F. A. ANDERSON.

CONTROLLING DEVICE FOR SWINGING DOORS.

APPLICATION FILED MAY 13, 1915.

1,179,384. Patented Apr. 18, 1916.

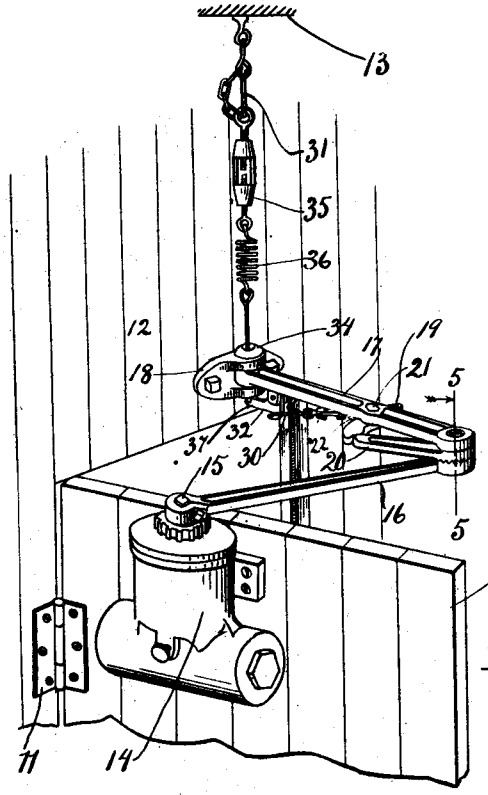

Fig. 1.

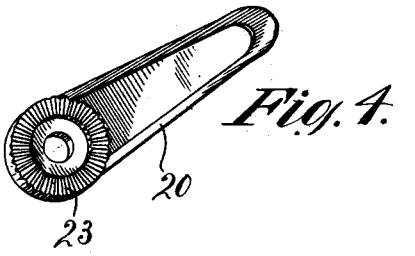

Fig. 4.

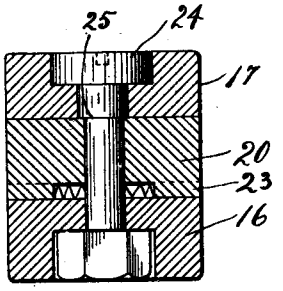

Fig. 5.

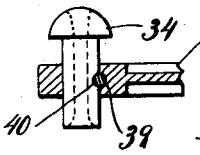

Fig. 6.

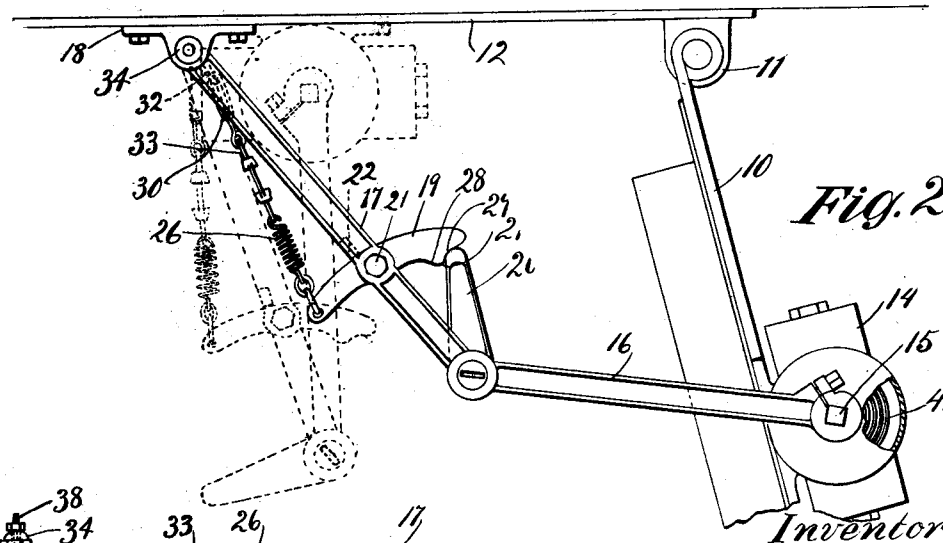

Fig. 2.

