Oct. 27, 1942. V. V. BECKEL ET AL 2,299,873

LEAF SPRING

Filed May 3, 1941

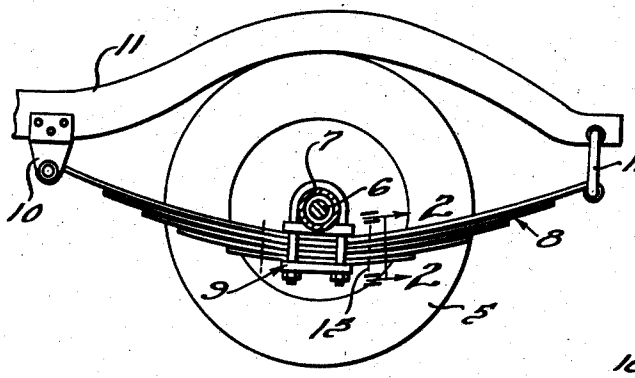


Fig. 1.

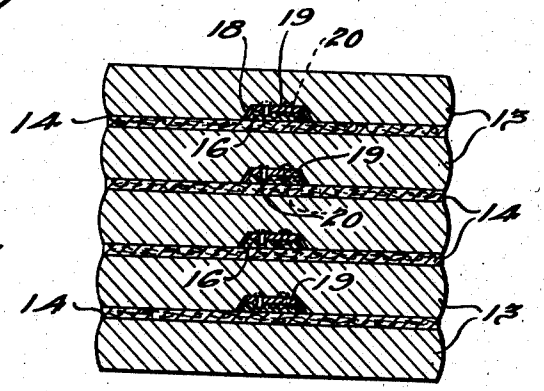
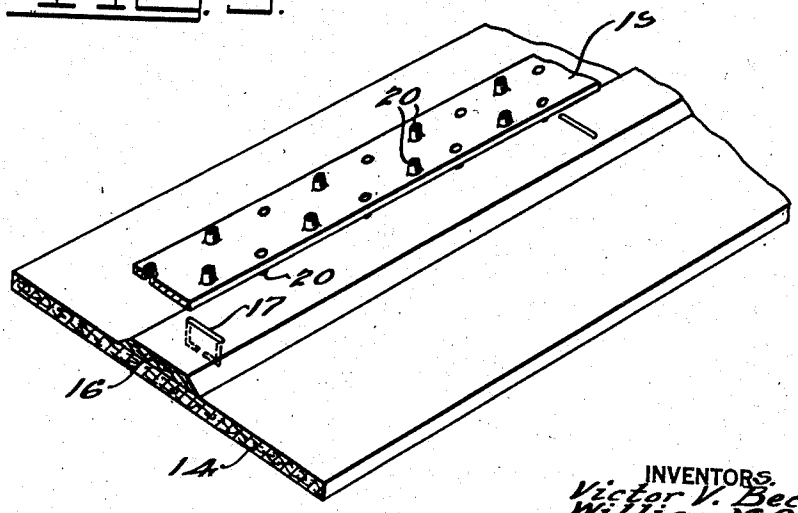


Fig. 2.

Fig. 3.



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Patented Oct. 27, 1942 2,299,873

UNITED STATES PATENT OFFICE

2,299,873

LEAF SPRING

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Application May 3, 1941, Serial No. 391,624

4 Claims. (Cl. 267—47)

This invention relates to improvements in leaf springs.

In this type of spring it has been found desirable to interpose a separator between adjacent leaves in order to maintain a constant amplitude of friction and it has been determined that such separator need not extend the full length of such leaves or the shorter one thereof in order to serve its purpose. However, considerable difficulty has been experienced in maintaining the separator against movement longitudinally with respect to the adjacent leaves due to flexing of the spring leaves.

An object of this invention therefore is to provide a spring wherein the aforesaid difficulty has been overcome and more particularly to provide means for opposing movement of the separator longitudinally of the spring and to thereby confine the same against unintentional separation from adjacent spring leaves.

Another object of the invention is to provide such means in operative association with means whereby the separator is maintained against separation laterally with respect to the leaves separated thereby.

A still further object of the invention is to provide means of the foregoing type which is relatively inexpensive and which is particularly adapted for mass production.

In carrying out the foregoing objects there is preferably provided a metallic strip interposed between and having faces respectively engaging the separator and one of the spring leaves separated thereby, these faces being so roughened as to oppose movement of the separator longitudinally with respect to this one leaf in response to flexing of the spring. Such a strip need not have a length equal to that of the associated separator in order to serve its purpose.

Other objects and advantages of the invention will be more apparent from the following description taken in connection with the accompanying drawing, in which:

Fig. 1 is a fragmentary side elevational view of a motor vehicle chassis including a leaf spring embodying the invention.

