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V. H. PODSTATA & F. M. PREUCIL,  
PNEUMATIC SPRING FOR VEHICLES.

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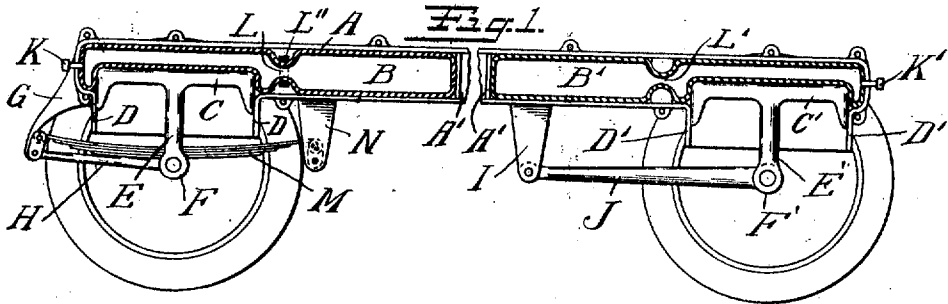


Fig. 2.

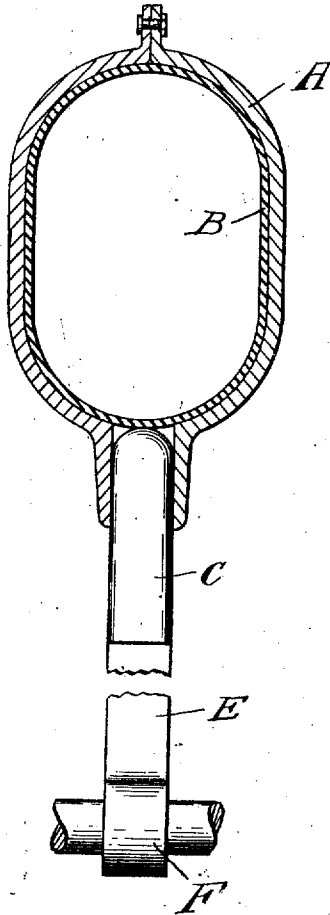
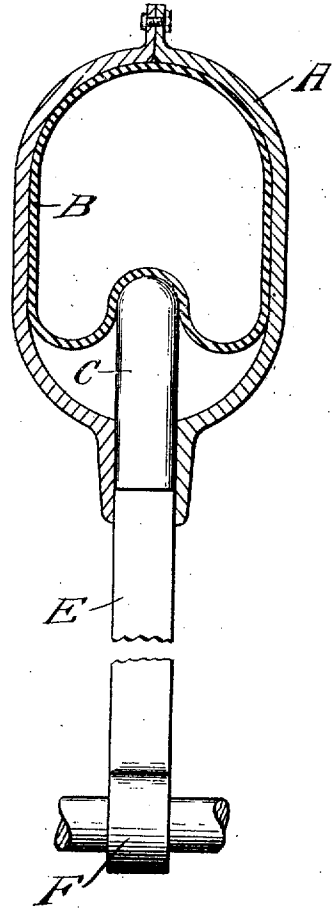


Fig. 3.



Witnesses  
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By *Robert B. ...*

# UNITED STATES PATENT OFFICE.

VACLAV H. PODSTATA AND FRANK M. PREUCIL, OF CHICAGO, ILLINOIS.

## PNEUMATIC SPRING FOR VEHICLES.

No. 850,180.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed March 12, 1906. Serial No. 305,444.

To all whom it may concern:

Be it known that we, VACLAV H. PODSTATA and FRANK M. PREUCIL, citizens of the United States, residing at Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Pneumatic Springs for Vehicles, of which the following is a full, clear, and exact description.

Our invention relates to improvements in springs for vehicles; and the object is to provide an efficient substitute for the usual metallic springs such as commonly employed.

This invention is applicable to ordinary vehicles or automobiles, but is of particular utility in connection with the latter.

Figure 1 is a longitudinal section and side elevation of the parts of a vehicle-body, illustrating our invention. Fig. 2 is a cross-section on a larger scale, showing a detail. Fig. 3 is a view of the same parts under pressure.

