(No Model.) 2 Sheets—Sheet 1.

E. I. BLOUNT.

DOOR CHECK AND CLOSER.

No. 458,357. Patented Aug. 25, 1891.

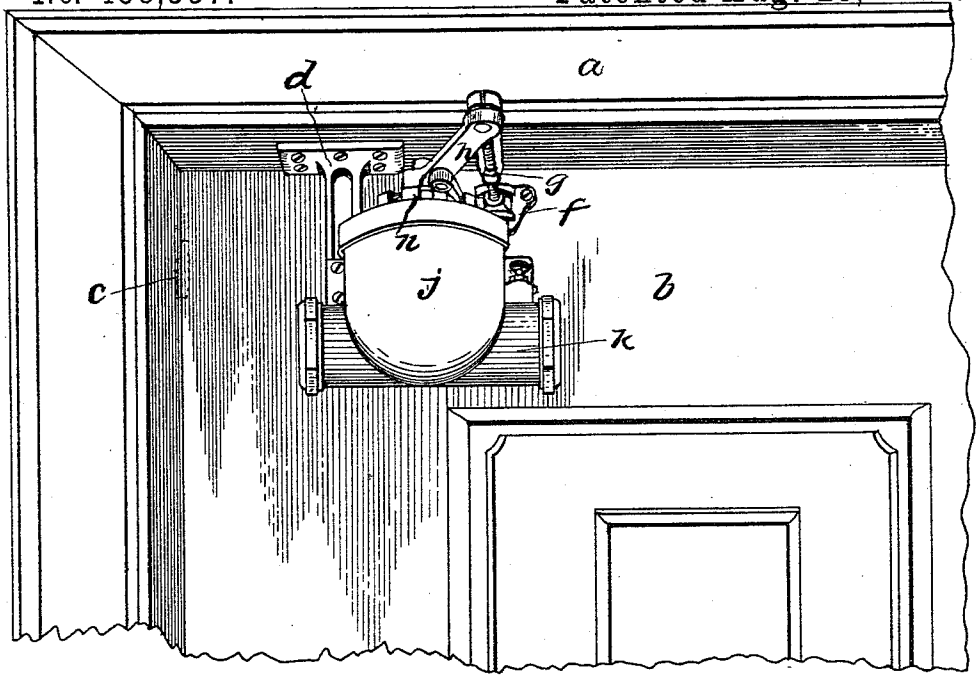


FIG. 1.

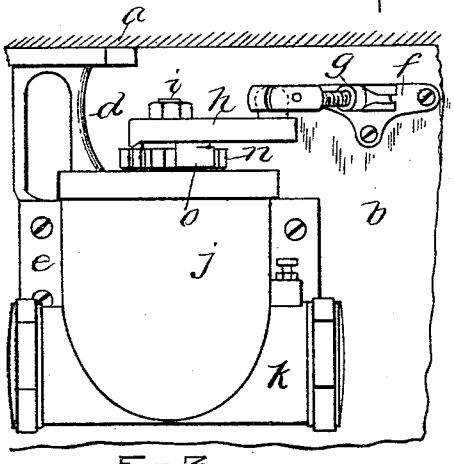


FIG. 3.

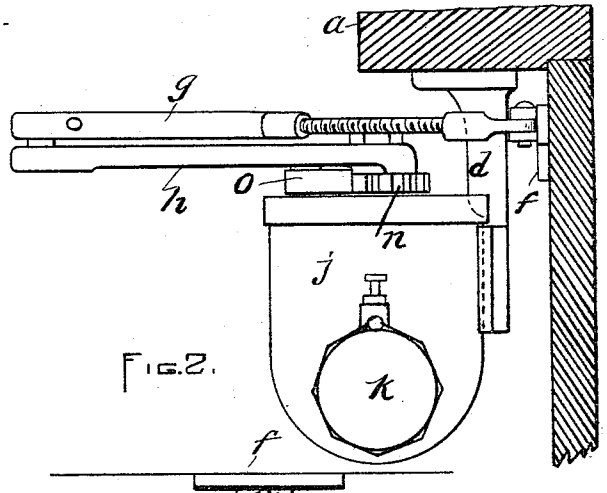


FIG. 2.

