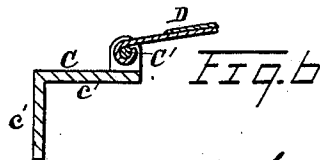
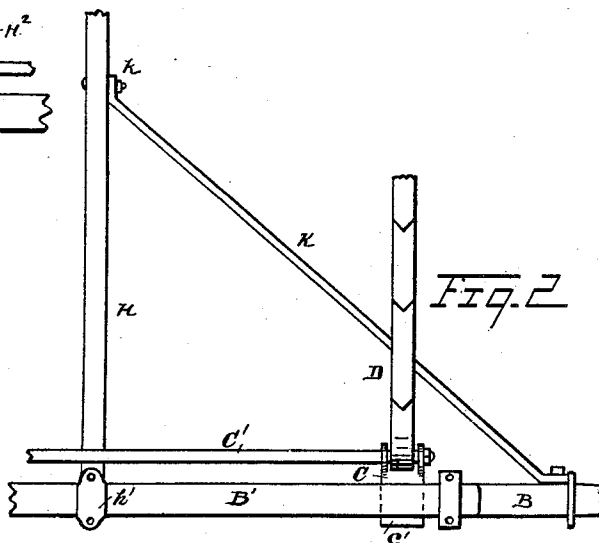
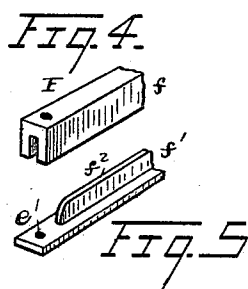
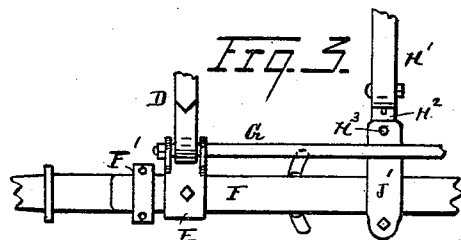
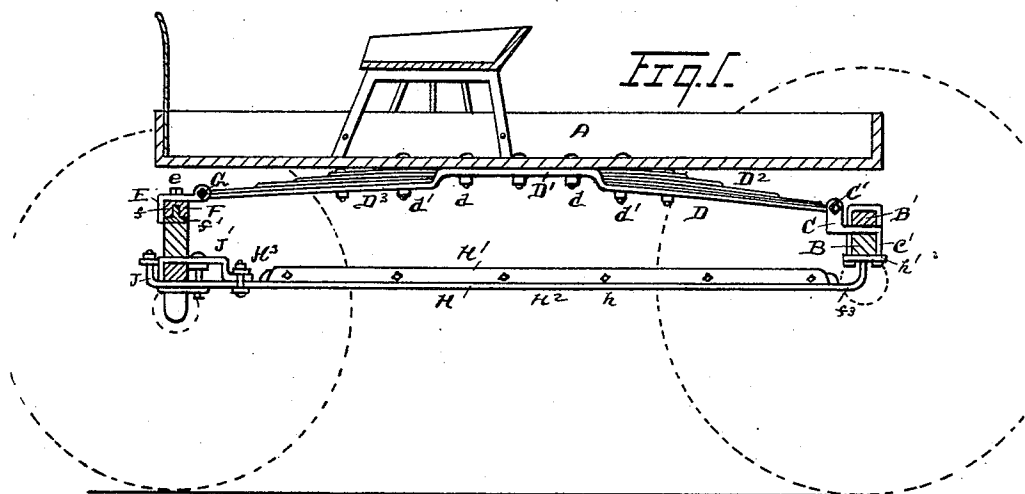


(No Model.)

N. H. HILL.
WAGON SPRING.

No. 470,297.

Patented Mar. 8, 1892.



Witnesses
John Schuman.
John F. Miller

Inventor
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UNITED STATES PATENT OFFICE.

NELSON H. HILL, OF ARMADA, MICHIGAN.

WAGON-SPRING.

SPECIFICATION forming part of Letters Patent No. 470,297, dated March 8, 1892.

Application filed February 27, 1891. Serial No. 383,025. (No model.)

To all whom it may concern:

Be it known that I, NELSON H. HILL, a citizen of the United States, residing at Armada, in the county of Macomb and State of Michigan, have invented a certain new and useful Improvement in Wagon-Springs; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to certain new and useful improvements in wagon-springs and their attachments to the vehicle, as more fully hereinafter specified and claimed, and illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation showing parts in section. Fig. 2 is a plan view of certain details connected with the rear axle. Fig. 3 is a similar view showing details connected with the front axle. Fig. 4 is a view in perspective of a portion of the front cross-bar. Fig. 5 is a similar view of the T-iron connected therewith. Fig. 6 is a separate view in section of an eye-plate, showing the engagement of the spring and equalizer.

The purpose of my invention is to provide a spring-wagon of superior utility, strength, and quality, and I carry out the same as follows:

A represents a wagon-box.

