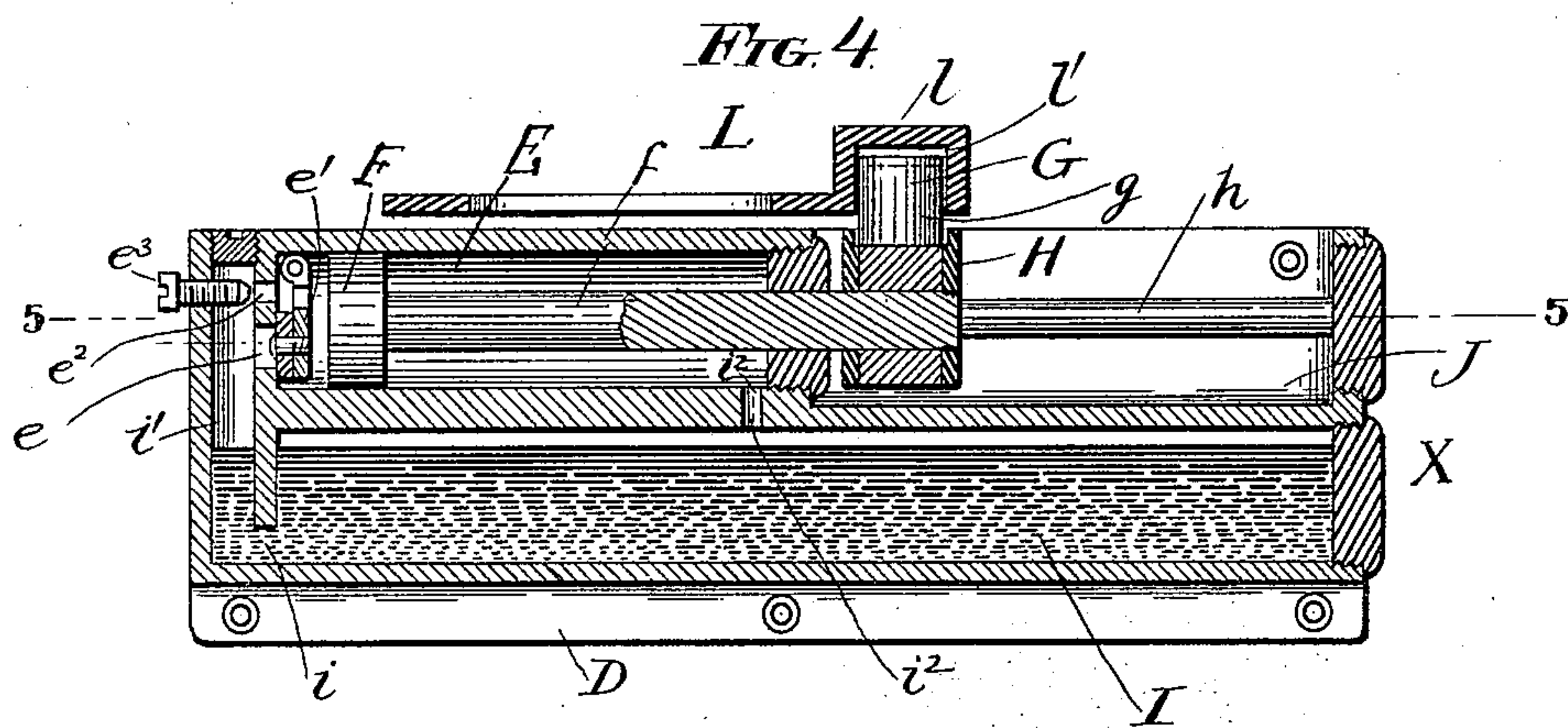
(No Model.)

3 Sheets—Sheet 2.

H. ELMBLAD.
DOOR CHECK.

No. 552,357.

Patented Dec. 31, 1895.



Witnesses:
A. H. Cooper
C. E. Middleton

Inventor:
Hjalmar Elmblad,
By J.B. Halpern,
Atty.

