(No Model.)

G. E. BLAINE.

WAGON BOLSTER SPRING.

No. 304,066. Patented Aug. 26, 1884.

Fig. 1.

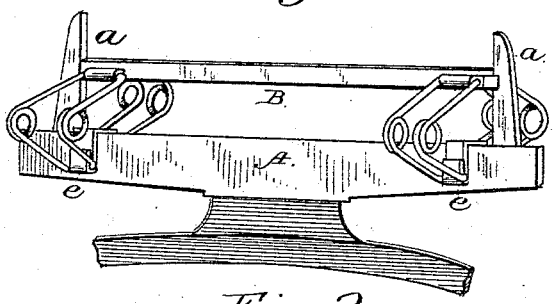


Fig. 2.

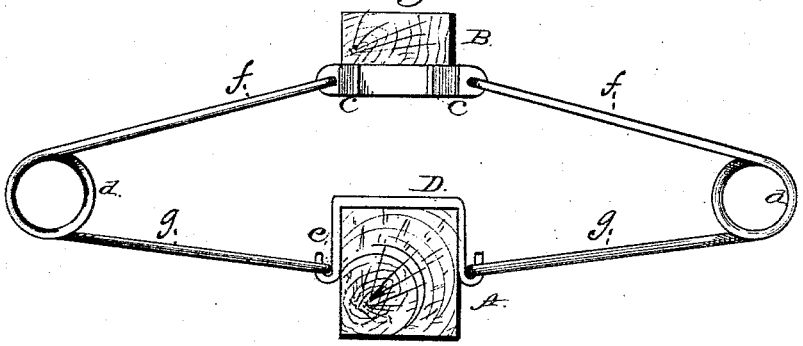
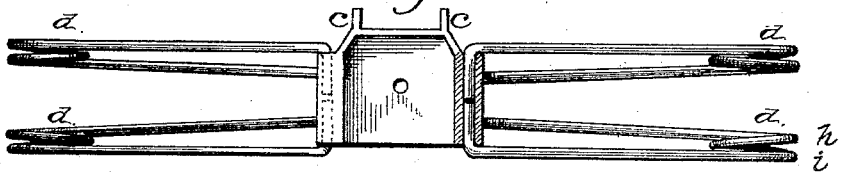


Fig. 3.



WITNESSES

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WAGON BOLSTER-SPRING.

SPECIFICATION forming part of Letters Patent No. 304,066, dated August 26, 1884.

Application filed April 30, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. BLAINE, of Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Combined Spring and Bolster Attachments; 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 the letters of reference marked thereon, which form part of this specification.

This improvement relates to that class of inventions known as "bolster-springs" for wagons, carriages, and all analogous vehicles, it having for its object, mainly, to provide a spring that will operate and last to give elasticity to the wagon-bed up and down between the standards for a much longer period of time than springs heretofore invented for that purpose, the form of construction being such as to absolutely prevent chafing of parts and the contact of the wagon-bed therewith, thus very materially adding to its endurance, further objects being to entirely dispense with bolts, rivets, and holes, and to render possible and easy the raising of the end of the wagon-bed to put the spring on or to remove it.

With the above ends in view my invention consists in the spring as constructed, its combination with the fixed and movable or sub bolsters, and in such other details as will be hereinafter distinctly described and claimed.

In the annexed sheet of drawings, Figure 1 represents in perspective the operative connection of my improved spring with the stationary and vertically-moving sub-bolster. Fig. 2 represents an enlarged view in side elevation of the spring, and illustrating the manner of connection of its upper and lower arms or members, respectively, with the seat that moves on or against the standards, and in which the sub-bolster rests, and the saddle or iron that embraces the lower or fixed bolster. Fig. 3 is a top or plan view of the seat and spring as united for use, and said figure showing the manner in which the ends of the springs are retained or held in said seat, and also showing the manner in which the spring is formed with its lower arms or branches shorter than its upper ones, for a purpose to be explained.

