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A. DUTRIEUX.

SHOCK ABSORBER FOR MOTOR CARS.

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Fig. 1

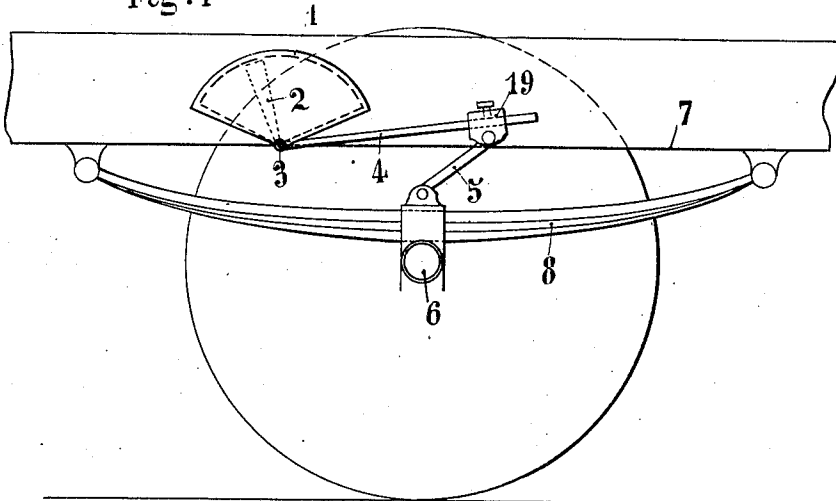


Fig. 2

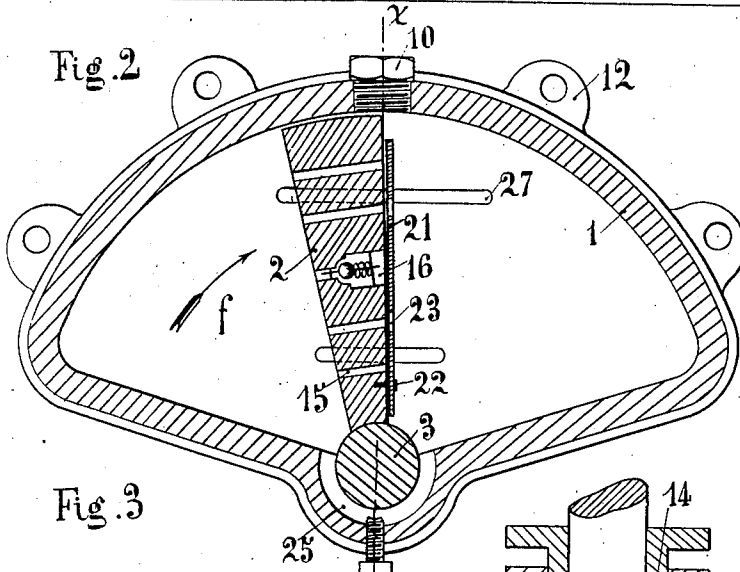
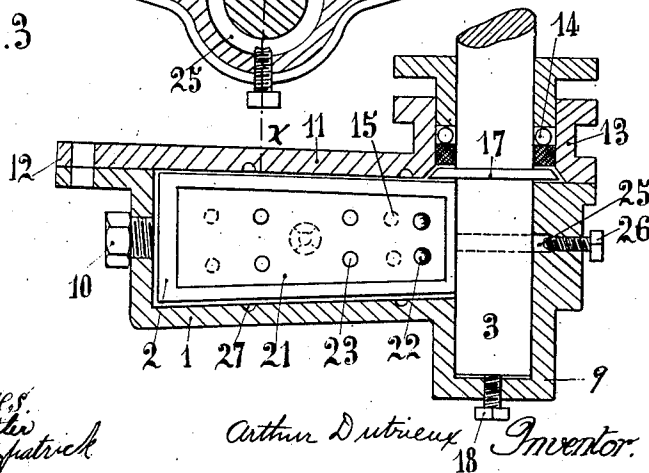


Fig. 3



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ARTHUR DUTRIEUX, OF LE QUESNOY, FRANCE.

SHOCK-ABSORBER FOR MOTOR-CARS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ARTHUR DUTRIEUX, manufacturer, residing at Le Quesnoy, France, have invented certain new and useful Improvements in Shock-Absorbers for Motor-Cars.

This invention has for its object improvements in apparatus for softening the trepidations of the springs of motor cars and the like and it is specially intended for avoiding the abrupt expansion of the compressed springs.

The apparatus differs from others hitherto made for the same purpose, on one hand by its peculiar form which permits one to reduce to the utmost not only the space occupied by the apparatus, but also its weight and on the other hand by its organization with a view to easy working.

The invention is fully described with reference to the accompanying drawings in which:

Figure 1 is a diagrammatic view of the apparatus showing how it is fixed on the frame of the car and its connection with the axle of the wheels. Fig. 2 is a transversal section of the apparatus at an enlarged scale. Fig. 3 is a transversal section of the apparatus through the line X X of Fig. 2.