A represents the sill of the vehicle-body. The same is made hollow or oval in cross-section, the particular shape being immaterial. The cavity within the sill affords a housing for the pneumatic spring or cushion. B B' represent the pneumatic cushions. In the lower side of the sill there are openings affording an entrance-space for plunger-heads C C'. In the particular form shown the plunger-head C is for the front wheel, while the plunger-head C' is for the rear or driving wheels.

D D and D' D' are guide members arranged to hold the plunger-heads C C', respectively, in their proper alinement and position. These plunger-heads have a vertical movement, and their inner ends bear against the cushions B B', respectively. The inner ends of the plunger-heads may be rounded or suitably shaped to avoid cutting the cushions. The head of the plunger may be of any desired length suitable to afford a sufficient surface area to give the proper bearing against the cushions, respectively.

E E' are stems projecting downwardly from the plunger-heads C C', respectively, and F F' are suitable bearings carried by the stems E E', respectively, for the axles of the front and rear wheels.

G is a bracket projecting downwardly from the sill A to a suitable extent and affording means for pivotally connecting one end of a reach-rod H, the opposite end leading back to the front axle.

I is an intermediate bracket carried by the sill A, to which one end of a reach-rod J may

also be connected, the opposite end being connected to the rear axle.

The cushions B B' may respectively be made in any suitable way or manner and are arranged to hold air under any desired pressure, suitable valves K K' being provided for the cushions. In the preferred form the cushions are provided with intermediate contractions, as indicated at L L', the purpose of the same being to afford sufficient slack, so that as the plunger-heads vibrate up and down against the cushions no undue strain in a longitudinal direction will be placed thereon.

L' illustrates a small band, which may be placed around the cushion at the contracted point to afford one simple means for mechanically holding the cushion contracted, as shown.

The sill A is preferably formed of two halves divided vertically and longitudinally and riveted together, the edges being provided with suitable flanges, whereby the said halves may be secured by rivets or any other suitable fastening devices.

The cushion may be inserted by removing the outer half of the sill, or, in fact, they may be inserted through the entrance-space for either plunger-head.

If desired, suitable end partitions A' A' may be employed within the sill to take the inner end thrust of each cushion B B'.

If desired, the apparatus may be supplemented by the use of a suitable spring, as indicated at M, in which event a second bracket N would be provided. If a spring M were provided, the reach-rod H could be dispensed with. The chief function of such a spring would be to check rebound, the main work being done by the aforesaid pneumatic cushions. When the springs perform the functions of reach-rods, it will be seen that the reach-rods will be flexible.

What we claim is—

1. In a vehicle, the combination of an elongated sill hollow on its interior to provide a chamber, and provided at one end of the chamber with an opening, a horizontally-elongated cushion lying within the chamber and having a portion of the cushion extending over the opening, a piston bearing at substantially right angles against the extended portion of the cushion, a guideway for the piston, an axle for the wheels of the vehicle, and a stem connecting the piston with the axle, substantially as described.

2. In a vehicle, the combination of an elongated sill hollow on its interior to provide a chamber, and provided at one end of the chamber with an opening surrounded by depending walls furnishing a guideway, a horizontally-elongated cushion within the chamber and having a portion of the cushion extending over the opening, a piston bearing at substantially right angles against the exposed portion of the cushion and operable within the guideway, an axle for the wheels of the vehicle, and a stem connecting the piston with the axle, substantially as described.

3. In a vehicle, the combination of a sill hollow on its interior to form front and rear chambers, each of the chambers having near its outer end an opening, front and rear pneumatic cushions within the chambers, part of each cushion extending over the opening, front and rear pistons operable within the openings and bearing against the exposed

portions of the respective cushions, front and rear axles, and stems connecting the front and rear pistons with the respective axles, substantially as described.

4. In a vehicle, the combination of a sill hollow on its interior to provide a chamber and provided at one end of the chamber with an opening surrounded by depending walls furnishing a guideway, a cushion within the chamber provided with a contraction intermediate of its length, a piston bearing against one of the uncontracted portions of the cushion and operable within the guideway, an axle for the wheels of the vehicle, and a stem connecting the piston with the axle, substantially as described.

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Witnesses:

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