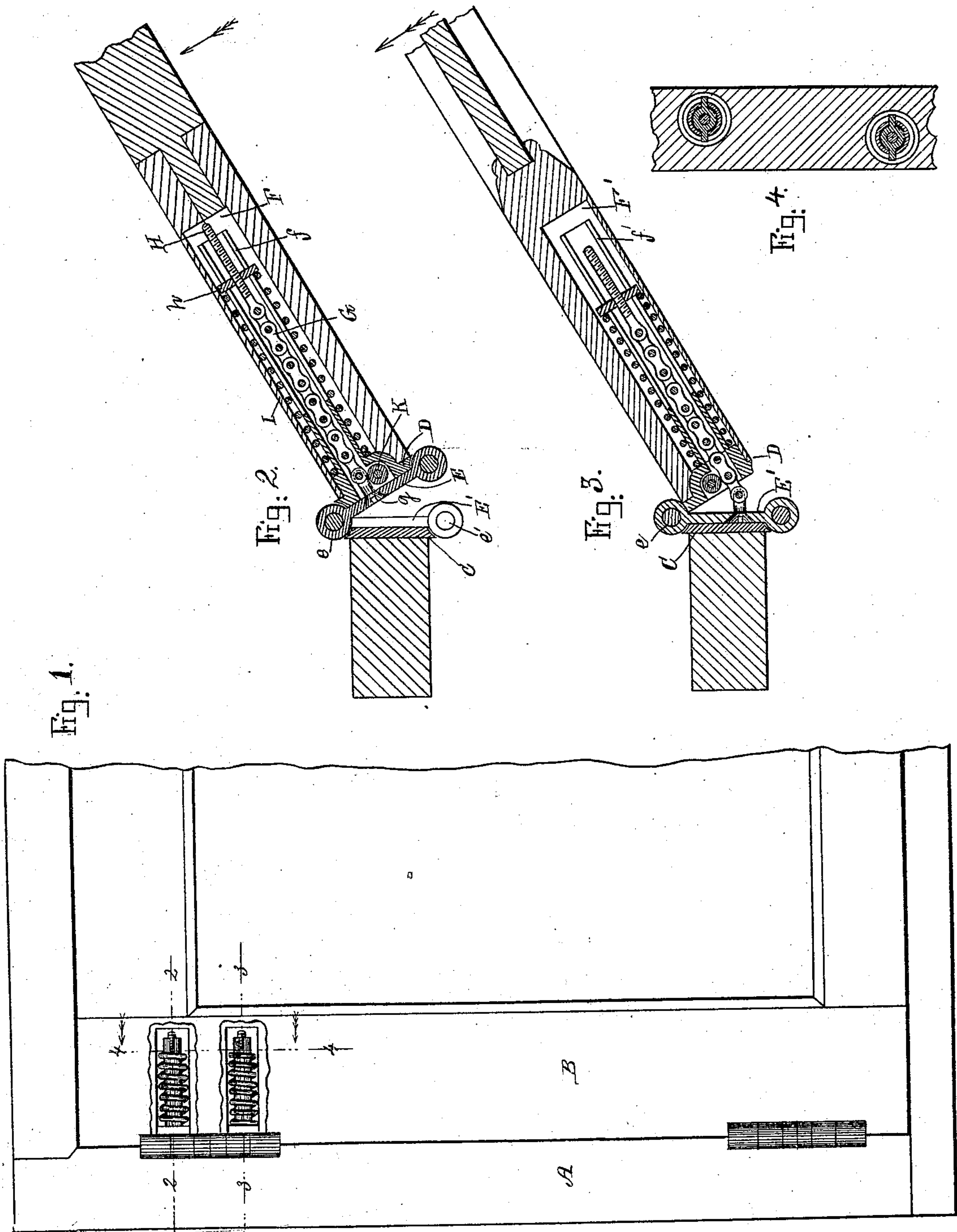


(No Model.)

F. D. ROBINSON.
SPRING HINGE.

No. 503,064.

Patented Aug. 8, 1893.



Witnesses.

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UNITED STATES PATENT OFFICE.

FRANCIS D. ROBINSON, OF SOMERVILLE, MASSACHUSETTS.

SPRING-HINGE.

SPECIFICATION forming part of Letters Patent No. 503,064, dated August 8, 1893.

Application filed September 16, 1892. Serial No. 446,112. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS D. ROBINSON, a citizen of the United States, and a resident of Somerville, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Double-Acting Spring-Hinges, of which the following, taken in connection with the accompanying drawings, is a specification.