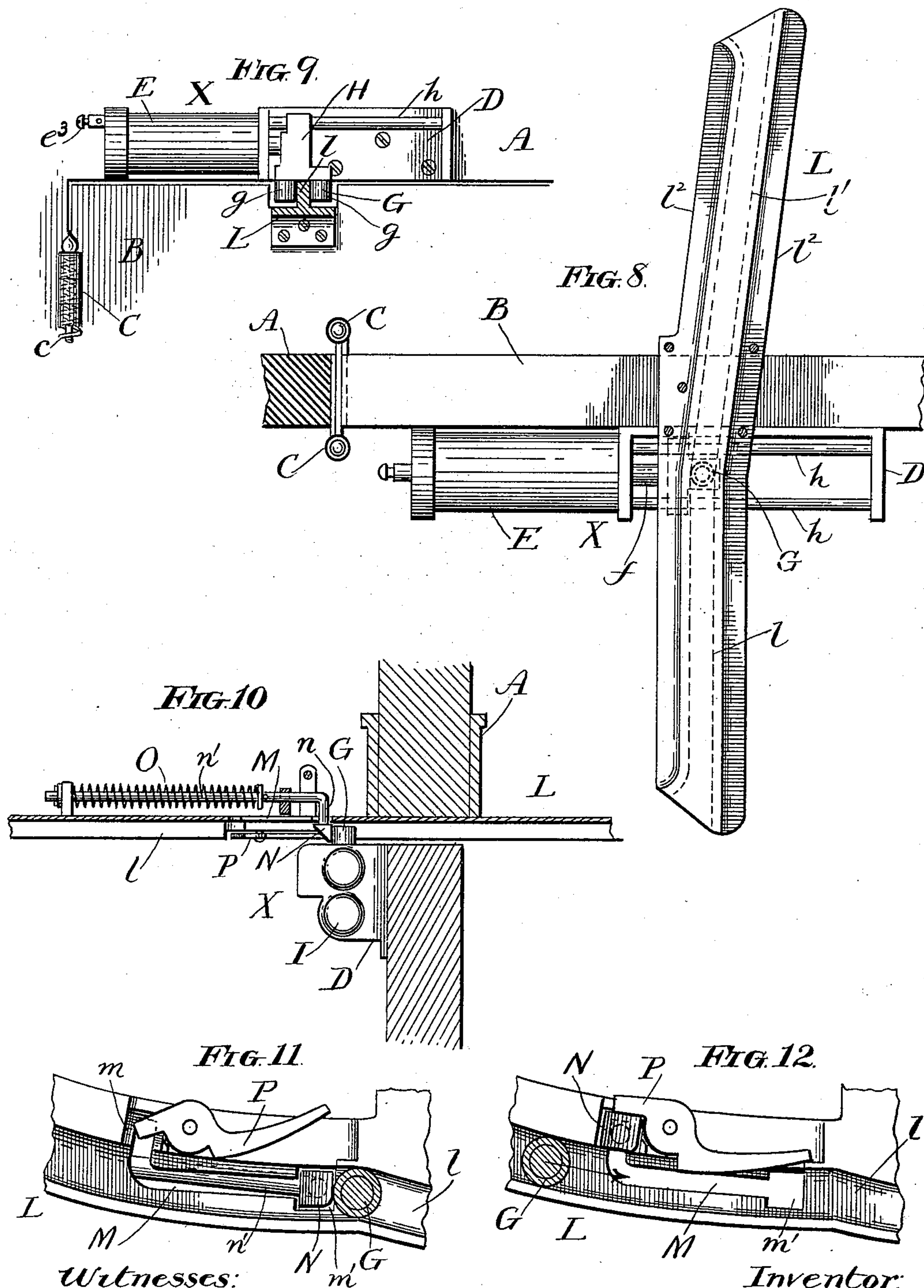
(No Model.)

3 Sheets—Sheet 3.

H. ELMBLAD.
DOOR CHECK.

No. 552,357.

Patented Dec. 31, 1895.



Witnesses:

A. H. Cooper,
C. E. Hiddleston

Inventor:

Hjalmar Elmlad
By J. B. Halpern,
Atty.

UNITED STATES PATENT OFFICE.

HJALMAR ELMBLAD, OF CHICAGO, ILLINOIS.

DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 552,357, dated December 31, 1895.

Application filed June 20, 1894. Serial No. 515,138. (No model.)

To all whom it may concern:

Be it known that I, HJALMAR ELMBLAD, of Chicago, Cook county, State of Illinois, have invented certain new and useful Improvements in Door-Checks, of which the following is a specification.

