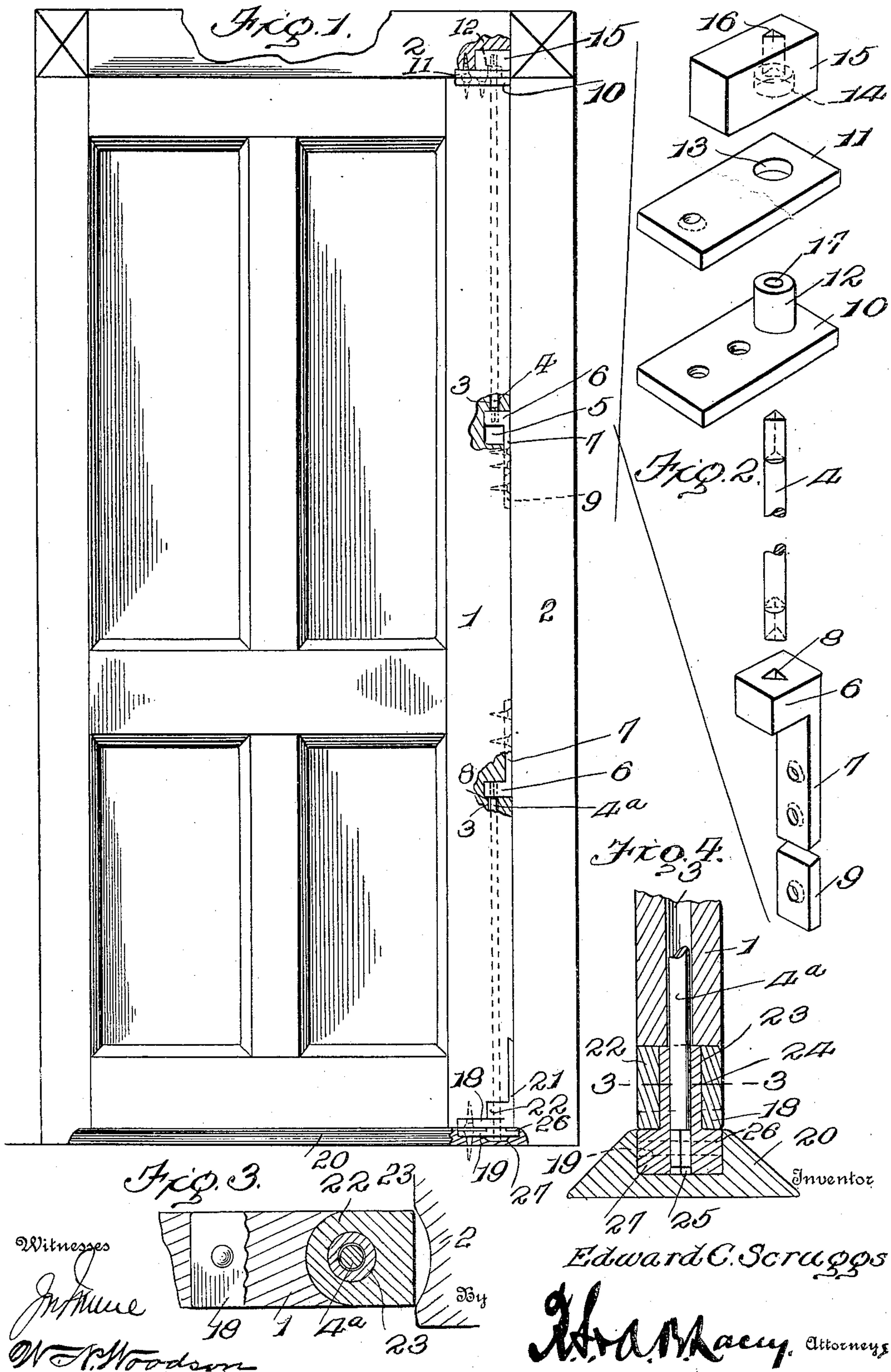


E. C. SCRUGGS.  
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 APPLICATION FILED OCT. 1, 1908.

938,797.

Patented Nov. 2, 1909.





