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Mandusky et al.

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[54] **FRAME AND SPRING ASSEMBLY FOR FURNITURE AND THE LIKE**

[75] Inventors: **Jack C. Mandusky; George F. Janko**, both of Lexington, Ky.

[73] Assignee: **Hoover Ball and Bearing Company**, Saline, Mich.

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[52] **U.S. Cl.** **267/110**; 5/255; 5/259

[51] **Int. Cl.** **F16f 3/00**; F16f 3/02

[58] **Field of Search** 267/102, 104, 105, 107, 267/109, 110; 5/255, 259, 261–263

[56] **References Cited**

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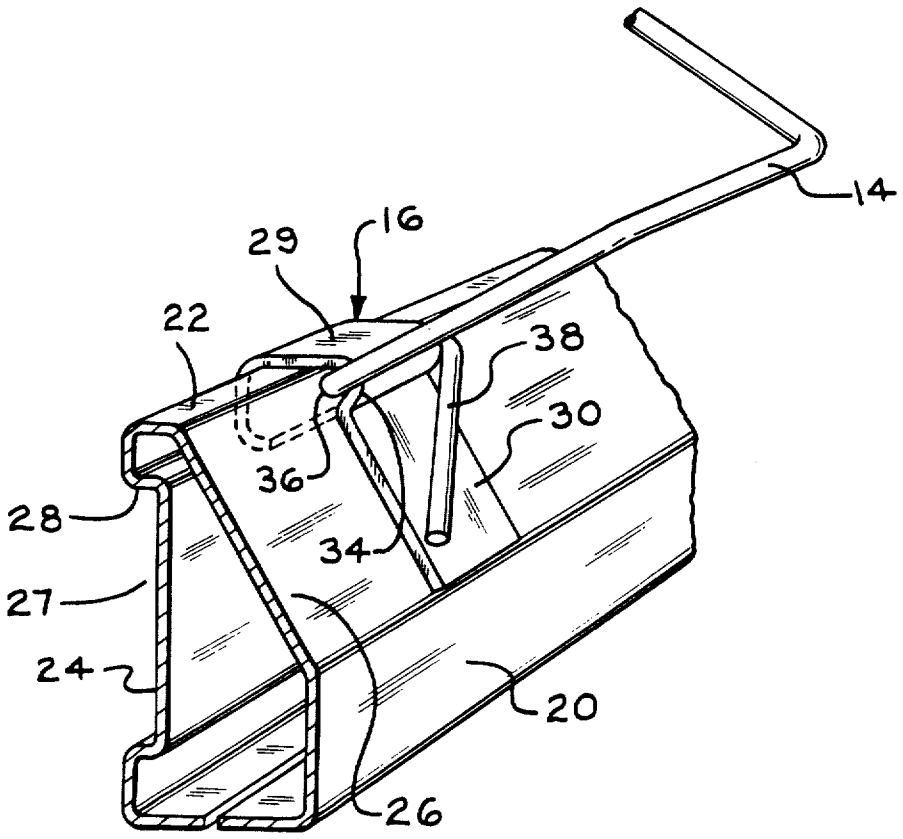
Primary Examiner—Casmir A. Nunberg

Attorney, Agent, or Firm—Olsen and Stephenson

[57] **ABSTRACT**

A frame and spring assembly for use in furniture such as chairs, sofas, etc. and bedding articles such as box springs wherein the springs are retained on the frame in a manner to enable fabrication of the frame from rigid materials such as metal or plastic. The frame rails and spring retention clips are formed so that the clips readily mount on and slide along the rails thereby enabling use of any desired number of springs on the frame without requiring any welding or other securing of the clips to the rails.

