(No Model.) 2 Sheets—Sheet 1.

J. SPRINGER.

WOVEN OR KNITTED CORD FURNITURE.

No. 326,064. Patented Sept. 8, 1885.

Fig. 1.

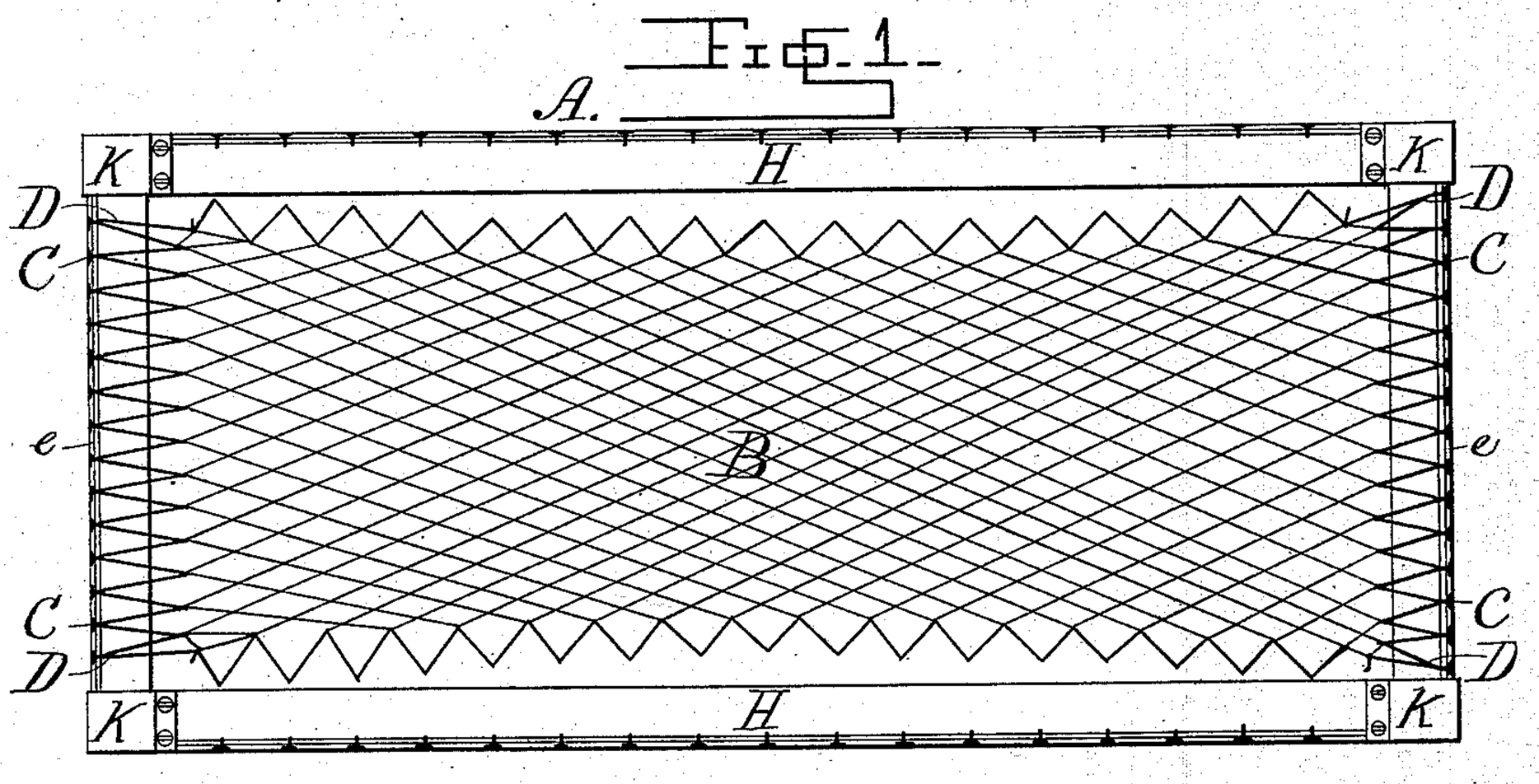


Fig. 2.

