(No Model.)

C. H. OCUMPAUGH.

PNEUMATIC DOOR CHECK.

No. 589,992. Patented Sept. 14, 1897.

Fig. 1.

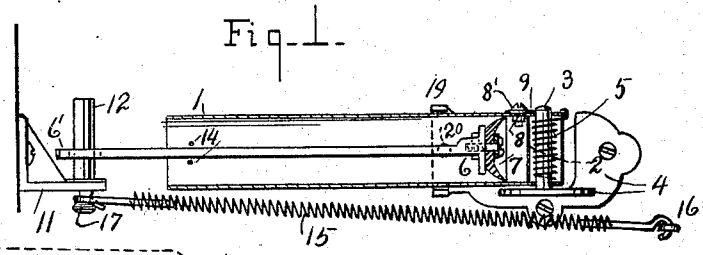


Fig. 2.

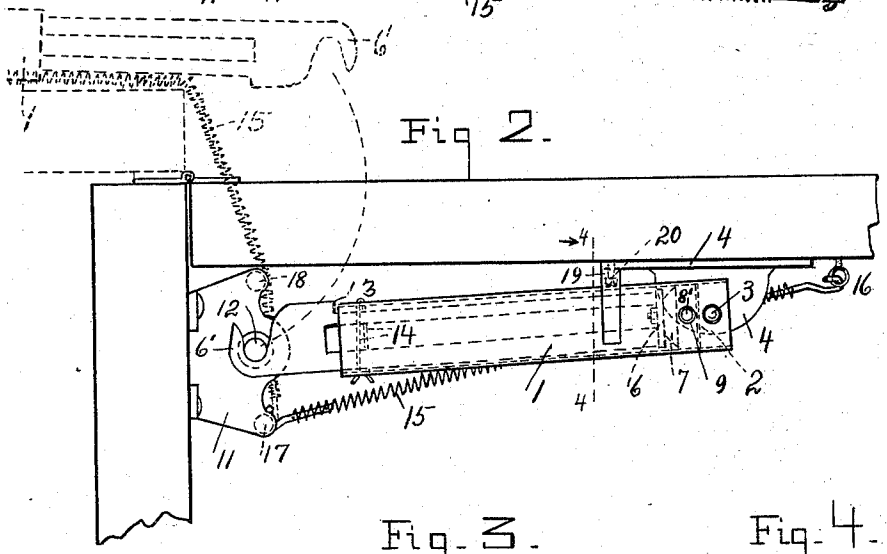


Fig. 3.

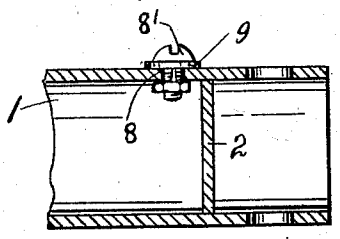
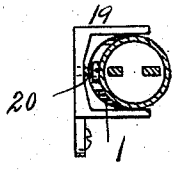


Fig. 4.



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UNITED STATES PATENT OFFICE.

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PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 589,992, dated September 14, 1897.

Application filed April 13, 1897. Serial No. 632,017. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HERBERT OCUMPAUGH, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Pneumatic Door-Checks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to pneumatic door-checks for screen or other light doors, and has for its object to produce an economical, durable, and efficient device.

The invention consists in the construction hereinafter described and pointed out.

In the accompanying drawings, Figure 1 is a front elevation of the checking device, the cylinder being shown in vertical section. Fig. 2 is a plan of the device and its connections. Fig. 3 is an enlarged section of a detail. Fig. 4 is a section on line 4 4 of Fig. 2.

Numeral 1 denotes a cylinder closed at 2 and open at its opposite end sufficient for the free passage of a plunger. It is supported upon and rotatable about a stud or pivot 3, fixed in a bracket 4, adapted to be attached to a door by screws or the like.

5 indicates a spring coiled about the pivot and having one end attached thereto and the other fastened to the cylinder. The pivot is situated in suitable openings made through the cylinder-wall, and it, together with the coil, attached as stated, constitutes a spring-hinge for the cylinder.

6 denotes the plunger, provided at its inner end with a flexible disk 7, normally fitting the cylinder in an air-tight manner.

8 is an air-vent regulable in capacity by a screw 8′, having a nut on its inner end. When the plunger is forced into the cylinder, its inward movement is opposed by the air contained in the cylinder and is checked until said air escapes at the vent, as usual in this class of devices.

The outward movement of the plunger tends to produce a vacuum behind it, which has the effect to cause a partial collapse of the rim of the flexible disk 7 of the plunger 6 and fill the cylinder with air, the vent being at such time closed or partially closed by the flexible washer 9, surrounding the screw 8′. It is not, however, essential or important to close the air-vent.

