

O. KATZENBERGER.

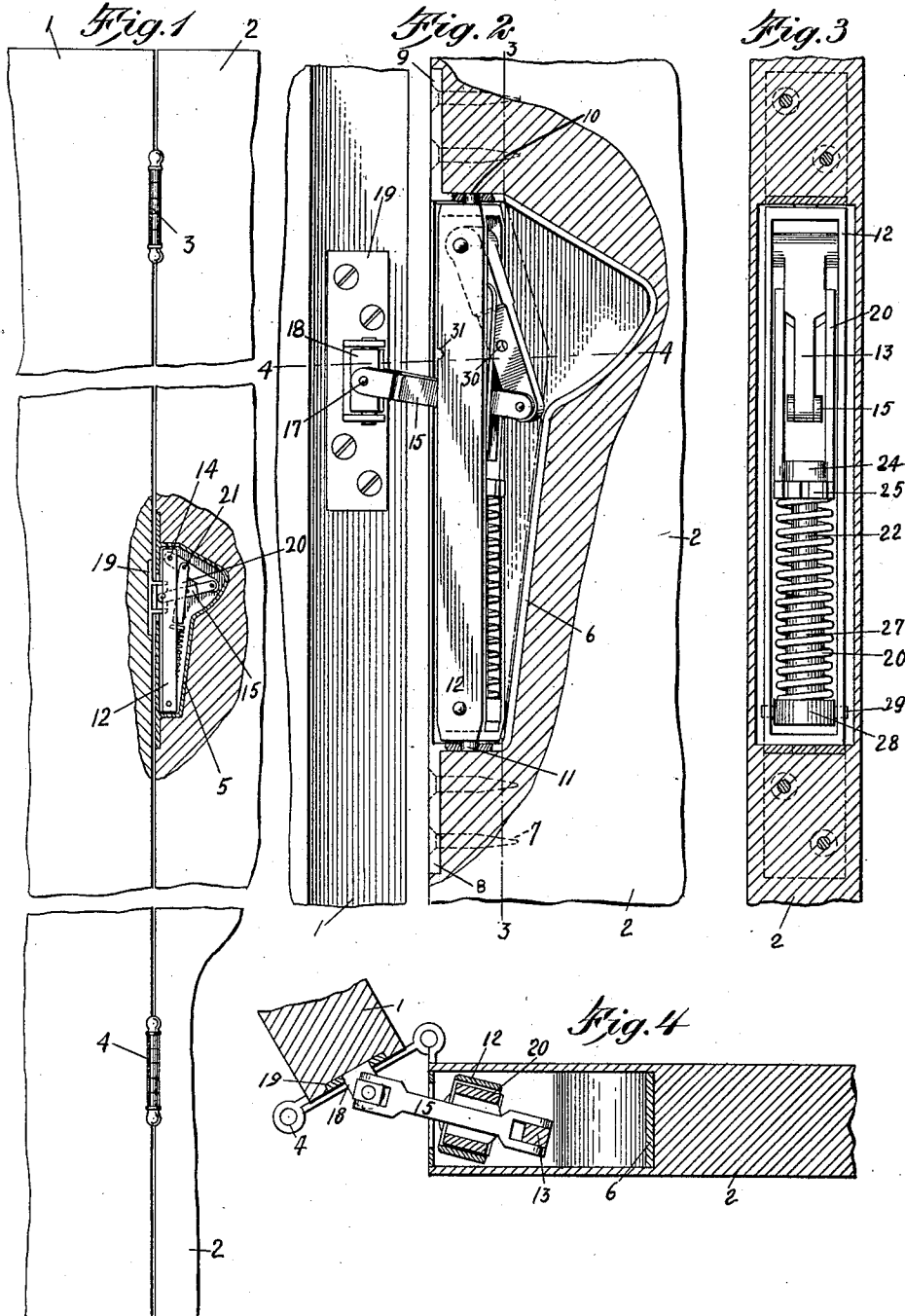
DOOR SPRING.

APPLICATION FILED JULY 24, 1912.

Patented Mar. 11, 1913.

2 SHEETS-SHEET 1.

1,055,755.



