

No. 684,126.

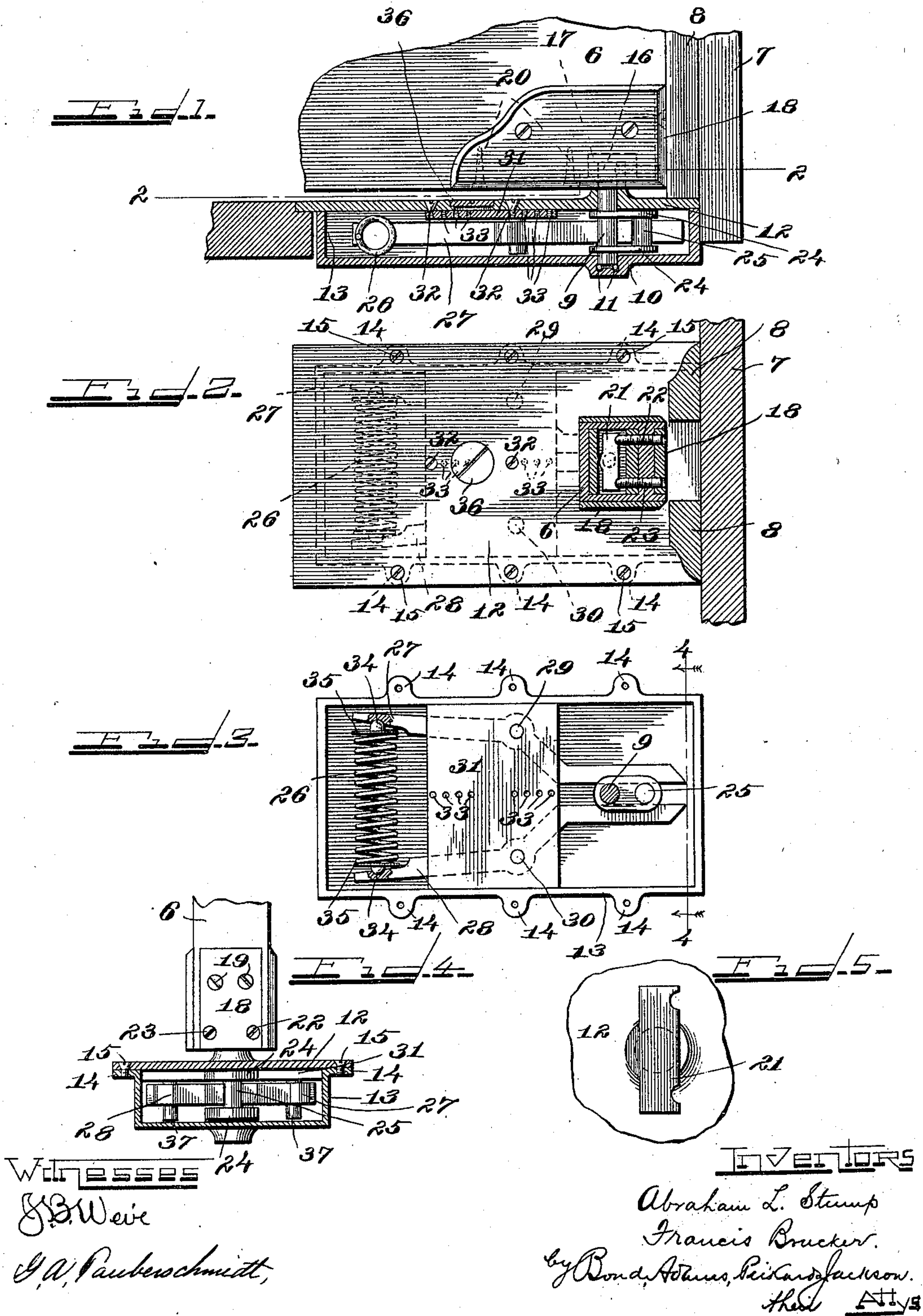
Patented Oct. 8, 1901.

A. L. STUMP & F. BRUCKER.

HINGE FOR DOORS.

(Application filed Oct. 1, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

ABRAHAM L. STUMP AND FRANCIS BRUCKER, OF SHELBY, OHIO, ASSIGNORS
TO THE SHELBY SPRING HINGE COMPANY, OF SAME PLACE.

