

(No Model.)

2 Sheets—Sheet 1.

G. W. MURRAY.
SPRING MATTRESS.

No. 468,018.

Patented Feb. 2, 1892.

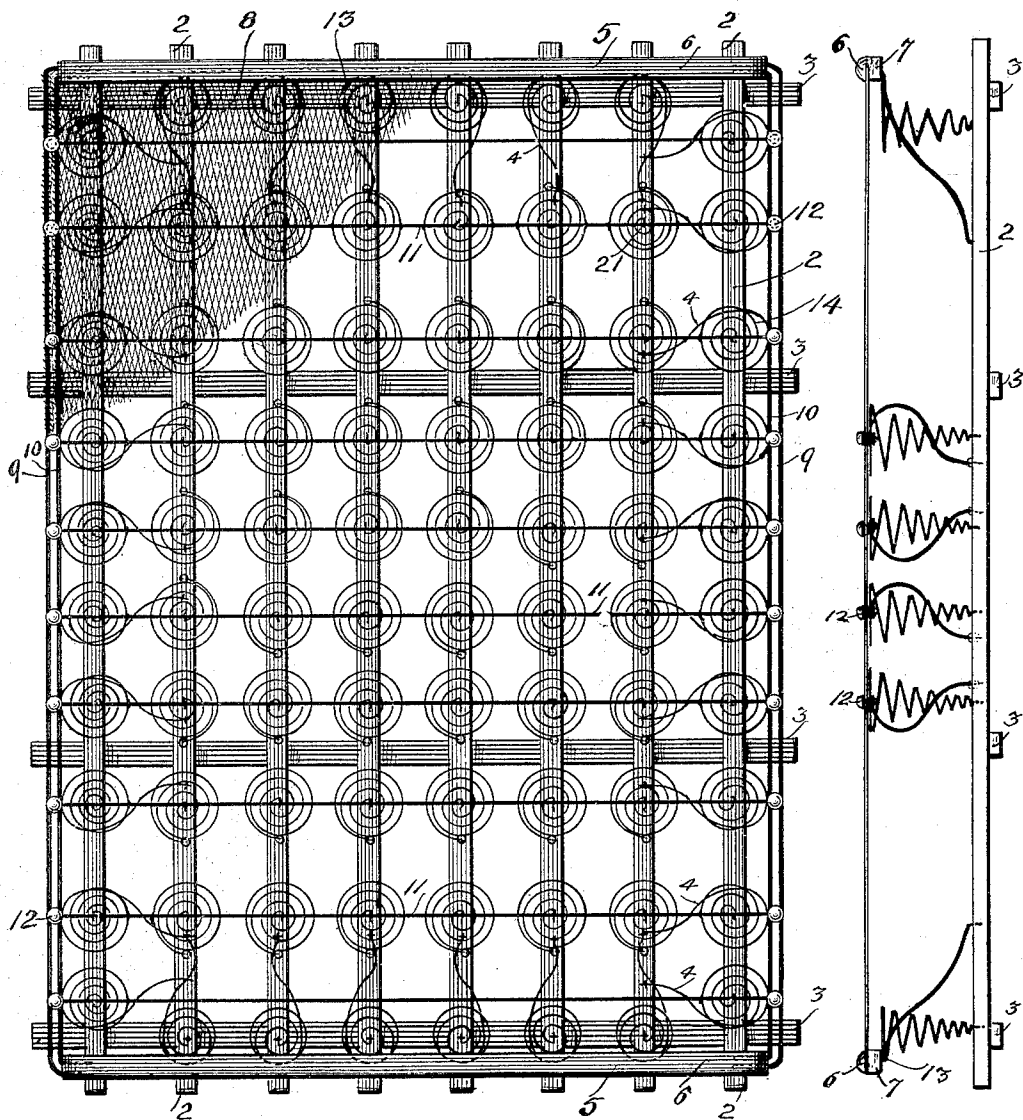


Fig. 1.

Fig. 2.

Witnesses.
C. E. Van Doren.

C. E. Hawley

Inventor

George W. Murray

By Paul & Murray Attys.

(No Model.)

