

985,790.

A. DICE.
 SPRING HINGE.
 APPLICATION FILED MAY 31, 1910.

Patented Mar. 7, 1911.
 2 SHEETS—SHEET 1.

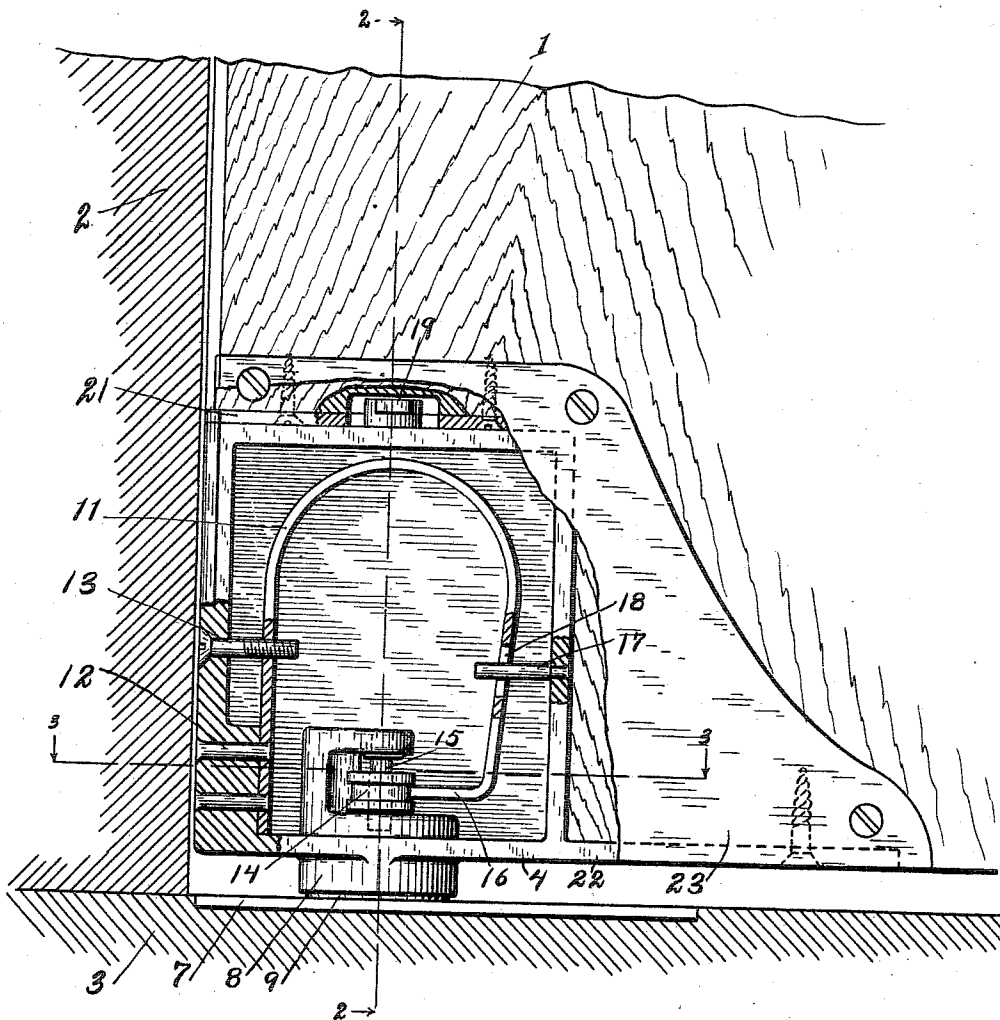


Fig.1.

Inventor

Witnesses
 Clara Ellen Braden
 F. Gertrude Gallman

Alvin Dice
 By Chaffell Earl

Attorneys

985,790.

A. DICE.
 SPRING HINGE.
 APPLICATION FILED MAY 31, 1910.

Patented Mar. 7, 1911.

2 SHEETS—SHEET 2.

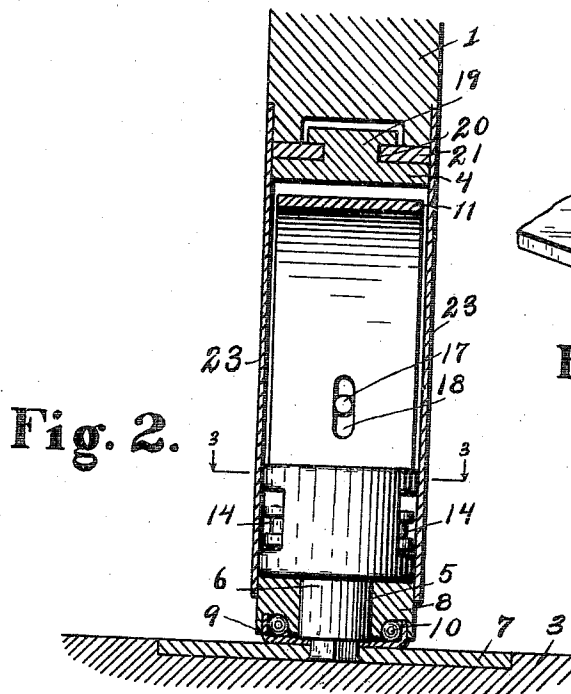


Fig. 2.

