

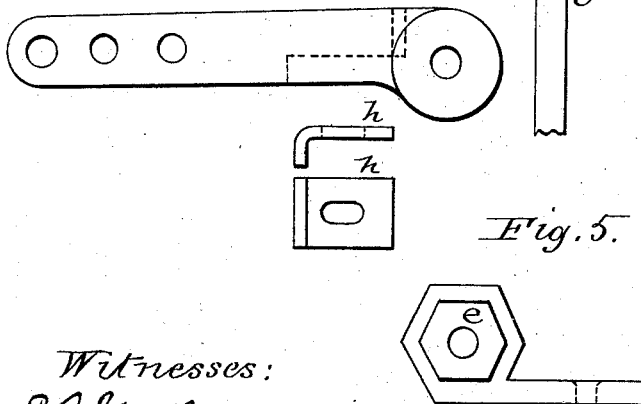
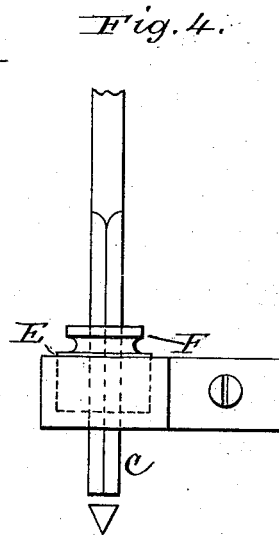
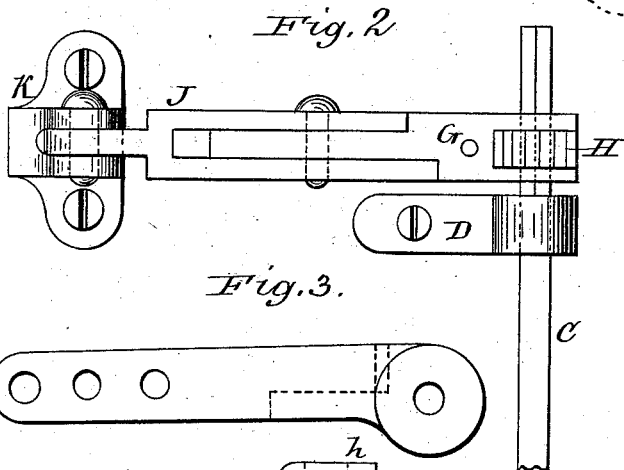
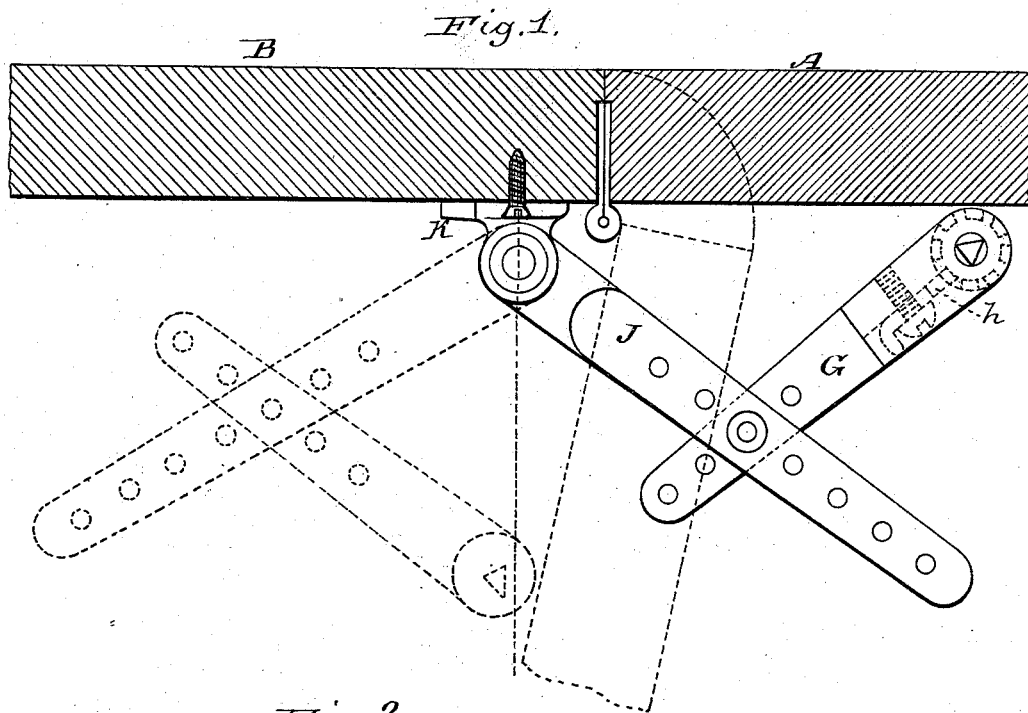
(Model.)

M. CAMPBELL.

DOOR SPRING.

No. 261,670.

Patented July 25, 1882.



Witnesses:
E. B. Storking
Chas. Hunt

Inventor:
Malcolm Campbell
H. J. [Signature]
Att'y.

UNITED STATES PATENT OFFICE.