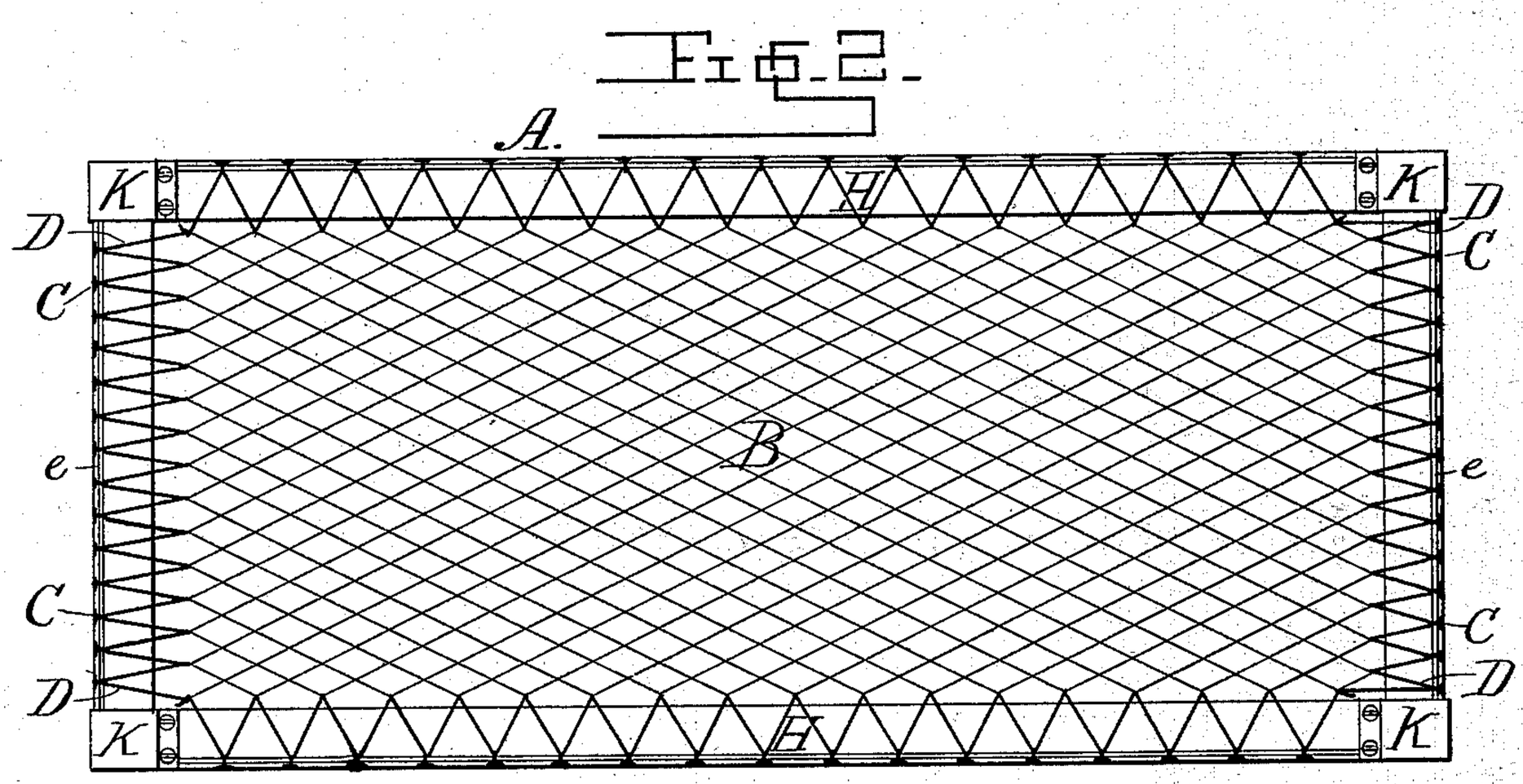
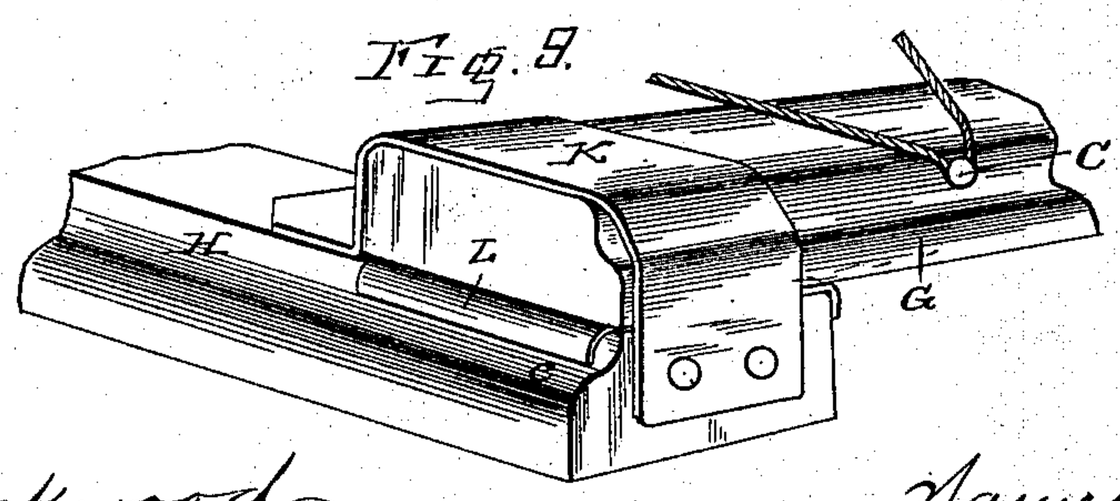


