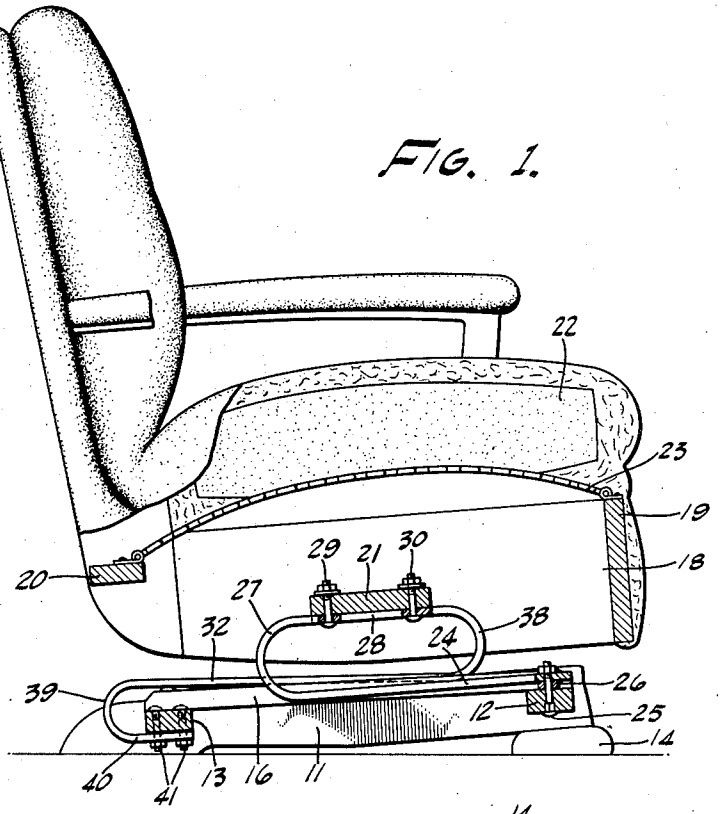
Oct. 30, 1956 L. C. PHENIX 2,768,674

SPRING SUSPENSION FOR ROCKING CHAIRS

Filed April 9, 1953

FIG. 1.



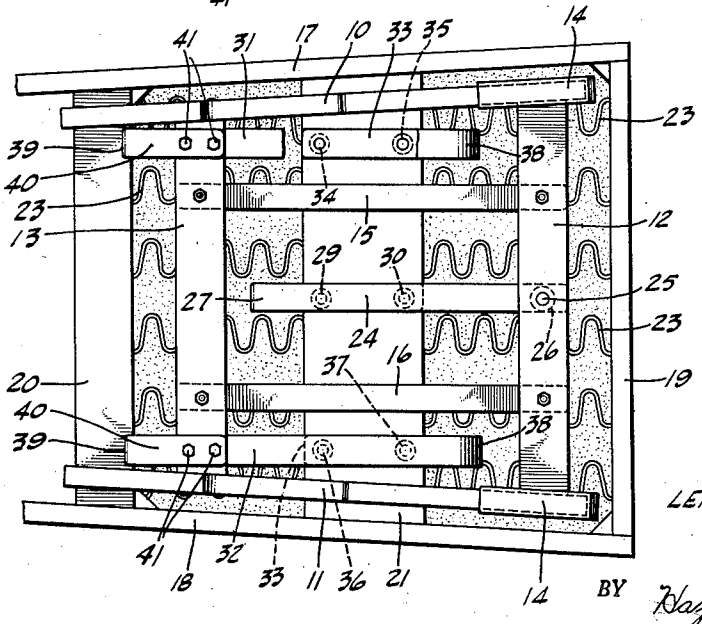


FIG. 2.

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SPRING SUSPENSION FOR ROCKING CHAIRS

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5 Claims. (Cl. 155—54)

This invention relates to improvements in spring suspension for rocking chairs, and may be regarded as an improvement over the construction disclosed in United States Letters Patent No. 2,164,163, issued June 27, 1939, to W. S. Piper.

