(No Model.)

S. PORTER.

PNEUMATIC DOOR CHECK.

No. 306,349. Patented Oct. 7, 1884.

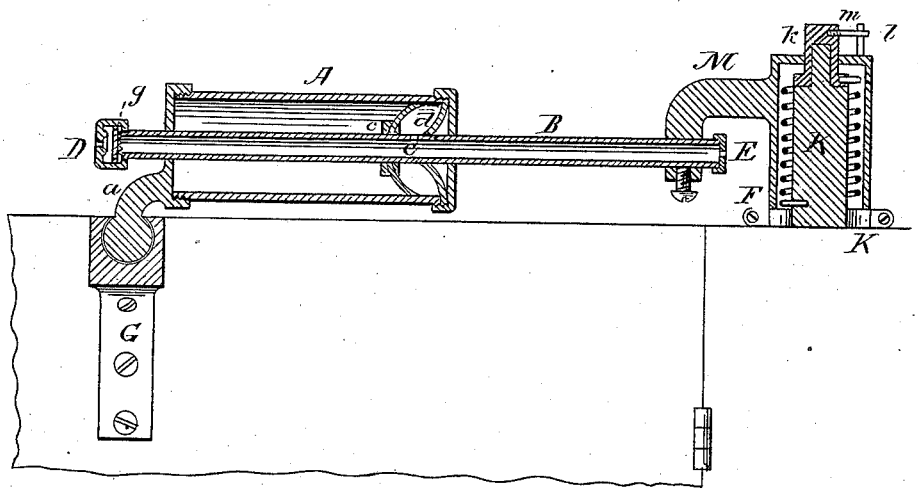


Fig. 1.

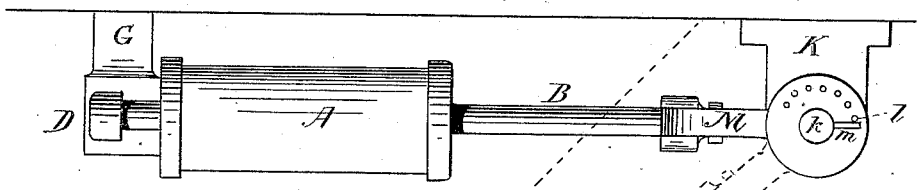
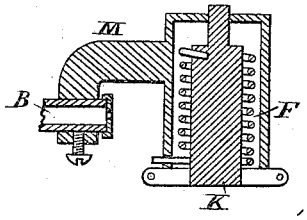


Fig. 1a.



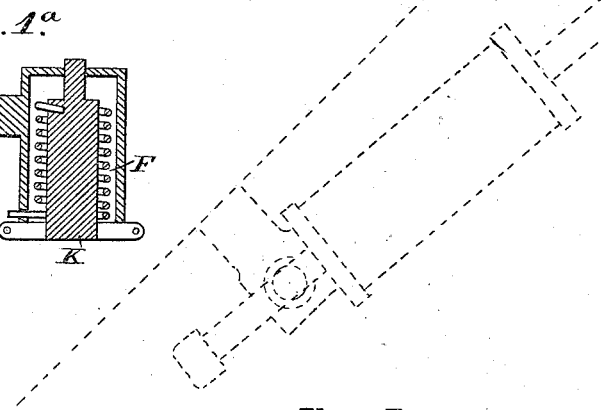


Fig. 2.

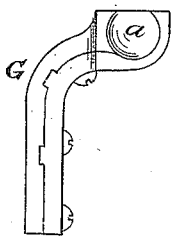


Fig. 3.

WITNESSES

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STEPHEN PORTER, OF BOSTON, MASSACHUSETTS.

PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 306,349, 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, in section, of my improved door-check and adjustable spring, and illustrates its mode of application to the door. Fig. 1ª shows the method of construction and arrangement of the arm, spring, and supporting-bracket when it is not desired to make the spring adjustable. Fig. 2 is a plan view of the same, and Fig. 3 a detailed view of the supporting-bracket.

My improved door-check contains the features of an air-compression chamber, a spring for closing the door against the resistance of a body of compressed air, means for regulating the tension of 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 method of connecting and supporting the door-check in its position upon the door, 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 cylinder A is attached by means of an extension, *a*, to a bracket, G, secured to the door, the connection between the part *a* and the bracket G being in the form of a ball and socket, as shown at Fig. 3. For the purpose of thus inclosing the ball of the extension *a* within its socket the bracket G may be conveniently made in two parts, which are clamped together in the manner shown in Fig. 3, after the ball *a* has been inserted. The piston or plunger B 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, *g*, which allows the inflow of air when the piston is moving in one direction, but which closes the aperture D 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. This piston B is firmly attached to an arm, M, which terminates in a hollow open shell, which passes over and rests upon a bracket, K, over which the arm M revolves as the door moves upon its hinges.

To the shell of the arm M is attached one end of a spring, F, the other end of which is attached to the bracket K. This structure is illustrated in Fig. 1ª. When I desire to regulate the tension of this spring, I form that part *k* of the bracket to which the end of the spring is attached independent of the rest, and I attach the other end of the spring to the bracket K itself, as shown in Fig. 1, so that by revolving this part *k* around upon the bracket K, I can increase or diminish the tension of the spring. To hold this part *k* against the strain of the spring at any desired position I provide it with a projection, *l*, which engages with a pin, *m*, that may be set in any one of a number of holes or sockets formed in the top of the arm M, and visible in the plan view, Fig. 2, by which means I can set the part K at any desired position, and thus regulate the tension of the spring F at pleasure. By this means I am enabled to adjust the door-check to any weight of door, and also to vary its power upon the same door 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.

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 at the same time by its circular motion imparted through the arm M to compress the spring F. The space in the cylinder between the packing *c* and *d* and the interior of the piston B is at the same time filled with air which enters through the valve D. The compressed spring F now acts to force the door to with a tension regulated as described, and this causes the packing *c* and *d* 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.

The peculiar structure of the hollow piston and its connected parts is made the subject of an application, No. 114,700, of even date herewith, and therefore is not claimed herein. Similarly certain features of the apparatus herein described, whereby the coiled spring is applied with adjusted tension, to operating the check and the door, are disclaimed by me herein, as they form part of an application, No. 114,699, made by me of even date herewith.

I claim—

1. The combination, in a door-check, of an air-cylinder provided with an extension having a ball-shaped termination, *a*, and a supporting-bracket formed with a spherical socket to inclose the said ball, all substantially as and for the purposes set forth.

2. In a door-check, the combination of the socket-bracket G, the cylinder A, with its ball-shaped extension *a*, the hollow piston B, the arm M, with its supporting-bracket K, and the interposed spring F, all substantially as herein described.

3. In a door-check of the character described, the combination of the arm M, the supporting-bracket K, the spring F, the revoluble attachment *k*, and means, substantially as herein described, for securing it at any desired position, all substantially as herein set forth.

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.