(No Model.)

G. VINCENT.

PNEUMATIC DOOR CHECK.

No. 322,763. Patented July 21, 1885.

FIG. 1.

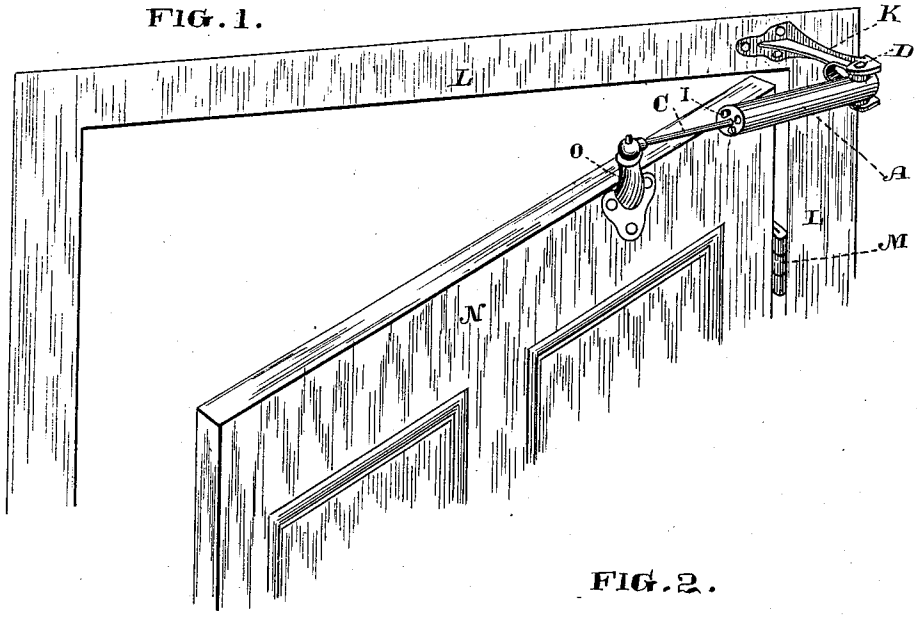


FIG. 2.

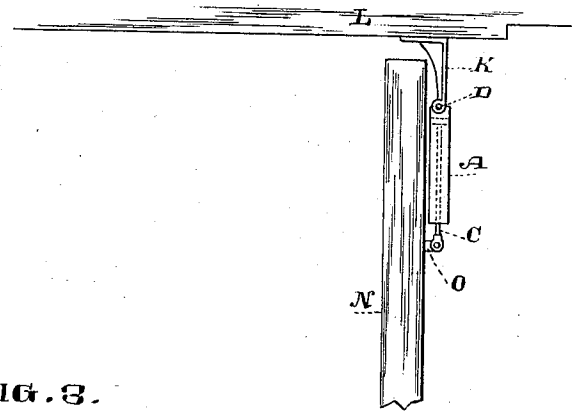
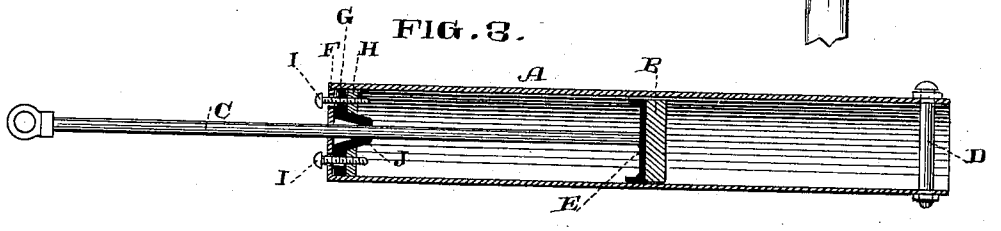


FIG. 3.



Witnesses,
Geo. H. Strong.
J. L. Norris.

Inventor,
Geo. Vincent
By Dewey & Co.
Attorneys

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GEORGE VINCENT, OF STOCKTON, CALIFORNIA, ASSIGNOR OF ONE-HALF TO GEORGE W. HAINES, OF SAME PLACE.

PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 322,763, dated July 21, 1885.

Application filed April 13, 1885. (No model.)

To all whom it may concern:

Be it known that I, GEORGE VINCENT, of Stockton, San Joaquin county, State of California, have invented an Improvement in Pneumatic Door-Checks; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a door-check of that class in which the compression of air prevents the door from slamming, and to a means by which the door is controlled.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a view showing the door-casing, a door partially open, and my device connected with it. Fig. 2 is a view showing the door opened to a position at right angles. Fig. 3 is a longitudinal section showing the interior of the cylinder.

