No. 827,034. PATENTED JULY 24, 1906.

H. RICHARDSON.

ELASTIC BED BOTTOM.

APPLICATION FILED DEC. 21, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

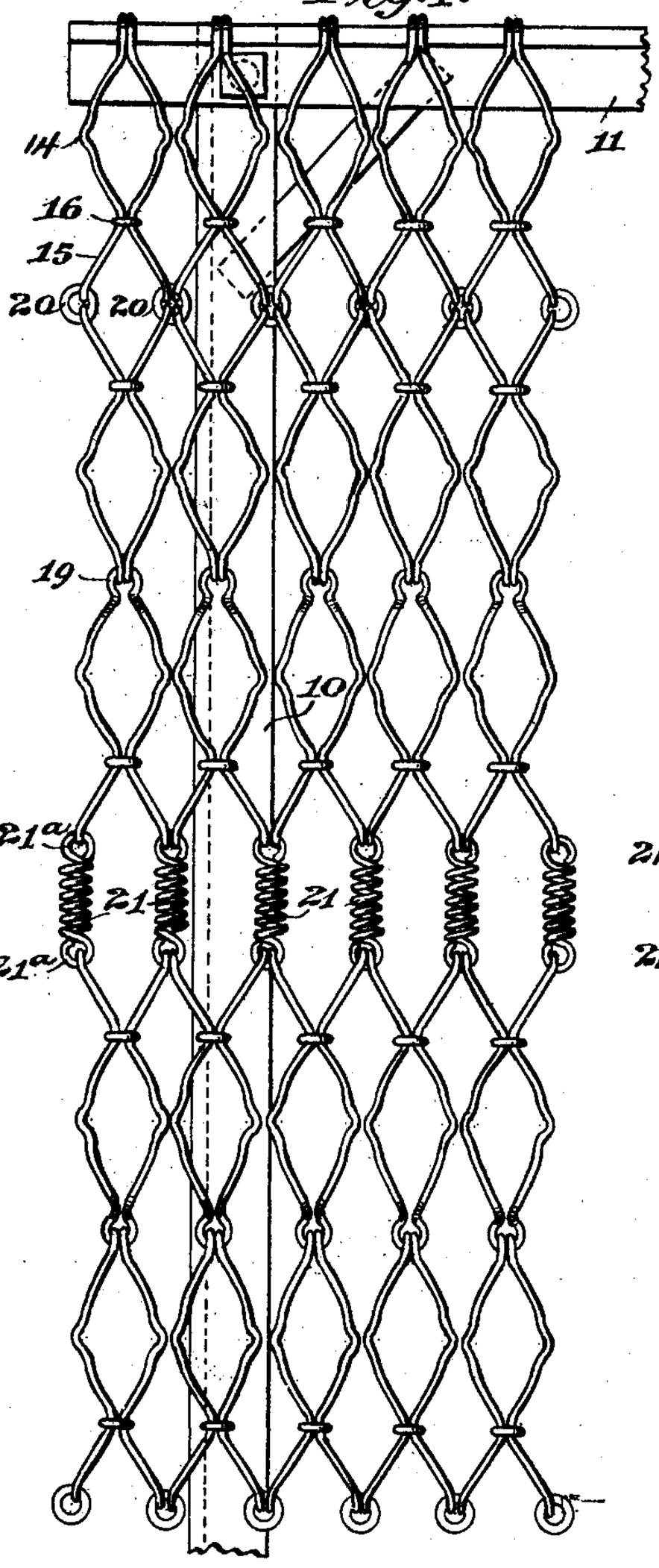


Fig. 2.

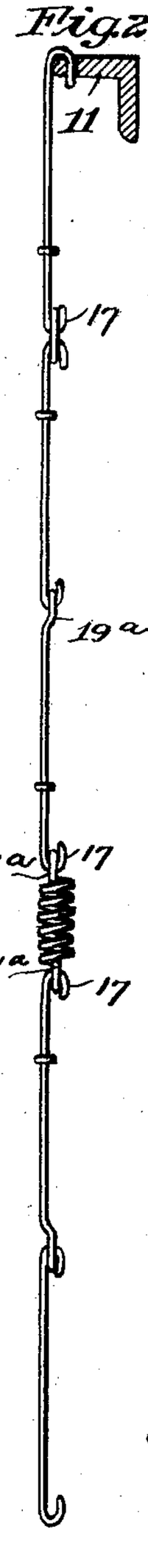


Fig. 3.

