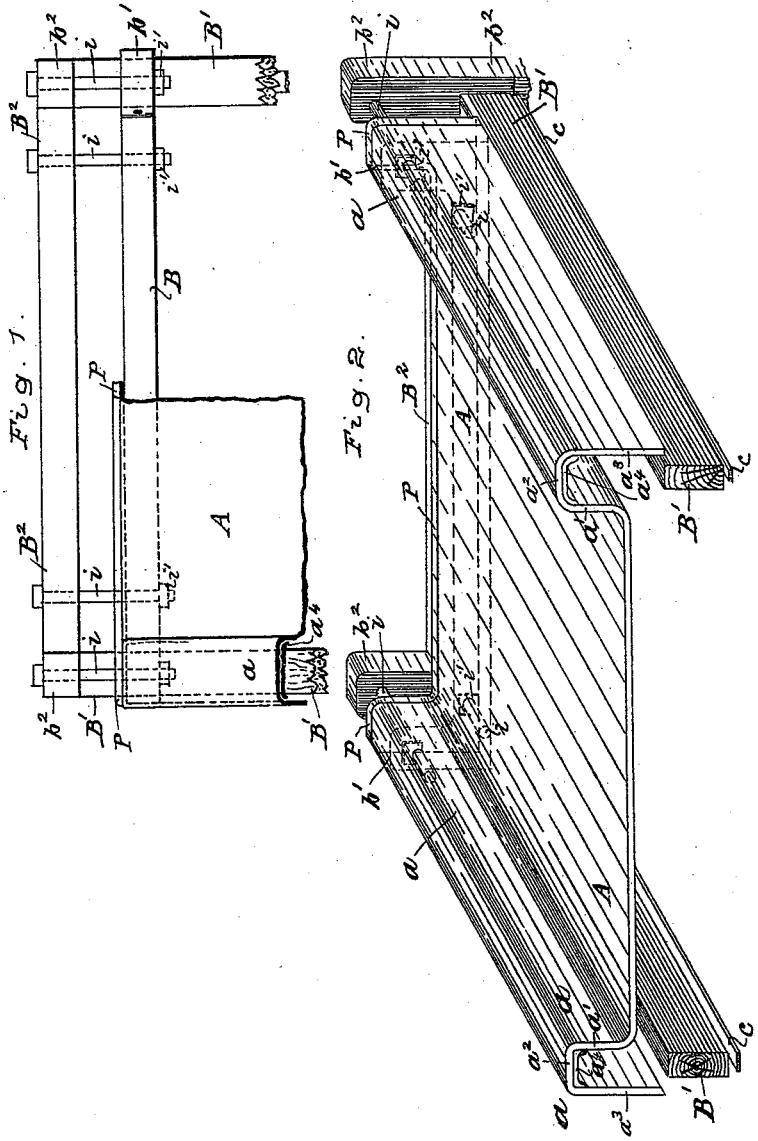
(No Model.) 2 Sheets—Sheet 1.

E. R. BILLINGTON.

WOVEN WIRE MATTRESS.

No. 493,147. Patented Mar. 7, 1893.



Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

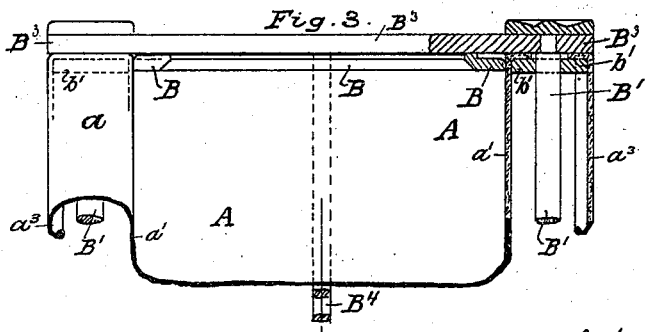
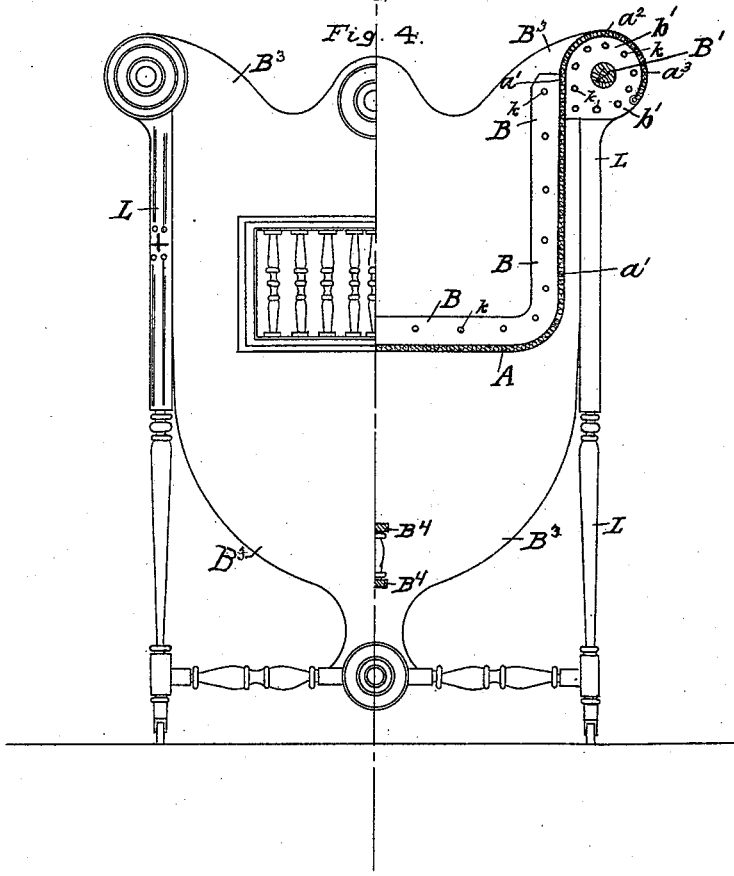


Fig. 4.



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UNITED STATES PATENT OFFICE.

EDWARD ROWCLIFFE BILLINGTON, OF LIVERPOOL, ENGLAND.

WOVEN-WIRE MATTRESS.

SPECIFICATION forming part of Letters Patent No. 493,147, dated March 7, 1893.

Application filed November 8, 1889. Serial No. 329,646. (No model.) Patented in England June 8, 1889, No. 9,546.

To all whom it may concern:

Be it known that I, EDWARD ROWCLIFFE BILLINGTON, a subject of the Queen of Great Britain and Ireland, residing at Liverpool, in the county of Lancaster, England, have invented new and useful Improvements in Metallic Mattresses, (for which I have obtained a patent in Great Britain, No. 9,546, dated June 8, 1889,) of which the following is a specification.

This invention relates to metallic mattresses, used either as separate things for, or as an integral part of, bedsteads, cots, cribs and other analogous articles of rest, the material of which the bedstead mattress or the like is made being of "woven wire," metallic "web," chain or chain and spring "web," or other analogous metallic "meshwork" having an elastic nature, and such as are commonly, or are susceptible of being used as material for mattresses of the kind referred to: this mattress material throughout this specification I term "elastic material."

The object of the invention is chiefly to provide mattresses which shall be especially applicable and useful for lunatics and persons suffering from other diseases, infants, and children, to secure certain purposes and ends hereinafter mentioned.

A mattress provided with improvements according to this invention consists as follows:—The base is made of metallic elastic material of the nature above specified, and is provided at its edges with vertical or upwardly projecting sides, the top of which stands considerably above the level of the mattress bottom proper: the mattress is thus of a trough formation in cross section. Beyond this the edges of the elevated or turned up sides of the elastic material may be continued outward, and then downward forming inverted channels; if this be done the edges constitute cushions and serve as such to pressure exerted upon them, in a downward, outward, and inward direction. The bottom, sides, and cushion portion are, in the general application of the invention, made of a sheet of metallic elastic fabric such as is usually employed in manufacturing ordinary metallic spring mattresses.

