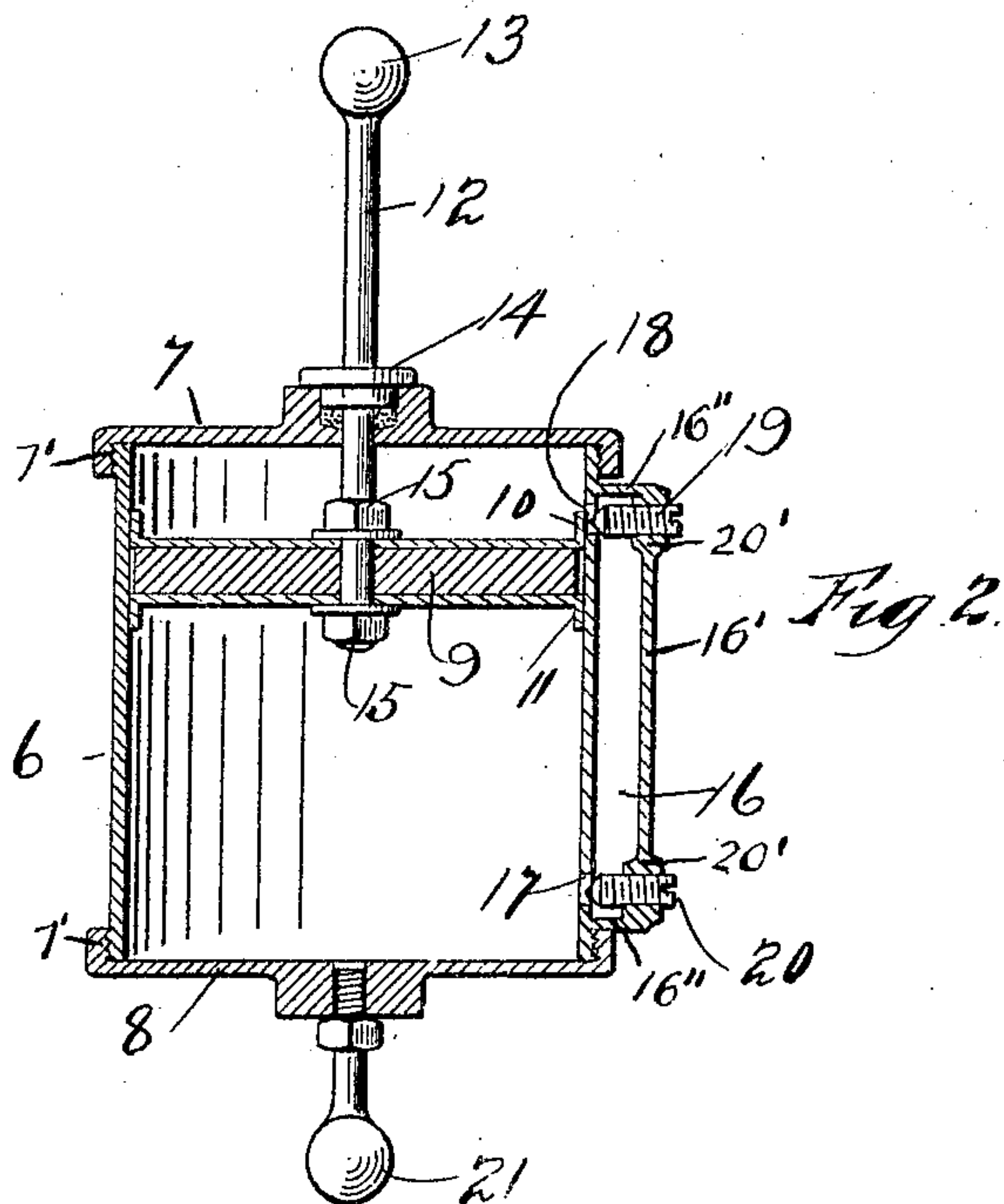
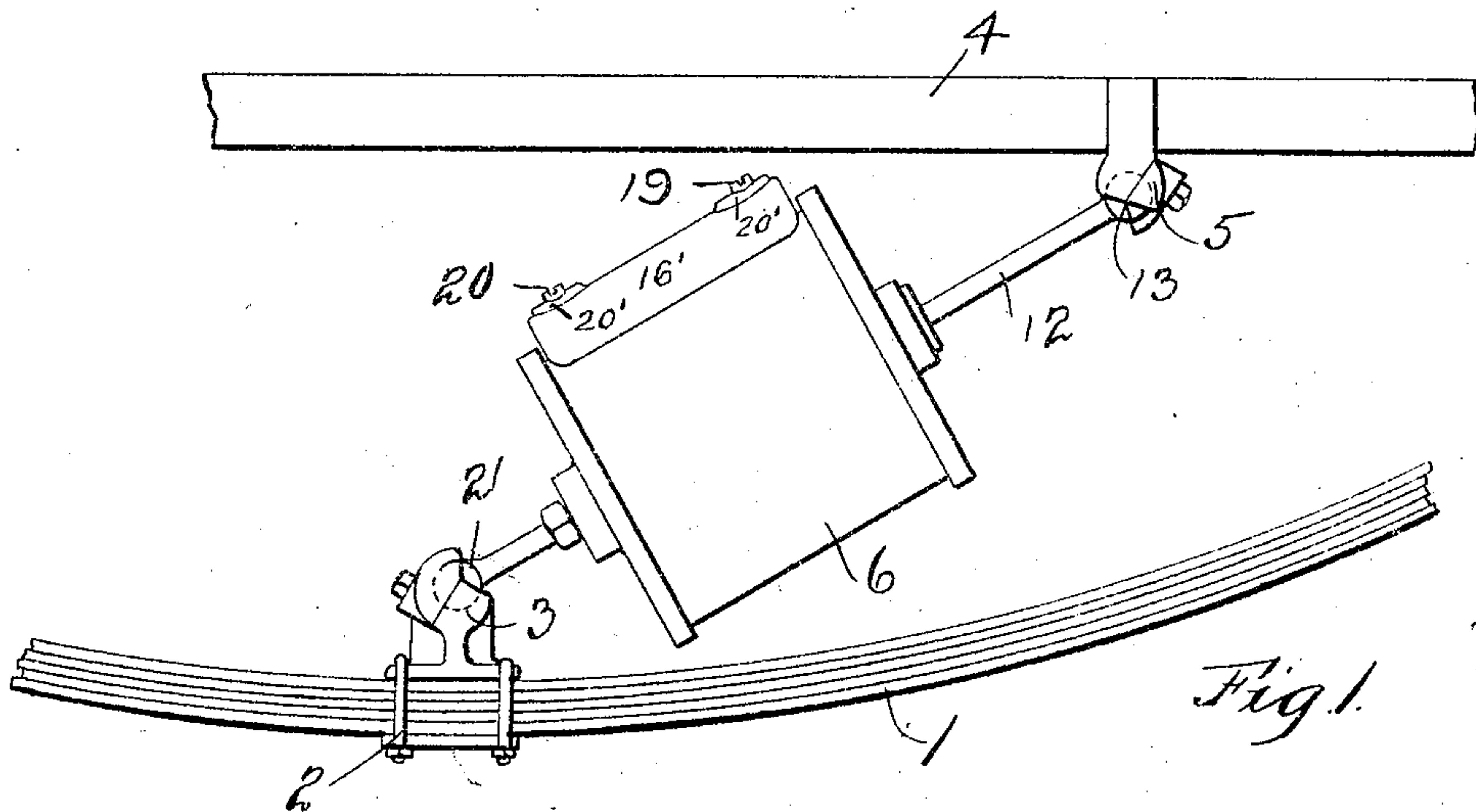