6 Claims, 5 Drawing Figures



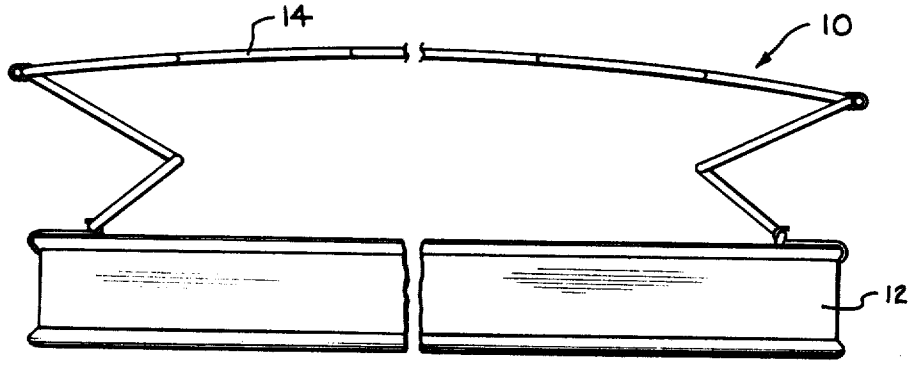


FIG. 1

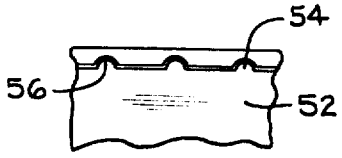


FIG. 5

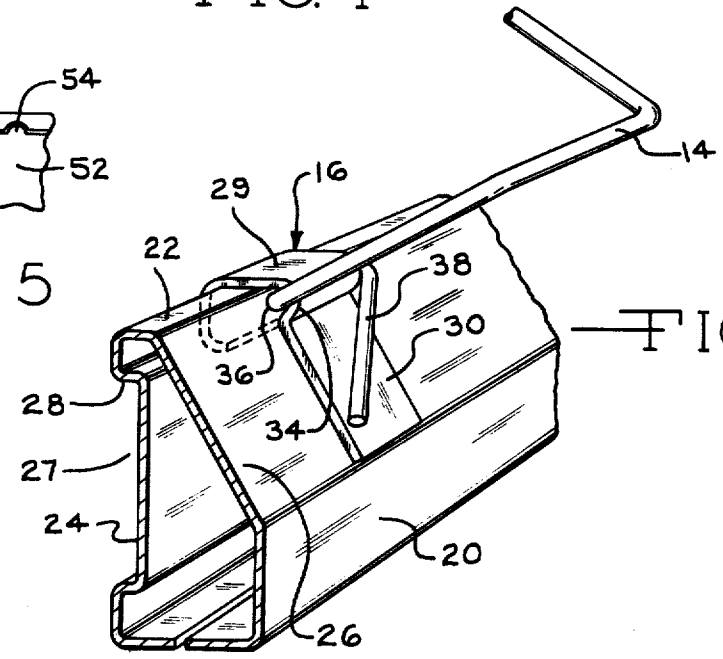


FIG. 3

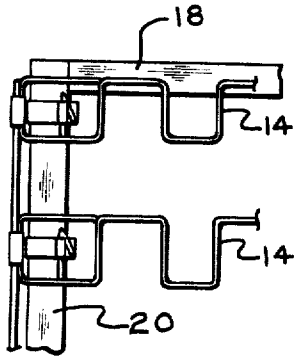


FIG. 2

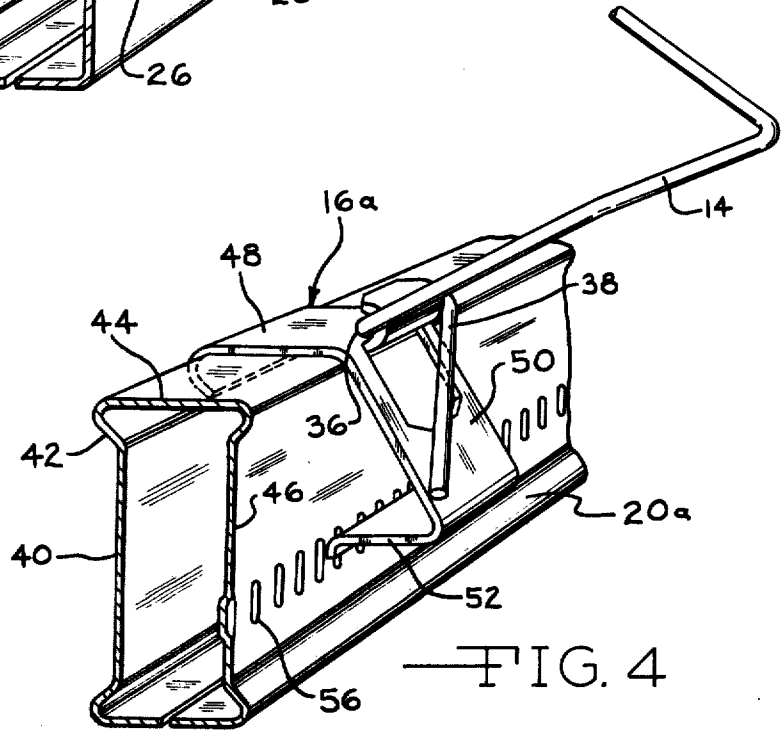


FIG. 4

FRAME AND SPRING ASSEMBLY FOR FURNITURE AND THE LIKE

BACKGROUND OF THE INVENTION

Wood has been the most commonly used material for furniture and bedding frames in the past. This has been due to the ready availability of good quality wood, the low cost of wood, and the ease of nailing or stapling spring mounting and retention devices onto wood rails. However, the quality of wood available for this purpose has been declining and the cost of wood has increased to the point where wood no longer offers the advantages that it previously offered. It is an object of the present invention, therefore, to provide an improved frame and spring assembly constructed so that the components thereof can be fabricated from metal, plastic or the like.

