(No Model.)

# G. J. SHULTS.

## SPRING AND BRACKET CONNECTION FOR PLATFORM ROCKERS.

No. 409,509. Patented Aug. 20, 1889.

*Fig. 1.*

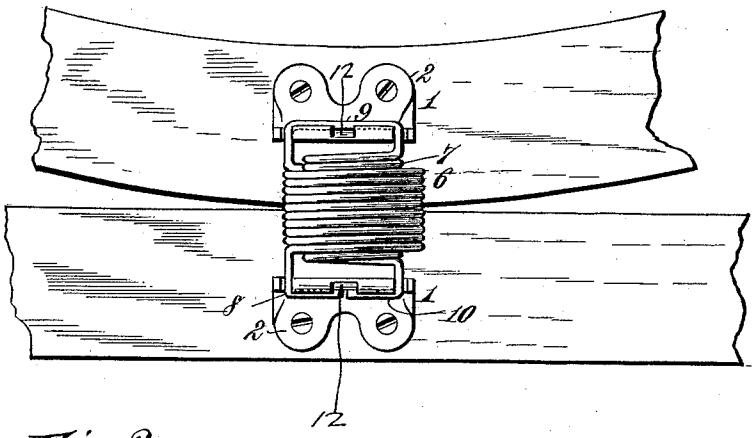



*Fig. 2.*

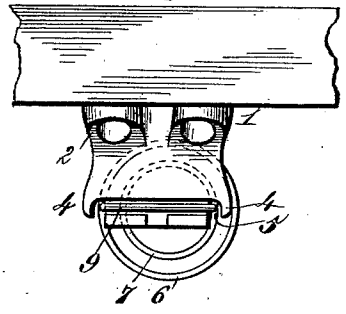



*Fig. 3.*

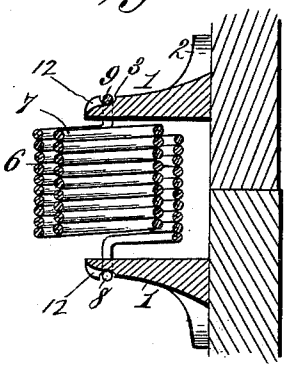



*Fig. 4.*

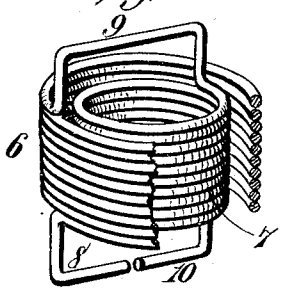



*Fig. 5.*

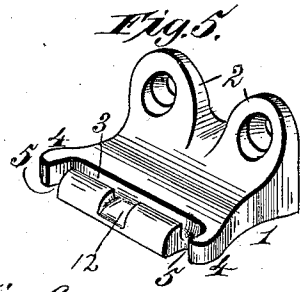
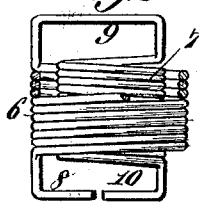



*Fig. 6*




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# UNITED STATES PATENT OFFICE.

GEORGE J. SHULTS, OF AVOCA, NEW YORK.

## SPRING AND BRACKET CONNECTION FOR PLATFORM-ROCKERS.

SPECIFICATION forming part of Letters Patent No. 409,509, dated August 20, 1889.

Application filed May 27, 1889. Serial No. 312,326. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE J. SHULTS, a citizen of the United States, residing at Avoca, in the county of Steuben and State of New York, have invented new and useful Improvements in Spring and Bracket Connections for Platform-Rockers, of which the following is a specification.

My invention relates to certain improvements in platform rocking-chairs, wherein a rocker-frame rests upon a stationary base-frame, and is connected therewith and retained in proper position relatively thereto by elastic connections attached to the rocker-frame and base-frame, respectively, in alignment with the normal line of contact.

It is the purpose of said invention to provide simple, durable, and inexpensive spring-connections consisting of spiral concentric duplex coils formed of a single integral strand of suitable wire and provided with attaching-loops which engage with brackets upon the rocker and base frames, the latter being so constructed as to provide seats in which the spring-attaching loops are securely and rigidly held, preventing any tendency to rotary displacement, but permitting the detachment and reattachment of the spring-loops at any time.

The invention consists in the several novel features of construction and combinations of parts hereinafter set forth, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is an elevation of the inner face of one of the rockers and one side of the base-frame, showing the spring attached. Fig. 2 is a plan view of the parts shown in Fig. 1. Fig. 3 is a vertical section taken in the axial line of the duplex coils and showing the same connected to the chair and base. Fig. 4 is a detail view showing the construction of the spring-connections. Fig. 5 is a detail perspective of one of the brackets mounted on the rocker and frame. Fig. 6 is a partial section showing an inner and an outer spring coiled in opposite directions.

In chairs of this type various means have been devised for making an elastic connection between the base-frame and the rocker-frame resting and oscillating thereon. In one instance this connection has been formed of a strong endless band of rubber stretched over pivots upon the parts connected. Coiled springs have also been used for a similar purpose, and in one instance these springs have been constructed in concentric duplex coils, but these coils were formed of separate strands of wire having entirely independent means of connection to the rockers and rails.

