No. 691,551. Patented Jan. 21, 1902.

M. A. D. KINCAID.

SPRING HINGE.

(Application filed Jan. 14, 1901.)

(No Model.)

Fig. 1

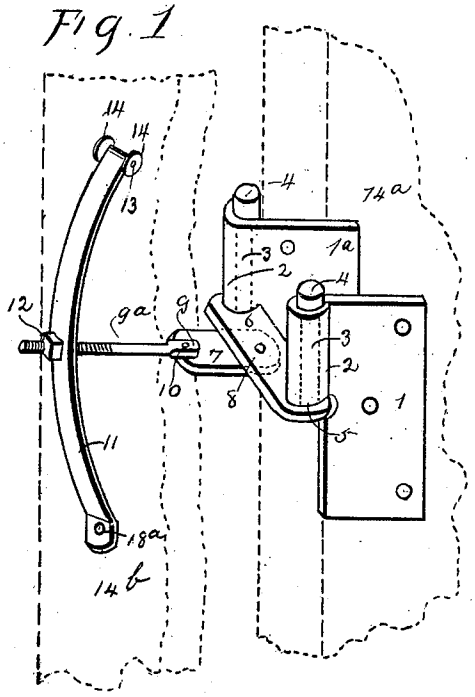


Fig 2

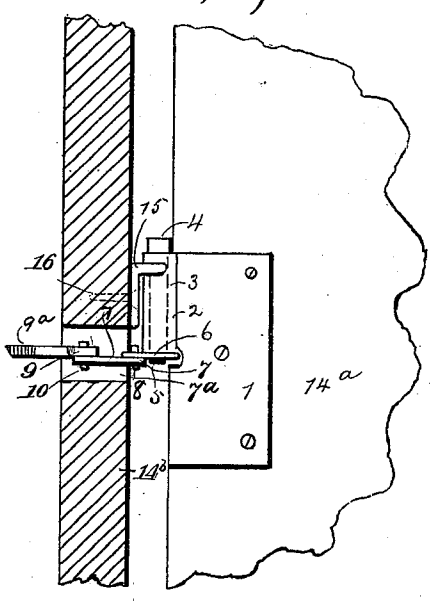


Fig. 3

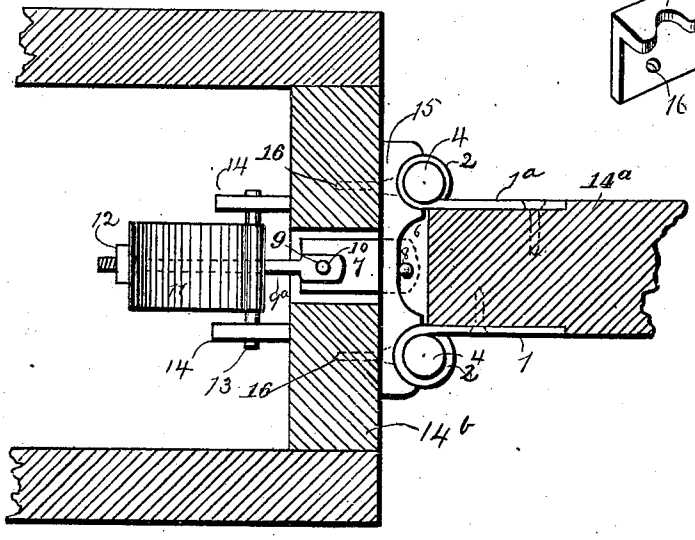
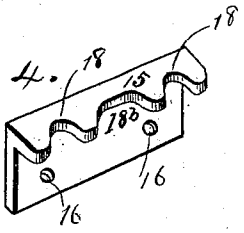


Fig. 4.



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UNITED STATES PATENT OFFICE.

MICHAEL A. D. KINCAID, OF DALLAS, TEXAS.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 691,551, dated January 21, 1902.

Application filed January 14, 1901. Serial No. 43,243. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL A. D. KINCAID, a citizen of the United States of America, residing at Dallas, the county of Dallas, State of Texas, have invented a new and useful Improvement in Spring-Hinges, of which the following is a specification.

