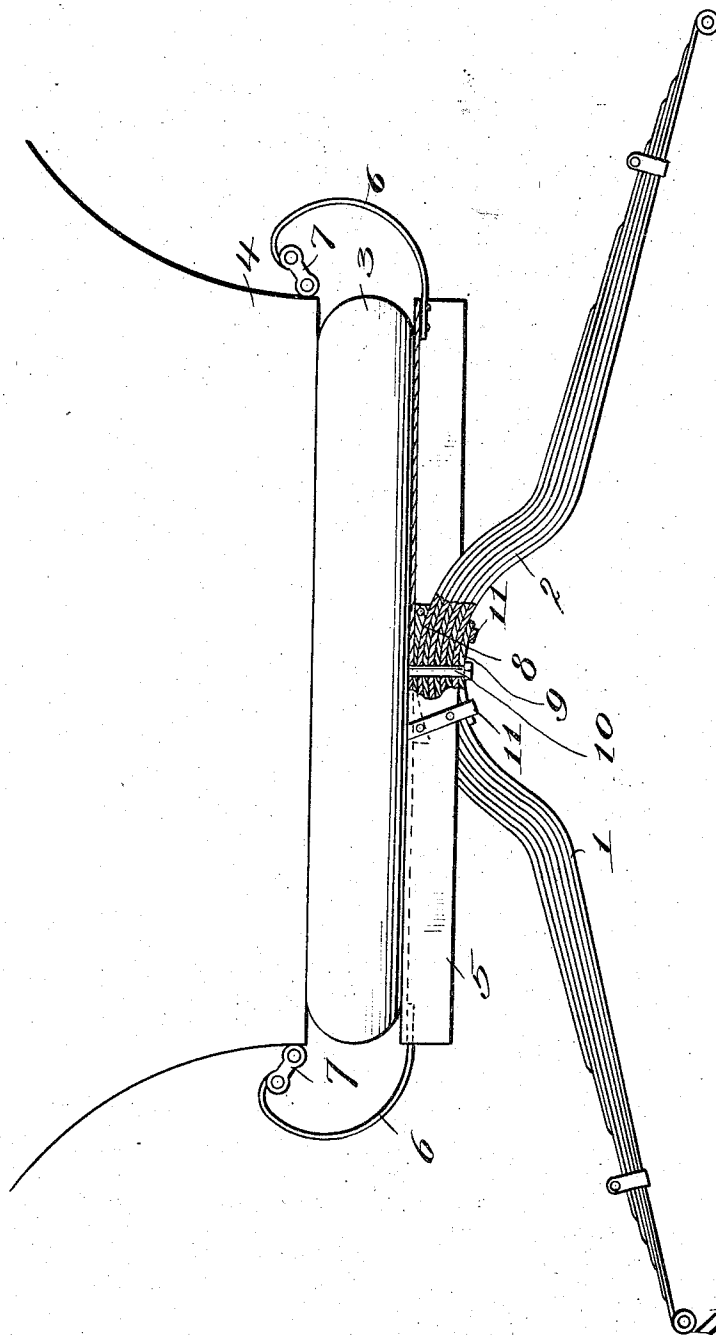


W. H. COOK.
SHOCK ABSORBER.

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1,062,441.

Patented May 20, 1913.



Witnesses:

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WALTER H. COOK, OF NEW ORLEANS, LOUISIANA.

SHOCK-ABSORBER.

1,062,441.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed November 14, 1912. Serial No. 731,355.

To all whom it may concern:

Be it known that I, WALTER H. COOK, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Shock-Absorbers, of which the following is a specification.

This invention relates to improvements in shock absorbers of that general type which is illustrated in my copending application, Serial No. 719,662 and which embodies a transverse main spring, a cushioning element, and a shock-transmitting element, these parts being in a common vertical plane and the shock-transmitting element serving to pass the uncared for impulses of the main spring to the cushioning element, the latter taking its bearing between the shock-transmitting element and the vehicle frame or body.

The present invention proposes a form of shock absorber which is especially applicable to main springs of so-called "hump" or "camel-back" character, such as are used, for example, in the well known Ford automobile.

Owing to the peculiar outline of a main spring of the character stated, some difficulty has been experienced in efficiently absorbing or compensating for direct and reactionary vibrations, and the object of the present invention is to provide a shock absorber for use in connection with a spring of the character stated by which the proper relation of the vehicle body will be effectively maintained, and those vibrations which are beyond the capacity of the main spring to absorb and care for will be effectively and uniformly taken up.