HINGE FOR DOORS.

SPECIFICATION forming part of Letters Patent No. 684,126, dated October 8, 1901.

Application filed October 1, 1900. Serial No. 31,677. (No model.)

To all whom it may concern:

Be it known that we, ABRAHAM L. STUMP and FRANCIS BRUCKER, citizens of the United States, residing at Shelby, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Hinges for Doors, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to double-acting spring-hinges for doors, and particularly hinges which are adapted to be fitted in the floor.

The object of our invention is to provide certain improvements in the devices by which the spring is placed under tension when the door is swung in either direction and also to provide improved means for adjusting the tension of the spring.

In the accompanying drawings, Figure 1 is a view of the lower portion of a door and door-jamb, the hinge being partially in section. Fig. 2 is a plan view on line 2 2 of Fig. 1, some parts being in section. Fig. 3 is a view of the spring mechanism, the cover-plate being removed. Fig. 4 is a vertical section on line 4 4 of Fig. 3, and Fig. 5 is a plan view of the adjusting-plate by which the position of the door with reference to the spring-operating mechanism is adjusted.

Referring to the drawings, 6 indicates the door, of which the lower inner corner is shown in Fig. 1.

7 indicates the door-jamb, and 8 indicates ornamental molding between the door and the jamb at opposite sides of the hinge. The upper portion of the door may be hinged in any suitable way to the jamb. The lower end of the door rests upon a pivot 9, arranged in a vertical position thereunder and supported on a base-plate 10, as shown in Fig. 1. Anti-friction-balls 11 are provided under the pivot 9 to avoid friction, a suitable socket being provided in the base-plate 10 for the lower end of the pivot and the balls, as shown in Fig. 1.

12 indicates a cover-plate, which fits upon the base-plate 10 and is provided with a bearing for the pivot 9, as shown. As shown in Figs. 1, 3, and 4, the base-plate 10 is provided with a marginal flange 13, which carries outwardly-extending ears 14 at suitable points,

and the cover-plate 12 is secured to the base-plate by screws 15 passing through said plate and into the ears 14. By this construction a box is provided adapted to contain the operating parts of the hinge.

The upper end of the pivot 9 extends through the cover-plate 12 into a socket 16 in the lower end of the door 6, as indicated by dotted lines in Fig. 1. A socket-plate 17 is screwed in the lower corner of the door to give the necessary strength, said socket-plate having an upturned flange 18 at the inner edge of the door, as indicated by dotted lines in Fig. 1 and as illustrated in Figs. 2 and 4. Screws 19 20 serve to hold the socket-plate in position.

21 indicates an adjusting-plate, which is carried at the upper end of the pivot 9 and extends transversely of the door. Said adjusting-plate is engaged by horizontally-disposed screws 22 23, which extend through the flange 18 and bear against the outer edge of the adjusting-plate 21, as shown in Fig. 2. By adjusting said screws the position of the door with reference to its pivot may be adjusted, and by the engagement of said screws with the adjusting-plate the pivot 9 is caused to swing with the door.

As shown in Figs. 1 and 3, the pivot 9 is provided below the cover-plate 12 with one or more crank-arms 24, which are fixedly secured to the pivot and carry a crank-pin 25. Said crank-arms extend in a plane substantially parallel with that of the door, as shown in Fig. 3, and as the door swings the crank-pin 25 is swung from side to side.

26 indicates a spring extending substantially at right angles to the plane of the door and arranged on the base-plate 10. Said spring is supported on pivoted arms 27 28, which are pivotally supported on pivots 29 30, respectively, carried by a plate 31, which is secured to the cover-plate 12 on the under side thereof, as best shown in Fig. 1. For securing the plate 31 to the cover-plate 12 screws 32 are provided, which pass through the cover-plate and into screw-holes 33, provided in said plate 31. A number of screw-holes 33 are provided, so that the plate 31 may be adjusted longitudinally of the cover-plate for adjusting the action of the spring, as will be hereinafter set forth. The inner