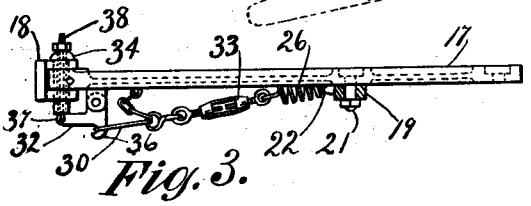

Fig. 3.

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UNITED STATES PATENT OFFICE.

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CONTROLLING DEVICE FOR SWINGING DOORS.

1,179,384. Specification of Letters Patent. Patented Apr. 18, 1916.

Application filed May 13, 1915. Serial No. 27,765.

To all whom it may concern:

Be it known that I, FREDERICK A. ANDERSON, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Controlling Devices for Swinging Doors, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to controlling devices for swinging doors.

As to certain features of the apparatus shown herein, this application is a continuation of my application for patent on controlling device for swinging doors, filed May 23, 1912, Serial No. 699,210.

More particularly the invention relates to door checks and closers having provision for holding the door open.

The object of the invention is to provide a door check and closer equipped with latch mechanism for holding the door open in any adjusted position and provided with attachments for insuring automatic release of the latch to permit the closing of the door in case of fire.

In the accompanying drawings, Figure 1 is a perspective view showing details of a swinging door and of the adjacent parts of a building, the door being equipped with a door check and closer embodying the features of improvement provided by the invention, Fig. 2 is a plan view of the door check and closer illustrated in Fig. 1, details of the door and casing also being shown, Fig. 3 is a side elevation showing one of the arms or links of the door check and closer with the associated elements partly in section, a modified application of the apparatus being illustrated, Fig. 4 is a detail perspective view showing one of the parts of the latch mechanism, Fig. 5 is a detail sectional view taken on the line 5—5 of Fig. 1, and Fig. 6 is a detail view partly in section showing the manner in which one of the pivot bolts may be secured in place.

A swinging door is represented at 10. One of its hinges is indicated at 11 and details of the door frame or casing and of the ceiling of the room appear at 12 and 13, respectively.

In carrying out the invention, a door check and closer device comprising a frame or casing 14, a spring actuated spindle 15, an arm 16, and a link 17 is preferably employed. In the arrangement shown, the casing 14 is attached to the door 10. The arm 16 is mounted upon the spindle 15 in the usual way and the link 17 extends between the outer end of the arm 16 and a bracket 18 which is secured to the door frame or casing 12 above the door opening. These parts serve for closing the door without slamming, in a well known manner.

The door is held open by a latch which serves to prevent relative movement between the several parts of the door check and closer device. In the preferred arrangement this latch is so constructed as to serve only for restraining the automatic movement of the parts of the door check and closer device and yields to a forcible initial closing movement of the door. As shown, the latch comprises a swinging latch arm 19 and abutment 20, the latter being adjustable to provide for the operation of the latch to hold the door open in any selected position. The latch arm 19 is pivotally mounted upon the link 17. For this purpose the latch arm is secured against the under side of the link 17, intermediate its ends, as by a pivot bolt 21 which passes vertically through the latch arm and through the link. To limit the swinging of the latch arm 19 in one direction, a stop lug 22, is desirably formed upon the underside of the link 17. When the latch arm, as 19, is mounted on the link 17, the latch abutment, as 20, is desirably carried by the arm 16. In this instance the abutment 20 is mounted upon the outer end of the arm 16, in line with the pivotal connection of the arm 16 and link 17, and projects into the angle between these parts. The position of the abutment arm 20 is adjusted by forming the contiguous parts of this element and the arm 16 with complementary toothed surfaces, as 23. When this is done, the pivot bolt, as 24, employed for uniting the arm 16 and the

link 17, is provided with an annular shoulder 25. The bolt 24 thus serves to firmly clamp the abutment 20 upon the end of the arm 16, in any angularly adjusted position without interfering with the swinging of the link 17 upon the bolt as a pivot.

The latch arm 19 is controlled by a spring, as 26. This spring normally reacts upon one end of the latch arm for holding the arm against the stop lug 22. The other end of the latch arm 19 is formed with a lateral projection 27 for coöperating with the abutment 20. In order that the latch arm 19 may yield to permit the passage of the abutment 20, upon the application of sufficient force in both the opening and closing movements of the door, both faces of the lateral projection 27 are rounded as indicated at 28 and 29, Fig. 2.