The object of this invention is to provide a door-hinge of simple and durable construction swinging freely either way from a spring which is fast at one end, but adapted at the other to ride freely up and down the door-jamb.

To this end the said invention consists in the construction and combination of parts herinafter more particularly set forth and claimed.

In accompanying drawings, Figure 1 represents a perspective view of a hinge embodying my invention. Fig. 2 represents an elevation of the same, the joint being shown in vertical section and the spring being omitted. Fig. 3 represents a horizontal section taken just above the joint and showing the hinge mechanism in plan, and Fig. 4 represents a perspective detail view of the knuckle-plate.

Two upright plates 1 and 1^a, secured to the sides of the door 14^a, are provided at the rear corners thereof with two thimbles 2, which fit on vertical pins 3, headed above them at 4, the lower ends of these pins being rigid, with a horizontal plate 6 extending transversely across the rear edge of the door in contact therewith and into notches of the said plates 1 and 1^a. The rearwardly-presented edge of this plate is preferably curved, as shown. A rearward-extending horizontal plate 7 is pivotally connected near its outer end to the said plate by a pin 8. A tension-rod 9^a is connected by a pivot-pin 10 to the rear part 9 of the said plate 7. The screw-threaded rear end of the said rod is passed through a supporting-spring 11 and receives a nut 12 on the other side of the same, whereby the spring tension may be adjusted. This spring is fastened at its lower end 18^a to the door-jamb 14^b and curves upward in bow form to its free upper end, which is provided with a transverse spindle 13, having antifriction-rollers 14 arranged to bear against the said jamb as the said free end of the spring slides up or down, according to the increasing or diminishing pull upon the said spring, the resistance whereof will depend on the tightening or loosening of the said nut. An angular bearing-plate 15 is fastened by screws 16 to the front of said jamb, its projecting horizontal part being provided with two rounded indentations or undulations 18, which receive the cylindrical thimbles 2 aforesaid, and with a broader intervening undulation or recess 18^b, which similarly receives the curved rear edge of plate 6.

When the door is closed, both of the thimbles rest in the undulations 18 and the rear edge of plate 6 rests in undulation 18^b. When it opens in either direction, the thimble on that side turns in the corresponding undulation or indentation, becoming the pivot of the door and being drawn into such contact by the strain of the said spring, which increases with such opening, while the spring is straightened against its resistance and the antifriction-rollers ride upward. The door is returned from its open position to its closed or normal position by the reaction of the spring, the fixed or normal tension which it resumes when the door is closed being sufficient to hold the door against accidental opening.

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

1. A spring fixed at its lower end to the inner face of a door-jamb and having its upper end free to slide up and down thereon, in combination with the door member of a swing-hinge and intermediate devices pivotally connecting the middle of the said spring to the said door member.

2. A bearing-plate provided with curved indentations and attached to the outer face of a door-jamb in combination with a door member of a hinge having curved parts to fit into such indentations, a spring attached to the inner face of the door-jamb at one end and having the other end free and provided with antifriction-rollers to slide up and down thereon and devices pivotally connecting the said spring with the said door member substantially as set forth.

3. The door member of a hinge provided with curved bearing-surfaces at each of its rear corners and in the rear space between

them, in combination with a bearing-plate having curved surfaces arranged to fit the bearing-surfaces aforesaid, a spring attached to the inner face of the door-jamb and adjustable connections between said spring and said door member whereby the opening of the door in either direction will put the spring under predetermined tension substantially as set forth.

4. A spring-hinge comprising the plates 1 and 1^a provided with thimbles carrying pins and adapted to be secured to the sides of the door, a horizontal plate 6 rigid with said pins and extending across the inner edge of the door, a bearing-plate outwardly presenting curved recesses adapted to seat said thimbles and the curved rear edge of plate 6, in combination with a curved spring 11 adapted to be rigidly secured at one end to the inner face of a door-jamb and to bear at its free end on the said jamb, rollers mounted on the said free end and means for operatively connecting the said spring with the door member of the hinge, consisting of the plate 7 pivotally secured to the under side of the said plate 6 and the tension-rod 9^a pivotally secured to plate 7 adjustably secured to the central portion of the said spring substantially as set forth.

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