No. 754,629. PATENTED MAR. 15, 1904.

J. A. YOUNG.

DOOR CHECK AND CLOSER.

APPLICATION FILED MAY 16, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

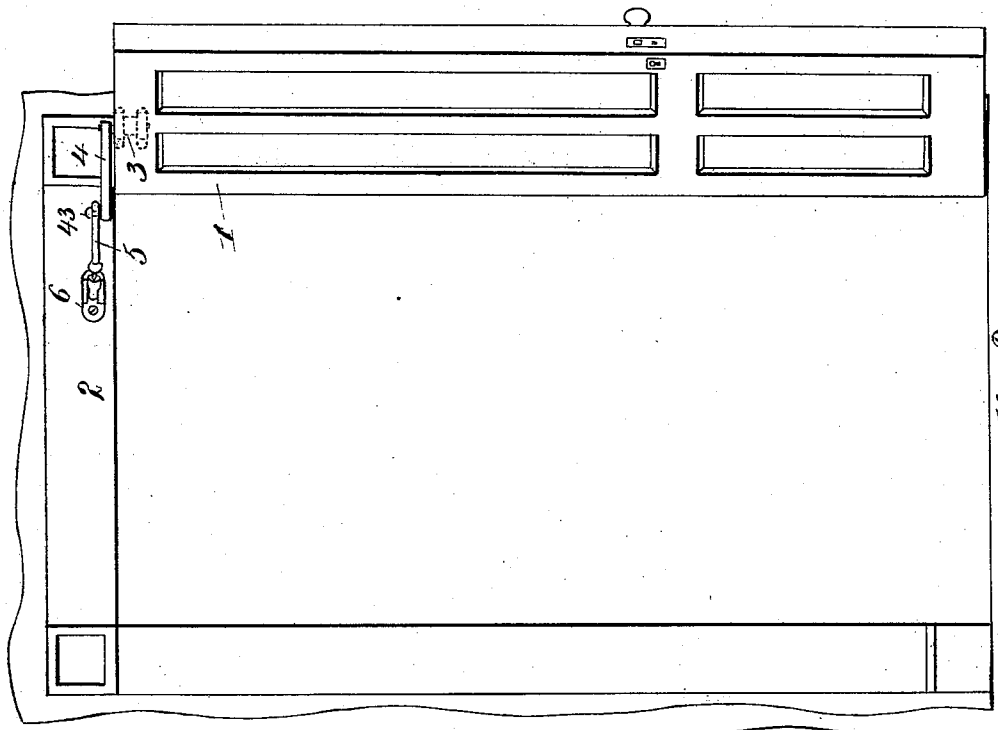


Fig. 2.

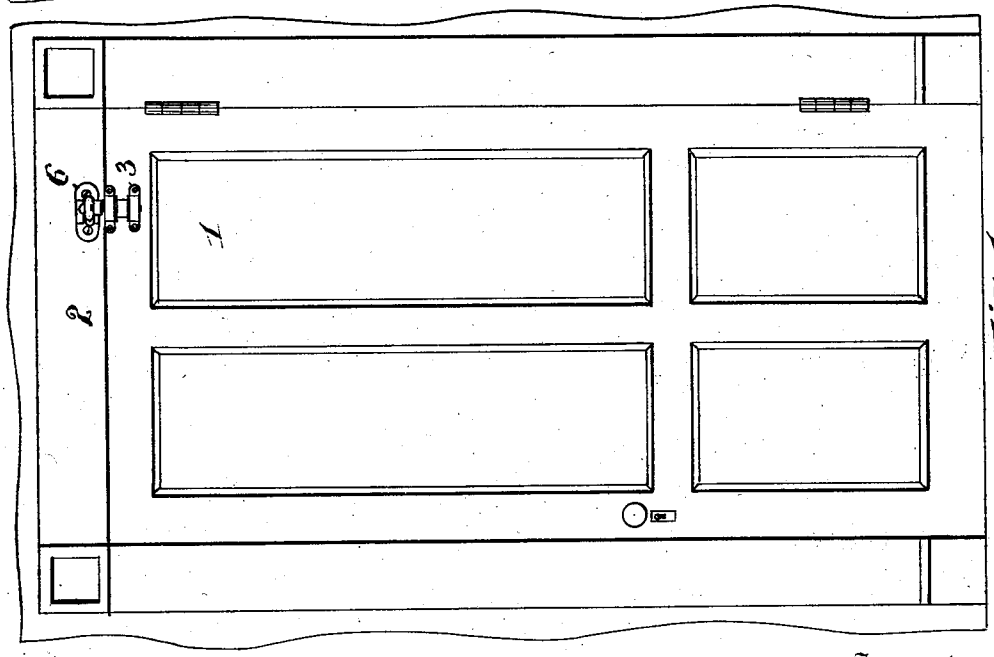


Fig. 1.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 6.

