W. J. KEENE.

SPRING HINGE.

APPLICATION FILED AUG. 16, 1912.

1,107,076. **Patented Aug. 11, 1914.**

Fig. 1.

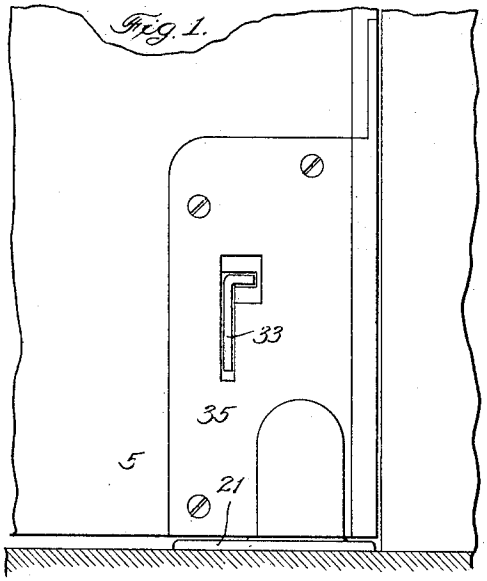


Fig. 3.

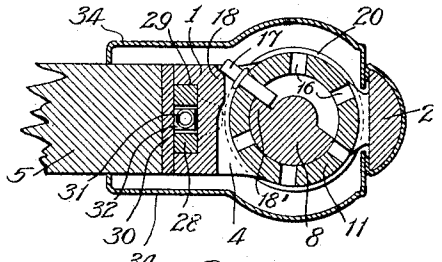


Fig. 5.

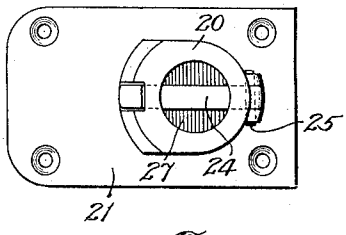


Fig. 2.

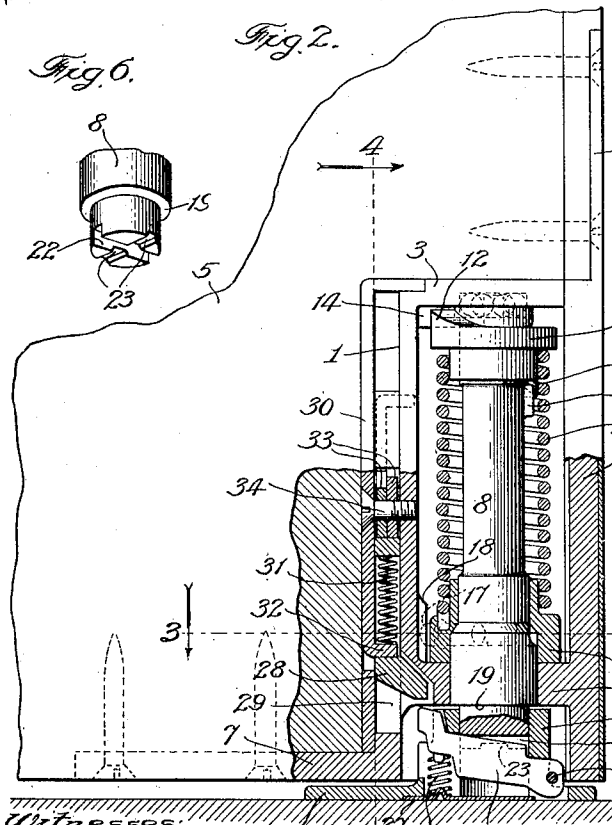
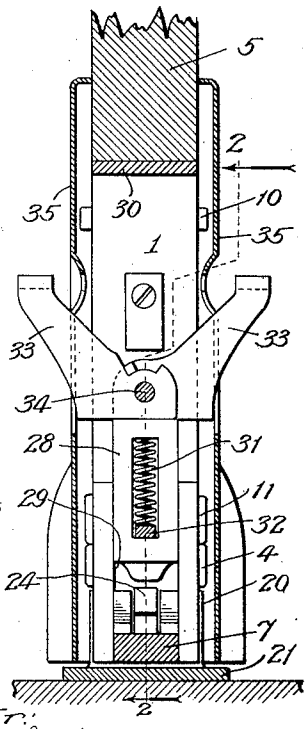


Fig. 6.

Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SPRING-HINGE.

1,107,076. Specification of Letters Patent. Patented Aug. 11, 1914.

Application filed August 16, 1912. Serial No. 715,349.

To all whom it may concern:

Be it known that I, WILLIAM J. KEENE, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a full, clear, and exact description.

The invention relates to spring hinges for doors and the like and having means whereby the spring may be thrown out of operation, so that the door may swing free.

More particularly the invention seeks to improve the construction set forth in my prior United States Letters Patent No. 1,032,144, dated July 9, 1912.

The construction set forth in the above mentioned patent is provided with a locking detent for the spring actuated spindle of the hinge which yieldingly holds the door in closed position, but which is releasable to permit the door to swing free. The present invention seeks to provide means whereby a detent of this sort may be employed to hold the door in open position against accidental closing by drafts or the like, but which is readily disengaged when pressure is applied to the door to close it.

The invention consists in the features of improvement hereinafter set forth, illustrated in its preferred form in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in elevation of the lower corner of a door and door frame with the improved hinge applied thereto. Fig. 2 is a vertical section on the line 2—2 of Fig. 4. Figs. 3 and 4 are horizontal and vertical sections on the lines 3—3 and 4—4, respectively, of Fig. 2. Fig. 5 is a plan view of the floor plate and Fig. 6 is a perspective view of the lower end of the hinge spindle.