MALCOLM CAMPBELL, OF HOLYOKE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO EDWARD S. PACKARD, OF SAME PLACE.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 261,670, dated July 25, 1882.

Application filed May 1, 1882. (Model.)

To all whom it may concern:

Be it known that I, MALCOLM CAMPBELL, a citizen of the United States of America, residing at Holyoke, in the county of Hampden and State of Massachusetts, 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 invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of door-springs which consist of a rod of steel having triangular or square ends, one of which is secured rigidly in a lower bearing on the door-casing, and the upper one of which is held firmly in a bearing secured to the door, and is adapted by suitable means to be turned so as to twist the rod to increase its torsional tension, and to be held permanently in said twisted condition, whereby the resistance of the spring to the opening of the door is rendered adjustable in degree; and my invention consists in certain features hereinafter described, and specifically set forth in the claim.

Figure 1 represents a plan of my improved spring, the door or jamb and casing to which it is attached being shown in section, the full lines representing the position of the levers when the door is closed and the dotted lines therein the position when the door is open. Fig. 2 is a front elevation of the upper end of the spring and of its bearing and the operating-levers. Fig. 3 is a plan of one of the levers with the key detached. Fig. 4 is a side elevation of the lower end of the rod and its bearing, and Fig. 5 is a plan of the bearings.

Like letters refer to like parts in all the figures.

A represents the door, and B the casing.

C is a steel rod having a triangular or, if preferred, a square bearing portion, *c*, at each end thereof.

D is a bracket secured to the door and provided with a bearing adapted to fit the round

torsion-rod. It is located near its upper end, as shown.

At the bottom end of the rod is a bracket, E, secured to the door and provided with a seat, *e*, in this instance hexagonal in outline, and a perforation in the bottom seat circular in outline and of sufficient size to permit the passage of the round torsion-rod.

Within the seat *e* is a hexagonal nut, F, having a square central aperture adapted to fit the square end of the rod. It will thus be necessary that the rod be attached at both ends to the door, and not one end to the door and the other to the casing, whereby a direct torsional tension is produced, which is less liable to break the highly-tempered rod than when it is placed with one end attached to the door and the other to the casing.

Immediately above the bracket D, at the upper end of the rod and upon the square or polygonal portion thereof, is an arm, G, bifurcated at one end to embrace a ratchet, H, which is centrally perforated to fit the triangular end of the rod.

At *h* is a slide-bolt seated upon the lever G, and adapted to pass between the bifurcations thereof and into the teeth of the ratchet by means of a slot and screw, as shown.

To the lever G, and by means of a pin, I, which is passed through one of the several holes contained therein, is secured a companion-lever, J, the bifurcated end of which embraces the lever G, and is in like manner perforated, as shown, whereby the point of connection of the two levers may be changed at will. The lever J is pivotally secured to the casing by a bracket, K.

This being the construction, the operation is as follows: By a suitable wrench adapted to fit the polygonal end of the rod it may be twisted at its upper end to the right, as shown in Fig. 1, to such an extent as to render its tension torsionally sufficient to close the door, and this tension is adjusted in accordance with the weight of the door to which the spring is applied. It is retained in this twisted condition by pushing the slide-bolt *h* into one of the teeth of the ratchet and secured therein by

means of a screw, as clearly seen in the drawings. If desired, a further increase of the tension may be made by applying a wrench to the nut F at the bottom of the rod, lifting the nut
5 from the seat *e* in the bracket E and twisting it to the left, reference being had to Fig. 4. The desired tension being produced in this manner, and the levers connected, when the door is swung open the tension of the spring
10 tends to draw the lever G toward the pivot of the lever J, and the pivotal connection of the two levers allows the rod to approach the pivot of the lever J, and when in the position shown in the dotted lines the tension of the rod, still
15 tending to throw the lever G toward the pivot of the lever J, acts to lock or retain the door in an open position just in proportion to the approach of the rod to the pivot. Therefore by adjusting the connecting-point of the two levers
20 in such a manner that the lever J, when the door is open, shall more or less nearly approach a line parallel with the casing, the torsional effect of the spring results in locking the door in an open position whenever it is
25 opened to such a distance as to bring the lever J into said parallel or nearly parallel po-

sition. Whenever the door is opened to a less distance than this the spring immediately returns the door to a closed position.

I am aware that a rod with polygonal ends 30 and suitable brackets has been long used as a door-spring, and do not claim such as of my invention.

Having described my invention and its operation, what I claim as new, and desire to 35 secure by Letters Patent, is—

The combination of the rod C, the bracket E, having the polygonal seat *e*, nut F, having a polygonal body and polygonal perforation, the bracket D, having a round perforation, 40 the ratchet H, having a polygonal perforation, arms G and J, the former embracing the ratchet and provided with the sliding bolt *b*, and adjustably connected to the latter, and the pivot-bracket K, substantially as shown 45 and described.

In testimony whereof I affix my signature in presence of two witnesses.

MALCOLM CAMPBELL.

Witnesses:

HARRY T. HILLMAN,
EDUARD W. CHAPIN.