

A. FALKENRATH.
 SPRING DOOR HINGE.
 APPLICATION FILED APR. 16, 1910.

980,230.

Patented Jan. 3, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

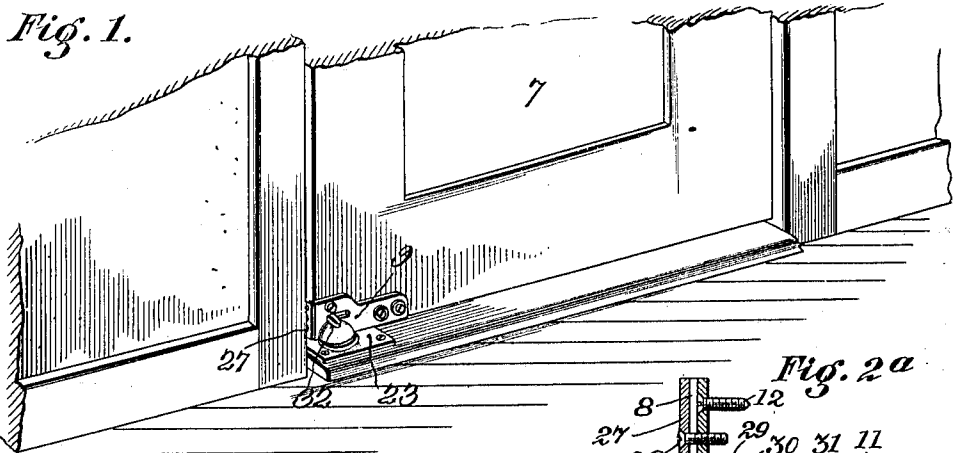


Fig. 2a

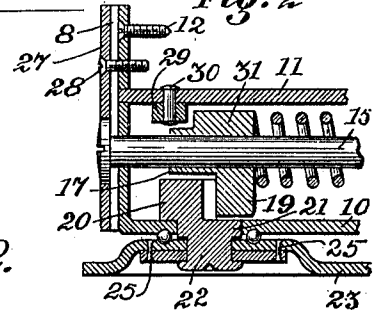
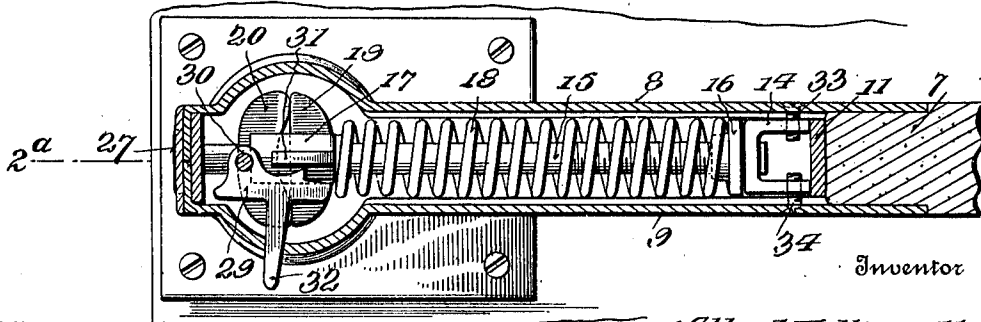
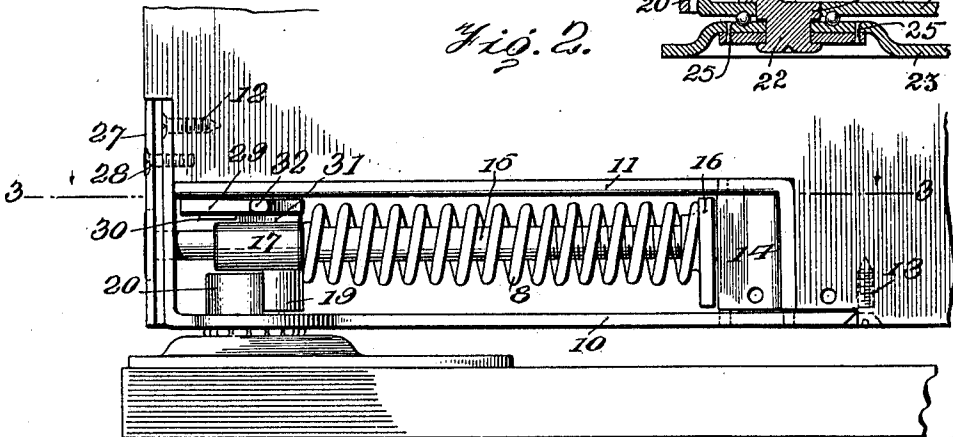


Fig. 2.



