Oct. 20, 1925. 1,558,017

H. KINTZ

RECOIL ABSORBING SPRING SUSPENSION

Filed Sept. 18, 1924

FIG. 1

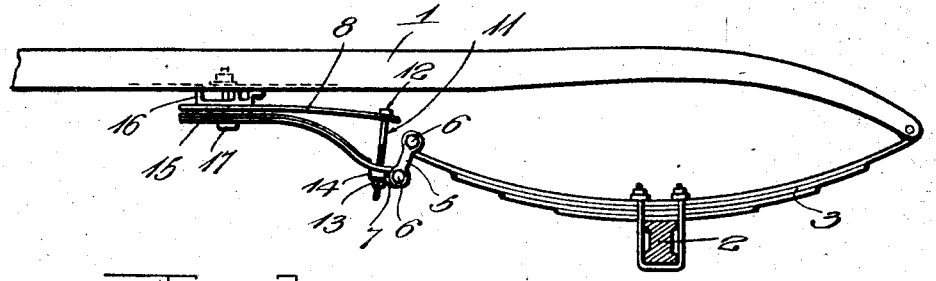


FIG. 2

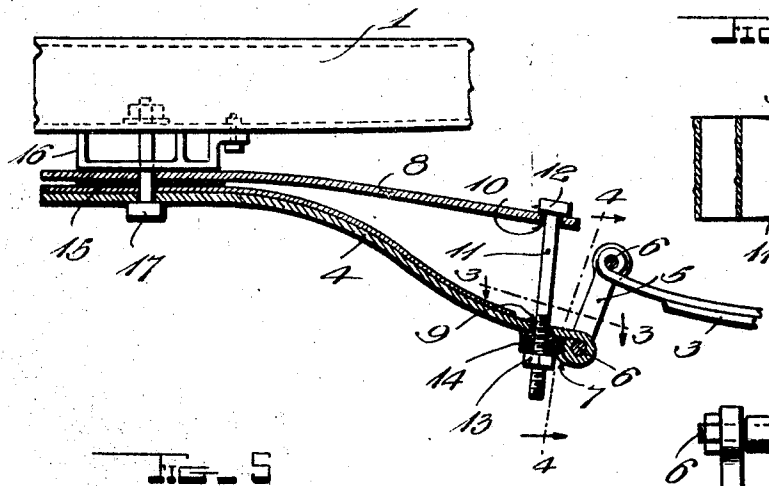


FIG. 3

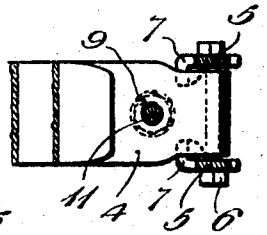
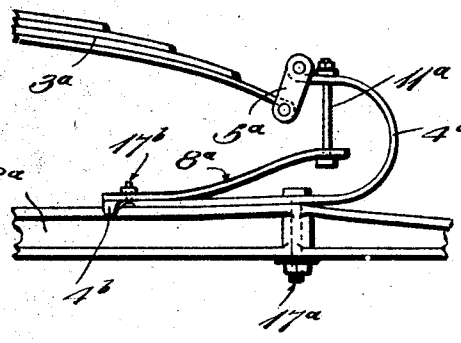


FIG. 5



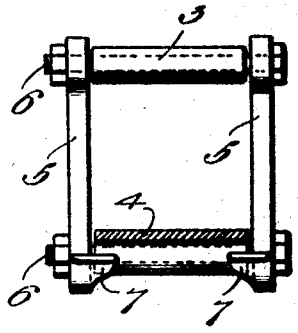


FIG. 4

Witness

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Patented Oct. 20, 1925. 1,558,017

UNITED STATES PATENT OFFICE.

HERBERT KINTZ, OF SHARPSBURG, PENNSYLVANIA, ASSIGNOR OF FORTY-NINE PER CENT TO EUGENE C. MOSTI, OF BRIDGEVILLE, PENNSYLVANIA.

RECOIL-ABSORBING SPRING SUSPENSION.

Application filed September 18, 1924. Serial No. 738,473.

To all whom it may concern:

Be it known that I, HERBERT KINTZ, a citizen of the United States, residing at Sharpsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Recoil-Absorbing Spring Suspensions; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention aims to provide a unique spring suspension for automobiles, which will greatly increase the easy riding qualities thereof, and will effectively eliminate the inconvenience commonly caused by the recoil of the springs, after they have been severely compressed.

A further object is to provide an attachment for common forms of automobile springs, so that they may assist in forming the improved suspension.

In carrying out the invention, main and auxiliary leaf springs are shackled together, and a still further object is to provide an arrangement of stop lugs on the shackle links, which will prevent them from swinging to inverted positions, when recoil takes place.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawings.

Figure 1 is a side elevation partly in section showing the use of my invention.

Figure 2 is an enlarged fragmentary sectional view, partly in elevation.

Figure 3 is a detail section on line 3—3 of Fig. 2.

Figure 4 is another detail sectional view on line 4—4 of Fig. 2.

Figure 5 is an elevation illustrating a different form of construction, for use upon a different type of automobile.

