

No. 832,171

PATENTED OCT. 2, 1906.

L. L. SHEDDAN.
VEHICLE SPRING.

APPLICATION FILED OCT. 19, 1905.

Fig. 1.

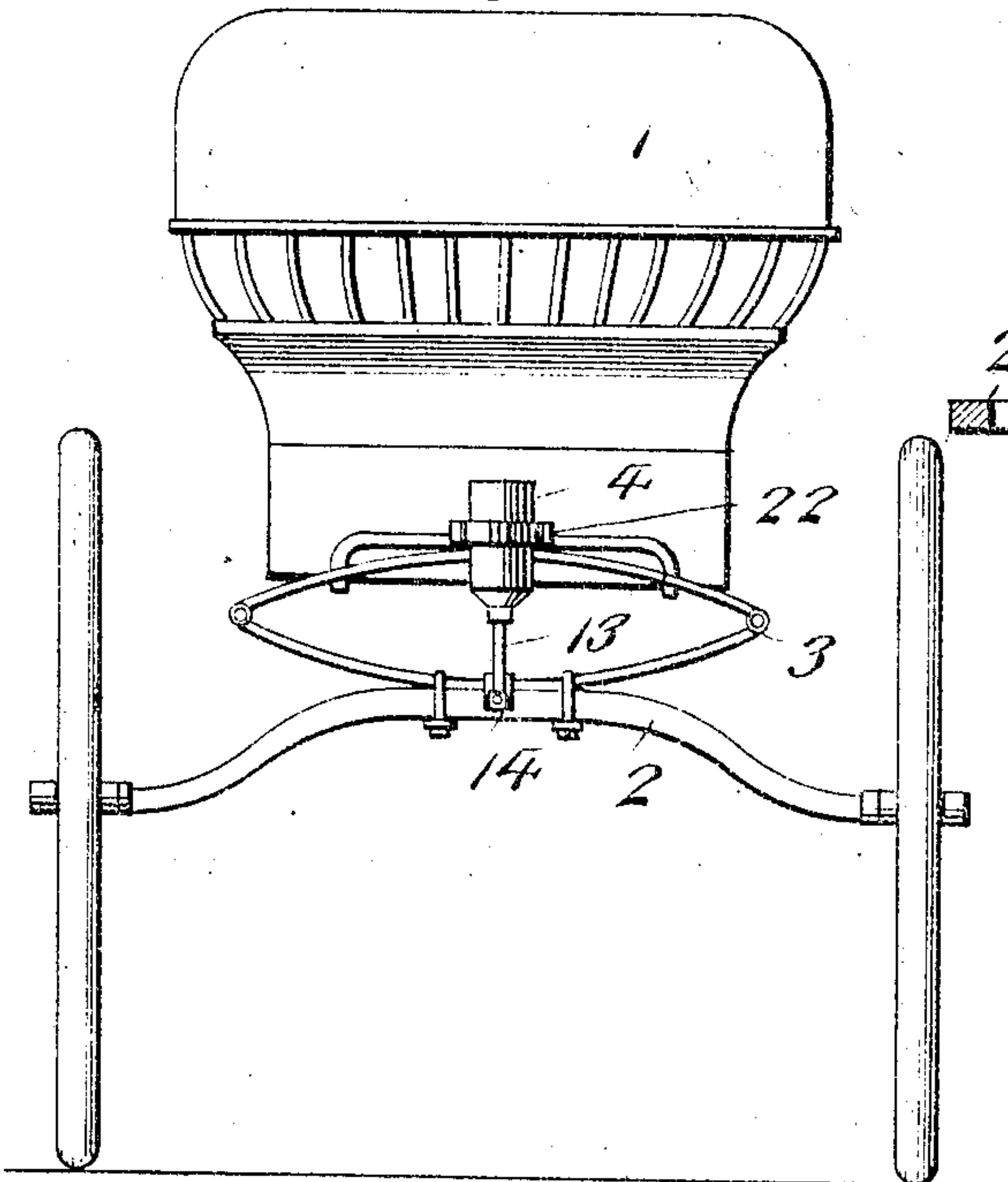


Fig. 2.