10 This invention relates to improvements in double acting door springs and it is carried out as follows, reference being had to the accompanying drawings, wherein—

15 Figure 1 represents a front elevation of a door provided with my double acting door spring. Fig. 2 represents a horizontal section on the line 2—2 in Fig. 1 showing the door partially swung open. Fig. 3 represents a similar horizontal section on the line 3—3 20 shown in Fig. 1; and Fig. 4 represents a vertical cross-section on the line 4—4 shown in Fig. 1.

Similar letters refer to similar parts wherever they occur on the different parts of the 25 drawings.

30 The object of my invention is to provide a new and improved double acting spring hinge for automatically closing a door when swung in either direction and preventing such door from oscillating unduly after reaching its normal closed position.

35 In the drawings A represents the door frame to which the door B is hinged by means of two or more double acting hinges each composed of attaching plates C and D secured respectively to the door frame A and door B as shown. The upper portion of the plates C and D are hinged together by means of the intermediate link-plate E and the lower portion of said plates C, D, are hinged together 40 by a corresponding intermediate plate or link E'.

45 *e* and *e'* are the fulcra on which the door is swung respectively in its two and opposite directions, opposite to the intermediate plates or links E and E'. I make horizontal recesses F and F' in which are located respectively the longitudinally slotted tubes *f* and *f'* the ends nearest the hinge portions of which are secured to the plate D as shown. Within the 50 tube *f* is arranged a chain G the other end of

which is connected to a head *g* which is preferably attached to or journaled in a recess in the link-plate E as shown in Fig. 2, and said head *g* is notched like the head of a wood 55 screw so that it may be turned around its axis by means of an ordinary screw driver when it is desired to adjust the power of the door springs.

To the outer end of the chain G is connected 60 a screw threaded bolt H on which is screwed the adjustable nut *h* having side lugs or projections entering and moving in the slots of the tube *f* as shown in Figs. 2 and 4.

I is a coiled spring which surrounds the 65 tube *f* between the nut *h* and plate D. By turning the head *g*, chain G and screw bolt H to the right or left the tension of the spring I may readily be adjusted according to the size or weight of the door on which the invention 70 is to be used.

K is an anti-friction roller journaled in a recess in the plate D against which the chain G rolls when the door is swung on the pivot 75 *e'*, in a direction opposite to that shown by arrow in Fig. 2.

F', *f'*, G', *g'*, H', *h'*, I', and K' are corresponding parts arranged in connection with the intermediate plate or hinged link E' as shown in Figs. 1, 3 and 4. The tubes *f* and *f'* 80 extend in the same direction from the attaching plate D and they lie one above the other.

By swinging the door in the direction shown in arrows in Figs. 2 and 3 the spring I' is compressed while the position of the spring I is 85 not disturbed. By swinging the door outward in the opposite direction to that shown by arrows in said Figs. 2 and 3, the spring I will be compressed while the spring I' will remain in the normal condition. It will thus be seen 90 that the springs I and I' are alternately compressed according to the direction in which the door is swung and serve as means for automatically returning the door to its normal closed position in an efficient and noiseless 95 manner.

I have shown only one pair of springs in the drawings as arranged on the hinged door, and this would be sufficient on ordinary, light doors, but on larger doors an additional number of similar springs may be used if so desired; also if desired the spring or springs 100

may be arranged in the jamb instead of the door without departing from the essence of my invention.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. The combination, in a double acting spring hinge, of attaching plates, one of which is provided with tubes, link-plates pivotally connecting the attaching plates, springs supported by the tubes, nuts bearing against the springs and movable along and guided by the tubes, screw bolts engaging the nuts, rotatable chains connected with the link-plates and the screw bolts and means for rotating the chains to adjust the nuts, substantially as described.

2. The combination, in a double acting spring hinge, of attaching plates, one of which is provided with tubes, link-plates pivotally connecting the attaching plates, springs supported by the tubes, nuts bearing against the springs and movable along and guided by the tubes, screw bolts engaging the nuts, chains connected with the screw bolts, and rotatable notched heads carried by the link-plates and

secured to the chains for rotating the latter and adjusting the nuts, substantially as described.

3. A double acting spring hinge, consisting of attaching plates C and D, longitudinally slotted tubes *f* and *f'* arranged one above the other and both extending in the same direction from one of said attaching plates, the independent link-plates E and E' pivotally connecting the attaching plates, the chains G and G' connected respectively with the link-plates, and springs I and I' supported by the tubes and acting upon the inner ends of the chains whereby the springs are alternately compressed by the action of the independent link-plates when the door is swung in opposite directions, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 16th day of July, A. D. 1892.

FRANCIS D. ROBINSON.

Witnesses:

ALBAN ANDRÉN,

RICHARD A. MURPHY.