ends of the arms 27 28, between which the spring 26 is supported, as shown in Fig. 3, are provided with concave recesses adapted to receive buttons 34, projecting from plates 35 at the ends of the spring 26 to permit the arms 27 28 to be adjusted readily to different angles with relation to the spring. The pivots 29 30 of the arms 27 28 are placed, preferably, about midway between the ends of said arms, and the outer ends thereof are bent in toward each other and extend parallel with each other, but slightly separated, as shown in Fig. 3. The space between said outer ends of the arms 27 28 is just sufficient to receive the pivot 9 and crank-pin 25, as shown in Fig. 3, the arrangement being such that whenever the crank-pin 25 is swung by the swinging of the door it will bear against one or the other of the arms 27 28, swinging such arm on its pivot, and consequently compressing the spring 26. Whichever way the door swings, therefore, the spring 26 will be compressed, and consequently will act to return the door to its closed position when it is released. By the construction described each of the arms 27 28 acts as a lever of the first class to compress the spring 26, and consequently by varying the relative position of the crank-pin 25 and the pivots of said arms a greater or a less leverage on said spring may be secured, depending on whether the pivots are moved from or toward the crank-pin 25. By adjusting the plate 31 longitudinally of the hinge, therefore, the leverage of the crank-pin 25 may be varied and the action of the spring 26 correspondingly increased or diminished, as the case may be. In order to facilitate the adjustment of said plate, an enlarged opening is provided in the cover-plate 12 and is closed by a screw-cap 36, as shown in Figs. 1 and 2. Said opening is large enough to expose one or more of the screw-holes 33 in the plate 31, so that by removing said screw-cap a tool may be inserted in one of said screw-holes and the plate 31 adjusted, the screws 32 having been first removed. To support the plate 31 when the screws 32 are removed, lugs 37 are provided on its under side, as shown in Figs. 1 and 4. In order to adjust the position of the door with reference to the spring mechanism, it is swung far enough to expose the screws 22 23, and by adjusting said screws the position of the door with reference to the adjusting-plate 21 and the operating parts of the spring may be varied, as desired, or the door may be carried toward or from the jamb.

That which we claim as our invention, and desire to secure by Letters Patent, is—

1. A spring-hinge comprising a pivot, a pair of swinging levers, a spring between said levers and means connected with said pivot and operating one of said levers to put said springs under tension when the pivot turns, substantially as described.

2. A spring-hinge comprising a pivot, a crank carried thereby, a spring, and a pair of levers pivoted between their ends, said crank extending between two adjacent ends of said levers, said spring being connected with the opposite ends of said levers, whereby when the pivot turns one of said levers will be rocked to put said spring under tension, substantially as described.

3. A spring-hinge comprising a pivot, a spring, a lever for putting said spring under tension, means connected with said pivot and operating said lever when the pivot turns, and means for adjusting the relative positions of said operating means and the fulcrum of the lever to vary the action of said spring on the pivot, substantially as described.

4. A spring-hinge comprising a pivot, a spring, a pivoted lever for putting said spring under tension, means connected with said pivot and operating said lever when the pivot turns to put said spring under tension, and means for shifting the pivot of said lever to vary its action on the spring, substantially as described.

5. A spring-hinge comprising a pivot, a spring, a pair of swinging levers between which said spring is mounted, a crank carried by said pivot between said levers for swinging said levers when the pivot is turned, and means for adjusting said levers with reference to said crank to vary the action thereof on the spring, substantially as described.

6. A spring-hinge comprising a hinge-pivot, a spring, a pair of swinging levers between which said spring is mounted, an adjustable plate, pivots carried by said plate and supporting said levers, and a crank carried by said hinge-pivot and extending between the said levers for operating them to compress the spring when the pivot turns in one direction or the other, substantially as described.

7. A spring-hinge comprising a box, a cover therefor, a pair of pivoted levers in said box, an adjusting-plate secured to said cover, pivots carried by said plate and supporting said levers, a spring between said levers, and means for operating said levers to put said spring under tension, substantially as described.

8. A spring-hinge comprising a box, a cover therefor, a pair of pivoted levers in said box, an adjusting-plate secured to said cover, pivots carried by said plate and supporting said levers, a spring between said levers, means for operating said levers to put said spring under tension, said adjusting-plate having a number of perforations, and a hole in said cover-plate adapted to expose one or more of said perforations, substantially as described.

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Witnesses:

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MARY KOCHENDERFER.