SUMMARY OF THE INVENTION

The frame and spring assembly of this invention consists of a plurality of frame rails that provide the conventional support for the spring assembly with each frame rail being shaped so that its outer side is indented to form a generally downwardly facing surface adjacent to top of the rail. A spring supporting clip, slideably supported on the rail, has a top portion that is hooked over the top of the rail and engaged with the downwardly facing surface. This engagement prevents the clip from being forced off the rail by spring pressure.

Each clip also has a downwardly and inwardly inclined spring support leg which is located on the inner side of the rail. A spring retainer means is formed on the clip at the upper end of the leg so that a spring can be assembled with the clip by nesting a spring torsion bar in the retainer means and engaging an end portion of the spring with the top side of the inclined leg. The clip then functions much like the clips that are now in common use in connection with wooden frame rails wherein it is easy to staple the clip to the frame rail. In this invention, a plurality of clips can be mounted on a frame rail and adjusted for position lengthwise of the rail during assembly of the springs with the rail. In one form of the invention the rail is provided with a downwardly and inwardly inclined inner side to support the clip legs. In another form of the invention each clip leg has an inturned extension which engages the rail to maintain the clip in desired position. Cooperating projections and indentations on the clip and the rail hold the clip in an adjusted position.

In summary, therefore, the frame and spring assembly of this invention is particularly constructed to enable ease of assembly of the springs on the frame and fabrication of the frame rails from rigid materials such as plastic and metal.

Further objects, features and advantages of this invention will become apparent from a consideration of the following description when taken in conjunction with the accompanying drawing in which:

FIG. 1 is a foreshortened side elevational view of the frame and spring assembly of this invention;

FIG. 2 is a fragmentary plan view of a portion of the assembly shown in FIG. 1;

FIG. 3 is a fragmentary perspective view showing a spring retention clip mounted on one form of a frame rail in the assembly of this invention so as to support a spring on the rail;

FIG. 4 is a fragmentary perspective view, like FIG. 3, showing another form of spring retention clip and frame rail in the assembly of this invention; and

FIG. 5 is a fragmentary detail sectional view of the frame rail and retention clip shown in FIG. 4.

With reference to the drawing, the frame and spring assembly of this invention, indicated generally at **10**, is shown in FIG. 1 as including a generally rectangular metal frame **12** on which a plurality of springs **14** are mounted. The springs **14** are of the conventional "formed wire" type (FIG. 2) and are retained on the frame **12** by retention clips **16** (FIG. 3) or **16***a* (FIG. 4).

The frame **12** consists of side rails **18** and end rails **20** connected together in any suitable manner, the end rails **20** constituting the supports for the springs **14**. As shown in FIG. 3 an end rail **20** is formed from a single sheet of rigid material, preferably metal, but which could be a plastic or similar material, bent to form the rail so that it has a top **22**, an outer side **24** and an inner side **26**. The rear side **24** has an indentation **27** therein that forms a generally downwardly facing surface **28** adjacent to top **22**. The inner side **26** is inclined downwardly and forwardly for a purpose to appear presently.

Each retention clip **16** has a hook shaped portion **29** that is hooked over the top **22** of the rail **20** and engaged with the surface **28**. The clip **16** also has a downwardly and inwardly inclined leg **30** that lays flat against the rail inner side **26** and is supported thereon. At the juncture of the clip top **29** and the leg **30**, the clip **16** is formed with an inwardly projecting arcuate section **34** which is spaced inwardly from the rail side **26** a distance sufficient to allow an end torsion bar **36** on a spring **14** to be inserted therebetween.

In the assembly of a clip **16** with frame rail **20** so as to mount a spring **14** on the rail **20**, the clip **16**, with the torsion bar **36** nested in the arcuate section **34** is placed on the rail **20** so that the hook portion **29** of the clip is hooked over the top **22** of the rail **20** as shown in FIG. **3**. The clip **16** can then be moved longitudinally of the rail **20** to a desired adjusted position in which the spring **14** is located in a pre-established position on the frame **12**. As shown in FIG. **3**, the spring **14** has an inclined end portion **38** that engages the top side of the leg **30**. When the spring **14** is loaded, during normal use of the furniture or the like in which the assembly **10** is installed, the spring end portion **34** exerts downward pressure on the retention clip leg **30** so as to maintain the clip in a desired location on the rail **20**. Similarly, when the spring **14** is not under load, it is compressed enough between the end rails **20** to provide adequate downward force at the end portion **38** on the leg **30** to hold the clip **16** in position.

