(No Model.) 2 Sheets—Sheet 1.

W. E. LAPE & A. J. ROSENTRETER.

PNEUMATIC DOOR CHECK.

No. 582,392. Patented May 11, 1897.

Fig. 1

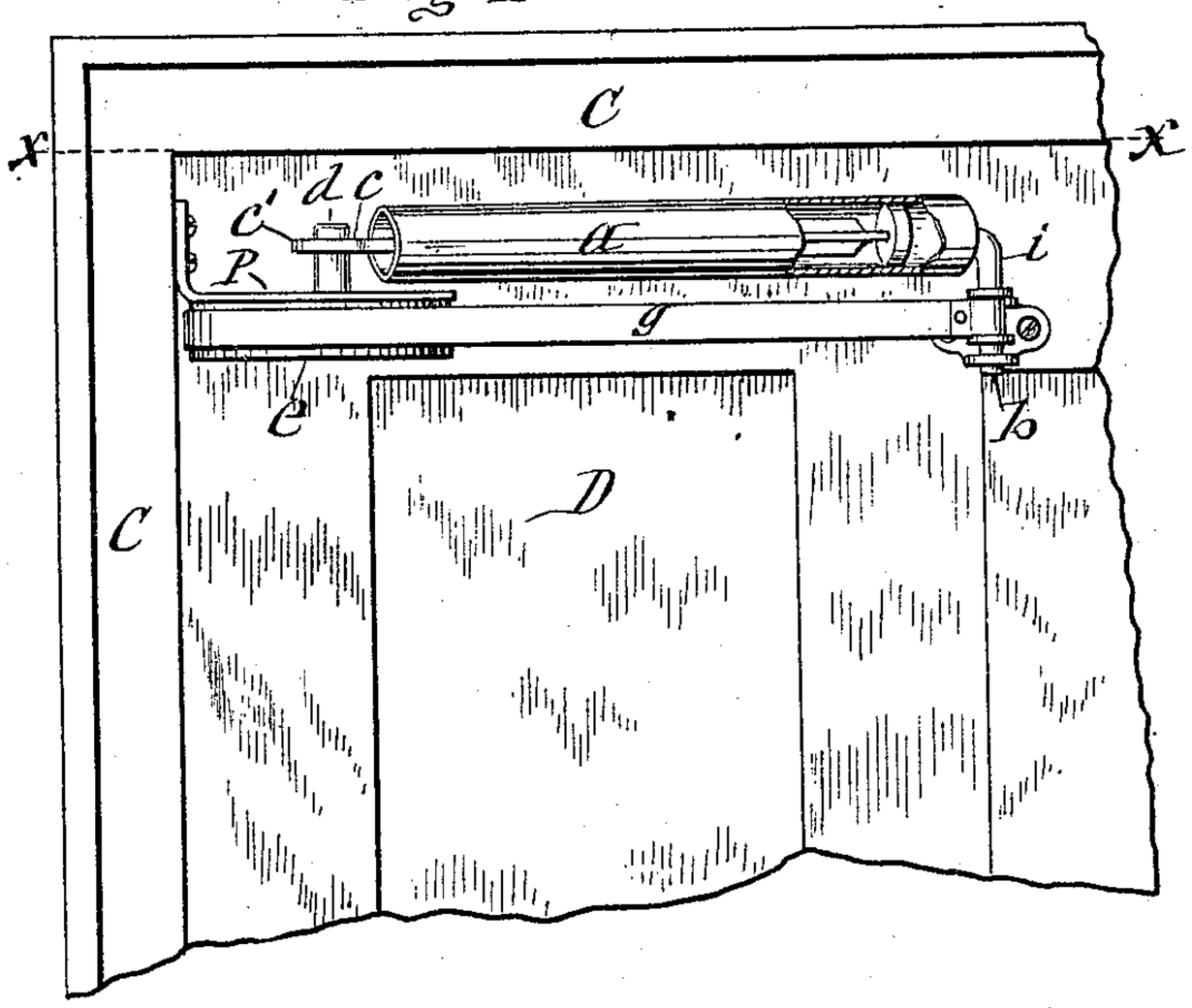


Fig. 5

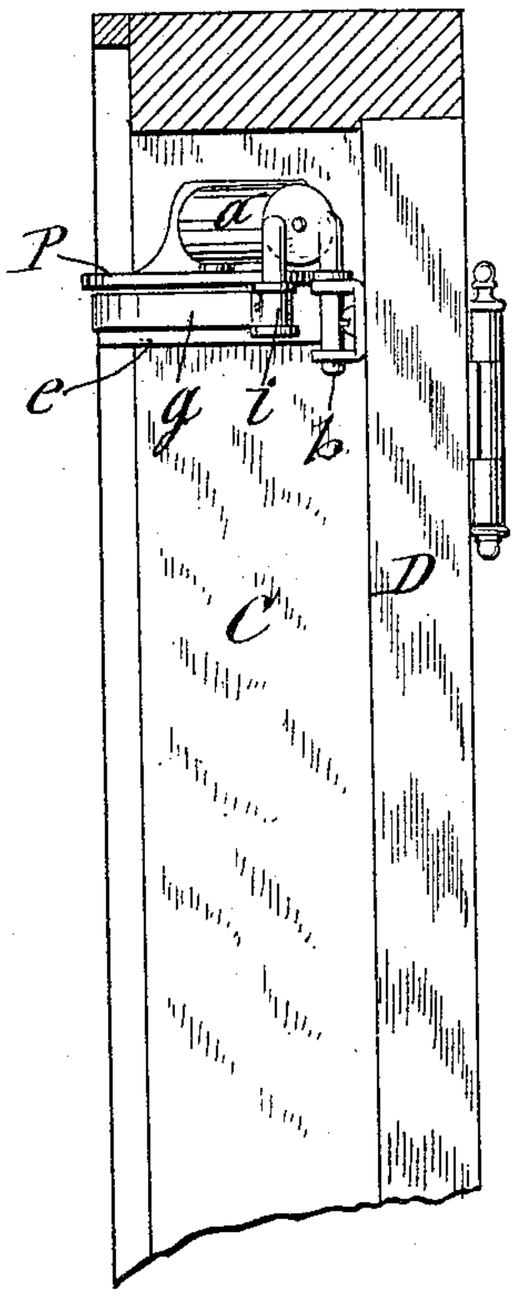
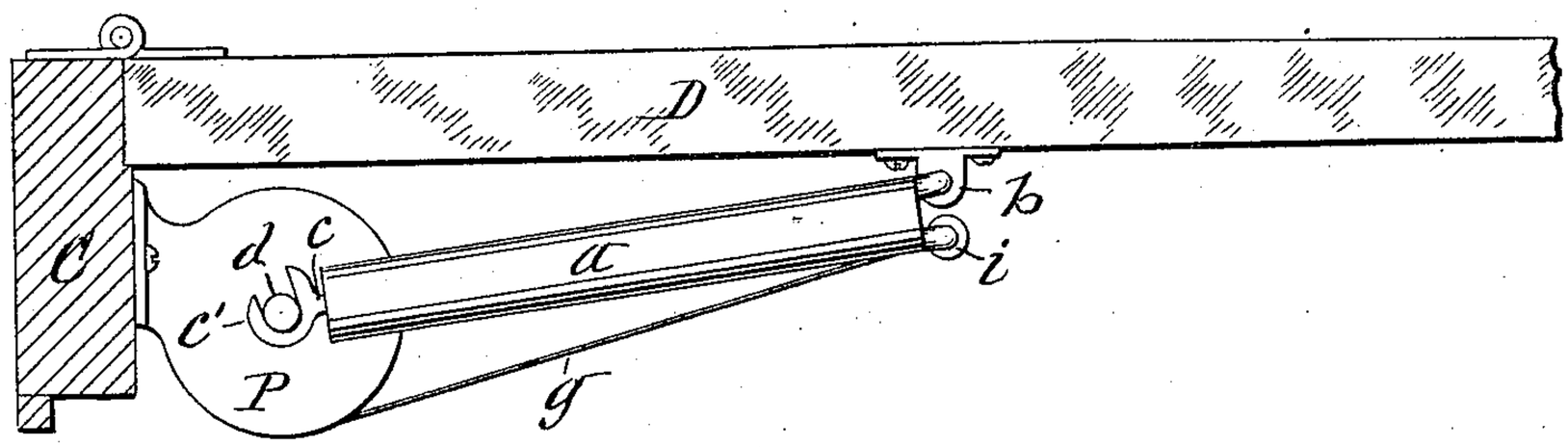


