No. 842,121. PATENTED JAN. 22, 1907.

R. R. SMITH.

DOOR CHECK.

APPLICATION FILED APR. 1, 1905.

Fig. 1.

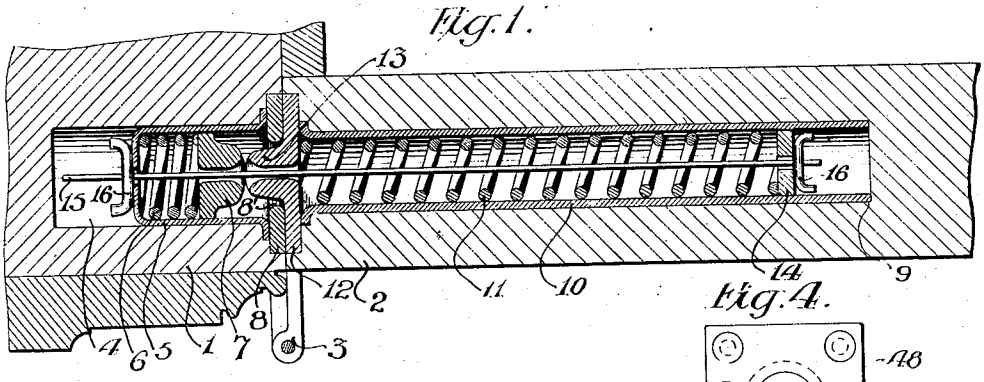


Fig. 4.

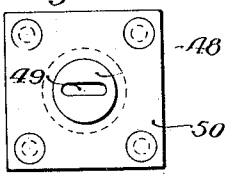


Fig. 2.

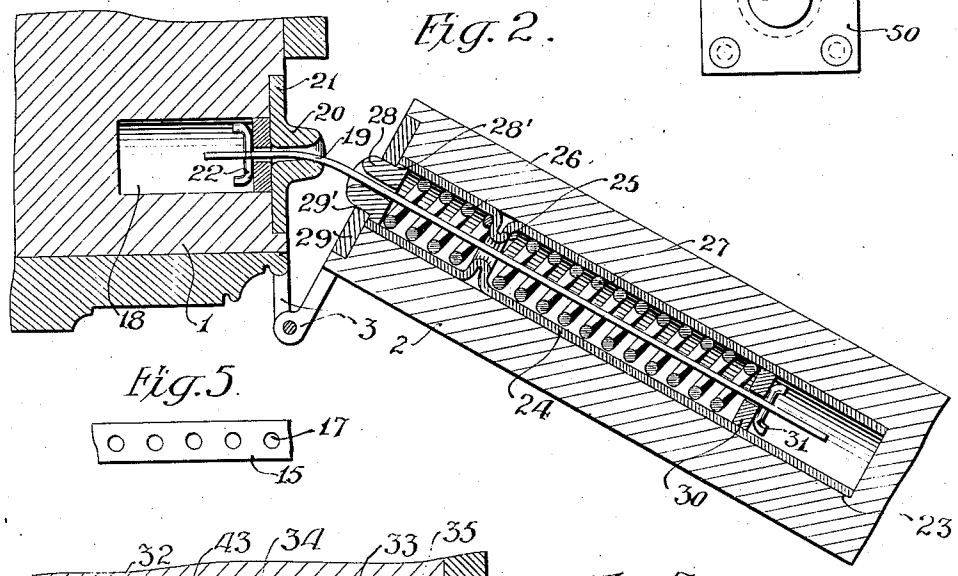
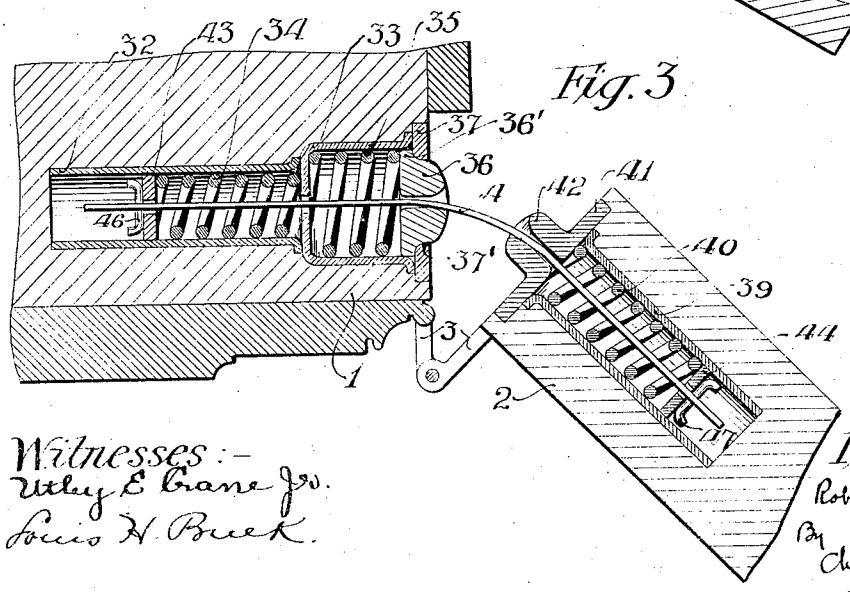


