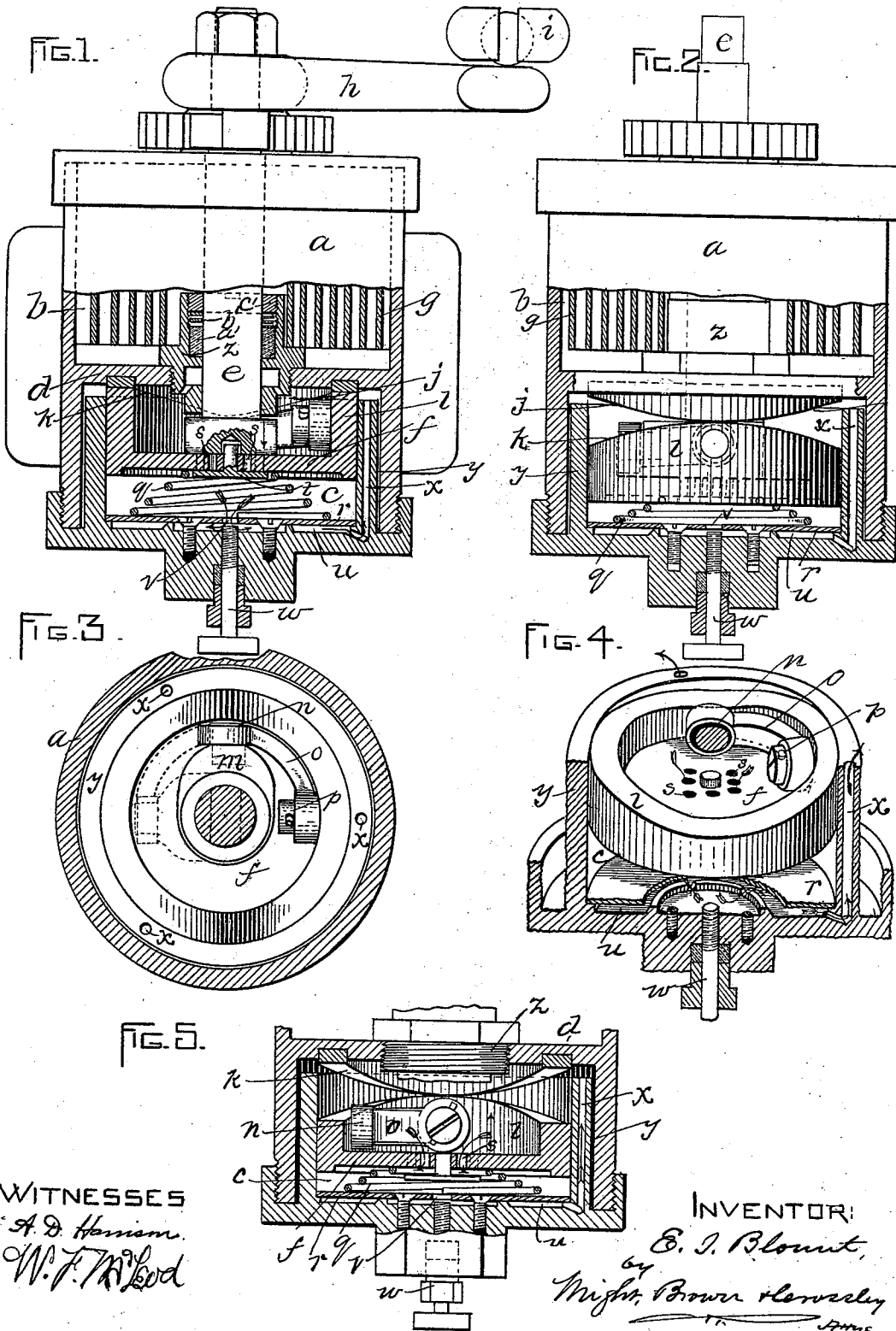


(No Model.)

E. I. BLOUNT.
DOOR CHECK AND CLOSER.

No. 542,840.

Patented July 16, 1895.



WITNESSES

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UNITED STATES PATENT OFFICE.

EUGENE I. BLOUNT, OF GARDNER, MASSACHUSETTS, ASSIGNOR TO THE
BLOUNT MANUFACTURING COMPANY, OF PORTLAND, MAINE.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 542,840, dated July 16, 1895.

Application filed December 27, 1893. Serial No. 494,869. (No model.)

To all whom it may concern:

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

This invention has relation to door checks and closers of the kind employing liquid in their operation; and it is the object of the invention to provide such improvements as will render simple, practical, and in the highest degree efficient a structure in which the piston may operate vertically or in line with the spindle actuated by the door and spring and operating the piston.

To these ends the invention consists of the door check and closer as a whole and of the parts and combinations of parts in a door check and closer hereinafter described and claimed.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 is a side elevation, partially in section, of my improved door check and closer, showing the position of the parts when the door is open and on the point of starting to close. Fig. 2 is a view somewhat similar to Fig. 1, showing the position of the parts when the door is closed. Fig. 3 is a horizontal sectional view taken on a line just above the piston. Fig. 4 is a perspective view, partly in vertical section, of the piston and its connections and the liquid-chamber and its connections. Fig. 5 is a vertical sectional view through the liquid-chamber, piston, and connections.

