

F. H. ELLIS.
SPRING HINGE.

APPLICATION FILED JAN. 30, 1909.

957,603.

Patented May 10, 1910.

2 SHEETS—SHEET 1.

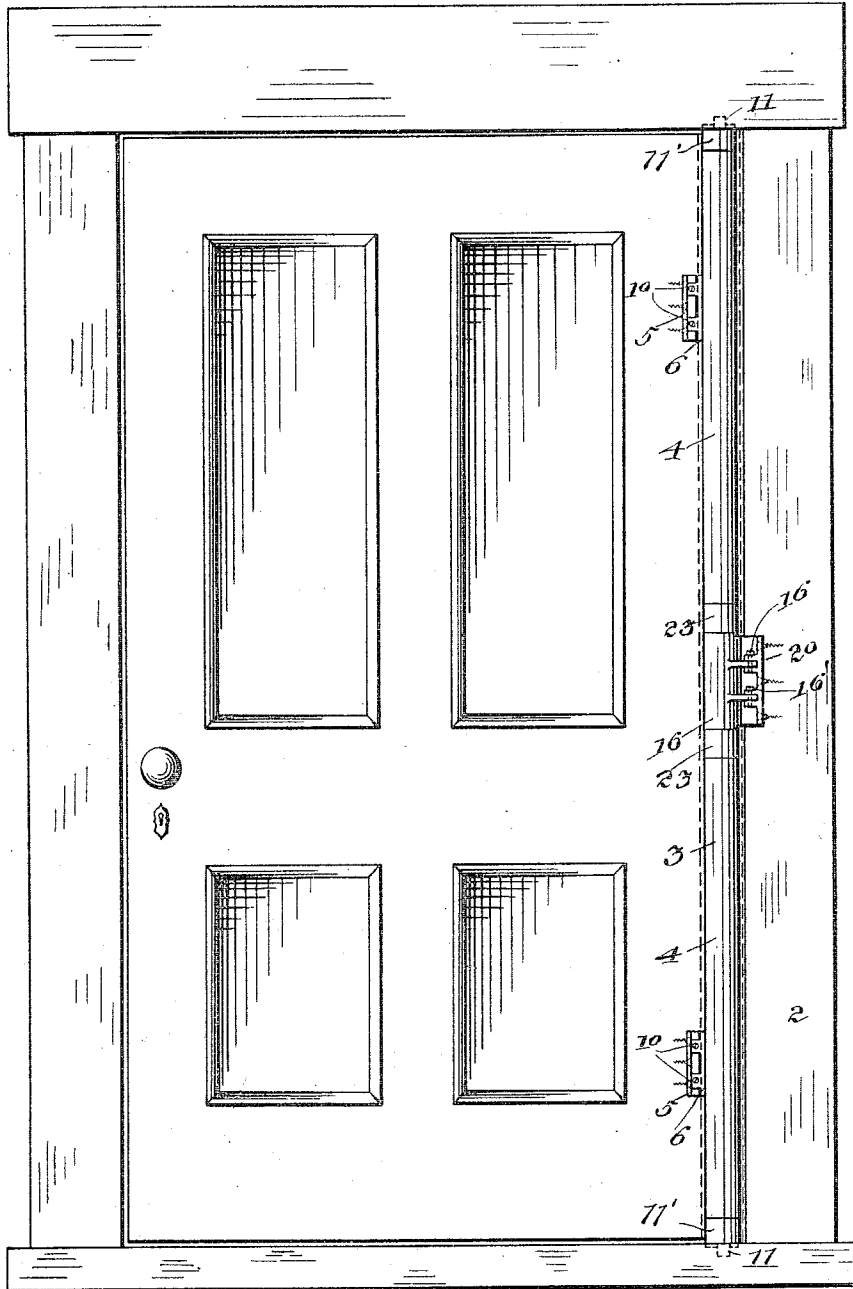


Fig. 1.

Witnesses:

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Inventor:

Frank H. Ellis,
By Joshua R. Potts
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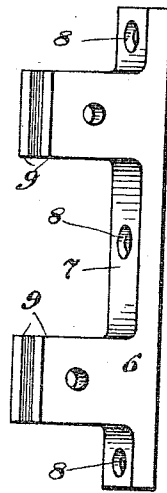
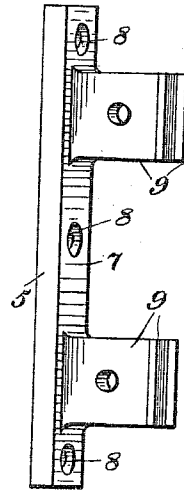
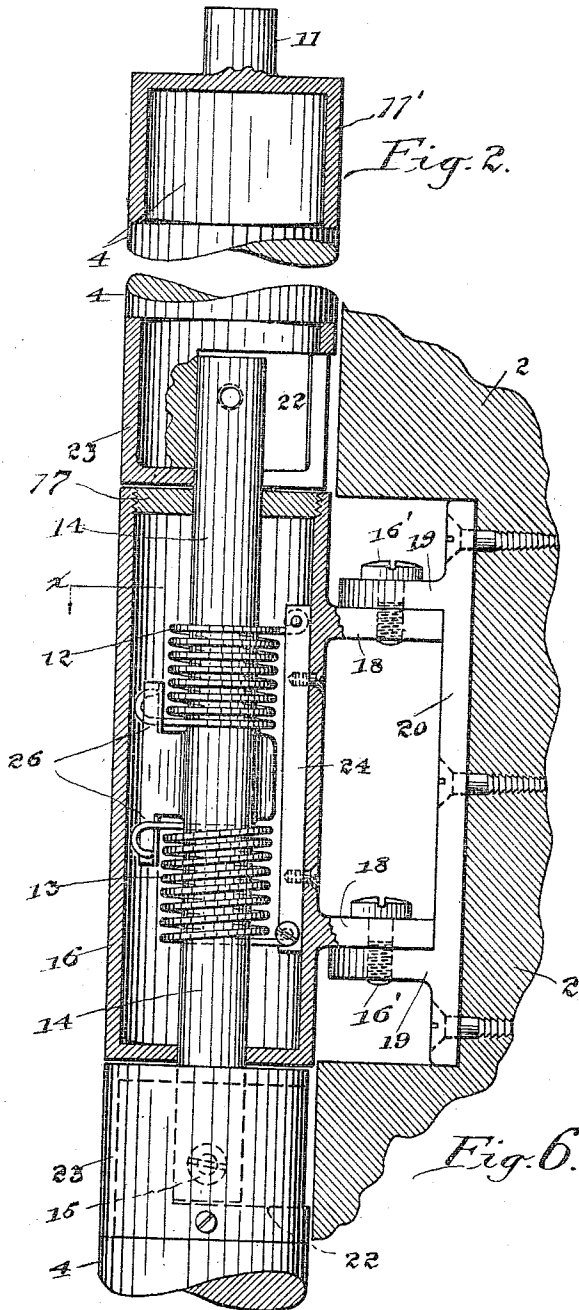


Fig. 4.

Fig. 5.

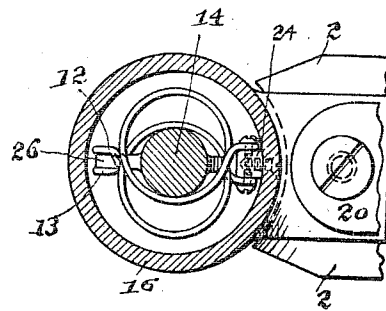
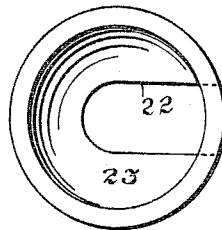


Fig. 3.

Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANK H. ELLIS, OF CHICAGO, ILLINOIS.

SPRING-HINGE.

957,603.

Specification of Letters Patent.

Patented May 10, 1910.

Application filed January 30, 1909. Serial No. 475,213.

To all whom it may concern:

Be it known that I, FRANK H. ELLIS, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Spring-Hinges, of which the following is a specification.

My invention relates to improvements in hinges and particularly to spring hinges for doors adapted to swing in both directions and which shall normally maintain the door in closed position.

The object of my invention is to provide an improved spring hinge of the character mentioned by means of which the door may be readily hung.

A further object of my invention is to provide a device as mentioned which shall effectually close and maintain a close joint between the door and the jamb to which it is hinged.

A further object of my invention is to provide a hinge characterized as above mentioned in which the spring portion may be readily inserted and attached after the door is hung and as readily removed without necessitating the removing of the door.

Other objects will appear hereinafter.

With these objects in view my invention consists generally in a pair of similar cylindrical members adapted to be secured to the hinge edge of a door and together being almost equal in height to that of the door. The cylindrical members are secured to the door so that the ends of the respective portions are substantially flush with the upper and lower edges of the door or project slightly beyond the same, and the outer ends of said members are provided with reduced cylindrical extensions which are adapted to enter sockets provided for them in the lintel and the sill of the door frame, forming pivots for the door to swing upon. Arranged between the adjacent inner ends of said cylindrical members is a spring casing which is preferably cylindrical and co-extensive in diameter with said members. The spring casing is rigidly secured to the door jamb and extending axially through said casing is a spindle 14, the ends of which are rigidly fixed in the respective ends of the cylindrical members attached to the door and hence rotates with them when the door swings. A pair of springs are arranged within the casing and coiled about the spindle in opposite directions, one end of

each of said springs being attached to the casing and the other end to the spindle or to a lug projecting therefrom.