The invention is particularly applicable to and is shown applied to the construction set forth in the prior Letters Patent above referred to, but it should be understood that it could be applied to other types of double acting spring hinges.

The casing of the hinge comprises vertical members 1 and 2 connected at their upper and lower ends by cross pieces 3 and 4. This casing is adapted to fit within the mortised corner of the door 5 and is connected thereto by vertical and horizontal extensions 6 and 7. The hinge spindle 8 is journaled in the horizontal portions 3 and 4 of the casing and is yieldingly connected thereto by a spring 9. This spring is coiled about the spindle and is fastened at its ends to upper and lower collars 10 and 11 loosely mounted on the spindle. The collar 10 is provided with projecting lugs 12 and 13 on its upper and lower faces which are arranged to engage, respectively, the lugs 14 and 15 on the casing and on the spindle. The collar 11 is provided with a series of openings 16 adapted to receive a pin 17, and the ends of which pin are arranged to abut against shoulders 18 and 18′ formed upon the casing and on the lower end of the spindle. The portion of the spindle 8 journaled in the cross-piece 4 is somewhat enlarged and forms a shoulder 19. The portion of the spindle below the shoulder is journaled in a socket 20 of a floor plate 21. The lower end face of the spindle is provided with two transverse grooves or seats 22 and 23 which extend across the end face preferably at right angles to each other. The notch or seat 22 is deep, while the notch 23 is quite shallow. A detent 24 is arranged within the lower end of the socket 20 and is connected thereto at one end by a transverse pivot pin 25. A coiled spring 26 extends between the opposite end of the detent and a plate 27 that is fastened in any suitable manner on the lower face of the floor plate. The spring forces the detent upwardly and into one of the seats 22 or 23 when the latter is in line with the detent. The detent is adapted to be disengaged from the deep seat or notch 22 by a trip member or plunger mounted on the casing and which is similar in construction to the trip member set forth in the prior patent referred to. This plunger or trip member 28 slides vertically in a guide-way 29 formed in the upright portion 1 of the casing. A bar or strip 30 secured to the casing holds the plunger in position. A coiled spring 31 is arranged in a longitudinal slot in the plunger 28 and extends between one end of the slot and a lug 32 which projects from the strip or plate 30, as shown in Figs. 2 and 4. The spring normally holds the plunger uplifted with the lower end of the slot therein engaging the lug 32. The plunger is depressed by a pair of levers 33 mounted on a pivot screw 34 above the plunger. These

levers have substantially horizontal lower edges which bear upon the upper end of the plunger and when the outer end of either is depressed, the plunger is forced downwardly against the tension of the spring 31 so that the projecting toe portion at the lower end of the plunger, is engaged in the end of the detent 24 to disengage the latter from the deep seat or notch 22 on the lower end of the spindle.

In the ordinary operation of the hinge, the detent 24 engages the deep seat or notch 22 of the spindle to thereby secure the latter to the hinge member or floor plate 21 and hold it against rotation. The movement of the door in one or the other direction will place the spring 9 under tension, so that the door will be automatically returned to closed position by the spring. When the door is in central position, the plunger 28 may be depressed by either one of the levers 33 to thereby disengage the detent 24 to permit the door to swing free. When this occurs, the spindle rotates with the door and the detent 24 will be pressed against its lower end face by the spring 26. If the door is moved to full open position, or at approximately 90° from its closed position, the spring 26 will force the detent into the shallow seat or notch 23 on the spindle and the door will be held against accidental movement by drafts or the like from this open position. This notch, however, is quite shallow and, if necessary, its side edges may be slightly beveled so that by grasping the door and moving it toward closed position, the spindle will not be locked in position to place the spring 9 under tension, but will move with the door and the engagement of the detent with the shallow notch of the spindle will be released. This engagement of the spindle with the shallow notch is such that it merely holds the door against accidental movement from open position, but the engagement is insufficient to lock the spindle against rotation when the door is moved from open position. As soon as the door returns to its closed position, the spring 26 will force the detent into the deep seat or notch 22 and the door will then be yieldingly held in closed position. The engagement of the detent with the deep seat or notch is such that it will hold the spindle against rotation and, as stated, when the door is shifted in either direction, the spring 9 will be placed under tension to automatically close the door.

As in the previous construction referred to, the hinge casing is inclosed by a pair of thin sheet metal side plates 35 which are fastened to the opposite sides of the door and which are provided with slots through which the levers 33 extend.

It is obvious that numerous changes may be made in the details set forth without departure from the essentials of the invention as defined in the claims.

I claim as my invention:—

1. A double acting spring hinge comprising a casing adapted to be set within a mortised corner of the door, a vertical spindle journaled in said casing, a right and left acting spring yieldingly connecting said spindle to said casing, a floor plate having a socket wherein the lower end of said spindle is journaled, a pivoted detent mounted in said socket plate below the lower end of said spindle, said spindle having transverse relatively deep and shallow seats in its lower end face arranged to be engaged by said detent to hold the door in open and closed positions, respectively, a shiftable trip mounted in said casing and arranged to disengage said detent from said relatively deep seat, and a spring for automatically engaging said detent with said seats, substantially as described.

2. A double acting spring hinge comprising a casing adapted to be set within the mortised corner of the door, a vertical spindle journaled in said casing, a right and left acting spring yieldingly connecting said spindle to said casing, a floor plate having a socket wherein the lower end of said spindle is journaled, a pivoted detent mounted within the socket of said plate and extending across the lower end of said spindle, said spindle having a groove extending across its lower end face arranged to be engaged by said detent, a shiftable trip mounted in said casing, and arranged to engage the end of said detent and shift the same out of said groove, and a spring for pressing said detent upwardly against the lower face of said spindle, substantially as described.

WILLIAM J. KEENE.

Witnesses:
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KATHARINE GERLACH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."