W. J. THUL.

SHOCK ABSORBER.

APPLICATION FILED DEC. 26, 1914.

1,192,955.

Patented Aug. 1, 1916.

Fig. 1.

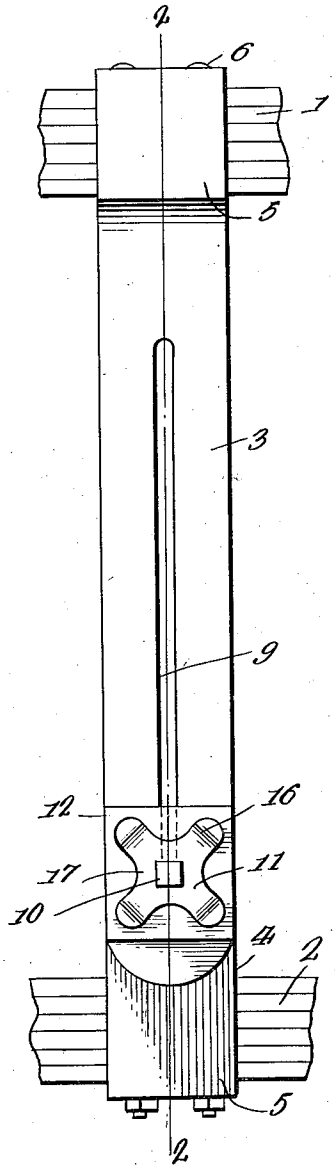
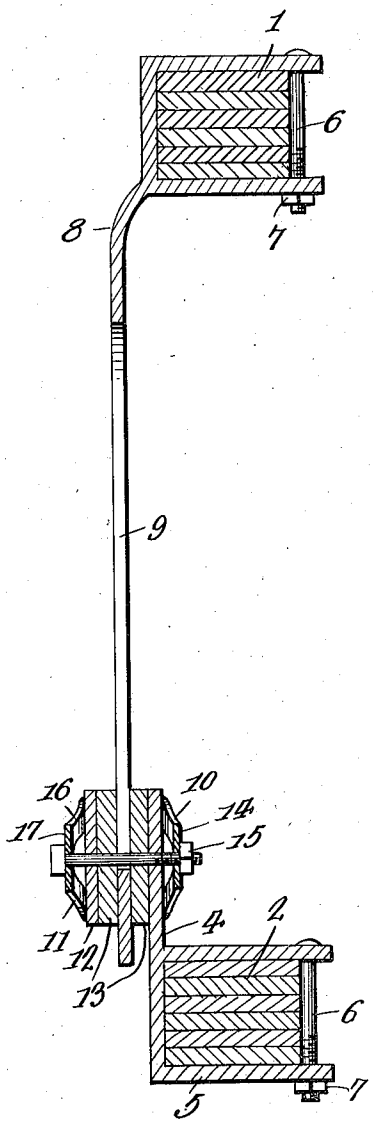


Fig. 2.



Witnesses

Guy N. Spring.

Wm. Webster Downing.

Inventor

William J. Thul.

By Richard B. Owen.

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM J. THUL, OF MELROSE, MINNESOTA.

SHOCK-ABSORBER.

1,192,955. Specification of Letters Patent. Patented Aug. 1, 1916.

Application filed December 26, 1914. Serial No. 879,203.

To all whom it may concern:

Be it known that I, WILLIAM J. THUL, a citizen of the United States, residing at Melrose, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Shock-Absorbers, of which the following is a specification.

My invention relates to shock absorbers for vehicles.

The primary object of my invention resides in the provision of an improved coacting means associated with the vehicle spring for absorbing the shocks transmitted thereto when the vehicle is passing over an uneven surface, thus reducing the liability of the breaking of the spring to a minimum and providing for the easy riding of the vehicle.

Another object of my invention resides in the provision of a novel means for increasing the friction between the coacting connecting means, the latter having novel means associated therewith and coöperating with the frictioning means for facilitating the adjusting of the same.

A further object of my invention resides in the construction of a novel device of the character described including two coacting plates, the latter having novel means associated therewith for facilitating the clamping of the same to the vehicle spring.

A still further object of my invention resides in the provision of a device of the character described that is simple in construction, efficient in operation and one that can be manufactured and placed on the market at a minimum cost.

Other objects as well as the nature, characteristic features and scope of my invention will be more readily understood from the following description taken in connection with the accompanying drawings and pointed out in the claim forming a part of this specification.

In the drawings:—Figure 1 is a front elevational view of my invention applied to the portions of the upper and lower parts of an elliptical spring of a vehicle; and Fig. 2 is a vertical sectional view of the same taken on the line 2—2 of Fig. 1 showing especially the means for connecting the plates.

