W. A. ROSS.

AUXILIARY SPRING.

APPLICATION FILED APR. 7, 1910.

980,343. Patented Jan. 3, 1911.

Fig. 1

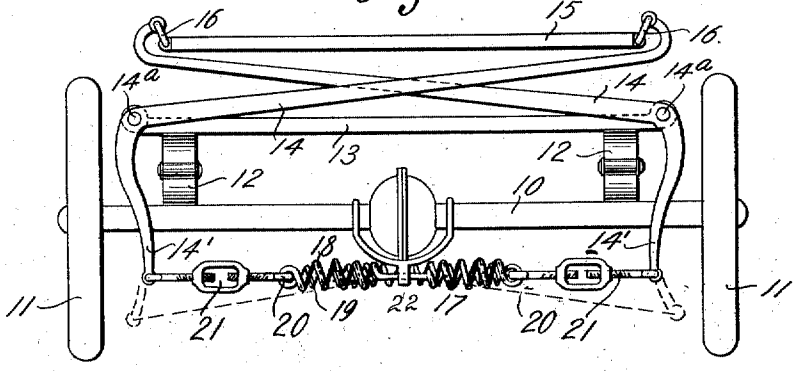


Fig. 2

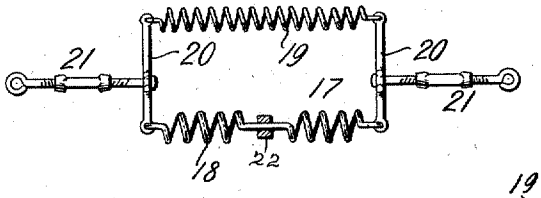


Fig. 5

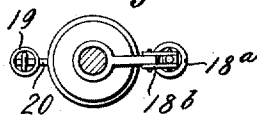


Fig. 3

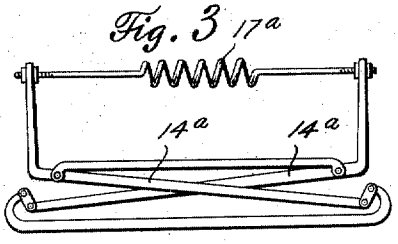
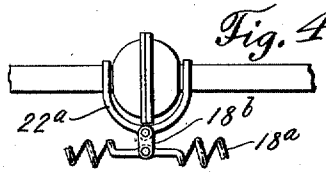


Fig. 4



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AUXILIARY SPRING.

980,343. Specification of Letters Patent. Patented Jan. 3, 1911.

Application filed April 7, 1910. Serial No. 554,061.

To all whom it may concern.

Be it known that I, WARNER A. ROSS, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Auxiliary Springs, of which the following is a specification.

This invention relates to auxiliary springs and suspension devices for automobiles or other vehicles, and has particular reference to devices of this character whereby the body of the vehicle may be so supported as to eliminate all of the usual objectionable effects due to irregularity in the road, all of which will be hereinafter fully described and claimed, and illustrated in the following drawings, in which—

Figure 1 is a rear end view of a conventional construction of automobile, showing the invention applied thereto; Fig. 2 is a top plan view of the auxiliary resilient connection, the means attaching the same to the frame of the vehicle being shown in section, Figs. 3 and 4 are modifications, and Fig. 5 is a detail section more clearly showing the link connection of Fig. 4.

Throughout the following description and on the several figures of the drawings similar parts are referred to by like reference characters.

At 10 is indicated a vehicle axle having supporting wheels 11. Supported upon the axle are main springs 12, of any suitable or well known type, which are intended to resiliently support the load in the usual manner. Instead of the vehicle body being supported directly upon said springs 12 the body is supported by intermediate devices in a peculiar manner.