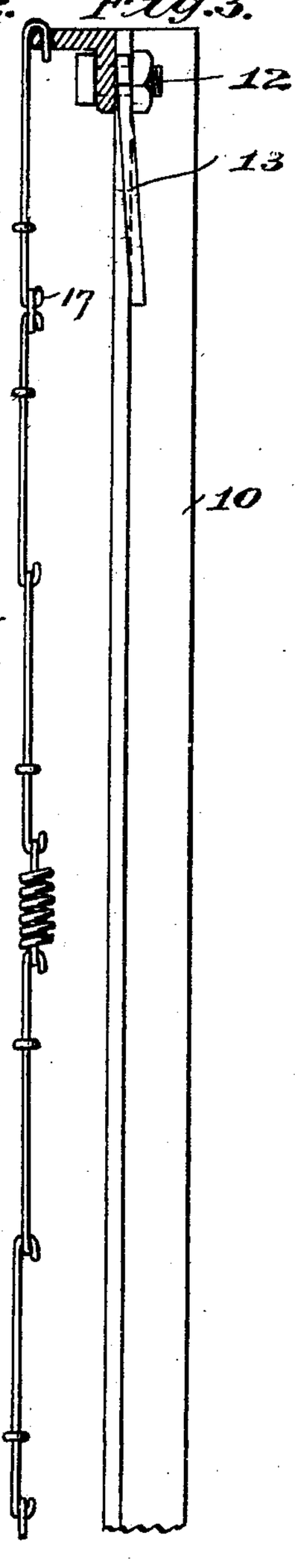
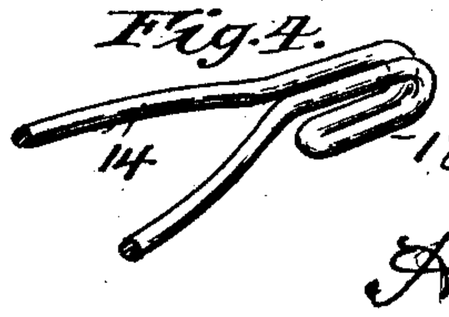


Fig. 4.



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2 SHEETS—SHEET 2.

