H. PERVELIS.

SHOCK ABSORBER.

APPLICATION FILED JAN. 12, 1916.

1,237,088.

Patented Aug. 14, 1917.

2 SHEETS—SHEET 1.

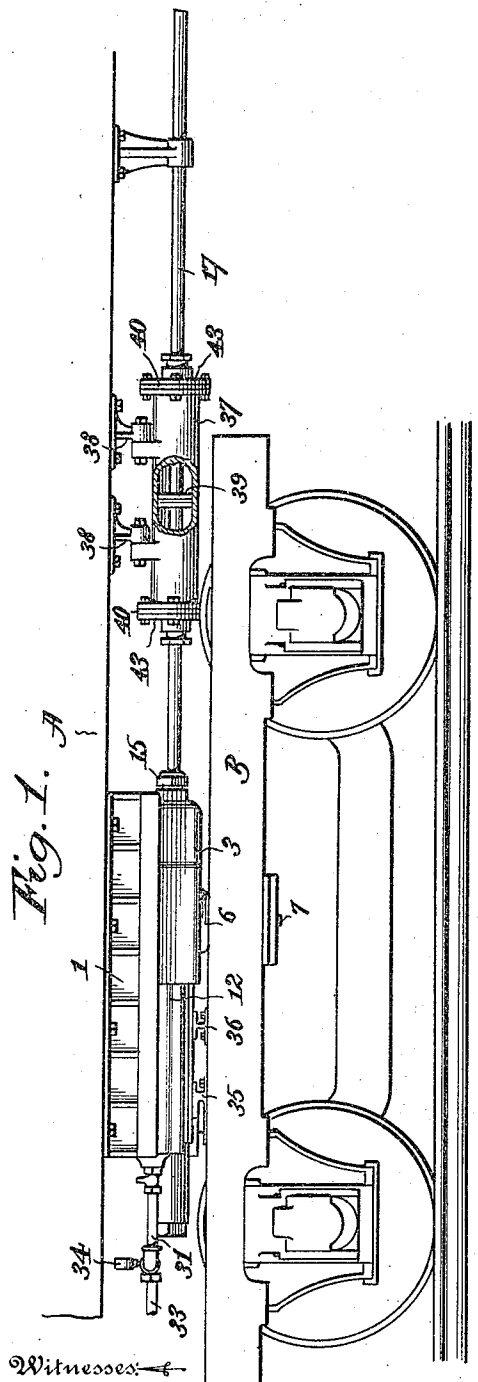


Fig. 1.

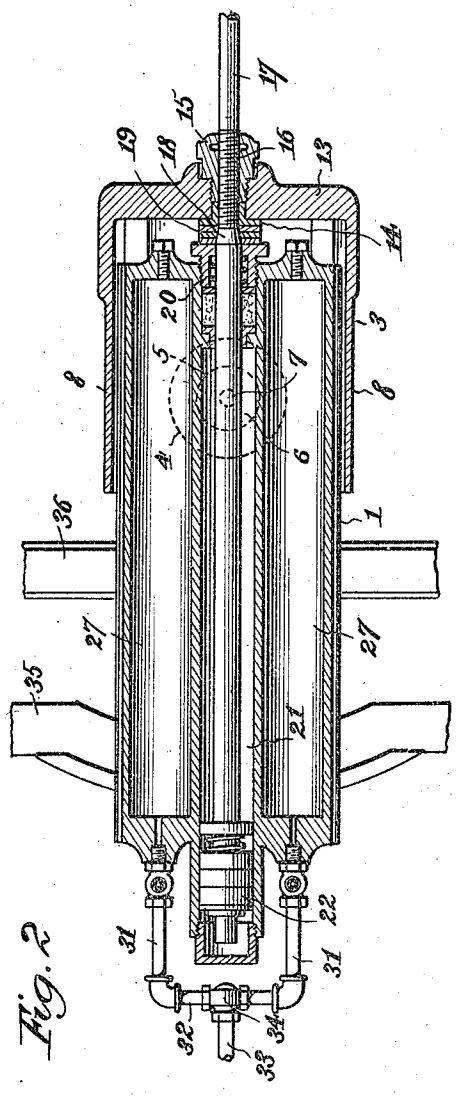


Fig. 2

Witnesses:

C. Crimmins.

A. V. Doyle.

Inventor,

Hercules Pervelis.

By Victor J. Evans,

Attorney.

