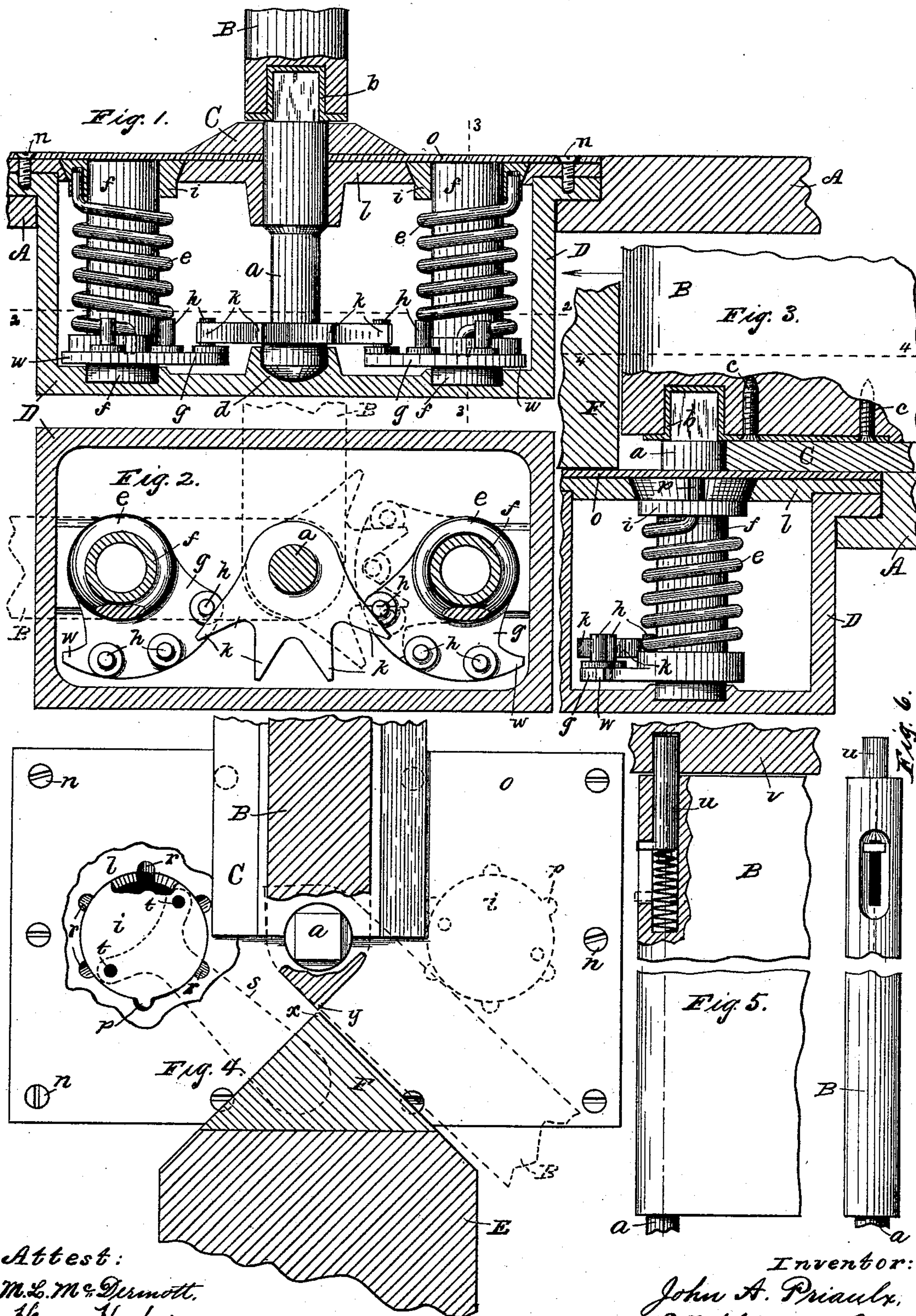


(No Model.)

