

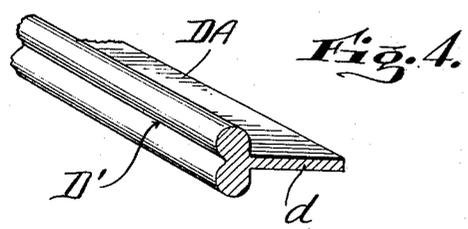
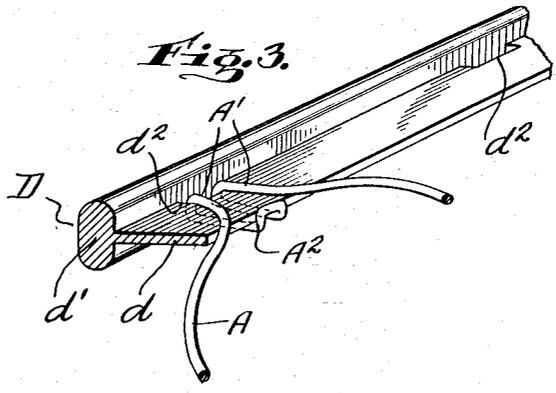
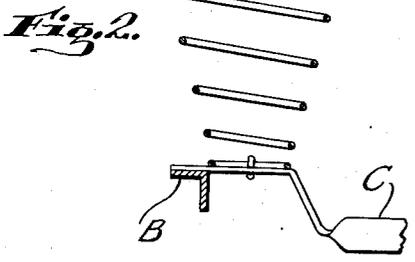
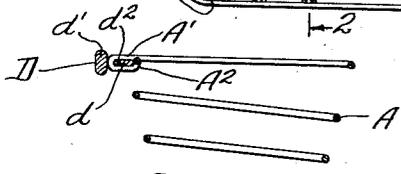
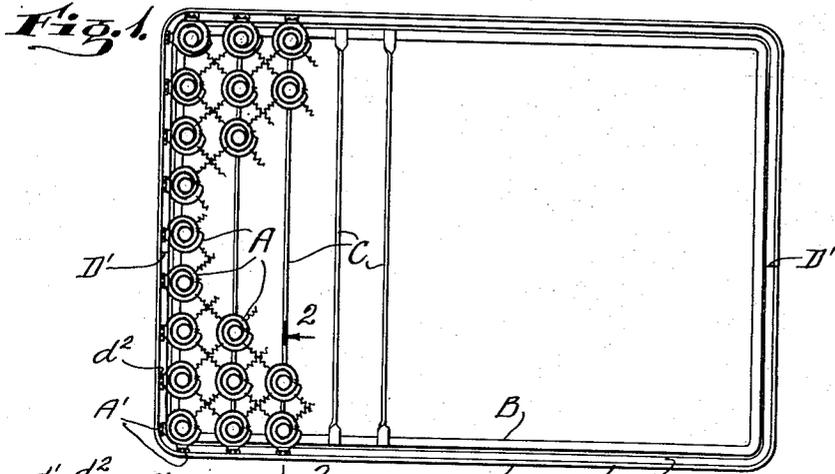
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2,008,185

BED SPRING

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2,008,185

BED SPRING

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4 Claims. (Cl. 5—260)

The general object of the present invention is to provide an improved bed spring or spring bed bottom. More specifically the primary object of the present invention is to provide an improved top border or border frame construction for a bed spring structure of the type which comprises a plurality of side by side vertically disposed helical spring elements each anchored at its lower end to a support and having a relatively large top convolution interconnected, usually by resilient connectors, with the corresponding convolutions of adjacent spring elements, and which has the top convolutions of the marginal springs of the structure connected to a top border or border frame member which forms the upper marginal or edge portion of the spring structure.

Heretofore it has been the usual practice to provide a bed spring of the above mentioned type with a border member, the sides and end portions of which are formed of integrally connected lengths of metal rod stock material of circular cross section. Each of the normally straight side and end portions of such a border frame necessarily has substantially the same flexibility transversely to its length in the direction of the normal horizontal plane of the frame, as in the direction transverse to said plane. Some use has also been made of a border frame of angle bar cross section having one of the angle bar flanges horizontal and parallel to the top of the bed spring and having the second flange similar to the first in form, but vertical and transverse to said plane. In the last mentioned border frame construction the two angle bar flanges have been similar in dimensions and the frame acts, therefore, like the first mentioned metal rod frame in that each straight, side or end portion of the frame has substantially the same transverse flexibility in the direction of normal horizontal plane of the frame as in the direction transverse to said plane.