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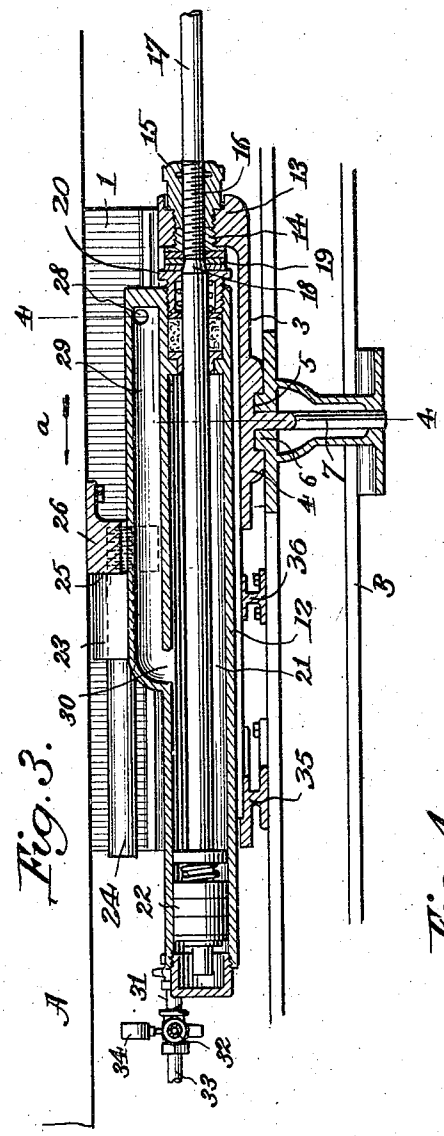


Fig. 3.

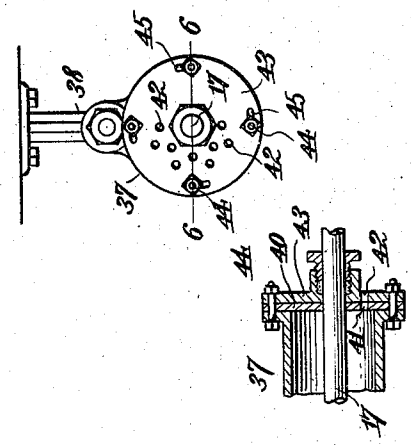


Fig. 5.

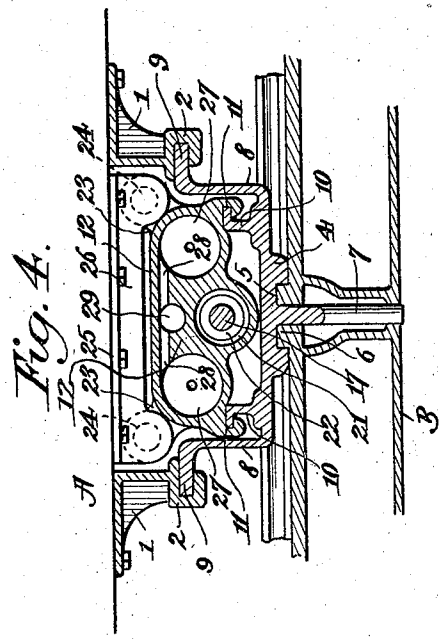


Fig. 4.



Fig. 6.

Witnesses:

C. Crimmins.

A. V. Doyle

Inventor,

Hercules Pervelis

By Victor J. Evans,

Attorney.

UNITED STATES PATENT OFFICE.

HERCULES PERVELIS, OF NEW YORK, N. Y.

SHOCK-ABSORBER.

1,237,088. Specification of Letters Patent. Patented Aug. 14, 1917.

Application filed January 12, 1916. Serial No. 71,757.

To all whom it may concern:

Be it known that I, HERCULES PERVELIS, a subject of the King of Greece, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Shock-Absorbers, of which the following is a specification.

This invention relates to shock absorbers and cushioning devices for wheeled vehicles and principally to a device of this character designed for use in connection with railway cars or similar rolling stock. It has for an object, the provision of means which may be expeditiously interposed between the body of the car and the truck thereof; one which will effectually accommodate itself to the usual longitudinal movements of the body of the car; one which will satisfactorily absorb all of the shocks, vibrations and sudden jars which are commonly transmitted to the body of the vehicle incident to the sudden stopping thereof, and one which will be simple, strong and durable and positive in action at all times.

A still further object of the invention resides in the provision of a fluid container suspended from the body of the car, means for moving the same by impact, a fixed piston supported from the truck and associated therewith whereby to permit the latter to accommodate itself to all necessary turning movements from the body and operable in the cylinder whereby, when the same is moved, the fluid within the cylinder will be operated upon, and in view of the provision of such co-acting parts as described hereinabove, I further contemplate providing means whereby fluid, such as air, and glycerin may be supplied in such volume or quantity to be determined upon according to the character of the vehicle with which the device is equipped.