In the drawings, *a* designates the outer casing.

b is the spring-chamber.

c is the liquid-chamber.

d is the partition dividing the spring and liquid chambers.

e is the spindle for operating the piston *f* and with which the spring *g* is connected in such manner as to transmit its force to the

door through the medium of the arms *h i*, the latter being connected to the spindle through the usual pawl-and-ratchet devices.

On the under surface of the partition *d* there is constructed a cam *j*, which is adapted to act upon the cam-surface *k*, formed on the upper face of the rim *l* of the piston *c*. The construction and arrangement of the said cams or cam-surfaces *k l* are such that when the door is closed the piston will be partially turned by the action of the spindle *e*, with the effect of depressing the piston, all as will be presently more fully explained.

The spindle *e* extends through the spring-chamber *a* into the liquid-chamber and is connected with the piston by means of a laterally-projecting arm or crank *m* connected with its lower end, the outer end of which arm or crank is pivotally connected, as at *n*, with one end of a curved link *o*, the opposite end of which is pivotally connected at *p* with the piston. With this construction it will be seen that as the spindle *e* turns it will turn the piston and that the latter may rise and fall without moving the said spindle longitudinally, the link *o* providing for this rising and falling movement of the piston.

The spring *g*, interposed between the lower surface of the bottom of the piston and the false bottom *r* of the liquid-chamber, serves to keep the cam-surface *l* of the piston up in contact with the cam-surface *k* when the door is opened and the piston is released.

Ports *s* are formed in the piston, which are controlled by a valve *t* in such manner that as the piston rises the said valve will be opened and the liquid above the piston will flow freely through the same to a place below the same, and when the piston is depressed the said valve will be closed, closing the said ports, all as will be readily understood without further description.

Below the false bottom *r* there is a chamber *u*, into which, through a restricted port *v*, the liquid may flow from below the piston, the said port *v* being controlled by a screw-valve *w* in the bottom.

Ports *x* are formed in the walls *y* of that part of the liquid-chamber in which the pis-

ton operates, said ports x communicating between the chamber u and the space above the piston, as shown.

With this construction and arrangement of parts it will be noticed that when the door is closed the said parts will be in the position in which they are represented in Fig. 2, the piston being depressed, and when the door is opened, as it may be without any resistance from the liquid, the parts will assume the position in which they are represented in Fig. 1, the piston being raised by the spring q and the liquid flowing freely through the ports s from above to below the piston. When, now, the door is closed by the action of the spring g , the spindle e through its connecting devices will partially turn the piston, and the cam-surface k , acting on the cam-surface l of the piston, will act to depress the latter; but by reason of the restricted character of the port v the action of the piston will be resisted until the liquid can flow through the last-mentioned port and the ports x to a place above the piston, so that the door may be closed without slamming.

The valve w is designed to control the rate at which the liquid may flow through the port v and may be of any suitable character for the purpose.

To prevent the leakage of the liquid from the liquid-chamber into the spring-chamber, I have provided a packing around the spindle e , consisting of a bearing z , screwed into the partition d and provided on its upper part with a chamber in which is inserted an elastic or expansible packing a' , upon which is arranged a spring b' , with a follower c' screwed into the upper end of the chamber on the spring, so that the packing may be pressed as closely around the spindle as may be desired. (See Fig. 1.)

The spring q may, it is obvious, be differently constructed and arranged so long as it performs the office of raising the piston. Furthermore, the several ports s may be replaced by a single port of ample dimensions.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. A door-check and closer comprising in its construction a casing having a spring chamber and a fluid chamber, a rotatively spring-actuated spindle extending through the spring chamber and into the fluid chamber, said spindle arranged for operative con-

nection with the door, a piston longitudinally and rotatively movable in the fluid chamber, a crank and link connection between the said piston and the spindle whereby they are rotatively connected and longitudinal movement of the piston permitted, cam-devices for imparting longitudinal movement to the piston under rotation of the spindle, and provisions for permitting unrestricted communication of fluid from one side of the piston to the other in one direction, and restricted communication in the opposite direction.

2. A door-check and closer comprising in its construction a rotatively spring-actuated spindle arranged for operative connection with the door; an inclosing casing having a fluid-chamber; a piston longitudinally and rotatively movable in said chamber, and formed with a cam-flange; a stationary cam for co-action therewith to produce longitudinal movement of the piston under rotation thereof; a curved link pivoted at one end to the flange of the piston and at the other end to a projection or crank on the spindle; and means for permitting unobstructed communication between opposite sides of the piston in one direction and restricted communication in the opposite direction.

3. A door check and closer comprising in its construction a spring chamber, a liquid chamber, a spring-actuated spindle extending through the spring chamber into the liquid chamber, a piston connected with the spindle, a cam surface on said piston, a co-operating cam surface on a fixed part of the device, and a spring for raising the piston, as set forth.

4. A door check and closer comprising in its construction a spring chamber, a liquid chamber, a spring-actuated spindle extending through the spring chamber into the liquid chamber, a piston connected with the spindle and adapted to be actuated in line therewith, a bottom and a false bottom, a chamber between the bottom and the false bottom, a free valve-controlled port in the said piston, a restricted valve-controlled port in the false bottom communicating with the chamber therebelow, and ports communicating with the chamber below the false bottom and the space above the piston, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 20th day of December, A. D. 1893.

EUGENE I. BLOUNT.

Witnesses:

ARTHUR W. CROSSLEY,
A. D. HARRISON.