

O. ANSCHÜTZ.
DOOR CHECK AND CLOSER.
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Patented Sept. 14, 1909.

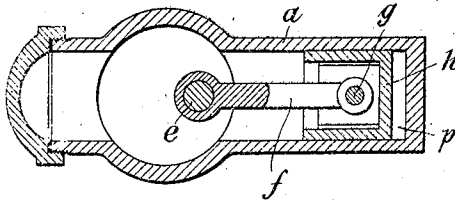
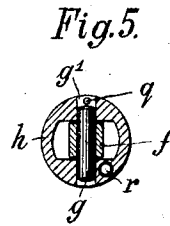
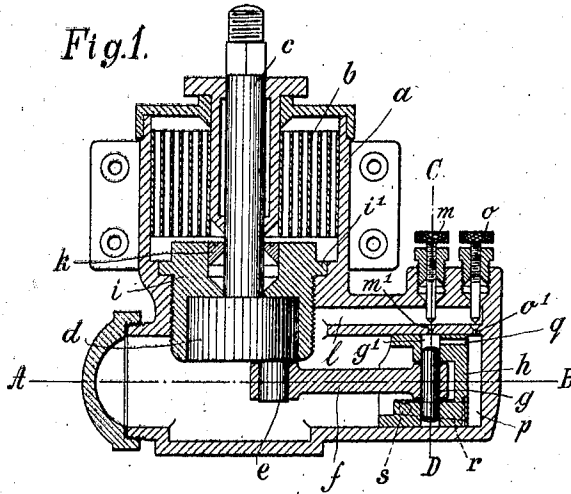
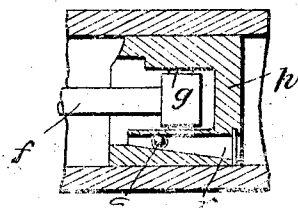
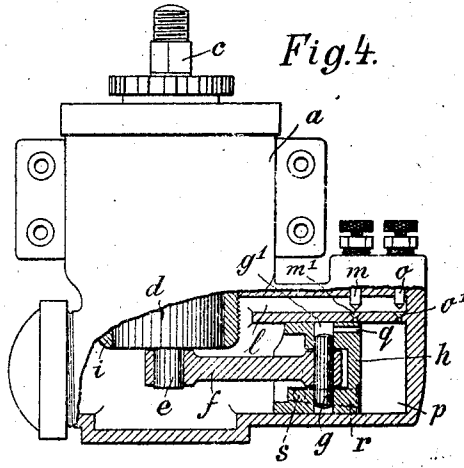
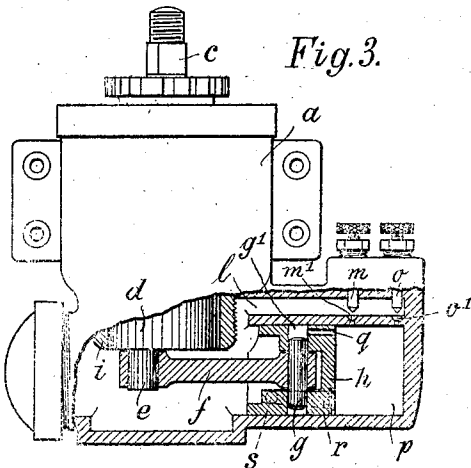


Fig. 2.



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DOOR CHECK AND CLOSER.

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To all whom it may concern:

Be it known that I, OSKAR ANSCHÜTZ, merchant, a subject of the German Emperor, residing at 115 Schanzenstrasse, Hamburg, Germany, have invented certain new and useful Improvements in Door Checks and Closers, of which the following is a specification.

The invention relates to liquid door checks and closers, and the object of the invention is to provide novel means whereby the beginning, middle and end speed of the door can be regulated according to requirements.

The invention consists in the novel construction and combination of parts as is hereinafter described and pointed out in the claims.

In the drawing the object of the invention is shown by way of example.

Figure 1 shows the door-closer in vertical section, the door being supposed to be closed. Fig. 2 is a sectional plan taken on line A—B of Fig. 1. Figs. 3 and 4 show the door-closer in partial section when the door is in motion. Fig. 5 is a vertical section of the brake piston taken on line C—D of Fig. 1. Fig. 6 is a vertical section, on an enlarged scale, through the piston and part of the casing, showing the opening in the piston for the passage of the fluid and the ball for controlling said opening.

The casing *a* of the door-closer is of the usual shape, the upper part of which serves to receive the spiral spring *b* and the spindle *c* with crank plate *d*. The crank pin *e* of the crank plate passes through a hole in the connecting rod *f* the other end of which is connected in the usual way by the pin *g* to the piston *h* which moves in the piston cylinder 40 in the lower part of the casing.

