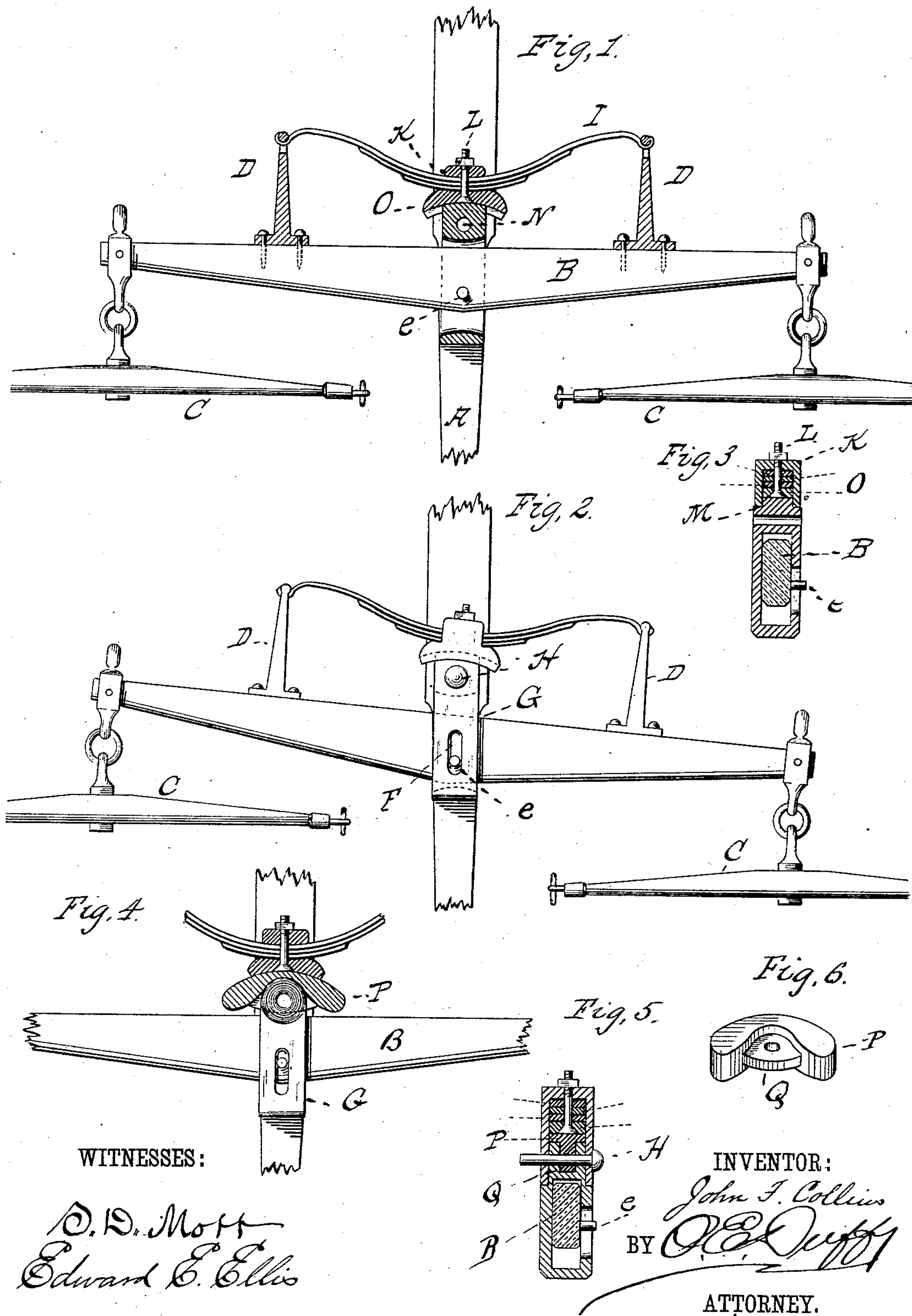


(No Model.)

J. F. COLLINS.
ELASTIC WHIFFLETREE.

No. 314,804.

Patented Mar. 31, 1885.



WITNESSES:

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ELASTIC WHIFFLETREE.

SPECIFICATION forming part of Letters Patent No. 314,804, dated March 31, 1885.

Application filed August 26, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. COLLINS, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Elastic Whiffletrees; 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.

Figure 1 represents a plan view of my invention, partly in section. Fig. 2 represents a plan view of my invention in one of its positions of adjustment. Fig. 3 represents a central cross-section through the double-tree, draw-bar, and spring. Fig. 4 represents a plan view of a modification of my invention, part thereof being shown in section. Fig. 5 represents a cross-section upon the line Y Y, Fig. 4. Fig. 6 is a perspective detail view.

My improvement relates to that class of devices wherein the moving strain is transmitted from the double-tree to the vehicle-tongue through the medium of a draw-bar and elastic spring connection. In the prior state of the art to which my invention belongs it has been customary to so unite the draw-bar with the double-tree that it should have an oscillating motion in conjunction therewith, the varying strain caused by uneven drawing of the horses being equalized by the spring. The disadvantage attendant upon this construction is that a sudden strain produced at one end of the double-tree is applied in great part at a point upon the spring intermediate between the center thereof and one of its supporting-arms. As a consequence the tendency to rupture at such point is greatly increased and uniformity of distribution of strain along the entire length of the spring is not realized. It becomes necessary, therefore, in order to provide against such contingencies, to use a quality of spring of much higher resilient strength than would be necessary if the moving strain were exerted directly at its center and uniformly distributed throughout its length. To obviate this difficulty I have adopted the construction shown in the drawings, embodying certain novel fea-

tures, which will be hereinafter described, and specifically pointed out in the claims.