Referring more particularly to the drawings in which similar reference numerals designate like or corresponding parts throughout the different views, I attach to the upper section 1 and the lower section 2 of an ordinary type of bow spring on a vehicle my improved coacting plates 3 and 4. The means for rigidly connecting the plates to the sections in this instance consists essentially of U-shaped clamps 5, formed integral with the outer terminals of the plates. The arms of both of the clamps 5 are arranged in close relation with the upper and lower surfaces of the sections 1 and 2 of the bow spring, the free ends of the arms being engaged by bolts or like fastening devices 6, the outer ends of which bolts are screw threaded and have adjustably mounted thereon nuts 7 or other suitable adjusting elements for removably clamping the plates in a substantially rigid position with respect to the sections.

The plate 3 connected to the upper section 1 depends therefrom and is longer than the plate 4 connected to the other section 2 of the spring, the extreme terminal of the plate 3 being arranged adjacent the clamp 5 on the section 2. The plates 3 and 4 are arranged in parallel relation with each other, this being afforded by the bend 8 adjacent the juncture of the plate 3 with the clamp 5.

In order to slidably connect the plates 3 and 4, I have provided the longer of the plates 3 with an elongated longitudinal slot 9, the latter being engaged by a bolt 10 mounted in an opening in the shorter of the plates 4. Preparatory to the insertion of the bolt 10 in the opening in the plate 4, the bolt engages a resilient element 11, a metallic plate 12 and fiber plates 13, all of which plates being of substantially rectangular form, the fiber plates being arranged in abutting relation with the respective surfaces of the plate 3 to increase the friction between the plates when a shock or jar is imparted to the vehicle, thus equalizing the strain on the sections 1 and 2 of the bow spring. The free threaded end of the bolt is also engaged by a resilient element 14 similar in construction to the resilient element 11 and adjustably engaged by a nut 15 which bears against the resilient element 14 and coöperates with the head for governing the tensioning of the resilient elements 11 and 14 for either increasing or reducing the friction between the fiber plates 13 and plate 9.

Each of the resilient elements in this instance consists preferably of blanks of sheet metal which assume the form of a cross, the

arms of which are inclined as at 16 from the central body portion 17 for providing the necessary resiliency. When assembled, the arms of the resilient elements extend toward each other and have their inner ends arranged in frictional engagement with the outer surfaces of the metallic plates 4 and 11 so that when the nut 15 is adjusted inwardly on the bolt, the arms will be forced toward the plane of the central body portions 17 thereof, thus causing the fiber plates 13 to more firmly engage with the respective surfaces of the plate 9, thus increasing the friction between these parts when desired. This matter of adjusting the springs to increase the friction rests entirely with the size and weight of the vehicle body and it is obvious that when the device is applied to a substantially light vehicle the nut can be released a considerable extent, thus diminishing the friction between the parts.

The operation of my invention is as follows:—Assuming that the parts have been assembled in the manner described and the nut 15 has been adjusted to its desired position, when the vehicle moves over rough or uneven ground the jar that is naturally imparted thereto will cause the sections 1 and 2 of the springs to move toward each other. Simultaneous with this movement and in order to equalize the strain thus imparted, the bolt 10 will move upwardly in the longitudinal slot 9 in the plate 3, the fiber plates 13 being arranged in the desired position offer a suitable resistance, thus facilitating the operation of the device. Furthermore, it is thought obvious that after the shock has occurred, the spring will assume its normal position thus automatically returning the device to its normal position.

Although I have shown and described the preferred embodiment of my invention, I desire to be understood that I am not to be limited to the exact details shown; however, great stress is laid upon the arrangement of the novel means for slidably connecting the sections to a bow spring, the said connecting means having novel friction means adjustably associated therewith for facilitating the efficient operation of the device.

From the above description taken in connection with the accompanying drawings, it can easily be seen that I have provided a device that is simple in construction, containing but a few simple parts that can be cheaply manufactured and assembled and when assembled can be placed upon the market and sold at a minimum cost.

It will be understood that the above description and accompanying drawings comprehend only the general embodiment of my invention and that various minor changes in details of construction, proportion and arrangement of the parts may be made within the scope of the appended claim and without sacrificing any of the advantages of my invention.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

In a shock absorber, the combination with a full elliptical spring, of a pair of substantially U-shaped brackets the arms of which are arranged in spaced parallel relation with each other, means for removably clamping the arms of each bracket to the upper and lower parts of the spring, an elongated longitudinal slotted plate integral with one of the brackets and offset at its point of juncture therewith so as to lie laterally of the plane of the spring, a short plate integral with the intermediate portion of the other bracket and extending toward the long plate and in spaced parallel relation therewith, a bolt mounted in the short plate and arranged through the slot in the elongated plate, a metallic plate mounted on the bolt, friction means mounted by the bolt and arranged between the plates, resilient means mounted on the bolt, and adjusting means on the bolt.

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

WILLIAM J. THUL.

Witnesses:
W. J. STEPHEN,
A. J. ZUERCKER.