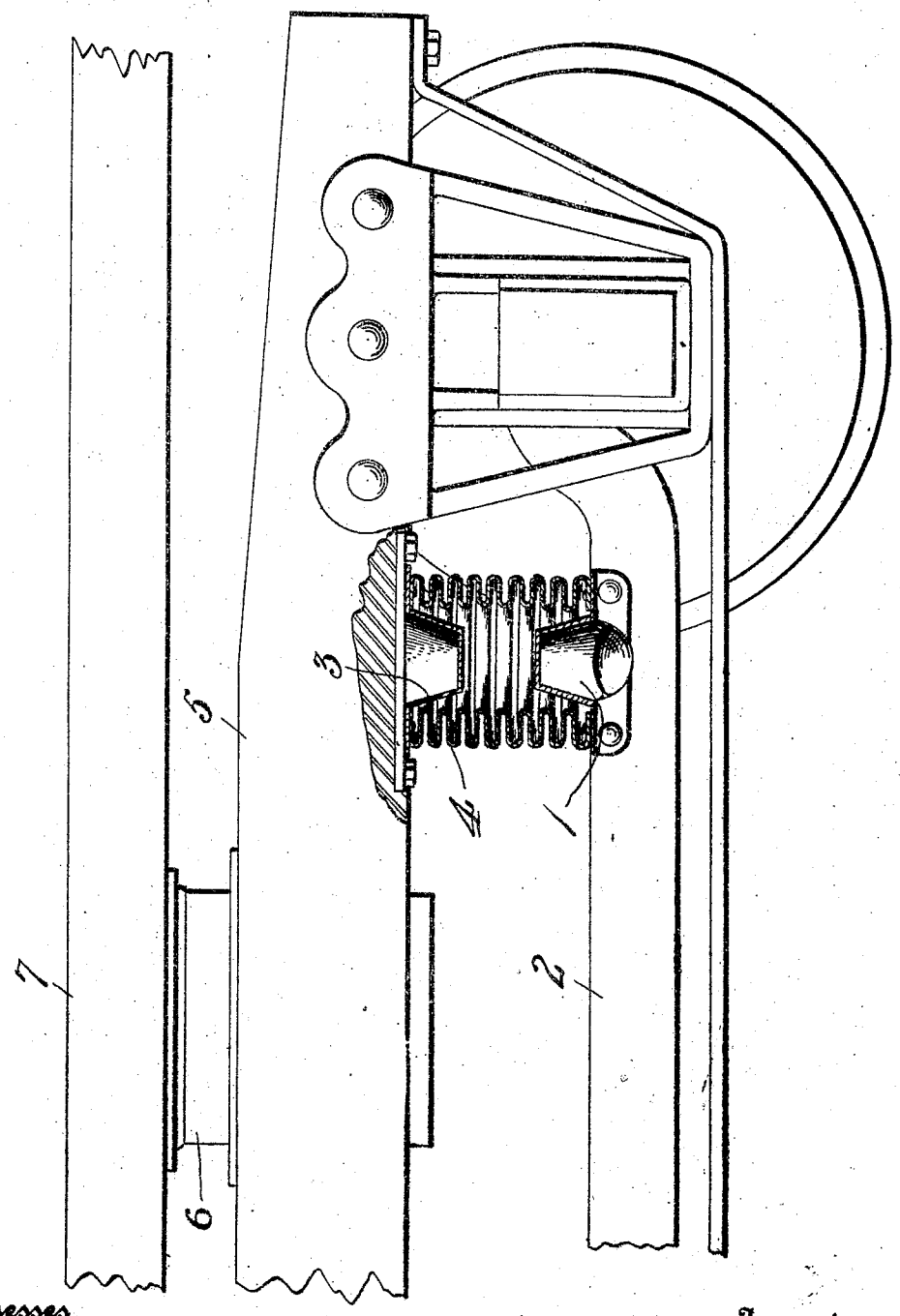
No. 747,409. PATENTED DEC. 22, 1903.

W. M. FULTON.

BUFFER.

APPLICATION FILED MAY 19, 1903.

NO MODEL.



Witnesses

Chas. K. Davies.

Inventor

William M. Fulton

by Marcus Cameron Lewis

Attorneys

No. 747,409. Patented December 22, 1903.

UNITED STATES PATENT OFFICE.

WESTON M. FULTON, OF KNOXVILLE, TENNESSEE.

BUFFER.

SPECIFICATION forming part of Letters Patent No. 747,409, dated December 22, 1903.

Application filed May 19, 1903. Serial No. 157,856. (No model.)

To all whom it may concern:

Be it known that I, WESTON M. FULTON, a resident of Knoxville, Tennessee, have invented a new and useful Improvement in Buffers, which invention is fully set forth in the following specification.