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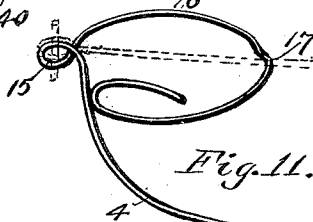
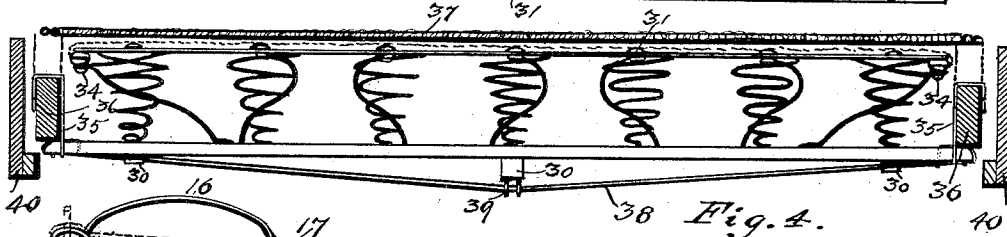
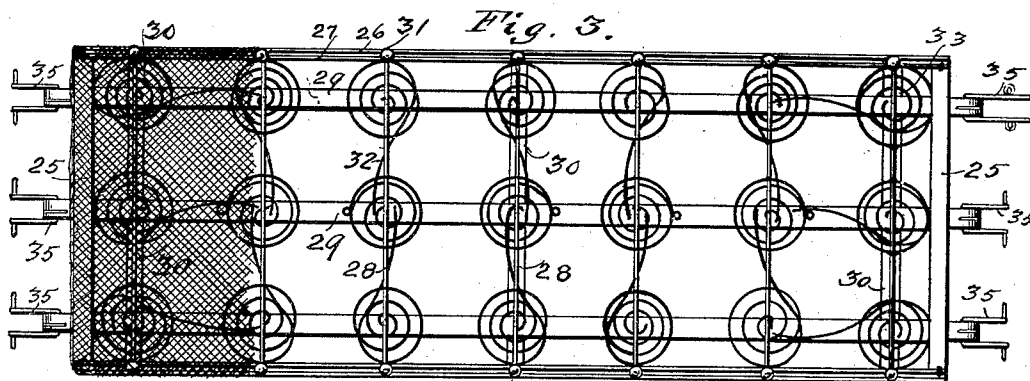


Fig. 11.

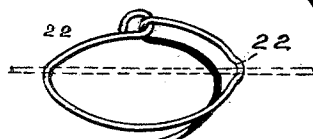


Fig. 10.

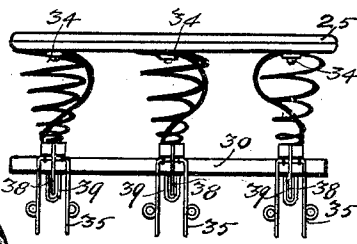


Fig. 5.

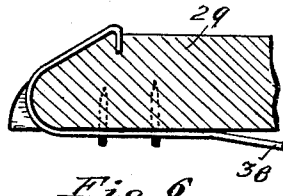


Fig. 6.

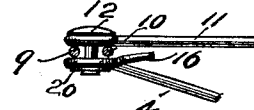


Fig. 9.

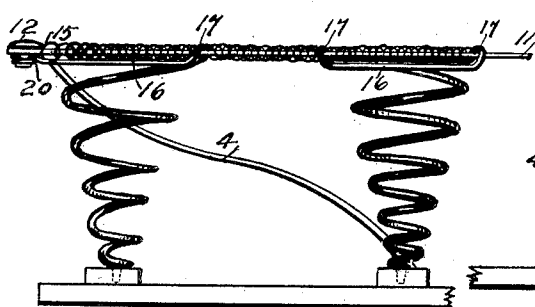


Fig. 7.

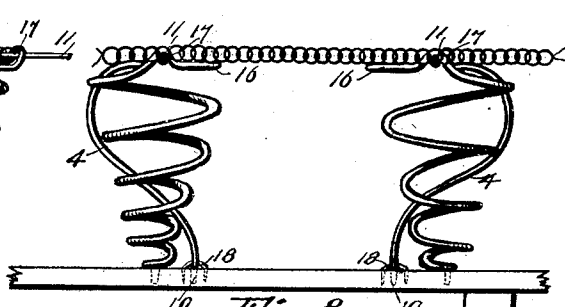


Fig. 8.

