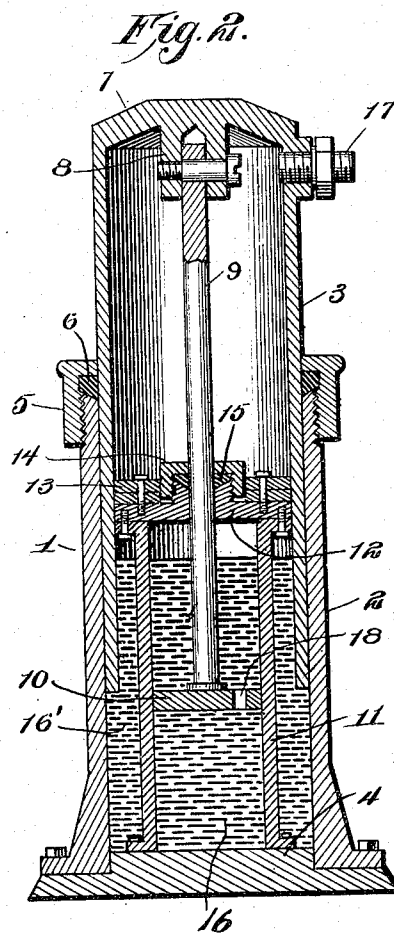
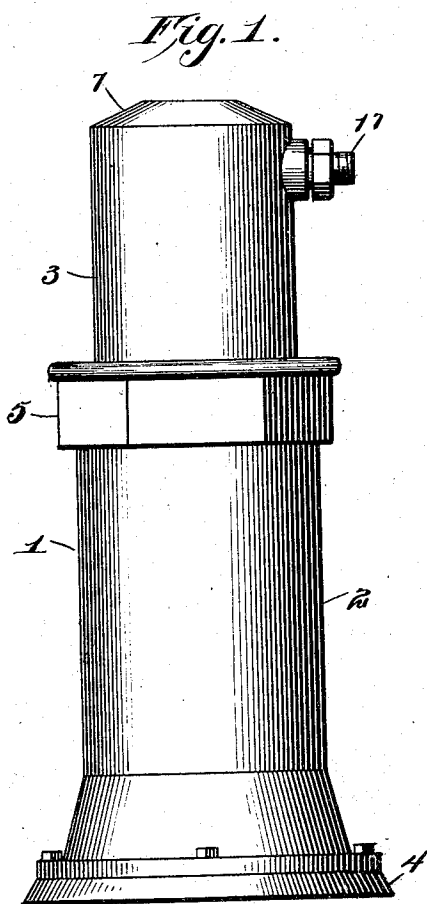


No. 847,941.

PATENTED MAR. 19, 1907.

M. P. HAYWARD.
PNEUMATIC BUFFER.
APPLICATION FILED FEB. 13, 1906.



Witnesses

Louis R. Kimbichs
J. J. Elmore

Inventor
Melville P. Hayward

By *Victor J. Evans*
Attorney

UNITED STATES PATENT OFFICE.

MELVILLE P. HAYWARD, OF QUINCY, MASSACHUSETTS.

PNEUMATIC BUFFER.

No. 847,941.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed February 13, 1906. Serial No. 300,930.

To all whom it may concern:

Be it known that I, MELVILLE P. HAYWARD, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented new and useful Improvements in Pneumatic Buffers, of which the following is a specification.

This invention relates to pneumatic buffers designed especially for use upon cars, motor-vehicles, and the like as a substitute for the springs ordinarily employed, and has for its objects to produce a comparatively simple inexpensive device of this character in which the movable member or piston will travel smoothly and evenly in its movements—one which in practice will present the requisite load-sustaining capacity and one in which the outward movement of the piston will be effectually governed for preventing sudden movements thereof and obviating objectionable shocks.

With these and other objects in view the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a side elevation of a buffer embodying the invention. Fig. 2 is a vertical longitudinal section taken centrally therethrough.

