W. P. HANSELL.

Vehicle-Spring.

No. 212,688. Patented Feb. 25, 1879.

Fig. 1.

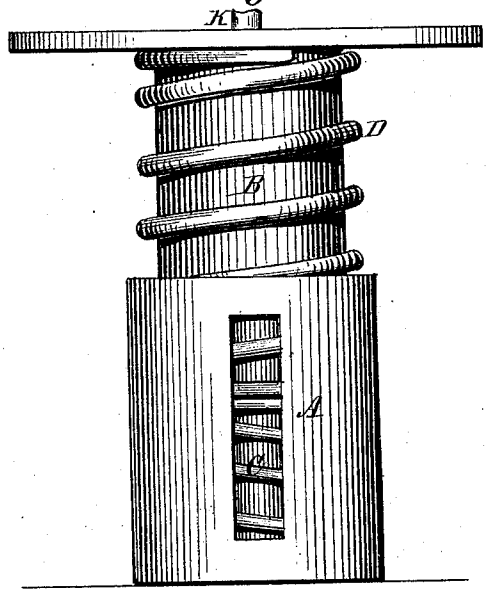


Fig. 2.

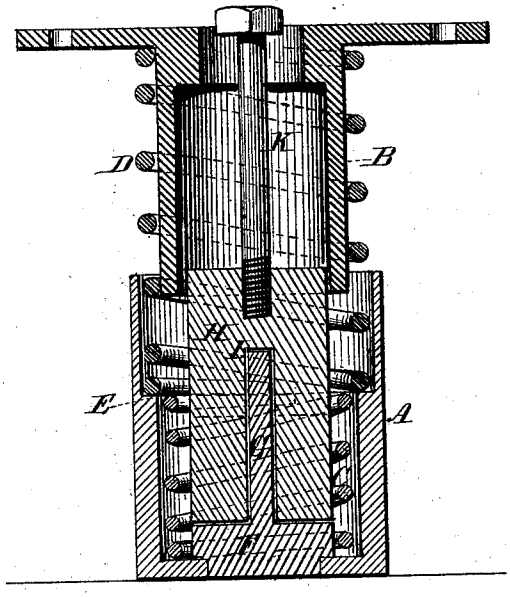


Fig 3.

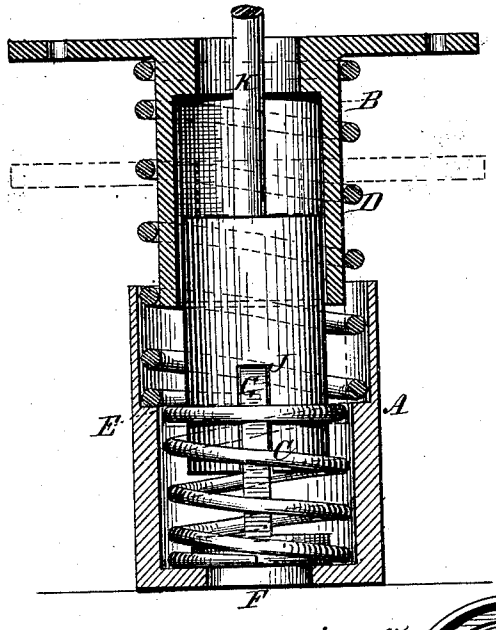


Fig. 4.

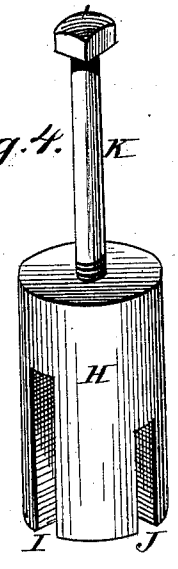
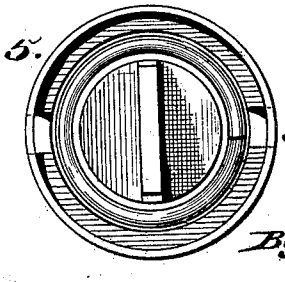


Fig. 5.



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UNITED STATES PATENT OFFICE.

WALTER P. HANSELL, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **212,688**, dated February 25, 1879; application filed December 27, 1878.

To all whom it may concern:

Be it known that I, WALTER P. HANSELL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Vehicle-Springs, of which the following is a specification:

My invention is a vehicle-spring adapted to act under varying pressures, and for rendering the spring non-acting for use in carrying solid heavy bodies—such as coal, stone, iron, &c.—where a spring-body is not necessary. These two objects are effected by a convertible spring or an adjustable stop device in which the spring function is rendered active or non-active, as may be desired, and without removing any of the parts which constitute the spring.

Two hollow cylinders are adapted for telescoping, in connection with separate and independent springs, adapted to be brought into action under varying pressures, and in which the lower spring, seated in the bottom of the lower cylinder, extends a suitable height, but some distance below its top, and bears the greatest pressure of the load, while the upper spring is seated upon an offset or shoulder of said lower cylinder, at or near the top of the bottom spring, but independent of it, and bears the light pressure. With the spring thus arranged I combine an interior plug or adjustable stop device, adapted to be lengthened or shortened to render the springs active or non-active, and to support the body solidly in carrying very heavy and hard substances without injury to the springs.

