Sept. 4, 1923. 1,467,124

L. A. SUNDE ET AL

DOOR HINGE

Filed July 15, 1921

Fig. 1.

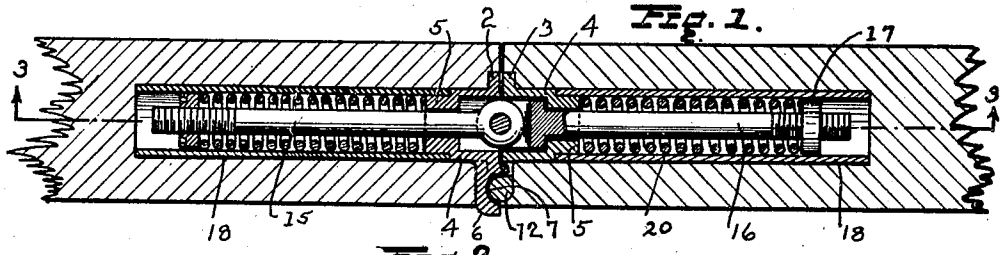


Fig. 2.

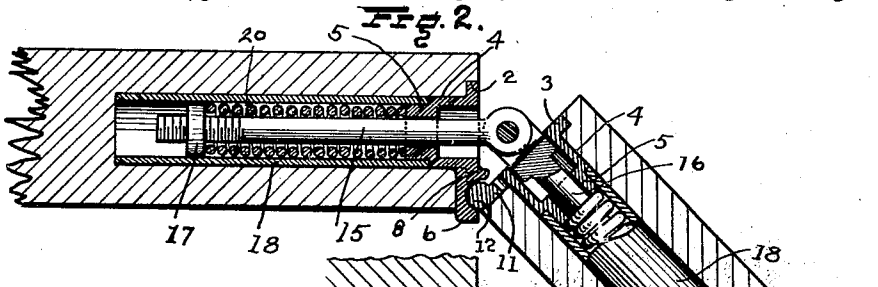


Fig. 3.

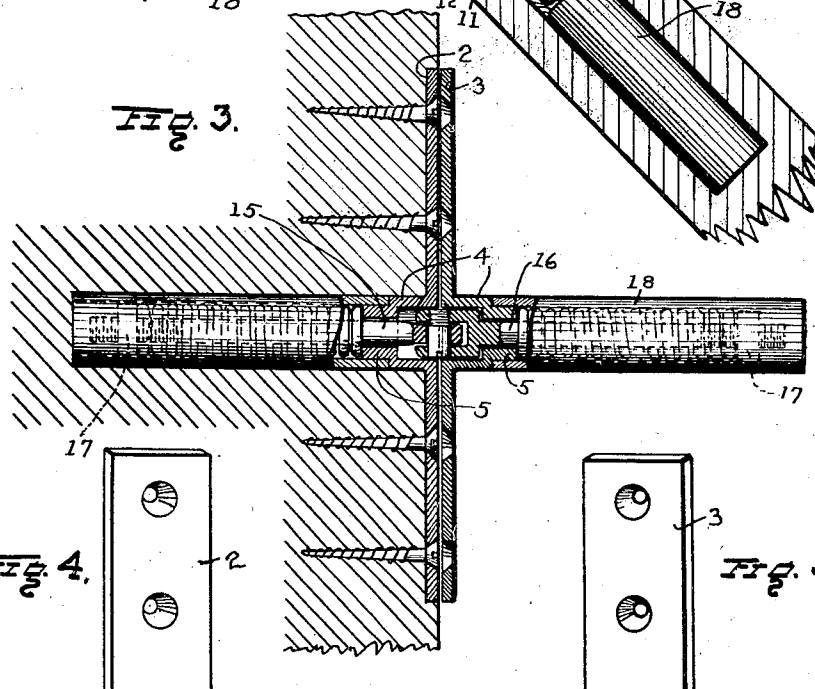


Fig. 4.

