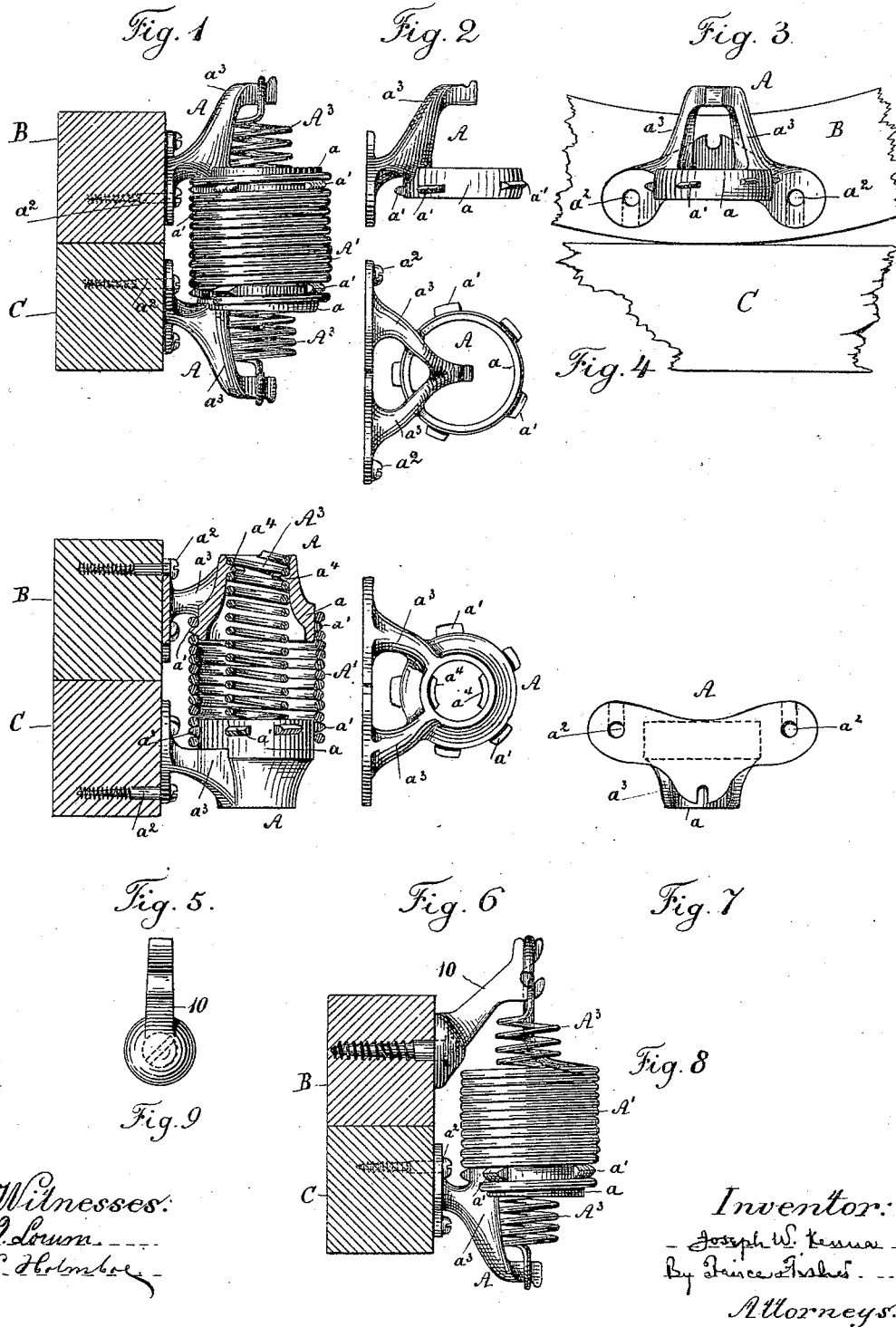


(No Model.)

J. W. KENNA.
CHAIR ROCKER SPRING.

No. 304,205.

Patented Aug. 26, 1884.



