May 30, 1944. S. F. APICELLA 2,349,839

WOOD SPRING

Filed Oct. 17, 1942

Fig. 1.

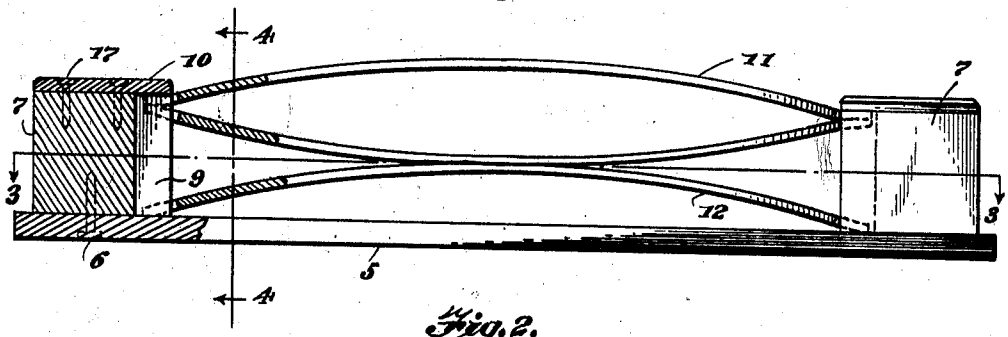


Fig. 2.

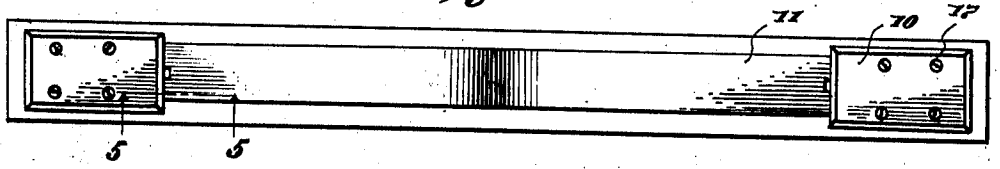


Fig. 3.

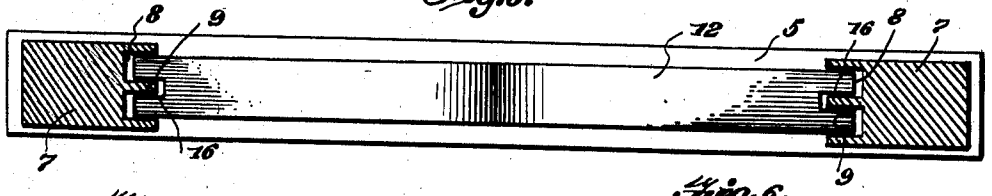


Fig. 4.

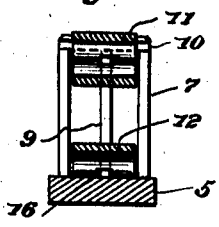


Fig. 5.

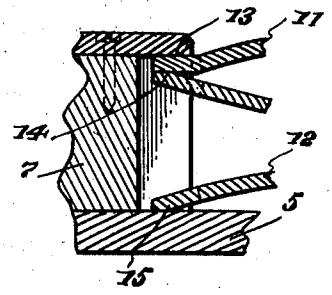
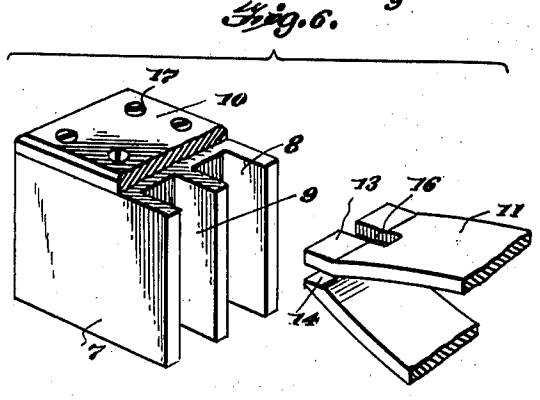


Fig. 6.



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WOOD SPRING

Salvatore F. Apicella, New York, N. Y.

Application October 17, 1942, Serial No. 462,387

3 Claims. (Cl. 267—1)

This invention relates to springs and more particularly to a spring in which wood is utilized as the structural material thereof.

It is a well known fact that, owing to the scarcity of metal and the enforcement of Government priorities incident to present war conditions, considerable difficulty is experienced in obtaining such material for the manufacture of springs used in the construction of furniture, automobiles, and other commodities or devices, with the result that the manufacture of metal springs has been materially reduced and, in some cases, entirely discontinued, due to inability on the part of the manufacturer to obtain metal used in the construction thereof.

Recognizing the restrictions put upon the use of metal, the object of the present invention is to provide a spring constructed entirely of wood but possessing the requisite resiliency, strength and efficiency of a steel spring.

A further object of the invention is to provide a spring including a plurality of flat, superposed wood leaves, certain of which are arranged in elliptical form and rest on the upwardly bowed portion of a semi-elliptical leaf, whereby when the spring is subjected to load conditions, the initial downward pressure thereon will depress the elliptical leaves and a further downward pressure cause the semi-elliptical leaf to function and assist in cushioning the load.