WITNESSES
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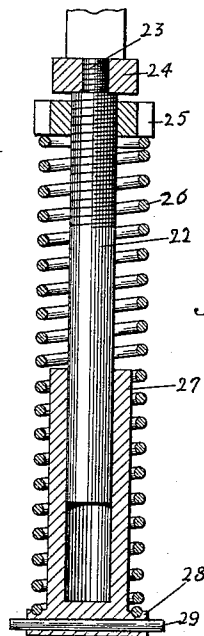
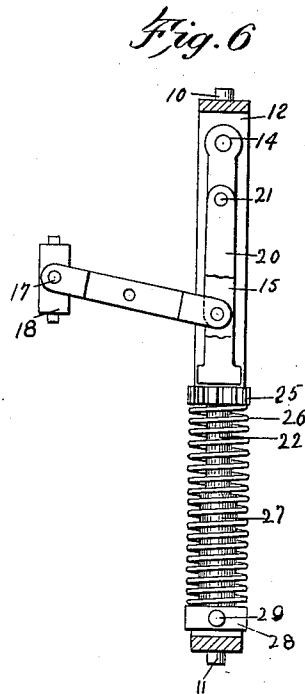
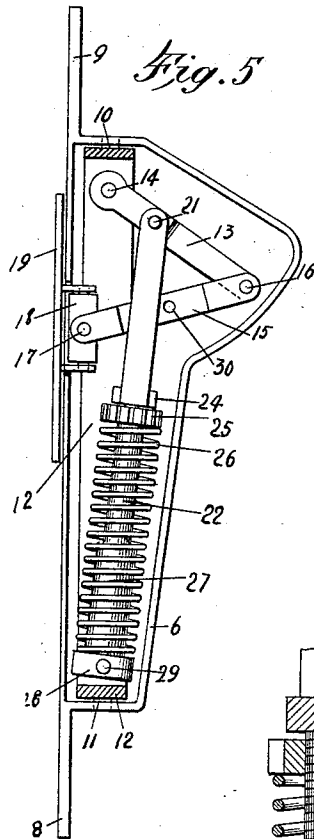
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UNITED STATES PATENT OFFICE.

OSCAR KATZENBERGER, OF CHICAGO, ILLINOIS.

DOOR-SPRING.

1,055,755.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed July 24, 1912. Serial No. 711,238.

To all whom it may concern:

Be it known that I, OSCAR KATZENBERGER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Door-Spring, of which the following is a full, clear, and exact description.

This invention relates to improvements in door springs, and particularly to invisible door springs, and has for an object to provide an improved structure which is of simple strong construction, and which is designed to exert such a strain on a door while the door is in a closed position so as to prevent wind pressure from opening the same.

A further object of the invention is to provide a door spring which may be applied at any time either before or after the door is hung.

A still further object of the invention is to provide an improvement in door springs which may be associated with any kind of hinge, which will permit a door to swing in one direction or in either direction, the spring causing the door to return from either position to a closed position and a maximum resisting tension of the door when in a closed position.

In carrying out the objects of the invention, a framework is provided which is adapted to be mortised into a door. This framework carries a substantially swinging mechanism which includes in its construction a swinging arm actuated by a spring so as to tend to continually remain in a predetermined position. Connected with this arm is a pivotally mounted link extending from the door to a pivotally mounted fixed member connected with the jamb of the door. By this construction and arrangement when the door is opened the arm is moved against the action of the spring so that the spring is brought under tension whereby when the door is released the spring will act for closing the door and bringing the link and pivotally mounted arm back to their original position.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side view of a door and a jamb, certain parts being broken away for disclosing an embodiment of the invention; Fig. 2 is a side view partly in perspective of

an embodiment of the invention, the same being shown applied and the door to which the device is connected being shown partially open; Fig. 3 is a section through Fig. 2 on the line 3—3; Fig. 4 is a section through Fig. 2 on the line 4—4; Fig. 5 is a side view on an enlarged scale of the construction shown in Fig. 1, certain parts being broken away for better disclosing the construction and arrangement; Fig. 6 is a detail fragmentary view showing the spring arm in a different position from that shown in Fig. 5; and Fig. 7 is an enlarged detail fragmentary view disclosing the spring support and associated parts.

Referring to the accompanying drawings by numerals, 1 indicates an ordinary door jamb of any desired kind, and 2 a door of any desired kind, which may be provided with hinges 3 and 4 designed to swing in one direction only or in both directions. An invisible door spring structure 5 is shown as having been mortised in place between the hinges 3 and 4, but it will be evident that the same may be mounted at any desired point. The door spring structure 5 is formed with a housing or base member 6 mortised into the door 2 and held therein by suitable securing means, as screws 7 passing through extending ears 8 and 9. The housing or base 6 is provided with an aperture at the top and also an aperture at the bottom for accommodating the journals 10 and 11 extending from a slotted bar 12 whereby the slotted bar 12 is rotatably mounted. An arm 13 is pivotally mounted at 14 in the bar 12 near the upper end so that the same may swing back and forth and also turn with the bar. A link 15 is pivotally mounted at 16 to the outer end of the arm 13 and is pivotally mounted at 17 to a shaft 18 journaled in a suitable bracket 19 connected in any desired manner, as for instance by screws, to the jamb 1. Preferably the link 15 is bifurcated at each end so as to straddle the arm 13 and shaft 18 in order to prevent a twisting action of any of the members. A bifurcated member 20 is pivotally connected at 21 to the arm 13 and at the opposite end is adjustably connected to a bar 22 which is threaded at 23 for fitting into the end 24 of the member 20 and for receiving an adjusting nut 25 for adjusting the tension of the spring 26. The bar 22 slidably fits into a sleeve 27 which is provided with an en-

