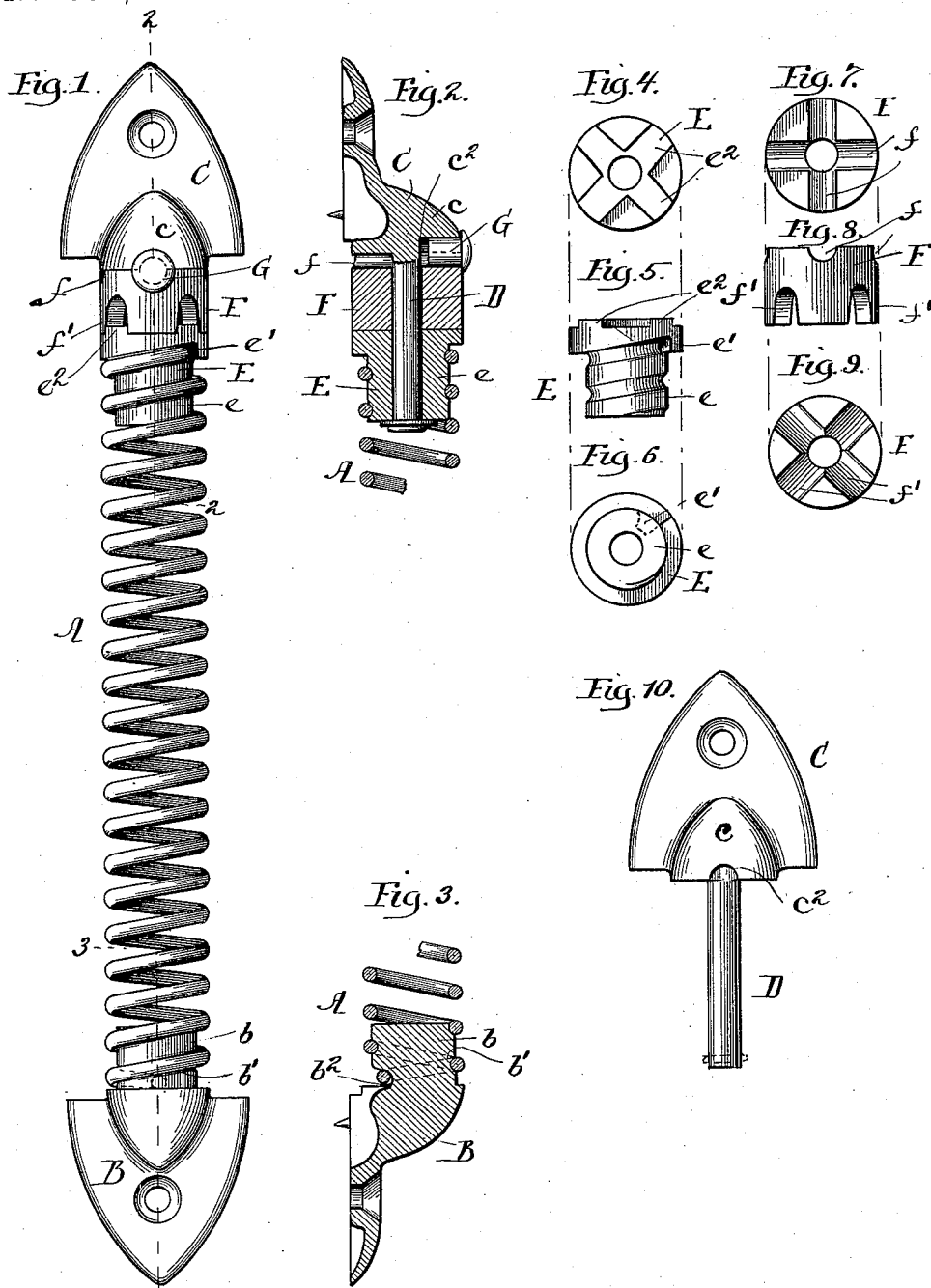


(No Model.)

J. KEENE.
DOOR SPRING.

No. 532,787.

Patented Jan. 22, 1895.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH KEENE, OF CHICAGO, ILLINOIS.

DOOR-SPRING.

SPECIFICATION forming part of Letters Patent No. 532,787, dated January 22, 1895.

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To all whom it may concern:

Be it known that I, JOSEPH KEENE, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Door-Springs, of which I do declare the following to be a full, clear and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My present invention has relation to that class of springs designed to effect the automatic closing of doors or gates to which they are attached, one end of the spring being connected to the door or gate and the opposite end being connected to the door-frame or gate-post.

The object of my invention is to provide a simple, cheap and effective construction of spring mechanism whereby the torsional spring can be attached in position for use and whereby its adjustment can be readily effected.

My invention will be found to embody various novel features of advantage and these features I have hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a front view of a door spring embodying my invention. Fig. 2 is a view in vertical section on line 2—2 of Fig. 1. Fig. 3 is a view in vertical section on line 3—3 of Fig. 1. Figs. 4, 5 and 6 are detail views of the spring support. Figs. 7, 8 and 9 are detail views of the turning sleeve or hub. Fig. 10 is a detail front view of one of the brackets and the pintle connected thereto.