J. A. PRIAULX.
DOOR SPRING.

No. 459,306.

Patented Sept. 8, 1891.



Attest:
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UNITED STATES PATENT OFFICE.

JOHN A. PRIAULX, OF ROCHESTER, NEW YORK.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 459,306, dated September 8, 1891.

Application filed April 13, 1891. Serial No. 388,742. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. PRIAULX, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Door-Springs, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention is an improved door-spring, the same being hereinafter fully described and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a sectional elevation of the device. Fig. 2 is a horizontal section taken on the dotted line 2 2 in Fig. 1, parts being shown in various positions by full and dotted lines. Fig. 3 is a sectional elevation taken on the dotted line 3 3 in Fig. 1 and viewed as indicated by the arrow. Fig. 4 is a plan view of the inclosing case with parts broken away, the door and door-jamb being horizontally sectioned, as on the dotted line 4 4 in Fig. 3. Figs. 5 and 6 show, respectively, a side elevation and a rear edge elevation of the door, drawn to a small scale and condensed as to length, a portion of Fig. 5 being vertically and centrally sectioned to more fully show the upper holding bolt or pivot.

Referring to the parts shown, A is the floor of a building, B the door, and C the threshold beneath the door.

D is a rectangular metal inclosing case or box inserted in an opening in the floor beneath the rear edge of the door. This case contains a central vertical pivot-shaft *a*, which supports the weight of the door and acts as a pivot upon which the door turns. The upper end of this pivot-shaft is squared and enters a metal socket *b*, inserted in and secured to the lower edge of the door by screws *c*. The lower end of the pivot-shaft rests in a step or seat *d* in the floor of the box. At either side of the pivot-shaft is a spiral spring *e* within the box, each being mounted upon a vertical holding drum or shaft *f*, equally distant from the pivot-shaft. These drums, like the pivot-shaft, have their lower ends resting in steps in the floor of the box. The drums are each formed with an expanded part *g* and pins *h*. The lower ends of the springs are secured to the respective drums, while their upper ends

enter rests or seats in circular pieces *i*, held in the cover *l* of the case. The pivot-shaft is likewise formed with extended teeth *k* in position to engage the pins *h* of the drums. Now if the door is turned to the left, for instance, viewing Fig. 2, the right-hand drum will be turned in a manner to bring an increased stress upon its spring, the new positions of the parts being shown in dotted lines. The action of the spring will, of course, tend to return the door to its normal position at right angles to the vertical plane, passing through the axes of the drums. Likewise, if the door be turned toward the right the left-hand drum and the spring will be similarly affected, and the latter will react against the door and tend to return it to its normal position.

The cover *l* of the case is detachable, being held to the latter by simple screws *n*, Fig. 4. The circular pieces *i* are concentric with the respective drums and form rests for the upper ends of the latter, the drums being fitted to turn in them. These pieces are preferably made conical as to part of their lengths, resting adjustably in conical seats in the cover *l*, their upper faces being even with the upper surface of the cover.

o is a thin rectangular plate of metal in the rough or nickle-plated, or of hard rubber or other material of a size sufficient to cover the case, the latter being inserted in the floor so that the upper surface of the plate shall be even with the surface of the floor, as shown in Figs. 1 and 3. This plate may be secured to the box by the screws *n* or by other simple and convenient means.

The adjustable pieces *i* furnish means for adjusting the tension of the springs. These pieces or rests are each formed with a projection *p*, Figs. 2 and 4, and the case is formed with cavities *r*, in which to receive them. Now by turning these rests one way or the other the stress upon the springs may be varied to suit the requirements in any given case. In turning either rest it is slightly raised off its seat to free it from the notch. It may be turned by any simple and well-known means—as, for instance, by an ordinary T-wrench *s*, (shown in dotted lines in Fig. 4,) inserted in holes *t* in the upper surface. The upper end of the door is held by a vertical

bolt *u*, Figs. 5 and 6, entering a socket in the lintel *v* of the door. The bolt shown is an ordinary spring-pressed flush-bolt; but it may be a simple shaft or pin inserted downward through the lintel into the door. In any case its axis and the axis of the pivot-shaft *a* are in the same vertical line.

