H. R. CLARK.

Door-Spring.

No. 217,585. Patented July 15, 1879.

Fig. 1.

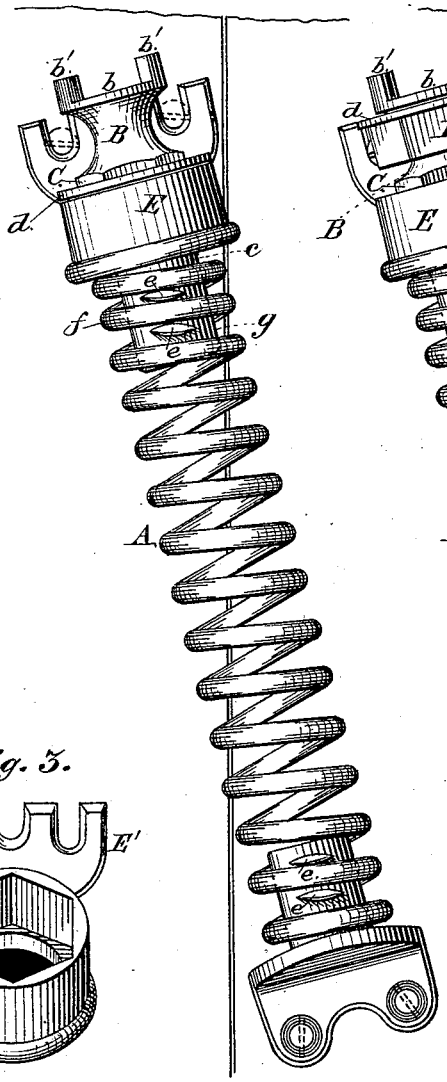


Fig. 2.

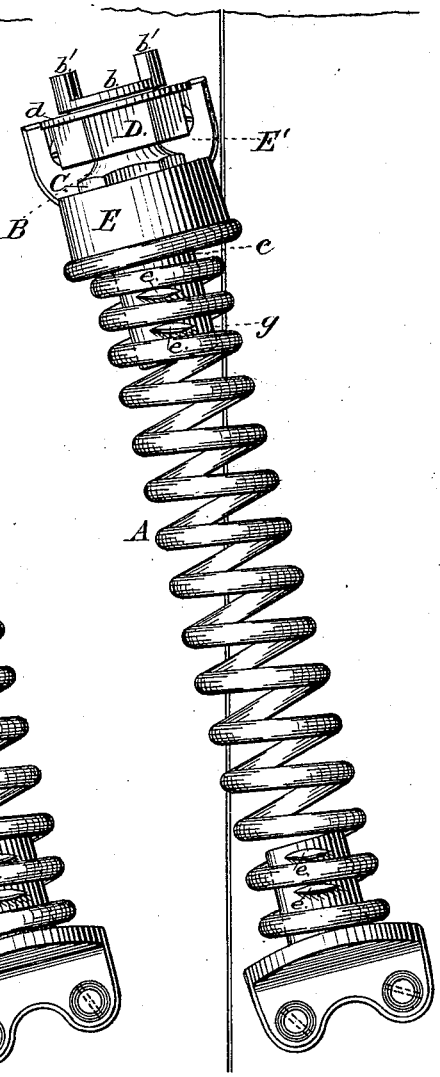


Fig. 3.

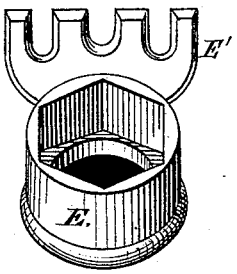
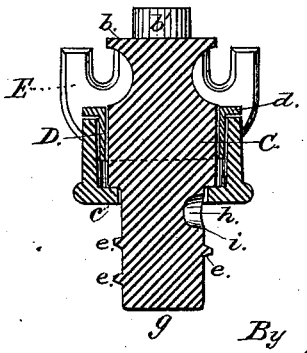


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY R. CLARK, OF BUFFALO, NEW YORK.

IMPROVEMENT IN DOOR-SPRINGS.

Specification forming part of Letters Patent No. **217,585**, dated July 15, 1879; application filed December 17, 1878.

To all whom it may concern:

Be it known that I, HENRY R. CLARK, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Door and Gate Springs, of which the following is a specification.

The invention relates to that class of door and gate springs which have one end secured to or near the hinged edge of the door or gate, and the other end to a part of the door-frame, or to the post to which it is hinged, the spring being under a torsional strain in such direction as to keep the door or gate closed, and so that when opened there is produced upon the spring an extra torsional tension, the reaction of which causes the door or gate to close when left to swing free.

Its object is to provide for regulating the tension of this class of springs, and to produce a neat, compact, reliable, and easily-operated adjusting device, capable of application to any kind of torsional springs; and, further, to provide an efficient means of securing the ends of the spring in position to prevent the possibility of the same turning or being pulled off endwise.