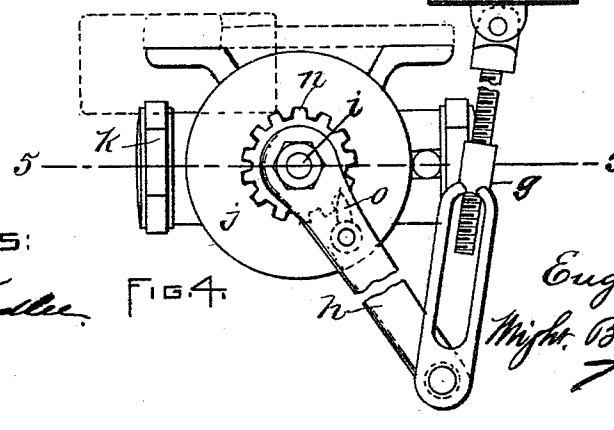


FIG. 4.

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Geo. H. Chandlee.

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(No Model.) 2 Sheets—Sheet 2.

E. I. BLOUNT.

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FIG. 6.

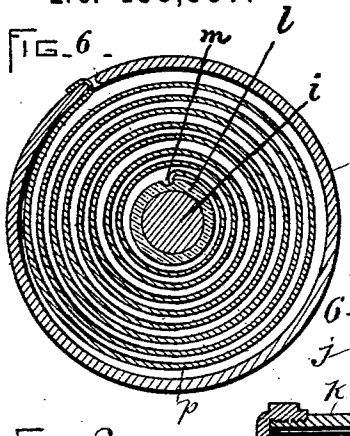


FIG. 5.

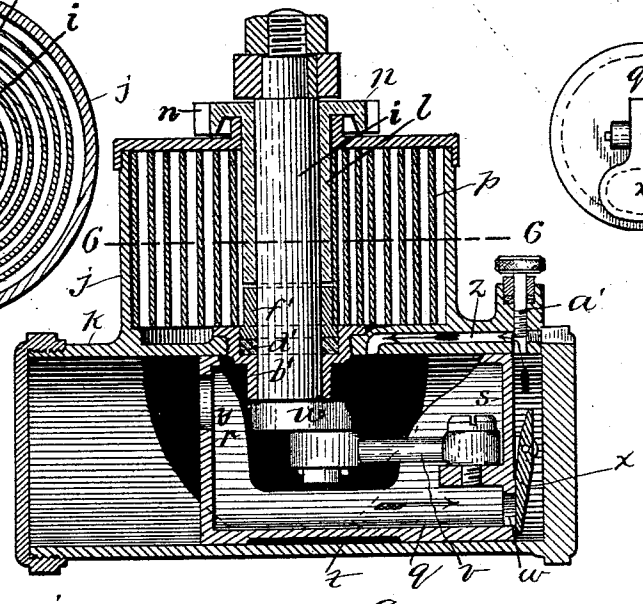


FIG. 7.

FIG. 8.

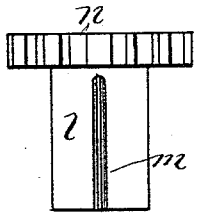


FIG. 9.

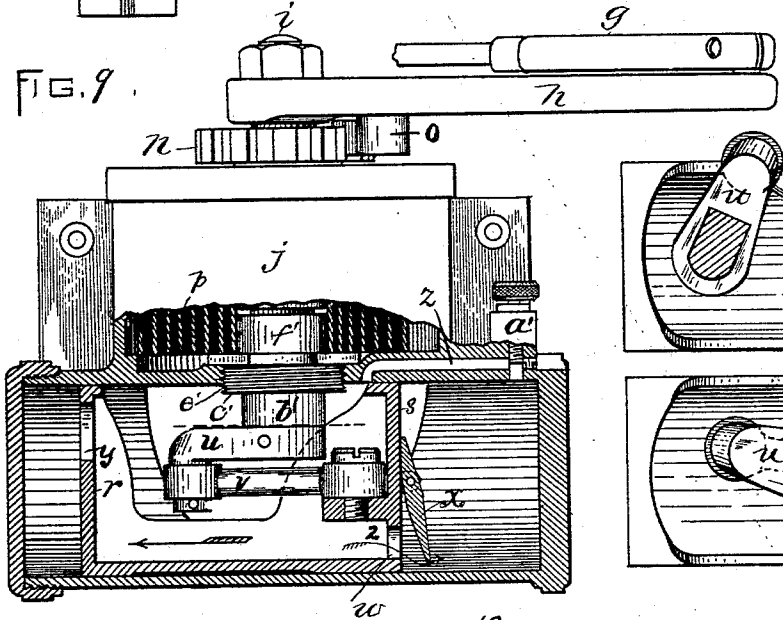


FIG. 10.