The spindle *c* with the crank plate *d* is mounted in a special box *i* which is screwed fast into the casing *a* and made tight by means of a shoulder or collar *j*. The upper 45 part of this box *i* carries a stuffing-box *k*.

Above the piston *h* is provided in the casing *a* a channel *l* which forms a communication between the spaces in front of and behind the piston *h*. At one end of the lower 50 part of the casing *a* are two valve spindles *m* and *o* which stand exactly over the holes or ports *m*¹ and *o*¹ which connect the channel *l* with the piston cylinder. The positions of the holes *m*¹ and *o*¹ are such that the hole *m*¹ 55 as shown in Fig. 1 (when the door is completely closed) lies exactly over the hole *g*¹

of the piston *h* which is not completely filled by the pin *g*, while the hole *o*¹ opens into the space *p* at the end of the cylinder when the piston *h* is at its dead point. The piston *h* also has a hole *q* which connects the space *p* with the hole *g*¹.

The action of the door-closer is as follows:—When the door is opened the piston *h* is moved by means of the rotary movement 65 of the crank plate *d*, (which is turned to the left by means of the usual lever arm on the free end of the spindle *c* (not shown in the drawing) and the spiral spring *b* is thereby wound up. 70

For the purpose of an easy transfer of the fluid from the left hand side of the cylinder to the right hand side thereof when the door is opened, the piston *h* is furnished with a communicating hole *r* in which works a ball 75 *s* which allows the passage of fluid when the piston is moved toward the left but prevents such passage when the piston moves to the right.

When the door is released the crank plate 80 *d* is turned by the spiral spring *b* in the opposite direction whereby the piston *h* is forced to the right. Hereupon the ball *s* effects the closing of the communicating hole *r* in the piston *h* so that the fluid is forced 85 through the two holes *m*¹ and *o*¹ into the channel *l* and so passes to the left hand side of the cylinder. The piston moves gradually farther toward the right until it reaches the position shown in Fig. 4 wherein the hole 90 *m*¹ is closed by the piston *h*, and the fluid can only escape and pass around to the other end of the cylinder by means of the hole *o*¹. After the piston *h* has closed the hole *m*¹ the door must naturally move slower than before 95 the closing of the said hole *m*¹. The piston *h* is now pressed farther to the right, and at the moment when the hole *g*¹ in the piston *h* coincides with the hole *m*¹ the fluid escapes through the hole *g* in the piston *h* 100 and the hole *m*¹ into the return channel *l* so that the movement of the door is somewhat accelerated in consequence of the reduced resistance in the cylinder.

According to the adjustment of the valves 105 *m* and *o* the beginning, middle and end speed of the door can be regulated and at the end of its movement may be closed more or less sharply according to requirements.

The arrangement of the box *i* screwed into 110 the casing *a* has the advantage that its cylindrical inner surface can be brought com-

pletely into alignment with the periphery of the crank plate *d* which result is not attainable in cases where the crank plate is journaled in the casing *a* direct, as the cylindrical hollow space to receive the crank plate is partly broken into by the cylinder. The crank plate *d* is inclosed by the recess in the box *i* both on its upper surface and also on its periphery whereby not only is an increased bearing surface obtained to resist the one sided pressure due to the action of the piston *h* and wear and tear thereby reduced to a minimum, but also the bending of the spindle *c* and the consequent leakage at the stuffing-box is prevented.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed I declare that what I claim is:—

- 20 1. A door check and closer, comprising a casing adapted to contain liquid and having a piston cylinder, a piston movable in said cylinder, the said piston having a passage extending from the end thereof and opening at the periphery of the piston, the casing having a return channel leading from the closed end of the cylinder to the other end thereof, the end portion of the cylinder being connected by spaced ports with said return channel, and valves controlling said

ports, the opening in the periphery of the piston being adapted to register with one of said ports for the purpose set forth.

2. In a door check and closer, the combination with a casing adapted to contain liquid and having a cylindrical piston chamber closed at the front end and open at the rear end, the piston chamber having a port adjacent to the front end thereof and a port at the rear of the first port, the casing having a passage connecting said ports with the rear end of the piston chamber, of a piston movable in the said piston chamber and adapted to open and close the said rear port, and a rotatable spindle having a crank disk connected with the piston, the said piston having a valve controlled passage extending through the same, the piston also having a passage extending from the front end thereof and opening at the periphery of the piston, the said passage being adapted to register with the rear port of the piston chamber, as and for the purpose set forth.

In testimony, that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

OSKAR ANSCHUTZ.

Witnesses:

GEORG PINKERT,
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