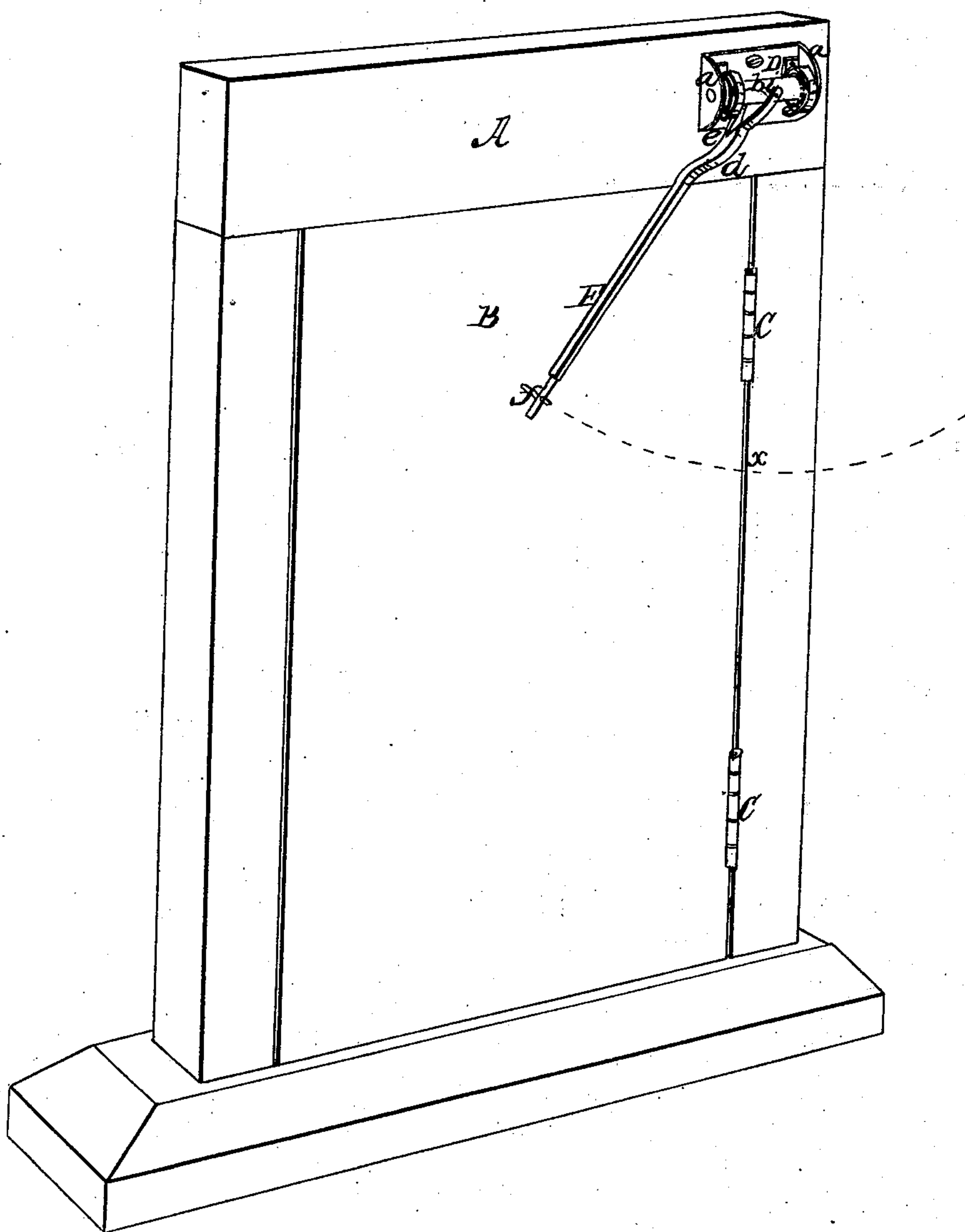


D. G. Smith,

Door Spring.

N^o 14,326.

Patented Feb. 26, 1856



UNITED STATES PATENT OFFICE.

DAVID G. SMITH, OF CARBONDALE, PENNSYLVANIA.