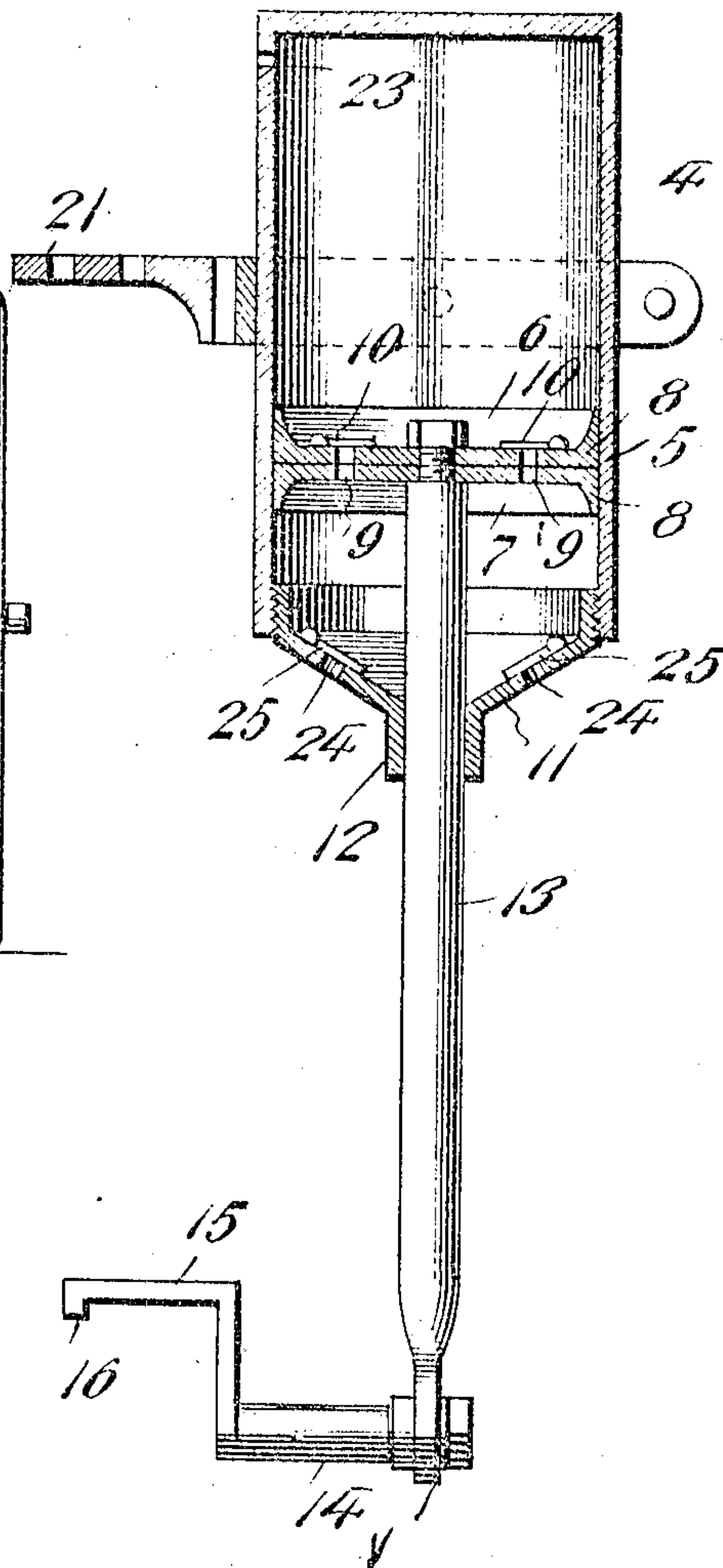
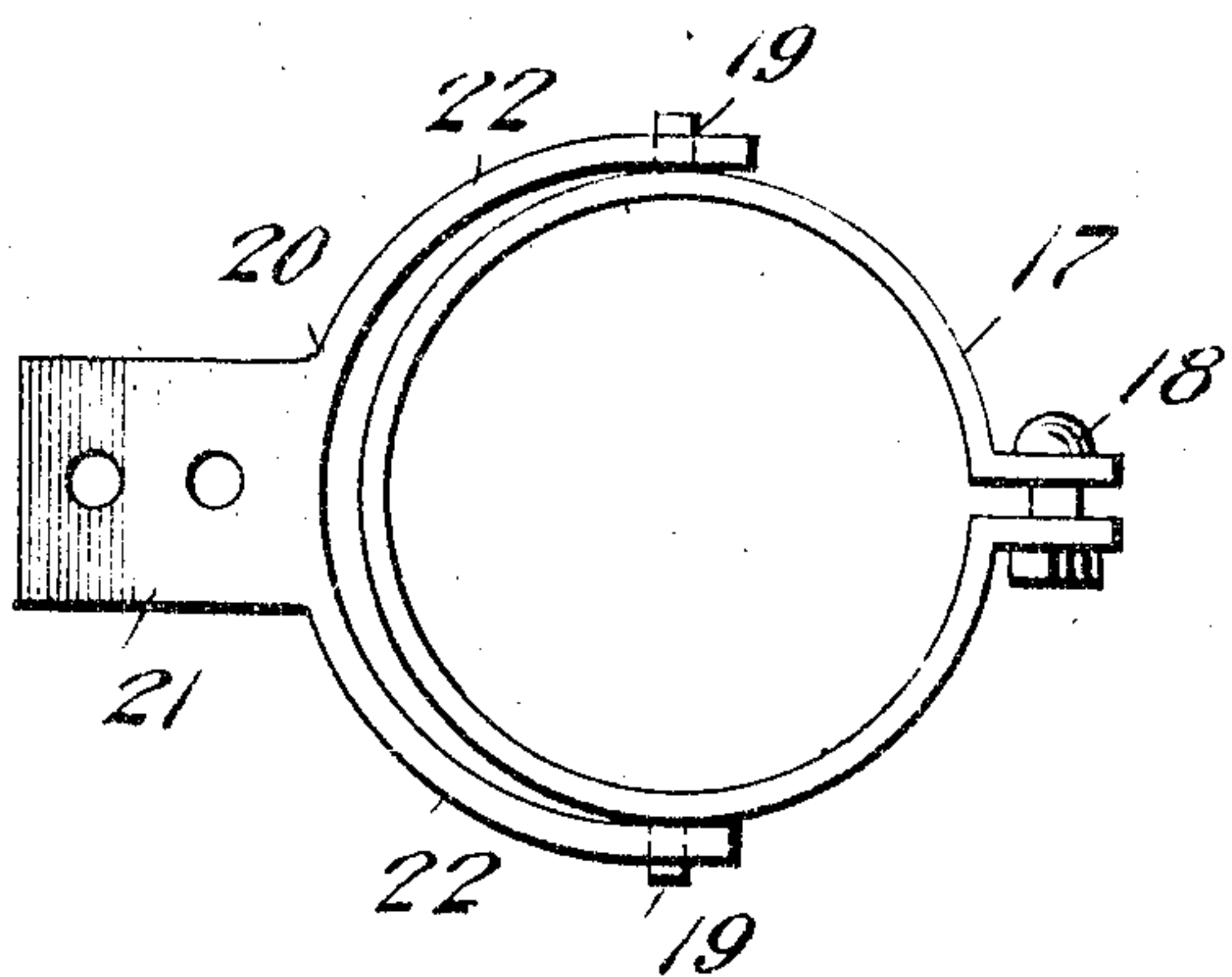