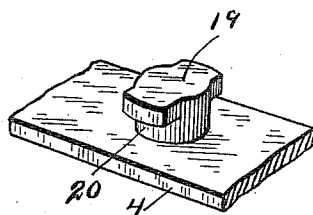


Fig. 4.

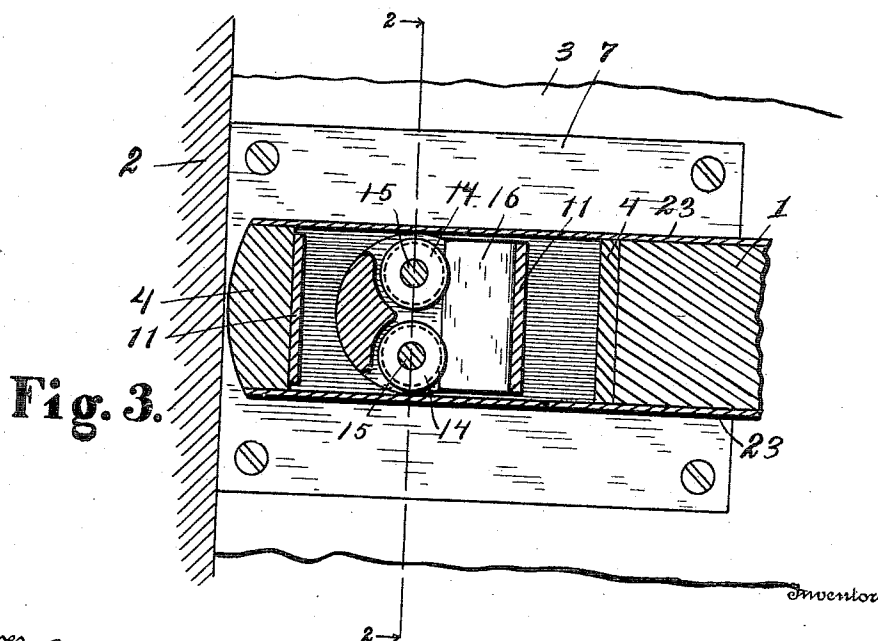


Fig. 3.

Witnesses
 Clara Ellyn Braden
 F. Gertrude Tallman

By

Alvin Dice
 Chaffell Earl

Attorneys

UNITED STATES PATENT OFFICE.

ALVIN DICE, OF ALBION, MICHIGAN, ASSIGNOR TO T. C. PROUTY COMPANY, OF ALBION, MICHIGAN.

SPRING-HINGE.

985,790.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed May 31, 1910. Serial No. 564,229.

To all whom it may concern:

Be it known that I, ALVIN DICE, a citizen of the United States, residing at Albion, Michigan, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

This invention relates to improvements in spring hinges.

The main objects of this invention are: first, to provide an improved spring hinge designed to permit the door to swing in either direction from its closed position and to automatically close the door. Second, to provide an improved spring hinge embodying these features, which is very simple and economical in structure and, at the same time, efficient for the purpose.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The structure described constitutes one effective embodiment of my invention. Other embodiments would be readily devised by those skilled in the art.

The invention is clearly defined and pointed out in the claims.

A structure constituting an effective and preferred embodiment of the features of my invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which:

Figure 1 is a detail side elevation of a structure embodying the features of my invention, portions being broken away and portions being shown in section to better illustrate the form and arrangement of the parts. Fig. 2 is a detail vertical section taken on a line corresponding to line 2—2 of Fig. 1. Fig. 3 is a detail horizontal section taken on a line corresponding to line 3—3 of Figs. 1 and 2. Fig. 4 is a detail perspective of the top of the frame, showing the arrangement of the attaching lug thereon.

In the drawings, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, 1 represents a door, 2 a door casing and 3 the floor, in connection with which my improved hinge

is shown in operative relation. The movable member of my improved hinge, which is attached to the door, consists of a frame 4 open at the sides. The bottom of the frame has an opening 5 therein, through which the post 6 is arranged. The post 6 is rigidly secured to the floor plate. In the frame 4 I provide a bearing member 8, having a suitable ball race therein, and a co-acting bearing member 9 secured to the floor plate, the bearing balls 10 being arranged between, as clearly appears in Fig. 2.