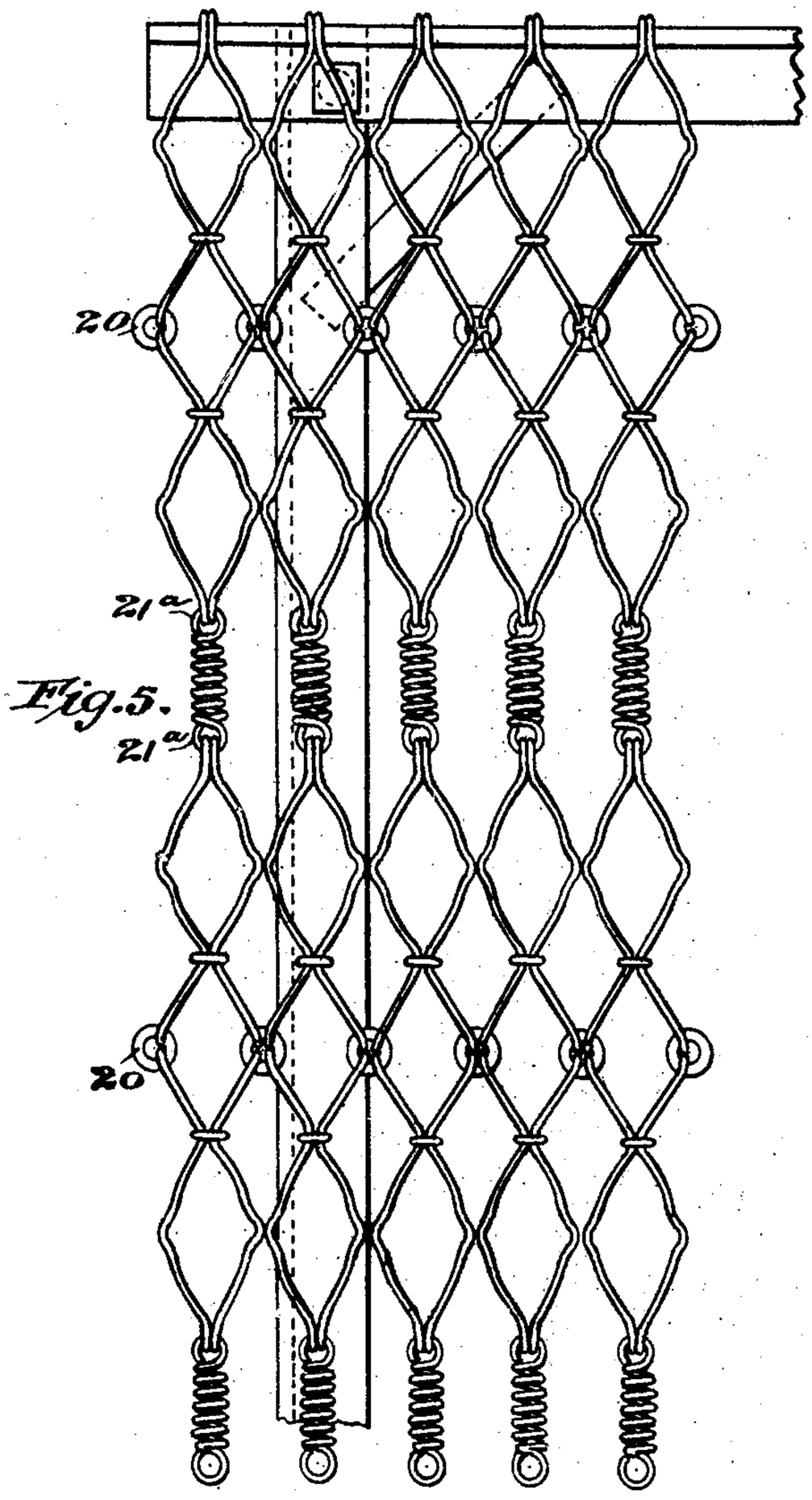

Fig. 5.

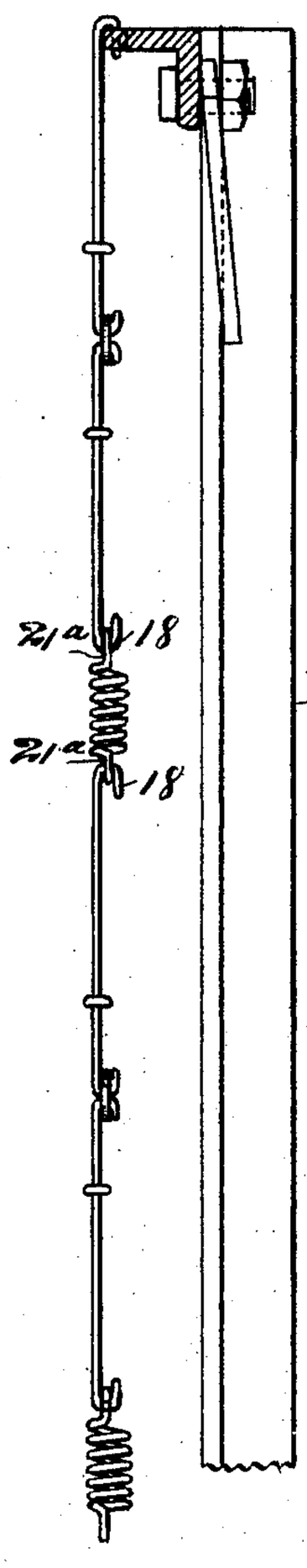

Fig. 6.

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UNITED STATES PATENT OFFICE.

HENRY RICHARDSON, OF CHICAGO, ILLINOIS.

ELASTIC BED-BOTTOM.

No. 827,034. Specification of Letters Patent. Patented July 24, 1906.

Application filed December 21, 1904. Serial No. 237,804.

To all whom it may concern:

Be it known that I, HENRY RICHARDSON, a subject of the King of Great Britain, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Elastic Bed-Bottoms, of which the following is a specification.

My invention relates to elastic bed-bottoms of that type which is principally constituted by a sheet of reticulated material, usually of wire; and the invention has for its principal objects to provide a wire bed-bottom of this class characterized by increased simplicity and economy of manufacture, attractiveness of appearance, noiselessness, and superior resiliency and general efficiency for its intended purpose. The commercial practicability of such devices depends to a considerable extent upon the facility with which the reticulated material can be formed and assembled from its constituent elements, and a leading feature of my present invention consists in such form and relative arrangement of these elements or units as greatly facilitates their union into the completed fabric making up the elastic sheet which is attached to the supporting-frame.

To these ends my invention comprehends as a leading constructional feature a plurality of elements or units each of which comprises a substantially diamond or kite shaped portion and as a longitudinal continuation or extension thereof a semidiamond or semikite shaped portion, these portions being provided with hooked ends and the fabric being made up by a plurality of transverse rows of such elements with the elements of adjacent rows disposed inversely to each other, in combination with one or more transverse rows of helical springs interposed between said elements to afford the elasticity requisite in a bed-bottom fabric.