A further object is to provide novel means for mounting and guiding the ends of the wood leaves, said mounting means including oppositely disposed terminal blocks or boxes adapted to be fastened to a suitable support and provided with intermediate guide partitions which fit within recesses in the adjacent ends of said leaves and serve to confine and guide the leaves in a vertical path.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability and efficiency, as well as to reduce the cost of manufacture.

In the accompanying drawing:

Figure 1 is a side elevation, partly in section, of a spring constructed in accordance with the present invention.

Figure 2 is a top plan view.

Figure 3 is a longitudinal sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a detail sectional view showing the manner of mounting the ends of the wood leaves within the terminal blocks or boxes.

Figure 6 is a perspective view, partly in section, of one of the terminal blocks or boxes and the ends of adjacent springs, the parts being separated for the sake of clearness.

The improved spring forming the subject matter of the present invention may be constructed of any kind or type of wood possessing the requisite strength and stability to sustain the weight of different loads without breakage, and is primarily intended to take the place of steel springs used at present in the manufacture of furniture and other articles or devices.

The device comprises a base or anchoring strip 5 which may be a separate unit or part of a bed, automobile, or other structure on which the spring is used. Secured to the opposite ends of the strip 5 by screws or similar fastening devices 6, are mounting boxes 7, each preferably formed of a block of wood having its front portion recessed at 8 to form an intermediate vertically disposed guide partition 9 extending the entire height of the block and disposed flush with the front end thereof. The lower ends of the blocks, at the recesses 8, are open and rest on the anchoring strip 5 while the tops of said recesses are normally closed by removable top plates 10 to permit insertion or removal of the wood leaves 11 constituting the body of the spring.

The leaves 11 are preferably three in number, the upper leaves being arranged to form an elliptical spring member and the lower leaf 12 being normally bowed upwardly to form a semi-elliptical spring member which bears against the central portion of the lower leaf of the elliptical spring member, as best shown in Figure 1 of the drawing. The opposite ends of the upper leaf of the elliptical spring member are deflected laterally to form straight terminal portions 13 while the adjacent ends of the lower leaf of the elliptical spring member are inclined or beveled at 14 to bear against said straight portions, there being similar inclined portions 15 formed on the ends of the leaf of the semi-elliptical spring member for contact with the base member 5, as shown.

The ends of the leaves of both spring members are provided with vertically alined recesses 16 which receive the adjacent vertical partitions 9 and form guides therefor when the spring members are compressed under the weight of a load. It will here be noted that the partitions 9 form guides for the central portions of the ends of the leaves while the side walls of the recesses 8, by contact with the adjacent side edges of the leaves, serve to prevent lateral displacement of said leaves

and also to assist in guiding the same under different load conditions.

In assembling the leaves of the spring, the cover plates 10 are removed and the wood leaves positioned within the recesses 8, in the manner shown in Figure 1 of the drawings, after which the cover plates 10 are securely fastened in place by screws or other similar fastening devices 11. It will thus be seen that an initial downward pressure on the spring will first depress the leaves forming the elliptical spring member, and upon further downward pressure, the leaf of the semi-elliptical spring member will be depressed and function to assist in cushioning the load. The mounting blocks or boxes thus perform a dual function; first, to mount and house the ends of the wood leaves, and, second, to form guides for the leaves during vertical movement of the ends of the leaves.

While it is preferred to construct the leaves of the spring of wood, it will, of course, be understood that in cases where metal is available for structural purposes, the leaves of the spring may be made of metal instead of wood and I, therefore, do not wish to limit the invention to any particular kind of material. It will further be understood that the springs may be made in different sizes and shapes and used for any desired purpose, while the mounting boxes for the spring leaves may be secured to any suitable support which will permit of proper functioning of said springs. Inasmuch as the spring, in its preferred form, is entirely devoid of metal, it may be manufactured at a minimum cost and will serve all of the purposes of a conventional steel spring.

Having thus described the invention, what is claimed is:

1. A device of the class described comprising spaced mounting boxes for attachment to a support, said boxes being open at the front and closed at the back and top and provided with vertical guide partitions, and a plurality of superposed flat leaves bowed in opposite directions and having their end portions slidably mounted for vertical movement within the boxes and provided with terminal recesses within which the partitions extend.

2. A device of the class described comprising spaced mounting members for attachment to a support and having their confronting faces provided with vertical recesses defining intermediate partitions, a plurality of flat bowed wood leaves having their opposite ends fitting within the recesses of the mounting members and recessed to accommodate the adjacent partitions, and closure plates secured to said mounting members for confining the adjacent ends of the leaves within said members.

3. A device of the class described comprising spaced mounting members for attachment to a support, each mounting member being formed from a block having its forward portion cut away to form vertical recesses defining an intermediate vertical guide partition, laterally bowed leaves having their opposite ends extending within said recesses and provided with means for engagement with the guide partitions, the ends of one of the leaves being deflected to form straight portions and the ends of an adjacent leaf being beveled for contacting said straight portions, and a closure plate forming the top of one of the mounting members and serving to confine the ends of the leaves within said recesses.

SALVATORE F. APICELLA.