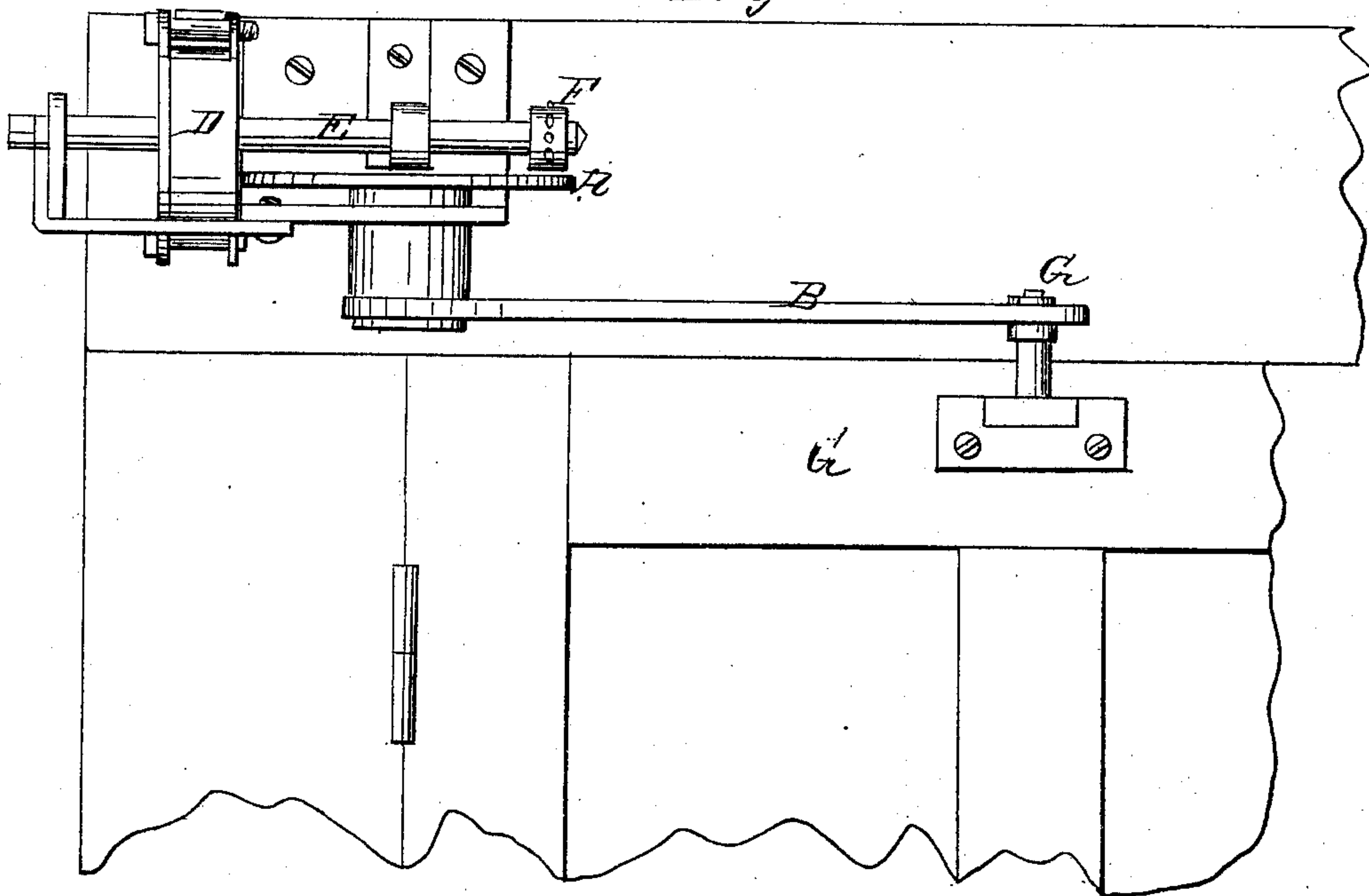
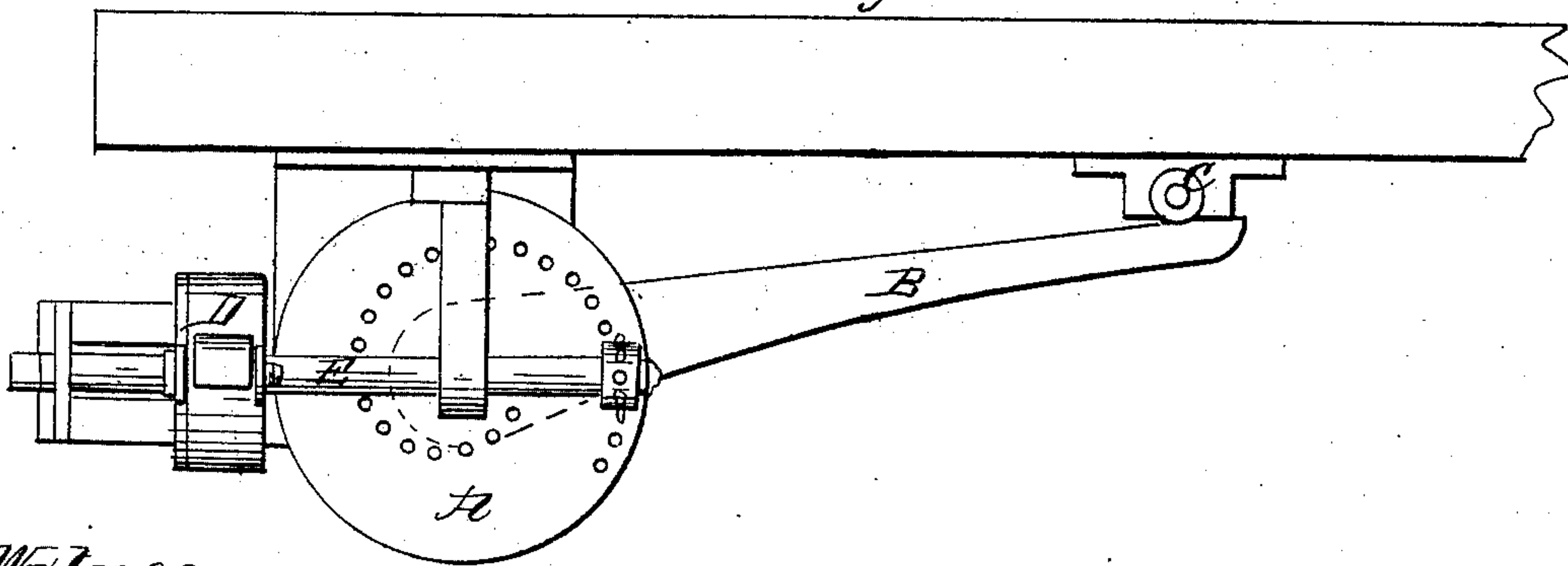


