United States Patent

[11] 3,559,978

[72] Inventor **Otto P. Molt**
Haubersbronn, Wurttemberg, Germany

[21] Appl. No. **812,110**
[22] Filed **Apr. 1, 1969**
[45] Patented **Feb. 2, 1971**

[54] **FLAT SPRING ARRANGEMENT FOR USE ON A SPRING WIRE MESH**
6 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** **267/144,** 245/2
[51] **Int. Cl.** **A47c 23/16**
[50] **Field of Search** 267/110, 111, 112, 180, 181, 182; 242/2, 3

[56] **References Cited**
UNITED STATES PATENTS

2,319,684	5/1943	Horton	267/110
3,258,260	6/1966	Olson	267/110

Primary Examiner—Arthur L. La Point
Attorney—Sparrow and Sparrow

ABSTRACT: A flat spring for use in spring wire mesh for chairs and beds. The spring wire is bent in substantially zigzag form with the sections of the wire which lie between the apex portions bent further outwardly thereby enabling improved longitudinal and transverse extension.

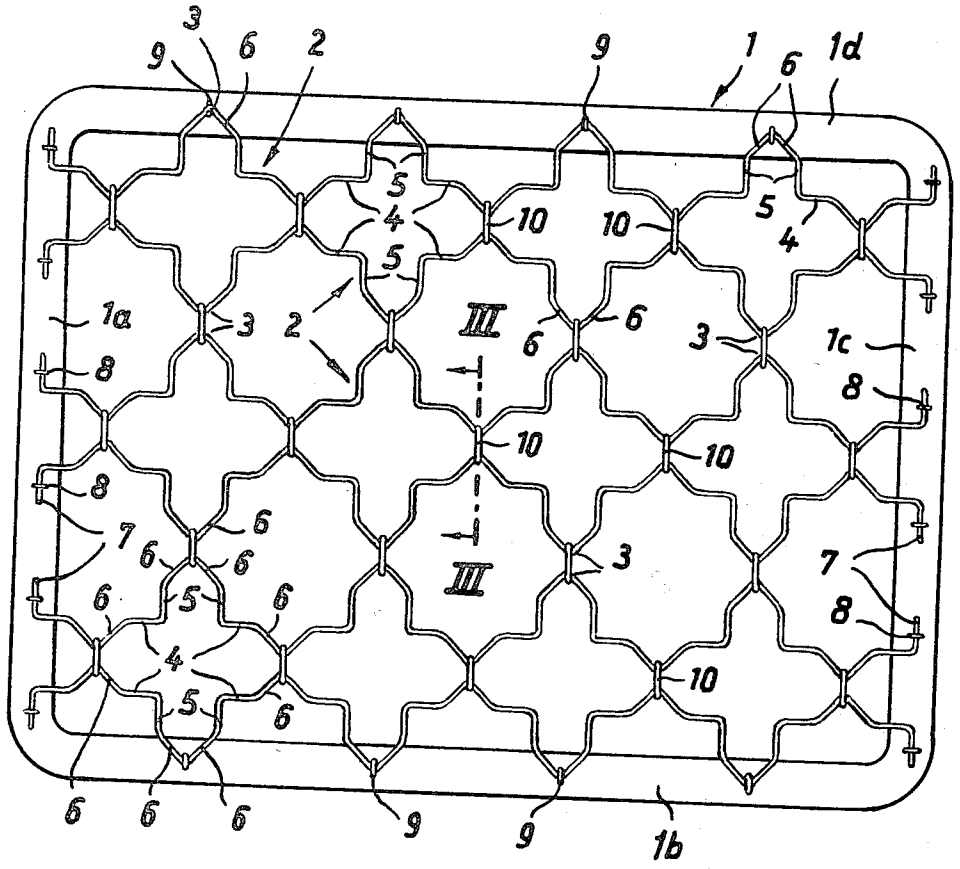

Fig. 1

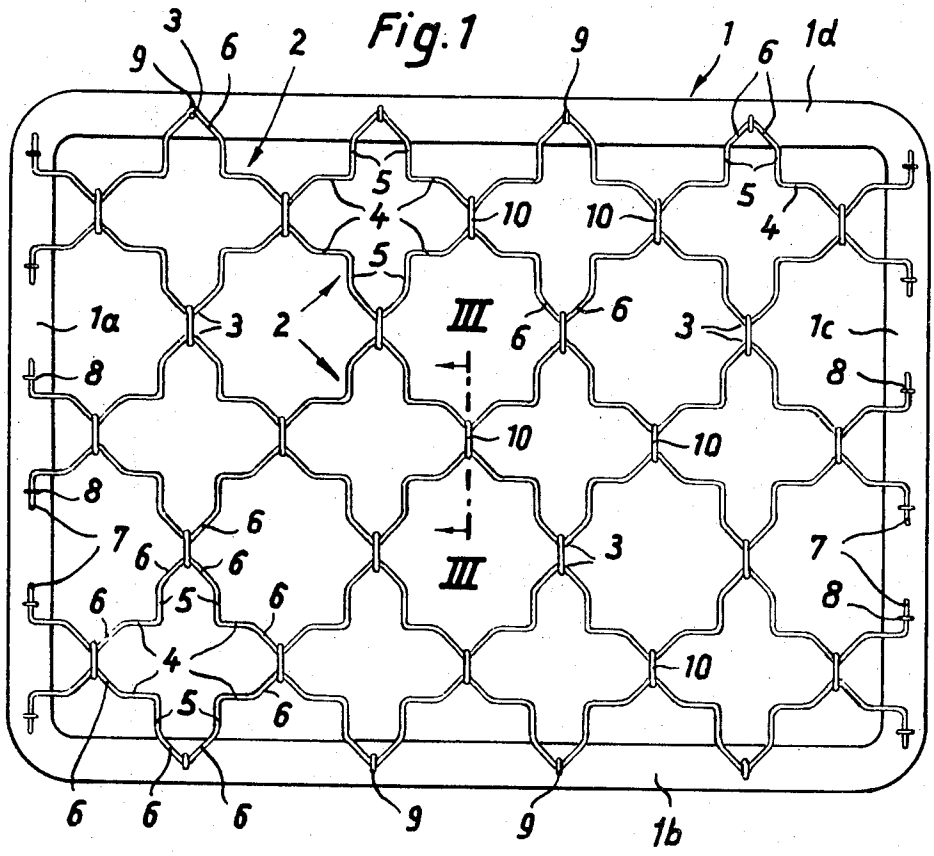

Fig. 2

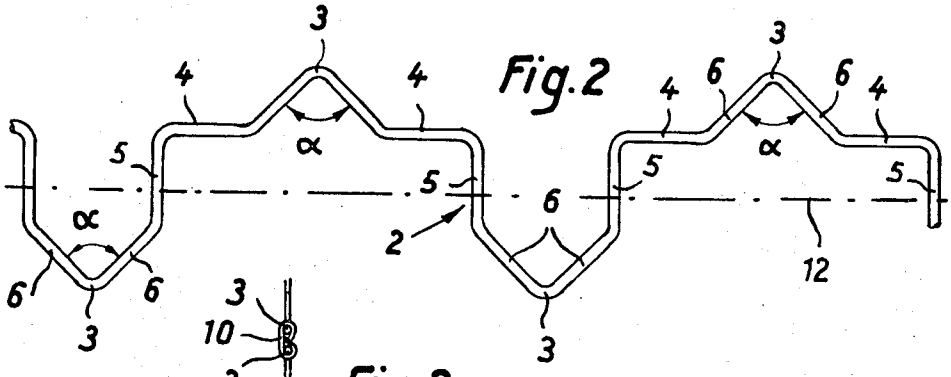

Fig. 3

INVENTOR
Otto P. Holt

BY Sparrow and Sparrow
ATTORNEYS

FLAT SPRING ARRANGEMENT FOR USE ON A SPRING WIRE MESH

This invention relates to a flat spring arrangement for use on a spring wire mesh for chairs, beds and the like, having courses of spring wire tensioned between oppositely disposed sides of a frame.

With known spring wire meshes of this type, the individual flat springs can be expanded independently of one another only in their longitudinal direction. Consequently, they must be made of a comparatively strong spring wire, in order to withstand the peak loads which occur in their region.

The invention has for its object to provide a flat spring wire mesh which can be more favorably stressed.