Fig. 3.



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VEHICLE-SPRING.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LEON L. SHEDDAN, a citizen of the United States, residing at Fayetteville, in the county of Lincoln and State of Tennessee, have invented new and useful Improvements in Vehicle-Springs, of which the following is a specification.

The invention relates generally to an improvement in vehicle-springs, and particularly to a cushioning means for such springs constructed and arranged to counteract any sudden movement of the spring in use.

The main object of the present invention is the production of means adapted for ready connection to the leaves of an ordinary vehicle-spring or to the running-gear and vehicle-body and serving when in place to cushion and retard any sudden compression or extension of said spring, thereby avoiding straining or breaking shocks to the spring and insuring a regular even movement of the vehicle-body supported by the spring.

The invention in its preferred details of construction will be described in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a rear view of a vehicle provided with my improved spring-cushioning device. Fig. 2 is an enlarged sectional view, partly in elevation, of the cushioning device. Fig. 3 is a plan of the cylinder-supporting bracket.

Referring to the drawings, 1 represents a vehicle-body supported from an axle 2 through the medium of one or more bow-springs 3, all of which parts may be of any usual or preferred construction, as they form no material part of the present invention.

A cushioning device comprises a cylinder 4, closed at the upper end and open at the lower end, in which is mounted for reciprocation a piston 5. The upper and lower surfaces of the piston are provided with dish-shaped packing-rings 6 and 7, respectively, the peripheral edge flanges 8 of which are adapted to fit snugly against the interior surface of the cylinder and be held in practically air-tight relation thereto by the pressure above and below the piston when in operation, as will be later apparent. The piston is provided with diametrically opposite ports 9, closed at their upper ends through the medium of ordinary leaf-valves 10, so arranged with relation to the ports as to be held

in closed position by the pressure above the piston when the latter is moving in the upward direction.

The open end of the cylinder proper is provided with a conical head 11, arranged for threaded connection with the lower end of the cylinder and serving, with the exception of the ports hereinafter noted, to close said cylinder against the admission of air. The head is formed with a suitable depending flange 12, providing a bearing for a piston-rod 13, which extends within the cylinder and is terminally secured to the piston 5.

The piston-rod, which is approximately of a length equal to the normal distance between the leaves of the spring, is movably connected at its lower end to a pin 14, to the opposite end of which is connected or formed integral an inverted-L-shaped bracket 15, the free end of which is turned downwardly at 16 approximately parallel with the vertical arm of the bracket and spaced therefrom approximately the width of the lower leaf of the spring.