Fig. 5.

Fig. 3.



Witnesses:-
Utley E Crane Jr.
Louis W Breck.

Inventor
Robt. R. Smith.
By Chas. N. Butler
Attorney

UNITED STATES PATENT OFFICE.

ROBERT R. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

DOOR-CHECK.

No. 842,121. Specification of Letters Patent. Patented Jan. 22, 1907.

Application filed April 1, 1905. Serial No. 253,249.

To all whom it may concern:

Be it known that I, ROBERT R. SMITH, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Door-Checks, of which the following is a specification.

This invention provides improved mechanism for effecting a cushioned checking and closing of doors or the like, and it is designed for effecting these results by simple and inexpensive means readily applied and operating in an improved manner.

In the accompanying drawings, Figure 1 represents a longitudinal sectional view of the invention applied to a door that is closed. Fig. 2 represents a longitudinal sectional view of a modified form of the invention in its relation to a door that is open. Fig. 3 represents a longitudinal sectional view of a further modification of the invention in relation to a door that is open. Fig. 4 represents a face view of a bumper-plate, and Fig. 5 represents a plan view of a section of the tie-spring.

In the drawings the part 1 represents the jamb-casing, the part 2 the door, and the parts 3 the hinges connecting them.

As shown in Fig. 1, the recess 4, formed in the jamb-casing, has a thimble or cylindrical socket 5 set therein, which contains a coiled spring 6 and a plunger 7, the several parts being held in place by a plate 8, with an aperture 8′ therein, set in the casing. The recess 9 in the door has therein the tube 10, which contains the coiled spring 11, the spring being held in place by a plate 12, set in the door and having the bumper 13 thereon. A piston 14 in the tube 10 bears against the spring 11, and a tie-spring 15, passing through the parts described, is engaged to the thimble and the piston by keys 16 passed through holes 17 in the respective ends thereof, as shown in Fig. 5. When the door is opened, the tie-spring acts, through the piston, to compress the spring 11, and the spring 6, released by the withdrawal of the bumper, throws the plunger outwardly into the aperture 8′. When the open door is released, the action of the spring 11 closes it, the final movement being checked by the impact of the bumper against the plunger, whose inward movement is checked by the spring 6 of lower strength than that of the spring 11.

As shown in Fig. 2, a recess 18 in the jamb-casing receives the end of the tie-spring 19, which passes through the bumper 20 on a plate 21, secured to the casing, and is anchored by a key 22 passing through the end thereof. The recess 23 in the door receives a tube 24, having the ring-bearing 25 crimped therein, this bearing supporting the springs 26 and 27, contained in the tube. The spring 26 is held in the tube by the plunger 28, which works therein, and the plate 29, which is secured to the door, the plate having the aperture 29′ through which the plunger projects and the plunger having the flange 28′, which engages the plate. The spring 19 extends through the plunger and the coiled springs in the tube, being engaged to the piston 30, engaging the spring 27, by the key 31. When the door is opened, the tie-spring acts, through the piston, to compress the spring 27; and when the open door is released the expansion of the compressed spring closes it, the closing action being checked by the impact of the bumper against the plunger and the resistance of the spring 26, the latter having a sufficiently lower strength than the spring 27 to permit the door to close automatically.