My invention is illustrated in two practicable forms thereof in the accompanying drawings, wherein—

Figure 1 is a plan view of a fragment of an elastic bed-bottom embodying my invention. Fig. 2 is an edge view of the same. Fig. 3 is an edge view similar to Fig. 2, illustrating a slightly-simpler form of one series of units. Fig. 4 is a detail perspective illustrating the hooked-end formation of the closed end of one series of links. Fig. 5 is a plan view similar to Fig. 1, illustrating a different relative disposition of the interposed helical springs, and Fig. 6 is an edge view of Fig. 5.

Referring first to Figs. 1 to 4, inclusive, 10 designates the longitudinal and 11 the transverse supporting members of the bed-bottom frame, said members being united at the corners by bolts 12 and braces 13. The elastic covering constituting the mattress-support is made up for the most part of a series of lengthwise and crosswise connected wire units, each of which is simply and cheaply made from a strip of wire so bent as to present a substantially diamond or kite shaped portion 14 and as a longitudinal extension thereof a semidiamond or semikite shaped portion 15. The opposite sides of the portions 14 and 15 at their point of junction are united crosswise by clips 16. The free ends of the side members making up the semidiamond portions 15 are bent backwardly, forming hooks 17, and in the case of certain of the units the closed end of the portion 14 is contracted and extended and bent backwardly to thereby form the double wire hook 18, (shown more particularly in the detail view, Fig. 4,) while the closed ends of certain other of the units are bent into eye formation, as shown at 19. The hooks 18 and eyes 19 thus formed coöperate intimately in the assembling of the units and in their conversion into a sheeted wire fabric, as will hereinafter more particularly appear.

The units of adjacent horizontal rows where disposed with their open or semidiamond-shaped ends adjacent are united by engaging the hooks 17 with rings 20, and where the units of adjacent horizontal rows are assembled with their closed ends in proximity to each other said units are connected longitudinally by engaging the hooks 18 with the eyes 19. In this connection it may be noted as embodying the preferred construction shown in Figs. 1 and 2 that the eyes 19 are laterally offset, as shown at 19^a, so as to maintain the upper surfaces of the several rows of units substantially flush or in the same plane.

At one or more points transversely of the sheet are interposed one or more transversely-extending rows of extensible helical springs, (designated by 21.) These springs are each provided with a closed eye 21^a at each end, whereby they are adapted to be engaged with the adjacent ends of the wire links. These eyes are preferably located in planes to one side of and above the axis of the spring,

so as to cause the upper surface of the spring to lie substantially flush with the upper surface of the fabric, as shown in the edge views. It is immaterial to the purposes of the present invention whether these transverse rows of springs are interposed between the open or the closed ends of endwise-adjacent links. In Figs. 1, 2, and 3 I have shown such springs as interposed between the open or semidiamond-shaped ends of the links, in which case the eyes 21ª of the springs are engaged by the hooks 17. In Figs. 5 and 6 I have shown such transverse rows of springs as interposed between the closed adjacent ends of the links, in which case the eyes 21ª are engaged by the double wire hooks 18. In the construction shown in Figs. 1 to 3 the longitudinal strands created by the several series of endwise-connected units are united and held together crosswise by both the rings 20 and the eyes 21ª of the interposed springs 21, while in the construction shown in Figs. 5 and 6 such longitudinal strands are bound together crosswise solely by the rings 20. The construction of Figs. 1 to 3 is slightly preferable because of this increased transverse binding of the units, although the construction of Figs. 5 and 6 is sufficient for all practical purposes in many instances.

The hooked formation 18 of the closed end of alternate transverse rows of units I regard as of prime importance, in that it affords a direct connection of such units with the adjacent transverse series of units, obviating the necessity of intermediate connecting members.

It is to be understood that any desired number of rows of interposed springs may be inserted, according to the desired degree of elasticity, and also that such a series of springs might be interposed between the opposite ends of the fabric and the transverse supporting members 11, if desired.

My invention in its broader aspects is not limited to any particular number or disposition of interposed springs nor to their particular relation to the wire links between which they are interposed. The preferred closed-eye formation of the springs above described is important, as it prevents said springs from falling out and makes them an integral part of the fabric.

While the particular diamond and semidiamond outline form of the link herein shown is not of the essence of the invention, yet an important feature of the bed fabric is the general shape of the link, which provides for the width of the fabric as well as its length, thereby improving the construction and lessening the cost of same by reducing the number of component parts, no cross-links, as distinguished from mere connecting devices for the longitudinal links, being required.