Fig. 3.



WITNESSES;
Jos. H. Blackwood.
R. L. Dewey Bond.

INVENTOR
James Springer

(No Model.) 2 Sheets—Sheet 2.

J. SPRINGER.

WOVEN OR KNITTED CORD FURNITURE.

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Fig. 3.

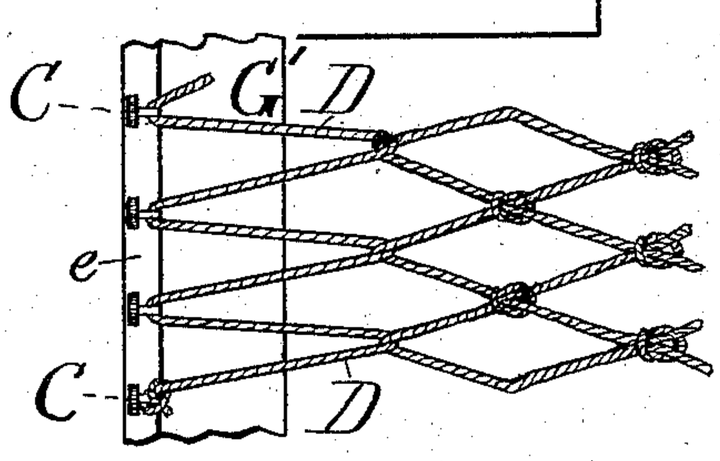


Fig. 5.

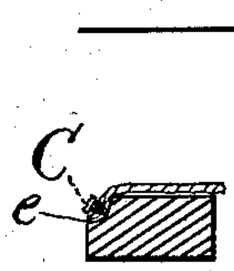


Fig. 4.

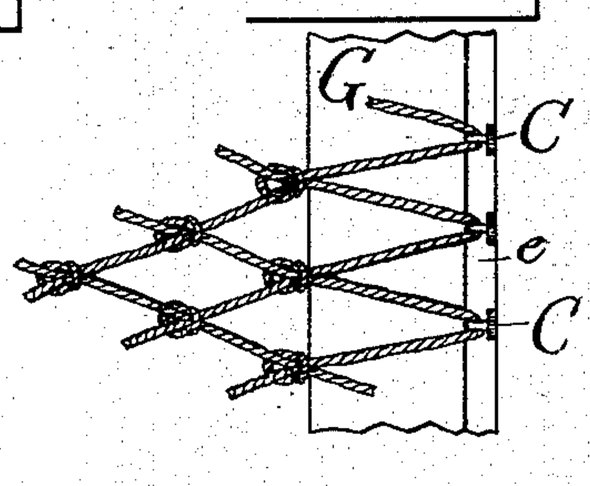


Fig. 6.

