L. A. WARNER.
Door-Spring.

No. 214,213. Patented April 8, 1879.

Fig. 1.

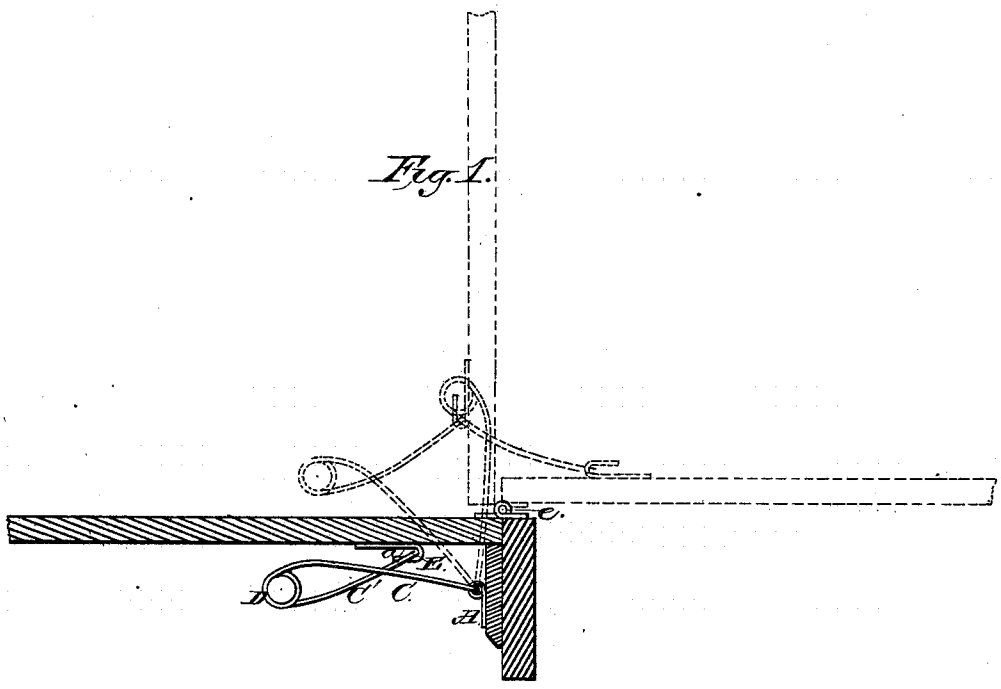


Fig. 2.

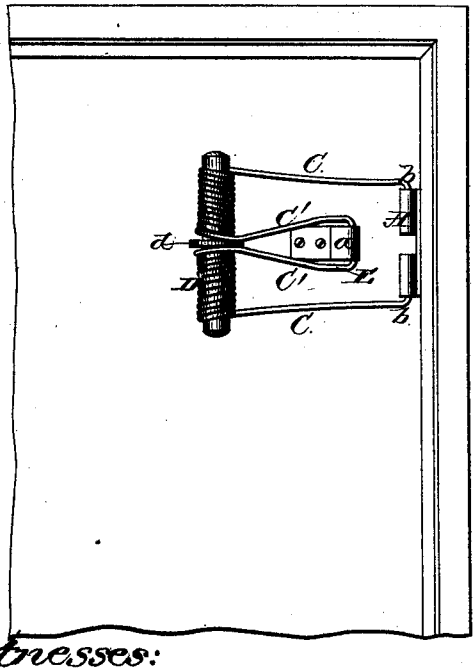
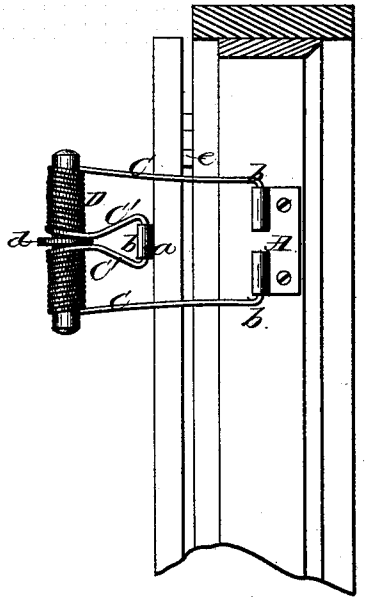


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

LEMAN A. WARNER, OF FREEPORT, ILLINOIS.

