(No Model.)

2 Sheets—Sheet 1.

D. LEONARD.

SPRING BED.

No. 509,040. Patented Nov. 21, 1893.

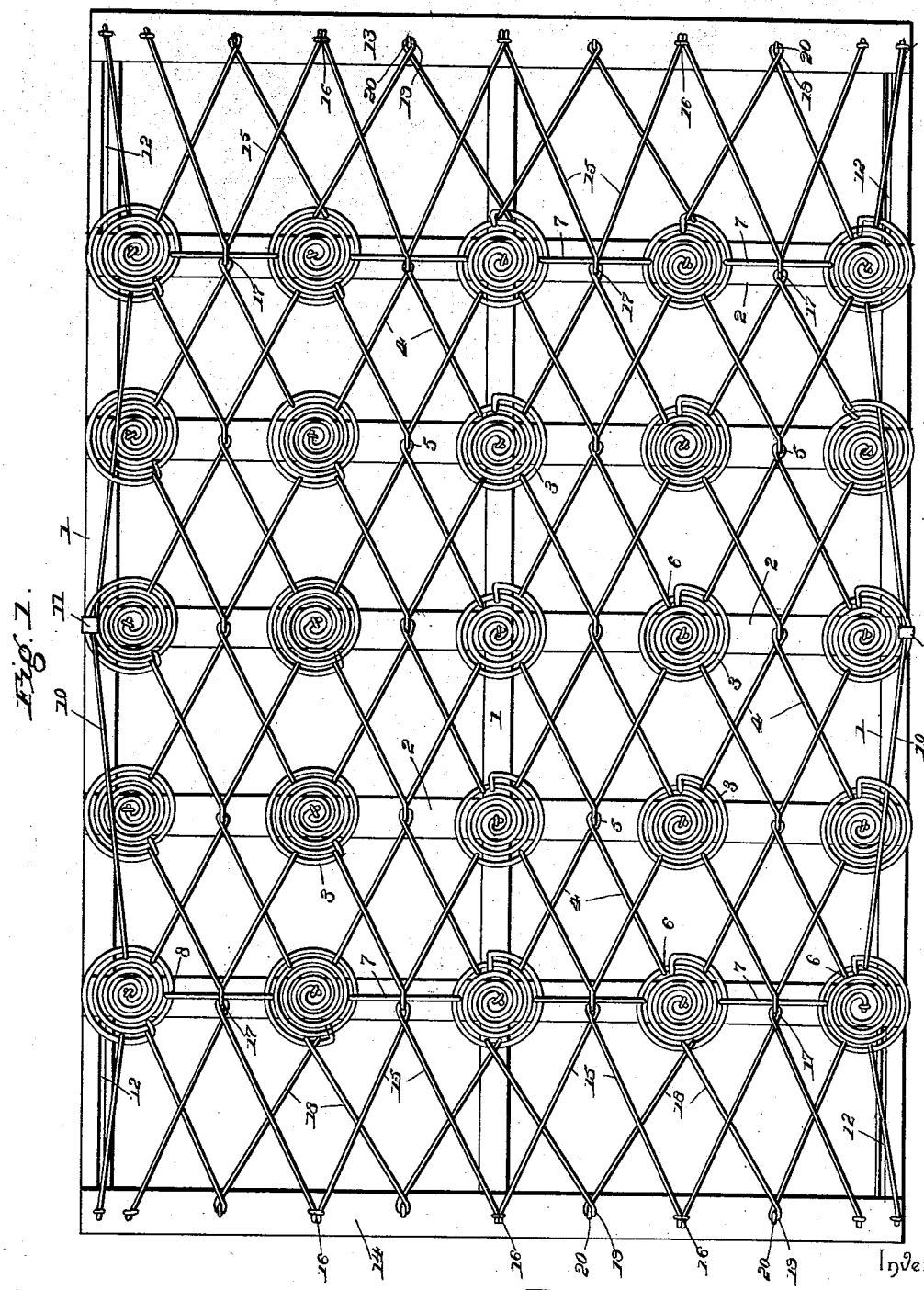

Fig. 1.

Inventor

David Leonard

Witnesses

F. M. Johnson

W. S. Duvall.

By his Attorneys.