UNITED STATES PATENT OFFICE.

JOSEPH W. KENNA, OF CHICAGO, ILLINOIS.

CHAIR-ROCKER SPRING.

SPECIFICATION forming part of Letters Patent No. 304,205, dated August 26, 1884.

Application filed February 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. KENNA, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Chair-Rocker Springs, of which the following is hereby declared to be a full, clear, and exact description, sufficient to enable others skilled in the art to which said invention appertains to make, construct, and use the same.

In the accompanying drawings, forming part of this specification, like letters designate like parts throughout.

Figure 1 is a view in side elevation illustrating one form of my improved spring applied to the rocker and base-rail of a chair, (these latter being shown in cross-section.) Fig. 2 is a detail view in side elevation of one of the bracket-plates of the improved spring detached. Fig. 3 is a front elevation thereof as mounted in position upon the chair-rocker. Fig. 4 is a top plan view of said bracket-plate detached. Fig. 5 is a view similar to Fig. 1 of another or modified form of my chair-rocker spring in position. Fig. 6 is a top plan view, and Fig. 7 is a rear elevation, of a modified form of bracket-plate detached; Fig. 8, another view, similar to Fig. 1, of a modified form of mounting for the springs; Fig. 9, a modified bracket-pin.

The invention relates to what are known in the trade as "platform rocking-chairs," in which chairs the rockers rest upon suitable base-rails of a stationary platform, and are retained in place thereon by elastic spring-connections joined, respectively, to the rockers and the platform or rails. In Letters Patent No. 92,379, Singer, July 6, 1869, this spring-connection between the chair-rockers and base-rails consisted of an endless rubber band distended over three pivot-points located as at the angles of a triangle, the upper pivot-point being upon the rocker immediately above the central lines of contact between rocker and rail as the chair is at rest, while the two lower pivot-points were upon the base-rail at equal distances to the right and left of said central or normal line. An obvious modification in practice was to substitute two coil-springs for the endless rubber band, each spring being

sustained above from the single upper pivot-pin, and extending thence to the right and left pivot-pin, respectively, upon the base-rails; or, again, in some instances two upper pivot-pins were located directly above the two lower pivot-pins at right and left of normal line, and the two coil-springs were secured at their ends to said sets of upper and lower pins. Experience has proven that spring-connections of any of the forms specified are objectionable. If not mounted with precision and with even tension upon the springs, the chair does not rest at a horizontal. A combined push and pull resistance from the springs is met with, whether the chair be rocked forward or backward, so that the action is hard, abrupt, or "jerky," producing a sense of discomfort, and quickly fatiguing the occupant of the chair. To obviate these and other objections there is shown in Letters Patent No. 156,130, Carter, October 20, 1874, and No. 214,871, Beiersdorf and Bunker, April 29, 1879, a single elastic spring located vertically at the normal line of contact between rocker and rail with the chair at rest, the ends of said spring being rigidly retained above and below in suitable bracket-plates fastened to the rocker and base-rail, respectively.

My invention has for its object to improve the construction of this class of rocker-springs, which, as defined, are mounted in vertical alignment with the central or normal line of contact between rocker and rail; and said invention consists of certain peculiar features of organization in such spring, substantially as hereinafter described, and more particularly pointed out in the claims.

Upon the outer face of the circular extension or rim *a* of the bracket-plate *A* is a series of detached teeth, *a'*, set spiralwise at equal distances apart about the rim *a*. These teeth are parts of a mutilated screw-thread of a pitch corresponding with that of the coils of main spring *A'*, by which expedient the ends of this stout coil-spring *A'* may be snugly screwed into and over the rims *a* of the bracket-plates *A*, to securely and rigidly hold said spring in position between said bracket-plates. In this condition the bracket-plates, with the main spring attached thereto, may be fastened, as at *a''*, to the rocker *B* and rail *C*, respectively,