This apparatus is composed of a box or chamber 1, which seen on the front side has the form of a sector, and which is fixed on the frame 7 of the car. This box contains a pallet 2, working as a piston. The piston is oscillating within the box 1 filled with a convenient liquid (oil, mixture of water and glycerin, consistent grease, etc.) and in order to permit the liquid to pass from one side of the piston to the other, holes have been provided through the piston, and through a flexible plate fixed on the said piston in such a manner that the liquid can flow easily in one direction through the piston and on the contrary with difficulty in the other one. For this purpose, the piston 2, is traversed by numerous small canals 15. A flexible plate 21 is applied to one of the faces of the piston 2 and is there fixed only by one of its sides 22, as to be lifted by pressure of the liquid, which traverses the canals 15 in the direction of the arrow *f*. The flexible plate 21 has three or four holes 23, which are in the prolongation of the canals 15.

The piston 2, having to oscillate under the influence of the oscillations of the springs, is mounted on the axle 3, on the prolongation

of which is fixed a lever 4. A connecting-rod 5 is movably connected in one of its extremities at a convenient point of the lever 4 and in its other extremity on the axle 6 or on the hoop of the spring 8.

The box 1 (Figs. 2 and 3) has a hub 9, in which is engaged the extremity of the axle 3 and a screw cap 10 destined to introduce the liquid. The box 1 is shut by a cover 11 which is fixed by means of bolts passing through the eyes 12. The cover is provided with a collar 13 to give passage to the axle and to receive the stuffing-box 14.

The axle 3 of the apparatus is provided with a ring 17 beveled on its periphery and the ring 17 is applied against a beveled shoulder made in the collar 13 of the cover 11 by means of a screw 18 pressing against the extremity of the axle 3.

A stuffing box 14 coöperates with this arrangement for obtaining the tightness of the joint. The small connecting-rod 5 is pivotally connected in one of its extremities on a sliding socket 19 engaging the lever 4 on which it is fixed by a screw and it is pivotally connected in its other extremity above the axle 6. By this means it is possible to vary the length of the arm of the lever 4, according to the degree of sensibility, which is desired to be given to the spring and according to the load of the car. In case the length of the connecting-rod 5 is insufficient to have the fastening-point sufficiently far on the lever 4 a longer connection rod is used.

As it is desirable that the apparatus be regulated according to the more or less great elasticity of the springs a canal 25 is provided in the nave connecting the two compartments of the box together; the passage of the liquid through the canal is regulated by a screw-plug 26. Likewise as it is desirable that the smaller vibrations of the springs may be freely produced without being hindered by the resistance of the liquid against the piston small grooves 27 have been made in the walls of the box around the medium position of the piston, facilitating the passage of the liquid from one side of the piston to the other during the smaller vibrations and on the contrary, the piston produces its whole moderating effect as soon as the springs have been strongly compressed.

A safety valve 16 is provided in the piston opening in the direction of the arrow *f* in case of a stronger pressure by which the apparatus would be injured.

The apparatus operates as follows: When the springs are in the normal position the piston 2 is in the middle of the box; when the springs are bent the piston is moved in the direction opposite to the arrow, the liquid passes easily through the canals 15 lifting the flexible plate 21. On the contrary, when the springs are rebounding their abrupt expansion is stopped, the liquid pressing the flexible plate 21 against the piston 2, and flowing only through the holes 23 of the plate 21 which are in the prolongation of the canals 15.

Having so described the nature of my invention and how it is performed I declare that what I claim is:

1. In combination with the supporting spring and body of a vehicle, a sector-shaped chamber on said body, a swinging pallet in said chamber having a number of passages therein, a yielding plate secured to said pallet near its center of movement and provided with holes opposite some of said passages but closed opposite others, and means connecting said spring to said pallet whereby the latter is caused to swing in correspondence with the bending of the former, substantially as described.

2. In combination with the supporting spring and body of a vehicle, a sector-shaped

chamber on said body, a shaft passing through the chamber near the center of its arc-shaped wall, an operative connection between said shaft and said spring, a perforated pallet on said shaft, a yielding plate secured against one face of said pallet and an adjusting screw passing through the wall of said chamber back of said shaft, said chamber having a by-pass canal cut in its wall around said shaft and across the inner end of said screw, substantially as described.

3. In combination with the supporting spring and body of a vehicle, a sector-shaped chamber on said body, a swinging pallet within said chamber, a shaft for said pallet projecting out of the chamber, a lever on said shaft, and a connecting piece adjustably secured to said lever at one end and to a portion of said spring at its other end, substantially as described.

4. In a device of the class described, a sector-shaped chamber, a swinging pallet within the same, a yielding plate fixed against one face of said pallet, a safety valve in said pallet and a spring controlling said valve, substantially as described.

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