11 indicates a bracket to be secured to the door-casing, and 12 is a vertical post fixed to the bracket. Said post is normally engaged by a hook on the end of the plunger, so that when the door is opened the plunger is drawn out of the cylinder with the effect to fill it with air, as above stated. The bracket-hook is denoted by 6′, and 13 is a shoulder on the plunger to limit its stroke. The shoulder 13 is situated on an edge of the plunger and adapted to engage the edge of the cylinder whenever the plunger-hook is in position to engage the post 12. It is preferably situated at such distance from the hook that the cylinder cannot strike the bracket situated in the same plane, whereby a comparatively small bracket may be employed. It insures that the hook may engage the post smoothly and accurately and also that the piston or flexible disk 7 may not overrun the vent-valve to the injury of one or both.

The plunger preferably has a width approximately equal to the diameter of the cylinder whereby it is guided, and 14 denotes cross-wires to guide the plunger in a horizontal plane. This guide within the cylinder toward the outer end of the plunger keeps the latter, otherwise supported only by the flexible disk at its inner end, in suitable plane to properly engage the post 12.

15 denotes a door-closing spring attached to the door at 16 and to a stud 17 and adapted to be put under tension when the door is opened.

18 is a stud, which may be similar in form to stud 17, that acts as a fender to receive and support the spring 15 and prevent its being drawn sharply across the edge of the door when the latter is very widely opened, as indicated by dotted lines in Fig. 2.

Since the bracket 11 is symmetrical and has two similar studs 17 and 18 it can be used either for right or left hand doors without turning down the bracket 11, on which is post 17, as is necessary in prior devices. In the practical use of such prior devices the bearings of the check-cylinder hinge-pivot have always been broken or enlarged by the lateral movement of the cylinder, so that the opposite end of the cylinder fell below its proper level and the plunger-hook when re-

turning was carried below the post intended to engage the plunger-hook. To avoid this, guides 19, preferably two in number, are fixed to the door adjacent the cylinder-hinge to prevent any material variation of the said cylinder from its normal plane and preventing the cylinder-hinge pintle-bearings from wearing, while at the same time they allow the check to have full lateral movement. One or more of these guides are deemed important, more especially in the case of a cylinder made of cheap thin material, and for that reason having bearings more liable to be enlarged by the cylinder-hinge pivot.

Another defect of prior door-checks of the present class is that they lack suitable means of adjustment to suit doors of different thicknesses, it being customary, particularly for inexpert purchasers, to set and reset the post-bracket on the door-casing until a suitable adjustment is discovered. To avoid this, I provide an adjusting or set screw 20, whereby the cylinder can be stopped laterally and a proper relative adjustment secured for doors of any ordinary thickness without disturbing the post-bracket.

Having described my invention, what I claim is—

1. In a pneumatic door-check, the combination of a bracket having a post 12, a cylinder having a diaphragm adjacent its end and an air-vent, a plunger movable in the cylinder and adapted to engage the post, a stud passing through the cylinder on the side of the diaphragm opposite the vent, and a spring connecting the cylinder and stud to hold the cylinder to the door, substantially as described.

2. The combination of a pneumatic door-check comprising a cylinder hinged at one end to the door, and one or more guide-arms 19 fixed to the door and transverse to said cylinder, substantially as described.

3. The combination of a door, the cylinder provided with a hinge at one end connected to said door, the bracket having a post 12 and two studs and fixed to the door-casing, the cylinder-plunger having a hook and a spring fixed to one of said studs and to the door, the studs being situated oppositely with respect to the bracket-post, substantially as described.

4. The combination of a pneumatic door-check comprising a cylinder hinged to the door, means for keeping the cylinder close to the door, and an adjustable screw or stop 20 situated between the cylinder and door for regulating the distance of the cylinder from the door to suit doors of different thicknesses, substantially as described.

5. The combination of a pneumatic door-check comprising a cylinder having a hinge to connect it to a door with a plunger movable in said cylinder having a hook at its outer end, a fixed post to engage the plunger-hook, and guides 14 for the plunger fixed in the cylinder near the hooked end of the plunger, substantially as described.

6. The combination of a bracket having a post 12 with a hinged pneumatic door-check, comprising a cylinder having a vent, a plunger having a hook at its outer end and a flexible disk at its inner end, and a shoulder 13 situated on the plunger and adapted to engage the end of the cylinder to prevent the disk overrunning the air-vent and to stop the movement of the plunger when its hook is adjacent the post, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES HERBERT OCUMPAUGH.

Witnesses:
E. C. HEMPEL,
C. HERBERT CLARK.