G. L. Bailey,

Door Spring.

No. 14,686. Patented Apr. 15, 1856.

Fig 2.

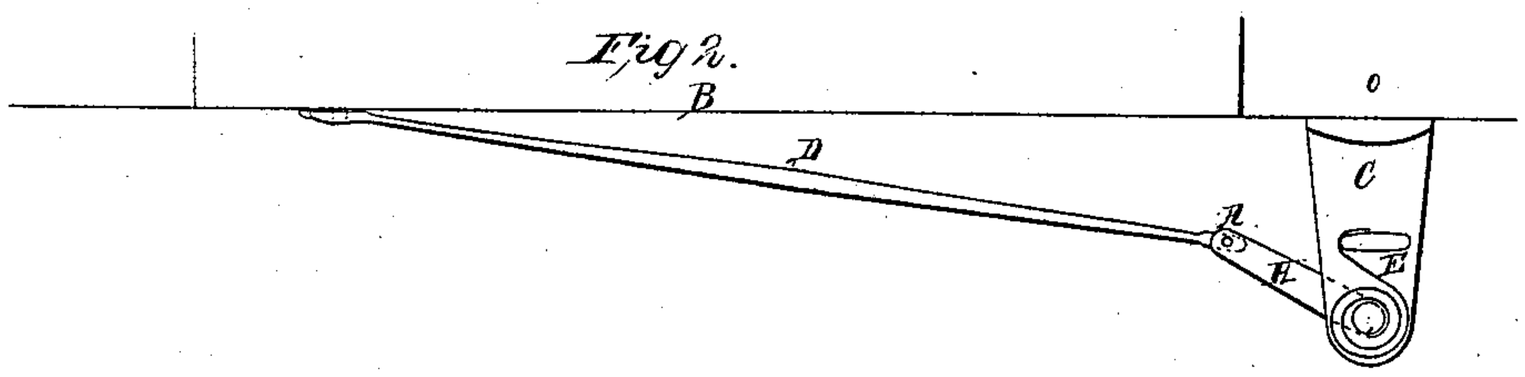
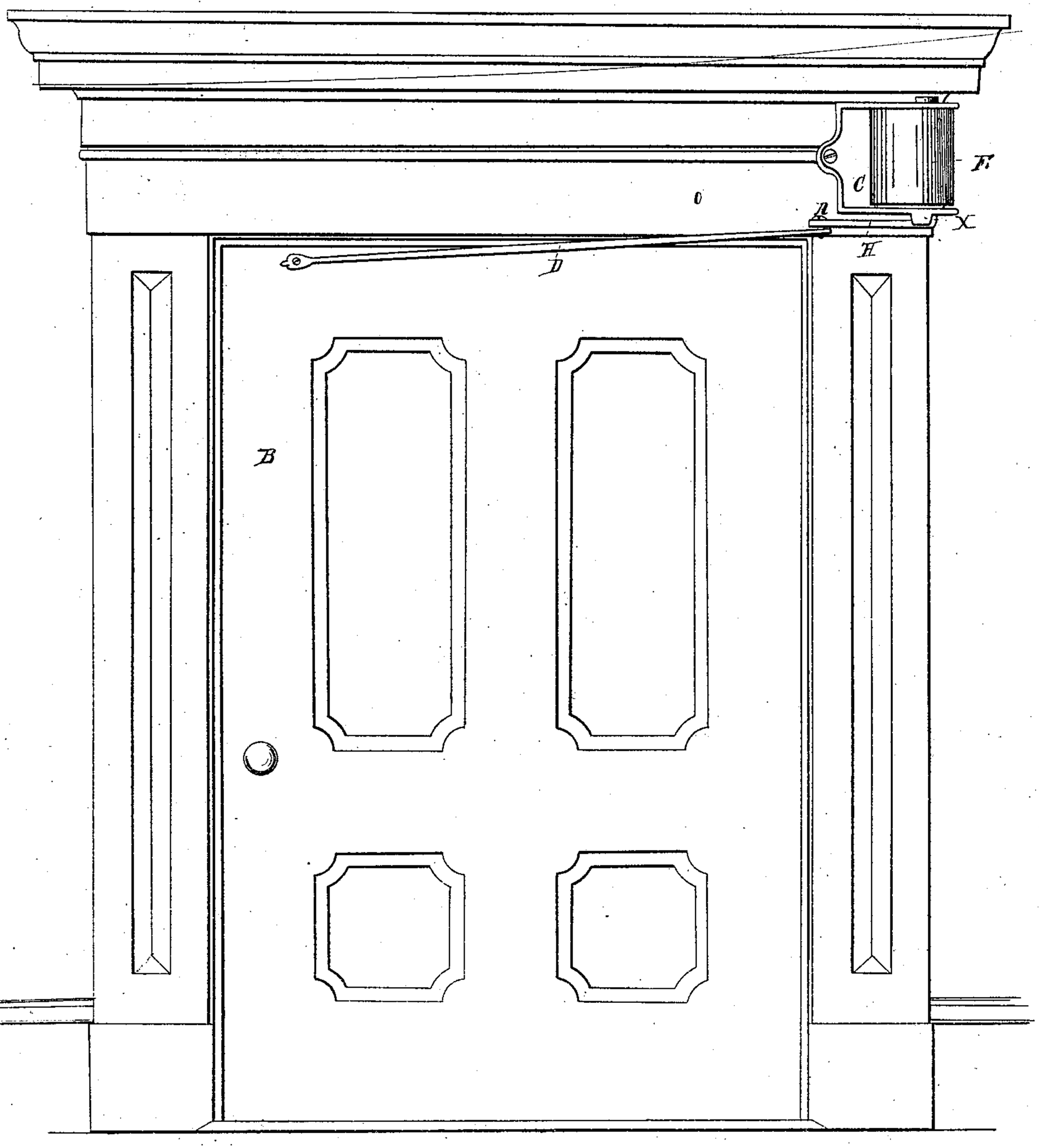