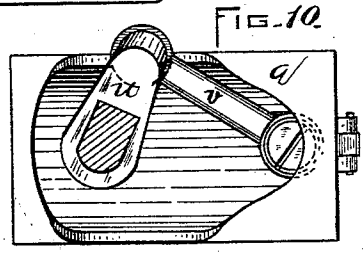


FIG. 11.

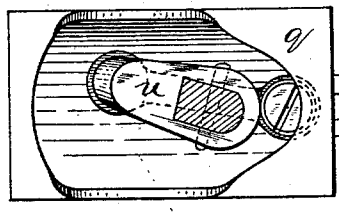
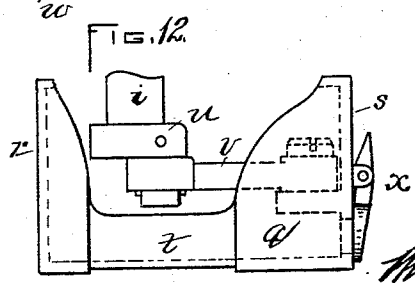


FIG. 12.



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UNITED STATES PATENT OFFICE.

EUGENE I. BLOUNT, OF CAMBRIDGE, ASSIGNOR TO THE BLOUNT MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 458,357, dated August 25, 1891.

Application filed March 16, 1891. Serial No. 385,201. (No model.)

To all whom it may concern:

Be it known that I, EUGENE I. BLOUNT, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Door Checks and Closers, of which the following is a specification.

My improvements are particularly applicable to door-checks in which oil, glycerine, or other liquids are employed, though parts of the invention may be used in connection with other kinds of door-checks.

It is the object of the said improvements to enhance the efficiency of door-checks, simplify their construction, and reduce the cost of their manufacture.

The invention consists of the improvements hereinafter described in detail, and pointed out in the appended claims.

Reference is to be had to the drawings hereunto annexed and forming a part of this specification, in which—

Figure 1 is a perspective view of the invention, showing it as applied to a door-casing and door. Fig. 2 is an end view of the same, the portion of the door-casing and door shown being represented in section. Fig. 3 is a front view. Fig. 4 is a top plan view. Fig. 5 is a vertical sectional view taken on the line 5 5 of Fig. 4. Fig. 6 is a horizontal sectional view taken on the line 6 6 of Fig. 5. Fig. 7 is a front end view of the piston. Fig. 8 is a side view of the ratchet-sleeve. Fig. 9 is a front view, parts being represented as broken out, showing the piston in a different position from that in which it is represented in Fig. 5. Figs. 10 and 11 are sectional details in plan of the piston and a part of the means for actuating the same. Fig. 12 is a side view of what is shown in Figs. 10 and 11.

The same letters of reference designate the same parts or features, as the case may be, wherever they occur.

In the drawings, *a* designates a door-casing, *b* a door, and *c* (in dotted line) the hinges of the door.

d is a bracket secured to the lower face of the upper cross-frame of the door-casing, so as to depend therefrom.

The casing *e*, comprising the spring and liquid chambers and supporting the operative parts of the apparatus, is secured to the lower end of the said bracket.

f designates a bracket secured to the door and to which the inner end of the adjustable lever *g* is pivoted, the opposite end of said lever being pivoted or jointed to the outer end of the lever *h*, which is rigidly connected at its opposite end with the shaft *i*, which extends vertically through the spring-chamber *j* into the liquid-chamber *k*, as is best seen in Fig. 5.

l is a sleeve having a groove *m* formed in its side, and provided upon its upper end with a ratchet-wheel *n*, engaged by a pawl *o*, pivoted upon the lever *h*. The inner end of the spring *p* in the spring-chamber is bent into the form of a hook, so as to engage the groove *m* in the sleeve *l*, the other end of said spring being attached to the side of the spring-chamber *j*.

q designates the piston in the liquid-chamber, which is elongated in form and provided at its rear end *r* with a bearing which substantially fits the interior of the chamber, as does the front end *s*, which constitutes the piston proper. The body of the piston intermediate of the front and rear ends is turned down or reduced in size or diameter, as at *t*, to avoid unnecessary friction in the operation of the piston.

u designates a crank connected with the lower end of the shaft *i*, and *v* is a pitman or link rod pivoted at one end to the crank *u* and at the opposite end to the piston, so that when the door is opened the crank will be operated through the medium of the levers *g* and *h* and shaft *i* to draw the piston back from the position in which it is represented in Fig. 5 to that in which it is shown in Fig. 9, the movements of the crank and pitman being clearly indicated in Figs. 10 and 11.