My invention relates to a check for doors having a double-swinging movement. Doors of the class referred to, when provided with self-closing springs, oscillate to a considerable extent before closing. To overcome this defect is the object of my invention, which I accomplish by means illustrated in the accompanying drawings, the principal feature of the device being a buffer that engages a lateral guideway while the door is closing.

In the drawings, Figure 1 is a side elevation of portion of a door and casing to which is attached my device, the guideway being broken away to more clearly show the position of the buffer-head. Fig. 2 is a plan of same with top casing removed. Fig. 3 is a cross-section taken on the line 3 3 of Fig. 1. Fig. 4 is a longitudinal section of the buffer, taken on line 4 4 of Fig. 5, which also shows a cross-section of the guideway. Fig. 5 is a horizontal section taken on line 5 5 of Fig. 4. Fig. 6 is a transverse section of the buffer-head, taken on line 6 6 of Fig. 4. Fig. 7 is a sectional elevation showing a modification of the buffer. Figs. 8 and 9 are a plan and elevation, respectively, showing modifications of the guideway. Fig. 10 is a longitudinal section of the guideway having an auxiliary attachment or wind-stop. Figs. 11 and 12 are inverted views of same, enlarged, showing positions of the parts when the buffer and door are in a normal and in an open condition.

Like letters of reference indicate similar parts in the different views.

In the application of my device spring-hinges or such other means as are common for the purpose are contemplated to make the door self-closing, and as shown in Fig. 1, A is the casing, and B is the door having hinges C and springs c arranged so as to close the door.

In illustrating the essential feature of my invention—a buffer operating in a lateral guideway—I have shown in Figs. 1 to 6 what is more particularly the preferable form of construction, and the following description will first relate to those views, it being under-

stood that, as hereinafter shown, the buffer or the guideway may be modified without departing from the features of the invention.

On one side of the door near its top I attach a bracket or frame D on which is mounted the buffer X. This buffer, as shown in Figs. 1 to 6, is preferably of the hydraulic type, and is constructed as follows:

E is a horizontal cylinder having a piston or plunger F and piston-rod f , the outer end of which is connected to a slide-block or cross-head H which moves on side rods h .

G is the buffer-head which consists of roller or sleeve g mounted on a stud or bearing g' on the block H. The buffer-head projects above the door. The cylinder E is provided at its rear end with an inlet e and valve e' , and an outlet e^2 having a regulating-screw e^3 . Below the cylinder E is arranged an oil-reservoir I. An opening i in the lower part of reservoir enters a passage i' which communicates with the inlet e and outlet e^2 of the cylinder. At the forward end of the cylinder an air-passage i^2 enters the top part of reservoir, its purpose being to prevent back-pressure when the piston F is drawn outwardly.

The reservoir I extends beyond the cylinder E and has a slight trough J cast on the extended part, which serves as a receptacle for any oil escaping from the cylinder as well as for oil to lubricate the bearings of the block H. This block has recesses h' and perforations h^2 through which wicks h^3 are drawn so as to cross the rods h . These wicks draw up oil from the trough J.

L is a guideway fixed transversely on the casing over the door, and is adapted to engage the buffer-head G. This guideway consists of a rail or track l , which projects laterally beyond each side of the door. I preferably make the guideway with a grooved track, as shown at l' , and with flanged portions l^2 to strengthen same. The object of the guideway is to move the buffer-head G a certain distance when the door opens and closes, and as I usually attach the buffer on the side of the door, I find it best to suit the eccentricity of its position by making the track l with a contour which diverges or proceeds from a central position forming cam-like portions of varying degree, as shown at l^3 . The contour of these cam-like portions is prefer-

ably segmental in form, as shown at Fig. 2, but the construction of the track is not necessarily confined to curves, for the buffer may be actuated by a guideway which projects either at right angles or in an oblique direction to the doorway, as shown in Fig. 7. A most distinctive feature of the guideway is that it is constructed to be attached to the door or lintel transversely of the doorway, and so as to form a transverse track in the doorway for actuating the head of the buffer. A grooved track is preferable for engaging the buffer-head, but a similar effect may be attained by employing a single rail and a buffer-head having two rollers, as shown in Fig. 9. It will thus be observed that the shape or structure of the means employed for actuating the buffer-head may be modified without departing from the scope of my invention.