It is a further object of the invention to provide a main working cylinder which will operate to absorb the shocks and jars owing to the sudden thrust of the body in a longitudinal direction and an auxiliary means acting in conjunction therewith to further minimize the shocks and jars and offer yielding resistance to the longitudinal movements of the body over the trucks.

With the above and other objects in view which will appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangements of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a single and preferred form of the invention, it being, however, understood that no limitations are necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claims may be resorted to when desired.

In the drawings:—

Figure 1 is a side view of a car showing the application of the invention thereto.

Fig. 2 is a horizontal section through the fluid cylinder showing parts in full lines.

Fig. 3 is a vertical section therethrough.

Fig. 4 is a transverse section taken on the line 4—4 of Fig. 3.

Fig. 5 is an end view of the auxiliary cylinder.

Fig. 6 is a horizontal section taken on the line 6—6 of Fig. 5.

In carrying the invention into practice, use is made of brackets 1—1, which are secured to the underside of the body of the car, A. These brackets are spaced from each other and on reference to Fig. 4, it is seen that at their lower ends, said brackets are formed with longitudinal guide-ways 2, for a purpose to be hereinafter described.

While it is described specifically, that the invention is to be used upon cars, it is desired that it be understood that I do not wish to limit myself to such use, as the invention may be applied to any form of wheeled carrier in which the body is supported from trucks and associated therewith whereby to permit the body to move relatively of the truck in a longitudinal direction.

It is these sudden movements of the car body in a longitudinal direction that I aim to cushion and to absorb all of the sudden shocks or jars which are commonly imparted to the body of the car incident to the described movements of said body on the truck.

The truck B, supports a member 3, having a central depending boss 4, in which a socket 5, is formed. This socket receives a cylindrical boss 6, which rises from the truck, and passing through the said boss 6, is a king-bolt 7, the latter being fixedly connected with the boss 4. The said member is provided with side flanges 8—8, which ter-

minate in angular branches 9—9, which are received by the guide-ways 2—2, of the brackets 1—1, which are supported from the body A, of the car. In addition thereto, the mentioned member is provided with short rails 10—10, which extend into guide-ways 11—11, formed on a fluid container or chambered member 12.

The member 3, is provided at one end, with a vertical extension 13, which threadedly receives nipples 14 and 15, and as illustrated, the latter are internally threaded to accommodate a thread 16, on a piston rod 17. In advance of the thread 16, the rod is formed with a flared portion 18, which is extended through packing washers 19 interposed between the nipple 14 and a packing gland 20. This packing gland forms a part of the member 12, and it receives the rod 17, therethrough. The rod 17, through the extension 13 and the nipples just referred to, is thus fixed on the truck B, of the car. The member 12, is provided with a main piston cylinder 21, which receives the piston-head 22, on the piston rod 17. Through this arrangement, the member 12, is adapted to reciprocate upon the piston head 22.

Rising from the member 12, are lugs 23—23, which are adapted to travel in a longitudinal direction upon parallel stems 24—24, which form a part of a fixed bracket 25. This bracket is secured in any suitable well known manner to the body of the car A, at a point between the brackets 1—1. The bracket 25 has an abutment-forming extension 26, and the lugs 23—23, are disposed in the direct path of movement of said abutment, whereby, when the car body moves in the longitudinal direction indicated by the arrow (*a*), Fig. 3, the chambered member 12, will of course, be operatively advanced over the piston-head for a purpose to be hereinafter explained.

The member 12, is provided with chambers 27—27, arranged in communication with each other through lateral ports 28—28, which open from their tops and intersect an interposed channel 29, formed in the member 12, at a point above the cylinder 21, and on reference to Fig. 3, it is observed that said channel opens at 30, into the cylinder 21, at a point in advance of the working end of the piston-head 22. The arrangement of the device as shown in Fig. 1, may be for either the front or rear end of the car but will be reversed at the other end as I contemplate distributing a pair of such devices beneath the body of the car, whereby movements, in a forward or rearward direction of the body of the car, will be absorbed and cushioned at all times. The chambers 27—27, are adapted to contain glycerin and the same may be supplied by means of valved pipes 31—31, connected by a by-pass 32, to a feed pipe 33. A gage 34, is arranged in the by-pass whereby the operator may readily judge the pressure within the device. The pipes 31—31, preferably extend into the forward heads of the chambers 27—27.

The king-bolt 7, is provided for the purpose of permitting the truck B, to turn so as to take all ordinary curves in the track. Cross bars 35 and 36 on the truck B permit the member 3, to swing thereon, as will be understood.