In the form of construction illustrated in Figs. 1 to 4, the numeral 1 designates one side bar of an ordinary chassis frame, 2 indicates the front axle, and 3 has reference to the semi-elliptic front spring, and while my improvements have been shown in connection with this spring, I wish it understood that they are also adaptable to springs of different characters, and may be used on the rear of a machine as well as on the front.

An auxiliary spring 4 is provided, said spring having a free end disposed under the rear end of the spring 3, and connected with the latter by a pair of shackle links 5 and shackle bolts 6, said links being shown as provided with integral, inwardly extending lugs 7 which are adapted to engage the auxiliary spring 4 and prevent said links from swinging to an inverted position, upon recoil of the spring suspension.

Disposed over the auxiliary spring 4, is a recoil absorbing spring 8 having a free end which is disposed in vertically spaced relation with the free end of said auxiliary spring. Connecting means are provided between the free ends of these two springs, for permitting upward yielding of the spring 4 toward the spring 8, but for limiting downward movement of said spring 4 with respect to the spring 8, causing the latter to absorb recoil. In the present showing, the free ends of the springs 4 and 8 are formed with openings 9 and 10 which loosely receive a bolt 11, said bolt having a head 12 contacting with the upper side of the spring 8, and being provided with an adjusting nut 13 under the spring 4, an anti-rattling washer 14 being preferably disposed between said nut and said spring 4.

In the construction shown, the spring 4 is formed of two leaves, the spring 8 is formed of only one leaf, and the leaves of these two springs are spaced apart at the ends of the springs, remote from the bolt 11, by a spacing plate 15. These ends are suitably secured to the chassis frame and in the construction shown, a spring seat 16 is interposed between the frame and the springs, and one or more bolts 17 are used to secure said springs in place.

By providing the construction and association above described, or a substantial equivalent thereof, a spring suspension is provided which will cause any machine to ride with extreme ease. When the invention is installed, the nut 13 is tightened, to place the springs 4 and 8 under the desired amount of tension, and in operation of the machine, the auxiliary spring 4 takes up minor shocks, whereas the two springs 3 and 4 co-act in absorbing more forcible shocks. Upon recoil of the spring suspension, the spring 4 moves downwardly from the spring 8 to the extent permitted by the bolt 11, and if further downward movement must take

place, such movement is yieldably resisted by the bolt and the recoil absorbing spring 8, so that the effect of the recoil is reduced to the minimum.

In Fig. 5, I have illustrated a construction which is adapted for use upon a different type of machine. In this view, 2^a designates a front axle, 3^a has reference to a transverse front spring, and 5^a designates a shackle by means of which the spring 3^a is connected to a substantially J-shaped auxiliary spring 4^a, this spring being secured upon the axle by a bolt 17^a passing through the usual opening through which the common spring perch attaching bolt passes. To prevent pivoting of the spring about the bolt 17^a, it may well have a pair of axle-straddling lugs, one of which is shown at 4^b. Secured to the upper side of the fixed end portion of the spring 4^a, by a bolt 17^b or other desired means, is a recoil absorbing spring 8^a whose end is connected with the free end of the spring 4^a, by a bolt 11^a or other suitable connection.

The action of the construction just described is the same as that previously explained and it will of course be understood that such construction may be used in connection with either the front or rear springs of a machine.

As excellent results are obtainable from the general construction shown, it is preferably followed, but within the scope of the invention as claimed, numerous minor changes may be made.

I claim:

1. A recoil absorbing spring suspension comprising a main leaf spring, an auxiliary leaf spring having a free end connected to one end of said main spring, a recoil absorbing leaf spring having a free end spaced vertically from the free end of said auxiliary spring, and connecting means between the free ends of said auxiliary spring and said recoil absorbing spring permitting movement of the former toward the latter but serving to limit the movement of the auxiliary spring away from the recoil absorbing spring.

2. A recoil absorbing spring suspension comprising a main leaf spring, an auxiliary leaf spring having a free end connected to one end of said main spring, a recoil absorbing leaf spring having a free end spaced vertically from the free end of said auxiliary spring, said free ends having openings, and a bolt passing through said openings to limit the movement of the auxiliary spring away from the recoil absorbing spring but permitting movement of said auxiliary spring toward said recoil absorbing spring.

3. An attachment of the class described comprising an auxiliary leaf spring having a free end adapted for connection with one end of a vehicle spring, a recoil absorbing leaf spring having a free end spaced vertically from the free end of said auxiliary spring, and connecting means between the free ends of said auxiliary spring and said recoil absorbing spring permitting movement of the former toward the latter but serving to limit the movement of the auxiliary spring away from the recoil absorbing spring.

4. An attachment of the class described comprising an auxiliary leaf spring having a free end adapted for connection with one end of a vehicle spring, a recoil absorbing leaf spring having a free end spaced vertically from the free end of said auxiliary spring, said free ends having openings, and a bolt passing through said openings to limit the movement of the auxiliary spring away from the recoil absorbing spring but permitting movement of said auxiliary spring toward said recoil absorbing spring.

In testimony whereof I have hereunto affixed my signature.

HERBERT KINTZ.