In the frame I arrange a spring 11, which is bowed, it being preferably inverted U-shaped. This spring is secured at one end, as by the rivets 12 to the frame. I preferably provide, in connection with this securing means, an adjusting screw 13, which is arranged through the rear frame piece and threaded into the spring above the rivets 12. By adjusting this screw, the tension of the spring can be regulated.

The post is provided with bearings, with which the free end of the spring engages, the bearings consisting of the grooved rollers 14 arranged on the bearing pins 15 to permit axial movement thereon, so that the pulleys can shift axially as the door swings, which causes some variation in the free end of the spring. The free end of the spring is provided with a projection 16, which engages the grooves of the rollers, the parts being arranged so that the spring engages both rollers when the parts are in their normal position. When the door is swung in either direction, the spring travels or bears upon the roller on the side toward which the door is swung.

I preferably provide means for supporting the free end of the spring against lateral movement, and this, in the structure illustrated, consists of the pin 17 on the frame which engages the slot 18 in the spring, see Fig. 1. This relieves the spring of considerable side strain when the door is swung. The frame 4 is preferably attached to the door by providing the frame with a headed stud 19, adapted to be inserted through an opening 20 in the plate 21, which is attached to the door, as indicated in Fig. 1, it being possible to engage the stud when the frame is turned substantially at right angles to the door, so that when the frame is swung into alinement with the door, the stud is effectively engaged with the attach-

ing plate. The lower frame piece is extended at 22 to provide a convenient means for attaching the lower portion of the frame, as is indicated in the drawing. The parts
 5 are inclosed by inclosing plates 23 which are secured to the sides of the door over the hinge member.

I have illustrated and described my improved hinge with the post adapted to be
 10 seated in the floor and the frame adapted to be seated in the door. It is common practice in this art to seat the frame having the movable parts therein in the floor and to seat the post in the door, and it will
 15 be obvious to those skilled in this art that my invention can be readily adapted for that arrangement, it being a mere reversal of the parts.

My improved hinge is very simple and
 20 economical in structure, and, at the same time, is an effective and durable construction. I have illustrated and described the same in detail in the form in which I have embodied the same. I am aware, however,
 25 that my invention is capable of considerable structural variations without departing from my invention, but as such variations or modifications will be obvious to those skilled in the art to which my invention relates, I
 30 have not attempted to illustrate or describe the same herein.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

35 1. The combination with a post adapted to be fixedly seated in a floor and a frame adapted to be seated in a door and rotatably mounted on said post, of a bow spring secured by one arm to said frame and hav-
 40 ing a horizontally and inwardly-disposed portion on its free arm, means for preventing lateral movement of the free arm, and bearings comprising grooved rollers rotatably mounted on said post, adapted to engage
 45 the projecting portion of said spring when the parts are in their normal positions.

2. The combination with a post adapted to be fixedly seated in a floor and a frame adapted to be seated in a door and rotatably mounted on said post, of a bow spring
 50 secured by one arm to said frame, and bear-

ings comprising rollers rotatably mounted on said post and adapted to engage the free arm of the spring when the parts are in their normal positions. 55

3. The combination with a post adapted to be fixedly seated in a floor and a frame adapted to be seated in a door and rotatably mounted on said post, of a bow spring secured by one arm to said frame, means for
 60 preventing lateral movement of the free arm comprising a pin seated in the frame and projecting through a slot in the free portion of the spring, and bearings on said post for engagement with the free end of said
 65 spring.

4. The combination with a post adapted to be fixedly seated in a floor and a frame adapted to be seated in a door and rotatably mounted on said post, of a bow spring
 70 secured by one arm to said frame at the rear of said post, and extending over the opposite side of the post, and bearings on said post for engagement with the free arm of said spring. 75

5. The combination with a post adapted to be fixedly seated in a floor and a frame adapted to be seated in a door and rotatably mounted on said post, of a bow spring secured by one arm to said frame, and bear-
 80 ings on said post for engagement with the free arm of said spring, and an adjusting screw passed through the frame and engaging a screw threaded opening in said spring.

6. The combination with a post adapted
 85 to be fixedly seated in a floor and a frame adapted to be seated in a door and rotatably mounted on said post, of a bow spring secured by one arm to said frame and having a horizontally and inwardly-disposed
 90 portion on its free arm, and bearings comprising grooved rollers rotatably mounted on said post, adapted to engage the projecting portion of said spring when the parts are in their normal positions. 95

In witness whereof, I have hereunto set my hand and seal in the presence of two witnesses.

ALVIN DICE. [L. S.]

Witnesses:

CHAS. W. RULISON,
 MARK MERRIMAN.