A designates the spiral spring, to one end of which is connected a bracket B. The bracket B is provided with a core *b* that enters the end of the spring, this core being preferably cast with a spiral groove *b'* to receive the end coils of the spring and preferably also with a recess *b''* upon its under side into which the extreme end of the spring will be bent in order to securely retain the bracket in engagement with the spring. The opposite end of the spring A is connected to a bracket C from the base plate of which projects the part *c* and to this projecting part *c* is connected the pintle D. By preference the

pintle D is rigidly connected to the bracket, the end of the pintle being preferably fixed to the projection *c* in the operation of casting the bracket. Upon the pintle D is mounted a spring support E that is revolutely sustained with respect to the bracket C and this spring support is formed with a core *e* that enters the end of the spiral spring A and is preferably furnished with a spiral groove to receive the end coils of the spring and with a recess *e'* into which the extreme end of the spiral spring may bend in order to securely hold the spring upon the spring support. The pintle D is preferably provided at its outer end with a head, (and if desired also with a washer,) in order to retain the spring support and the spring in connection with the bracket C so that any danger of accidental loss of the parts will be avoided and this feature of the invention will be found of value, as will also the feature of providing the bracket with a pintle serving to sustain the spring support without regard to the remaining features of my invention.

In order to enable the spring support E to be adjustably connected with the bracket C so that the tension of the spring A can be made as strong or light as desired, I prefer to interpose between the spring support E and the bracket C a shifting hub or sleeve F, the construction of which is more particularly shown in Figs. 7 and 9 of the drawings. The shifting sleeve F is mounted upon the pintle D and is revolvable with respect to the bracket C and one end of the shifting sleeve bears against the face of the extension *c* of the bracket and is provided with a series of notches *f* to receive a locking pin G. The extension *c* of the bracket C has its face formed with a notch or semi-circular seat *c''* so that when either of the notches *f* of the shifting sleeve F is brought opposite the notch *c''* the locking pin G can be inserted in these coincident notches and thus securely lock the shifting sleeve against rotation. The opposite end of the shifting sleeve F is provided with suitable means whereby it can interlock with the spring support E and for this purpose I prefer to employ the means illustrated in the accompanying drawings; that is to say, the shifting sleeve is provided with a series of seats *f'* adapted to receive a series of pro-

jections or lugs e^2 on the end of the spring support E. Preferably the seats or notches f' of the shifting sleeve are of such depth as not only to insure the interlocking of the sleeve with the spring support but also allow enough space to permit a turning bar to be inserted into the seats or notches f' in order to turn the shifting sleeve when the tension of the spring A is to be varied.

In carrying out my invention I prefer to cast the bracket C with the pintle D therein as shown in Fig. 2 of the drawings. The spring support E is also preferably cast in a single piece as the shape of this support is such as to permit it to be cast in piece and without the necessity of tool work. So also by forming the shifting sleeve F as shown I am enabled to make this piece of a single casting and thus avoid the necessity of drilling holes in order to provide means for turning the sleeve and as well also the necessity is avoided for cutting the sleeve to form seats to engage the lugs of the spring support. When the spring support E and the sleeve F are assembled upon the pintle D, and the end of the spiral spring A has been attached to the spring support, the parts will be securely held together so that all danger of displacement or accidental loss of the parts is avoided. So also when the parts are thus assembled they can be polished upon an ordinary wheel in the usual manner and thus a much better finish and appearance can be given to the springs than is possible with any other springs of this type.

In prior constructions of door springs it has been proposed to provide the spring support with perforations extending at right angles through the support to receive the bar for turning the spring in order to give the desired tension thereto, but this method of making the perforations is objectionable because in drilling the perforations at right angles to each other there is constant danger of breaking the drills as they pass through the first perforation in drilling the second.

I do not wish my invention to be understood as restricted to the precise details of construction above set out since these may be varied by the skilled mechanic within wide limits without departing from the spirit of my invention. So also certain features of the invention may be advantageously employed without the adoption of the invention as an entirety. Thus for example while there are manifest advantages in forming the shifting sleeve or hub F separate from the spring support E, still these parts might be cast in piece while still embodying other features of my invention.

Having thus described the invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. A door spring comprising the combination with a torsion spring, of a revoluble spring support fixed to the end of the torsion spring, a pintle extending through said spring support and provided at its free end with a head or stop to retain said spring support thereon, a bracket having a raised part from which said pintle projects and suitable means intermediate the inner face of said raised part of the bracket and said spring support whereby said parts may be locked together in different positions, substantially as described.

2. A door spring comprising the combination with a torsion spring, of a bracket having a raised part, a pintle projecting from said raised part of the bracket, a spring support attached to said torsion spring and revoluble with respect to said bracket, and a revoluble shifting hub or sleeve formed separate from said spring support and interposed between the spring support and the raised part of the bracket, said spring support and said revoluble hub or sleeve being interlocked and said revoluble hub or sleeve having its outer end locked to the raised part of the bracket, substantially as described.

3. A door spring comprising the combination with a torsion spring of a bracket having a raised part, a pintle projecting from said raised part of the bracket, a spring support attached to said torsion spring and revoluble with respect to said bracket and a revoluble shifting sleeve or hub formed separate from said spring support and having at one end a series of open-sided notches to engage projections on said spring support and having at its opposite end a series of open-sided notches to receive a pin whereby said shifting sleeve or hub may be locked to the raised part of the bracket, substantially as described.

4. A door spring comprising the combination with a torsion spring, of a bracket having a raised part, a pintle projecting from said bracket partially through said torsion spring, a revoluble spring support and a separate revoluble sleeve or hub mounted upon said pintle, said revoluble sleeve or hub being provided at one end with shallow open-sided notches to receive a locking pin and at its opposite end with deep open-sided notches to receive a turning bar and said spring support being formed with lugs or projections that enter for a short distance the open notches in the adjacent end in the revoluble sleeve or hub, substantially as described.

JOSEPH KEENE.

Witnesses:

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