The operation of the device, as now described, is as follows: When the door is opened, the buffer-head G follows the track *l* and pulls the piston toward the outer end of cylinder, as shown by the dotted lines in Fig. 2. The cylinder is thus charged with fluid. On the hand being released from door, the springs *c* will cause the door to resume its closed position. During this closing movement the buffer-head G moves on the track *l* and presses the piston F inwardly, and as the piston meets the pressure or resistance of fluid in the cylinder, the outflow being suitably regulated by the screw *e*³, the door will be checked or stopped by the time it reaches the middle of casing. The advantages of making the buffer X, so as to work with hydraulic pressure, are that the device can be made very compact and the buffer is more effective; but I do not limit myself to the means by which pressure may be provided in the buffer. In Figs. 7, 8, and 9, I have shown a pneumatic buffer. The construction of this is virtually the same as that first described, with the exception that a reservoir is not attached to the cylinder. The positions of the buffer and guideway may be transposed and the same effect gained. In most of the figures I have shown the buffer attached to the door and the guideway placed on the casing, but in Fig. 9 they are arranged vice versa to this.

On large buildings where there is a great indraft, the wind will sometimes blow the door slightly open after it has closed, and to prevent this I use the following device auxiliary to the door-check.

In the guideway L, I cut a cam-like slot or opening M. N is a beveled block having a stud or shank *n* projecting through the slot M and attached to a rod *n'* having a spring O. P is a bell-crank lever mounted on the side of guideway.

The block N when the door is closed rests in a position next the buffer-head, as shown in Figs. 10 and 11, and receives the pressure of the door should the wind be blowing hard, the spring O counteracting movement of door.

When the door is opened, the buffer-head shoves the block N along the track of guideway, the stud *n* follows the cam-like slot and the block recedes from path of the buffer-head into a recess *m*, as shown in Fig. 12. When the door is returning to its closed position, the buffer-head strikes the long arm of the lever P, the shorter arm throws the block N into track of guideway again and the spring O carries the block N back to its initial position. The spring O also helps to bring the door to a closed position. Should the block accidentally reach its initial position before the buffer-head the buffer-head will strike against the beveled portion of block and the block will recede in the enlarged part *m'* of the slot and allow the buffer-head to reach its proper position.

It will thus be seen that my invention provides a novel and compact device for checking the oscillations of swing-doors and that it can be applied readily to such doors with but little alteration to the woodwork.

What I claim as new is—

1. In a door check, a guideway which forms a transverse track in a doorway, and a buffer having a head which engages the guideway so as to actuate pressure when the door is closing, the said buffer and guideway being attachable to a door and lintel, substantially as set forth.

2. In a door check, a guideway which forms a transverse track in a doorway and has cam-like portions *l*³, in combination with a buffer having a head which engages the said guideway, substantially as set forth.

3. In a door check, a buffer having a reciprocating piston, means for obtaining fluid pressure, and a buffer head consisting of a roller mounted on a block which is connected to the piston, in combination with a track which forms a transverse guideway in a doorway and engages the buffer head, substantially as set forth.

4. In a door check, the combination of the guideway L, and the buffer X having a head which engages the guideway, a slide block on which said head is mounted and an oil trough J beneath its bearings, substantially as set forth.

5. The combination in a door check, of a buffer having a reciprocating piston, means for obtaining fluid pressure, a buffer head connected to the piston, and a grooved transverse track or guideway for actuating the buffer head, the said buffer and track being attachable to a door and lintel in the manner described and for the purpose set forth.

6. In a door check, the combination of a cylinder having an inlet, valve and outlet, a piston, a reservoir for a supply of fluid communicating with said inlet and outlet, a buffer head connected to the piston, and a lateral track or guideway for actuating the buffer head, the said parts forming the buffer and the guideway being adapted to be at-

tached to a door and lintel, substantially as described and set forth.

7. In combination, the buffer X, the guideway L, and a wind stop which consists of a
5 spring actuated block mounted in a cam-like slot in guideway which causes the block to recede from the path of the buffer head, and

a bell-crank lever whereby the stop is thrown into action by the contact therewith of the buffer head, substantially as described.

HJALMAR ELMBLAD.

Witnesses:

J. B. HALPENNY,

H. G. HUFF.