Fig. 2



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(No Model.) 2 Sheets—Sheet 2.

W. E. LAPE & A. J. ROSENTRETER.

PNEUMATIC DOOR CHECK.

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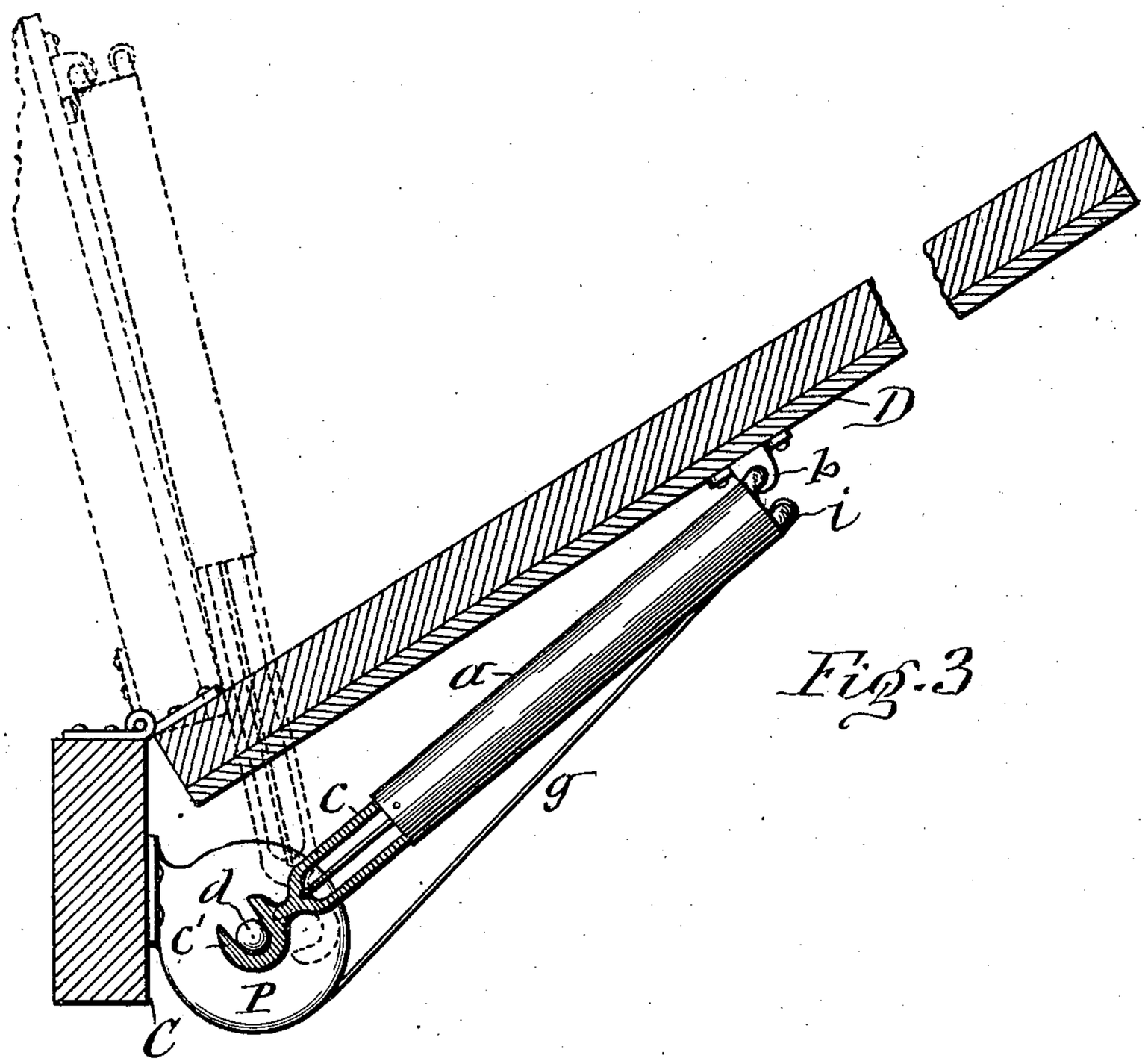
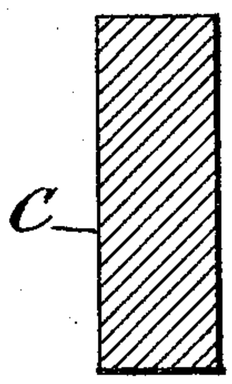