C. A. Snow & Co.

THE NATIONAL LITHOGRAPHING COMPANY.
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

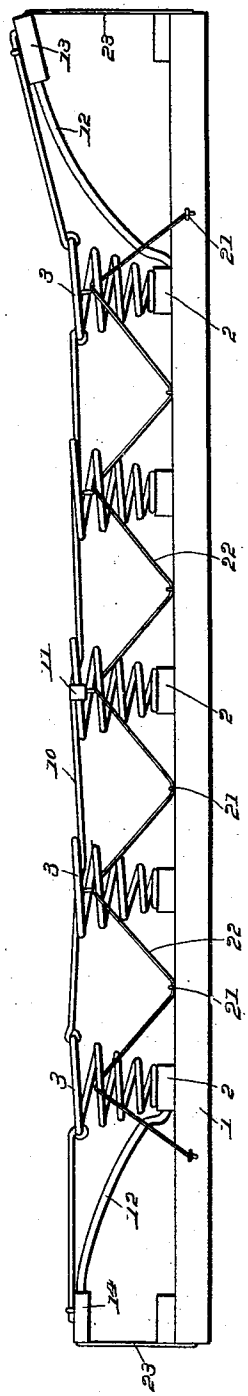


Fig. 3.

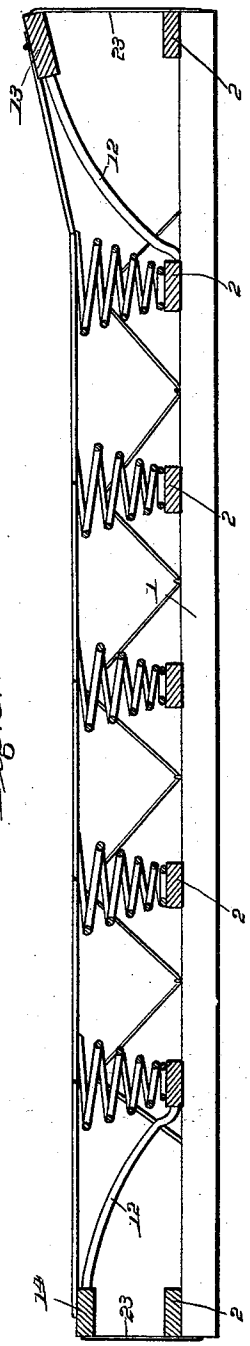


Fig. 5.

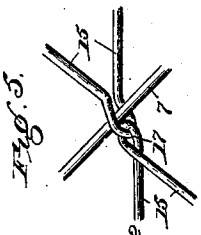
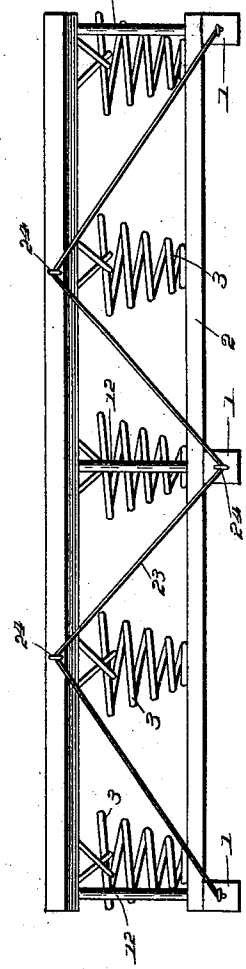


Fig. 4.



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UNITED STATES PATENT OFFICE.

DAVID LEONARD, OF ST. LOUIS, MICHIGAN, ASSIGNOR TO FRANK G. KNEELAND AND JOHN R. KNIGHT, OF SAME PLACE.

SPRING-BED.

SPECIFICATION forming part of Letters Patent No. 509,040, dated November 21, 1893.

Application filed July 12, 1893. Serial No. 480,296. (No model.)

To all whom it may concern:

Be it known that I, DAVID LEONARD, a citizen of the United States, residing at St. Louis, in the county of Gratiot and State of Michigan, have invented a new and useful Spring-Bed, of which the following is a specification.

My invention relates to improvements in spring beds, and to that general class employing a series or body-portion of convolute springs.

