F. G. Johnson,

Bed Bottom,

No. 45,832. Patented Jan. 10, 1865.

Fig. 1.

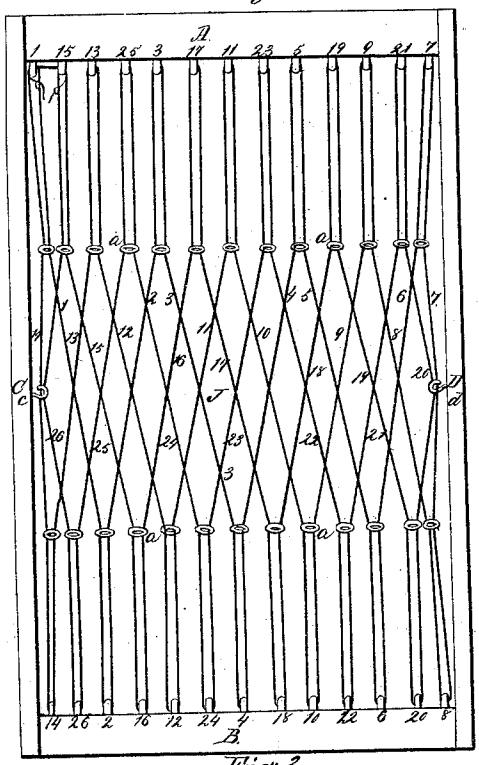


Fig. 2.

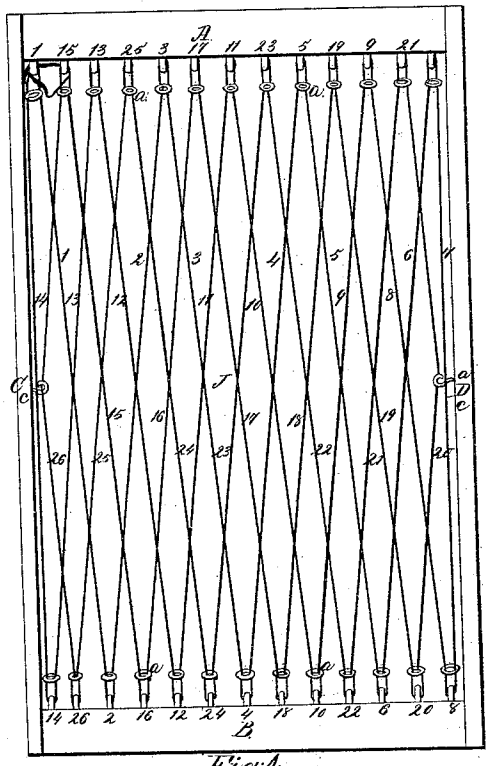


Fig. 3.

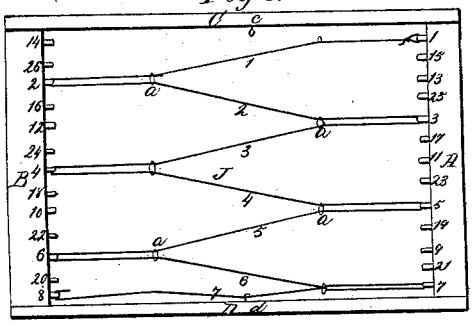
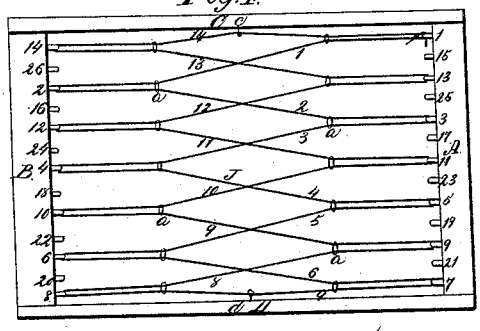


Fig. 4.



Witnesses;
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UNITED STATES PATENT OFFICE.

FRANK G. JOHNSON, OF BROOKLYN, NEW YORK.

IMPROVED BED-BOTTOM.

Specification forming part of Letters Patent No. **45,832**, dated January 10, 1865.

