(No Model.)

J. H. SHAW.

DOOR CHECK.

No. 478,372. Patented July 5, 1892.

Fig. 1

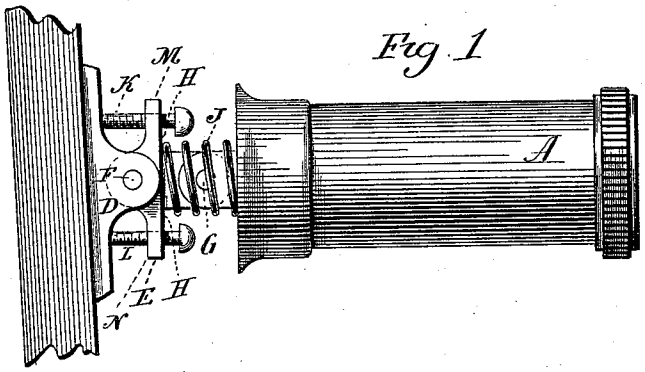


Fig. 2

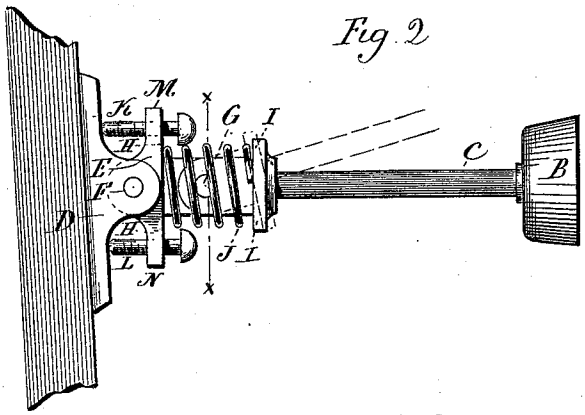


Fig. 4

Fig. 3

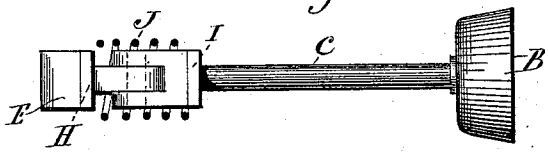


Fig. 5

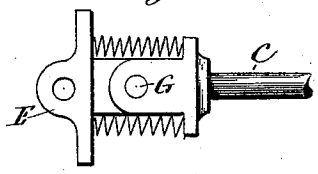


Fig. 6

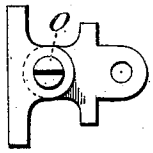


Fig. 7

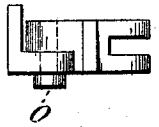
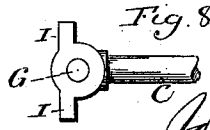


Fig. 8



Witnesses.
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Lillian S. Kilby.

John H. Shaw.
Inventor.
By attys.
Earle Seymour

UNITED STATES PATENT OFFICE.

JOHN H. SHAW, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE SARGENT & COMPANY, OF SAME PLACE.

DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 478,372, dated July 5, 1892.

Application filed April 4, 1892. Serial No. 427,677. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. SHAW, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Door-Checks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a plan view of the check complete; Fig. 2, a plan view of the piston and its connections removed from the cylinder; Fig. 3, a side view of the same; Fig. 4, a transverse section cutting on line *x x* of Fig. 2; Fig. 5, a modification in the spring; Fig. 6, a plan view, and Fig. 7 an edge view, of the bracket and saddle in a modified form; and Fig. 8, another modification.

This invention relates to an improvement in that class of door-checks which consist of a piston and cylinder, the one attached to the lintel and the other to the door, and so that in the opening of the door the two separate, and so that when the door is closed the piston will re-enter the cylinder and, compressing the air therein, will serve as a check to the closing door, so as to prevent its slamming.

In the usual application the cylinder is made fast to the door and the piston to the lintel; but the result is the same whether this be the arrangement of the piston and cylinder or whether their positions be reversed. As the door swings in opening and closing, the part attached to the door necessarily moves in the arc of a circle. If, therefore, in a closed position the piston stands with its rod in substantially the axial line of the cylinder, as it should do, the opening movement of the door will necessarily incline the piston-rod from that position, owing to the curve in which the parts move in separation, so that there is unavoidably a swinging movement of the piston until it is entirely free from the cylinder, and as the door closes, to return the piston into the cylinder, there will be a like swinging movement of the piston after it enters the cylinder and until it reaches its home position. The piston therefore must necessarily have a certain extent of freedom to swing in a plane at right angles to the axis on which the door swings, and in order to avoid undue friction between the piston and the cylinder there must be little opposition to such swinging movement of the piston, and yet the piston must be held after it leaves the cylinder, so that its proper entrance to the cylinder on the closing of the door will be assured.

Various devices have been made to yieldingly hold the piston to permit the beforementioned swinging movement and yet insure the proper entry of the piston into the cylinder. It is to this class of adjusting devices for the piston that this invention particularly relates, the object being a simple and yielding device whereby the object of the invention is accomplished; and the invention consists in the construction as hereinafter described, and particularly recited in the claims.

A represents the cylinder, which is secured to the lintel or door, as the case may be, in the usual manner and is of the usual construction.