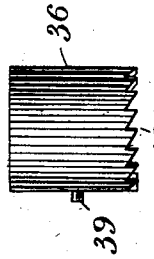


Fig. 7.

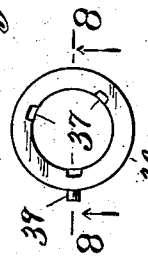


Fig. 8.

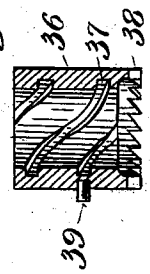


Fig. 9.

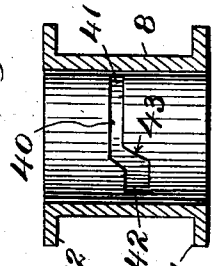


Fig. 4.

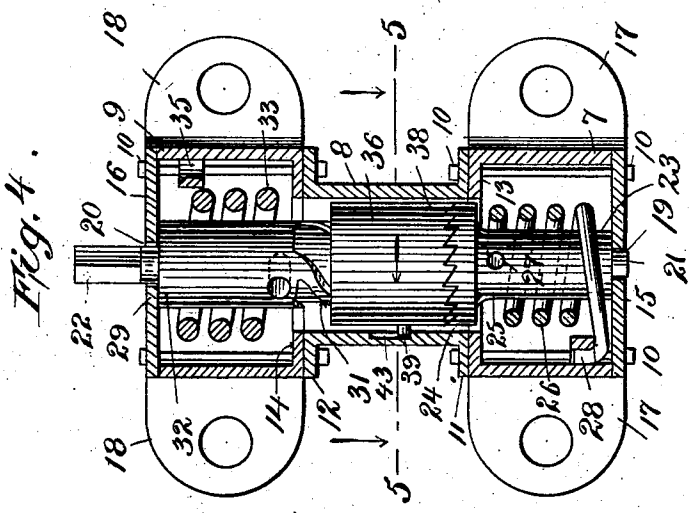


Fig. 10.

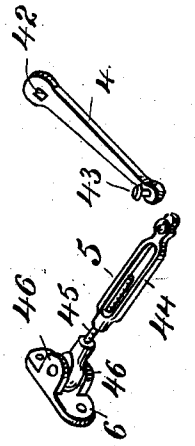


Fig. 3.

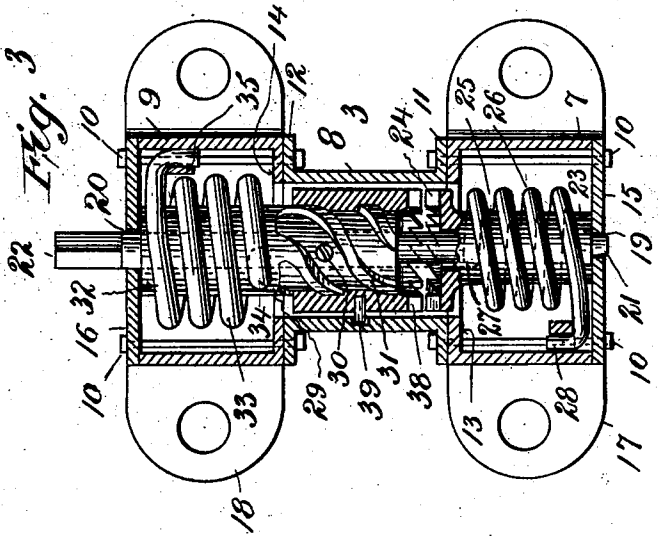
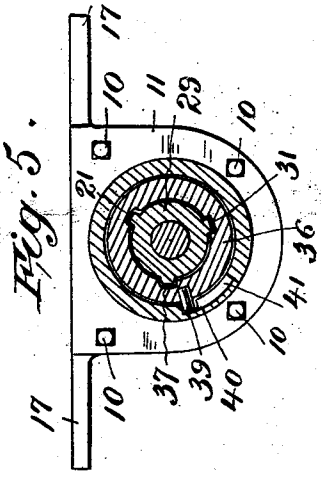


Fig. 5.