At 13 is shown a bar or frame of any suitable shape or construction, dependent upon the form of springs 12, the bar being mounted directly upon said springs. A pair of levers 14 are pivoted on the ends of said bar 13 and are so disposed that one end of each of the levers extends from its point of connection with the bar across to the opposite side of the vehicle body and its other end extends substantially downwardly toward the ground. The vehicle body or its frame indicated at 15 is connected in any suitable manner, as by links 16, to the upper portion of said levers. Any suitable resilient means 17 may be employed to connect the downwardly extending ends 14′ of said levers, such means being operative to resist the normal downward force of the vehicle body upon the links 16, such force tending to turn the levers 14 upon their pivots 14^a. The connecting means 17 between arms 14′ of the levers is shown as comprising in one of its preferred forms a pair of springs 18 and 19 connected at their opposite ends to bars or levers 20. A link 21 serves to connect each of the levers 20 with the adjacent arm 14′, the point of connection with said lever being preferably nearer one spring than another. The link 21 may be provided with a common form of turn buckle for adjustment purposes if desired.

Should one of the wheels 11 strike an obstacle tending to raise the wheel, or enter a rut tending to permit the wheel to drop, the effect of such irregularity would not be transmitted immediately to the vehicle body on the side thereof adjacent said wheel, but the effect of such irregularity would cause the adjacent lever 14 to swing on its pivot and such movement of the lever would be cushioned by the spring connections 17, the levers 14 constituting equalizing means preventing the entire weight of the vehicle body from being shifted to any single wheel. By making one of the springs 18 and 19 weaker than the other it would naturally respond quicker to the movement of the lever than would the other spring, but a greater turning moment on the lever 14 would of course bring both the springs into coöperation. The strength of the spring connection 17 will be determined by the adjusting devices according to the normal load to be carried by the vehicle, and an important feature of this invention resides in means whereby an added load will automatically increase the tension of said connection. To this end I have shown one of the springs so connected to the axle at 22 as to cause the spring connection 17 to be increased in tension proportionately to the downward displacement of the lower end of arms 14′ due to the compression of the springs 12 by the added load of the vehicle body, as indicated in a somewhat exaggerated form by dotted lines in Fig. 1. Any suitable means may be employed to connect said spring of the device 17 to the axle for this purpose. The connection 22 between the spring connection 18 and the axle 10 has the effect of displacing certain elements of the spring device 17 in a direction at a right angle with respect to the movement of the elements or coils

of said spring device when placed under tension. In other words, in the actual operation of the invention, the efficiency of the spring connection 17 is increased because on downward bodily movement of the vehicle body and the equalizing levers 14, which movement is allowed by the provision of the springs 12 supporting said parts, such downward movement is resisted not only by the longitudinal expansive action of the spring 18, but by the lateral or rectilinear pull exerted on said spring at its central portion by the connection 22.

In Fig. 3 of the drawings I have shown a modification in the general arrangement of the parts of my invention, the crossed levers 14^a extending upwardly at their outer ends, instead of downwardly as in Fig. 1, and the resilient connection 17^a being attached to the levers above the same, an arrangement practically opposite that of Fig. 1. Figs. 4 and 5 illustrate modified means for connecting the spring 18^a with the axle, a link 18^b being pivotally connected with the spring 18^a and similarly connected with a yoke 22^a, the latter swinging on the axle 10. Any one of these modified constructions may be employed in the actual practice of my invention.

I claim:

1. The combination with a vehicle axle, main springs supported thereon, and a bar connected to said springs, of a body, a pair of levers connected to the body and to the opposite ends of said bar, and extending thence downward from the bar, and a resilient connection between the lower ends of said levers.

2. The combination with a vehicle axle, main springs supported thereon and a bar connected to said springs, a lever pivoted to each end of said bar, one end of each lever extending from its point of connection downward and the other end extending from said point across the bar to a point above the pivotal point of the other lever, a body connected to the upper crossed ends of said levers, resilient connections between the lower ends of said levers, a portion of said connections being anchored to the axle whereby the tension of the connections will be increased automatically with the increase of load on the vehicle frame operative through said main springs.

3. In combination, a vehicle body, an axle, a supporting bar, a pair of levers connected at corresponding ends with the body and pivotally connected to said bar, main springs supporting the body, bar, and levers permitting simultaneous downward movement thereof, an auxiliary spring connection attached to the opposite corresponding ends of the levers, and means connecting said spring connection with the axle for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

WARNER A. ROSS.

Witnesses:
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