

No. 708,586.

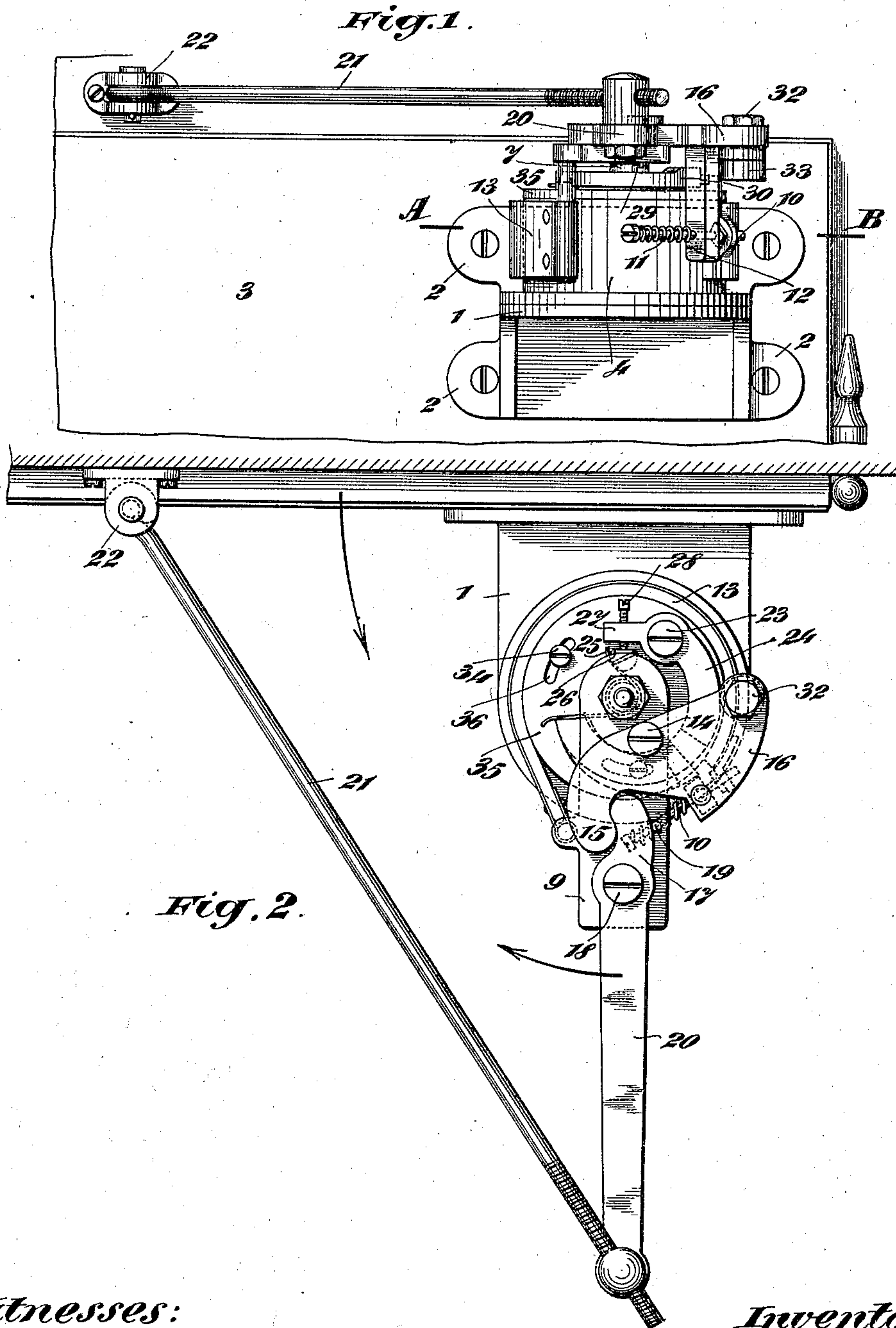
Patented Sept. 9, 1902.

