H. DE ROSIER.

SHOCK ABSORBER.

APPLICATION FILED MAR. 31, 1911.

1,012,824. Patented Dec. 26, 1911.

Fig. 1.

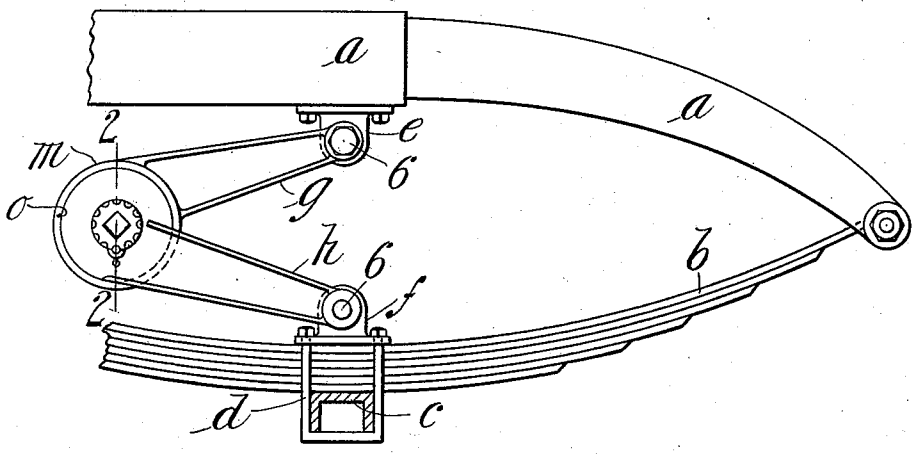


Fig. 2.

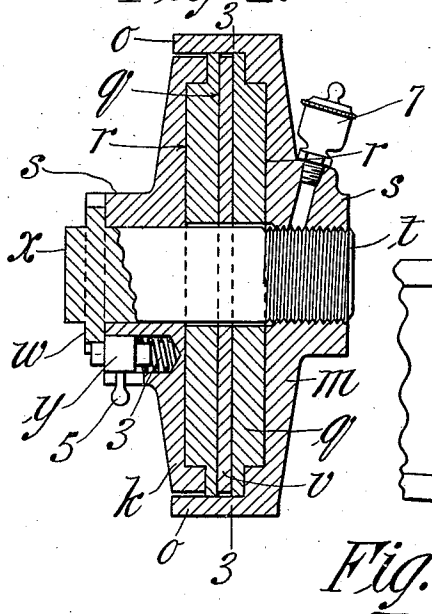


Fig. 3.

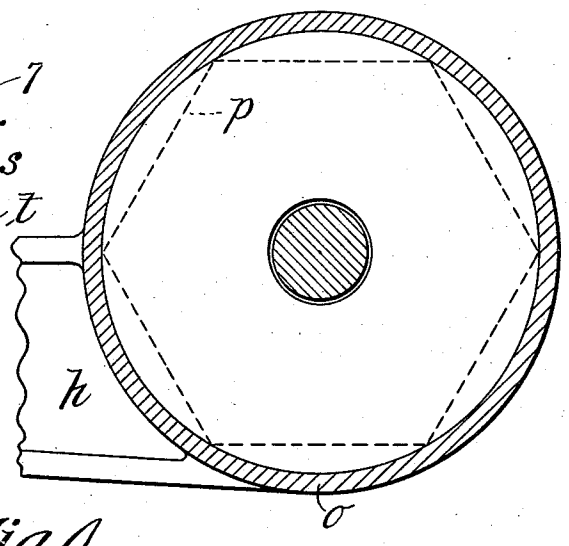
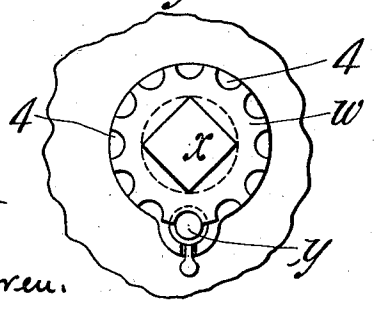


Fig. 4.



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HORACE DE ROSIER, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR OF ONE-THIRD TO WILLIAM J. TOWER AND ONE-THIRD TO ROBERT E. LANE, BOTH OF SPRINGFIELD, MASSACHUSETTS.

SHOCK-ABSORBER.

1,012,824. Specification of Letters Patent. Patented Dec. 26, 1911.

Application filed March 31, 1911. Serial No. 618,250.

To all whom it may concern:

Be it known that I, HORACE DE ROSIER, a subject of the King of Great Britain, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Shock-Absorbers, of which the following is a specification.

This invention relates to shock absorbers, so-called, for vehicles, and is especially adapted to self-propelled road vehicles.

The invention is fully illustrated in the accompanying drawing forming part of this application, and clearly described and summarized in the specification and in the claim appended thereto.

In the drawings forming part of this application,—Figure 1 is a side elevation of a part of the frame of the vehicle and a part of one of its springs showing the invention applied thereto in the usual way. Fig. 2 is a cross-sectional view of the device on a somewhat enlarged scale, the plane of the section being on line 2—2, Fig. 1. Fig. 3 is a sectional elevation of the device, the plane of the section being on the line 3—3, Fig. 2, and at right angles to the plane of the section in Fig. 2. The scale in which Fig. 3 is drawn is the same as that of Fig. 2. Fig. 4 is a side elevation of a part of the device shown in Fig. 2 and illustrates means to lock the bolt shown in said Fig. 2 in its adjusted position.

