(No Model.)

N. H. DAVIS.

CAR SPRING.

No. 287,640. Patented Oct. 30, 1883.

Fig. 1.

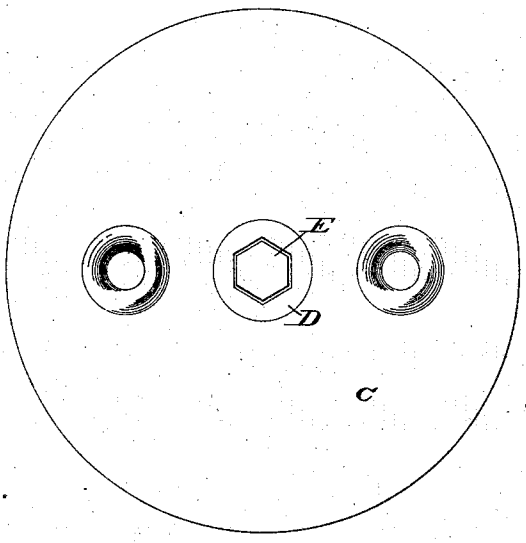


Fig. 2.

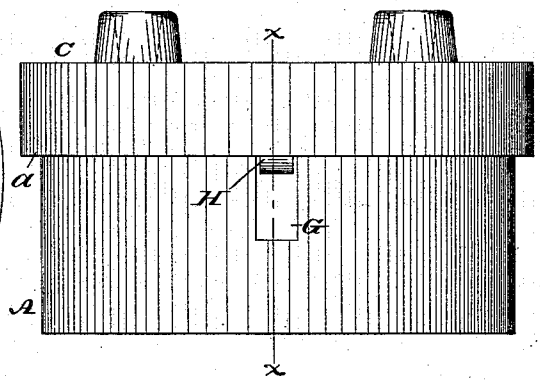


Fig. 3.

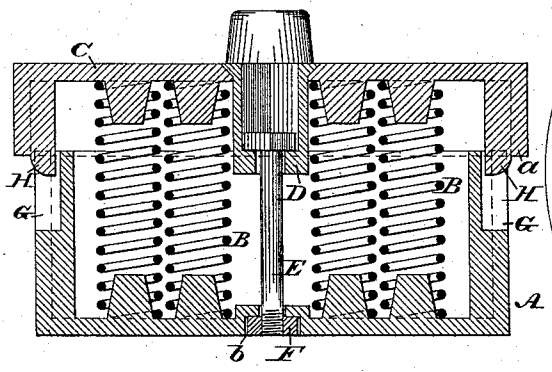
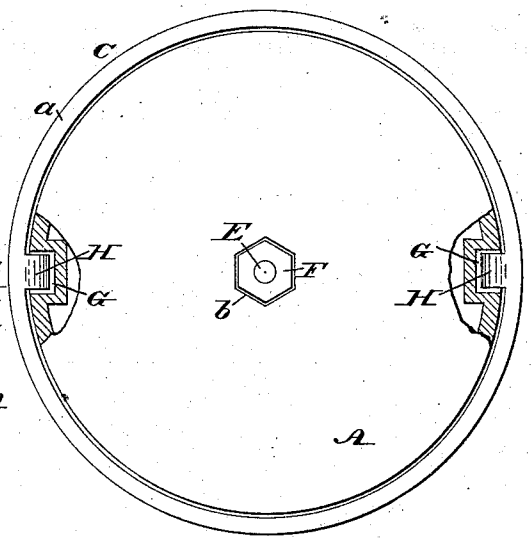


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

NATHAN H. DAVIS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO LEWIS C. GRATZ, OF SAME PLACE.

CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 287,640, dated October 30, 1883.

Application filed June 20, 1883. (No model.)

To all whom it may concern:

Be it known that I, NATHAN H. DAVIS, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Car-Springs, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a top or plan view of a car-spring embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical section thereof in line *x x*, Fig. 2. Fig. 4 is a bottom view thereof, partly broken away.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a car-spring having its box and follower connected by a bolt, the head whereof is adapted to play in a cup or socket which is removably connected with either the box or follower, whereby the body of the bolt is protected from wearing action, and should the cup or follower break they may be separated and one of them preserved for further use.

It also consists in providing the box and follower with means whereby the effect of the load on the springs may be indicated, the construction being hereinafter set forth.

Referring to the drawings, A represents a box containing a number of coiled springs, B; and C represents a follower, which is fitted to the top of the box, and has a circumferential rim, *a*, which encircles said top.

D represents a socket or cup, which is freely suspended centrally from the follower C, in a countersunk opening therein, and has an opening in its base, through which is passed the bolt E, by which the follower and box are connected. The head of the bolt rests against the upper face of the base of the socket, and the point or end thereof passes through the base of the box, and is threaded for engagement with a nut, F, which occupies an angular recess, *b*, on the lower face of the base of the box, it being seen that the opening in the base of the socket is considerably wider than the thickness of the body of the bolt, so that the latter is entirely free from contact with the walls of said opening; and it will also be seen that the head of the bolt occupies the space of the socket D, so that the latter is guided in its motions with the follower C, and the bolt is prevented from rotation, the nut F being also prevented from rotation, owing to its occupation of the recess *b*.

Should the cup D be broken, it may be removed and replaced, the follower being preserved, and vice versa.

When the springs, box, and follower are properly located, the follower and box are subjected to the action of a vise or other proper implement or tool, so that the springs are compressed. The bolt is then passed through the bases of the socket and box and the nut F applied to the threaded end of the bolt and screwed thereon the required extent. The box, with the connected follower, is then removed from the vise, and the nut F enters the recess *b*, the springs B expanding and being in condition for use.

It will be seen that when the follower rises and falls the head of the bolt plays in the socket D, and the length or body of said bolt is removed from wearing action with the socket, the bolt being also prevented from disconnection, owing to its inability to rotate. Furthermore, a short bolt is employed, and as its head plays in the socket it is not liable to strike the bolster above it and be strained thereby, it also being seen that the socket and nut are flush with the faces of the follower and box, as most readily shown in Fig. 3.

In the sides of the box are vertical grooves or recesses G, and cast with the rim *a* of the follower are depending tongues H, which project into said grooves; or the tongues may project upwardly from the box, and the groove may be formed in the rim of the follower.

It will also be seen that when the spring is loaded the tongues H are depressed with the follower, and the position of their lower ends relatively to the base of the grooves G indicates the effect of the load on the springs, or the strength of the same. A single tongue and groove will be sufficient for the purpose indicated; but it may be desirable to employ a number of such tongues and grooves at different parts of the box and follower for conven-

iently viewing their operation thereof. If desired, more than a single bolt E may be employed, in which case the number of sockets, nuts, and recesses to receive the nuts will be increased; and, furthermore, if desired, the position of the socket, bolt, and nut may be reversed, whereby the former is fitted to the bottom of the box and the recess for the nut formed on the upper face of the follower without producing different results.

If desired, the nut F may be dispensed with, and in lieu thereof the bolt may be riveted or otherwise secured in position, the head of the same, however, remaining in the socket or cup D.

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

1. A spring in combination with a bottom box with an angular recess, *b*, a separable cup, D, with an angular opening, a follower, C, from which said removable cup is suspended, a bolt having an angular head which occupies said angular opening, and a nut which occupies said angular recess, substantially as and for the purpose set forth.

2. A spring-box provided with a vertical groove in its outer face, in combination with a follower having a circumferential rim, a tongue integral with said rim, fitted in the groove of the box, and a bolt connecting the box and follower, substantially as and for the purpose set forth.

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