X. REICHLIN.
DOOR CHECK AND CLOSER.

(Application filed May 6, 1902.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:

Otto
P. Lommers

Inventor:

Xaver Reichlin
by *Heinrich Orth*

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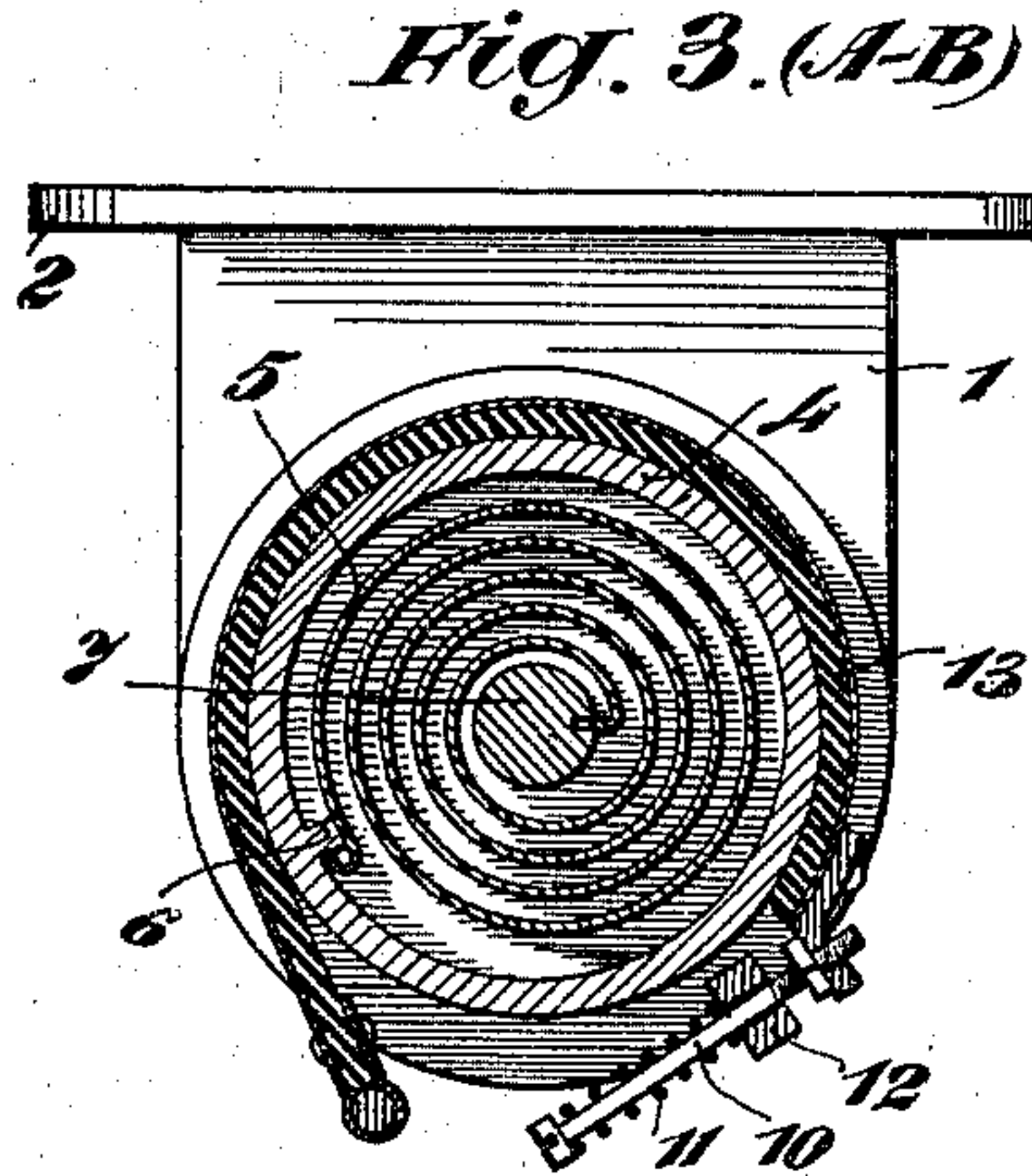