# UNITED STATES PATENT OFFICE.

EDWARD C. SCRUGGS, OF NASHVILLE, TENNESSEE.

## SPRING-HINGE FOR DOORS.

938,797.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed October 1, 1908. Serial No. 455,675.

*To all whom it may concern:*

Be it known that I, EDWARD C. SCRUGGS, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Spring-Hinges for Doors, of which the following is a specification.

The object of my invention is to provide a spring hinge for doors the several parts of which are constructed and arranged to permit the door to be opened in either direction and returned to a closed or normal position by a spring actuated movement occasioned by the tension placed upon concealed springs.

The invention comprises essentially co-operating stationary and movable hinge sections located upon the door frame and door and a concealed spring connection between the hinge sections whereby the door is permitted to swing in either direction and return automatically to a closed position. The concealed arrangement of the spring and co-operating hinge sections is desirable in that the appearance of the door and frame is improved and the springs rendered less liable to injury.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of a door and door frame illustrating the arrangement of the hinge plates and springs. Fig. 2 illustrates in detail the hinge plates and springs attached. Fig. 3 is a horizontal sectional view on the line 3—3 of Fig. 4; and Fig. 4 is a vertical sectional view through the hinge plates at the lower edge of the door.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings the numeral 1 designates a door and 2 the frame to which the door is hinged. The door is provided with longitudinal openings 3 extending parallel with the rear edge and adapted to contain torsional spring rods 4 the ends of which are angular or otherwise formed to prevent independent movement when occupying positions within similarly formed openings in suitably located socket sections.

The longitudinal openings 3 are intersected by larger openings or recesses 5 formed in the rear edge of the door and designed to receive lateral projections 6 on the rod retaining brackets 7, said projections being provided with angular openings 8 in which the inner ends of the respective spring rods are secured.

To provide a convenient method of hanging the door and adjusting the upper spring rod in position after the door is hung, one of the recesses 5 is formed to permit the projection 6 to slide vertically therein and the projection brought into or out of engagement with the end of the rod 4. The brackets 7 are set in flush with the edge of the door and secured as by screws, and a smaller plate 9 is employed to occupy the extension in the groove in which the upper plate slides when the projection 6 on said plate is secured to the end of the upper spring rod.

The numeral 10 designates a hinge plate embedded and secured in the upper edge of the door at the rear corner and pivotally connected to a similar hinge plate 11 correspondingly located and embedded in the lintel of the frame 2. The plate 10 is provided with a pintle 12 which is arranged to extend through an opening 13 in the plate 11, the extremity of said pintle operating in a socket 14 formed in the block or top plate 15. These plates 10 and 11 in connection with the block 15 having therein the socket or pintle 12 give an enlarged bearing surface between the door and the upper end of the frame, this bearing surface being enlarged and having two opposed metallic faces and a pintle 12 projecting up into the block 14 acts to prevent wear between the pintle and the door frame and between the contacting faces of the door, which would be liable to be the case were the pintle 12 simply a tubular member inserted in the rear edge of the door and extending up into a socket formed in the door frame. Inasmuch as the plate 11 is detachable from the block 15 and is independent of it, the pintle may be replaced when worn without removing the block 15 against which no wear comes. This block being inserted deeper into the wood of the frame and being of smaller dimensions than the plate 11 is more securely held within the frame and with less liability of its being thrown out or being broken away from the frame than if merely



held there by screws. The said block 15 is embedded in the frame above the plate 4 and is provided with an angular opening 16 extending transversely of the block 15 from the center of the socket opening 14, designed to receive the similarly formed end of the spring rod 4 and prevent independent movement of said rod at its upper end. The plate 10 is provided with a circular opening 17 extending through the pintle 12, and the body portion of the rod 4 adjacent to the angular end extends through the plate and pintle within said opening.

The numeral 18 designates a hinge plate embedded in and secured to the door in its lower edge at the rear corner and pivotally connected to a hinge plate 19 correspondingly located and embedded in the sill or carpet strip 20. The plate 18 is formed with an angular extension or arm 21 adapted to be secured to the rear edge of the door and an elongated thickened portion 22 is formed parallel with the plate from the point of the angle of said plate and arm.