This invention relates to buffer-springs. In springs of this class composed of metal or other elastic material, wherein the spring action is dependent upon the resiliency of a solid—such as steel, rubber, and the like—the spring in time loses its efficiency because of the deterioration of the material of which it is composed. The metal undergoes a change which is technically known as "tiring," and the rubber is oxidized by the air or otherwise deteriorized, so that in time the function of the spring is not as efficiently performed as is the case when it was first installed.

The object of the present invention is to produce a buffer or spring for use in any of the numerous conditions or combinations where springs are needed which shall obviate the above-noted objections, and in accomplishing this object advantage is taken of the well-known physical law that the volume of any gas or gases is proportional to the pressure to which the same is subjected and that at any fixed pressure equal changes in temperature will produce equal changes in the volume of the gas.

In the practice of this invention a suitable gas or mixture of gases is confined in an expansible and collapsible vessel, so constructed that it may yield along the line of one dimension only, the yielding walls of the vessel being free from angles, whereby lines of cleavage or breakage would result in case of continual use. In order to obtain this result, it is necessary that the walls of the vessel should be composed of material possessing certain resiliency and which yet possesses sufficient rigidity to enable it to resist the outward pressure of the gas along any but the desired line. In the practical exemplification of the invention illustrated herein the vessel consists of two rigid end walls, preferably having indentations therein, which end walls are connected by a cylindrical wall of flexible material, as sheet steel or brass, said walls being deeply corrugated. The particular manner of forming the corrugations is of much importance. As here shown, the corrugations consist of plane surfaces substantially normal to the line of expansion and contraction of the vessel, which plane surfaces are connected by curved portions, the whole being so constructed that the wall from end to end is entirely free from any angles, and therefore free from any point where a destructive strain could be placed upon the metal of the vessel tending to crack or break the same.

One mechanical expression of the inventive idea is illustrated in the accompanying drawing, which is a broken side elevation of a car-truck, showing my invention applied thereto as a buffer-spring between the truck and the framework of the car, the cylindrical vessel being shown in vertical section.

Referring to the drawing, 1 is a rigid indented end wall of a collapsible vessel which is firmly secured to and supported on the beam 2, forming part of the car-truck, and 3 is a like rigid end wall, said walls 1 and 3 being connected by the corrugated wall 4, preferably formed of sheet metal and corrugated, as shown, so as to be free from angles, and having substantially horizontal portions connected by curved portions. Resting upon the upper wall 3 is the beam 5, forming the part of the car-truck which is supported upon the spring, said beam having a bearing therein for the king-pin 6, secured to the beams 7 of the car. The collapsible vessel is filled with any suitable gas, preferably air, and is then hermetically sealed, so as to confine the air therein. The weight of the car will tend to collapse the vessel, whose corrugated wall being made of non-yielding material will permit of no bulging or expansion in any direction except upwardly with the axis of the vessel, thereby rendering it possible to utilize the superior elastic property of the gas or gases confined within the vessel to the exclusion of any expansion or contraction of the vessel along any undesirable lines. The curved form of the corrugations in the expansible and contractible wall 4 gives the vessel greater durability than is possessed by vessels having angular corrugations, the combination as a whole forming a greatly improved cushion or buffer.

While I have herein shown my invention as applied to the truck of a car whereby it

forms an efficient car-spring or buffer, it is to be understood that the invention is not limited to such application, but that it is intended to be applied to any use where a buffer or spring may be employed.

Having thus described my invention, what I claim is—

1. A buffer or spring composed of a vessel having rigid end walls and elastic lateral metallic walls which yield only along the line of the vessel's collapse, with a gas hermetically sealed therein.

2. The combination of a hermetically-sealed vessel inclosing a gas, said vessel consisting of rigid end walls and corrugated metallic lateral walls yielding only along the line of one dimension.

3. A buffer or spring consisting of a hermetically-sealed vessel having a gas confined therein and composed of rigid end walls connected by corrugated non-angular metallic walls yielding only along the line of the vessel's collapse.

4. A buffer or spring consisting of a hermetically-sealed vessel having a gas confined therein and composed of indented rigid end walls connected by metallic corrugated non-angular lateral walls yielding only along the line of one dimension of the vessel.

5. A buffer or spring consisting of a hollow hermetically-sealed vessel having rigid end walls and collapsible metallic side walls which yield along the line of one dimension of the vessel only, and a gas in said vessel.

6. A buffer or spring consisting of a hollow hermetically-sealed vessel having rigid end walls and corrugated metallic side walls, the corrugations being composed of portions substantially normal to the line of collapse and expansion of the vessel and connected by curved non-angular portions, and a gas in said vessel.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WESTON M. FULTON.

Witnesses:
HUGH M. TATE,
ROBT. M. WILLIAMSON.