No. 898,043.

PATENTED SEPT. 8, 1908.

C. K. FOSTER.
SHOCK ABSORBER FOR VEHICLES.
APPLICATION FILED JUNE 12, 1907.



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES K. FOSTER, OF CENTERVILLE, RHODE ISLAND.

SHOCK-ABSORBER FOR VEHICLES.

No. 898,043.

Specification of Letters Patent.

Patented Sept. 8, 1908

Application filed June 12, 1907. Serial No. 378,557.

To all whom it may concern:

Be it known that I, CHARLES K. FOSTER, a citizen of the United States, residing at Centerville, in the town of Warwick, in the county of Kent and State of Rhode Island, have invented certain new and useful Improvements in Shock-Absorbers for Vehicles, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to shock absorbing devices and has for its object to provide a simple and effective means to be used in connection with vehicle springs whereby the shock caused by the unusual vibration of said springs may be absorbed or taken up to relieve the unusual tension on the same.

Springs which are used to support the body of the vehicle must of necessity be quite light and flexible in order to provide an easy riding carriage, and while running rapidly over a rough road, on account of their flexibility, they receive undue strains and are liable to be broken.

My improved device is attached to the vehicle between the body portion and the axle to assist in supporting said body and serves as a cushion to retard any sudden compressions or extensions of the spring, and effectually absorb the unusual shocks and strains to avoid the breaking of the springs, thereby controlling the motion of the body and insuring a regular and easy movement of the same.

A special feature of this invention is that the cylinder is set on an angle, one end of the same being secured near the axle while the outer end of the piston rod at the opposite end of said cylinder is secured to the body portion of the vehicle, each of said ends being held by a ball and socket joint.