B represents the piston, and C the piston-rod, the piston being of any of the usual constructions adapted to properly fit the interior of the cylinder.

D represents a bracket, by which the piston is secured to the door or lintel, as the case may be. In this bracket a saddle E is hung upon a pivot F, the axis of the pivot being substantially parallel with the axis on which the door swings. The piston-rod C is hung to this saddle upon a pivot G, the axis of which is parallel to the axis of the pivot F, the said pivot G being arranged between the piston and the pivot F. The piston swings freely on the pivot G from right to left.

The saddle E is constructed with shoulders H H to the right and left of the pivot, and the piston-rod is constructed with corresponding shoulders I I, the shoulders H being near the pivot F, on which the saddle is hung, and the shoulders I upon the opposite side of the pivot G, and so that as the piston swings to the right or left, turning upon its pivot G, the shoulder I on the side of the piston toward

which it is swinging will approach the shoulder H, while the shoulder I upon the opposite side of the piston will correspondingly recede from the shoulder H of the bracket on that side, and vice versa.

The hinged portion of the saddle and piston-rod—that is to say, that part of the saddle and piston-rod between the shoulders on the saddle and the shoulders on the piston-rod—is made of cylindrical shape, as represented in Fig. 4. Around this cylindrical portion a spiral spring J is arranged, one end of which bears upon the shoulders H H of the bracket, and the other end of the spring bears upon the shoulders I I of the piston-rod. The bracket and the shouldered part of the piston are narrower than the diameter of the springs, as seen in Fig. 3, so that the bearing of the spring upon the piston and bracket is to the right and left of the pivots only, thereby operating between the shoulders substantially the same as if there were two independent springs, one arranged between the two shoulders on one side of the pivot and the other spring arranged upon the opposite side of the pivot, as seen in Fig. 5, and so that if the bracket be held firm as the piston swings in one direction, as to the left, and as indicated in broken lines in Fig. 2, the spring will be compressed on the left-hand side; but so soon as the piston is free the reaction of the spring will bring the piston back into line again, the spring bearing between the shoulders of the bracket and the shoulders of the piston, so as to maintain the piston in substantially a direct line through the support of the bracket and the pivot on which the piston is hung.

It is necessary that the piston be adjustable, so that in setting the check in place the piston may be adjusted to operate properly with relation to the cylinder. This adjustment may be accomplished in various ways, one of which is illustrated in Figs. 1 and 2, and is produced by means of adjusting-screws K and L through arms M N, projecting at the right and left from the saddle, and so that by withdrawing one screw and turning the other inward the inclination of the piston with relation to the bracket may be readily varied. Other known adjusting devices may be substituted for this arrangement—as, for illustration, that seen in Figs. 6 and 7, in which the saddle and bracket are clamped together by means of a binding-screw O, which forms the pivot upon which the saddle may swing, and so that by loosening the screw the saddle may be turned to the desired position, and when that position is attained the screw turned so as to clamp the two parts firmly together. This construction of the connection between the piston and its saddle gives to the piston that freedom which is necessary in its movement into and from the cylinder, and the spring insures the normal position of the piston necessary for its proper entrance into the cylinder.

While preferring to make the shoulders on the piston between the piston and the pivot on which it is hung and the shoulders on the saddle upon the opposite side of said pivot, this relative position is not essential—as, for illustration, the shoulders on the piston may be the other side of the pivot, as seen in Fig. 8, and produce substantially the same result. It is therefore only essential to the invention that there shall be shoulders on the saddle at the right and left of the pivots and corresponding shoulders on the piston, between which shoulders of the piston and the shoulders of the saddle a spring or springs are arranged, adapted to bear on the shoulders each side of the pivots and with substantially equal force.

I claim—

1. In a door-check consisting of a cylinder and a piston and in which the piston is withdrawn from the cylinder in the opening movement of the door, the combination therewith of a saddle, the piston-rod hung to said saddle upon a pivot the axis of which is parallel with the axis upon which the door is to swing, the saddle constructed with shoulders to the right and left of the said pivot, and the piston-rod constructed with corresponding shoulders, with a spring between the shoulders of the piston-rod and the shoulders of the saddle, and a bracket to which the said saddle is adjustably pivoted, the axis of the bracket-pivot being parallel with the axis of the pivot between the saddle and piston-rod, substantially as described.

2. In a door-check consisting of a cylinder and a piston and in which the piston is withdrawn from the cylinder in the opening movement of the door, the combination therewith of a saddle, the piston-rod hung to said saddle upon a pivot the axis of which is parallel with the axis upon which the door is to swing, the saddle constructed with shoulders to the right and left of said pivot, and the piston-rod constructed with corresponding shoulders, with a spiral spring around that portion of the piston-rod and saddle between said shoulders, one end of which bears upon the shoulders of the saddle and the other end upon the shoulders of the piston-rod, and a bracket to which the said saddle is adjustably pivoted, the axis of the pivot between the saddle and bracket being parallel with the axis of the pivot between the saddle and piston-rod, substantially as described.

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

JOHN H. SHAW.

Witnesses:
NINA L. EGGLESTON,
F. S. HAMLIN.