Witnesses.
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C. Hawley.

Inventor
George W. Murray.
By Paul & Merwin Attys.

UNITED STATES PATENT OFFICE.

GEORGE W. MURRAY, OF MINNEAPOLIS, MINNESOTA.

SPRING-MATTRESS.

SPECIFICATION forming part of Letters Patent No. 468,018, dated February 2, 1892.

Application filed March 13, 1891. Serial No. 384,975. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. MURRAY, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented a new and Improved Spring-Mattress, of which the following is a specification.

The invention relates, generally, to spring beds or mattresses of the ordinary size, and also to auxiliary spring bed-supports adapted to be attached beneath an ordinary woven-wire mattress to prevent sagging of the middle part thereof.

My invention relates, especially, to improvements in the devices upon which United States Letters Patent have been granted me under date of August 11, 1885, No. 324,335, and March 1, 1887, No. 358,563, for a spring-seat and spring-cushion, respectively.

The object of my invention is to provide a mattress which will permanently retain its shape owing to the fact that all depression of the upper surface thereof is exactly vertical.

My invention consists in the combination, with the base, of a woven-wire mattress-top, wires or rods provided in the edges of said top, cross-wires extending through said fabric and attached to said side wires or rods, and coiled springs provided on said base secured beneath and to said top by said cross-wires, the outer row of said coiled springs formed with spring-balance or compensating braces having their lower ends secured on said base.

My invention consists, further, in a particular arrangement of coils and base whereby they are adapted to be secured beneath an ordinary woven-wire spring-mattress, and further in various details of construction and in combinations hereinafter described, and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings, in which Figure 1 is a general plan view of a spring-bed embodying my invention. Fig. 2 is a partial side view thereof. Fig. 3 is a plan view of an auxiliary support adapted for use for spring-beds. Fig. 4 is a side view thereof showing the same in position beneath such a spring bed or mattress. Fig. 5 is an end view of the same. Figs. 6, 7, 8, 9, 10, and 11 are details.

In Figs. 1 and 2 of the drawings the base is shown to consist in the longitudinal slats

2, held in place by the transverse slats 3, preferably four in number. The spring-braces 4, provided in connection with the outside row of coiled springs, are arranged in opposing pairs. Hence an even number of coils is preferably employed across the ends and sides of the mattress in order that the braces may compensate one for the other to prevent any tilting of the mattress-top. The cross-pieces or ends 5, each formed of two strips 6 7, as shown in Fig. 2, clamp the ends of the wire fabric 8, a small portion of which is shown in the right-hand corner of the mattress. The selvages of the woven-wire fabric embrace the two side rods 9 and 10, which serve to form straight even edges for the mattress-top. The ends of the wires or rods 9 10 are clamped between the ends of the strips 6 7 and 7.

In order to prevent the mattress-top from spreading, I provide the cross ties or wires 11 of equal lengths. These wires have loops or eyes formed in their ends, down through which the rivets 12 extend between the side wires 9 10, securing the same firmly in position. These cross-ties are threaded through the wire fabric, which therefore embraces all of the wires 9, 10, and 11, a smooth top being therefore left upon which the bedding may be placed without danger of its being abraded by any sharp points or edges. The outer row of coiled springs is provided or formed with the spring-braces 4, the coiled spring and the brace in each case being formed of one piece of wire. These spring-braces are preferably formed in ogee curves, and will be so described throughout the specification, though I sometimes employ other forms. The upper coils of the end springs 13 may be somewhat smaller than the others, and are secured beneath the strip 7, as shown in Fig. 2, in any suitable manner, preferably having slight crimps or indentations adapted to engage fastening-staples to prevent the coils from shifting. The side coils 14 are formed (detail, Fig. 11) with the eye 15 in their upper coils 16. The opposite sides of the coil are provided with the crimps or indentations 17. The lower end of the wire forming the coil is driven into the longitudinal slat 2 and fastened there by staples, tacks, or screws. From the eye 15 the wire extends down in an ogee curve to

form the brace 4, which brace has an angle-foot 18, provided with a point 19, adapted to be driven into the second longitudinal slat. The eye 15 engages the shank of the rivet 12, which passes through the loop in the end of the cross-wire, then between the side wires 9 and 10, through the eye 15, and through a suitable washer 20, provided beneath the same, as shown in Fig. 9. In this way the fabric, the outer row of side springs, the side wires, and the cross-ties are all securely fastened together.