DOOR-SPRING.

Specification of Letters Patent No. 14,326, dated February 26, 1856.

To all whom it may concern:

Be it known that I, DAVID G. SMITH, of Carbondale, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Door-Springs; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, making a part thereof, and which represents a perspective view of a door and frame and the spring connected therewith.

I am aware that a contrivance for closing a door has been essayed, in which an arm passed obliquely from the door frame to the door, being secured to each so that in opening the door, it will rise on its hinges, and when released the door will close by running down upon its hinges. To such contrivance I lay no claim whatever, as I purpose using such a method as will make it applicable to any door already hung, regardless of the kind of hinges used thereon, and not requiring the door to rise on its hinges.

The nature of my invention consists in so arranging a series of devices consisting of a permanent arm upon a barrel or shaft controlled by a spring or springs, as that said arm which acts as a lever against the door, shall practically increase in length as the door approaches its seat, and thus preserve greater power at the point where the spring usually becomes too weak by uncoiling or expanding to effectually close the door. It might be proper here to state, that this object has been aimed at by causing the arm to run on a cam plane, or a series of planes, or, by changing the fulcrum of the arm. These, however, involve intricacy, and are by no means reliable, while they are much more expensive than my contrivance, and I lay no claim to such.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A represents a door frame of any of the usual well known forms, and B the door hung thereto at C, C, by the ordinary butt, or any other kind of hinges.

On the top piece of the door frame, for convenience only, as it may as readily be placed on the side piece of the frame, I arrange the apparatus for holding open or closing the door, and which I describe as

follows: D, is a metallic plate permanently attached to the door frame, and provided with lugs or ears *a, a*, in which the journals of a barrel or shaft *b*, are supported, so as to freely turn therein. The plane of the axis of the barrel *b*, stands at right angles to a plane drawn through the hinges of the door, and the center of the barrel may stand in line with said hinges, when placed on the top of the frame, or on one side of said line, when placed on the side of the frame. Or the axis of the barrel may be parallel with the axes of the door hinges if found desirable, the effect depending mainly upon the obliquity of the arm or lever as will be explained.

c c are springs one end of each fastened to the plate D, and after being coiled around the drum, barrel, or shaft *b* have their other ends fastened to said shaft.

E, is an arm or lever, bent at *d*, so as to set close to the door, and forked at *e*, so as to span or straddle the barrel or shaft *b*, and is pivoted at its forked ends to the barrel, by a pin *i*, passing through the barrel, and through said forked ends that it may turn on said pin *i*. The other end of the lever or arm E, is laid into a hook *f*, placed in the door in such manner that the arm shall stand oblique as seen in the drawing, and may be removed therefrom, if not required for any purpose.

The operation is as follows: The door on being swung back causes the end of the arm in the hook *f* to travel in a curved line, as represented in red, and when it arrives at the point *x* on said line, it having coiled up the springs *c c* on the barrel *b*, it will stand at that point, as the action of the coiled springs is to press the door against its own hinges, and not to swing it thereon. But when the door is swung in either direction enough to carry the arm beyond the point *x*, then the tendency of the springs is to swing the door on its hinges in that direction and the farther the point of the arm is from the point *x* in moving, in the same ratio will the tendency of the springs to uncoil, be more effectually applied to the swinging of the door—the point *x*, being a dead point, where there is no such action. Springs as ordinarily applied to doors, are weakest just where the door is to be closed, and if the door fits its frame snugly, or the raising of a bolt or latch is to be effected, the spring will not do its work, unless coiled

so tight for that purpose, as to make it almost impossible to open the door against its action. With my arrangement the dead point is at x , and the power of the springs
5 is equally applicable to swing the door open or shut, from that point or to hold it there, and as the end of the arm moves from that dead point, so is the action of the springs increased in efficacy, until the door is closed,
10 or thrown wide open.

Having thus fully described the nature of my invention what I claim therein as new and desire to secure by Letters Patent, is—

The use of the lever E , in connection with the barrel b , and springs c, c , constructed 15 and operated in the manner described.

DAVID G. SMITH.

Witnesses:

HUGH McCOMB,
ALMON CROCKER.