In a companion application filed concurrently herewith, Serial No. 237,803, I have disclosed and claimed a wire fabric possessing some features in common with the structure of the present application, more particularly as regards the formation and relative manner and means of connecting up the bent-wire units, such fabric being capable of general application and use.

The present invention relates to an elastic wire bed-bottom, being distinguished from the structure of the aforesaid application principally through the interposition of the transverse rows of helical springs, whereby the elasticity required in a bed-bottom is afforded.

That which I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. An elastic bed-bottom of the class described, comprising a plurality of transverse rows of longitudinally and crosswise connected units, each of said units comprising a wire bent to present a substantially diamond-shaped portion, and a semidiamond-shaped portion constituting an integral endwise extension of said diamond-shaped portion, the units of adjacent rows being arranged to lie in inverse longitudinal disposition, and one or more transverse rows of helical springs interposed between adjacent transverse rows of units and constituting integral parts of the bed-bottom, substantially as described.

2. An elastic bed-bottom of the class described, comprising a plurality of transverse rows of longitudinally and crosswise connected units, each of said units comprising a wire bent to present a substantially diamond-shaped portion and a semidiamond-shaped portion constituting an integral endwise extension of said diamond-shaped portion, with a clip uniting the sides of the unit at the junction of said diamond and semidiamond shaped portions, the units of certain adjacent transverse rows being provided with integral hooks and eyes at corresponding ends, respectively, whereby said units may be longitudinally connected in inverse longitudinal disposition, and one or more transverse rows of helical springs interposed between adjacent transverse rows of units, substantially as described.

3. An elastic bed-bottom of the class described, comprising a plurality of transverse rows of longitudinally and crosswise connected units, each of said units comprising a wire bent to present a substantially diamond-shaped portion and a semidiamond-shaped portion constituting an integral endwise extension of said diamond-shaped portion, with a clip uniting the sides of the unit at the junction of said diamond and semidiamond shaped portions, adjacent transverse rows of said units being arranged in inverse longitudinal disposition with the units of said adjacent rows terminating at their proximate ends in hooks, and a series of helical springs

having eyes at both ends interposed between and connecting said hooked ends of the units, substantially as described.

4. A wire fabric comprising a series of longitudinal strands each of which includes a plurality of longitudinally contiguous independent bent wire units each having an open and a closed end, adjacent units in each strand being arranged in inverse disposition with their closed ends connected together, and rigid links connecting the open ends of adjacent units, substantially as described.

5. A wire fabric comprising a series of longitudinal strands each of which includes a plurality of longitudinally contiguous independent bent wire units each having a narrow closed end and a wide open end, adjacent units in each strand being arranged in inverse disposition with their closed ends connected by integral hooks and eyes, and rigid links connecting the open ends of adjacent units, substantially as described.

6. A wire fabric comprising a series of longitudinal strands each of which includes a plurality of longitudinally contiguous independent bent wire units each having a narrow closed and a wide open end, adjacent units in each strand being arranged in inverse disposition with their closed ends connected by integral hooks and eyes, and rings connecting the open ends of adjacent units, said rings also serving to loosely connect said longitudinal strands laterally, substantially as described.

7. An elastic bed-bottom of the class described, comprising a series of longitudinally and transversely connected bent wire units, each unit comprising a substantially diamond-shaped portion and a substantially semidiamond-shaped portion constituting an integral extension of said diamond-shaped portion, the units of adjacent transverse rows being connected longitudinally in inverse disposition throughout the entire fabric, whereby to create a longitudinal tension throughout the latter and obviate diagonal strains, substantially as described.

8. An elastic bed-bottom of the class described, comprising a plurality of transverse rows of longitudinally and crosswise connected units, each of said units comprising a wire bent to present a substantially diamond-shaped portion and a semidiamond-shaped portion constituting an integral endwise extension of said diamond-shaped portion, the units of certain adjacent transverse rows being provided with integral hooks and eyes at corresponding ends, respectively, whereby said units may be longitudinally connected in inverse longitudinal disposition, and one or more transverse rows of helical springs interposed between adjacent transverse rows of units, substantially as described.

9. An elastic bed-bottom of the class described, comprising a plurality of transverse rows of longitudinally and crosswise connected units, each of said units comprising a wire bent to present a substantially diamond-shaped portion and a semidiamond-shaped portion constituting an integral endwise extension of said diamond-shaped portion, adjacent transverse rows of said units being arranged in inverse longitudinal disposition with the units of said adjacent rows terminating at their proximate ends in hooks, and a series of helical springs having eyes at both ends interposed between and connecting said hooked ends of the units, substantially as described.

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