A represents the tongue of a vehicle, shown as broken away at both ends. C C are single-trees attached to the double-tree B, which is provided with a pin, *e*, having a sliding movement in the slot F of the draw-bar G. At its rear end the double-tree is provided with backwardly-extending rigid arms D D, connected thereto by lugs and bolts, as shown, or in any other suitable manner. At their outer ends these arms are shaped for the engagement of the extremities of a leaf-spring, I. This spring has a central leaf-housing, K, consisting of a hollow cap of internal width equal to that of the spring-leaves, and perforated at its top for the reception of a screw-threaded bolt and nut, L. The arms of the cap fit over the rear end of the hollow draw-bar, whose sides are cut away, leaving a backwardly-projecting lug, M, the outer faces of the cap or housing and the draw-bar being thus flush with each other and the lug extending within the cap. By means of this disposition of parts any desired number of leaves may be inserted in the cap or housing K, and the latter is secured against lateral displacement. The draw-bar is rigidly connected to the tongue by means of a king-bolt, H, passing through perforation N.

The parts being arranged as described, the operation of my invention is as follows: When the strain upon each end of the double-tree B is equal, the latter occupying a position at right angles to the tongue, such strain is transmitted from the arms D D to the spring I, and thence by means of the cap K directly to the rear of the draw-bar, rigidly connected to the tongue by means of the king-bolt H. It is evident that in this relative arrangement of the parts, and as shown in Fig. 1, the strain upon the spring I is equal throughout its extent, and that its whole power is utilized. All sudden shocks in a right line caused by inequalities of the surface over which the vehicle is passing are thus taken up by the spring and transmitted gradually and uniformly to the tongue. When, however, as shown in Fig. 2, a greater strain is brought to bear upon one end of the double-tree than the other, it revolves within the slot F upon the pin *e*, assuming a different angle to the tongue. Dur-

ing this movement of revolution, the spring and its cap revolve with the double-tree in such a manner that a line drawn from the center of the cap through the king-bolt will always have
 5 a direction at right angles to the central line of the double-tree, consequently the strain upon the spring will be transmitted from the cap-piece to the tongue directly through the king-bolt, and will be distributed in like man-
 10 ner, as in Fig. 1, equally throughout the entire length of the spring.

In order to lessen the friction at the point of contact of the cap K and the rear end of the draw-bar, I sometimes employ the remov-
 15 able oscillating washer P, (shown in Figs. 4, 5, and 6,) which consists of a piece of metal having an upper rounded surface correspond-
 ing to and working in the hollow of the cap K, and provided with a central connecting-lug,
 20 Q, perforated for the reception of the king-bolt. By the employment of this device I secure a double frictional surface, lessening the wear of the parts. When worn away, the washer P may
 25 be removed and another substituted in its place.

In substitution of this oscillating washer steel facings can be employed at the point of contact between the cap K and the draw-bar
 30 as a means of reducing the wear produced by friction.

It will be observed that in Fig. 5 the flanges of the cap-piece extend down below the king-bolt, and are perforated for its reception.

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

1. In a spring-whiffletree, the combination, with the tongue A, having hollow draw-bar provided with slot F, of the double-tree B, piv-
 40 oted within said draw-bar by a pin passing through the slot and provided with rigid arms D D, the spring I, and the cap-piece K, resting upon the inner end of said draw-bar and through which the spring passes and is secured,
 45 substantially as described.

2. In a spring-whiffletree, the combination,

with the tongue, of the draw-bar secured there-
 to, the whiffletree B, pivoted in the draw-bar, having rigid arms, and the spring connecting
 the outer ends of said arms, and a central slid- 50
 ing connection between said spring and draw-bar, substantially as described.

3. In a spring-whiffletree, the combination, with the tongue A, of the draw-bar secured thereto, the whiffletree B, pivoted in the draw-
 bar, having rigid arms, the spring connecting 55
 the outer ends of said arms, a central sliding connection between the spring and draw-bar, and a friction medium or washer intermediate
 between the said connection and draw-bar, sub- 60
 stantially as described.

4. In a spring-whiffletree, the combination, with the tongue A, of the draw-bar rigidly con-
 nected thereto by a king-bolt, the sides thereof
 being cut away at its inner end to form a pro- 65
 jecting lug, the cap-piece embracing the sides of said lug, the spring secured in the cap-piece, and the whiffletree having rigid arms to which
 the ends of the spring are attached, substan- 70
 tially as described.

5. In a spring-whiffletree, the combination, with the tongue having draw-bar G, of the
 double-tree having rearwardly-extending arms
 D D, and spring I, the cap-piece, and the washer 75
 P, intermediate between the draw-bar and said cap-piece, substantially as described.

6. In a spring-whiffletree, the combination, with the tongue having draw-bar G, of the
 double-tree having rearwardly-extending arms
 D D, and spring I, the cap-piece K, within which 80
 the spring passes and is secured, and the washer P, intermediate between the draw-bar and cap-
 piece, formed with the connecting-lug Q, sub-
 stantially as described.

In testimony that I claim the foregoing as 85
 my own I affix my signature in presence of two witnesses.

JOHN FLETCHER COLLINS.

Witnesses:

FRANCIS HERNE,
 JOHN H. HYDE.