In accordance with the present invention, I provide a bed spring of the above mentioned type of bed spring with a border frame which is appreciably stiffer, i. e. offers more resilient resistance to flexure, in the direction of the plane of the border than in a direction transverse to said plane. With such differences in flexibility in the two directions, any straight elongated side or end portion of the border may have a desirable capacity for bending in general accordance with, and to accommodate the contraction in length of adjacent spring elements when the latter carry more than an average portion of the total

weight supported by the bed spring, while at the same time, each such border frame portion may be relatively and desirably unyielding in the horizontal direction, so that said portion suitably resists forces tending to bend it inward toward the corresponding portion of the border at the opposite side of the spring structure.

Advantageously I form my improved border frame member out of a metal bar which may be rolled or drawn steel, subsequently tempered, and which is essentially a T-bar in cross section, with the head portion of the T section vertically disposed, and with the web or leg portion of the T section horizontally disposed, and with the head and leg portions so relatively proportioned as to give such greater flexibility to the border member in a direction transverse to the web or leg portion of the T-bar section than in a direction parallel to the latter as may be desirable. With a border member of such T-bar cross section, the top convolutions of the marginal spring elements may be attached in any suitable manner to the said web or leg portion of the border frame section which is at the inner side of the head portion of the border, and the corners of the said head portion are preferably rounded to avoid sharp corner edges which might cut or wear spring cover or bedding material, or might injure persons coming into contact with the border member.

In a preferred construction, a longitudinal groove or channel is formed in the outer side of the head portion of the border member midway between its top and bottom, to thereby increase its flexibility in a direction transverse to the normal horizontal frame of the border without correspondingly increasing its flexibility in the direction of said plane.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, and the advantages possessed by it reference should be had to the accompanying drawing and descriptive matter in which I have illustrated and described a preferred embodiment of the invention.

Of the drawing:

Fig. 1 is a somewhat diagrammatic plan view of a bed spring with some of its spring elements and their supports omitted;

Fig. 2 is a partial section on the line 2—2 of Fig. 1;

Fig. 3 is a perspective view of a portion of the border member of Figs. 1 and 2;

Fig. 4 is a view similar to Fig. 3 illustrating a border frame of modified cross section.

In Figs. 1 and 2, I have illustrated the use of the present invention in a bed spring, which, except for the character of the top border member and the particular manner in which the marginal spring elements are connected to said member, is of a well known type now in extensive use. The bed spring shown in Figs. 1 and 2 comprises a multiplicity of vertically disposed helical spring elements A which are anchored at their lower ends on a supporting structure shown as comprising a stiff marginal frame B of angle bar cross section, and transverse spring supports C secured at their ends to opposing sides of the frame B. The spring elements A are usually tapered as shown with their upper end convolutions larger in diameter than their lower end convolutions. Each spring element has its top convolution connected to the corresponding convolutions of adjacent elements by connecting means shown as consisting of small horizontally disposed crossed spring elements which may be of the character set forth in the Hanauer Patent 1,788,867, granted January 13, 1931. The top convolutions of the spring elements at the margin of the bed spring are connected to a border frame D.

The border frame D is shown as substantially rectangular, but with rounded corners and may consist of a single length of tempered steel bar bent to form the four sides of a rectangular figure, with its two ends welded or otherwise secured together. For convenience of manufacture, the border may well be made, however, of two pieces of metal bar, each comprising one long side and half of each of the two short sides of the border frame, and with the ends of the two pieces brought into register and welded together at D', D'. As shown best in Figs. 2 and 3, the border of Figs. 1 and 2 is made of a suitable bar of T-bar cross section. The web or leg portion *d* of the T-bar section extends horizontally at the inner side of the head *d'* of the section, the head *d'* being rounded off at top and bottom to avoid sharp corners.

In accordance with the present invention the cross section of the metal bar of which the border frame is made, is so shaped and proportioned as to give the bar substantially greater stiffness in the plane of the web *d* than in the transverse vertical plane of the head *d'*. While obviously the proportions and dimensions may vary with conditions, it is noted by way of illustration, and not by way of limitation, that in one standard size bed spring construction made in accordance with the present invention, the leg portion *d* is of or a little less than number 11 gauge thickness i. e. an eighth of an inch thick or a little less, while its depth, i. e. the horizontal dimension of the leg or web *d* as seen in Fig. 2, is approximately five-eighths of an inch, whereas the maximum vertical dimension of the head *d'* as seen in Fig. 2, is approximately a half inch, and the maximum horizontal thickness of the head *d'* is a quarter of an inch.

The top convolutions of the marginal spring elements A may be secured to the border member D in various ways, as by means of rivets, or as in the preferred construction illustrated, by passing portions of the convolutions through apertures *d2* formed for the purpose in the web portion *d* of the border member. As shown in Figs. 1, 2 and 3, the top convolution of each of the marginal spring elements A, except those at the corners of the spring structure, is formed with a loop por-

tion A' having a downturned portion extending downward through a corresponding rectangular aperture *d2* formed in the web portion *d* of the border member D. After each loop portion A' is thus passed downward through its aperture *d2*, the end portion A2 of the loop is bent upward to snugly secure the portion of the corresponding spring directly above the web *d* snugly against the latter, to insure a rigid connection and the avoidance of noise in the use of the spring.