In carrying my invention into practice I mount upon the rocker-frame and base-frame horizontally-projecting brackets 1, having angular lugs 2, which receive the attaching-screws. These brackets are substantially similar in form, each consisting of a flattened plate provided upon its outer surface with a groove or channel 3, formed near and parallel with the edge of the bracket-plate. At the ends of said groove the body of the bracket-plate is cut away to form shoulders 4, which are provided with notches 5, in which the parallel arms of the wire loop lie, as hereinafter described.

The numeral 6 denotes a duplex spiral coil of spring-wire, consisting of a main outer coil and an inner supplemental coil 7, concentric therewith and formed of an integral portion of the wire composing the outer coil. One terminal of the latter is formed into a half-loop 8, and the outer coil is then wound. From its last spiral the wire is bent to form the integral loop 9, from which the continuous wire is coiled into the inner supplemental spiral, its other terminal being bent into the half-loop 10, which meets the other half-loop 8, both lying in one of the grooves or channels 3 of the brackets, while the integral loop 9 lies in the corresponding channel of the other bracket. When properly constructed, these loops will rest snugly in the channels of the brackets, and their parallel arms will engage the notches 5 in the shoulders 4, thereby effectively preventing rotary or lateral displacement. In operation these springs, having different diameters, will possess different tension under the same draft, the tension of the smaller or inner spring being the greater. By this construction the elastic tension is not only divided between the inner and the outer springs, but as the former approaches its maximum resistance the latter begins to exert

a rapidly-increasing tension, which develops as the rocker approaches the extremes of its rocking movement, thereby relieving the inner spring of severe strain at these points, but exerting no material or appreciable influence at other points. I am thus able to protect the outer spring from being wrenched apart or weakened by the rocking action, and thereby greatly promote its durability and improve the ease and uniformity of the oscillation of the chair. To facilitate the removal of these loops of the spring-connections from the channels of the brackets in which they lie, a notch or depression 12 is formed centrally in each of the brackets to permit the insertion of a screw-driver, pick, or other suitable instrument, under the loop as it lies in the channel 3. By using the tool as a lever the loop can be thrown off the bracket without difficulty.

It will be seen that with a limited oscillation of the rocker-frame the coils will be tilted or lifted upon opposite sides alternately, and in this movement the strain will fall mostly upon the outer coil. With a rocking movement of greater length the springs will be extended in the direction of their axes, and here the inner coil will re-enforce and protect the weaker outer coil from rupture or strain. I am thus able to provide an elastic connection which will exert materially different tensions upon the rocker, the lesser tension yielding readily to the gentle and slow vibration of the chair, while the longer rocking movement will be resisted by the stronger and rapidly-increasing tension of the inner spring as the rocking movement approaches its maximum.

The notches 5, formed at the ends of the channels 3 in the brackets, not only prevent lateral displacement of the loops on the spring-coils, as already stated, but they also hold the divided loops formed by the free ends of the continuous wire together and prevent them from slipping out of the channels 3 in the brackets, whereby the coils would be caused to strike each other, producing an unpleasant noise, besides causing them to wear rapidly. These shoulders also center the coils and hold them in proper position relatively to each other. The inner and outer coils of the spring-connection are preferably wound in opposite directions, as shown in Fig. 6, in order that any tendency to rotary displacement upon the part of one coil may be normally counteracted by the other. In this manner the annoying tendency of rockers of this class to work around until they rock off the base-frame may be effectively avoided. If preferred, however, the two coils may be wound in the same direction, as shown in Fig. 3.

What I claim is—

1. The combination, with a duplex-spring connection consisting of outer and inner concentric coils formed of a single continuous spring-wire having loops, of brackets adapted to be mounted upon the rocker-frame and base-frame of a chair, respectively, substantially as described.

2. In a rocking-chair, the combination, with duplex springs composed of inner and outer concentric coils formed of a single integral wire, of brackets adapted to be mounted upon the rocker-frame and base-frame, and provided with grooves for said loops, and shoulders at the ends of said grooves, having notches which receive the parallel arms of the loops, substantially as described.

3. In a rocking-chair, the combination, with a stationary base-frame, of a rocker-frame, and duplex elastic connections, each consisting of an inner and an outer concentric coil of one and the same continuous wire having loops which form part of each coil and lie in the channels of bracket-plates mounted on the rocker-frame and base-frame, said brackets being provided with shoulders at the ends of said channels, said shoulders having notches receiving the parallel arms of the loops, substantially as described.

4. The combination, with the supporting-brackets adapted to be attached to the rocker-frame and base-frame of a chair, of a duplex-spring connection consisting of an outer and inner coil formed of a single piece of spring-wire, said coils being wound in opposite directions, substantially as described.

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

GEO. J. SHULTS.

Witnesses:

JAMES L. NORRIS,

JAMES A. RUTHERFORD.