In the above mentioned patent there is disclosed a rocking chair consisting of a stationary base having front and rear cross rails. On this base there is supported a combined seat and backrest structure having a transversely extending spring rail mounted thereon located beneath the seat adjacent the center thereof. Wire springs connect the spring rail with the front and back cross rails on the base, these being in the form of forward springs which are attached to the spring rail and have one or more convolutions disposed rearwardly thereof and having forwardly extending portions which are pivotally mounted on the forward cross rail by means of clips. There are also rear springs which have attaching portions secured to the spring rail and which have convolutions disposed forwardly thereof and rearwardly extending portions that are pivotally connected to the rear cross rail on the base by means of links.

There are several objections to this structure. One such objection is that the springs are of such a nature that they frequently break in or near the convolutions in the springs. Another objection is that the pivotal connections between the springs and the front and rear cross rails on the base must be lubricated at frequent intervals or squeaking develops.

A primary object of the present invention is to provide an improved spring suspension for a rocking chair of this general type which can be easily and economically manufactured and installed and which is so designed that spring breakage may be eliminated. Also, as no pivotal connections between the ends of the springs and other parts of the chair are employed, lubrication may be eliminated and danger of squeaking is avoided.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a view in side elevation, parts being broken away and shown in vertical section of a rocking chair in which the spring suspension embodying the present invention has been installed; and

Fig. 2 is a bottom plan view of the chair illustrated in Fig. 1.

Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the chair illustrated consists of a stationary base made up of side rails **10** and **11** connected together by front and rear cross rails **12** and **13** forming a rigid stationary base. The forward ends of the side rails **10** and **11** may, if desired, be supported on feed **14** so that the base normally assumes a rearwardly sloping position when supported on a flat supporting surface.

The front and rear cross rails **12** and **13** may be connected together by longitudinally extending connecting members **15** and **16** which contribute to the rigidity of the base structure.

Over the base there is supported a combined seat and backrest structure, the details of which are unimportant insofar as the present invention is concerned. However, the seat and backrest structure has side rails **17** and **18**, a front rail **19**, and a rear rail **20**. A spring rail **21** extends transversely across the combined seat and backrest structure and preferably has its ends recessed in or otherwise rigidly secured to the side rails **17** and **18**. The seat and backrest structure may be upholstered in any conventional or preferred manner and I have illustrated such upholstery **22** as being supported on arched sections of sinuous spring wire **23**. These sections have their ends suitably anchored on the front and rear rails **19** and **20**.

The present invention is concerned with the spring suspension which supports the combined seat and backrest structure for rocking movement on the base. This spring suspension consists of a central forward spring **24** formed of flat spring steel having its forward end apertured to receive an attaching bolt **25** which is extended therethrough and through the front cross rail **12** of the base. The forward attaching portion of the front spring is preferably positioned on top of the rail **12** and if desired, a replaceable spacer **26** may be interposed between the spring and the rail to adjust the height of the forward end of the front spring with respect to the rail **12**. The flat spring **24** extends rearwardly from the front cross rail **12** to a point below and to the rear of the spring rail **21** at which point it is bent upwardly and forwardly and given a reverse bend indicated at **27**, which terminates in a forwardly extending attaching portion **28** that is positioned against the under side of the spring rail **21**. This attaching portion is rigidly secured to the spring rail **21** as by bolts **29** and **30**. The forward spring **24** is preferably arranged on the longitudinal center line of the base.

On opposite sides of the forward spring there are two rear springs **31** and **32** which are also formed of flat steel. Each of these springs has at its forward end an attaching portion **33** that is rearwardly directed and which is positioned beneath the spring rail **21**. These attaching portions are rigidly secured to the spring rail **21** as by bolts **34**, **35**, **36**, and **37**. From the attaching portions these rear springs extend forwardly and are reversely bent as indicated at **38**. The springs extend rearwardly from the reverse bends **38** to points rearwardly of the rear cross rail **13** where they are again reversely bent as indicated at **39**, terminating in forwardly extending attaching portions **40** that are disposed beneath the rear cross rail **13** and are bolted thereto as by bolts **41**.

With the combined seat and backrest structure thus supported on the base by means of these springs the seat and backrest may be rocked forwardly and rearwardly relative to the stationary base. In the course of such rocking movement the springs merely flex between their points of rigid attachment to the cross rails **12** and **13** and the spring rail **21**.

