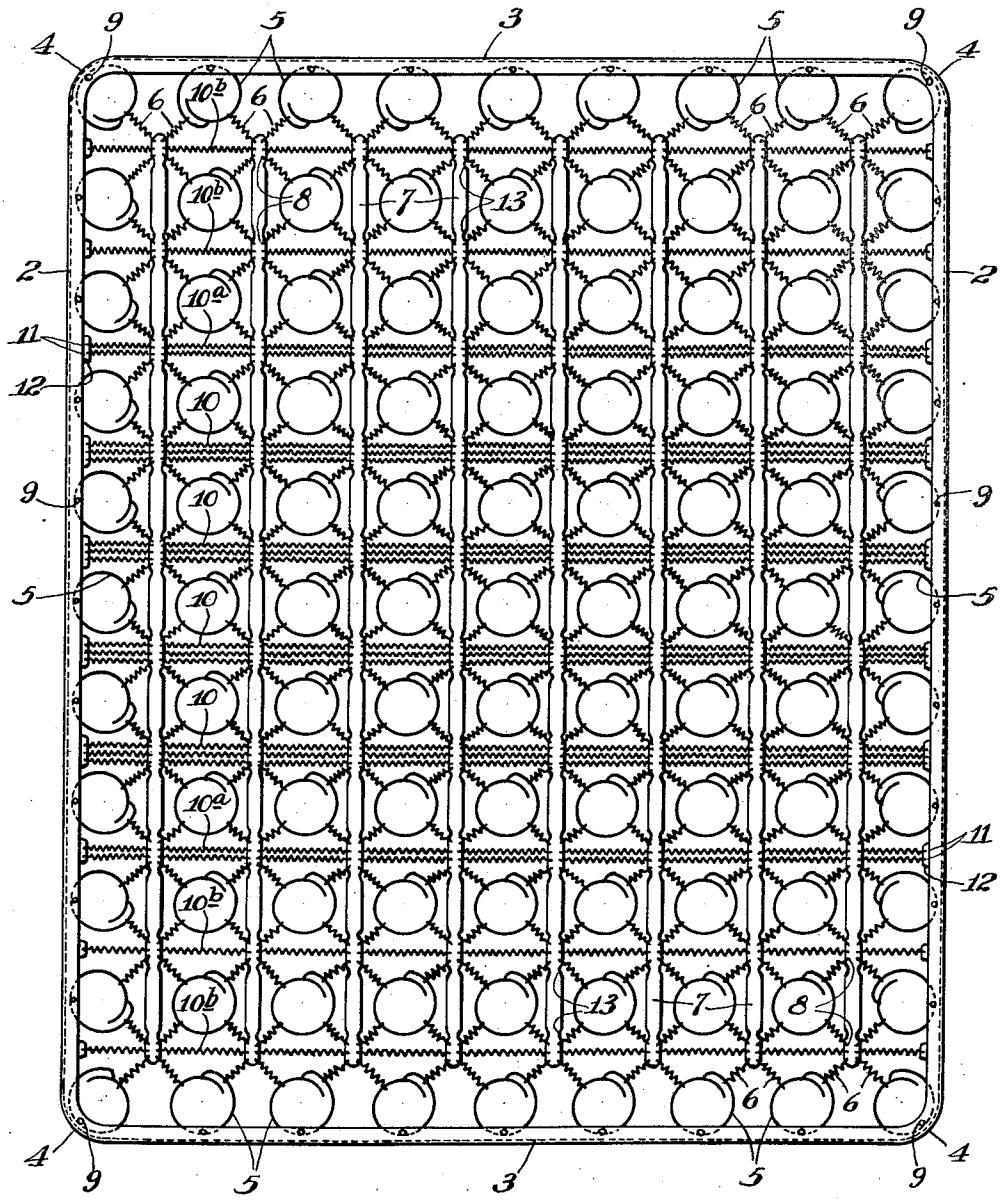
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BEDSPRING

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Fig. 1.