Should it be necessary to replace a spring **14**, the retention clips **16** therefor can readily be disassembled from the end rails **20** to provide for easy replacement of a spring **14**. This replacement feature is due principally to the fact in the assembly **10** the clips **16** are slideable on the rails **20** and are not permanently secured thereto by welding, stapling or the like.

A modified rail and clip arrangement for the assembly **10** is shown in FIG. **4**. In the modified arrangement, the spring **14** is identical to the spring in the assembly **10** but the end rails **20***a* and the clips **16***a* are different. The end rail **20***a* is formed much like the end rail **20**, but to a different shape providing for symmetry of the rail **20***a* with respect to a vertical plane. The rail **20***a* is formed on its outer side with a recess **40** that provides

a generally downwardly facing surface **42** disposed adjacent the top **44** of the rail. The inner side **46** of the rail **20***a* is shaped much like the other side. The retention clip **16***a* has a hook shaped top portion **48** which hooks over the top **44** of the rail **20***a* and engages the surface **42** so that the clip **16***a* will not move on the rail **20***a* in response to inwardly and downwardly directed force applied to the clip **16***a*.

The clip **16***a* has a downwardly and inwardly inclined leg **50** which terminates at its lower end in an outwardly directed extension **52** formed at its terminal end with evenly spaced projections **54** (FIG. 5). The inner side **46** of the rail **20***a* has similarly spaced indentations **56** that cooperate with the projections **54** to prevent the clip **16***a* from being freely slideable on the rail **20***a* when there is spring pressure on the clip **16***a* tending to force the projections **54** into the indentations **56**.

As shown in FIG. **4**, a central portion of the leg **50** is cut and bent upwardly and rearwardly so as to form a generally hook shape retainer section **58** on the clip **16***a* at the juncture of the clip top **48** and the leg **50**. This enables the spring **14** to be assembled with the clip **16***a* after the clip is mounted on the rail **20***a* by nesting the torsion bar **36** in the hook shape portion **58** and laying the spring end portion **38** on the top side of the clip leg **50**. Spring pressure on the clip **16***a* then retains the clip in an adjusted position on the rail **20***a*.

From the above description it is seen that this invention provides a spring and frame assembly **10** in which clips **16** and **16**a cooperate with cooperatively shaped end rails **20** and **20***a*, respectively, so as to firmly mount the springs **14** in adjustable positions on the rails **20** and **20***a*. This is accomplished without requiring any structure for securing the clips **16** and **16***a* to the rails **20** and **20***a*, respectively, and with the clips **16** and **16***a* being slideable longitudinally of the rails. This enables a variable number of springs **14** to be used on similar frames **12** and also enables easy replacement of springs **14**. The cooperating projections **54** and indentations **56** on relatively movable and normally engaged parts of the clip and rail to prevent accidental relative movement can also be incorporated in other parts of the clips **10** and **10**a such as between the clip top wall and the rail top.

What is claimed is:

1. In a frame and spring assembly, a frame rail having a top, an inner side and an outer side, said outer side being indented so as to form a generally downwardly facing surface thereon, a spring supporting clip slideably supported on said rail, said clip having a top portion hooked over the top of said rail and engaged with said surface and having a downwardly and inwardly inclined spring support leg located on the inner side of said rail, said clip having spring retainer means formed thereon at the upper end of said leg for retaining a spring in a supported position on said leg, said clip being engaged with said rail inner side at a position below said spring retainer means so that downward forces exerted on said leg by a spring supported on said clip will tend to hold said clip in a pre-established position on said rail, and a spring member having a torsion bar nested in said spring retainer means and an end portion engaged with the top side of said leg.

2. A frame and spring assembly according to claim **1** wherein said inner side of said frame rail is inclined downwardly and inwardly in a substantially parallel relation to said clip leg and is disposed in supporting engagement with said leg.

3. A frame and spring assembly according to claim **1** further including an extension on the lower end of said leg extended toward and engaged with the inner side of said rail.

4. A frame and spring assembly according to claim **1** wherein said spring retainer means comprises an upwardly extending hook member formed from a portion of said leg.

5. A frame and spring assembly according to claim **1** wherein said spring retainer means comprises an arcuate portion formed in said clip at the juncture of said top and said leg and spaced from said rail so that said torsion bar is between said rail and said clip.

6. A frame and spring assembly according to claim **3** further including interengaging projection and recess means on said leg extension and said rail inner side impeding free sliding movement of said clip on said rail.

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