The arrangement heretofore described is such that when the body of the car moves in the direction of the arrow (*a*), Fig. 3, the fluid contained within the inter-communicating cylinders 21 and 27—27, will be brought under compression. The air will be compressed against the glycerin and as a consequence thereof, a high degree of efficiency in the operation results. The sudden shocks and jars will be very nicely absorbed as the air compresses, and the volume of air may be regulated by increasing or diminishing the volume of glycerin. The latter is trapped within the chambers 27, from which it cannot escape because the ports 28 open from the tops of said chambers; and the air under pressure is forced up through the port 30 into the channel 29 and from the latter through the lateral ports 28 into the chambers 27. The glycerin will lie on the bottom of these chambers, and if considerable resistance to the movement of the piston is desired sufficient glycerin will be supplied to nearly fill these chambers. On the other hand, when the glycerin is withdrawn there will be a much larger space for the air and the cushion will be correspondingly softer. When the force of the impact has thus been cushioned by compressing the air, the latter will again expand and restore the parts to the position shown in Fig. 3. Meanwhile and at all times the member 3 and the parts carried thereby are supported from the car body and stand in alinement therewith, whereas the boss 6 rises from the truck and affords a bearing for the king bolt 7 depending from said member 3 so that the truck is pivoted and may swing from side to side, its cross bars sliding beneath said member 3 as will be seen in Fig. 3.

As a working complement to the mechanism above described, and therefore as forming an addition to the principal features of the invention, use is made of an auxiliary cylinder 37, which is operatively suspended from the body A, as at 38. This cylinder receives the rod 17, therethrough and the latter carries a piston head 39, which is normally disposed between the ends of the cylinder. The ends of the cylinder are provided with heads 40—40, having perforations 41, which are adapted to co-act with similar perforations 42, in valve plates 43—43. These plates are mounted to turn on bolts 44, which extend from the cylinder

37 through arcuate slots 45, in the valve plates 43—43, as shown. To quite a considerable extent, movements in due directions will be taken up by the piston head 39, and the shocks and jars will be absorbed by causing the piston to work against the atmospheric air contained in the cylinder 37. In order that one may regulate the compression of the air within the cylinder 37, I have made use of the mentioned valve plates 43—43. It is seen that by adjusting these plates over the heads 40—40, the perforations 41, may be closed or opened to such extent as may best meet the given purpose.

What is claimed as new is:—

1. A device of the character described comprising a fluid container slidably supported by a vehicle body, means for moving it by the movements of said body, a member slidably connected with said container and pivotally connected with the truck of the vehicle, and a piston supported from the truck and working against the fluid in said container.

2. A device of the character described comprising a fluid container slidably supported by a vehicle body, means for moving it by the movements of said body, a member slidably connected with said container and pivotally connected with the truck of the vehicle in line with the king bolt thereof, a piston head working against the fluid in said container, and a rod leading from the head and connected with said member.

3. A device of the character described comprising guide ways supported by a vehicle body, a member slidably mounted thereon and pivotally connected with the truck of the vehicle in line with its kingbolt, and itself having guideways, a fluid container slidably mounted in the last-named guide ways, and a piston supported from the truck and working against the fluid in said container.

4. A device of the character described comprising guide ways supported by a vehicle body, a member slidably mounted thereon and pivotally connected with the truck of the vehicle in line with its kingbolt and itself having guideways, a fluid container slidably mounted on the last-named guideways between those first-named, means on the body for imparting longitudinal movement to said container by the movements of the body, a piston head within said container and working against the fluid therein, and a rod connecting the head with said member.

5. A device of the character described comprising a piston mounted on the truck and fixed thereon against longitudinal movement, a sliding fluid cylinder slidably associated therewith and supported below the body of the car, means on the cylinder, and means on the body of the car, the latter co-acting with the first means to move the cylinder over the piston.

6. A device of the character described, comprising, a piston fixedly supported from the truck, a movably supported member having a cylinder receiving the piston and a plurality of communicating chambers opening to the piston cylinder, means between the body of the vehicle and the cylinder, and means for transmitting movements of the vehicle body to the cylinder, as and for the purpose specified.

7. A shock absorber for cars, comprising means connected with the truck to permit the turning of the latter in a horizontal direction, said means receiving the car body for sliding movement, a fluid container slidable over said means, a piston supported by the means and working in the container, and mechanism for transferring movements of the car body to said container and comprising, devices on the container, and a fixed device on the body co-acting therewith.

8. A shock absorber for cars, comprising means connected with the truck to permit the turning of the latter in a horizontal direction, said means receiving the car body for sliding movement, a fluid container slidable over said means, a piston supported by the means and working in the container, mechanism for transferring movements of the car body to said container, and comprising a guide carried by the body and devices carried by the container receiving said guide and co-acting therewith.

In testimony whereof I affix my signature in presence of a witness.

HERCULES PERVELIS.

Witness:

ANNA V. DOYLE.

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