To all whom it may concern:

Be it known that I, FRANK G. JOHNSON, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Method of Constructing Corded Spring-Bottoms for Bedsteads; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Heretofore cord has been laced into bedsteads generally lengthwise and crosswise, so that the two sets of cords form right-angle squares, and in such a manner that the cords running crosswise assist in supporting those that run lengthwise, thus equalizing the action or strain on the several lines of cord. Cord, when laced into bedsteads in this way, allows all the "slack" of cord, both lengthwise and crosswise, to form a hollow from end to end and from side to side of the bedstead, so that the center of the bed becomes the lowest. On the contrary, if cord be laced into the bedstead or frame only lengthwise, the sag crosswise is prevented, and lengthwise, too, provided it is sufficiently tightened. By this method, if the cords run parallel to each other, they are liable to spring away from each other in the middle, and the pressure not being equalized, each two or three consecutive cords are liable to be strained, sagged, and broken. Therefore the object and nature of my invention consist in applying the common cord to a simple rectangular frame in such a manner as to provide a desirable spring-bottom for beds that shall not be liable to any of these objections, which I accomplish by lacing the cord into the frame in such a way as to cross the cords over one another and equalize the pressure or strain without running them crosswise of the frame, and by means of lacing or tightening rings, to keep the cord always tight and by the same rings, to combine the action or strain of the several cords together in such a novel and peculiar manner as to produce a lively elasticity crosswise of the bed-bottom as well as lengthwise, which will be clearly seen in the following full explanation of its construction and operation.

Figure 1 is a view showing the cord laced into the frame A B C D and tightened up with the tightening-rings *a a a a*, ready for use. Fig. 2 is a view to show the position of the cords with the tightening-rings slipped back to the end pieces, A and B, of the frame. Fig. 3 shows the relation of the first line of cord to the second, and the second to the third, and the third to the fourth, and so on, in the first tier of lacing. Fig. 4 shows the relation of the first and second tiers of lacing.

In each of the cross-pieces A and B are thirteen eyes or staples, or any other suitable fastenings, numbered in the order in which the cord passes through them, and as there is a tightening-ring and a line of cord to every staple the same consecutive numbers will stand for each of these parts.

By referring to Fig. 1 it will be seen that the first end of the cord is fastened to staple No. 1, passed through ring No. 1 and ring No. 2 to staple No. 2, thence through rings 2 and 3 to staple 3, thence through rings 3 and 4 to staple 4, and so on, as shown by the black lines in the drawings, across the frame to staple 8. (See Fig. 3.) This, for convenience, I call the "first tier of lacing." It will be seen that these staples are passed by each time the cord goes back and forth. The cord now is passed through the rings and staples in the order of their numbers from staple 8 back to staple 1—the place of beginning—in the same manner, and constitutes the second tier of lacing. (Shown by the red lines in the drawings, see Fig. 4.) The cord is now passed across from staple 1 to staple 15, and thence is passed back and forth through the rings and staples in the order of their numbers, same as before, to staple 20, (shown in the drawings by the blue lines,) and makes the third tier of lacing. Thence the cord passes through the rings and staples in the continued order of their numbers back to staple 15—the place of beginning on the third tier of lacing—(shown in the drawings by the green lines,) and constitutes the fourth tier of lacing. Thus the cord begins at staple 1 and ends at staple 15.

When the tightening-rings are slipped toward the center to tighten the cords, they cause the cords to somewhat converge toward the center of the frame. To prevent converging, the two outside cords, on both sides of the bedstead-bottom, (shown by the numbers 14, 7, 20, and 26,) are drawn up to the side pieces, C D, of the frame and fastened thereto by the hooks *c d*. This strain or tension from side to side produces an elasticity crosswise of the

bottom, which is very desirable in spring bed-bottoms. This cross tension and elasticity, combined with the tension lengthwise and the elasticity of the cord itself, produce an elasticity in every direction from the common center, the same as would be produced by stretching a piece of rubber cloth in all directions from the center. This will be apparent by placing the finger on cord No. 4 at J, Fig. 3, when it will be seen that the strain is not only carried lengthwise from staple 4 to staple 5, but also crosswise to cords 3 and 5, and so on to cords 2 and 6 and to cords 1 and 7. What is true of the first tier of lacing is true of each of the other tiers of cords. By means of the tightening-rings, too, the crossings of the cords over each other are brought to the central portion of the bottom, where the greatest support and elasticity are needed.

By means of the rings and the diagonal crossings of the cords it will be impossible to put any action or strain on any single cord without having the same action or strain applied more or less to every other cord in the bottom, which is very desirable, and which constitutes the most distinctive feature of this invention. If, for instance, a pressure be applied to J in Fig. 1, it will be communicated to cords Nos. 3, 17, and 10 in the different tiers of lacing, and from each of these four cords diagonally back and forth to every other cord in its own tier of lacing.

It will be seen that the lacing-rings, though simple in themselves, accomplish four distinct and important purposes—viz., first, to tighten the cords; second, to bring the crossings of the cords toward the center of the bottom, where they are the most needed; third, to communicate the strain from one cord to another sidewise, and thus equalize the strain on the several cords; fourth, to produce an elasticity crosswise of the bottom.

I do not confine myself to the use of cord only, as wire might be used as well.

What I claim as my invention, and desire to secure by Letters Patent, is—

The peculiar manner in which the cord is laced into the frame A B C D, so that no two consecutive cords are parallel to each other, substantially in the manner and for the purposes herein set forth.

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