Fig. 2 is an enlarged transverse sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary view showing the spring leaf separator and the retainer in perspective.

Referring to the drawing there is illustrated a motor vehicle chassis including a road wheel 5 rotatably carried by an axle shaft 6 disposed within a housing 7. A semi-elliptical leaf spring 8 is secured to the housing 7 by a clamp assembly indicated at 9 and has one end portion thereof secured to a spring hanger 10 carried by the chassis frame member 11, the other end portion of the spring being secured to a shackle 12 carried by the member 11.

The spring 8 consists of a plurality of leaves 13 of relatively different lengths. Interposed between adjacent leaves 13, as illustrated more particularly in Fig. 2, is an inter-leaf or separator 14, preferably comprising a fibrous material, having one end terminating at or adjacent the point 15 and the other end thereof terminating in spaced relation to the extremity of the shorter of the leaves separated thereby. In this connection it will be understood that relative movement between adjacent leaves, due to flexing thereof, has its greatest magnitude between the point 15 and the ends of the springs. Inasmuch as the separators maintain a constant amplitude of friction between the leaves respectively separated thereby, they are thus disposed in the region where the relative longitudinal movement of the springs is the greatest.

Each separator 14 has a longitudinally extending tongue 16 on one face thereof, such tongue being suitably secured to the separator by brads 17 or the like, or if desired can be formed integrally therewith. One of the leaves thus separated, preferably the upper one thereof, has a longitudinally extending groove 18 formed in the face thereof adjacent the tongue for receiving the latter, the opposite side walls of the groove and the corresponding walls of the tongue being preferably tapered as shown. This tongue and groove arrangement retains the separator 14 against separation laterally from the adjacent leaves 13.

In order to prevent movement of the separator 14 longitudinally with respect to the adjacent spring leaves 13 and hence separation therefrom in response to flexing of these leaves, a strip 19 is interposed between adjacent faces of the groove and tongue 16. The strip 19 is preferably metallic and is provided with roughened faces which frictionally engage the adjacent groove wall and tongue respectively. The roughened faces are provided by punching or otherwise forming openings in the body of the strip, the metal thus displaced forming a burr-like protuberance 20 projecting from a side face. The strip is then heat treated for hardening in order that the protuberances will be effective over a longer period of time. The protuberances on one side face will tend to bite into the tongue and those on the opposite side face will tend to

bite into the adjacent groove wall, thus opposing movement of separator 14 longitudinally of the spring leaf 13 to thereby prevent relative separation. A relatively short strip thus formed and positioned will serve the desired end, the length of the strip being less than the length of the separator 14.

Although but several embodiments of the invention have herein been shown and described, it will be understood that various changes in the size, shape and arrangement of parts may be made without departing from the spirit of the invention or from the scope of the appended claims.

We claim:

1. In a leaf spring including a plurality of metallic leaves, a separator comprising a fibrous material disposed between adjacent metallic leaves, one of said adjacent leaves having a longitudinally extending groove therein and said separator having a tongue disposed in said groove and cooperating with the wall thereof to oppose relative lateral displacement of said one leaf and said separator, and a metallic strip disposed between said tongue and a wall of said groove, said strip having roughened face portions respectively engaging said tongue and said wall for opposing relative longitudinal movement of said one of said leaves and said separator in response to flexing of said adjacent leaves.

2. In a leaf spring including a plurality of metallic leaves, a separator comprising a fibrous material disposed between adjacent metallic leaves, one of said adjacent leaves having a longitudinally extending groove therein and said separator having a tongue disposed in said groove and cooperating with the wall thereof to oppose relative lateral displacement of said one leaf and said separator, and a metallic strip disposed between said tongue and a wall of said groove, said strip having portions of the metal extruded from opposite sides thereof respectively engaging said tongue and a wall of said groove and operable to oppose movement of said separator longitudinally with respect to said one spring leaf in response to flexing of said spring.

3. In a leaf spring including adjacent leaves of relatively different lengths, a non-metallic separator disposed between said leaves having a length less than the length of either thereof, at least one of said leaves and said separator having interengaging portions cooperating to prevent relative separation thereof laterally, and a metallic strip disposed between said portions having a length less than the length of said separator, said strip having roughened face portions respectively engaging said portions for opposing movement of said separator longitudinally of said one of said leaves in response to flexing of the spring.

4. In a leaf spring including adjacently disposed leaves a separator between said leaves, one of said leaves having a longitudinally extending groove bounded by opposed side walls and a wall intermediate the latter and said separator having a tongue extending into said groove, and a metallic strip disposed between said tongue and said intermediate wall, said strip having roughened face portions respectively engaging said tongue and said intermediate wall for opposing longitudinal movement of said separator relative to said grooved leaf in response to flexing of said spring, said strip being disposed between and retained against lateral displacement by said side walls.

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