The object of the invention is to provide a shock-absorber of the frictional type which shall be as simple as possible and of low cost of manufacture and in which, without secrificing compactness of construction, the requisite frictional surface is provided with easily manipulated compression devices, whereby the desired initial frictional contact between the parts may be attained, an important feature of the invention residing in means to provide for an increase in the frictional contact between the parts when these parts are moved in one direction, and to reduce said frictional contact when the parts are moved in an opposite direction.

Referring to the drawings, *a* represents one end of the frame of a vehicle; *b* the spring; *c* the axle, and *d* the clip for securing the spring to the axle, these parts being shown in a more or less conventional manner.

Located respectively on the frame *a* and the clip *d*, and in a substantially vertical plane, are two supports for the shock absorber, as it is usually applied, these supports being indicated by *e* and *f*. The shock absorber proper comprises two arms *g* and *h* of cast metal or stamping, each arm having at one end a disk integral therewith,—that on the arm *g* being indicated by *m* and that on the arm *h* by *k*. The disk *m* on the arm *g* is provided with an annular peripheral flange *o* at right angles to the plane of the disk, thus providing a cup-shaped recess to receive the opposite disk. Each of these disks *k* and *m* has cast or stamped therein a hexagonal or other angularly shaped recess, indicated by the dotted lines *p*, Fig. 3, and fitted into these recesses are two fiber-blocks each having a circular face, the diameter of which is substantially equal to the diameter of the disk *k*. These blocks, indicated by *q*, have molded on the back side thereof the angularly shaped projections *r* adapted to fit the recesses *p* in each of the disks *k* and *m*. When these blocks are in position they are, by the nature of their construction and application to the disks, held against rotation.

On each of the disks *k* and *m* is formed a hub *s* through which a compression bolt *t* passes. This bolt passes freely through the disk *k*, axially thereof, and also through the two blocks *q* and through a steel disk *v* located between the two blocks *q*, but the bolt is threaded into the disk *m*. Opposite the threaded end of the bolt a head *w* is provided thereon, and a squared portion *x* on this head. When the bolt *t* is screwed into the disk *m*, the head *w* of the bolt will be drawn up against the disk *k* thereby pressing the two blocks *q* in the disks together against the opposite sides of the steel disk *v*. This bolt *t* is held against rotation by the engagement of a bolt *y* located in a hole in the hub of the disk *k*, and normally pushed outwardly by a spring 3, the end of the bolt engaging notches 4 cut in the periphery of the head *w* of the bolt. Therefore, to turn the bolt *t*, it is necessary to depress the bolt *y*, and to effect this conveniently said bolt is provided with a short arm 5 extending therefrom through a slot in the hub all of which is clearly shown in Fig. 2.

While the disk *v* has been spoken of as a steel disk, any metal disk can be used, steel being preferred.

The whole device is applied to a vehicle

in the usual manner, the two arms *g* and *h* having their extremities secured to the supports *e* and *f* by bolts 6 which will permit rotative movement of the arms relative thereto.

When this device is in operation, and any movement of the vehicle over the road tends to compress the spring *b* there will result a scissors-like movement of the two arms *g* and *h*, first toward each other and then in the opposite direction, and as is well known, this device is for the purpose of checking the movement in the opposite direction above referred to, which is a movement of the frame *a* away from the spring. Therefore, the direction of the screw-thread on the end of the bolt *t* is such that when the two arms *g* and *h* approach each other, it will tend to unscrew the bolt, and when the ends of these arms move in the opposite direction, or away from each other, it will tend to screw the bolt more tightly into the disk *m* and thereby bind more tightly the metal disk *v* between the two blocks *q*, to the end that the frictional resistance of these contacting surfaces may be increased in proportion as the ends of the two arms *g* and *h* are separated. In this manner, the more violent the rebound of the frame *a* away from the spring *b*, the greater will be the degree of resistance to movement between the surfaces of the blocks *q* and the sides of the disk *v*,—this resistance being less when the frame *a* is returned to its normal position relative to the spring and still further reduced, if the normal distance between the frame and the spring is lessened.

Preferably, an oil-cup 7 is applied to the hub of the disk into which the screw-threaded end of the bolt *t* enters.

It will be observed that during the operation of this device, one of the blocks *q* will have a rotative movement in a direction contrary to that of the other block, and therefore notwithstanding the disk *v* is tightly clamped between these blocks, it will remain practically stationary since the rotative force applied thereto by one of said blocks will be counteracted by a like force applied to the other side in an opposite direction. This obviates the necessity of securing the disk *v* non-rotatably on the bolt or otherwise. The nature of the whole construction makes it possible to render it practically dustproof.

What I claim, is:—

A shock-absorber comprising a pair of arms, one end of each of which is pivotally secured respectively to the frame and to the axle of the vehicle, a disk on the opposite end of both of said arms, each of said disks having in the opposed faces thereof recesses, a non-metallic block non-rotatably seated in each of said recesses, and a metal plate loosely positioned between said blocks, a compression bolt having a head thereon bearing against one of said disks and extending loosely therethrough, the opposite end of the bolt being screw-threaded into the other disk whereby, by screwing up on said bolt, said metal plate may be clamped between said blocks, together with means coacting with said bolt, whereby the latter may be secured in any adjusted position to that one of said disks through which it passes freely.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."