By this invention I provide a bedstead mattress, cot, or crib, in which the users are free to move and roll about without hurting themselves, and also without liability to fall out; and further, by the arrangement of the side cushions (hereinafter more clearly explained), persons falling, leaning, or bearing upon the sides, do not come into contact with the frame of the structure, *i. e.* with hard material, this being protected by the elastic material, and consequently injury from such causes is obviated.

In the drawings which serve to illustrate my invention I show two constructions of mattresses according to my invention, one, that shown in Figures 1 and 2, in part plan and perspective view, respectively, being a mattress applicable for use on any suitable bedstead; and the other, that shown in Figs. 3 and 4, in part plan, and in half end view and cross end section, respectively, being a crib or cot more especially applicable for children's or infants' use.

In the drawings the same letters of reference are used to denote the same or corresponding parts in all the views.

With reference to the drawings, A designates the metallic elastic material, which is made as a sheet of the required size.

B is an end member and "former," over the edge of which the material A is passed and to which it is fixed.

B′ are the bars of the frame which support the material A and which take the compression due to the tension of said material; and B^2 is an end bar or plate of said frame.

a generally designates the upwardly projecting protective sides consisting of three parts, the inside portion *a*′, the top portion a^2, and the outside portion a^3, and these portions are so arranged in relation to the frame bars B′, that persons using the mattress and pressing upon them, or falling upon them, are protected against striking said bars as already stated.

Referring now especially to Figs. 1 and 2, the mattress shown therein is an adjustable one, that is, one of its end bar formers B is adjustable lengthwise of the material, and the other is fixed as is commonly done in wire mattresses; and the two side bars B′ are tied together at the adjustable end of the mattress by the bar B^2. The bars B are so shaped

that when the material is laid over them, they give it the form it is desired to have throughout its length and constitute formers as above stated. In this case their form consists of a plain bar having at each end upright projecting portions b' over the surface of which the material is placed as shown, and held, (the holding being effected by an ordinary clamp plate P—or other suitable means of fixing, said plate being secured to the bars B by nails, screws, bolts, or other suitable means,) and the edges of the material A lap over the bars B and the uprights b' and are clamped between these and the plate P. The section shown in Fig. 2 is the true shape of the elastic material in cross section, and this form is made as stated and maintained by the formers B. The adjustment of the end former bar B is effected through the screw bolts i which are passed through and work in the bar B^2 and upright corner pillars b^2, and also through the bar B and its upright corner pieces b', at the back of which nuts i' are provided. The form of bolt or nut for the adjustment of wire mattresses is a common one. It will be seen that the adjustable bar B shown in Figs. 1 and 2 rests on the side bars B′ in the usual manner. I provide at the cushion portion a at the top thereof extra strength by a separate strip of elastic material a^4, running from end to end, and secured to the upright ends b' of the "former" bars B. Reverting to the means of adjusting, with one of the bars B, as shown in Figs. 1 and 2, four adjusting bolts i' are used, two of which are arranged in connection with the bars B and B^2, and two in connection with the upright portions thereof b' and b^2. By this arrangement of bolts, an even and requisite distribution of stresses is effected over these bars and their uprights. Also to prevent the canting inward of the uprights b^2, tension bars c are provided, which are arranged below the side bars B′ and pass through the uprights b^2. In the cases in which the mattress forms an integral part of a bedstead, the end posts of the bedsteads would be used in lieu of the uprights b^2, and the side bars B′ and end bars B^2 would be fixed to them in the usual and well known way.