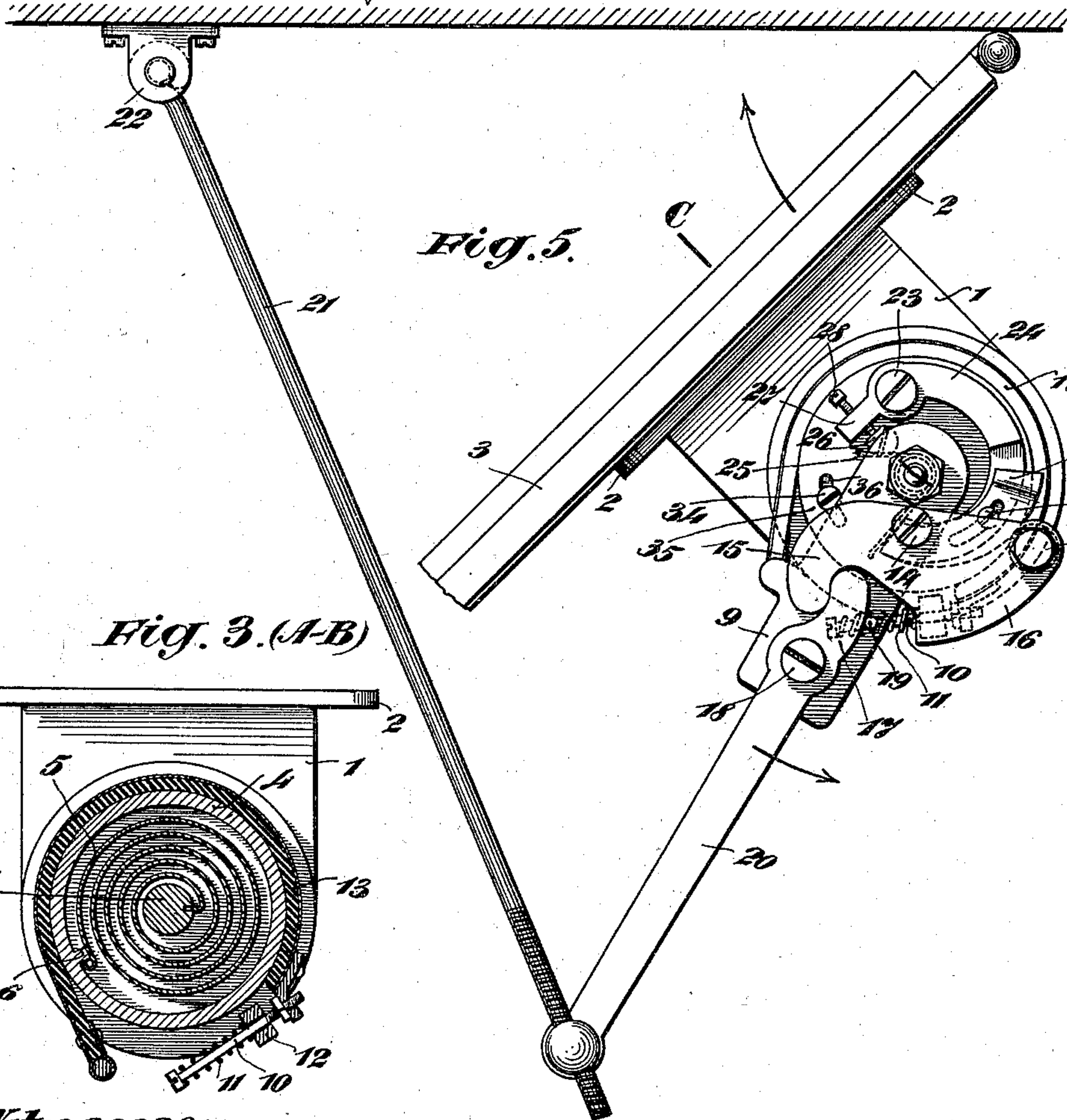
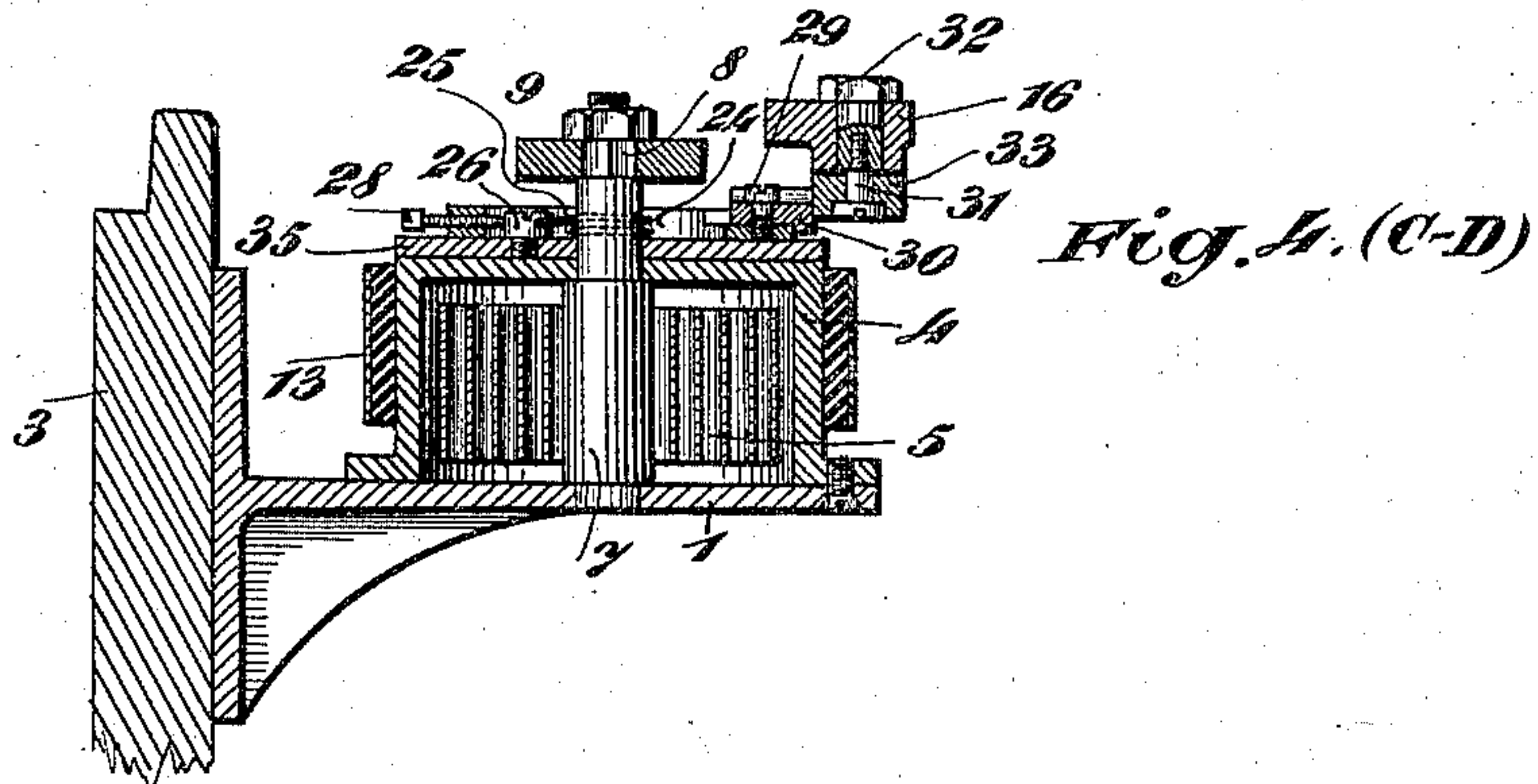
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(No Model.)