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No. 754,629. Patented March 15, 1904.

UNITED STATES PATENT OFFICE.

JOSEPH A. YOUNG, OF NEW YORK, N. Y.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 754,629, dated March 15, 1904.

Application filed May 16, 1903. Serial No. 157,356. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. YOUNG, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, county of Queens, and State of New York, have invented a new and useful Improvement in Automatic Door Checks and Closers, of which the following is a specification.

Heretofore it has been common to provide springs of this class with pneumatic means, such as a cylinder with a piston and valve mechanism, which cushion the door, so as to prevent the spring from causing it to slam. The objections to this device are that the mechanism is expensive and complicated and easily put out of order because the valve becomes defective.

The object of my invention is to secure all the advantages of the pneumatic device without the disadvantages due to its cost and delicacy, and this I accomplish by an entire departure from the structures heretofore in vogue and substituting in lieu thereof a mechanism in which a controlling-spring closes the door, while a secondary and opposing spring automatically operates to prevent the door from being slammed.

For a more particular description of one embodiment of my invention reference is to be had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is an elevation showing my improved device applied to a closed door. Fig. 2 shows the same when the door is open. Fig. 3 is a section through the casing, showing the mechanism in the position assumed when the door is open. Fig. 4 is a similar view showing the position of the mechanism when the door is closed. Fig. 5 is a section taken on the line 5 5 of Fig. 4 and looking in the direction of the arrows. Fig. 6 is an elevation of a portion of the clutch mechanism. Fig. 7 is a plan view of the same. Fig. 8 is a longitudinal section taken on the line 8 8 of Fig. 7 and looking in the direction of the arrows. Fig. 9 is a section showing the central portion of the casing. Fig. 10 is a perspective view showing the actuating-links.

Throughout the various views similar reference characters designate similar parts.

The embodiment of my invention hereinafter described may be attached to any door 1 and the frame 2 by means of the casing 3 and screws, and the arms 4 and 5, and a bracket 6, to which the arm 5 is pivotally connected and which is fixed to the frame 2 by screws or other suitable means at a point above the door and near the side to which its hinges are attached.

The casing 3 comprises upper, lower, and intermediate sections 7, 8, and 9, respectively, and these are fixed together by means of bolts 10, which pass through flanges 11 and 12 on the section 8, internal flanges 13 and 14 on the sections 7 and 9, respectively, and caps 15 and 16, also on said sections. Projecting ears 17 and 18 protrude from the said sections 7 and 9 to enable the casing 3 to be fixed to the door 1.

The caps 15 and 16 are provided with central perforations 19 and 20, through which passes a spindle 21, the upper end 22 of which is made square or a non-circular shape in cross-section. Resting on the cap 15 and pivotally mounted on the spindle 21 is the ratchet 23, which is provided with ratchet-teeth 24 at its upper extremity and is reduced below these teeth at 25 to form a barrel, which the spring 26 surrounds and to which one end of the spring is secured at 27. The other end of the spring 26 is bent upwardly and rests in a seat 28, fixed to the vertical wall of the section 7. From this it is evident that when the ratchet 23 is moved from the position shown in Fig. 1 this movement is against the action of the spring 26. The upper portion of the spindle 21 below the cap 16 is surrounded by the sleeve 29, which is fixed to the spindle by means of a set-screw 30, and the lower part of the sleeve 29 is made screw-threaded at 31 with multiple threads of a large pitch. The upper portion of the sleeve 29 forms a barrel

32, which a spring 33 surrounds and which is secured at one end, 34, to the sleeve 29 and at its other end is secured in a seat 35, which is fixed to the section 9.

A nut 36 with threads 37 is fitted to the screw-threads 31 on the sleeve 29, and at its lower end the nut 36 is provided with ratchet-teeth 38, which are adapted to engage the teeth 24 of the ratchet 23. The external surface of the nut 36 is cylindrical and is proportioned so that it will turn freely in the section 8. A pin 39 projects from this cylindrical surface and engages a cam-groove 40 in the walls of section 8, and this groove has two horizontally-disposed parts 41 and 42, which are united by a diagonal connection 43. The cam-groove 40 and the pin 39 are so disposed that when the pin 39 is in the part 42 the ratchet-teeth 24 and 38 engage, and when the pin 39 engages the part 41 the said ratchet-teeth are separated, so that the nut 26 and ratchet 23 may have relative motion without either noise or interference with each other.