With reference now to Figs. 3 and 4 the formers B, b' are secured directly to the end plate B^3 of the crib or cot, the end edges of the material A being clamped between said "formers" and the said plate, as shown. The "formers" B, b' are fixed to the plates B^3 at either end of the crib or cot by screws or bolts k, or other suitable means. In this example the end plates B^3, besides serving as the means by which the "formers" are held in position, also serve to cover or close the ends of the crib or cot, that is, as the head and foot boards, generally so termed, thereof, and they are supported on legs L. In addition to the side bars B′, which lie within the portion a' and a^2 of the sides of the elastic material, I employ another central bar B^4 to connect the end plates B^3 together, and to take a part of the compressive stresses due to the tension of the elastic material. In this example no means of adjustment of the material A are provided, the requisite stretch or tension being given when putting it in position. This may be done in any well known way.

Besides the ends and advantages above referred to afforded by this invention, cleanliness is afforded by the use of the metallic elastic material A of the kind herein mentioned, and as arranged and formed as described; and moreover if it becomes dirty it may easily be cleansed and thus kept in a wholesome state, and consequently serves to render it possible to keep the mattress in a condition conducive to health. These advantages are of great value, in the case of lunatics and diseased persons, as well as infants and children, unable to care for themselves.

Having now clearly and fully described the nature, object, and purposes of my invention, what I claim in respect thereof is—

1. A spring mattress consisting of suitable end-pieces, longitudinal side-bars and a sheet of metallic, elastic material having its longitudinal side portions extended upwardly, turned outwardly and overhanging the side-bars as elastic cushions guarding the side-bars, substantially as described.

2. A spring mattress consisting of suitable end pieces longitudinal side bars and a sheet of metallic, elastic material having at each side portion the upwardly projecting part a', the lateral top part a^2 and the pendent part a^3 forming a hollow cushion, substantially as described.

3. A spring mattress consisting of suitable end pieces longitudinal side bars, a sheet of metallic, elastic material comprising a horizontal bottom portion and opposite, upwardly projecting side-edges, and adjusting devices for longitudinally stretching, adjusting the tension of and holding under tension the said upwardly projecting side portions and the bottom portion of the elastic sheet, substantially as described.

4. A spring mattress consisting of end-pieces, longitudinal side bars, the transverse former-bars located at the ends of the side-bars, supported thereby and having at each end an upwardly projecting portion and a spring sheet of metallic elastic material having a bottom portion, vertically extending side portions and outwardly projecting parts suspended above the side-bars and overlying and secured to the upwardly projecting portions of the former bars, substantially as described.

5. A bedstead, cot, or crib mattress consisting of metallic elastic supporting material, held at its ends to the end plates B^2 connected together and kept apart by bars B′, said elastic supporting material consisting of a horizontal bottom portion, upright sides a', and outwardly extending portions a^2, overhanging and elevated above said side bars B′, said bottom, sides, and outward extensions being

made of a continous piece of said metallic elastic material, substantially as described.

6. The herein described improvement in and connected with infants' and children's cot or crib mattresses, consisting of a metallic elastic supporting material A, comprising a bottom, upright sides a', and cushion portions a^2, a^3, stretched between and held by head and foot boards B^2 connected together and kept apart by side bars B′ and lower bar B^4, and said elastic metallic material being fixed to said head and foot boards by "former" bars B, between which and said head and foot boards the ends of said material are disposed and gripped, substantially as set forth with reference to the drawings.

7. In a mattress of the kind herein specified, the combination of an end bar B, having upwardly projecting ends b', a metallic elastic supporting material A held by and resting upon said bar and projecting ends, a plurality of adjustment bolts i, some of which are connected with said bar B, and one to each of said projecting ends b' and adapted to serve as means by which said end bar and projecting ends may be adjusted and the stretch or tension on said metallic elastic supporting material regulated, and a suitable end bar B^2, having uprights b^2, for supporting said bolts or bedstead frame, substantially as set forth.

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

EDWARD ROWCLIFFE BILLINGTON.

Witnesses:

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