It will be seen in Fig. 1 that the spring-braces 4 are carried around from the point where the rivets are provided to the other side of the cross-bar and the centers of the second course of springs 21, and also that adjoining pairs of outside springs have their spring-braces arranged in exactly opposite positions, so that they oppose each other; further, that on opposite sides of the mattress the spring-braces are placed in opposing positions. The same is true with the placing of the end springs and braces. Hence it follows that a pressure upon any point of the mattress creates a counter pressure or pull at an opposite point thereon. I sometimes place the braces in groups, in which case one group on one side or end of the mattress opposes another at an opposite position thereon. As a consequence the top of the mattress is prevented from twisting with respect to the base-slats or from tipping to one side or the other. The inner springs 21, by which is meant the second row and all embraced thereby, are simple upright coils secured on the longitudinal slats and acting to uphold the middle of the mattress-top. These springs, as shown in Fig. 10, illustrating a top coil of one of them, are provided with diametrically-opposite crimps or indentations 22.

In the construction of the mattress all of the coiled springs are placed in position and the wire fabric placed over the same. The cross-wires are then woven through the fabric and under the crimps 22 17, which are pressed up into the fabric. In this way the top of each coiled spring is secured firmly in position and left entirely independent of all the other springs, whereby a greater elasticity or flexibility of the mattress-top is attained. Moreover, the tops of the springs are held securely, and the mattress-top being prevented from shifting by the ogee braces the coiled springs are at all times held against any lateral movement, being permitted to move only straight up and down. The braces continue to be spring, braces at all times during the depression.

One of the advantages of my construction is that the woven-wire fabric is held instead of being adapted to hold the other parts of the mattress, and hence does not need to be stretched preparatory to making up the mattress, but is simply laid on top of the coiled springs in its normal condition. It follows that a greater freedom of movement is given

the mattress-top. I preferably arrange the springs in straight rows across the mattress and place the rows closer together toward the middle thereof, so as to provide an extra number of supporting-springs where the greatest weight is placed upon the mattress. This arrangement of the springs is shown clearly in Fig. 1, where the longitudinal distance between the coils noticeably decreases toward the middle of the mattress. The four rows of coils making up the middle of the mattress are about the same distance apart. For convenience I set the corner-coils a short distance away from the end strip 5.

This idea of providing an extra support at the middle of the bed leads to the device shown in Figs. 3, 4, and 5, which is practically the middle section of the mattress shown in Fig. 1. In this form of mattress, or "auxiliary support," as I have called it, the springs are preferably of equal size. The outer row of springs is provided with ogee spring-braces adapted to prevent shifting of the mattress-top like unto those shown in Fig. 1. The end pieces 25 correspond to the end pieces 5 in Fig. 1, being made of two strips secured together to clamp the ragged ends of the woven-wire fabric, which, as shown by dotted lines in Fig. 4, passes over the strip and around between parts thereof, so as to form a smooth round edge, in this respect differing somewhat from Fig. 1. The side wires 26 and 27 correspond to 9 and 10, and the cross-wires 28 to the cross-wires 11 in Fig. 1. Three transverse slats 29, held together by the short longitudinal pieces 30, correspond in reality to the longitudinal slats of Fig. 1 and form the base for the several coils. The outer row of coils is provided with eyes similar to 15, Fig. 11, and with crimps similar to 17, which engage the rivets 31 and the cross-ties 28, respectively. The lower ends of the ogee braces 32 are secured on the base-strips. The middle row of coil-springs corresponds to the coils 21 of Fig. 1. The corner-springs 33 differ from the other springs of the outside row in that they are provided with second eyes adapted to engage the screws 34, passed through the same and secured in the strips 25. The fabric, the side and cross wires, and the upper coils of the springs are interwoven, as in the large mattress. The strips 29 extend a short distance beyond the line of the end pieces 25 and are provided with the loop-hooks 35, adapted to be thrown over the side bars 36 of the ordinary woven-wire mattress, so as to support the auxiliary mattress beneath the wire fabric 37, having its ends secured in the head and foot bars fastened across the ends of the side bars 36. 40 represents the side boards of the bedstead. I sometimes provide the trusses 38 beneath the bars 29 to give additional strength to the base. The truss-wires 38 are secured to the ends of the bars in the manner shown in Fig. 6. A staple or staples 39 prevent lateral movement of the middle part of the wires 38. When weight is placed upon the top of the bars, they

are forced down, so as to bring the strips 30 against the truss-wire.

