M. BURTON.

Spring-Bolster for Vehicles.

No. 211,834. Patented Feb. 4, 1879.

Fig. 1.

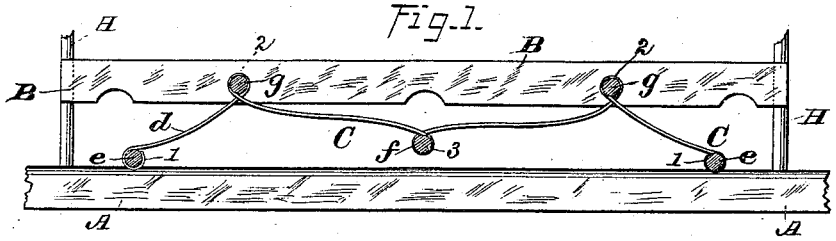


Fig. 2.

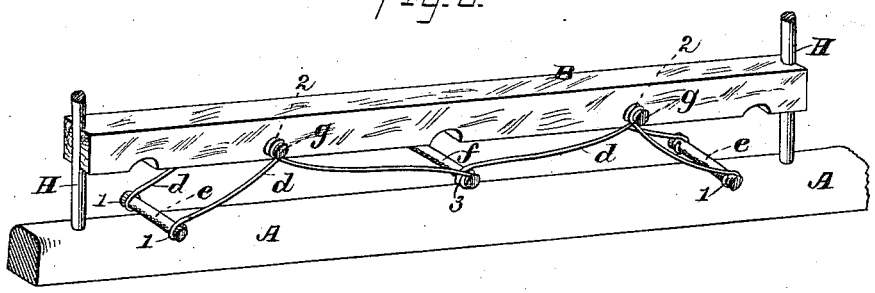
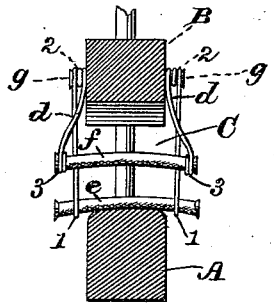


Fig. 3.



WITNESSES:

Jas. E. Hutchinson.

Penn & Halsted

INVENTOR.

Matthew Burton

by John J. Halsted, Atty.

UNITED STATES PATENT OFFICE.

MATTHEW BURTON, OF BATAVIA, ILLINOIS.

IMPROVEMENT IN SPRING-BOLSTERS FOR VEHICLES.

Specification forming part of Letters Patent No. **211,834**, dated February 4, 1879; application filed August 3, 1878.

To all whom it may concern:

Be it known that I, MATTHEW BURTON, of Batavia, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Spring-Bolsters for Wagons, Carriages, &c.; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention belongs to that class in which the spring, while adapted for light loads, is also self-adapting for heavy loads; but, unlike most springs of that class, it does not employ one set of springs for the light load, and an independent but auxiliary set for the heavy load; but, on the contrary, my construction is such that the same spring is but partially brought into action to receive the weight unless the load is particularly heavy, and then the remainder of the same spring comes into action to resist the heavier burden, the actual resisting power or spring capacity of the whole being some five to six times greater than that of the portion first brought into action.

The invention consists in a special construction and combination of bent or coiled rods and bearing bars or rods upheld thereby, as will now be described.

Figure 1 is an elevation, Fig. 2, a perspective, and Fig. 3 a cross-section, of a spring-wagon bolster made in accordance with my invention.

A is the bolster of a wagon or other vehicle; B, a bolster above the same, and to which alone the entire spring C is attached, being suspended therefrom. This spring is composed of two long rods or wires, *d*, each similarly coiled at the several places indicated by the figures 1 1, 2 2, and 3. At 1 1, respectively, each rod is coiled around a double-headed bolt or round bar, *e*, and at the center, 3, around a similar bar, *f*, this bar *f* being considerably elevated above the plane of the bars *e*, each of these bars or bolts *e e* and *f* being entirely upheld and supported by the coiling of the wires *d* around them. Between the center, 3, and the ends, 1 1, the wires curve upward, and are coiled, at 2 2, around other pins or bolts, *g g*, which are fastened to the bolster B, as shown, this upper bolster, by means of such bolts or pins, or bolts *g*, sustaining the entire compound spring, which is thus, in fact, suspended therefrom, with its ends and central part hanging free in space, the lower bars, *e e*, being just above, and touching, or nearly touching, the wagon-bolster A, but not in any way needing to be connected thereto. Vertical guide posts or rods H H at each end of the bolster A serve to hold the bolster B in position and permit it to move vertically, as the weight imposed upon it may demand.

When the wagon is lightly loaded the bars *e e* bear down on and ride upon the bolster B, and move outward upon its surface during the further compression of the spring, the ends only of the spring—viz., the parts between 1 and 2—sustaining all the weight, the portion from 2 2 to the center, 3, at this stage sustaining none of the weight, because the central bar, *f*, has not as yet descended far enough to touch the bolster B. When, however, the weight has been increased enough to bring such bar *f* down upon the bolster, then that part of the spring extending from such bar *f* to the fixed bolts or pins *g* comes, for the first time, into action, and with very largely-increased power of resistance, as there are no free ends of the wire between these fixed bolts, and as the free ends at 1 1 are also at this juncture offering great resistance. It will be observed, also, that while the free ends move in the arc of a circle, the bar *f* can only rise vertically. Any further pressure, besides having to overcome, therefore, the joint resistance both of the central and of the terminal portions of the spring, must also contend against both while exercising their greatest power.

It will be seen from this that the load will ride just as easily whether it be a light or a heavy one; and the spring will work satisfactorily under all conditions, whether the wagon be loaded or not; and that it automatically, by reason of its peculiarity of construction and action, adapts itself to all variations of the load, increasing the resistance proportionately to the weight.

If desired, the under side of bolster B may

have transverse recesses, to admit the bolts or bars *e e* and *f* when said bolster is supporting its greatest weight.

It will be evident that my invention is also applicable to wagon-seats.

My improved spring, it will be seen, may be used as a side spring in side-spring buggies or other vehicles; and may be applied to any desired part of the same, as convenience or the character of the vehicle may suggest or indicate.

I claim—

1. A wagon-spring suspended from a bolster, and having its lowest points at its extremities, and such extremities unconfined and free to bear and ride both at the same time upon a wagon-bolster, A, and having a central auxiliary bearing connected with such spring and upheld by it until brought into action by a heavy load, substantially as shown and described.

2. In combination with the bolster B, the spring wires or rods *d d*, connecting-bars *e e* and *f*, and pins or bolts *g*, as shown, and for the purpose described.

3. In combination, the bolsters A and B, the compound spring C, formed from bent and coiled wires, and constructed and applied as described, and the guide posts or rods H H, all as shown and set forth.

MATTHEW BURTON.

Witnesses:

GEO. BURTON,

ROBT. KIMBELL.