My invention further consists in a device characterized as above described and of such construction that the spring casing and the spindle may be readily placed in position after the door is hung and as readily removed when desired.

My invention further consists in various details of construction and arrangements of parts all as will be fully described hereinafter and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification and in which—

Figure 1 is an elevation of a door and door casing equipped with a hinge embodying my invention in its preferred form, Fig. 2 is a detail vertical section of the hinge and a portion of the door casing or jamb, upon an enlarged scale, Fig. 3 is a horizontal section on the line *x* of Fig. 2, Figs. 4 and 5 are perspective views of brackets for detachably and rigidly securing the cylindrical members to the door, and Fig. 6 is an inner end view of one of said cylindrical members.

Referring now to the drawings 1 indicates a door and 2 the jamb of the door frame adjacent the hinge edge of the door. Secured to the hinge edge of the door are a pair of similar cylindrical members 4 which are preferably formed of wood and attached to the door so that the ends thereof project slightly beyond the upper and lower edges of the door to abut the lintel and sill of the frame respectively. The outer ends of the members 4 are reduced in diameter forming extensions 11 which are adapted to enter sockets provided for them in the lintel and sill. The projections 11 are preferably formed upon metal caps 11' secured to the outer ends of the members 4 as shown clearly in Fig. 2, said caps being of equal diameter with the members 4. The edge of the door and the adjacent jamb are concavely formed to receive portions of the members 4 and to maintain a tight joint between the door and the casing when both opened and closed.

The members 4 are detachably and rigidly secured to the door by brackets 5 and 6, the former being secured to the door and the latter to the respective members 4 by screws or other suitable fasteners. Each

bracket comprises a base plate 7 having a plurality of screw perforations 8, and two pair of lugs extending outwardly at substantially right angles thereto. The lugs of each pair are parallel and the corresponding lugs of the adjacent brackets are adapted to interlock and are held in interlocked position by screws 10.

The length of the members 4 is less than the height of the door leaving a space between the adjacent inner ends thereof, and in the space thus formed a cylindrical spring casing is arranged. The spring casing 16 substantially fills the space between the inner ends of the members 4 and is of equal diameter therewith. Extending axially through the casing 16 is a spindle 14, the ends of which project beyond the ends of the casing into the members 4 and are rigidly secured therein as by screws 15. Arranged within the casing 16 and coiled about the spindle 14 in opposite directions are a pair of helical springs 12 and 13. One end of each spring is secured to the casing 16 or a bar 24 fixedly mounted therein, and the opposite end to the spindle 14 or a lug 26 projecting therefrom.

Adjacent the casing 16, the door jamb 2 is provided with a recess in which is secured a bracket 20 having a pair of outwardly projecting ears or lugs 19. 18 indicates a pair of similar ears or lugs extending from the casing 16 into the recess in the jamb and secured to the lugs 19 by screws 16'. To remove the spring and spring casing it is but necessary to remove the screws 16' and 15, and to facilitate withdrawing the ends of the spindle 14 from the members 4 the ends of said members are provided with the radially disposed sockets 22 to receive said ends. To strengthen the ends of the members 4 they are provided with the metal ferrules or caps 23 which are slotted to correspond with the sockets 22. The upper end of the casing 16 is provided with a removable closure 17 threaded there into and which gives access to the interior of the casing for assembling the parts.

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

1. A door and door jamb in combination with a pair of cylindrical vertically disposed members of less length than the door

respectively secured to the edge of the door at its upper and lower portions, said door and said jamb being concavely formed to receive the same and the outer ends of said members being provided with projections adapted to enter sockets in the lintel and sill of the door frame, a spring casing seated in the space between said members and rigidly connected to said jamb, a spindle extending axially through said casing and having its ends rigidly fixed in said members and a pair of springs oppositely coiled about said spindle and having their opposite ends connected respectively to said spindle and said casing, substantially as described.

2. A door and door frame including the lintel, jamb and sill, in combination with a pair of cylindrical members of less length than the door, brackets secured to said door and said members, means connecting said brackets whereby said members are detachably secured to the edge of said door at its upper and lower portions, a spring casing seated in the space between said members and rigidly secured to said jamb, a member rotatably mounted in said casing and fixed to said members and a spring connecting said casing and said rotatably mounted member, substantially as described.

3. A door and door frame including the lintel, jamb and sill, in combination with a pair of cylindrical members secured to the edge of said door at its upper and lower portions and provided with reduced extensions on the outer ends thereof adapted to enter sockets in said lintel and said sill, a spring casing seated in the space between the adjacent ends of said members and rigidly secured to said jamb, a spindle extending axially through said casing and having its ends secured rigidly in the ends of said cylindrical members, said members being provided with radially disposed sockets to receive the same and a spring interposed between said spindle and said casing, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK H. ELLIS.

Witnesses:

HELEN F. LILLIS,
JANET E. HOGAN.