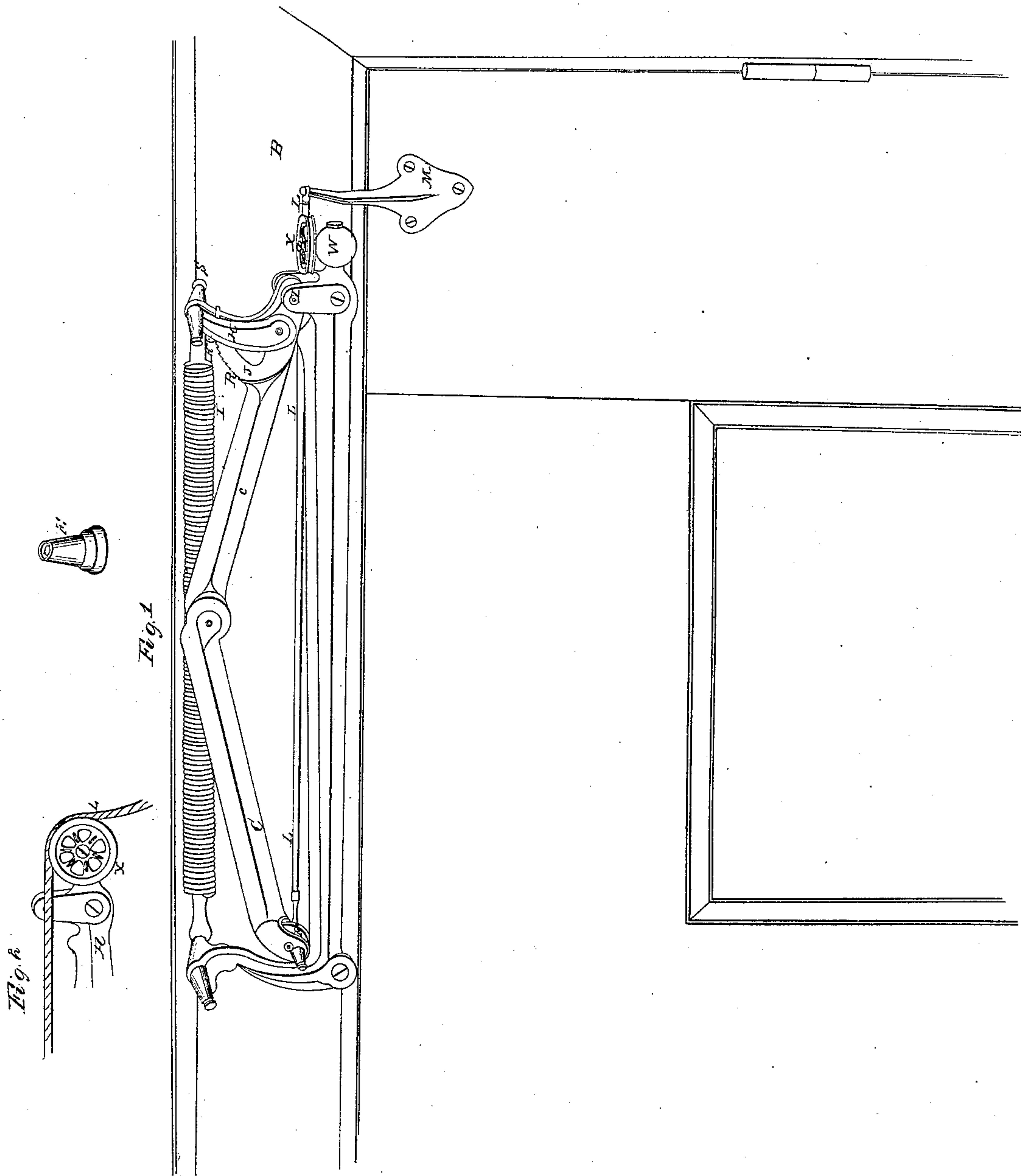


*A. Westcott,*

*Door Spring.*

*N<sup>o</sup> 13,770.*

*Patented Nov. 6, 1855.*



*Witnesses.*  
*J. M. Lawton*  
*R. J. [unclear]*

*Inventor*  
*Amos Westcott*

# UNITED STATES PATENT OFFICE.

AMOS WESTCOTT, OF SYRACUSE, NEW YORK.

## DOOR-SPRING.

Specification of Letters Patent No. 13,770, dated November 6, 1855.

*To all whom it may concern:*

Be it known that I, AMOS WESTCOTT, of the city of Syracuse, in the county of Onondaga and State of New York, have invented  
5 a new and useful Improvement in Door-Springs, of which the following is a full description, reference being had to the accompanying drawings, which form a part of this specification and represent a view in  
10 perspective of a door and door-frame with my spring attached thereunto.

In my improved spring the door is connected by a strap or cord to the movable extremity of a rule-jointed lever, whose opposite  
15 extremity is free to turn upon a point, and is acted upon by a spiral spring, which tends to straighten the lever, whenever it is flexed by the opening of the door. The movable extremity is provided with grooved  
20 wheel which runs upon a track so placed as to determine the direction in which the cord is to be drawn and also to modify the effect of the spring upon the door.