Fig. 7 shows a section transverse to the side bars, illustrating the manner of weaving the parts together. Fig. 8 is a view seen from a section lying parallel to said side wire and showing plainly the cross-tie wires engaging the crimps 17 in the upper coils of the springs.

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

1. The combination, in a mattress, of a base with a flexible mattress-top, coiled springs interposed between the same, and curved spring-braces provided in connection therewith, said braces having their lower ends fixed on said base and each alternate brace or group of braces curved in opposite directions to the adjoining brace or braces, whereby each spring-brace of the mattress is counterbalanced by another, thereby preventing lateral or twisting movement of the top with respect to the base, substantially as described.

2. The combination, in a spring-mattress, of a base with a woven-wire-fabric mattress-top, the end strips, the side wires 9 10, the cross-wires 11, and coiled springs interposed between said base and top, the outer row of said coiled springs provided with ogee spring-braces, each alternate brace or group of braces curved oppositely to the adjoining brace or braces, and each brace constituting a constant supporting spring-brace, whereby pressure upon one portion of the mattress-top is compensated by a counter action at a corresponding opposite point, substantially as described.

3. The combination, in a spring-mattress, of a base with a woven-wire-fabric top, the side wires 9 10, the cross-wires 11, provided with loops or eyes, coiled springs interposed between said base and top, the outer row of said springs having their upper coils provided with prolongations forming ogee-curved braces, said braces having their ends secured on said base, eyes formed in the said upper coils, and rivets or bolts 12, passing through the loops in said cross-ties between said side wire and through said eyes in said coiled springs, substantially as and for the purpose set forth.

4. The combination, in a spring-mattress, of the base with the fabric, the side wires 9 10, and the flexible cross-wires 11, embraced by said fabric, said side wires passing through the selvages thereof, the coiled springs having crimps whereby their coils engage said

cross-wires, the outer row of said coils, each alternate coil or group of coils thereof provided with spring-braces oppositely to the adjoining brace or braces, and means for securing the outer edges of the upper coils thereof to the said side wires and the ends of the mattress, substantially as described.

5. The combination, in a coil-spring mattress, of the base of the strips 25, with wires or rods 26 27, the cross-ties 28, a wire fabric, coiled springs interposed between said base and said cross-ties and fabric, means for securing the same thereto, the compensating ogee spring and supporting-braces provided in connection with the outer row of coiled springs, and means for suspending the whole beneath an ordinary spring-mattress, substantially as and for the purpose specified.

6. The combination, with a spring-mattress, of an auxiliary support consisting of the bars 29, with the bars 30, the coiled spring, the auxiliary wire-fabric top provided above the same, the side wires 27 and 26, the cross-ties 28, and the curved spring-braces provided in connection with the outer row of said coiled springs and arranged in opposing positions, and hooks 35, adapted to engage the side bars 36 of an ordinary spring-mattress, as and for the purpose specified.

7. The combination, with the bars 29 and the bars 30, secured transversely across the middle of said bars 29, of the loose truss-wires 38, depending below and normally free from engagement with the bar 30, and staples for guiding said wires 38, said wires being arranged to engage the bar 30 when said bars 29 are sprung down, substantially as described.

8. The combination, in a spring-mattress, of the base with the mattress-top, coiled springs interposed between the same, the end pieces, and edge wires 9 10, and curved spring-braces extending from said end pieces and said side wires and having their lower ends secured on said base, and alternate braces or groups of braces being arranged in opposing and exactly counterbalancing positions, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 18th day of February, 1891.

GEORGE W. MURRAY.

In presence of—

F. S. LYON,

O. G. HAWLEY.