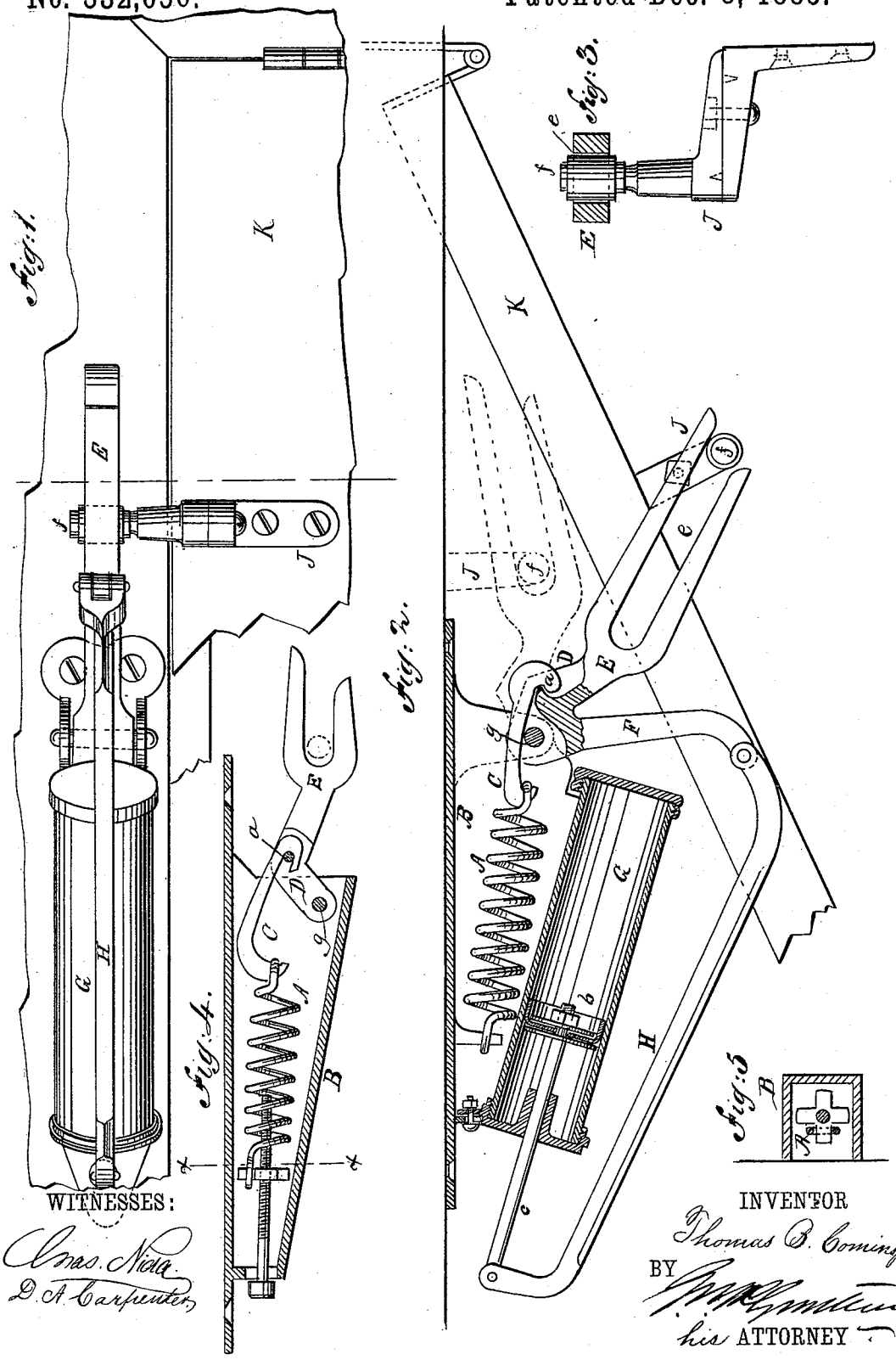
(Model.)

T. B. COMINS, Jr.

DOOR CHECK AND CLOSER.

No. 332,056. Patented Dec. 8, 1885.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS B. COMINS, JR., OF NEW YORK, N. Y.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 332,056, dated December 8, 1885.

Application filed June 19, 1885. Serial No. 169,163. (Model.)

To all whom it may concern:

Be it known that I, THOMAS B. COMINS, Jr., of the city, county, and State of New York, have invented a certain new and useful Improvement in Door Checks and Closers; and I declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention is in the nature of an improvement in door checks and closers; and the invention consists in a door check and closer constructed in the manner and with the arrangement and combination of the several parts hereinafter shown, described, and claimed.

In the accompanying sheet of drawings, Figure 1 shows my device when applied to a closed door. Fig. 2 is a view of same, partly in section, when applied to a door in the state of being closed. Fig. 3 is a detail view of bracket. Fig. 4 is a sectional view of my device without the pneumatic cylinder. Fig. 5 is a cross-sectional view in the line *x x*, Fig. 4.