In the accompanying drawing the spring  
25 and lever are made fast to a frame A, the upper edge of which constitutes the track, over which the grooved wheel passes and which is screwed to the door frame B, over the door. Intervening between the frame  
30 and casing are studs or feet E, to bring the frame out so as to admit of the movement of the arms or levers and springs. These feet are detached from the frame, and may be placed upon either side of it, thus making  
35 the same frame answer whether the door open to the right or left. These feet are connected with the frame and casing by the screw which holds the frame to the casing passing through them. The jointed lever C,  
40 is pivoted at the extremity P, nearest the hinge post of the door frame to the frame A, and its opposite extremity, or that nearest the lock post, is furnished with a friction roller F, which moves upon the track  
45 G, whose direction corresponds with the door frame B. The run of the friction roller is grooved to guide it along the edge of the track. An arm H, projects from near the hinged extremity of the lever C, to which is  
50 attached the movable end of a spiral spring I, whose opposite end is made fast to the frame A. The arm H, is pivoted to the lever C, at a point D, near its connection with the frame A, and secured in its position or from  
55 being drawn forward by the spring, by means of a dog K, and ratchet R, the former

being attached to the arm H, and the latter constituted by a circular projection from the lever C, the center of which circular  
60 projection is the point D. The movable end of the lever C, is connected by a cord or strap L, to a bent standard or bracket M, projecting upward from the upper end of the door. The strap or cord works upon a  
65 fixed pulley X, placed at the hinged post end of the frame. This pulley revolves upon a pivot which is screwed into a hub W, which is on a projection from the end of the frame. The screw upon which the pulley  
70 revolves passes through the rim of the hub, and serves also as a set screw to fix the position of the hub and pulley, to any desired angle with the frame work of the door spring.

From the accompanying drawing which  
75 represents the position of the several parts when the door is closed, it is evident that the arm or lever H, the rule jointed lever C, C, and the lever constituted by that portion of the door between its hinged edge and  
80 the point to which the cord is attached on the standard M, are each in a position to exert their utmost power upon the door, and that the first effect of opening the door is to diminish the power of each respectively,  
85 and to such an extent is this true, that the arrangement may be such as wholly to neutralize the power of the spring in respect to any tendency to close the door when it is  
90 fully open. It is also evident that if the relative arrangement of the several parts were fixed, or invariable, the ratio of the decrease of power upon the door, would  
95 also be uniform, and the effect would be uniform, if the resistance to be overcome was equal in all cases; but the relative amount of power which it is desirable to retain at the respective points of the opening is by no means the same in different  
100 cases and weight of doors. For example in tight doors, and where the friction is hence slight the arrangement may be such as to allow the power to be very nearly exhausted and still the door will be acted upon  
105 with sufficient force to move it from any point which may be desired, whereas if only the same relative power were to be retained in heavy doors, where the friction upon the hinges is necessarily great, a spring of sufficient power to close the door firmly from  
110 any point near its closing, would not move it at all when it was at or past right angles



with the casing. It therefore becomes a matter of moment to be able to graduate the power to all the respective points of opening so that it will act in a uniform manner whether the door be tight or heavy. This in my improved door spring is accomplished by making the upper end of the arm or lever H, vibrate upon a pivot or fixed point, and so arranging it as that it may be fixed by a dog and ratchet in any desired position. If the door is tight and there is hence little resistance to be overcome the arm H, is drawn back so as to be perpendicular to the center of motion. If the arm starts in this position, it is evident that its power commences to diminish the instant the lever C, begins to rise and that when the lever C, is perpendicular as is the case when the door is fully open the extremity of the arm H, will have fallen horizontally with the center of motion and the power will be acting against and wholly expended upon the pivot upon which both vibrate; but when the door is heavy and presents a greater resistance this leverage must be retained which may be done by detaching the dog and carrying the extremity of the arm H, forward or toward the free end of the rule jointed lever.

Another feature in my improved door spring is the means herein described for making adjustable the cord pulley X. As the cord or strap is always placed horizontally and the end attached to the door is necessarily thus moved it follows that the cord pulley must also be placed and working in a horizontal position, at whatever angle the frame A may be placed with re-

spect to the door or casing, and as there is frequent occasion to change this angle, from a vertical to a horizontal position, either to clear an overhanging molding which would interfere with a perpendicular motion of arms, or to place the spring upon the opposite side of the door under the lintel in which position (see Fig. 2) the arms must work horizontally, it is evident that some means of adjusting this pulley with reference to the frame is desirable. This in my improved spring is accomplished by connecting the pulley with a hub W, which revolves upon a projecting end of the frame, to which it is made fast at any desired position, by a set screw, which passes through its rim. The same screw which is thus used to keep the hub from turning projects upward from it, and serves as the pivot upon which the pulley turns and to secure it in place. If but a limited number of positions are deemed necessary the hub may be made solid and constitute a part of the frame, and provided with as many holes, into which the pivot sustaining the pulley may be secured and changed from hole to hole to alter the position of the pulley with reference to the frame.

What I claim as new and desire to secure by Letters Patent in this class of door spring is—

Adjusting the jointed lever substantially as herein set forth, and also adjusting the pulley as and for the purposes described.

AMOS WESTCOTT.

In presence of—

R. J. NEVEN,  
JAMES LAURENSEN.