larged end 28 for receiving one end of the spring 26. The end 28 is provided with journal members 29 designed to be fitted into the bar 12 whereby the sleeve 27, bar 22, and member 20 may oscillate and move pivotally back and forth as the arm 13 is swung inwardly and outwardly. The sleeve 27 and the bar 22 act as a guide for the spring and continually hold the same in position to permit the spring to act properly on the nut 25 for continually giving the member 20 a tendency to swing the arm 13 to the position shown in Figs. 1 and 5. When the door 2 is open the bar 12 and associated parts are pulled in a curved direction from the shaft 18 whereby the outer end of the arm 13 will be moved downwardly pivotally and cause a compression of the spring 26. As soon as the door is released the spring will cause the arm 13 and link 15 to act in such a manner as to swing the door closed.

When preparing the spring structure for shipping the link 15 is moved longitudinally until the aperture 30 comes opposite the notch 31 and a pin is inserted through aperture 30 which will fit into the notch 31 when the link 15 is released. This will hold the spring 26 under tension and will hold link 15 a sufficient distance away from the bar 12 to permit member 19 to be correctly mounted on the door jamb. It will also permit the base 6 to be correctly mortised into the door. After the link members have been properly placed in position the pin is removed and the device is then in condition for operation. The spring 26 is designed to cause a maximum resisting tension of the door when in a closed condition by co-acting with the particular construction and arrangement of arm 13, link, 15, member 20, and associated parts. As clearly shown in Fig. 5, when the door is closed, arm 13 extends almost at a right angle to the way spring 26 and member 20 extend, so that a small pull or tension brought to bear on arm 13 when in this position will have a greater influence thereover than when a much heavier tension is brought to bear upon said arm when substantially in the position shown in Fig. 2, as the pivotal members 21 and 14 are then almost in alinement so that the fulcrum is appreciably reduced. It will of course, be evident that the compression of the spring is greater when in the position shown in Fig. 2, than when in the position shown in Fig. 5, but the fulcrum upon which the same acts is much less and may be brought to a neutral point when the pivotal members 14, 21, and 29 are in line.

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

1. In a door spring of the class described,

a pivotally mounted fixed member adapted to be secured to a door jamb, and a movable member adapted to be secured to a door, said movable member comprising a pivotally mounted bar formed with a slot therein, an arm having one end pivoted in said slot so that the arm may swing into said slot and swing therefrom, a link pivotally mounted on said pivotally mounted fixed member and extending through said slot, means for pivotally connecting said arm and said link, a spring, and means actuated by said spring for normally holding said arm in a predetermined position and for moved therefrom.

2. In a door spring of the class described, returning said arm to said position when a pivotally mounted fixed member adapted to be connected with a door jamb, a housing adapted to be connected to a door, a pivotally mounted bar arranged in said housing and in substantially the same plane as said fixed member, an arm pivotally connected at one end with said pivotally mounted bar, a link pivoted at each end for connecting the outer end of said arm and said pivotally mounted fixed member whereby whenever said pivotally mounted bar is moved out of the plane of said fixed member, said arm will be moved pivotally, a pivotally mounted thrust member connected with said arm, and a spring continually acting on said thrust member for causing said arm to continually pull on said link.

3. In a door spring of the class described, a pivotally mounted fixed member adapted to be connected with a door jamb, a base member adapted to be mortised into a door co-acting with said jamb, a pivotally mounted bar formed with a longitudinal slot extending for substantially the full length thereof, an arm pivoted at the upper end of said slot, a spring carrying sleeve pivoted at the lower end of said slot, a thrust member pivotally connected with said arm and having the lower portion telescopically fitting into said sleeve, and a spring pressing against said thrust member and against said sleeve for continually tending to move the outer end of said arm in an upward direction, a link connecting the outer end of said arm and said pivotally mounted fixed member, said link being pivoted at both ends.

4. A pivotally mounted slotted bar adapted to be connected with a door, an arm pivotally mounted in one end of said slotted bar, a spring, means actuated by said spring for normally holding said arm in a predetermined position and for moving said arm back to said position when moved therefrom, a link pivotally connected with said arm and extending through said slotted member, and means for pivotally connecting said link to the jamb of said door.

5. In a door spring of the class described, the combination with a jamb and a door, said door being formed with a notched out portion, of a housing fitting into said
5 notched out portion, a slotted bar pivotally mounted in said housing and extending parallel with the axes of the hinges of said door, a pivotally mounted arm connected with said slotted member, a spring for normally holding said pivotally mounted arm
10 in a predetermined position and returning said arm to said position when moved there-

from, a link pivotally connected at one end to said arm, a rotatable fixed member connected with said jamb, and means for pivotally connecting said link with said rotatable fixed member. 15

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

OSCAR KATZENBERGER.

Witnesses:

OSCAR KATZENBERGER, Jr.,
JOHN CONNOLLY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
