(No Model.)

S. PORTER.

PNEUMATIC DOOR CHECK.

No. 306,351. Patented Oct. 7, 1884.

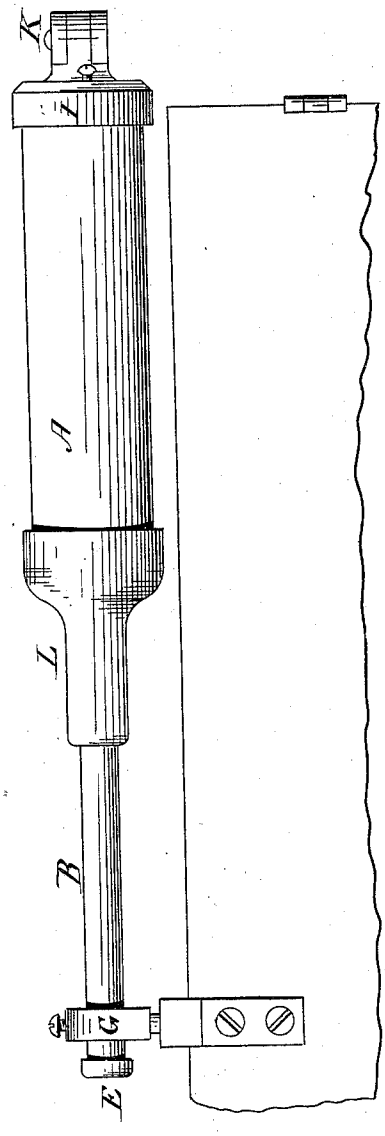


Fig. 1.

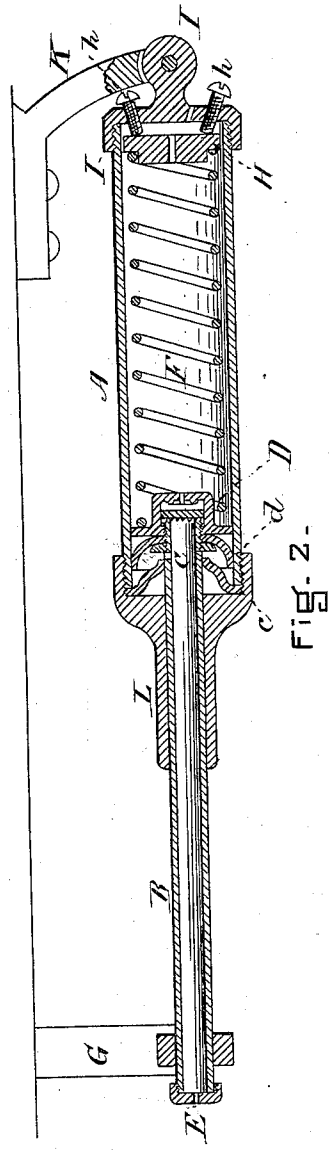


Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

STEPHEN PORTER, OF BOSTON, MASSACHUSETTS.

PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 306,351, dated October 7, 1884.

Application filed December 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN PORTER, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented certain new and useful Improvements in Door-Checks, of which the following is a specification.

My invention relates to that class of contrivances known as "door-checks," in which the resistance of a body of compressed air is opposed to the closing movement of a door, so that its slamming or noisy closing is prevented; and it has for its object to provide means whereby a noiseless closure of the door will be automatically effected.

My invention in the best form now known to me is illustrated in the accompanying drawings, in which Figure 1 shows a side view, and Fig. 2 a sectional view, looking from the top of a door-check and spring embodying my invention as applied ready for use.

My improved door-check contains the features of an air-compression chamber; also, a spring for closing the door against the resistance of a body of compressed air, means for regulating the tension of the said spring, and suitable means for applying the device as a whole in proper position with regard to the door upon which it is to operate.

My present invention consists in improvements in the means of compressing the air, and in the means whereby the regulated closure of the door is obtained.

A represents a barrel or cylinder, within which moves a hollow piston or plunger, B. This piston or plunger is packed at two places within the cylinder A, as shown at *c* and *d*, and an air-passage, C, is made through the shell of the piston opening into the cylinder A, between the two places where the piston is packed, so that the portion of the cylinder A between the packings and the interior of the hollow piston-rod form an air-chamber. Through this piston-rod I obtain the supply of air required to form the air-cushion by making an aperture in the rod, as shown at D, provided with a valve, which allows the inflow of air while the piston is moving in one direction, but which closes and prevents the outflow of air when the piston moves in the other direction, and acts as an air-compressor. I also provide an opening from the piston (shown at E) of suitable size, through which the compressed air may escape as the door gradually closes.

F represents a coiled spring, which, for convenience, is placed within the same cylinder or barrel A. This spring operates to close the door by pressure against the piston B, which is connected with the door by the bracket G, to which it is attached. The tension of this spring F, and consequently the force with which it acts to close the door, is regulated by means of a suitable adjusting device—preferably consisting of an abutment or bearing, H, acting against the base of the spring F, and provided with adjusting-screws *h*, whereby the pressure upon the spring, and consequently its amount of resistance, may be regulated at pleasure. By this means I am enabled to adjust the door-check to any weight of door, and also to vary its power from time to time, if this, for any reason, should become necessary, and I am also enabled to do this while the door-check is in place. These adjusting-screws may conveniently bear in the cap I, which connects the cylinder A and its inclosed mechanism with a second bracket or hinge, K, attached to the jamb of the door at the proper location relatively to the line of the hinges, as shown in Fig. 1. The other end of the cylinder A is closed by a sleeve, L, which is extended to form a bearing for the piston-rod B.

The device operates as follows: As the door is opened the difference of the length of the radii on which the cylinder A and the piston B swing causes the latter to travel through the cylinder and compress the spring F, the space in the cylinder between the packings *c* and *d* and the interior of the piston B being at the same time filled with air, which enters through the valve D. The compressed spring F will now force the door to with a tension regulated as described, and this will cause the packings *d* and *c* to approach, so that the air between them and also that within the hollow piston is compressed, and the closing of the door retarded until the slow escape of air through the aperture E allows the door to gradually and noiselessly close under the spring-pressure.

I am aware that door-checks have been previously constructed or described which contain the features, broadly, of an air-compressing piston connected with a spring, and at-

tached to a door and acting within a cylinder connected with a part adjacent to such door at such a point relative to the hinges that the cylinder shall swing on a relatively shorter radius than the door and piston when the door is opened and closed.

I make no claim to any of these features, broadly.

I claim—

1. In a door-check, the combination, with the air-compression chamber, formed by the cylinder and the packed hollow piston, said piston working within said cylinder and being provided with an air-vent of fixed size, of the door-closing and air-compressing spring, and means for regulating its tension or force, all substantially as and for the purposes set forth.

2. In a door-check, the combination of the following elements, to wit: an air-inclosing cylinder, a hollow perforated piston working therein, a valved air-inlet, and an air-outlet, the said piston being packed at two places within the said cylinder on either side of the perforation.

3. In a door-check, the hollow piston B, provided with a valved air-inlet, an air-outlet, and an aperture, C, connecting the interior of the piston with that portion of the cylinder A within which and the hollow piston the air is compressed.

In testimony whereof I have hereunto subscribed my name this 10th day of December, A. D. 1883.

STEPHEN PORTER.

Witnesses:

CHAS. W. KNAPP,

J. HENRY TAYLOR.