

No. 664,444.

Patented Dec. 25, 1900.

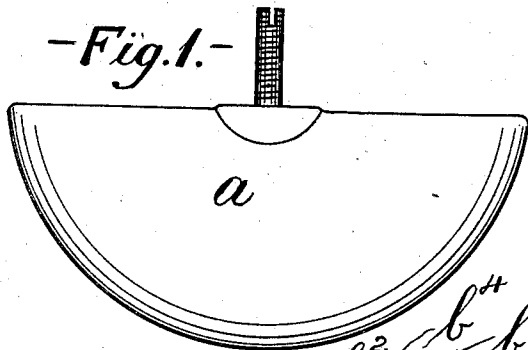
S. H. STUBBS.
PNEUMATIC SPRING OR CUSHION.

(Application filed Aug. 27, 1900.)

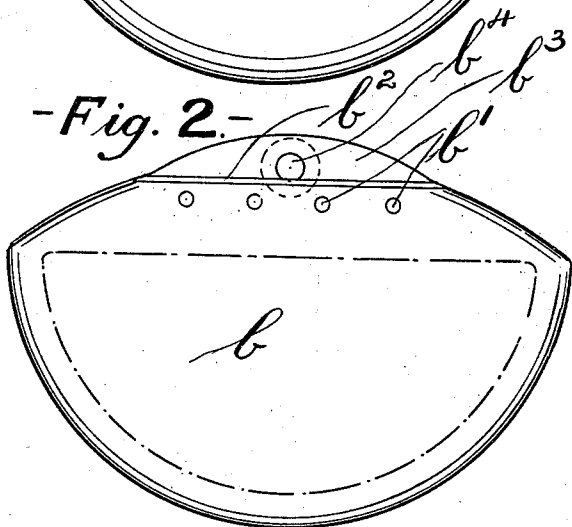
(No Model.)

2 Sheets—Sheet 1.

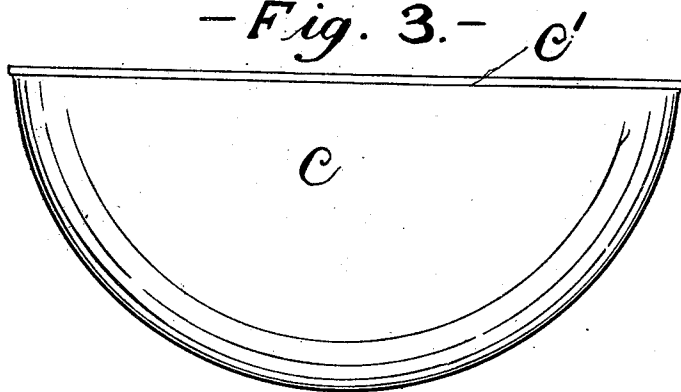
-Fig. 1.-



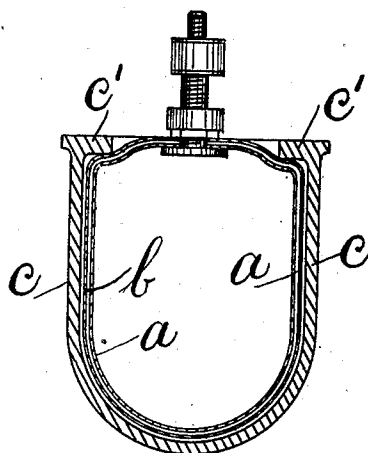
-Fig. 2.-



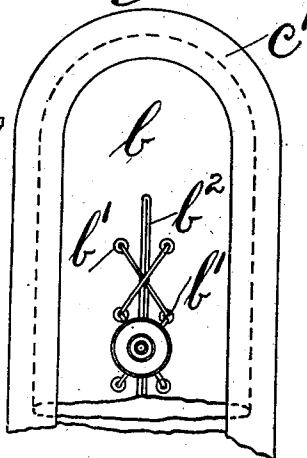
-Fig. 3.-



-Fig. 4.-



-Fig. 5.-



Witnesses.

Arthur Gadd.

George Frederick Gadd.

Inventor.

Sheldon Harold Stubbs.

per William Gadd

Attorney.