The release of the latch arm 19 in case of fire is accomplished by providing an anchor for the spring 26 in which a fusible link, as 30 and 31, is employed. Fig. 1 illustrates the use of two such links. In that case the link 30 serves for the release of the latch in event heated air currents pass through the door opening. The link 31 serves to release the latch as heat air accumulates adjacent the ceiling 13. As shown, a bell crank lever 32 is pivotally mounted upon the link 17 adjacent its inner end. A flexible connector 33 in which the fusible link 30 is interposed unites one arm, as 36, of the bell crank lever 32 with the spring 26. The other arm, as 37, of the bell crank lever 32 extends below the pivot bolt, as 34, which serves for connecting the link 17 with the bracket 18. When the two fusible links, as 30 and 31, are both employed, the pivot bolt 34 is desirably made tubular. A flexible connector 35, including the fusible link 31 and, if desired, a spring 36, is extended through the bore of the bolt 34 and connects the arm 37 of the bell crank lever 32 with the ceiling 13. If the fusible link 30 is alone to be relied upon for the release of the latch arm 19 in case of fire, the arm 37 of the bell crank lever 32 may be rigidly secured against the lower end of the pivot bolt 34, as by an eye-bolt 38 (Fig. 3) which is hooked into the arm 37 of the bell crank lever and extends through the bore of the pivot bolt 34. In either case displacement of the pivot bolt 34 is conveniently prevented by the use of a pin 39 which is passed through the link 17 and enters a notch 40 formed in the side of the pivot bolt 34 intermediate its ends.

The spring for actuating the spindle 15 may be of any well known form and is housed within the casing 14. It is indicated in the drawings at 41.

I claim as my invention.—

1. In combination with a swinging door and its casing, a pair of pivotally connected parts having a spring actuated relative swinging movement for closing the door and one of said parts being pivotally attached to the door casing, a detent movably mounted on the last mentioned one of said parts, an elastic connection between the detent and a fixed support extending in line with the axis of pivotal attachment of the part on which the detent is mounted to the door casing, and a stud mounted on the other one of the first mentioned parts cooperating with the detent to hold the first mentioned parts against relative movement.

2. In combination with a swinging door and its casing, a pair of pivotally connected parts having a spring actuated relative swinging movement for closing the door and one of said parts being pivotally attached to the door casing, a detent movably mounted on the last mentioned one of said parts, a thermally controlled elastic connection between the detent and a fixed support extending in line with the axis of pivotal attachment of the part on which the detent is mounted to the door casing, and a stud mounted on the other one of the first mentioned parts coöperating with the detent to hold the first mentioned parts against relative movement.

3. In combination with a swinging door and its casing, a pair of pivotally connected parts having a spring actuated relative swinging movement for closing the door and one of said parts being pivotally attached to the door casing, a detent movably mounted on the last mentioned one of said parts, an elastic connection between the detent and a fixed support extending in line with the axis of pivotal attachment of the part on which the detent is mounted to the door casing, and a stud adjustably mounted on the other one of the first mentioned parts coöperating with the detent to hold the first mentioned parts against relative movement.

4. In combination with a swinging door and its casing, a pair of pivotally connected parts having a spring actuated relative swinging movement for closing the door and one of said parts being pivotally attached to the door casing, a detent movably mounted on the last mentioned one of said parts, a thermally controlled elastic connection between the detent and a fixed support extending in line with the axis of pivotal attachment of the part on which the detent is mounted to the door casing, and a stud adjustably mounted on the other one of the first mentioned parts coöperating with the detent to hold the first mentioned parts against relative movement.

5. In combination with a swinging door and its casing, a pair of pivotally connected parts having a spring actuated relative swinging movement for closing the door, a tubular pivot bolt attaching one of said parts to the door casing, a detent and a bell

crank lever both movably mounted on the last mentioned one of said pivotally connected parts, a stud mounted on the other one of the said pivotally connected parts, and coöperating with the detent to hold the pivotally connected parts against relative movement, and a pair of thermally controlled connectors, one extending between the detent and the bell crank lever and the other extending from the bell crank lever through the bore of the said tubular pivot bolt to a fixed support, one of said connectors including a spring.

FREDERICK A. ANDERSON.