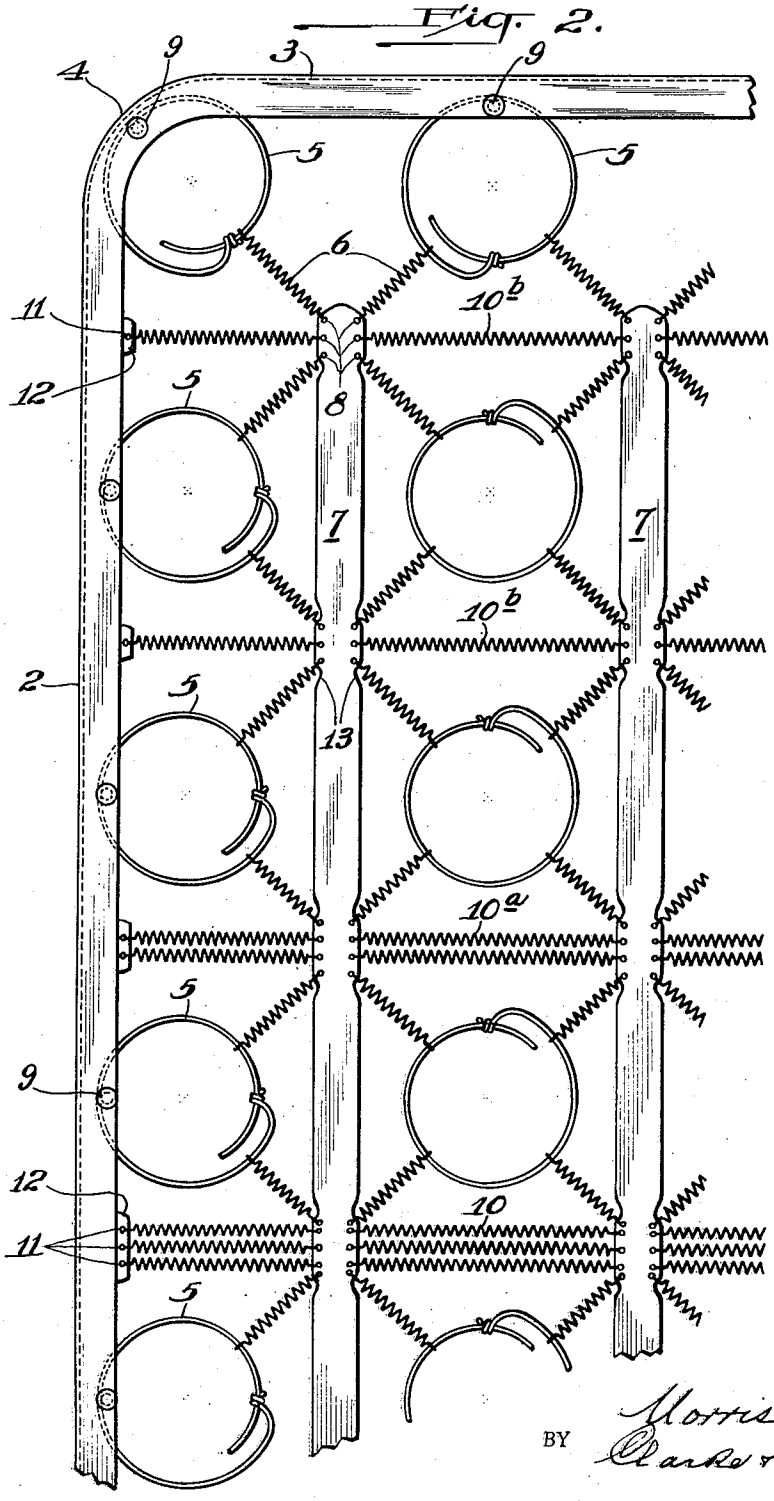
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Fig. 2.



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BEDSPRING

Morris Fischer, Pittsburgh, Pa.

Application February 23, 1940, Serial No. 320,322

8 Claims. (Cl. 5—267)

This invention is an improvement in a spring construction or assembly particularly designed for use in upholstery, such as a bedspring, or the like.

In the present state of the art, modern development emphasizes the desirability and advantage of providing a unitary assembly which will support the body of the user in proportion to its weight, and with resulting comfort and ease of posture in giving relaxed beneficial sleep.

It is a recognized fact that the major proportion of weight of a normal individual is in the middle body section, whether lying midway of a bed or towards either side, with a reducing proportion of weight towards the head and feet.

My invention is designed to provide compensating supporting resistance so proportioned as to form a restful bearing support under varying conditions, well adapted to conform to body contour, having ample resiliency properly distributed, and easily adjusted to the superimposed weight of any occupant within a wide range of weight variation.

In such equipments it is customary to provide a skeleton lower frame of suitable construction adapted to rest on the bedstead, a border frame spaced thereabove, intervening spiral coil or other springs, and means connecting such springs with the border frame. All such, in various prior constructions and combinations, are old and well known.