I have experimented with having the rearwardly extending portions of the rear springs terminate on top of the rear cross rail **13** and having them rigidly secured thereto without including the reverse bends at **39**. Such constructions have not proven satisfactory in that stresses are such as to so severely twist the rear cross rails **13** so that these rails are apt to split or break. By including the reverse bends at **39** I find that such breakage of the rear rails **13** is avoided. Apparently the flexing afforded by the reverse bends at **39** is sufficient to reduce any twisting stresses on the rear rails sufficiently so that damage to these rails can be entirely avoided. In the preferred form of construction the radius of curvature of the reverse bends **39**

is substantially smaller than the radius of curvature of either of the bends **27** or **38**.

It will be appreciated by those skilled in the art that the improved spring suspension can be very easily and economically manufactured. Three strips of spring steel may have their ends apertured to receive the attaching bolts and then given the required reverse bends and the suspension is completed. As there are no pivotal connections between any of the springs and any other parts of the chair, lubrication is rendered unnecessary and squeaking of the chair is entirely avoided. By withdrawing a spacer **26** of given thickness and substituting therefor a thicker or thinner spacer, the normal position of the seat with relation to the base can be adjusted.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A chair comprising a base having transversely extending front and rear cross rails adjacent the front and back thereof respectively, a combined seat and backrest structure over the base having a transversely extending spring rail beneath the seat, a spring rigidly connected to the front rail of the base and extending rearwardly therefrom to a point rearwardly of the spring rail and then being bent upwardly and forwardly and secured to the spring rail, and additional springs secured to the spring rail on both sides of the mentioned spring, and extending rearwardly therefrom beyond the rear rail on the base and then being bent downwardly and forwardly and rigidly secured to said rear rail.

2. A chair comprising a base having transversely extending front and rear cross rails adjacent the front and back thereof respectively, a combined seat and backrest structure over the base having a transversely extending spring rail beneath the seat, a spring rigidly connected to the front rail of the base and extending rearwardly therefrom to a point rearwardly of the spring rail and then being bent upwardly and forwardly and secured to the spring rail, and additional springs secured to the spring rail on both sides of the mentioned spring, and extending rearwardly therefrom beyond the rear rail on the base and then being bent downwardly and forwardly and rigidly secured to said rear rail against the under side thereof.

3. A chair comprising a base having transversely extending front and rear cross rails adjacent the front and back thereof respectively, a combined seat and backrest structure over the base having a transversely extending spring rail beneath the seat, a spring rigidly connected to the front rail of the base and extending rearwardly therefrom to a point rearwardly of the spring rail and then being bent upwardly and forwardly and secured to the spring rail, and additional springs secured to the spring rail on both sides of the mentioned spring, and extending forwardly and downwardly therefrom and then rearwardly beyond the rear rail on the base and then being bent downwardly and forwardly and rigidly secured to said rear rail.

4. A chair comprising a base having transversely extending front and rear cross rails adjacent the front and back thereof respectively, a combined seat and backrest structure over the base having a transversely extending spring rail beneath the seat, a spring rigidly connected to the front rail of the base and extending rearwardly therefrom to a point rearwardly of the spring rail and then being bent upwardly and forwardly and secured to the spring rail, and additional springs secured to the spring rail on both sides of the mentioned spring, and extending forwardly and downwardly therefrom and then rearwardly beyond the rear rail on the base and then being bent downwardly and forwardly and rigidly secured to said rear rail against the under side thereof.

5. A chair comprising a base having transversely extending front and rear cross rails adjacent the front and back thereof respectively, a combined seat and backrest structure over the base having a transversely extending spring rail beneath the seat, a spring connected to the front rail of the base and extending rearwardly therefrom to a point rearwardly of the spring rail and then being bent upwardly and forwardly and secured to the spring rail, additional springs secured to the spring rail on both sides of the mentioned spring and extending forwardly and downwardly therefrom and then rearwardly beyond the rear rail on the base and then being bent downwardly and forwardly and secured to said rear rail against the under side thereof, and a replaceable spacer between the front rail and the forward end of the first-mentioned spring.

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