A split clamping-ring 17 is removably secured to the cylinder 4 through the medium of a clamping-bolt 18 and is provided at diametrically opposite points with studs 19. An upper bracket 20 is secured to the ring comprising a plate 21, adapted to be bolted or otherwise secured to the upper leaf of the spring, and branching arms 22, projecting from said plate and terminally engaging the studs 19. The curvature of the arms 22 is on a greater radius than that of the ring 17, thereby providing for a limited independent movement of the cylinder 4 with relation to the bracket 20 to compensate for any irregularity in the movement of the spring.

Near the upper end the wall of the cylinder is provided with a small port or opening 23, while the head 11 is also provided with ports 24, normally closed against the passage of air from within the cylinder by leaf-valves 25. By preference the ports 9 in the piston are of slightly-greater diameter than the outlet-port 23 of the cylinder, whereby the cushioning and retarding effect under the compression of the spring is slightly greater than the cushioning effect under the extension of the spring.

In use the cushioning device is secured to the respective leaves of the spring 3, the plate 21 being secured to the upper leaf and

the bracket 15 secured to the lower leaf, the arm 14 of the lower bracket being of such length that when the parts are in position the cylinder and piston-rod are normally vertical. Under any sudden shock or jar tending to compress the bow-leaves of the spring the piston is forced upward in the cylinder 4, and the air above said piston compressed, with the effect to retard and cushion the movement, the compressed air gradually making its escape through the opening 23 and restoring the equilibrium of the parts, permitting the spring to rest at the point of compression necessitated by the weight to which it is subjected. In the upward movement of the piston air from without the cylinder will readily find its way through the openings 24 in the head, thereby preventing the formation of a vacuum below the piston. Any sudden reverse movement of the spring is likewise counteracted and retarded, as in such movement the piston moves downward and compresses the air below it, the excess of pressure from within serving to maintain the valve 25 in closed position. In this movement of the parts, however, the valves 10 are freely opened by the upward pressure; but as the ports 9 are comparatively small the escape of air therethrough is gradual and insufficient to defeat the cushioning effect desired. The pressure of air above and below the piston in its respective movements will operate to press the flange 8 of the respective packing-rings tightly against the surface of the cylinder, and thereby prevent leakage at this point.

The cushioning device described is adapted for ready connection to and use with any form of bow-spring and may be readily applied thereto, serving when in place to effectively cushion and retard any sudden or violent movement of the spring means, causing said leaves under the influence of any sudden jar to gradually and uniformly yield to such jar. The construction therefore effectively guards against the breaking of the spring under the influence of any sudden demand upon it and by its insuring a gradual movement of the spring under all circumstances materially increases the ease and comfort of the vehicle. Having thus described the invention, what is claimed as new is—

1. A cushioning device for springs comprising a cylinder closed at the upper and lower ends, the upper end of the cylinder being formed with an escape-port, and the lower end formed with valved inlet-ports, a piston-head movable within the cylinder and formed with ports closed against the passage of air from above the piston, a piston-rod connect-

ed to the piston, and means for supporting said cylinder and rod from the spring-leaves.

2. A cushioning device for springs comprising a cylinder closed at the upper and lower ends, the upper end of the cylinder being formed with an escape-port and the lower end of the cylinder formed with ports closed against the passage of air from within the cylinder, a piston-head movable within the cylinder and formed with ports closed against the passage of air from above the piston, a piston-rod secured to the piston-head and extending beyond the cylinder, and brackets connected to the cylinder and to the piston-rod and adapted for connection with the respective leaves of the spring.

3. The combination with a bow-spring, of a cushioning device supported beyond the operative plane of the spring and adapted to cushion the movement of said leaves in both directions, means for securing said device to the lower leaf of the spring, and means for securing the device to the upper leaves of the spring, said latter means being adapted to permit an independent pivotal movement of the upper end of the device to and from the operative plane of the spring.

4. The combination with a bow-spring, of a cushioning device arranged beyond the operative plane of the spring and adapted to cushion the movement of said leaves in both directions, means for securing said device to the lower leaf of the spring, and a bracket pivotally secured to the upper end of the device and adapted to be secured to the upper leaf of the spring, whereby the upper end of said device is arranged for movement to and from the operative plane of the spring.

5. A cushioning device adapted to cushion the relative movement of the running-gear and body of a vehicle, said device comprising a cylinder closed at both ends and movably secured in place wholly beyond the operative plane of the spring, a piston-head cushioned in both movements within the cylinder, and a piston-rod connected with said head and extending beyond the cylinder, said cylinder and rod being respectively connected to the vehicle to cushion the body and running-gear in their relative movements, the connection for the cylinder permitting an independent pivotal movement of said cylinder to and from the operative plane of the spring.

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

LEON L. SHEDDAN.

Witnesses:

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