Referring to the drawings, Figure 1 represents an elevation of a vehicle-spring embracing my invention; Fig. 2, a vertical section of the same as adapted for action under varying pressures; Fig. 3, a similar section of the spring as adapted for non-action under heavy loads; Fig. 4, the central plug-adjusting device, and Fig. 5 a top view of the lower cylinder and its springs.

Two hollow cylinders are used with my convertible spring. The lower part, A, is secured to the axle, and the upper part, B, is secured to the body of the vehicle, and works within the lower part, so as to leave an annular space between them. Within the base part, A, two springs are seated—one, C, in the bottom or closed end, rising about midway the height of said lower part, and the other, D, upon an interior shoulder, offset, or loose tube, E, of said lower part, at or near the top of the lower spring, and, rising above the lower part or cylinder, surrounds the upper part or cylinder, and upon which its cap bears.

These springs, thus arranged, are independent of each other. The upper one yields under light pressures; but this position of the spring may be reversed and produce the same results. In the normal position of these two cylinders the upper one does not rest upon the lower spring, but is separated from it some distance within the lower cylinder. The upper cylinder, however, is vertically coincident with the lower spring, and bears upon it when the upper spring is compressed by it under the load, thus bringing into action both springs adapted for varying pressures, and which increases the resistance according to the strength of the strongest spring. The springs, however, may be of equal strength; and if so, their capacity will be increased one-half. The upper spring may be the shortest and strongest, in which case the upper cylinder part must be made long enough to bear constantly upon the lower weaker spring; nor does it matter which spring acts first.

To render the springs non-acting, I combine with them a center stop device, consisting of an adjustable and a fixed part. The adjustable part I prefer to fit within the upper cylinder, and the fixed part at the bottom of the lower cylinder; but these may be reversed. In whichever way they are used, one part, F, has a tongue, G, and the other part, H, has right-angled mortises or slots I J in its end, adapted to fit over said tongue. These mortises are of different depths, so that by placing the slot, I, having the greatest depth over the tongue, the functions of the springs will be active, as shown in Fig. 2; but by placing the slot, J, of least depth over the tongue, the springs will be rendered non-active for carrying loads of dead-weight, where a spring-body is not needed.

The spring can be used or not, as may be desired, by a simple change in the vertical ad-

justment of the interior plug device, whereby a solid bearing is obtained for the body of the vehicle, by the extension or lengthening out of the plug or movable part, so that the cap of the upper cylinder will rest upon the plug and the parts be fixed solidly under the load; or, by shortening the length of the plug device, the two springs will act clear under varying pressures.

The vertical adjustment of the moving part may be made from the side of the wagon or from the top of the upper cylinder by a rod, K, passing from the plug through the cylinder-cap plates, as shown, and by lifting said rod until the two parts are separated the lifted part can be turned horizontally to shift the mortises, as may be required to make the adjustment.

The two-part plug device can be made longer or shorter, according to the height of the spring, and their length, when extended, may be such as to allow the upper or both springs to be partially compressed under the load before the vehicle-body rests solidly upon the plug device.

The springs are arranged in any suitable way to support the body.

In Fig. 3 the upper cylinder-cap is shown by dotted lines as resting upon the movable and fixed parts solidly under very heavy loads.

I claim—

1. The combination, with coiled springs and telescoping cylinders, of an interior adjustable stop device, consisting of a movable and a fixed part, adapted to be lengthened and shortened with respect to the height of the cylinders, to render the spring active or non-active, substantially as herein set forth.

2. In a spring of telescoping cylinders, an interior adjustable stop device, consisting of a movable and a fixed part, one part having a tongue and the other right-angled slots, of different depths, whereby to lengthen or to shorten the movable part, to render the spring active or non-active, substantially as herein set forth.

3. The combination, with telescoping cylinders and an interior lengthening and shortening stop device of two parts, adapted to render the spring active or non-active, of a handle-rod fixed to the movable part of said stop device for the purpose of adjusting it, substantially as herein set forth.

4. In a vehicle-spring consisting of coiled springs supported in independent seats in the lower part of telescoping cylinders, and an interior lengthening or shortening stop device of two parts, the movable part of said devices adapted to have a vertical and a turning adjustment upon the fixed part within one part of the cylinder, substantially as herein set forth.

5. A convertible spring consisting of telescoping cylinders adapted to act with springs supported upon independent seats in the lower cylinder, an interior lengthening or shortening stop device of two parts, to render the spring active or non-active, as may be desired, and a handle-rod by which to effect the adjustment of the movable part of the said device, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

WALTER P. HANSELL.

Witnesses:
W. H. LAWRENCE,
CALVIN BARTLEY.