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2 Sheets—Sheet 2.

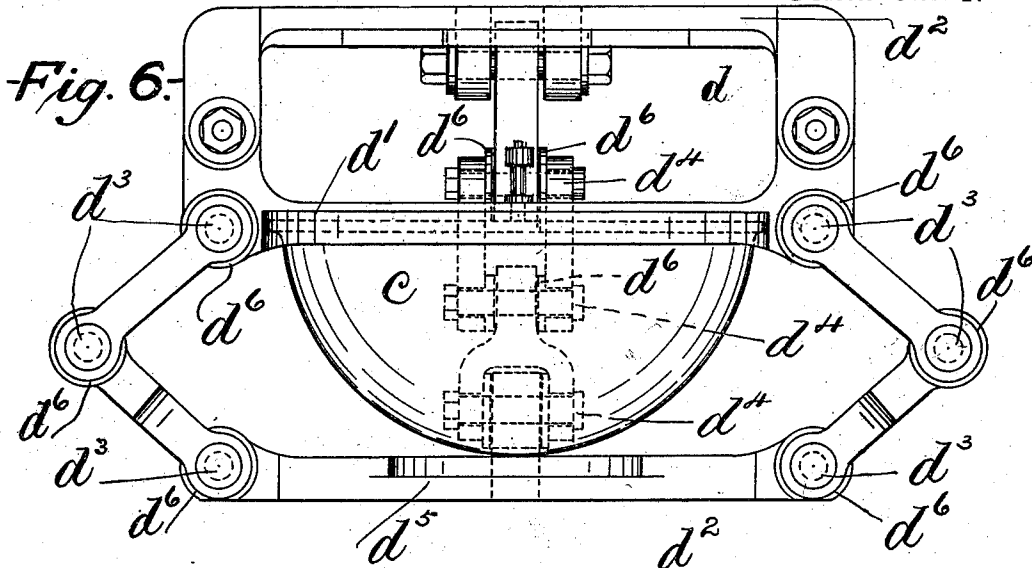


Fig. 7.

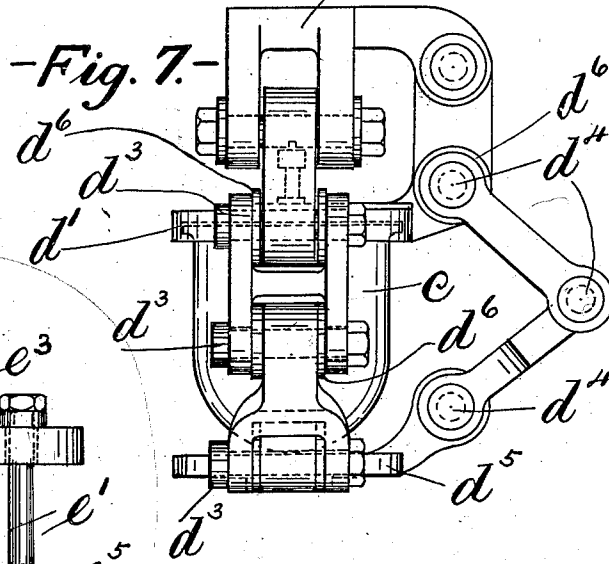
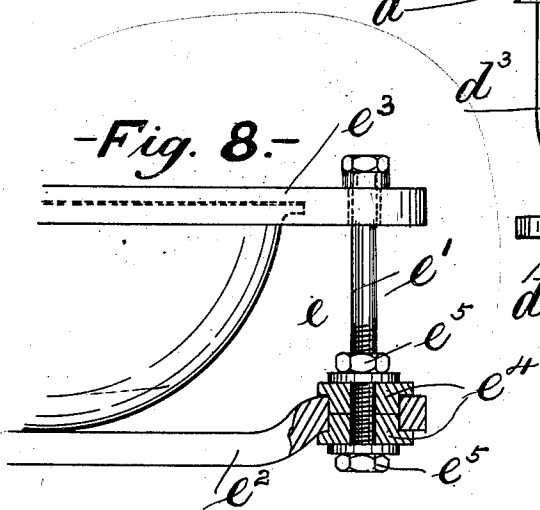


Fig. 8.