Fig. 3



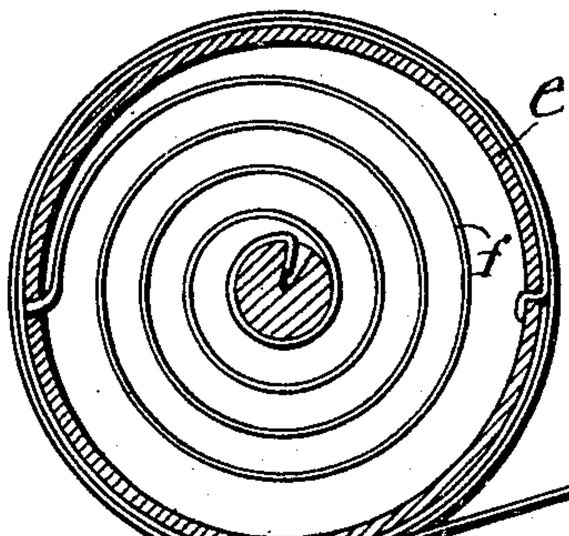


Fig. 4

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UNITED STATES PATENT OFFICE.

WILLARD E. LAPE AND ALBERT J. ROSENTRETER, OF SYRACUSE, NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO EDWIN L. LOOMIS, OF SAME PLACE.

PNEUMATIC DOOR-CHECK.

SPECIFICATION forming part of Letters Patent No. 582,392, dated May 11, 1897.

Application filed November 8, 1895. Renewed March 9, 1897. Serial No. 626,694. (No model.)

To all whom it may concern:

Be it known that we, WILLARD E. LAPE and ALBERT J. ROSENTRETER, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Pneumatic Door-Checks, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of combined door springs and check in which a spring forces the door to its closed position and an air-cylinder has its piston actuated by the movement of the door, so as to charge said cylinder with air automatically by the swinging of the door to its open position and form an air-cushion which checks the movement of the door to its closed position; and the invention consists of an improved construction and combination of its component parts, as hereinafter described, and set forth in the claim.

In the annexed drawings, Figure 1 is a face view of a portion of a door equipped with a combined door spring and check embodying our invention. A portion of the air-cylinder is broken away to show the piston. Fig. 2 is a transverse section on line X X in Fig. 1 and presenting a plan view of our invention in its normal position. Fig. 3 is a similar view showing the combined door spring and check in two of its operative positions when the door is opened. Fig. 4 is a transverse section of the spring-actuated spool; and Fig. 5 is an end view of the door, showing the connections of the air-cylinder to the door and to the spring-actuated band which draws the door to its closed position.