IMPROVEMENT IN DOOR-SPRINGS.

Specification forming part of Letters Patent No. **214,213**, dated April 8, 1879; application filed April 24, 1878.

To all whom it may concern:

Be it known that I, LEMAN A. WARNER, of Freeport, in the county of Stephenson and State of Illinois, have invented a new and useful Improvement in Door-Springs, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

My device is an improvement on the door-spring for which I received Letters Patent dated August 31, 1875, and is like that in purpose, having for its object the closing of a door and holding it closed, and also when the door is opened beyond a certain point it acts to hold it open; and it consists, principally, in the method of connecting the spring to the door and the door-jamb, and in dispensing with the spring B of the old device, thus relieving the spring D of the counteracting force of the spring B when the door is held open.

Figure 1 shows a horizontal sectional view of the spring with the door open, closed, and at a dead-center, (by the dotted lines,) or when the spring acts directly across the line of the door-hinge. Fig. 2 is an upright view of the spring on the door with the door closed. Fig. 3 shows the same with the door open.

A is a hinge-plate or half-hinge, screwed fast to the door-jamb, in which the spring works, as seen at *b b*, Fig. 3. C C are long arms extending from the hinge A to coils D D, the ends of which, at *b b*, Fig. 3, are bent at right angles, to serve as journals and form the hinge, as seen at *b b*, Fig. 2, in connection with the half-hinge A. C′ C′ are shorter arms, extending from the coils D D to the loop E.

E is a loop, the two sides of which are bent as near as may be at right angles, leaving a space between, straight, to serve as a journal, as in Figs. 2 and 3, at E E. D D are coil-springs, made in the same wire as the arms.

a is a hook, made of suitable size to receive the loop or journal E, for which it serves as a box or bearing. The hook is screwed fast to the door, and connects the spring to the door, serving the triple purpose of fastening the spring to the door, holding the spring in an upright position, and providing a pivot-joint that will not wear out as a curved or link joint is liable to.

The ends *b b* of the arms C C are fitted to and work in the hinge A in a similar manner, and for the same purpose—viz., to keep the spring in an upright position and provide a pivot-joint. The arms C C are also bent so as to spring together, to hold the ends *b b* in the hinge A.

c is the hinge of the door. *d* is a metal ring, (used to take the place of the wood enlargement in the old device,) through which a wood pin is driven tight, so as to keep the pin in place, the object being to make room for more coil of wire and keep the whole device more compact.

The arms C C are crimped or bent, so as to press tight on the ring *d*, thus holding the coils on the pin, while the loop or journal E is left wide enough for the purpose stated above—viz., holding the spring in an upright position.

The spring is made of one piece of wire, the ends and center being bent, as before stated, and the coils made in the proper position in relation to the ends of the arms and loop E. The ends *b b* of the arms C C are placed in the hinge A, and the spring then stands as shown in Fig. 1, A D and D to E, (different positions, shown by dotted lines.) The loop or journal E is pressed between the arms C C against the door and placed in the hook *a*. The loop E and the arms C C may be unhooked and rehooked at pleasure without removing screws.

When in position the pressure of the spring is in a direct line from the hook *a* to the hinge A wherever the door stands. The spring acts nearly on the principle of a jointed or compound lever, the coil serving as one end of the lever; hence, as the spring shuts up by closing the door, the force of the spring is increased, thus holding the door tight, and when the door is swung open the pressure from *a* to A is lessened, while the tension of the spring is increased, thus making the pressure on the door very nearly uniform, until the hook *a* is carried back, so that a line from *a* to A will pass over the center of the door-hinge, when the door will stand still, and if

pressed slightly beyond that point the spring will press and hold it open.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the arms C C, provided with the bent ends *b b*, the coil-springs D D, arms C′ C′, and loop E, with the half-hinge A and the hook *a*, all constructed and used substantially as and for the purpose described and shown.

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Witnesses:
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