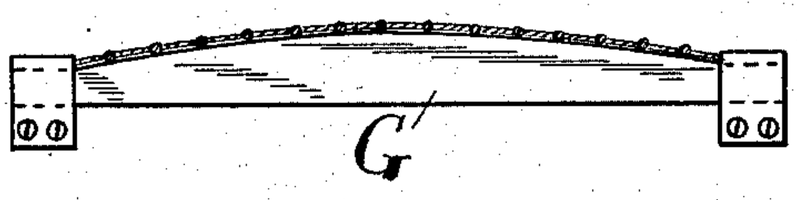


Fig. 7.

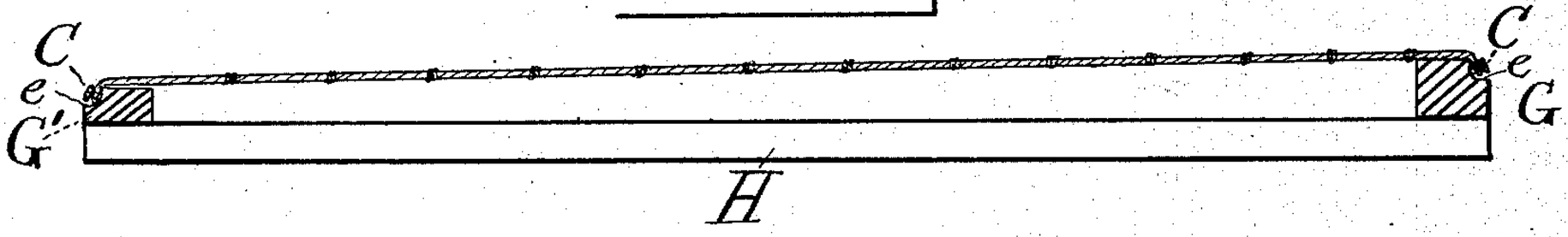
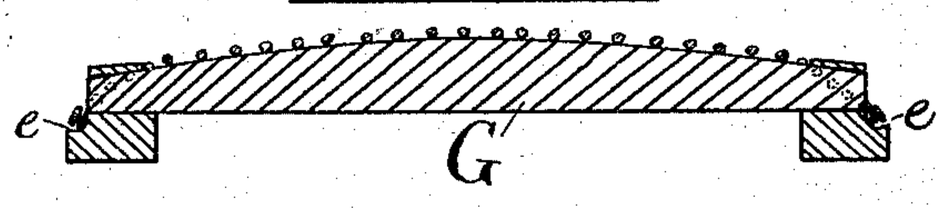


Fig. 8.



WITNESSES;
Jos. H. Blackwood del
R. L. Dewey Dois.

INVENTOR.
James Springer

UNITED STATES PATENT OFFICE.

JAMES SPRINGER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WOVEN CORD FURNITURE COMPANY, OF SAME PLACE.

WOVEN OR KNITTED CORD FURNITURE.

SPECIFICATION forming part of Letters Patent No. 326,064, dated September 8, 1885.

Application filed May 14, 1885. (No model.)

To all whom it may concern:

Be it known that I, JAMES SPRINGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Woven or Knitted Cord Furniture, of which the following is a specification.

The object of my invention is to make of cotton cord or other suitable material a comfortable, healthful, economical, and durable style of woven or knitted bottom or other parts for beds, cots, lounges, sofas, chairs, cradles, and other articles, and to secure the same to a frame of or for a bed or other article in a simple and efficacious manner; and it consists in the features and details of construction hereinafter described. Whether used for the bottom, back, or other part of any piece of furniture or other article, I shall hereinafter, for convenience, term the knitted or woven material and other parts of my structure a "bed-bottom."

The old way of making a corded bed-bottom or similar article was to take a large-sized cord and pass the same by hand over pegs in the side and end rails of a frame, across from one side or end of the frame to the other and back to the opposite ends or sides, or from end to end and side to side, and sometimes a sort of netting was formed by interlacing the cord; and, again, certain forms of clasps were used to tighten the cord by holding adjacent strands or meshes together. It is also old to attach and tighten a canvas bed-bottom or a netting to a frame by means of a cord. The difficulty of applying cords to a frame in the manner described, of preventing the same from sagging when applied, and other objections, led to the introduction of wire for the purpose, and wire for bed-bottoms and similar articles has to a very great extent superseded the old form of corded structures.