Similar letters of reference indicate corresponding parts.

D represents the door, which is hinged at one of its vertical edges in the usual manner.

a denotes the air-cylinder, which is hinged or pivotally connected at its closed end, preferably to a suitable bracket *b*, secured to the face of the door a suitable distance from the door-casing C. The outer end of the piston-rod *c* is provided or formed with a laterally-bifurcated head *c'*, by which said rod is normally connected to a lug or spur *d*, projecting from a plate P, which is rigidly secured to the door-casing C.

In the approach of the door toward its extreme open position the side of the piston-rod comes in contact with the face of the door and is thereby crowded laterally and caused to throw its bifurcated head out of engagement with the lug *d*, as illustrated by dotted lines in Fig. 3 of the drawings. The object of said detachable connection of the piston-rod is to dispense with the use of the toggle-arms and other protruding arms and levers employed in prior constructions, whereby our improved door-check can be used between two doors arranged one in front of the other and in proximity thereto, as in the arrangement of a screen-door with the door proper.

To the plate P is pivoted a spool *e*, which is actuated by a coiled spring *f*, attached at one end to said spool and at the opposite end to the pin which is fastened to the plate P, and has the spool pivoted to it. Upon this spool is wound a band or chain *g*, which is fastened at one end to the spool and at the opposite end to the end of the cylinder *a*, adjacent to the bracket *b*. This latter attachment of the band or chain is made at a point *i*, which is eccentric to the axis of the cylinder and farther from the door than the attachment of the cylinder, as clearly shown in Figs. 2 and 5 of the drawings. The purpose of the attachment of the band *g* to the cylinder *a* at the point *i* is to cause the spring-restrained band *g* to exert a strain on the cylinder *a*, so as to hold the bifurcated head *c'* of the piston-rod normally engaged with the lug *d*.

The operation of our described pneumatic door-check is as follows: In swinging the door to its open position the attachment of the piston-rod *c* to the lug *d* causes the piston of the cylinder *a* to be drawn outward, as shown in Fig. 3 of the drawings. The cylinder is provided with a suitable valve in its closed end similar to other cylinders of this class, and in the aforesaid movement of the piston the cylinder is charged with air through the said valve. At the same time a draft is exerted on the band or chain *g*, which turns the spool *e* and thereby winds up the spring *f*. As soon

as the door is released from pressure toward its open position the resilience of the spring causes the spool *e* to draw, by means of the band or chain *g*, the door to its closed position and at the same time exert a lateral strain on the cylinder *a*, so as to insure the engagement of the bifurcated piston-head *c'* with the lug *d*, which latter is concentric to the axis of the spool *e*. In this latter movement of the door the attachment of the piston-rod to the lug *d* causes the piston-rod to be pushed toward the closed end of the cylinder *a*, whereby its movement is resisted by the air contained in the cylinder, and thus the movement of the door is checked and then allowed to gradually move to its closed position by the gradual escape of the air from the cylinder.

What we claim as our invention is—

The combination with the door-casing and door, of a bracket secured on the casing, a spring-actuated spool pivoted to said bracket, the air-cylinder hinged to the door, a piston-rod detachably connected to the aforesaid bracket, a band or chain wound upon the spool and connected to the hinged end of the cylinder to hold said rod normally in its engagement with the aforesaid bracket, said rod being thrown out of engagement by contact with the face of the door in the approach of the door toward its extreme open position, and said band or chain drawing the door to its closed position and the rod to its connection with the bracket to operate the rod in the cylinder to check the door in its latter movement as set forth.

In testimony whereof we have hereunto signed our names this 2d day of November, 1895.

WILLARD E. LAPE. [L. S.]
ALBERT J. ROSENTRETER. [L. S.]

Witnesses:
J. J. LAASS,
M. A. LEYDEN.