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Fig. 3.

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 2 SHEETS—SHEET 2.

Fig. 4.

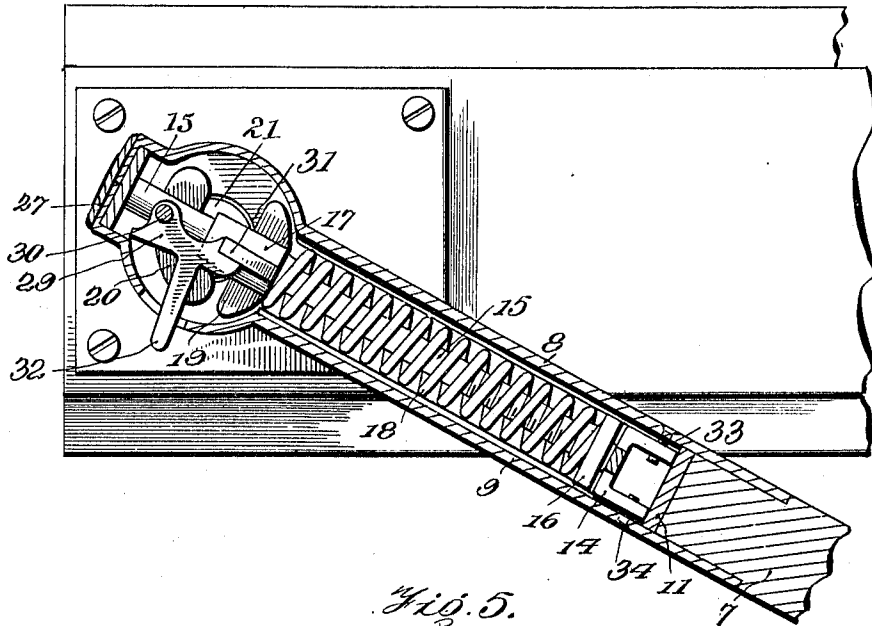


Fig. 5.

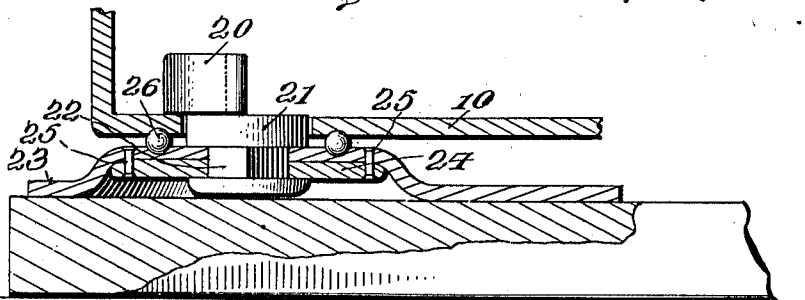
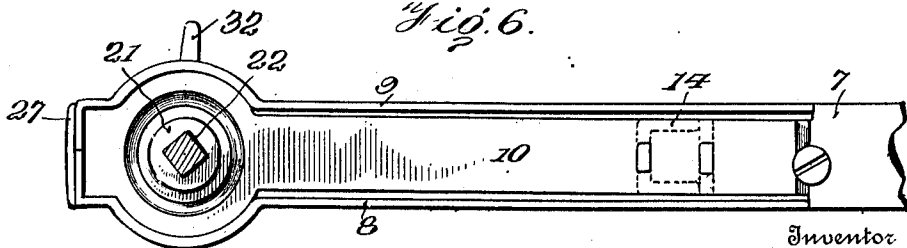


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALBERT FALKENRATH, OF RACINE, WISCONSIN.