To this end it consists in the combination of a spindle having one end adapted for attachment to a torsion-spring and the other for receiving a lever or other instrument, a collar adapted to fit an intermediate angular portion of the spindle, and a bracket provided with a socket in which the collar is adapted to fit without liability to turn therein, but capable of being moved axially from or into the said socketed bracket, the latter being constructed to be attached to a door, gate, door-frame, or gate-post.

When the collar is fitted upon the spindle and within the socket of the fixed bracket the spindle cannot turn; but when the collar is moved axially free from the socket, the spindle may then be turned to twist an attached spring, and when the collar is replaced in the socket the spindle will be prevented from turning back, so that the spring will be retained under whatever tension has been put upon it, and the construction is such that when the parts are in operative connection the movable collar cannot be moved entirely from the spindle, the enlarged upper end of the latter acting as a stop to the collar in its upward movement.

In the accompanying drawings, Figure 1 is a view of a spiral torsion-spring provided with my improvement and applied to a door. Fig. 2 is a similar view, showing the collar raised from its socket and in position to permit the spindle to be turned for adjusting the tension of the spring. Fig. 3 is a perspective view of the socketed bracket. Fig. 4 is a longitudinal central section through the spindle and the other parts when together.

The letter A indicates a spiral spring, the lower end of which is secured to the door-frame by means of the bracket, to be hereinafter set forth. The upper end of this spring is attached to the lower end of a spindle, B, the top of which has a head, *b*, provided with upward-projecting studs *b′ b′* at opposite portions of its edge. An intermediate portion, C, of this spindle is hexagonal in cross-section, and immediately below the hexagonal portion is a short circular journal, *c*.

The lower portion of the spindle is cylindrical, and formed or constructed with lugs or ribs *e*, between which or upon which one of the coils *f* at the end of the spring is arranged and clasped, which effectually prevents the spring from being pulled off endwise from the spindle, and in order to prevent the spring from turning on the spindle or the latter to turn in the spring, I form in one side of the cylindrical portion or shank *g* of the spindle a recess or cavity, *h*, which forms a shoulder, *i*, and in this recess or cavity the end of the spring is pressed or forced, the extreme end of the spring resting or bearing against the shoulder of said recess, thereby forming a stop to prevent either the spring turning on the spindle or the latter turning in the former, and thus both will at all times move together when the torsion of the spring is to be adjusted.

D designates a collar having its interior surface of a proper size and shape to fit snugly upon the hexagonal portion of the spindle without turning. For convenience of lifting, this collar has a flange, *d*, projecting from one end. The exterior surface of this collar is also hexagonal and of proper dimensions to fit snugly in a similarly-shaped socket, E, in a bracket, E′, the bottom of said socket having

a circular opening, which serves as a bearing for the journal *c* of the spindle.

When the parts are placed together, as shown in Figs. 1 and 4, with the collar D in the socket E of the bracket E′, and the hexagonal portion C of the spindle in the correspondingly-shaped opening of the collar, it will readily be seen that the spindle cannot be turned; but if the collar be slipped upward out of the socket there will be no obstruction to the turning of the spindle by means of a suitable lever, a small bar of iron, or a nail placed between the studs *b′ b′* on the head of the spindle.

In applying a spring having my improvement to a door, as shown in Figs. 1 and 2, the brackets at each end are secured, respectively, to the door and frame while the spring is under no tension. The collar is then raised from the socket, the spindle turned until sufficient tension is put upon the spring to hold the door properly shut, and then the collar should be allowed to drop back into the socket.

Should the spring become lax by use, it can be readily tightened up and put under tension in the same manner.

The head *b* of the spindle prevents the removal of the collar, so that it is not liable to be lost or accidentally displaced.

Though I have described and shown the collar D and the corresponding portions of the spindle and bracket as hexagonal, any other shape which will prevent turning of the spindle and collar will answer as well—as, for instance, octagonal, square, or circular with serrations or corrugations.

The lower bracket is also provided with a spindle or shank constructed similar to the upper spindle for the attachment and retention of the lower end of the coiled torsional spring.

Having now fully described my invention, I claim—

1. The combination of the coiled spring, spindle connected therewith, socketed bracket, and the collar having an angular opening and an angular exterior adapted to fit the socket, said spindle being constructed with the intermediate angular bearing on which the collar is arranged and slides, and having a head of greater diameter than the opening through the collar for limiting the upward movement of the latter, the enlarged head being constructed on its upper side to receive an instrument for turning the same, all substantially as and for the purposes set forth.

2. The combination of the spindle B, having one end adapted for attachment to a torsion-spring, and the other constructed to receive an instrument for turning the spindle, and provided with the intermediate angular portion, C, and lower circular journal, *c*, the angular collar D, adapted to the intermediate angular portion, and the bracket E′, having the angular socket and circular opening, substantially as described.

3. The spindle B, constructed with the cylindrical lower end, the enlarged head *b*, projecting vertical studs *b′*, and angular portion C intermediate of the cylindrical lower end and head of the spindle, and of less diameter than the head *b*, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

HENRY R. CLARK.

Witnesses:
JNO. A. FRANKE,
WILLIAM WAITE.