By setting this cushioning device on an angle a double effect is obtained, first it assists the springs in receiving the shocks and jars of the endwise movement of the body on the axles, and also assists the spring to absorb the unusual shocks and strains in a vertical direction.

In the operation of my device I use a double acting air cushion which is obtained by a piston reciprocating in a cylinder, an essential feature of this construction being the special means by which the cushion at both ends is controlled.

It is found in practice on automobiles and the like, that where the outside air is admitted to the cylinder the dust and dirt

works in around the reciprocating piston, quickly cutting the same out and rendering the device useless, but with my improved construction the air is not forced from and drawn into the cylinder by the stroke of the piston but is simply passed from one side of the piston around to the other through a special channel arranged for that purpose, the amount to be passed being nicely controlled by the size of the apertures which is determined by the position of the adjusting screws.

This invention is fully set forth in this specification and more particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1— is a side elevation showing my device in position between the axle and the body of the vehicle. Fig. 2— is a sectional elevation of my improved device.

Referring to the drawings, at 1 is shown a portion of a semi-elliptic spring, clamped together at 2, said clamping means being also arranged to secure a socket 3 in which the ball at the lower end of the shock absorbing device is held. The vehicle frame is illustrated at 4 to which is secured a bracket 5 in which bracket is held the ball at the upper end of said device.

This device is constructed of a cylinder provided at either end with the ends 7 and 8 the latter having inwardly extended flanges 7' which are threaded onto the cylinder. The piston 9, which is adapted to reciprocate in said cylinder, is provided with suitable packings 10 and 11 by which to make the same tight while working both ways in said cylinder.

At 12 is a piston rod which is provided with a ball 13 at its outer end adapted to be held in the bracket 5. The opposite end of this rod is passed through the packing box 14 and through the piston 9 where it is secured by means of the nuts 15—15.

In the working of an ordinary piston back and forth in a cylinder valves are ordinarily provided which would automatically close on the compression side of the cylinder and open on the opposite side. In this way dirt and dust would be drawn into the cylinder with the air and soon destroy the usefulness of the device. In order to avoid this very serious difficulty I have provided a channel 16, having ports 17 and 18 leading into said cylinder, which allows the air to pass from one side of the piston around to the other side through said channel and be used over and

over again as the piston reciprocates. In order that the amount allowed to pass from one end to the other may be varied under different conditions in which the device may be called upon to operate I have provided the screws 19 and 20, the points of which are adapted to enter said ports and regulate the opening therethrough, thus the quantity of air allowed to pass from one end to the other is nicely controlled. Channel 16, is formed by a plate 16', which is transversely curved and has its ends 16'', at right angles thereto extending inwardly and conforming in shape to the curvature of cylinder 6, to which, between flanges 7', said ends are secured. At ends of said plate are enlarged parts or bosses 20', which serve to strengthen the plate and to also provide wide bearings for screws 19 and 20. To the lower end of this cylinder another ball 21 is secured which is adapted to be held in the socket 3 to support the lower end of the cylinder.

My improved device may be used in any desired way in connection with vehicle springs, but I preferably set the same on an angle, as shown in Fig. 1, between the axle and the frame whereby the device will absorb the shock of the endwise movement of the vehicle body on the axle, as well as to steady the vertical movement of the same. By the use of these ball joints at either end of the device the movement of the same is universal and will readily follow any movement of the body without cramping.

A particular advantage obtained by the use of the two adjusting screws 19 and 20 is that one may be withdrawn to open its port while the other is forced in to nearly close the other passageway whereby the channel 16, which may be as large as desired may be used as an extra or enlarged air space or auxiliary chamber into which the compressed air from one side of the piston may be forced,

thereby increasing the area and diminishing the resistance on one side of the piston, at the same time reducing the area by confining the air in that end of the cylinder to increase the resistance on this side of the piston.

In practice it is found advantageous in some cases in riding over rough roads to allow the body of the car to descend without much resistance, and then retard the same in rising, which result can be obtained to a very satisfactory degree by nearly closing the inlet on one side of the piston and leaving the same entirely open and free on the opposite side of the same.

The device is exceedingly simple of construction, inexpensive to produce, and very effective in its operation, and by its practical construction no dirt or dust can enter the cylinder to affect its working parts.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

A shock absorber composed of a cylinder and a piston therein, said cylinder having ends provided with inwardly extending flanges interiorly threaded and secured to the cylinder, a plate transversely curved and disposed between said flanges, said plate having right angular ends which are curved and secured to said cylinder, enlarged portions at each end of said plate, each of which is apertured, and a screw in each of said apertures, the wall of said cylinder adjacent said plate being formed with openings alining with said openings of the plate and adapted to receive said screws therein.

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

CHARLES K. FOSTER.

Witnesses:

HOWARD E. BARLOW,
E. I. OGDEN.