B is the rear axle, and B' a wooden cross-bar engaged thereupon.

C denotes an eye-plate, constructed with an angular arm *c* engaged between the axle and said cross-bar, the cross-bar being recessed to receive said arm, the lower portion *c'* of which projects downward alongside the rear surface of the axle. As similar eye-plates have heretofore been constructed and applied, they have been bolted through the axle, the bolt-hole through the axle necessarily very much weakening it. As constructed and engaged in accordance with my invention, however, there is no weakening of the parts, while the plate is held firmly in position.

C' denotes an ordinary equalizer-bar engaged with said eye-plate.

D represents a spring running lengthwise of the box, said spring consisting of a con-

tinuous leaf D', running continuously from end to end of the spring, said leaf being secured intermediate its extremities to the box, as shown at *d* at one or more points. Toward the rear extremity the spring is constructed preferably of five leaves, as shown at D², and with four leaves in front, as shown at D³, the additional leaves at front and rear terminating toward the middle of the leaf D', leaving room for its attachment to the box. Said additional leaves may suitably terminate toward the middle about twelve inches apart. At their adjacent ends said manifold leaves may also be engaged with the box by additional bolts or fastenings *d'*, passing through all the leaves. The leaf D' is preferably bent upward between the adjacent ends of the additional leaves D² D³ to bring the intermediate portion thereof substantially to a level with the adjacent end portions and form close contact with the under side of the body or box A and a firm bearing thereupon, the inner ends of said leaves D² D³ abutting against the bent portions of the leaf. It will be obvious that this construction of the springs D as a whole is very strong and durable, while possessing the desired amount of elasticity. At the front an eye-plate E, similar to the eye-plate C, is provided, the same being located on the top of a cross-bar F, an equalizing-bar G being engaged therewith.

I do not limit myself to a single continuous leaf, nor to a precise number of additional leaves at the front and rear ends thereof.

Aside-spring vehicles have heretofore been constructed, the forward cross-bar, made of wood alone, has commonly sprung downward, on account of the strain thereupon, upon the bed-piece of the axle and wearing the bed-plate. To overcome this difficulty, I prefer to construct the cross-bar F of a wooden bar *f*, provided with a metal bar *f'*, preferably of T-steel, the web *f''* of which is let into the bar *f*. Clips F' hold the bars *f f'* together. At the extremities of said metal bar the web *f''* is cut away, as shown in Fig. 5, and the bolts *e*, uniting the eye-plate E upon the bar F, are passed through the head *f'''* of the metal bar, which is perforated therefor, as shown at *e'*. I design, also, to construct the reach H of T-steel H², let into a wooden bar H', bolted to the web, as shown at *h''*. At the rear end

the web f^2 is cut away for a suitable distance, and the head f^3 is bent upward and clipped to the axle, as shown at h' . At the forward end the web f^2 is cut away, and the head 5 welded or otherwise engaged upon the reach-iron J. In this way the reach can be made to fit any ordinary side-bar circle-irons. The top circle-iron J' is bolted or otherwise engaged upon the reach, as shown at H². It is 10 evident that this makes a very stout reach. The braces K, extending from the rear axle, are engaged with the reach, as shown at h , the same being preferably bolted through the web f^2 and the wood H.

15 What I claim as my invention is—

1. A vehicle-spring consisting of one or more continuous leaves D', extending from end to end of said spring, the continuous leaf or leaves reinforced by additional leaves D² 20 D³, separated at their adjacent ends and extending from points each side the middle of the continuous leaf toward the extremities thereof, leaving the middle portion of the spring unreinforced by said additional leaves, 25 said middle portion bent upward at the inner extremities of the additional leaves D² D³, substantially as described.

2. In a vehicle, the combination, with the box, of side springs extending lengthwise and 30 underneath the box, each spring consisting of one or more continuous leaves D', extending from end to end of said spring, the continu-

ous leaf or leaves reinforced by additional leaves D² D³, separated at their adjacent ends and extending from points each side the middle of the continuous leaf toward the extremities thereof, the box supported and resting upon the center of the spring and rigidly engaged to the continuous portion thereof intermediate the adjacent ends of said additional leaves, substantially as described. 35 40

3. The combination, with a vehicle provided with a box A and rear and front equalizer-bars C' G, of side springs extending lengthwise and underneath the box, each spring 45 consisting of one or more continuous leaves D', extending from end to end of said spring, the continuous leaf or leaves reinforced by additional leaves D² D³, separated at their adjacent ends and extending from points each 50 side the middle of the continuous leaf toward the extremities thereof, the box supported and resting upon the center of the spring and rigidly engaged to the continuous portion thereof intermediate the adjacent ends of 55 said additional leaves, said springs engaged at their extremities with said equalizer-bars, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

NELSON H. HILL.

Witnesses:

SABIN I. STUMP,
A. B. PALMERLEE.