The objects of my invention are to construct a bed of this class wherein the resiliency of the several springs composing said body portion are preserved, are thoroughly braced, whereby only vertical oscillations can take place; wherein the strain is diffused equally over the surface of the bed; and, furthermore, to provide a convenient head and foot portion, the same being so constructed as to be resilient so as to afford ease and comfort and so that the head will be slightly elevated above the foot and the bank or body portion of the springs heretofore mentioned.

With these and other objects in view the invention consists in certain features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a plan view of a bed constructed in accordance with my invention. Fig. 2 is a side elevation. Fig. 3 is an end elevation. Fig. 4 is a longitudinal sectional view through the center of the bed. Fig. 5 is a detail view to illustrate the connection between the transverse tie-wires and the interlocking connection of the V-shaped wires.

Like numerals of reference indicate like parts in all the figures of the drawings.

In constructing my bed bottom I employ a series of longitudinal bars 1, in this instance to the extent of three, though more may be employed if desired, and connect the same by a series of transverse bars 2, which in the present instance serve as slats and surmount the bars 1. All of the slats with the exception of those at the ends accommodate and support convolute springs 3 of the ordinary type.

Extending in opposite longitudinal directions from the upper coils and connecting each pair of convolute springs 3 are V-shaped wires 4, the same having their angles bent to form eyes 5 which take between the springs in advance and in rear of those to which they are connected and whose terminals are bent to form eyes 6 which engage the upper coils of those springs to which they are connected. By this disposition of the V-shaped wires 4, it will be seen that the angles of each alternate wire meet and their eyes 5 interlock, and they meshing with the adjacent V-shaped wires 4 combine therewith to fill in the rectangular space between each set of four coiled springs 4, so that as a result an entire spring surface is produced, wherein the mattress or bedding is prevented from sagging between the convolute springs and is thoroughly supported at all points, and any strain at any one point of the bed is diffused equally over the neighboring springs; and finally it will be seen that the convolute springs can only yield in a vertical direction. The series of end convolute springs 3 are connected by short transverse tie-wires 7 whose ends are bent to form eyes 8 which engage the coils of the springs, and said tie-wires also pass through the eyes 5 at the angles of the adjacent V-shaped wires 4. Along its outer edge the convolute springs composing the bank are connected by stringing wires 10, the terminals of which are bent to form eyes for engaging the end springs of the series and are interlaced between these eyes through the intermediate springs, being clipped as at 11 to the central springs of the series.

From the side rails 1 immediately in front and in rear of those transverse bars 2 adjacent to the end bars of the series rise pairs of upwardly and outwardly disposed spring arms 12, the same supporting at their outer ends head and foot rails 13 and 14, respectively, the spring arms supporting the former being disposed above those that support the latter, whereby the head rail is some distance above the body or bank of springs and the foot-rail. The head and foot rails, like the convolute springs, have extending therefrom V-shaped wires 15, the said wires having their ends driven in and secured by staples 16 to the rails 13 and 14 and their angular portions twisted to form eyes 17 that engage with the adjacent and longitudinally aligning V-

shaped wires 4 of those springs next to the end series. Similar V-shaped wires 18 extend from the convolute springs at the ends of the series and alternate with those of the head and foot bars, and their angles are bent to form eyes 19 which are secured by staples 20 to the head and foot bars so that it will be seen an interlacing of the wires is formed between the head and foot rails and the convolute springs.

Intermediate the series of cross-bars 2 there are secured to the rails 1 at the sides of the frame staples 21, and longitudinal tie-wires 22 are secured to the staples at the ends of the series, and between the same are interlaced through those convolute springs located at the sides of the bed-bottom, whereby the same are braced and are limited in their vertical upward vibrations. Similar staples 23 are located upon the ends of the rails 1 and alternate with staples 24 located upon the outer edges of the head and foot rails, limiting wires 25 being secured to the staples 23 and between the same extending through the staples 24, whereby the upward movements of the foot and head rails are likewise limited. This completes the construction of my improved bed bottom and it will be seen that I employ in its make up the well known and advantageous convolute spring as the main portion thereof, forming a bank of the latter at such points of the bed as are subject to the greatest amount of strain and weight, and at these points thoroughly bracing the said springs so as to obviate any but a vertical oscillation upon their part; that I have assiduously avoided the formation of any openings intermediate the springs, wherein it is possible for the mattress supported thereby to sag, become torn, or otherwise injured; that I have provided for a careful and uniform bracing of the entire bank of springs, whereby the strain to which any one or more may be subjected is diffused over the neighboring springs; and finally I have produced a head and foot portion, the former being elevated above the latter and the body portion of the bed and secured to the latter in such manner as to form a convenient support for the bedding and carry out the uniformity of the bottom as a whole and support the head at a point above the feet and body of the occupant.

