June 5, 1928. 1,672,513

J. W. BAIRD

SHOCK ABSORBING APPARATUS

Filed June 7, 1926

Fig. 1.

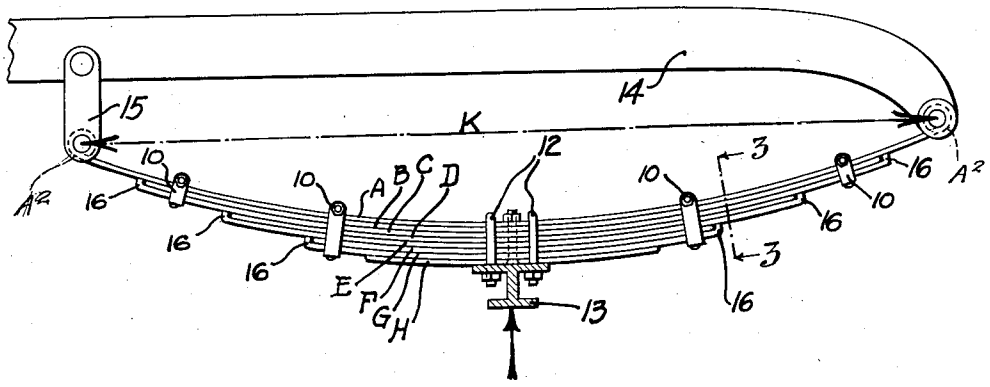
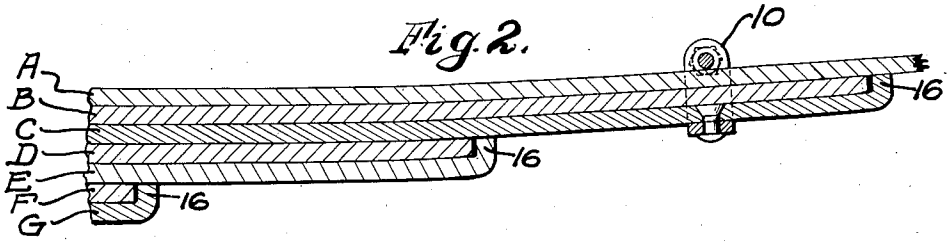


Fig. 2.



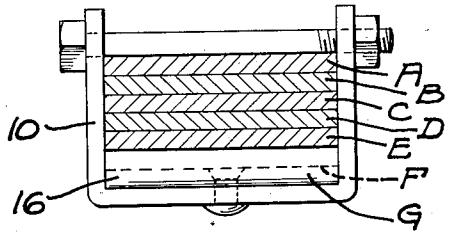


Fig. 3.

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UNITED STATES PATENT OFFICE.

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SHOCK-ABSORBING APPARATUS.

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This invention relates to shock absorbing apparatus and has particular reference to vehicle springs.

It is among the objects to provide novel resilient means for use on automobiles, trucks, wagons and the like.

Another object of the invention is to provide a spring for vehicles having means for absorbing or cushioning the recoil or rebound therein.

With the above and other useful objects in view, my invention consists in the novel combination, construction and arrangement of the parts and members shown in the preferred embodiment in the attached drawings, described in the following specifications and particularly pointed out in the appended claims.

Referring to the illustrations:—Fig. 1, is a side elevation of a spring in normal position embodying my invention applied to a structure of an automobile. Fig. 2, is an enlarged longitudinal section of a part of the spring, and Fig. 3, is an enlarged cross section taken on line 3—3 of Fig. 1.

The spring shown in normal position comprises a series of leaves of different lengths, indicated by A, B, C, D, E, F, G, and H, which are normally arcuate and provided with clamps 10 to prevent sidewise or cross shifting. Any suitable type of clamp 10 may be employed. I have shown a well known form. Likewise suitable U-bolts 12 are provided for retainment of the spring upon the axle 13. The longest leaf A is provided with loop ends A^2 for connection at one end to the frame 14 and at the other to the shackle 15.

In a preferred arrangement, such as shown in the illustrations, the spring is composed of a series of pairs of cooperative leaf springs, as for instance, the pair B and C, the pair D and E, and the pair F and G.

The construction and operation of the cooperative pairs of springs above set forth is similar, the pairs differing only in length, the length and number of pairs is determined by the use for which the spring is designed.

Referring now particularly to the several pairs B and C, D and E, and F and G, each pair is respectively composed of a plain arcuate leaf B, D and F and an adjacent arcuate leaf C, E and G having its end portions 16 bent substantially at a right angle to the end portions of the leaf, the ends of each plain leaf B, D and F being confined between the bent or hooked ends 16 of the adjacent cooperative leaves C, E and G.

From the above description and illustrations, it will readily be apparent, that when the spring unit, as shown in Figure 1, is bent under pressure exerted in the direction of the arrow under the axle 13, the cord K or the linear distance between the unit supports will lengthen by reason of the pivotal support of the shackle 15, and the leaves of the spring unit will tend to flatten, and all leaves will be subjected to bending movement, but in the recoil or rebound of the opposite movement of the spring, the length of the cord K will tend to shorten to a length less than the normal length, as shown in Figure 1, which tendency will be resisted by the binding action of the ends of the plain leaves B, D and F confined within the bent or hooked ends 16 of their respective co-operating leaves C, E and G. That is, the plain leaves B, D and F will be compressed and the hooked leaves C, E and G will be tensioned, thus absorbing the rebound.

It is obvious, that various changes or modifications may be made in form, shape or arrangement of the parts and members shown without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself to the preferred form, shape and arrangement shown, and it is my intention to claim the invention as broadly as the state of the art permits.

While I have shown and described my invention as applied to a vehicle chassis and axle therefor, it is readily apparent that my invention is susceptible to any and all uses as a resilient connection for a pair or plurality of relatively movable bodies for yieldingly resisting such relative movement.

I claim:

1. In a spring, a pair of normally arcuate, adjacently mounted leaf springs of uniform curvature through all sections thereof, one of said leaf springs having its ends bent angularly the ends of the other of said leaf springs whereby both of said leaf springs will be subjected to bending action when said springs are deflected in one direction and whereby said spring with bent ends will be tensioned and the other of said springs compressed when said springs are deflected in the opposite direction.

2. In a spring, the combination of series of normally arcuate leaf spring members, comprising a plurality of pairs of cooperative adjacently mounted leaf springs, one of said springs of each of said pairs having its ends bent to abut with the ends of the adjacent cooperative spring of each pair to thus cause a compression in said cooperative spring when deflected in one direction and when deflected in the opposite direction to cause a deflection in both of said cooperative springs.

3. In a device of the kind described, a plurality of pairs of normally arcuate, adjacently mounted leaf springs, one of said leaf springs of each of said pairs having its ends bent and adapted to abut with the ends of the adjacent leaf spring of each pair whereby all of said pairs of leaf springs will be subjected to bending action when said device is deflected in one direction and whereby each of said springs with said bent ends will be tensioned and the other adjacent spring of each pair compressed when said device is deflected in the opposite direction.

In witness whereof I affix my signature.

JOHN W. BAIRD.