Wire when crossed or woven and attached to a suitable frame makes a portable structure in many ways preferable to the older style of corded bottoms, but it is, however, also far more expensive, and the articles produced for the most part heavy, cumbersome, and in many respects unsatisfactory.

My invention is illustrated in the accompanying drawings. Figure 1 is a plan view of my improved bed-bottom, the netting being drawn tightly endwise and fastened to the end rails of the bed or other frame. Fig. 2 is a plan view of the bed-bottom with the netting stretched and attached to both sides and end rails of the bed or other frame; and Figs. 3, 4, 5, 6, 7, 8, and 9 illustrate certain details of construction hereinafter explained.

A is the frame. B is the woven or knitted material. C are the nails or other holders for the end or side meshes or loops of the netting; and D is a cord for tightening the netting lengthwise.

In making the netting for my improved bed-bottom I take elastic cotton cord or other suitable material and weave or knit the same into a netting of suitable size for the purpose to which it is to be applied. In the process of weaving or knitting, the meshes of the netting may be made of larger or smaller size, as may be desired, and the cord or other material for every mesh must be securely tied or otherwise fastened in place, as is done in the weaving of seines and similar articles. The netting may be composed of a body of meshes of uniform size, but I prefer to have the meshes at the sides and one or both ends of a larger size than the others, in order to facilitate the attachment of the netting to the holders, and also so that the knots or other means by which the meshes are tied or otherwise securely held may not rest upon the frame, and thus be subjected to extra wear. This is very important when I use my netting on a bed-bottom or other article requiring wide and strong end and side rails, as the meshes or loops are then long enough to reach across said rails and over the nails or other holders, and thus also affording a smooth bearing-surface for the loops or meshes. After a netting of the length and width suitable for a bed or other frame has been woven or knitted, the same may be attached and fastened to the frame at its ends by nails or other suitable holders in the end rails, G and G′, over which the meshes, loops, or lace-cord at the ends of the bed-bottom are placed. These nails or other holders in the end rails may be driven or fastened into a groove, *e*, as shown in Figs. 3, 5, and 9, running the length, and preferaby on the outside, of the end rails, of sufficient depth to receive

said nails or other holders, with the loops or ends of the meshes. After the meshes or loops of one end of the bed-bottom, preferably the head, have been placed in position over the nails or other holders, I prefer to insert a cord, D, preferably of a larger size than the body of the netting, through all of the meshes at the other end, and lace it over all of the nails or other holders at that end by pulling it through each mesh and then placing it over each nail or other holder, and at the same time drawing it tight and fastening it at the corner of the frame by a bow-knot or other suitable means, by which process any desired degree of longitudinal tension in the netting may be secured, and in connection with the stretching sidewise, undue sagging may be avoided or at any time easily removed. In this operation of fastening the netting over the end nails or other holders and securing the desired longitudinal tension, as described, the meshes will necessarily be drawn closer together and away from the side rails, H H. The side meshes or loops are afterward put in place over the side nails or other holders by fingers or other suitable means for drawing them laterally into place, thus giving the whole surface of the netting any degree of tension desired and imparting uniform elasticity to the same. This is an easy operation, owing to the fact that the process of stretching the netting endwise, as described, has the effect of greatly elongating the meshes, as substantially shown in Figs. 3 and 4. The longitudinal, lateral, and diagonal tension will thus be made and kept substantially uniform over the whole surface of the netting, but differing in degree, the longitudinal being much greater than the other. The tension being very much greater lengthwise of the meshes, which are much longer than wide, as shown in the drawings, allows them to spread easily sidewise when lain or pressed upon from the top, and when the weight or pressure is removed or lessened they will at once assume substantially their former positions, thus adding greatly to the comfort and elasticity of the bed-bottom.

The tension of the netting being from all directions inwardly and easily attached or detached, I prefer to make the frame with suitable hand-tight corner-holders, K, so that it may be easily taken apart for convenience in handling and shipping in knockdown form and may be readily put together for use. These hand-tight corners consist of a sheet-metal strap bent to correspond substantially in shape to the ends of the end rails. One end of the strap is secured to the top surface of the side rail, and the strap then passes over the end rail and its opposite end secured to the outer end of the side rail, as shown in Fig. 9. It is apparent, however, that the netted structure can be applied to other forms of frames, whether knocked down or not.