Changes in the form, proportion, and minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

It will be observed that the V-shaped wires cross each other and that each terminal is connected to different springs of the same series, also that the point of interlocking of the V-shaped wires comes between each pair of springs. Thus every space is bridged and covered up, and a bed-bottom is provided having great advantages in point of elasticity and equable motion.

Having described my invention, what I claim is—

1. In a bed bottom, the combination with a series of convolute springs, of pairs of oppositely disposed V-shaped wires connecting each pair of convolute springs and arranged in the space between the springs and terminating at their angles in eyes between the next adjacent pair of springs in longitudinal alignment, and interlocking with the eyes of those wires connected to those springs beyond the next adjacent pair, substantially as specified.

2. In a bed bottom, the combination with a bed frame comprising transverse bars, and a series of convolute springs supported thereon, of pairs of oppositely disposed V-shaped wires connecting each pair of convolute springs and terminating at their angles in eyes between the next adjacent pair of springs in longitudinal alignment and interlocking with the eyes of those wires connected to those springs beyond the next adjacent pair, and short transverse wires connecting the springs and passed through convenient eyes of the V-shaped wires, substantially as specified.

3. In a bed bottom, the combination with a bed-frame comprising transverse bars, and a series of convolute springs supported thereon, of pairs of oppositely disposed V-shaped wires connecting each pair of convolute springs and terminating at their angles in eyes between the next adjacent pair of springs in longitudinal alignment and interlocking with the eyes of those wires connected to those springs beyond the next adjacent pair, string wires interlaced through the end springs, clipped to the central springs, and bent to engage the corner springs, substantially as specified.

4. In a bed bottom, the combination with a bed frame comprising transverse bars, and a series of convolute springs supported thereon, of pairs of oppositely disposed V-shaped wires connecting each pair of convolute springs and terminating at their angles in eyes between the next adjacent pair of springs in longitudinal alignment and interlocking with the eyes of those wires connected to those springs beyond the next adjacent pair, upwardly and outwardly disposed spring wires rising from the rails, head and foot rails supported thereby, and V-shaped wires secured and disposed alternately to and from the end springs and head and foot rails and serving to connect the two, substantially as specified.

5. The combination with the bed frame, the transverse bars and the series of convolute springs arranged on the bars, of the curved spring arms, the transverse head rail arranged in a higher plane than the bank of springs, the V-shaped wires engaging and connecting each pair of convolute springs on those transverse rails nearest the head rail and at their angles bent to form eyes secured to the said rail, a second series of V-shaped wires

arranged intermediate the said connected convolute springs having their terminals secured to the head rail, and V-shaped wires connecting in pairs the convolute springs on that bar adjacent to those on the end bar and at their angles bent to form eyes engaging those V-shaped springs whose terminals are secured to the head rail, and transverse wires connecting the end springs of the series and passing through the interlocking eyes of those V-shaped wires in line therewith, substantially as specified.

6. A tie and cross bridge for springs, consisting of pairs of V-shaped wires 4, oppositely disposed and crossing each other, and located in the space between every four springs of the series, the ends of the wires connecting the springs of each pair of that series, the apex of each V-shaped wire being formed with an eye which is located between the opposite pair of springs and interlocks with a corresponding eye of an adjacent V-shaped wire, substantially as described.

7. A tie and cross-bridge for springs, consisting of pairs of V-shaped wires 4, oppositely disposed and crossing each other, and located in the space between every four springs of the series, the ends of the wires connecting the springs of each pair of that series, the apex of each V-shaped wire being formed with an eye which is disposed between the opposite pair of springs and interlocked with the corresponding eye of an adjacent V-shaped wire, and short transverse tie-wires 7 connecting the springs and passing through each pair of interlocked eyes of the V-shaped wires, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

DAVID LEONARD.

Witnesses:
N. D. WATKINS,
D. R. WAIT.