Advantageously, and as shown, the spring element at each of the four corners of the spring structure has its top convolution formed with two projecting loop portions A' which pass through respective apertures *d2* in the corresponding end and side portions of the border member.

In Fig. 4 I have shown a portion of a border member DA differing from the border member D only in the shape of the head portion of the border member cross section. As shown the member DA is formed with a longitudinal groove or channel D' in its head portion at the outer side of the latter, and substantially symmetrical with the central plane of the horizontal web portion *d*. Advantageously the walls of this groove or channel D' are rounded as shown. While the provision of the channel D' diminishes the stiffness of the border member in the direction of the plane of its web *d*, only slightly, it appreciably increases the flexibility of the border member in a direction transverse to said plane.

My improved border frame member formed from material having either of the sections shown in Figs. 3 and 4, may have adequate stiffness to resist forces tending to bend portions and particularly the longer side portions of the border member inwardly in the plane of the top of the spring construction, while at the same time having an appreciably greater flexibility in the transverse direction as is desirable to accommodate the contraction of spring elements occurring in a localized portion only of the spring structure, and thereby constitutes a substantial improvement over prior border frame members which are no more flexible in the vertical direction than in the horizontal direction in which greater stiffness is desirable.

The rounding of the corner edge portions of the head portion of the sections shown in Figs. 3 and 4 not only prevents injury to the bedding and spring cover, if the latter be employed, while at the same time minimizing the possibility of bodily injury or discomfort to a person sitting on the edge of a bed including the spring structure or otherwise coming into bodily contact with the border frame, but also increases the flexibility of the border frame in the vertical direction. The channel groove or groove D' in the section shown in Fig. 4 not only further increases the flexibility in the vertical direction of the border frame, but adds to the appearance of the latter directly, and also by lending itself to the addition of a decorative paint stripe improving the appearance of the structure and thereby increasing its saleability.

With either of the forms of sections shown in Figs. 3 and 4, the portions of the head portion of the section extending vertically above and below the upper and lower sides, respectively, of the web portion *d* serve as shields for the spring loop portions A' of the spring convolutions, or other means for connecting the marginal spring elements to the border frame, thereby giving further protection against injury to bedding and persons coming into bodily contact

with the border portion of the spring structure, as well as desirably adding to the appearance and hence to the saleability of the structure.

While in accordance with the provisions of the statutes, I have illustrated and described the best form of embodiment of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the form of the apparatus disclosed without departing from the spirit of my invention as set forth in the appended claims and that in some cases certain features of my invention may be used to advantage without a corresponding use of other features.

Having now described my invention what I claim as new and desire to secure by Letters Patent, is:

1. A flexible border member for attachment to the convolutions of the marginal springs of a spring structure of the kind described comprising a plurality of side by side helical spring elements surrounded by said member, the latter being of T-bar cross section with the web portion of its section substantially parallel to the plane of said member and at the inner side of the head portion of said section and so proportioned relative to said head portion that the flexibility of said member is greater in a direction transverse to the plane of said web than in the direction of said plane.

2. A flexible border member for attachment to the convolutions of the marginal springs of a spring structure of the kind described comprising a plurality of side by side helical spring elements surrounded by said member, the latter being of T-bar cross section with the web portion of its section substantially parallel to the plane of said member and at the inner side of

the head portion of said section and so proportioned relative to said head portion that its flexibility is greater in a direction transverse to the plane of said web than in the direction of said plane, said member being formed with a longitudinal groove in the side of the head portion of the section remote from its web portion.

3. In a spring structure of the kind described, the combination with a plurality of vertically disposed spring elements, a support to which the lower ends of the said elements are anchored and connections between the top convolutions of said elements, of a flexible border member surrounding the upper ends of said elements and of T-bar cross section with the leg portion of the section at the inner side of the member and substantially parallel to the plane of the upper ends of said elements, the marginal spring elements having portions engaging the said web portion of said member and secured to the latter.

4. In a spring structure of the kind described the combination with a plurality of vertically disposed spring elements, a support to which the adjacent ends of the said elements are anchored and connections between the top convolutions of said elements, of a flexible border member surrounding the upper ends of said elements and of T-bar cross section with the leg portion of the section at the inner side of the member and substantially parallel to the plane of the adjacent ends of said elements, the marginal spring elements having portions engaging the said leg portion of said member and secured to the latter, said head and leg portions being relatively proportioned to give said member greater flexibility in the direction transverse to the plane of said leg, than in the direction of said plane.

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