2 Sheets—Sheet 2.



Witnesses:

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Inventor:
Xaver Reichlin.

by *Chas. W. Hoff*

UNITED STATES PATENT OFFICE.

XAVER REICHLIN, OF HORGEN, SWITZERLAND, ASSIGNOR TO ANTONY SCHORNO, OF IRVINGTON, NEW JERSEY.

DOOR CHECK AND CLOSER.

SPECIFICATION forming part of Letters Patent No. 708,586, dated September 9, 1902.

Application filed May 6, 1902. Serial No. 106,143. (No model.)

To all whom it may concern:

Be it known that I, XAVER REICHLIN, a citizen of the Republic of Switzerland, residing at Horgen, Switzerland, have invented new and useful Improvements in Door Checks and Springs, of which the following is a complete specification.

The present invention has reference to improvements in automatic door checks and springs and relates more especially to a check mechanism in combination with the ordinary spiral-spring type of closing mechanism for the purpose of preventing the door from being violently slammed shut.

The improvement essentially consists in a band-brake influencing the mainspring-drum, which is automatically actuated upon the door being shut, so that a braking action is set up, which, however, just before the door finishes its closing movement is relieved, allowing the door to shut quickly and surely.

In order to make the invention more readily understood, I will describe it with reference to the accompanying sheets of drawings, in which—

Figure 1 represents a side elevation of my improved mechanism. Fig. 2 is a plan view of same, the door being closed. Fig. 3 shows a horizontal section on line A B of Fig. 1. Fig. 4 is a vertical section through the spring-drum. Fig. 5 represents a plan view of the mechanism with the door in partly-open position.

Upon a plate 1, attached by means of flaps 2 to the door-wing 3, is secured the drum 4, containing the main spiral spring 5, one end of which is fastened to the projection or nose 6 and the other end of which is secured to the pin 7, rotatably journaled in the plate 1 and in the cover of the drum. Upon the upper square part 8 of this pin 7 rides an arm 9, to which is secured by means of a bolt one end of a brake-band 13, surrounding the spring-drum 4, the other end of which is yieldingly held by means of a screw-bolt 10, a helical spring 11 surrounding the latter, said bolt freely passing through an arm 12, that in turn is secured to the arm 16 of the brake-lever 15 16, pivoted at 14. The arm 15 of this brake-lever contains a recess in which takes the shorter arm 17 of a double-armed tension-lever 17 20, pivoted at 18, a stop 19 limiting its movement in one direction. To the longer

arm 20 of this tension-lever is swiveled the rod 21, the other end of which is pivoted to the door-casing, as at 22.

Upon a plate 35 with slot 36, adjustably secured upon the cover of the spring-drum by means of the screw 34, is secured an arm 24, pivoted at 23. A spring is coiled about the pin 7, one end 25 of which bears against the screw 26 and the other end of which rests against the said arm 24, as is shown in dotted lines in Fig. 5, keeping the arm 24 in such a position that a set-screw 28, threaded into the extension 27 thereof, rests against the head of the screw 26. The free end of the arm 24 carries a wedge-piece 30, adjustably secured thereto by means of screw 29 and extending into the path of a roller 33, secured to the lever 15 16 by means of the screws 31 32. The arm 24 and wedge-piece 30 are preferably, though not necessarily, formed separately. The arm 24 being pivoted near one end at 23 will give as the roller passes over it during the opening of the door and be slightly rotated on its pivot 23 against the stress of the spring coiled about the pivot 7. Thus the cam or wedge-piece 30, either on the arm 24 or adjustably secured to said arm, will ride under the roller. Upon the door being opened the roller bears against the wedge-piece 30, causing the arm 24 to turn about its pivot 23. At the same time the main spiral spring, which when the door is still closed is already under tension, is still further contracted by the movement of the tension-lever 17 20 in the direction of the arrow, Fig. 2. If now the open door is let go, it will shut under the action of the mainspring 5, the roller 33 actuating the wedge-piece 30, so that the brake-lever is turned, tightening the brake-band. By reason of the pressure between roller 33 and wedge-piece 30 the arm 24 is slowly moved backward, the arm 24 not being in this instance easily moved out of the way of the roller for the reason that the roller rides over the increasing cam-surface and exerts a pressure in a line substantially through the pivot 23, so that just before the door is wholly closed the roller 33 leaves the wedge-piece, and the door can now close quickly, yet without slamming, owing to the brake-power no longer being exerted. If the attempt should be made to violently close the door, the rod 21 would tend to turn the arm 20 of the tension-lever in the direction of the

arrow, Fig. 5, causing the arm 17 to press against the arm 15 of the double-armed lever 15 16 and turn the latter, so that the brake-band is tightened around the spring-drum, with the result of checking the door's movement.