*H. Smith,*  
*Door Spring.*  
*N<sup>o</sup> 59,667.      Patented Nov. 13, 1866.*

*Fig. 1*



*Fig. 2*



*Witnesses:*  
*G. A. C. Smith*  
*John A. Bassett*

*Inventor.*  
*Henry Smith*

# UNITED STATES PATENT OFFICE.

GILES K. COATES, OF BOSTON, MASSACHUSETTS, ADMINISTRATOR OF  
HENRY SMITH, DECEASED.

## IMPROVEMENT IN MECHANISMS FOR CLOSING DOORS.

Specification forming part of Letters Patent No. 59,667, dated November 13, 1866.

*To all whom it may concern:*

Be it known that I, HENRY SMITH, of Salem, in the county of Essex and State of Massachusetts, have invented a new and useful Improvement in Mechanisms for Closing Doors; and I do hereby declare that the following is a full and exact description of the same, with reference to the accompanying drawings—

Figure 1 of which is an elevation; Fig. 2, a plan.

This invention relates to the combination of suitable mechanism with an equalized coiled spring for the purpose of closing doors, gates, &c.

On the 30th of January, 1866, I obtained Letters Patent for improved mechanical movement, wherein it is shown that the power of a coiled spring may be equalized and its uniform tension preserved by means of a scroll-rack and pinion.

The object of this invention is to combine this movement with a suitable device in such a manner that the force of the spring is exerted uniformly upon the door or gate, closing it after it has been opened with the regular force which this peculiar arrangement of the spring gives. It will be obvious that there are many different means by which this result can be carried out; but I have selected that which seems to be the most direct application, and which will indicate in the best manner the nature of the invention.

The results obtained by the combination of the scroll-rack and pinion with the spring are so fully set forth in the patent above referred to that it is not necessary to enlarge upon it further, except to say that the power of the spring is rendered perfectly uniform during the whole period of its uncoiling.

It is also obvious that the position of the elements of the combination may be changed without changing the nature of the invention. Thus the spring, instead of being placed on the pinion-shaft, may be placed on the shaft of the scroll-rack, and the power equalized in the same way.

It may be necessary in some cases that the

pinion-shaft shall have a screw with an increasing thread placed on it, working into a fixed bearing, so that the movement of the pinion over the face of the scroll-rack will be guided and controlled.

The scroll-rack plate A is mounted on a shaft so as to revolve freely, and has a lever, B, attached to it, which presses against a stud-roller, C, attached to the door.

The spring D is mounted on a shaft, E, and has a pinion, F, on one end, which engages with the openings in the scroll-rack plate A. The position of the pinion F with reference to these holes is such that when the spring is wound up the pinion is nearest the axis of the plate, and as it unwinds it moves outward toward the circumference, increasing the leverage as the spring is uncoiled. From this it will be understood as the door G is opened the lever B is pressed back, giving motion through the scroll-rack A and pinion F to the shaft E, winding up the spring D, and when the door is released the accumulated tension of the spring, acting through the parts just referred to, closes the door with uniform force.

The pinion-shaft E has one end finished square to receive a key, so that any required tension may be given the spring by winding it up, this tension being taken up by the holes in the scroll-rack plate, and closing the door with any required force.

Instead of the lever B, a cord or piece of thin steel may be wound on the periphery of the scroll-rack plate and secured to the door, accomplishing the same result.

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

The combination of a coiled spring, the power of which is equalized by a movable pinion working in a scroll-gear, with the mechanism for closing a door or gate, all constructed and arranged substantially as described.

HENRY SMITH.

Witnesses:

JOHN A. BASSETT,  
O. C. SMITH.