The door to which my device is applied is provided with a spring or any similar suitable means for closing it rapidly; and in order to prevent the door from closing with a disagreeable slam I employ a cylinder having a piston-rod extending through one end, the cylinder being connected with a suitable bracket upon the casing, while the end of the piston-rod is connected with a bracket secured to the door. An air-cushion as a door-check has been employed before; but my present device differs from those heretofore constructed in all essential particulars, in the method of operation, and the means for regulating it.

A is a cylinder, made of light drawn tubing, the interior of which is perfectly true, so as to admit a piston, B, which has a rod, C, connected with it, and extending out through one end of the cylinder, which is provided with a head, as shown. The opposite end of the cylinder is left open for the free movement of air upon that side of the piston, and may have holes bored transversely through its opposite sides to receive a pin, D, by which it is connected with the bracket attached to the door-casing, as will be hereinafter described.

Upon that side of the piston B which is toward the closed end or head of the cylinder is fixed a cup-leather, E, which serves to make a tight joint when the piston is moved in that direction, and which will allow air to pass it sufficiently freely to cause little resistance when the piston is moved in the opposite direction. Within the head F of the cylinder is fixed a cup-leather, G, and inside of this is a plate, H, between which and the head the disk of the cup-leather is secured by screws I, which pass through the head and through this plate. The central opening in the head of the plate is made sufficiently large to allow the central projecting part, J, of the cup-leather to pass inwardly through it and press upon the piston-rod C, so that when the piston is being drawn toward the head F this cup-leather presses upon the sides of the rod, so as to form a perfectly tight joint without the necessity of any packing or stuffing box at the head. At the same time the cup-leather E, which is secured to the piston B, expands against the side of the cylinder so as to form a tight joint between the piston and the cylinder, and no air can escape from the cylinder while the piston is moving in that direction, except through the spaces around the screw-thread of one of the screws I, which is not screwed down closely, but may be turned back as much as is desired for the purpose of leaving such an escape.

By this construction it will be seen that when the piston is pressed inwardly from the head F toward the open end of the cylinder the cup-leather will allow air to pass into the cylinder behind the piston, so that the latter moves freely toward the open end; but as soon as the piston is moved toward the closed end of the cylinder the cup-leathers fit against the sides of the cylinder and around the piston-rod, so as to make a tight joint, and the movement of the piston within depends upon the rapidity with which the air escapes around the screw-threads, as before described.

In mounting this apparatus for use a bracket, K, is fixed to the door-casing L, so as to project in line with the hinges M, upon which the door N swings. This bracket extends outward to a considerable distance beyond the axis of the hinges. The cylinder A has its open end attached to the outer end of this bracket by a pin, D, as before described, and the piston-rod C has its outer end attached by

an eye or otherwise to a vertical pin projecting from the upper end of a bracket, O, which is secured to the door N at such a distance that when the door is closed the piston-rod C will be drawn out nearly or quite the full length, and the piston B will lie in close proximity with the closed end or head F of the cylinder.

The screws I pass far enough through the plate H, so that if the piston comes near the end of the cylinder it will strike against the ends of these screws, and thus prevent the turned-up edges of the cup-leather E from being injured by striking the end of the cylinder.

When the door is opened, it moves about its hinges M as an axis, and as the bracket K projects in line with these hinges and beyond them it will be seen that the cylinder A will turn about its fulcrum-pin D in the end of the bracket, and at the same time the piston B will be forced toward the open end of the cylinder by reason of the shortening of the distances between the bracket O upon the door and the fulcrum-pin D upon which the cylinder A swings.

When the door is released, it is closed by a spring, which is applied to it for that purpose; but the action of the cup-leathers in the cylinder causes the air to be compressed between the piston and the head of the cylinder and to escape slowly through the spaces around the loose screw I, so that the door will be closed gradually with sufficient rapidity and yet without any slam.

My device is peculiarly adapted for the use of light sash or screen doors, and it may be made very light, because all the pressure exerted upon the piston-rod is a pulling strain or tension, so that the rod may be made very slender. The cylinder may be made of very thin metal, and the whole apparatus is very light and not cumbersome.

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

1. The cup-leathers G, having the central projection, J, clasping the piston-rod, in combination with the disk H, centrally perforated to allow the projection to pass through it, and the screws I, by which the body of the cup-leather is secured between the disk and the head of the cylinder, and which also furnish means for regulating the escape of air, substantially as herein described.

2. A door-check comprising a cylinder having an open and a perforated closed end, a bracket to which the open end is pivoted, a piston having a cup-leather, a piston-rod, a cup-leather having a central projection which clasps the piston-rod, a disk, and suitable screws in the closed end of the cylinder which regulate the escape of air, and also serve as stops against which the piston strikes, all constructed and arranged to operate as herein described.

In witness whereof I have hereunto set my hand.

GEORGE VINCENT.

Witnesses:
JOHN P. COSGROVE,
JAMES A. MORRISSEY.