An embodiment of the invention is illustrated in the accompanying drawing which comprises a single figure showing the improved shock absorber partly in elevation and partly in section.

The transverse main spring is shown at 1 and may be suspended at its ends in any usual manner. The central portion of the main spring is formed into a relatively wide hump 2 of arcuate outline. The cushioning element, which preferably comprises an elongated pneumatic tube, is shown at 3 and works between the body 4 of the vehicle and a shock-transmitting element 5. The shock-transmitting element is in the nature of an elongated bar, preferably channeled on its under face, and of substantially the

same length as the cushioning element for which it furnishes a seat. For the purpose of maintaining the proper relation of the vehicle body and for also resisting or counterbalancing and unifying the action of the element 5, relatively strong curved leaf or bow springs 6 are connected at the ends of said element 5 and also at the sides of the body 4, the connection between said springs and the sides of said body preferably comprising links 7 which enable the springs 6 to have the requisite degree of yielding action.

The shock-transmitting element 5 is carried by the spring 1 and is secured centrally thereto. It is essential that the connection between the element 5 and the spring 1 should be of rigid character in order that there may be no play between said element and said spring, and for this purpose, wedge pieces 8, conforming to the curve of the hump 2, are introduced between said hump and the adjacent face of the element 5, a curved retaining plate 9 is arranged at the under side of the hump, and bolts 10 and brackets 11 are provided as means of connection between the element 5 and the spring 1, the bolts 10, of course, taking through the wedge pieces 8 and the plate 9 aforesaid. In this way, a secure connection of the element 5 to the spring 1 is established and any relative play of said element and spring is prevented.

When the vibrations developed by the running of the vehicle are such that they are beyond the capacity of the spring 1 to care for and absorb, so that the spring itself vibrates, the vibrating impulses of said spring are transmitted by the element 5 to the cushion 3 and the spring 6 are at the same time acted on by said element 5 for the purpose of maintaining the equilibrium of the body 4 and also of resisting and equalizing the yielding action of the element 5. Thus, if the shock encountered is developed at the right side of the vehicle, so that the right-hand portion of the spring yields, the right-hand portion of the element 5 will be tilted upwardly and the left-hand portion of said element will be tilted downwardly, and this will produce a compression of the cushion 3 at one end thereof, but the equilibrium of the vehicle body will be maintained by the springs 6 which are connected to the element 5 and to said body at opposite sides thereof. Moreover, that side of the element 5 which

is tilted upwardly will effect a compression, so to speak, of the spring 6 which is connected thereto, and that side of the element 5 which is tilted downwardly will effect a tensioning, so to speak, of the other spring 6. Power is thus stored in both of said springs in such manner that they act to prevent the vibrations of the element 5 from being too free and consequently to reduce the impulses of the spring 1 and to restore the element 5, in a relatively short time, to its normal or mean horizontal position.

Having fully described my invention, I claim:—

15 1. In a shock absorber, a transverse main spring, a shock-transmitting element rigidly secured over and to the central portion of said spring, spring connections between the ends of said shock-transmitting
20 element and the body of the vehicle, and a cushioning element which normally seats on the shock-transmitting element and is arranged between the latter and the body of the vehicle.

25 2. In a shock absorber, a transverse main spring having a central hump, a shock-transmitting bar rigidly secured at its center to said hump, curved leaf springs connecting the ends of said bar and the body

of the vehicle, and an elongated air cushion 30 which normally seats on said bar and is arranged between the latter and the body of the vehicle.

3. In a shock absorber, a transverse main spring, a shock-transmitting bar rigidly secured over and to the central portion of
35 said spring, curved leaf springs connecting the ends of said bar and the sides of the vehicle body, and an elongated air cushion which normally seats on said bar and is arranged between the latter and the vehicle
40 body.

4. In a shock absorber, a transverse main spring having a central hump, a shock-transmitting bar rigidly secured at its center to said hump, spring connections between
45 the ends of said bar and the vehicle body, and a cushioning element which normally seats on the shock-transmitting element and is arranged between the latter and the vehicle
50 body.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WALTER H. COOK.

Witnesses:

JOHN RIDGLEY,
ROBERT WATERMAN.