In my invention I have utilized an improved arrangement and construction of longitudinal floating strips with transverse and diagonal helical springs, so interconnected and attached to the strips, coil springs, and border frame, as to give the desired service and improved results in their functional efficiency, as above stated.

It will be understood that the invention resides in the uppermost portion of such an assembly unit, irrespective of its size, shape, or proportions, and may be utilized with otherwise different or standard lower framing or foundation designs.

One preferred construction is illustrated in the accompanying drawings, in which:

Fig. 1 is a somewhat diagrammatic plan view of the upper portion of a spring assembly, illustrating the invention;

Fig. 2 is an enlarged similar partial view, partly broken away, illustrating detail constructions.

In the drawings, the bottom frame of any usual spring bed assembly is omitted as unnecessary and as generally understood, so that a description of the upper portion embodying my improvement will be sufficient. Suitably supported above such lower frame is a generally rectangular continuous upper frame or border, of angle metal or other suitable flanged shape, having side members **2** and end members **3**, preferably rounded at the corners, as at **4**.

The main vertical coil springs **5** are located in longitudinal and crosswise rows, following usual practice, supported on the lower framework, and having connection either directly or by short diagonal helical springs **6**, with the several framing and strip elements of the construction.

Extending longitudinally between the endmost members **3**, but not connected directly with them, are a series of flat strips **7** of thin sheet metal, suitably formed for attachment of said springs **6**.

As shown more clearly in Fig. 2, the opposite edges of such strips **7** are provided at intervals with small transverse holes **8** for connection with the hooked or bent terminals of oppositely extending pairs of such diagonal springs **6**, and with one or more pairs of other oppositely extending lateral springs, as hereinafter described.

The endmost series of coil springs **5** and also the outer side rows of such springs, have connection by suitable headed pins **9**, extending downwardly or upwardly from the border **2—3**, with which the upper loop of such springs **5** engage, entirely around the four sides and corners of the border frame member. The ends of strips **7** as shown, terminate some distance inwardly from the end members **3**, and are connected by pairs of the short helical diagonal springs **6** with the several adjacent outermost and the entire series of inner coils **5**.

For the purpose of providing the middle transverse supporting spring reinforcement, I utilize plural rows, as two or more, of helical springs **10** extending in successive plural width sections clear across between the several adjacent strips **7** and between the outermost of such strips and the side border members **2**.

Connection is made directly with perforations **11** in the member **2**, or by similar perforations in attached narrow cleats **12** as shown in Fig. 2, either being provided with single or plural holes, into which the outer hooked terminals of the outer series of springs **10**, **10***a* or **10***b* engage.

Each of the several strips **7**, at transversely alining locations, is provided at opposite edges with the series of holes **8**, so that when thus connected there is a continuous series of spaced apart sets of maximum, intermediate and, minimum strength and tension springs providing supporting members of varying area across the entire width of the main unit. The drawings illustrate

four such complete sets of three helicals each at the middle portion, beyond which toward each end is a similar series of relatively lesser tension sets, as two, of helical springs, as at 10*a*. The single springs 10*b* outwardly beyond these toward each end are of still lesser tension and supporting surface, and are similarly connected, and also connected with the side border members 2, by their hooked terminals.

As thus arranged the transverse tensioning resistance to the superimposed load gradually increases inwardly from each end, or per contra, gradually decreases from the middle transverse plural series, toward each end. Likewise the corresponding supporting area of the several groups of such transverse supporting members varies in the same relative proportions.

Each of the several inner coils 5 is also connected with adjacent strips by the diagonally disposed shorter helicals 6, so that as thus arranged there is a continuous interconnection between the vertical coil spring members 5 by their upper loops with the said strips and with the surrounding border frame.

There is also a positive connection between the ends of each of the said several strips with the loops of the outer spring members 5 diagonally sidewise. And finally, there is a continuous transverse connection between the side members 2 and each of the several strips successively, by means of the maximum tension series of transverse springs 10, the intermediate lesser tension springs 10*a*, and the outermost springs 10*b*, of minimum tension.

A feature of advantage which is sometimes useful in connection with the strips is that their edge portions beyond the openings 8 may be recessed for clearance, as indicated at 13.

It will be understood that the terminals of the several springs 6, 10, 10*a*, and 10*b* are preferably hooked or bent, so as to engage around the main coils 5 for fastening, and with particular facility and ease are insertable into and out of the strip openings 8, due to the rounded and recessed edge portions as shown.