SPRING DOOR-HINGE.

980,230.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed April 16, 1910. Serial No. 555,917.

To all whom it may concern:

Be it known that I, ALBERT FALKENRATH, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Spring Door-Hinges, of which the following is a specification.

This invention relates to spring hinges of the class especially designed for use on double-acting doors, and particularly to those of this class termed floor hinges.

One object of this invention is to produce a hinge of this sort in which the spring may be thrown out of action at will, whereby the door may be swung to and fro by hand as in the case of a door mounted on ordinary hinges.

Another object is to so construct the hinge that after application to the door it may be adjusted into proper alinement therewith, or if, on account of the unequal wearing of the parts of the hinge, the door should get out of its proper plane in its frame, the hinge may be readily adjusted with relation to the door and the door made to stand in its right place.

With these and other objects in view, the invention consists in the structure of parts and their combination for the purposes specified substantially as hereinafter set forth and claimed.

In the accompanying drawings which form a part of this specification, Figure 1 represents in side elevation the improved hinge as applied to a door; Fig. 2 represents in side elevation the hinge, as applied to a door, with its housing plates removed; Fig. 2^a is a vertical, longitudinal, medial section of the pivoted end of the hinge taken in the plane indicated by the line 2^a in Fig. 3. Fig. 3 is a horizontal section through the hinge frame taken in the plane indicated by the line 3—3, Fig. 2, the housing plates being shown in place; Fig. 4 is a like horizontal section showing the spring of the hinge held out of action and the door at an angle to its normal position; Fig. 5 is a vertical longitudinal medial section through the mechanism as seen in Fig. 2; and Fig. 6 is an under side view of the hinge in place, the floor plate being removed.

In the drawings the hinge is shown as located in the lower end of the door at the rear edge thereof, as is usual, and has its fixed coacting part located in the floor. The portion of the door shown is indicated at 7, and to this are secured the housing plates 8 and 9 at either side of the hinge frame. Said frame may be made in any suitable manner, but is preferably formed from an L-shaped piece 10 and a smaller L-shaped piece 11 having lugs at its ends riveted into holes in the piece 10. The ends of the piece 10 project beyond the piece 11 and serve for securing the frame to the door, as by means of screws, as indicated at 12 and 13. It will be noted that the screw 13 does not pass through the plate 10, but holds the same in place by engagement of the head of the screw with the beveled end of said piece 10. Within the frame at the inner end thereof a curved plate, as 14, is secured, preferably by lugs on the ends thereof extending through holes in plates 10 and 11. Through the inner face of the plate 14 a hole is made in which a screw-threaded rod 15 is secured, as by upsetting its inner end. This rod extends longitudinally of the frame and projects at the rear end through said frame where it is provided with a nicked head. Upon the screw-threaded inner end of this rod is located a nut 16 and upon said rod near its outer end is loosely mounted a cross head 17 adapted to slide thereon. Between the nut 16 and the cross head 17 is located the actuating spring (18) of the hinge. On the lower side of the cross head 17 there is formed a shoulder 19 for engagement with the abutment 20 with which the spring mechanism of the hinge coacts in automatically returning the door to its normal position. This abutment is formed upon the upper end of the pintle 21, upon which the frame of the hinge is journaled. This pintle, as clearly seen in Figs. 2^a and 5, has its lower portion 22 squared for insertion in a squared opening in the floor plate 23. To secure the pintle in the floor plate a washer, as 24, with a squared opening, is placed upon the end 22 and said end headed over upon it. Then to further insure the rigidity of the pintle with the floor plate rivets, as 25, may be passed through

the washer 24 and the floor plate, as indicated. A ball bearing is preferably provided between the frame and the floor plate by forming appropriate grooves in each and placing balls therein, as indicated at 26. The housing plates 8 and 9 have their rear ends bent in over the plate 10 and these ends are preferably covered by means of the end plate 27, through which there is an aperture giving access to the head of the screw rod 15. A set screw, as 28, preferably joins the plate 27 to the frame by which said plate may be loosened in removing and in applying the said housing plates.