care being taken to mount the spring axially in alignment with the normal line of contact, and to slightly distend the spring in mounting by holding the last bracket-plate taut as it is screwed into position at a^2 to impart an initial tension to the spring. Thus far the device is in general the same as is already well known and in use in the art. If the chair-frame be heavy or be heavily upholstered, or if it be roughly used, or the occupant be a heavy person, it has been found in practice that the stout coil-spring A' is very apt to get out of order. It cannot withstand the severe tension at the extremes of the rocking movement, and is apt to pull out of the brackets, or to take a permanent set as abnormally distended, and sometimes to break. If attempt is made to remedy this by increasing the size of the wire used for the spring, the action becomes at once hard, and a limit is soon reached to the practicable and comfortable use of the spring. To obviate these difficulties, my invention provides a supplemental spring, A^3 , concentric with the main coil-spring A' , and secured at its ends either to the projecting lugs a^3 of the bracket-plates A , as in Fig. 1, or to the threaded teeth a^4 upon the interior of the rims a , as in Fig. 5, of said bracket-plates. In either event the springs, being concentric, preserve the advantages of vertical alignment with normal line of contact, while the inner or supplemental spring develops more and more of its resistance as the extremes of the rocking movement are reached. It relieves the main spring from the severe strain, and, being lighter and smaller, exerts no appreciable influence save at the ends of the rocking movement when most needed. By this expedient the rocking action within ordinary limits is no harder than heretofore, while a gradual increase in resistance of the springs is encountered near the extremes of movement, which is easy and comfortable in character, and, as explained, entirely relieves the main spring A' from the severe stress heretofore encountered. It is obvious that this supplemental spring may be detached or replaced at will, thus permitting an adjustment of the spring-resistance, if at any time desired.

The details of construction may be modified somewhat without departing from the spirit of the invention—as, for example, the upper end of supplemental spring A^3 may be hooked over a suitable pivot-pin separate from bracket-plate A ; or, again, as shown in Fig. 8, the bearings for both main spring A' and supplemental spring A^3 may be furnished by a double pivot-pin, 10, screwed into the rocker B , in lieu of using the bracket-plate A rigidly joined to the end coils of said springs, as before described.

I am aware that it has been proposed to surround a main coil-spring similar to the spring A' with a rubber tubular jacket closely encompassing the same and secured to the bracket-plates A . This jacket, however, is of the same length as the main spring it surrounds, and is designed more for finish and to deaden the metallic sounds of the spring when under tension than for any other end. The rubber rapidly deteriorates and becomes worthless, and if it can be said to have any spring action, this is strictly in conjunction with the main metallic coil-spring it encompasses, and is the same in effect as if the latter had been made from heavier wire. The objectionable characteristics of such heavy acting springs is precisely what my invention designs to avoid. The supplemental spring is entirely independent from the main spring, is much lighter, is set in position after the main spring has been mounted, and is of much weaker tension, so that it shall come into play and act somewhat as a stop by increase of resistance near the ends of the rocking movement, at the same time, because of the separate connection with the bracket-plate or independent pivot, as the case may be, serving to relieve the main coil-spring from the severe wrench and strain to which it has heretofore been subject at such extremes. I therefore disclaim the older construction defined, as wholly foreign in purpose and entirely wanting in the peculiar advantages of my invention.

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

1. The combination, with the chair-rocker and base-rail, of a main coil-spring, a supplemental spring set concentrically within and independently from said main spring, and brackets to secure the ends of said springs to the rocker and rail, respectively, substantially as set forth.

2. The combination, with the chair-rocker B and base-rail C , of the bracket-plates A , secured, respectively, thereto, the main coil-spring A' , fastened rigidly at its ends to said bracket-plates, and the supplemental spring mounted within and independently from said main spring, substantially as specified.

3. The combination, with the bracket-plates A , having outer screw-thread, a' , and inner screw-thread, a^4 , upon their rims a , of the main coil-spring A' and the supplemental spring A^3 , set concentrically within and independently from said main spring, substantially as described.

JOSEPH W. KENNA.

Witnesses:

GEO. P. FISHER, Jr.,
JAMES H. PEIRCE.