The piston proper *s* is provided with a port *w*, controlled by a valve *x*, to freely admit of the passage of the liquid in the rear of the piston to the front of the same, as indicated by the arrow 2, Fig. 9, when the door is opened, an aperture or port *y* being provided in the rear end of the piston to permit the liquid to flow to and fro therethrough. When the door is closed, as it will be by the action of the spring *p* in a well-known way, the valve

x will close and the fluid will be forced from in front of the piston to the rear of the same through the passage z, communicating between the front and rear of the piston proper. This passage z is controlled by a valve a', to govern the flow of the liquid and the extent of resistance of the same to the door-closing operation of the spring p.

The operation of the invention in the opening of the door by personal effort or force and the closing of the same by the operation of the spring p, slamming being prevented by the resistance offered by the liquid to the operation of the piston, will be understood without further description.

Any suitable efficient bearing and packing may be provided around the shaft i between the spring and liquid chambers. As is herein shown, the bearing consists of a thimble b', offset at c' for the reception of the packing d', which thimble is screw-threaded on its exterior, as at e', and screwed into an aperture formed in the top of the fluid-chamber. A follower f', screw-threaded upon its exterior, is fitted to be screwed down into the interiorly-screw-threaded thimble b' upon the packing.

By making the fluid-chamber as an elongated cylinder arranged horizontally beneath the vertically-arranged spring-chamber and arranging the oscillatory shaft in the spring member so as to extend through into the liquid-chamber and connected with the piston in the manner described I am enabled to provide a construction which is exceedingly simple, not liable to get out of order, certain in its operation, and compact in form.

My improvements render the check capable of being readily changed from "right" to "left" hand arrangements and adapt it to being applied to the door-casing and door at the hinge side, as shown in the drawings, so that the check will operate to pull the door to closed position in contradistinction to pushing it shut, the bracket d, secured to the lower face of the upper cross-piece of the door-frame, contributing materially to this end.

It is obvious that changes may be made in the form and arrangement of parts comprising my improvements without departing from the nature or spirit thereof.

Having thus explained the nature of my improvements and described a way of constructing and using the same, though without attempting to describe all of the forms of construction and modes of use, I declare that what I claim is—

1. A door-check embracing in its construction a closed spring-chamber and its spring, a closed cylindrical liquid-chamber arranged at a right angle to the spring-chamber, a piston in said chamber, a valve adapted to operate longitudinally in said chamber, an oscillatory shaft extended through said spring-chamber into the liquid-chamber, and a crank and pitman connecting the shaft with the piston, as set forth.

2. A door-check embracing in its construction a closed spring-chamber, a liquid-chamber below said spring-chamber arranged at right angles to the spring-chamber, an oscillatory shaft extending through said spring-chamber into said liquid-chamber, and a piston having a valved port and longitudinally movable in said liquid-chamber at a right angle to the axis of said shaft, the latter being connected to the said piston to operate the same, as set forth.

3. A door-check embracing in its construction a vertically-arranged spring-chamber, a closed liquid-chamber arranged at a right angle to the axis of the spring-chamber, an elongated piston in said liquid-chamber adapted to operate longitudinally of said liquid-chamber and having a valved port and provided at its front and rear ends with bearings to substantially fit the interior of the chamber, and a shaft extending through the said spring-chamber into the liquid-chamber and connected with the piston to operate the same and be operated thereby, as set forth.

4. A door-check comprising in its construction a closed spring-chamber and its spring-closed elongated liquid-chamber arranged at a right angle to the axis of the spring-chamber and in juxtaposition thereto, an elongated piston in the said liquid-chamber reduced in size intermediate of its ends, an oscillatory shaft in said spring-chamber and extended into the liquid-chamber, and a crank and pitman connecting the shaft with the piston and arranged to operate intermediate the ends of the latter, as set forth.

5. A door-check comprising in its construction a closed spring-chamber and a closed liquid-chamber arranged at a right angle to the axis of the spring-chamber and in juxtaposition thereto, as set forth.

6. A piston for the liquid-chambers of door-checks, having front and rear ends adapted to fit and to be guided by the interior of the chamber and having its central portion intermediate its ends reduced in diameter or size, as set forth.

7. The combination, with the spring and liquid chambers and the oscillatory shaft passing from one chamber into the other, of the packing located between the chambers and consisting of the thimble b', offset at c', the packing d' in said offset portion, and the follower f', screwed into the thimble upon the packing, the thimble being screwed into the casing of the chambers, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 7th day of March, A. D. 1891.

EUGENE I. BLOUNT.

Witnesses:
ARTHUR W. CROSSLEY,
C. F. BROWN.