In order to vary the period of actuating the brake, either the plate 35 after loosening the screw 34 is turned one way or the other and secured again by tightening the screw 34, so that the relative position of the wedge-piece to the roller is altered, or the wedge-piece is shifted accordingly on the arm 24. The braking power may be regulated either by more or less tightening in advance the brake-band 13 by means of the screw-bolt 10 or by adjusting the screw 28. If the latter is screwed back more or less, the arm 24, with the wedge-piece 30, is turned about its pivot 23, so that the wedge-piece extends more or less into the path of the roller 33, causing the brake-lever to be attracted correspondingly. I may state that the wedge-piece is located with reference to the pivot of the arm 23 so that the common normal of pressure at the point of contact between roller 33 and wedge passes near the pivot 23, whereby for pressing back the arm 24 only a relatively small component of force results, with the effect of causing very slow movement of the arm 24 and sure attraction of the brake-lever.

What I claim, and desire to secure by Letters Patent, is—

1. In door checks and springs, the combination of the main spiral spring mechanism, a brake-band surrounding the drum of the said mainspring mechanism, a brake-lever connected to one end of the said brake-band, and a wedge-piece to actuate the said brake-lever, for the purpose of at first braking the closing door and then releasing it again, substantially as described.

2. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever connected to one end of the said brake-band, a wedge-piece cooperating with the said brake-lever, a screw-bolt connecting the said brake-band with the said brake-lever, and an interposed spring, for the purpose of altering the tension of the said brake-band, substantially as set forth.

3. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever connected to one end of the said brake-band, a wedge-piece cooperating with the said brake-lever, a plate carrying the said wedge-piece and turning about the mainspring-pin, and means for adjustably securing the said plate, for the purpose of varying the relative position of the said wedge-piece to the said brake-lever, substantially as and for the purpose set forth.

4. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-

lever connected to one end of the said brake-band, a wedge-piece cooperating with the said brake-lever, and an arm pivotally secured upon the mainspring-drum and carrying the said wedge-piece, and means for adjusting the said wedge-piece upon the said pivoted arm, substantially as and for the purpose specified.

5. In door-checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever connected to one end of the said brake-band, a wedge-piece cooperating with the said brake-lever, an arm pivotally secured upon the mainspring-drum and carrying the said wedge-piece, means for adjusting the said wedge-piece upon the said pivoted arm, and means for altering the starting position of the said pivoted arm, for the purpose of reducing or enhancing the braking action, substantially as set forth.

6. In door checks and springs, the combination of the mainspring mechanism, a brake-band surrounding the spring-drum, a brake-lever adjustably connected to one end of the said brake-band, an adjustable wedge-piece cooperating with the said brake-lever, and a tension-lever, adapted to actuate the said brake-band upon the door being violently slammed, substantially as described.

7. In a door-check, the combination with a drum, a spring therein, a lever, a roller on the lever and a cam-surface on which said roller acts to check the closing of the door, substantially as set forth.

8. In a door-check, the combination with a drum, a spring therein, a lever, a roller on the lever and a pivoted cam-surface on which the roller acts to check the closing of the door, substantially as set forth.

9. In a door-check, the combination with a drum, a spring therein, a lever, a roller on the lever and a pivoted adjustable cam-surface on which the roller acts to check the closing of the door, substantially as set forth.

10. In a door-check, the combination with a drum, a spring therein, a lever, a roller on the lever and a pivoted adjustable cam-surface on which the roller acts to check the closing of the door, and means to alter the point at which the door is checked, substantially as set forth.

11. In a door-check, the combination with a drum, a lever, a roller on the lever, and a cam pivoted on the drum and having a long and a short arm, said roller adapted to engage the long arm to check the closing of the door, and a spring to hold the cam in operative position and allow it to move out of the path of the roller when the door is opened, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

XAVER REICHLIN.

Witnesses:

MORITZ VEITH,

A. LIEBERKNECHT.