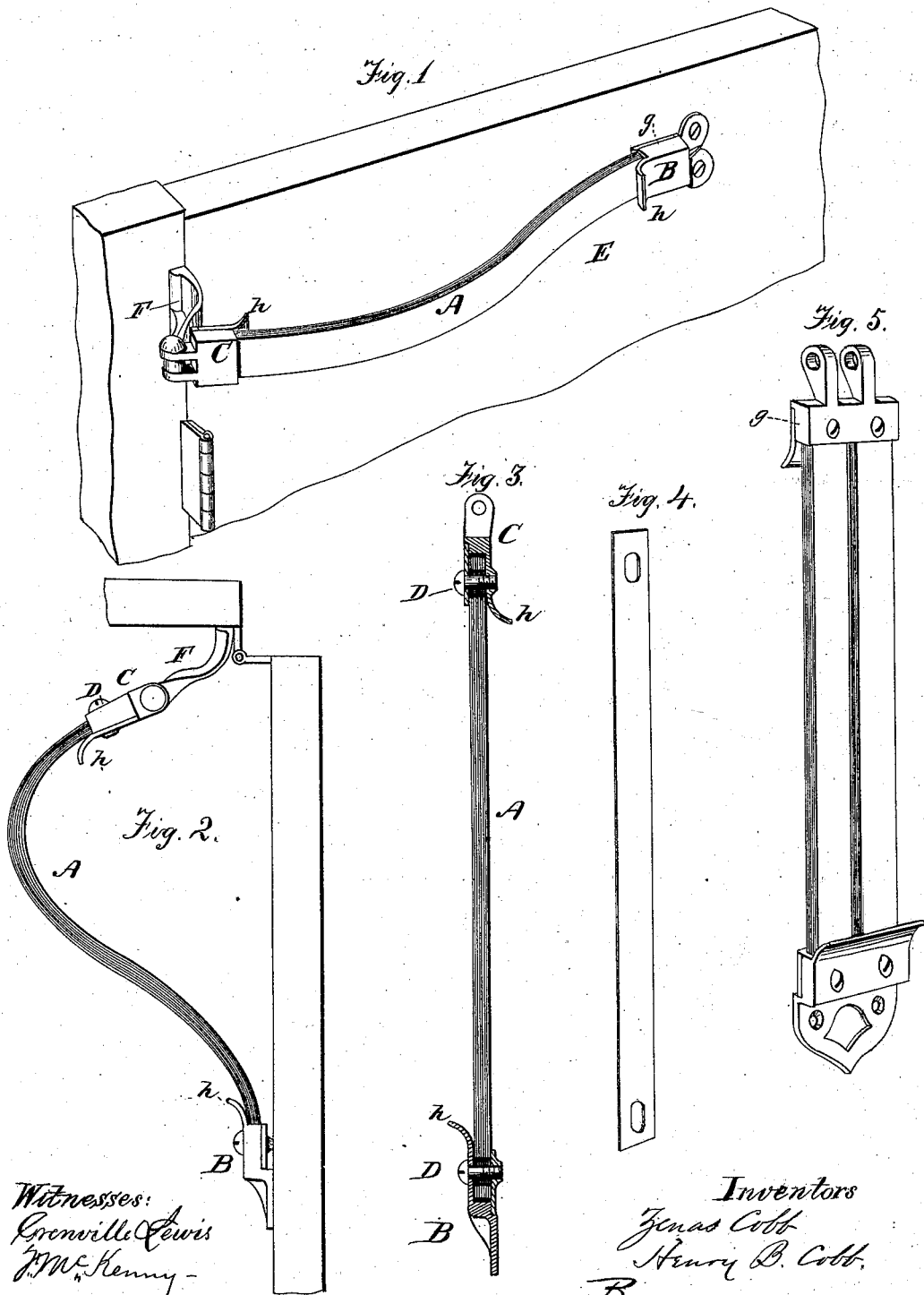


Z. & H. B. COBB.
DOOR-SPRINGS.

No. 194,511.

Patented Aug. 28, 1877.