Referring to the drawings, 1 designates the buffer, which in its organization comprises a body portion or cylinder 2 and a relatively movable member or piston 3 of cylindrical tubular form, as shown, and arranged in slidable telescopic engagement with the member 2, the normally lower end of which is closed by a base piece or wall 4, bolted or otherwise secured in place, there being threaded onto the upper end of the cylinder 2 a coupling member or nut 5, containing a packing-ring 6, forming a liquid and air tight joint between the cylinder and piston, which latter is closed at its upper or outer end, as at 7.

Extending centrally through the piston 3 and connected at its upper end between ears 8, provided on the wall 7, is a plunger-rod 9, having a head 10, fitted in a plunger cylinder or barrel 11, in turn arranged centrally in the cylinder 2, said barrel fixed at its lower end to the base 4 and having at its upper end a wall or head 12, to the outer face of which is secured packing gaskets or rings 13, fitted in the interior of the piston 3, while the rod 9 is entered into the barrel

through a stuffing-box 14, provided on the wall 12 and containing a suitable packing member 15, designed to prevent leakage of liquid or fluid around the rod. The cylinder 2 and barrel 11 are partially filled at one side of the wall 12, which constitutes, in effect, a central partition within the buffer, respectively, with oil or other liquid 16 and 16', it being mentioned in this connection that the liquid in the barrel is distinct from that in the cylinder or, in other words, that the barrel and cylinder are free from communication one with the other, as more fully hereinafter explained.

Tapped into the hollow piston 3 at a point near its outer end is a valve-controlled nipple 17, to which may be coupled a suitable point for filling the piston 3 above the partition 12 with air or other fluid under pressure, while formed in the head 10, which in practice moves back and forth through the liquid 16 within the barrel 11, is a suitable vent opening or passage 18, through which the liquid may flow from one side to the other of the head.

In practice the cylinder 2 is nearly filled with liquid and the piston filled with compressed air or other fluid, and when the piston 3 moves inward under pressure the air therein will be compressed, while the plunger 10 will be forced through the liquid 16, which will offer a due amount of resistance for cushioning the plunger in its movements, while the movement of the plunger is rendered possible owing to the liquid passing through the opening 18 from one side to the other of the plunger-head, it being understood that on inward movement of the piston 3 the liquid contained in the space between the body 1 and inner barrel 11 will be displaced by the piston to permit inward movement of the latter, and further, that this displacement of the liquid is rendered possible owing to the fact that the space is only partially filled, as before mentioned. In this connection it may be explained that the liquid in the space between the barrel and cylinder is distinct from that contained within the barrel and is employed solely for lubricating purposes to relieve friction between the piston and cylinder during relative movement of the parts. When the pressure is relieved upon the piston 3, the air in expanding will of course force the piston outward, the outward movement of the piston being, however, governed by the action of the liquid upon the head 10, thus

obviating a quick sudden outward movement of the piston, the outward movement of which will be limited owing to the head 10 coming in contact with the wall 12. It is apparent that under this construction the liquid acts upon the plunger 10 as a check for controlling the movements of the piston 3, thus insuring a steady uniform movement of the latter and obviating any sudden jerky movement of the piston.

Having thus described my invention, what I claim is—

A buffer of the class described comprising a tubular sleeve, a tubular piston fitted telescopically therein for relative sliding movement, an inner barrel fixed in the cylinder

and having a head forming a partition between the cylinder and piston, said barrel and cylinder being partly filled with liquid at one side of the partition and the piston being adapted to receive a fluid under pressure, a plunger-rod extended through the partition and connected with the piston and a plunger-head carried by the rod for movement through the liquid contained in the barrel.

In testimony whereof I affix my signature in presence of two witnesses.

MELVILLE P. HAYWARD.

Witnesses:

F. J. NIVER,
W. L. DIGGETT.