It will thus be seen that change or substitution of stronger or weaker springs is facilitated, to adapt the construction to variable weight users, if desired.

By the construction as shown and above described the resiliency of the upper portion of the unit is maintained throughout its entire area, together with a graduated resistance in both resilience and area proportioned to the load towards each end. The construction also provides ample facility for regulating the desired resistance to downward deflection, by varying the numbers of the several transverse sets of springs, more or less, wherever necessary.

Thus the strip may be provided with additional extra holes for addition of extra springs whereever desired, or certain of the springs may be removed or omitted, whereby to regulate the supporting efficiency with entire satisfaction to the user, in proportion to the variable weight resting upon the same.

It will also be understood that the construction may be changed or varied by the skilled mechanic or manufacturer in various detail construction, as to the proportions, arrangement, or specific character of the different elements, form or shape of the supporting members, their connections, etc., but all such changes are to be understood as within the scope of the following claims.

I claim:

1. A spring assembly as described provided with an outer border frame, a plurality of parallel strips extending longitudinally of the frame, coil springs directly connecting the extreme terminals of the strips with the frame, series of transverse resilient supporting members connecting adjacent strips with each other and with the frame of maximum tension across the middle portion of the assembly and of diminishing tension towards opposite outer portions thereof.

2. A spring assembly as described provided with an outer border frame, a plurality of parallel strips extending longitudinally of the frame, coil springs directly connecting the extreme terminals of the strips with the frame, series of transverse resilient supporting members connecting adjacent strips with each other and with the frame of maximum tension and supporting area across the middle portion of the assembly and of diminishing tension and area towards opposite outer portions of the assembly in the direction of the strips.

3. A spring assembly for beds comprising in combination with a series of supporting coil springs and a surrounding border frame, a plurality of longitudinal strips having resilient connection with the several coil springs, means connecting the outermost coil springs with the frame, and series of transverse springs connecting adjacent strips with each other and the outermost strips with the border frame in plural strand sets of maximum tension across the middle portion of the assembly and of less tension and diminishing number towards each end thereof.

4. A spring assembly for beds comprising in combination with a series of supporting coil springs and a surrounding border frame connected therewith, a plurality of spaced apart thin metal longitudinal strips having resilient radial connection with the several coil springs, and series of transverse resilient supporting members connecting adjacent strips with each other and with the frame in plural strand sets of maximum area across the middle portion of the assembly and of diminishing number and area towards outer end portions thereof.

5. A spring assembly for beds comprising in combination with a series of supporting coil springs and a surrounding border frame connected therewith, a plurality of spaced apart thin metal longitudinal strips having resilient connection with the several coil springs, and series of transverse resilient supporting members connecting adjacent strips with each other and with the frame in plural strand sets of maximum area across the middle portion of the assembly and of diminishing number and area towards outer end portions thereof, each such series of supporting members being connected with opposite sides of the border frame by springs of corresponding maximum area and tension for the middle portion of the assembly and of diminishing number and tension towards opposite outer end portions thereof.

6. A spring assembly for beds comprising in combination with a series of supporting coil springs and a surrounding border frame connected with the outer members thereof, a plurality of spaced apart thin metal longitudinal strips having direct diagonal resilient connection with the several coil springs, and series of transverse springs connecting adjacent strips with each other and the outermost strips with the border frame in plural strand sets of maximum tension

across the middle portion of the assembly and of decreasing number and tension towards each end thereof.

7. A bedspring assembly comprising in combination with a standard series of supporting coils and a surrounding border frame having connection with the outer members thereof, of spaced apart longitudinal strips resiliently diagonally and directly connected with the coils, a graduated transverse series of spaced sets of helical springs connecting adjacent strips with each other and the outermost strips with the border frame consisting of outer single and inner plural rows of helicals increasing in number and tension toward and through a middle load-supporting zone of maximum resistance.

8. In a spring assembly for beds on the same general plane as the tops of the usual combined coil springs, a border frame having inner holding perforations, a spaced apart series of longitudinal flat metal strips having similar perforations through their opposite edges in transverse register with the border frame perforations, diagonally arranged springs directly connecting the strips thereby with the endwise, sidewise, and inner coil springs, and transverse series of single and plural helical springs connecting adjacent strips with each other and the outermost strips with the border frame by said perforations, the number and tension of said springs increasing towards the middle from both ends whereby to provide an increased tension zone midway of the length of the assembly.

MORRIS FISCHER.