Fig 1.



UNITED STATES PATENT OFFICE.

GILBERT L. BAILEY, OF PORTLAND, MAINE.

DOOR-SPRING.

Specification of Letters Patent No. 14,686, dated April 15, 1856.

To all whom it may concern:

Be it known that I, GILBERT L. BAILEY, of Portland, in the county of Cumberland, State of Maine, have invented a new and useful Improvement in Door-Springs for Closing Doors; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a perspective view, and Fig. 2 is a bird's-eye view of a section showing the position of the rod and crank arm when the door is closed.

The nature of my improvement consists in providing a long rod, and so connecting it with the common crank and coiled spring, and the door, as to cause it to act on the principle of the toggle-joint, in closing the door, and to make the pressure greatest, when the door is closed.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct my spring and crank in the usual form, and fasten bracket C,—as shown in the accompanying drawings—which supports them, to the casing of the door frame O, by the usual means, and at the side of the door, or above the top of the same near the line of the hinge, according as the door is intended to open but half or the whole of the way. In case the door B, is required to open quite back, the spring is placed above the door, so as to allow the long vibrating rod D to pass under the crank arm H. The vibrating rod D is made of a length varying with the width of the door, and may be made of iron or steel. It is fastened by one end to the door, near its outer edge, on the side opposite to the hinges, by means of a common wood-screw, or otherwise; while the other end or that next the spring, is connected with the crank arm H, by the crank pin A, so as to form a joint or jointed rod, the crank arm H, making a part of the rod.

When the door is closed, the crank arm H, and the long vibrating rod D, form nearly a straight line, as shown in Fig. 2. The crank arm H is made of a length to enable it to be turned quite around, without striking the casing of the door.

When the door is opened, the crank arm H is turned in toward the hinge of the door, bringing the long vibrating rod D, close with the surface of the door a part of its length, while the remaining portion, is slightly bent over the top of the door; and in this situation acts as a secondary spring to start the door toward closing, when it is half way, or quite open. I also place a stop X on the under side of bracket *c*, which may be cast on, to prevent the crank arm H, from passing outward from the door quite to a straight line with the rod D, the action of the spring E being to force the crank arm outward. By this arrangement of the rod D, and crank arm H, the pressure of the spring E, on the door, is really the greatest when the door is shut, and this increased pressure is the result of the direct action of the spring, E and not of the momentum which the door acquires from the force of a hard strained spring, so that it readily overcomes any slight resistance which may be encountered just as the door is closing, and at the same time the pressure is lessened as the door is opened, by the passage of the crank arm H, inward toward the hinge of the door. The pressure on the door, when it is closed is exerted on, or near the side farthest from the hinge, by means of the long rod D.

Another advantage obtained by this arrangement over all other door springs, is that the travel of the spring E is essentially lessened, in consequence of the crank arm H, being made to turn inward toward the hinge of the door, and the necessity of its being strained to an undue degree as the door is opened wide, is thereby almost entirely obviated: thus the durability of the spring E is much increased, and at the same time its action made more free.

I do not claim a coiled spring in connection with a crank, as my invention, for these are well known devices. Neither do I claim having the spring act most powerfully when the door is closed, as new. I am also aware that a toggle-joint has been used heretofore for various purposes, and I do not claim this in itself, as my invention. But

What I do claim as new, and my invention, or improvement, and desire to secure by Letters Patent of the United States, is,—

The spring E, crank-arm H and rod D, constructed and operating in connection as described, so that the crank arm turns inward while opening the door.

GILBERT L. BAILEY. [L. S.]

Witnesses:

WM. H. JERRIS,

JOHN RICHARDSON.