As shown in Fig. 3, the jamb-casing is recessed to receive the tube 32 and the thimble or socket 33. The tube contains the spring 34, and the socket contains the spring 35, the springs bearing upon opposite sides of the base of the socket. The spring 35 is held in the socket by the plunger 36, which works therein, and the plate 37, secured to the casing, the plate having the aperture 37′, in which the plunger works, and the plunger having the flange 36′, which engages the plate. A tube 39, set in the door, contains the coiled spring 40, which is held in place by the plate 41, having the bumper 42 thereon. A piston 43, bearing on the spring 34, and a piston 44, bearing on the spring 40, are connected by the tie-spring 45, passing therethrough and through the intermediate parts of the apparatus, the tie-spring being engaged to the pistons by means of the keys 46 and 47. When the door is opened, the tie-spring acts, through the pistons, to compress both springs 34 and 40, and when the opened door is released both of the compressed springs act to close it, the final closing being checked by the impact of the bumper against the plunger and the resistance of the spring 35.

Fig. 4 illustrates in plan view both the plunger projecting through the plate and the plate with the bumper thereon, the part 48, having the slot 49 therein, being fixed to the

plate 50 when the former is a bumper and movable therein when it is a plunger. It will be observed that the bumper which projects from either the door or the jamb provides a bearing on which the tie-spring acts to turn the door upon its hinges, avoiding the dead-center action that would otherwise take place if the door were opened so that the connected members of the hinges lay in a common plane.

Having described my invention, I claim—

1. In apparatus of the class described, a stationary part, a swinging part, a tie-spring, means for securing said tie-spring to said parts, said means comprising a coiled spring which acts to draw said swinging part toward said stationary part, and a second coiled spring and means coacting therewith, to check the movement of said swinging part toward said stationary part, substantially as specified.

2. In apparatus of the class described, a plunger, a bumper, a coiled spring actuating said plunger in one direction, a second coiled spring, mechanism comprising a tie-spring whereby said second coiled spring presses said plunger and bumper together, and means for supporting said springs, plunger and bumper in operative relation to each other, substantially as specified.

3. In apparatus of the class described, a stationary part, a swinging part, a bumper fixed to one of said parts, a plunger engaged in reciprocating relation to the other of said parts, a coiled spring actuating said plunger, and mechanism comprising a second coiled spring and a tie-spring for drawing said parts together, substantially as specified.

4. In apparatus of the class described, a jamb, a door hinged thereto, a bumper fixed to one of said parts, a plunger having a movable connection with the other of said parts, means for cushioning the movement of said plunger, a tie member and a coiled spring connected with said door and jamb, substantially as specified.

5. In apparatus of the class described, a movable part, a stationary part, an apertured plate and a plunger connected to one of said parts, a plate having a bumper thereon fixed to the other of said parts, a coiled spring for actuating said plunger, and mechanism comprising a second coiled spring and a tie-spring for drawing said movable part toward said stationary part, substantially as specified.

6. In apparatus of the class described, a stationary part, a movable part hinged thereto, a recess in each of said parts, a coiled spring in each of said recesses, mechanism connected with one of said coiled springs and with the stationary part to draw said movable part toward said stationary part, and mechanism connected with the other of said springs to check the action of said movable part, substantially as specified.

7. In apparatus of the class described, a stationary object provided with a socket, a movable object provided with a socket, a spring supported in one of said sockets, a plunger movable in said last-named socket, and actuated in one direction by said spring, a closing-spring supported in one of said sockets, a bumper secured to one of said objects, a tie-spring and means to connect the same to the fixed object and the closing-spring of the movable object to draw said plunger and bumper together.

In testimony whereof I have hereunto set my hand, this 29th day of March, 1905, in the presence of the subscribing witnesses.

ROBT. R. SMITH.

Witnesses:
ROBERT JAMES EARLEY,
UTLEY E. CRANE, JR.