Reference being had to the letters, A represents an ordinary bolster, having a standard, *a*, at or near each end, for supporting the wagon-bed laterally.

B designates the vertically-movable bolster, or, as it is termed, the "sub-bolster."

After describing the operative connection or combination with the above elements of my improved spring, I will then explain in a general way its manner of formation and its operation. The location of the said springs is at each end of and between the bolsters A and B, in a direction at right angles therewith, one being to each side. Their ends or terminals are at the upper portions and are bent toward each other at right angles, as shown, to permit them to be sprung into hollow lateral wings of a metal guide-plate and seat, C. This seat, in addition to the hollow wings, is made with offsets or projections *c c*, forming between them a space by which the said seat is guided against the standard in the up-and-down movement caused by the action of the springs. It is also recessed in its top, as shown, for the reception of the end of the sub-bolster. The extremity of the lower arms or branches of the springs consists of a right-angle portion which is fitted into the channel or space formed by the upturned ends of a saddle, D, that embraces the stationary bolster in the manner shown in Fig. 1. It will be observed that with this arrangement the strain or pressure exerted on the springs will be preserved in a central line, the relative position of the seats that support the movable bolster being directly over the stationary bolster. The tension of the springs serves to retain the free ends in the hollow wings of the seat; but they are removable by simply pulling the said ends out.

The object of having the under or lower branches of the springs the shortest is as follows: In loading wagons or vehicles very heavily the strain brought to bear upon the springs would tend to overcome their elasticity, and by reason of this the wagon-body would come in contact with and rub or chafe against the springs, and in a short time render them unfit for use. In my case the inner

ends of the two branches tend, with the increment of weight, to be compressed toward each other until the lower branch is brought to a horizontal plane. Any additional strain that may then be imposed causes the said lower branches to go beyond a horizontal line, thereby exerting a draw or pull upon the upper branches and effectually preventing contact of the wagon floor or body, such drawing or pulling action taking place outward and downward at the coils.

The spring is of strong steel wire or other proper metal, and is formed by bending it at its center of length to form the double right-angle portion *e*, which adapts it to be held in the saddle D. Its two limbs are then coiled one or more times, as shown at *d*, bringing them at an approximate right angle to the lower branches already formed, care being taken to have the latter of shortest length for the purpose described. The free ends are then bent or turned toward each other at a right angle, thus forming the means of connection or attachment with the seat.

The seat is preferably made of malleable cast-iron, and the saddle or plate D of wrought metal; but it is obvious that any preferred metal to these may be employed.

The utility of my invention will be apparent from the above description, such form of spring having in practice proved to possess many advantages over bolster-springs heretofore patented.

It will be apparent that the parts herein described can be readily interchanged and removed and replaced by others when worn, manufactured at small cost, and easily applied or connected in their proper positions.

Having thus described my invention, what I claim as new is—

1. The bolster-spring herein described, formed with the coiled bend *e*, lower branches or arms, the coils *d*, and the upper branches having their terminals bent toward each other at right angles, said lower branches or arms being of shorter length than the upper, substantially as and for the purpose set forth.

2. The combination, with the stationary bolster having standards, and the sub-bolster of a vehicle, of the spring formed of a single piece, and having its lower arms or branches of shorter length than its upper, the saddles embracing the bolster and having upturned ends forming hooks for holding the lower end of the springs, and the seat and guide moving against the standards and formed with hollow lateral wings for the reception of the upper ends of the springs, all substantially as shown and set forth.

3. The combination, with the spring formed of one piece, having central rectangular bend, of the seat recessed in its top and formed with the offsets or projections *c c* and hollow lateral wings for the support of the spring, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I hereunto affix my signature in presence of two witnesses.

GEORGE E. BLAINE.

Witnesses:

EDWARD E. ELLIS,

F. O. MCCLEARY.