A pintle 23 on the plate 19 extends through an opening in the plate 18 and thickened portion 22 as shown at 24 (Fig. 4), and said plate 19 is formed with an opening 25 extending through the pintle and through which the body portion of the lower spring 4<sup>a</sup> protrudes. The extreme lower portion of the opening 25 is of angular formation and adapted to receive and retain the angular end of the spring rod and prevent independent movement of said rod. The hinge plate 19 is preferably formed with a raised annular portion 26 on its exposed side to provide a suitable sliding or abutting surface for the plate 18, and on its lower or concealed side with a similar projection 27 in which the lower angular end of the spring rod 4<sup>a</sup> extends.

With the arrangement of the cooperating hinge sections as shown the spring rods 4 and 4<sup>a</sup> are concealed within the door and are secured thereto at their inwardly projecting angular ends by brackets 7 embedded in the rear edge of the door and intersecting the openings in which the rods extend. The opposite angular extremities extend through suitably located openings in the cooperating and pivotally connected hinge plates and are secured in sockets located in the upper and lower door frame sections defining the door opening. As will be understood the door is permitted to swing in either direction and upon release will be returned to a closed or normal position by the torsional strain placed upon the rods 4 and 4<sup>a</sup> consequent upon movement of the door.

Particular attention is directed to the manner in which the cooperating hinge and spring retaining sections are partially or completely concealed in their respective movable and stationary sections of the door

and whereby all parts are protected, the appearance of the door vastly improved and a perfect operation insured.

Having thus described the invention what is claimed as new is:

1. The combination with a door and its frame, of hinges connecting said door to the frame, one of said hinges comprising a hinge plate secured to said door at one end and formed with a pintle having an aperture extending through its center, a hinge plate secured to the door frame and provided with a circular opening through which said pintle extends, a torsional spring rod secured within the door and extending at one end through said apertured pintle, and through the hinge plate, means in the door frame for rigidly engaging the end of the torsional spring, and a bracket secured to the rear edge of the door, having a projecting portion extending inwardly into the door opening, said projecting portion being formed with a many sided recess with which the inner end of said torsional rod engages.

2. The combination with a door and its frame, of hinges connecting said door and frame one of said hinges comprising a hinge plate secured to the door at one end and formed with a pintle having an aperture extending therethrough, a hinge plate secured to the door frame and provided with an opening through which said apertured lug extends, a block located in said frame and adapted to rest upon said last named hinge plate and provided with a socket in which the extremity of said apertured lug extends and also provided with an angular transverse opening extending through the block from the center of said socket, a torsional spring rod provided with an angular end portion secured within the angular opening in said block to prevent independent movement of the rod in the frame, said rod extending through the aperture in said lug into the body of the door, and means for fixedly connecting the other end of said rod to the door.

3. The combination with a door and its frame, of hinges connecting said door and frame one of said hinges comprising a hinge plate secured to the frame and provided with a pintle and also provided with transverse thickened portions said pintle having an aperture extending therethrough and of angular formation in said plate, a hinge plate secured to the door at one end and formed with an arm designed to extend over the corner of said door, and an integral elongated thickened portion parallel with said plate and provided with an opening through which said pintle is adapted to extend, a torsional spring rod provided with an angular end portion secured within the angular aperture in the first named hinge plate to prevent independent movement of the rod,



said rod extending through the aperture in said pintle into the body of the door, and means for fixedly connecting the upper end of said rod to the door.

- 5 4. The combination with a door having a longitudinal recess formed on its inner edge, opposed brackets extending into said recess and having a many sided aperture there-  
10 through, and torsional rods the ends of which are received within the bracket opening, of a plate secured to each end of the door and having a projecting circular pintle formed thereon, said pintle being tubular, plates secured to the opposite ends of the

door casing having each a circular opening 15 through which the adjacent pintle passes, and a block secured within the upper end of the door frame having a recess which fits the upper end of the adjacent pintle and an angular extension into which the upper end of 20 the torsional spring is received.

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

EDWARD C. <sup>his</sup> X SCRUGGS. [L. s.]  
mark

Witnesses:

W. B. BALLARD,  
T. F. HILL.