Similar letters of reference indicate like parts in the several figures.

This invention relates particularly to devices for closing open doors, either in combination with devices to check the slamming of the door or not. It is common knowledge that when springs are applied to doors for the purpose of closing them the tension of the spring is usually increased by opening the door, and its recovery from such tension constitutes the force that shuts the door, usually with a slam.

To obviate increasing the tension of the spring, except to an extent just sufficient to close the door, and to prevent its slamming is the purpose of this invention, mainly.

To this end I construct my door check and closer with a spring, A, preferably inclosed in a box, B, having the shape substantially as is shown in Fig. 4. This spring is fastened at one end within the box B and to the box. The other end of the spring is connected to a link, C. The end of this link opposite that to which the spring A is so connected is pivoted to a bell-crank lever, D, at *a*. This bell-crank lever D, pivoted at *g* to the box as a support or base, is provided with a slotted lever, E, and an arm, F. To the box B is secured an air-cylinder, G, with a piston, *b*, and piston-rod *c*. To the outer end of this piston-rod is pivoted one end of a connecting-link, H. The other end of this link is pivoted to the upper end of the arm F of the bell-crank D.

Now, when the box B, containing the herein-before-described mechanism, is fixed to the frame-work above the door at a place, say, about one-third of the distance from the hinged side of the door, a right-angular bracket, J, is screwed fast to the door K in such position relatively to the slot *e* in the bell-crank lever D as to cause the end *f* of the bracket J to begin to enter into said slot *e* when the door K is about three-fourths closed, as is shown in Fig. 2. As the end *f* of the bracket begins to enter the slot *e*, the lever E of the bell-crank D is in the position shown in Fig. 2; but as the door K continues to be closed, by hand or otherwise, the end *f* of the bracket J is forced to travel in the slot *e* toward the base of the slot, and while so traveling the slotted lever E is gradually forced inward until the pivot *g* of the bell-crank D and the pivot at *a*, which unites the link C to the bell-crank D, pass out of a direct or straight line passing through them and the axis of the spring A, when immediately the elastic force of the spring A (which has been distended by the opening of the door) causes the lever D to be drawn suddenly inward. The slotted lever E, bearing against the end *f* of the bracket J, forces the door K, to which that bracket is secured, to close with a sudden impulse that latches the nose of the lock in its keeper. When the door is closed, the position of the lever E and the bracket J is shown in dotted lines in Fig. 2.

In opening the door the action of the bracket J is to throw outward the lever E, and through the link C extending the spring A, the outward movement of the lever E continuing until the pivots *g* and *a* are again out of line or have passed to the other side of a line drawn through said pivots and the axis of the spring, and when in that position the lever E remains as shown in solid lines in Fig. 2, the end *f* of the bracket J leaving the slot *e* of the lever E. As the door is still further opened, the spring A can be no further extended or unduly strained, and its elastic force thereby weakened, since all connection between the door and the spring is severed. Now, when the door is opened and

the lever E assumes the outward position last described, and shown in Fig. 2, the arm F of the bell-crank lever D, through the connecting-link H, forces outward the piston-rod *c* and piston *b* in the cylinder G, in which outward position they remain until the door is closed in the manner hereinbefore described, when, by the action of the spring A when closing the door, the piston *b* is forced inward or to the other end of the cylinder G, causing the air which is confined between the piston and the cylinder-head to act as a cushion, and thereby prevent the too sudden slamming of the door, the piston being allowed to travel to the end of the cylinder slowly by the slow escape of the confined air between the interstices of the screw-threads which hold the cylinder-head in place.

It is obvious that where the noise of the sudden slamming of the door is immaterial the cylinder G and its connections may be dispensed with, the door check and closer then presenting the appearance shown in Fig. 4.

It is obvious that instead of slotting an arm of the bell-crank lever D the arm may be without a slot, and a slot may be formed in the bracket J, producing thereby the same effect as that described.

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

1. A door check and closer comprising a bell-crank lever, D, the forked arm E of said lever pivoted at *g* to a suitable base, the spring A, connected at *a* to said lever, and a bracket, J, which in the operation of the door entirely leaves said forked arm at certain times, substantially as and for the purpose described.

2. In a door check and closer, in combination, a bell-crank lever, D, with slotted arm E, and arm F, pivoted to connecting-link H, cylinder G, piston *b*, piston-rod *c*, spring A, and bracket J, as and for the purpose described.

3. In a door check and closer, in combination, a spring, A, a bell-crank lever, D, and a slotted bracket fixed to the door and engaging with said bell-crank lever, substantially as and for the purpose described.

THOMAS B. COMINS, JR.

In presence of—
D. A. CARPENTER,
L. MONTEMAR.