According to the invention, there is provided a flat spring for use in a spring wire mesh for chairs, beds and the like, having courses of spring wire tensioned between frame sides which face one another, wherein the spring wire is bent in substantially zigzag form in one plane and wherein those sections of the spring wire which lie between apex positions of the zigzag are once again bent outwardly in the same plane.

The spring wire mesh is now capable of extending longitudinally and transversely of the flat springs as well as in an oblique position extending therebetween, and thus practically in all directions, since the additional outward bending between the apex positions provides a spring action transversely and diagonally. Any load is thus distributed over the entire spring wire mesh. This has the result that similar load conditions can be controlled with a thinner spring wire, i.e. with use of less material.

The bending angle at the apex positions is preferably about 90°, and all wire sections, namely, those which extend longitudinally and transversely of the flat spring as well as those extending obliquely thereto, have the same length. This constructional form is particularly advantageous, because with this construction, the spring wire mesh can stretch in all directions to the same extent.

In the accompanying drawing:

FIG. 1 is a plan view of a spring wire mesh according to the invention,

FIG. 2 shows a section of a flat spring to a larger scale,

FIG. 3 is a section on the line III–III of FIG. 1.

Referring to FIG. 1, the spring wire mesh has a rectangular frame 1 with sides 1*a*, 1*b*, 1*c* and 1*d*, which can be made of wood, metal or any other suitable material. Tensioned between the facing frame sides 1*a*, and 1*c* are flat springs 2, in which the spring wire extends in substantially zigzag form around a mean axis 12 (FIG. 2). The spring wire sections between the apex positions of the zigzag course are indicated at 3 and are bent outwardly in the same plane so that a section 4 extending longitudinally of the flat spring and a section 5 extending transversely of the flat spring are formed. The remaining two wire sections 6 extend obliquely of the length of the flat spring.

The flat springs 2 are fixed by means of staples 9 to the frame sides 1*a* and 1*c* which extend transversely of their length by means of ends 7, which correspond to the wire sections 5.

Adjacent flat springs are connected by wire staples 10 at their apex positions 3 which face one another, so as to be resistant to tension (see FIG. 3). In this way, a wire mesh is formed which is so mounted in the frame that it has approximately the same pretension in both main directions of the plane of the frame. It is to be appreciated that the wire mesh according to the invention can resiliently transmit the forces in all directions.

In the constructional example, the angle α at the apex positions is substantially 90°, and the wire sections 4, 5 and 6 have the same length.

The relatively sharp bending of the spring wire, as shown in the constructional example, is advantageous on manufacturing grounds. Furthermore, the wire staples 10 in the sharp corners have a secure position and cannot be displaced so as to cause noise. For certain purposes of use, however, a more strongly rounded formation can also be advantageous.

Numerous modifications of the constructional form as illustrated are possible within the scope of the invention. By way of example, the outwards bends 4, 5 instead of always being on one side, can also be bent alternately in an outward and inward direction. The present constructional form provides a particularly uniform surface loading and is advantageous on manufacturing grounds.

I claim:

1. A flat spring for use in a spring wire mesh for chairs, beds and the like, having courses of spring wire tensioned between frame sides which face one another, wherein the spring wire is bent in substantially zigzag form in one plane and wherein those sections of the spring wire which lie between apex positions of the zigzag are once again bent outwardly in the same plane.

2. A flat spring according to claim 1, wherein sections of the spring wire follow one another along the length of the flat spring in the following order, an apex position, a section extending obliquely towards the mean axis of the spring wire, a section extending in the direction of the mean axis, a section extending transversely of the mean axis, a section extending obliquely away from the mean axis, an apex position, a section extending obliquely towards the mean axis, a section (5) extending transversely of the mean axis, a section extending in the direction of the mean axis and a section extending obliquely away from the mean axis.

3. A flat spring according to claim 1, wherein the outwardly bent portions in the sections between the apex positions lie substantially in the middle between the apex positions.

4. A flat spring according to claim 1, wherein the bending angle at the apex positions is about 90°, and all wire sections have the same length.

5. A flat spring according to claim 1, wherein the sections are substantially rectilinear.

6. A spring wire mesh comprising flat springs according to any of claim 1, wherein adjacent flat springs are connected to one another at their facing apex positions so as to resist tension and to outer flat springs are similarly connected to those sides of the frame which extend parallel to them.