The ratchet 23, sleeve 29, and nut 36 form a clutch, and while I prefer a clutch of this type, because the members positively engage each other, it is obvious that any equivalent and suitable mechanism may be employed.

The squared end 22 of the spindle 21 fits an opening 42 in the arm 4, and the other end of the said arm is pivotally connected at 43 with the part 44 of the arm 5. The part 44 is adjustably connected by screw-threads with a spindle 45, one end of which is pivoted between the perforated ears 46 of the base 6. The arm 5 may be adjusted at length by simply turning the part 44 on the spindle 45.

From the foregoing the operation of my improved mechanism will be readily understood. Assuming the parts to be in the positions indicated in Figs. 1 and 4, when the door 1 is opened the nut 36 is turned in the direction of the arrow by the spindle 21 and sleeve 29, so that the pin 39 rides in the cam-groove 40 from the part 42 to the part 41, thereby separating the ratchet-teeth, as stated above, and the spring 26 is released and assumes the normal position, (indicated in Fig. 3,) while the door is opened against the more powerful spring 33. When the door 1 is released, the spring 33 moves it toward its closed position, while the nut 36 turns in the direction opposite to that indicated by the arrow in Fig. 4, and the pin 39 rides in the cam-groove 40 from the part 41 to the part 42, and then the ratchet-teeth 24 and 38 engage and the spring 26 is put under increasing tension against the action of the decreasing tension of the spring 33, and the cam-groove 40 and springs 26 and 33 are so proportioned and arranged that the door 1 is closed automatically without a jar, because it is checked by the spring 26. The engaging threads 31 and 37 insure prompt engaging of the ratchet and operation of the device.

While I have shown and described one embodiment of my device, it is obvious that it may be embodied in other equivalent forms without departing from its spirit or sacrificing any of its advantages.

Having thus described my invention, what I claim is—

1. In an automatic door-closing device, means for closing a door, a spring, and cam-controlled means for applying a torsional stress upon said spring for checking the door and preventing it from slamming.

2. In an automatic door-closing device, a spring-actuated means for closing a door, and spring-actuated and cam-controlled means for checking, the door and preventing slamming through a torsional stress upon said latter spring.

3. In an automatic door-closing device, means for closing a door, a spindle, a spring, and cam-controlled means for connecting the spindle and spring so that a torsional strain of said spring operates to check the door to prevent it from slamming.

4. In an automatic door-closing device, means for closing a door, a spindle, a ratchet secured to said spindle, a second ratchet loosely mounted on said spindle and adapted to automatically engage said first-mentioned ratchet, and means for causing said ratchets to engage and disengage.

5. In an automatic door-closing device, a casing, a spindle mounted to rotate therein, a sleeve on said spindle and fixed thereto, a closing-spring connecting said casing and sleeve, a ratchet supported by said sleeve, a second ratchet mounted on said spindle, means for causing said ratchets to engage and disengage, and means engaging said second ratchet to cause the same to oppose the action of said closing-spring.

6. In an automatic door-closing device, a casing with a cam on its inner surface, a spring mounted to rotate therein, and a sleeve fixed to said spindle and provided with internal screw-threads and adapted to engage the threads on said sleeve and having rigid teeth on its lower end, and a pin projecting from said nut, and engaging said cam, a ratchet loosely mounted on said spindle and adapted to engage said teeth, and a spring connecting said ratchet and casing.

7. In an automatic door-closing device, a casing, a spindle, a spring interposed between said casing and spindle to close a door, a second spring secured to said casing and means for causing the springs to intermittently and torsionally oppose each other.

8. In an automatic door-closing device, a

casing, a spindle, a clutch mounted on said spindle, two springs secured to said casing, one end of each being secured to a clutch member, and means for automatically uniting and separating said clutch members so that the springs will intermittently oppose each other.

9. In an automatic door-closing device, a casing, a spindle, a clutch, springs secured to the respective clutch members and the casing, and means for causing said springs to intermittently oppose each other.

Signed at the city, county, and State of New York this 15th day of May, 1903.

JOSEPH A. YOUNG.

Witnesses:
CHAS. G. HENSLEY,
SOPHIE SETOSKY.