The nails or other holders may also be placed in a groove in the side rails, preferably on the outer side thereof. The advantage of thus placing the nails or other holders in both the end and side rails is that when thus placed they will not be unnecessarily exposed in handling or shipping or in the way when in use.

By the formation of the groove *e* along the outer edge of the side rails, and the insertion therein of the nails, as shown, the nails are readily accessible at all times for the purpose of applying, releasing, or tightening the netting; and while the nails are out of the way of bed-clothing or anything else, I am at the same time enabled to dispense with all devices for covering the nails or other holders or for keeping the same in place.

I prefer to make the end rail, G, at the head of the bed, when I use my netting in a bed-frame, somewhat oval or tapering from the center to both ends, as shown in Figs. 6 and 8, and as further shown in Fig. 7, which also shows the netting higher in the center than at the sides or foot of the bed bottom, so that when the netting is attached to the side rails of the frame, the foot-rail also being on top and higher than the side rails, as shown in Fig. 7, it has a somewhat oval shape the whole length thereof. This is intended to assist in preventing undue sagging where the bed is subjected to heavy pressure on top or by more than one person occupying it. To further prevent sagging, in connection with the construction described, the tension being from all directions and always being as great in the middle of the bed-bottom as in any other part, I also prefer to attach the meshes or loops of the netting at the outside of the end and side rails in the grooved flanges mentioned herein, the head and foot rails being preferably higher than the side rails, by carrying the meshes over them, as shown in the drawings, and also for the purpose of allowing the mattress, when used, or other under bedding to extend without obstruction to the outer edges of the frame; and I prefer, also, to make my frame with the end rails resting upon or higher than the side rails, so that the netting will be suspended above the side rails, except where fastened to the same, in order to assist in preventing undue sagging.

I make my netting preferably of elastic cord, so that it will possess all the yielding and resilient qualities of a comfortable bed-bottom. One of the characteristics or peculiarities of cotton cord is that it is very slow to receive injury from strains and shocks, and quick to return to its former position and condition; but to secure this elastic quality of cotton or other elastic cord in its greatest degree, and to utilize cords or other suitable material from hemp or other material which does not possess a very great degree of natural resilience or elasticity, or none at all, I stretch the meshes of my netting much longer than wide, as indicated in Figs. 3 and 4. I regard this as important. Though the meshes may be woven or knitted square, they must be stretched in putting them on the frame, so that they will

be much longer in one direction than another, preferably lengthwise of the frame, to fully secure the resilience of the netting when pressed upon, whether the material of which it is composed is more or less elastic. I regard the principle involved in this fact as very important and necessary to make a comfortable, practical, and successful bed-bottom of knitted or woven inelastic material. I prefer to stretch the meshes until they are at least twice as long in one direction as in the other. I have described this stretching as effected by a lacing-cord, and the passing of the other meshes over pins or other holders in the rails, though other means may be employed—such as adjustable corner-pieces, rollers, and others which will readily suggest themselves.

I have described and illustrated my improvement in connection with a bed-bottom; but I do not wish to be understood as confining myself to this particular application of my invention, as it is equally capable of use in connection with a variety of other articles and other household furniture. It may be used to form a bottom or other part for lounges, cots, cradles, chairs, bunks, and other articles in which a bottom or other part of meshed material may be employed; nor do I wish to restrict myself to the precise arrangement shown and described for fastening the netting to the frame, as other means will readily suggest themselves.

To prevent creaking of the frame, as well as to prevent the inroad of any insects, I prefer to insert between the ends of the rails, within metallic corner-holders, a thin sheet of tin or other metal, L, which, with the metallic holders, gives a metallic bearing to the four sides of the end rails at their intersection with the side rails, and also to the ends of the side rails.

It will be noticed that the qualities of uniform tension and uniform elasticity are attained by my improvement in a greater degree by arranging the meshes of the netting in a substantially direct longitudinal and lateral direction across the frame and placing the netting-holders on the side and end rails in substantially a direct line with the line of meshes.