Witnesses:
Gronville Lewis
J. M. Kenny

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UNITED STATES PATENT OFFICE.

ZENAS COBB AND HENRY B. COBB, OF WILMINGTON, DELAWARE.

IMPROVEMENT IN DOOR-SPRINGS.

Specification forming part of Letters Patent No. **194,511**, dated August 28, 1877; application filed July 31, 1876.

To all whom it may concern:

Be it known that we, ZENAS COBB and HENRY B. COBB, of Wilmington, in the county of New Castle and State of Delaware, have invented a new and Improved Door-Spring; and we do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view of the spring applied to a door. Fig. 2 is an edge view, showing the position of the spring when the door is fully opened. Fig. 3 is a longitudinal section. Fig. 4 is a perspective view of one of the spring-leaves; and Fig. 5 is a perspective view, showing a double-leaf instead of a single-leaf spring.

Similar letters of reference in the accompanying drawings denote the same parts.

Our invention has for its object to improve the construction and operation of door-springs, that they shall be more efficient and durable than those commonly employed.

To this end the invention consists, first, in constructing the spring of several thin steel leaves, which are so attached to their fastenings, by means substantially as described, that when the door is opened the leaves shall slide freely upon each other, and be compressed in the form of a reverse curve, for the purpose of increasing the force of the spring; and, second, in the novel construction of the clasp and bracket by which the spring is attached to the door and door-jamb.

In the accompanying drawings, A is the spring, composed of a number of thin steel strips or leaves placed together, and attached at opposite ends to a bracket, B, and clasp C. The ends of the leaves are slotted longitudinally for the passage of screws D, by which they are attached to the bracket and clasp. The bracket is secured to the central rail of a door, E, as shown in Fig. 1, and the clasp is hinged to the outer end of a curved arm, F, projecting outward from the door-jamb. This arm projects farther to the front of the door than the bracket B, and holds the spring in a line curved slightly in opposite directions, so that when the door is swung open the spring shall be compressed in reverse curves, as

shown in Fig. 2, for the purpose of increasing its force to move the door and hold it closed. The double curvature shortens the length of each curve, and therefore imparts greater force to the spring under compression than it could possibly possess if arranged to form a single arc or curve from end to end. The slotted ends of the springs permit them to move or slide freely upon each other, so that they shall operate independently without springing apart. Lugs or side pieces *g g* on the bracket and clasp serve to guide the ends of the springs, and prevent them from turning on the screws D.

The ends *h h* of the bracket and clasp, over which the spring bends when the door is opened, are curved outward away from the spring, as shown, to form broad guiding-surfaces for it to bend over, instead of sharp edges, which would be liable to break the spring if the door were opened quickly.

The arm F curves back somewhat away from the door for the purpose of allowing the spring to be carried back upon the door-jamb to hold the door open.

A door-spring composed of a series of sliding leaves is powerful enough to close any door to which it may be applied, and elastic enough to yield readily and uniformly when the door is opened. If a single thick spring were used, it would either break or remain permanently bent when compressed by the opening door, while a single thin spring would be too weak to effect any purpose whatever.

Instead of employing one series of springs, two may be used, placed side by side, as shown in Fig. 5, in which case the bracket and clasp are made a little wider, and have partitions—four in each—to properly separate the two series of springs.

Having thus described our invention, what we claim is—

1. A door-spring composed of a series of thin steel leaves, which are each attached to suitable supports at both their ends, by means substantially as described, and adapted to slide freely upon each other throughout their entire length when the door is opened and closed.

2. The door-spring composed of a series of thin steel leaves, attached at both their ends

to supports upon a door and its jamb, all the leaves sliding freely upon each other, and each compressed in reverse curves when the door is opened, substantially as described, for the purpose specified.

3. The bracket B, hinged clasp C, and curved arm F, combined with the spring A, composed of a series of thin steel leaves adapted to slide upon each other, substantially as described, for the purpose specified.

4. The bracket B and clasp C, each provided with a curved end, *h*, substantially as described.

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Witnesses:

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