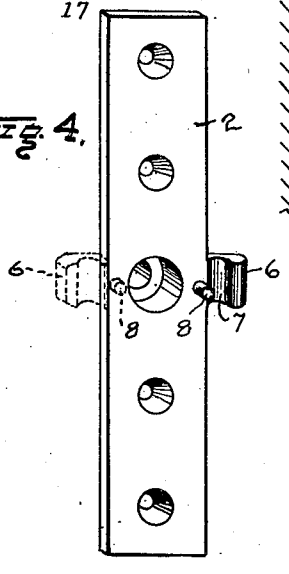
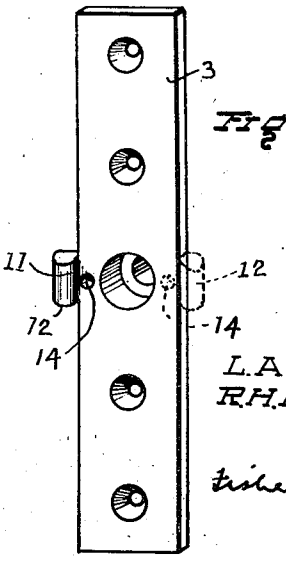


Fig. 5.



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UNITED STATES PATENT OFFICE.

LOUIS A. SUNDE AND RICHARD H. DALTON, OF CLEVELAND, OHIO.

DOOR HINGE.

Application filed July 15, 1921. Serial No. 484,914.

To all whom it may concern:

Be it known that we, LOUIS A. SUNDE and RICHARD H. DALTON, citizens of the United States, residing at E. Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in a Door Hinge, of which the following is a specification.

The present invention relates to an improvement in spring hinges for doors, and the object of the invention is to provide a hinge comprising two corresponding members having spring operating elements adapted to be completely enclosed and concealed within round openings bored into the door and the jamb or frame for the door.

In the accompanying drawing, Fig. 1 is a plan view and section of a door and door frame showing the hinge and door in a closed position, and Fig. 2 is a similar view showing a door hinge in a partly open position with the springs under tension. Fig. 3 is a vertical section centrally through the hinged parts on line 3—3, of Fig. 1. Figs. 4 and 5 are perspective views of the two hinged plates.

The invention comprises two relatively long and narrow flat plates 2 and 3 respectively, each having a round boss or hub 4 at one side centrally between the ends of the plate. The end portion 5 of each boss 4 is reduced in diameter and a round recess with a continuing opening of smaller diameter extends through each plate and its boss. Plate 2 is also provided with a lateral lug 6 having a round channel or groove 7 vertically at its front side, and a short pin 8 projects from the face of this plate at one side of said groove and adjacent the round opening in the plate. Plate 3 is also provided with a lateral projection 11 having a round portion 12 adapted to rest and turn within the groove 7 when the said plates are placed facing each other, and a small opening 14 is provided in the face of plate 3 to receive pin 8 on plate 2. Round bolts or links 15 and 16, respectively are adapted to extend and slide back and forth within the reduced openings in the bosses of said plates, and the meeting ends of said bolts or links are enlarged and pivotally connected together. As shown, one end of bolt 16 is forked to receive a reduced tongue or extremity on the other bolt 15 and these enlarged ends of the bolts are adapted to be confined within the larger opening or recesses in said plates. The outer or free end of the stem or main body of each bolt or link is screw-threaded, and a round nut 17 is screw-engaged therewith in bearing engagement with a stiff coiled spring 20 sleeved over the bolt. One end of the spring presses against the boss on the plate, and the tension of the spring can be increased or decreased by rotating the nut. Each spring is enclosed within a short section of tubing 18 sleeved over and snugly fitted upon the reduced portion of the round boss on each plate to protect the spring and provide a guide for the nut at the outer end of the bolt or link, it being understood that the link and nut slide back and forth together within the tube during the opening and closing movements of the door. The hinged plates may have pivot connections at only one side edge thereof, or such pivot connections may be duplicated at the other side edge as shown in dotted lines in Figs. 4 and 5, to provide a double acting hinge adapted to swing the door in either direction from its normally closed position in the door frame.

What we claim is:

A door hinge, comprising separate plates having lateral projecting portions and co-acting pins and openings in their face portions adapted to permit turning movements of said plates, round bearing bosses on said plates axially co-incident with each other, openings through said bosses in axial alignment, tubes affixed to said bosses, links pivotally connected in axial alignment at the meeting line of said plates and extending in slidable bearing through said openings in the bosses and into said tubes, coil springs within said tubes upon said links bearing against said bosses, and screw nuts engaged with the extremities of said links adapted to place said springs under compression.

LOUIS A. SUNDE,
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