It is often desirable to hold a double-acting door open in one direction or the other and it is generally inconvenient to do this because of the spring commonly used on such doors, and any sort of stop for holding these doors open is not only uncertain in action, but bothersome in manipulation. Therefore this improved hinge is provided with means for holding the spring out of action when desired. This means may take any suitable form, but the form found effective and easy of manipulation consists of a latch, as 29, preferably pivoted, as at 30, to the upper portion 11 of the hinge frame. A lug, as 31, is formed upon the upper side of the cross head 17 with which the latch may engage, as seen in Fig. 4, for holding the spring 18 out of action by holding the shoulder 19 of the cross head away from the abutment 20. For the easy manipulation of the latch 29 a handle, as 32, is made to project therefrom through a slot in the housing plate 9. To apply the latch to the cross head for holding the spring out of action the door is swung to one side, as in Fig. 4, until the abutment 20 has forced the cross head back along rod 15 until the latch may move in behind the lug 31 on the cross head. The latch may be moved into this holding position by touching the handle thereof with the foot. When it is desired to put the spring into action it is simply necessary to push the door back at such an angle to its normal position as will bring one end of the abutment 20 against the shoulder 19 of the cross head and thereby take the stress of the spring off the latch, when by putting the foot against the handle 32 the latch may be swung out of engagement with the shoulder 31 and the spring allowed to act upon the cross head 17 to hold the same in engagement with the abutment 20 and return the door to normal position. Other forms of stops for holding the spring out of action obviously may be devised and utilized without departing from the present invention.

The invention claimed is:—

1. In a double acting spring hinge the

combination with a fixed abutment, of a door carrying frame rotatively mounted thereon and a spring impelled sliding member mounted in said frame and adapted to impinge against said abutment and to rock on the surface thereof in the movement of the door, whereby to cause the compression of and permit the expansion of the spring actuating said sliding member, and means mounted in said frame and operable at will for holding said spring impelled member and spring out of action.

2. In a double acting spring hinge, the combination with a fixed abutment, and a door carrying frame rotatively mounted thereon, of a spring impelled sliding member mounted in said frame and adapted to impinge against said abutment and to rock on the surface thereof in the movement of the door, whereby to cause the compression and permit the expansion of the spring actuating said sliding member, and a latch pivotally attached to a fixed part of the frame and operable at will for holding said member and spring out of action.

3. In a double acting spring hinge, the combination with a fixed abutment, and a door carrying frame rotatively mounted thereon, of a sliding cross head adapted to engage the face of said abutment and to rock thereon, a rod on which said cross head is mounted, a spring on said rod having its inner end engaging said cross head and provided with a bearing for its outer end, and a latch pivotally mounted on said rod operable at will and adapted to engage the cross head, and to hold the same out of contact with the fixed abutment.

4. In a double-acting spring hinge, the combination with an abutment adapted to be fixed in place, of a door carrying frame pivoted upon said abutment, a rod extending longitudinally of said frame, a cross head mounted to slide upon said rod, a spring for normally holding the cross head in engagement with said abutment, and a latch pivoted to said frame and operable at will to engage and hold back said cross head to restrain the action of the spring.

5. In a double-acting spring hinge, the combination with an abutment adapted to be fixed in place, of a door carrying frame pivoted upon said abutment, a screw-threaded rod extending longitudinally of the frame and journaled in said frame, and having its outer end headed and exposed and nicked to receive a screwdriver, a nut upon said rod, a sliding cross head on said rod for engaging said abutment, and a spring located between said cross head and said nut for the purpose specified.

6. In a double-acting spring hinge, the combination with the door carrying frame

and the spring mechanism operatively mounted therein, of a floor plate, a pintle carrying the abutment for coaction with the spring mechanism and having a squared
5 shank entering through the floor plate, a washer having a squared aperture to receive said shank and upon which the shank is headed, and rivets for holding the washer

at its edge rigidly to the floor plate for the purpose set forth.

In testimony whereof I affix my signature
in presence of two witnesses.

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ALBERT FALKENRATH.

Witnesses:

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MATTIE E. PALMER.