The door shown in this application is one like those in common use, that swings both ways. In case the door is to swing only one way, one spring *e* and drum *f* only are required. The springs enter the rests *i* sufficiently so that they are not detached when the rests are turned as above stated, and the plate *o* holds the rests down upon their respective seats.

In setting the device both springs are strained so as to cause the drums to bear firmly against the pivot-shaft when the door is in a closed position, the springs being adjusted so as to act equally upon the door and hold the latter squarely over the threshold. This constant stress or action of the springs is for the purpose of holding the door moderately stable in its normal or closed position, so as not to yield too readily to puffs of wind, &c. When the door is swung in either direction, the teeth of the pivot-shaft move away from one or the other of the drums, as the case may be, leaving it temporarily idle; but the drum is prevented from being turned out of place from the action of the spring by the extended point *w* coming in contact with the side of the case. This forms a stop for the drum and holds it in readiness to receive the teeth of the pivot-shaft when the latter is returned by a contrary motion of the door. In case the door is to swing both ways and far around in each direction, the door-jamb *E* is formed inclined on both sides next the door, as shown in Fig. 4, an edge *x* being presented to the door, and in practice I prefer to form the door-jamb with a detachable vertical piece or strip *F* over the case *D*, to be removed as a matter of convenience when the case *D* is to be taken out of the floor or opened for the purpose of repairing the parts within. The rear edge of the door is also formed with a projecting edge *y* to meet the edge *x* of the door-jamb in case a close joint is desirable between the door and the jamb.

What I claim as my invention is—

1. In a door-spring, a vertical pivot-shaft mounted in bearings beneath the door and adapted to engage the same and turn therewith, and an arm rigid with said shaft and projecting laterally therefrom, in combination with vertically-mounted drums on either side of the shaft and parallel therewith, arms

on said drums adapted to engage the arm of said shaft, and springs mounted on said drums to oppose the opening movement of the door and by their reaction close the door, substantially as and for the purpose specified.

2. A support and operator for a door, having a pivot-shaft mounted in bearings beneath the door adapted to hold and turn with the latter and formed with a laterally-projecting arm, in combination with spring-actuated drums at the sides of and parallel with said pivot-shaft, having extended parts to engage said arm of the pivot-shaft to turn the latter and operate the door, and stops for the drums, substantially as and for the purpose set forth.

3. A support and operator for a door, consisting of a vertical pivot-shaft resting in bearings beneath the door and adapted to engage the latter and turn therewith, said shaft being formed with a laterally-projecting arm, in combination with two vertically-mounted drums parallel with said pivot-shaft having projecting parts adapted to engage said arm of the pivot-shaft, springs mounted on said drums to actuate them, and adjustable rests for the springs independent of the drums, one end of each spring being held by the drum upon which it is mounted and the other end held in said adjustable rest or bearing, substantially as described and shown.

4. A device for holding and operating a door, consisting of an inclosing case in the floor beneath the door, a vertical pivot-shaft within the case to hold the door and turn therewith, spring-actuated drums within the case, means, substantially as described, whereby said shaft alternately turns the drums as the door is swung either to the right or left, and adjustable rests for the upper ends of the drums held by the case and formed with projections to enter cavities therein, substantially as shown.

5. A device for holding and operating a door, consisting of an inclosing case in the floor beneath the door, a vertical pivot-shaft within the case to hold the door and turn therewith, spring-actuated drums within the case, means, substantially as described, whereby said shaft turns the drums as the door is moved, adjustable rests for the drums held by the case, and a plate covering said rests and the case, substantially as described.

In witness whereof I have hereunto set my hand, this 4th day of April, 1891, in the presence of two subscribing witnesses.

JOHN A. PRIAULX.

Witnesses:

ENOS B. WHITMORE,
M. L. McDERMOTT.