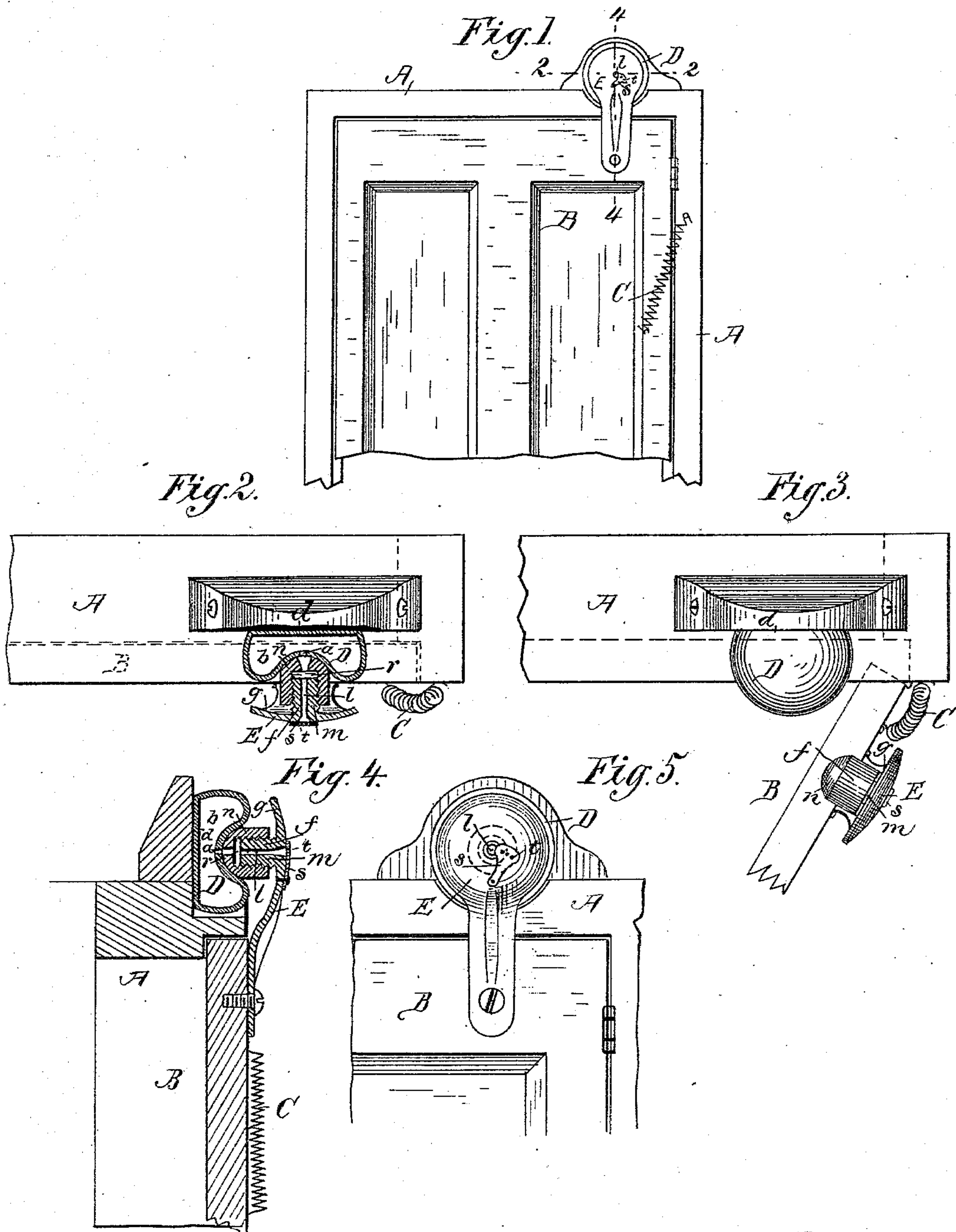


(No Model.)

S. PORTER.
DOOR CHECK.

No. 283,658.

Patented Aug. 21, 1883.



Witnesses:

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UNITED STATES PATENT OFFICE.

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DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 283,658, dated August 21, 1883.

Application filed April 14, 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, have invented certain new and useful Improvements in Door-Checks, of which the following is a full, clear, and exact description.

This invention relates to a new and improved device, substantially such as herein described, to be applied to doors for automatically checking them in their closing movement under the action of a spring or other force used to close them, and thereby, while allowing the door ultimately to close under the action of such force to automatically so regulate the same as to render slamming of the door practically impossible, and, in fact, to have no appreciable noise made at such times.

In the accompanying plate of drawings this invention is illustrated, Figure 1 being an elevation with it applied to the upper part of a door and its frame; Figs. 2 and 3, plan views, respectively, with the door opened and closed, Fig. 2 being in partial section on line 2 2, Fig. 1; Fig. 4, a vertical section on line 4 4, Fig. 1; Fig. 5, a front elevation. Figs. 2, 3, 4, and 5 are on an enlarged scale from that of Fig. 1, and are only of such parts as are necessary to illustrate the invention.

In the drawings, A is the door-frame, and B a door hung in the jamb thereof, to be opened and closed, and in opening to open against and to be closed by the door-spring C. This door-spring C, in the present instance, is a spiral spring, fastened at one end to the door and at the other to the door-frame in the usual manner of attaching such springs; but such spring may be of any of the other usual forms of door-springs capable of acting to close the door when the door, having been opened, is released to its action.