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UNITED STATES PATENT OFFICE.

SHELDON HAROLD STUBBS, OF MANCHESTER, ENGLAND.

PNEUMATIC SPRING OR CUSHION.

SPECIFICATION forming part of Letters Patent No. 664,444, dated December 25, 1900.

Application filed August 27, 1900. Serial No. 28,237. (No model.)

To all whom it may concern:

Be it known that I, SHELDON HAROLD STUBBS, a subject of the Queen of Great Britain, residing at Manchester, in the county of Lancaster, England, have invented a new and useful Pneumatic Spring or Cushion, (for which I have obtained Provisional Protection in Great Britain, No. 2,575, bearing date February 9, 1900,) of which the following is a specification.

The improvement relates to air-cushions to be used as springs for the reduction of vibration, and has for its object to produce an effective spring of the character to be hereinafter described.

In order to make my improvement better understood, I will refer to the accompanying sheets of drawings, in which—

Figures 1, 2, and 3 are side elevations of deflated component parts of one form of cushion forming a portion of my invention. Fig. 4 is a cross-section of such completed cushion when inflated, and Fig. 5 is part of a plan view of Fig. 4. Fig. 6 is side elevation of the inflated cushion and a "container" or framework by which the cushion is held in position and which framework in this particular case is suitable for attachment to the axle of a vehicle. Fig. 7 is an end view thereof, while Fig. 8 shows a portion of a side view of the cushion, together with a modified form of container or framework, partly in section. Figs. 6, 7, and 8 are reduced in scale.

The same letters indicate corresponding parts wherever they occur.

In carrying out my invention I form the cushion by placing an air-tight india-rubber or elastic bladder *a*, capable of having a suitable valve attached thereto, within a restraining-bag *b*, of canvas or other suitable material, the opening in which may be closed by lacings. In Fig. 2 a row of holes *b'* for receiving the laces are to be seen near one edge *b²* of the opening referred to, and above which edge an attached flap *b³* is turned into the plane of view in order to show the hole *b⁴* for the passage of the stem of the valve there-through. This bladder and restraining-bag I then place in an india-rubber or elastic cover *c*, provided with thickened edges *c'* around a flat portion of the cover, with an opening in such portion to permit of the insertion of the bladder and restraining-bag aforesaid.

In Figs. 6 and 7 the outer cover *c* is held by a container or framework *d*, the edges *c'* of such cover being retained by the plate *d'* and through which plate the valve attached to the bladder of the cushion projects. As shown, the movement of the plate *d'* and the top plate *d²*, supporting the weight of the vehicle, is controlled by the hinges *d³* and *d⁴*, arranged at right angles, so that when the bottom plate *d⁵* is fixed in manner well understood upon the axle of the vehicle the plates *d'* and *d²* are only free to move through one plane.

For the purpose of preventing to some extent vibration being transmitted from the bottom plate *d⁵* to the top plate *d²* by way of the hinges insertions *d⁶* of india-rubber or yielding material are shown at such hinge portions of the framework.

Instead of a container formed with hinges a container *e* may be provided with guide-rods, such as *e'* in Fig. 8, and to further assist in preventing vibration passing from the bottom plate *e²* to the plate *e³* above it india-rubber or elastic bushes, such as *e⁴*, are placed around the rods *e'*, which pass through holes in the bottom plate and are expanded laterally by the tightening up of nuts, such as *e⁵*, on the rod *e'*.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A pneumatic spring or cushion consisting of a bladder *a* with a valve attached, placed within a restraining-bag *b* and an outer cover *c*, in combination with a "container" or framework of a suitable character for holding in position the cushion of the particular kind described, for the purpose and in manner substantially as herein set forth.

2. A pneumatic spring or cushion consisting of a bladder *a* with a valve attached, placed within a restraining-bag *b* and an outer cover *c*, in combination with a "container" or framework *d* provided with hinges *d³* and *d⁴* arranged at right angles, for the purpose and in manner substantially as herein set forth.

SHELDON HAROLD STUBBS.

Witnesses:

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GEORGE FREDERICK GADD.