Having thus described my invention, what I claim is—

1. A structure suitable for bed-bottoms or other articles, consisting of a netting in which the meshes are made or drawn in an elongated form and securely held as formed, in combination with a frame consisting of inflexible end and side pieces, the said netting being drawn taut on the frame, and having a uniform longitudinal tension, a less but uniform lateral tension, and a uniform diagonal tension, substantially as described.

2. A bottom for beds or other articles, composed of a netting of cord or other suitable material in which the meshes are securely held as formed, provided with loops or meshes of larger size on the sides thereof and at one or both ends, whereby the same may be readily attached to a suitable frame or detached therefrom, and the meshes when attached to the frame may be easily drawn into an elongated shape, substantially as described and for the purposes set forth.

3. A structure suitable for bed-bottoms or other articles, consisting of a netting in which the meshes are rigidly held as formed, in combination with a lacing-cord and a frame consisting of inflexible end and side pieces, the said netting being drawn taut on the frame and having a uniform longitudinal tension and a less but uniform lateral tension, substantially as described.

4. A netted structure, in combination with a bed or other frame, composed of side and end rails, the end rails being higher than the side rails, each of said rails being provided on its side with a groove having holders therein to secure the netting, the holders being thus placed out of the way and protected from injury, substantially as described.

5. In combination with a suitable frame composed of side and end rails, each rail being provided on its side with a groove, the holders placed in said groove, and the netting having its meshes arranged substantially in a direct longitudinal and lateral line with said holders to aid in the production of uniform tension and uniform elasticity, substantially as described.

6. A structure suitable for bed-bottoms or other articles, consisting of a netting in which the meshes are made or drawn in an elongated form and rigidly held as formed, in combination with a lacing-cord inserted through a portion of said meshes, and a frame and holders, the said netting being drawn taut on the frame, and the meshes being stretched longitudinally with the frame and elongated, substantially as described.

7. A structure suitable for bed-bottoms or other articles, consisting of a netting having the meshes drawn in an elongated form and rigidly held as formed, in combination with a suitable frame and netting-holders, the said netting being drawn taut on the frame, and having a uniform longitudinal tension, a less but uniform lateral tension, a uniform diagonal tension, and a substantially uniform elasticity, substantially as described.

8. In combination with the frame provided with the metallic corner-straps, the piece of metal inserted between the end and side rails at the corners of the frame and within the corner-straps, whereby a metallic bearing to the four sides of the end rails at the intersection with the side rails is afforded, substantially as described.

9. The netting provided with larger meshes or loops at the end and sides, whereby the netting is more easily attached to the frame, and the knots joining the meshes are brought inside of but not against the frame, substantially as described.

10. The end rail having an upper surface tapering from the center to the ends and provided with a groove on the outer side thereof, and holders inserted in said groove, in com-

bination with the remaining rails, whereby, when the netting is applied thereto, it is raised higher at the center than at the sides, to aid in preventing sagging, substantially as described.

11. A structure suitable for bed-bottoms and other articles, consisting of a netting having its meshes drawn in an elongated form and rigidly held as formed, in combination with a knockdown frame, the said netting being drawn taut on said frame and having a uniform longitudinal tension, a less but uniform lateral tension, a uniform diagonal tension, and a uniform elasticity, whereby the frame and netting are readily disconnected or put together, substantially as described.

12. A knockdown frame composed of two side and two end pieces, the said end pieces resting on said side pieces, and the corner-straps for securing them together, substantially as described.

13. The end rail having an upper surface tapering from the center to the ends and provided with the groove on the side, in combination with the remaining rails and the corner-straps connecting the rails, substantially as and for the purpose described.

14. A frame composed of the side and end rails, each provided with a groove on the side thereof, the end rails being above and supported by the side rails, and holders placed within said grooves, whereby the netting may be suspended above the side rails, except where it is attached thereto, substantially as described.

15. As a new article of manufacture, a netted structure, in combination with the side rails, the end rails, each of the said rails provided with the groove, the hand-tight corners for connecting the said end and side rails, and the netting-holders placed within the said groove, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES SPRINGER.

Witnesses:

J. H. BLACKWOOD,

ANDREW PARKER.