D is a cushion, which, as shown, consists of a hollow hemispherical ball, which preferably is made of elastic vulcanized india-rubber or gutta-percha, or other elastic vulcanized gum, and is provided with an aperture, *a*, for air to pass out of and into the chamber *b* of the cushion, should the cushion be compressed, and the force of such compression be released, thereby securing an elastic or spring action from the cushion, and for a purpose which will herein-after the better appear. This air-cushion D,

at its flat and closed side *d*, is secured in any suitable manner—as, for instance, by rubber cement or other suitable adhesive material—to the door-frame A, as shown, over the top of the door, and in this position the air-vent of the cushion is at its outer and then forward or front end.

E is a vertical arm having a nipple or knob, *f*, projecting at right angles from one of its faces *g*, and provided with an axial passage, *h*, through its length and the thickness of the arm, which air-passage is open at each end. This arm is secured by screws or any other suitable means to the door in proper position for the outer end of its knob or nipple *f* to press against the air-cushion D at and about and over its air-vent *a*, when said nipple in the closing movement of the door has come into suitable relation therewith, and thereby to force the air out of this cushion through the vent-hole *a*, and thence through the air-passage *h* of the nipple, which is coincident therewith, securing as a consequence the compression of said air-cushion, by which the door is permitted to fully close provided sufficient force is exerted thereon by the door-spring C, or otherwise. As the door is opened the nipple swings away from the air-cushion, and as it so swings air passes through the vent-hole *a* into the cushion, filling and opening it out, and thus preparing it to cushion the door, when it is next allowed to close under the action of the door-spring or otherwise. As long as the nipple is in contact with the air-cushion air communication is then had both through the air-passage of the nipple and the air vent or hole *a* of the cushion; but with the nipple off the cushion the air communication with the cushion is then through its air vent or hole *a* only. In the first instance the air-cushion is prevented from filling with air by the greater pressure of the door on the air-cushion; but in the latter instance, such pressure being removed, the air-cushion is free to fill with air, as is obvious.

In the operation of an air-cushion, D, in connection with the closing and opening movement of the door, as has been described, it is plain that with a proper relative regulation of the escape of air from the air-cushion as the door presses upon it in the closing of the door, said cushion will act to retard the

closing movement of the door from the action of its spring, while at the same time it will allow the door to come to a full close therefrom, whereby the slamming and other objectionable noises, which result from the closing of the door by the springs which are applied thereto for such purpose, will be practically and substantially obviated.

As shown, the nipple is made in two parts, one, a stud, *m*, and the other a cap, *n*, screwing on the same, leaving an air-space or chamber, *r*, between the cap and end of the stud. This air-space *r* acts more or less to cushion the air passing through the nipple from the air-cushion, and thus to the better effect the retardation of air, above described.

s is a valve-plate pivoted to the arm *E*, and provided with a series of holes, *t*, in the arc of a circle suitable for said holes to be placed in and out of communication with the air-passage *l*, through the nipple, by simply swinging said valve-plate upon its pivot in the proper direction therefor. These valve-holes may be of any number, three being shown. An adjustment of this valve-plate *s* upon the arm *E*, so that one or two or three or more or all of its valve-passages are open to the air-passage *l*, through the nipple *E*, obviously correspondingly adjusts or changes the facility with which the air can escape at the air-passage from the air-cushion in the compression of the air-cushion from the closing movement of the door, as has been described, and as a consequence the degree of the retardation of the closing of the door by the operation of the air-cushion is varied.

The air-cushion, with the arm having nipple to operate against it, as has been described, may be located at other parts of the door-frame than that described and shown. They may be also reversed in position, and, again, the cushion, together with the operating-arm and nipple thereon, may be varied in many ways in their respective constructions; but the construction shown is found practicable; and, again, it is obvious they may be used with any of the usual door-springs or other springs

suitable for such purpose, and as they are independent and separate therefrom they can be applied to doors already provided with door-springs, the importance of which is obvious.

A nipple in two parts, as described, can be readily adjusted in length, and from time to time as may be necessary to secure the requisite compression of the air-cushion when the door closes.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An attachment for doors, consisting of an air-cushion, *D*, having an air-vent, *a*, and of an arm, *E*, having an air-passage, *l*, which are attached to the door and frame, either to each, and are constructed and arranged for said arm and its passage to act upon and in relation to said air-cushion and its air-vent, substantially as and for the purpose described.

2. An attachment for doors, consisting of an air-cushion, *D*, having an air-vent, *a*, and of an arm, *E*, having an air-passage, *l*, which are attached to the door and frame, either to each, and are constructed and arranged for said arm and its air-passage to act upon said air cushion and vent, substantially as herein described, in combination with a valve-plate, *s*, having a series of holes, *t*, applied to said arm, substantially as and for the purpose described.

3. The nipple *f*, in two parts, attached together for the adjustment of the length of the nipple, and having an air-passage, *l*, in combination with an arm, *E*, carrying said nipple, an air-cushion, *D*, having an air-vent, *a*, and a door and its frame, substantially as described, for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

STEPHEN PORTER.

Witnesses:

EDWIN W. BROWN,
WM. S. BELLOWS.