C. D. MARSH.
Whiffletree.

No. 210,463. Patented Dec. 3, 1878.

FIG. 1.

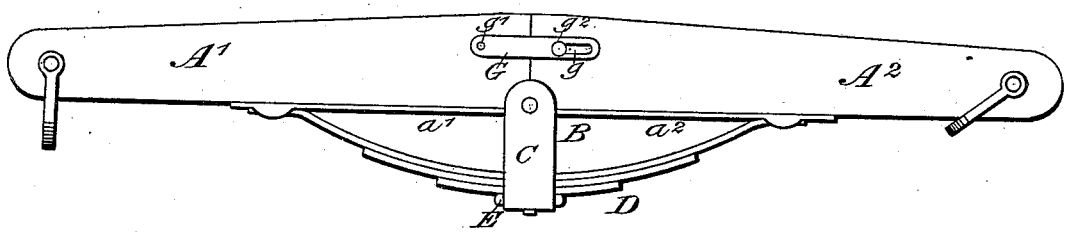


FIG. 2.

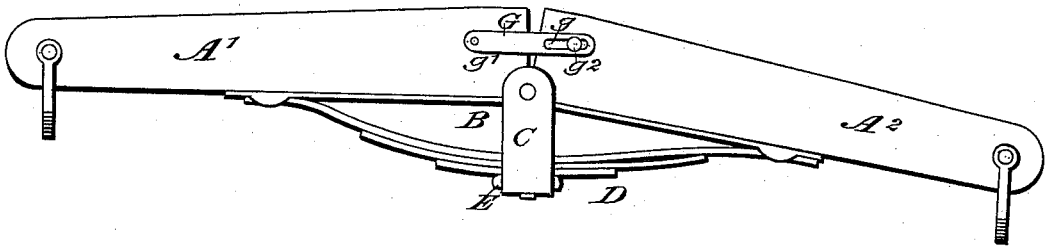
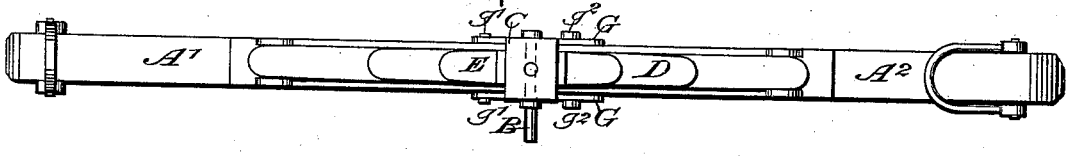


FIG. 3



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UNITED STATES PATENT OFFICE.

CALVIN D. MARSH, OF WILLIAMSPORT, PENNSYLVANIA.

IMPROVEMENT IN WHIFFLETREES.

Specification forming part of Letters Patent No. **210,463**, dated December 3, 1878; application filed November 12, 1878.

To all whom it may concern:

Be it known that I, C. D. MARSH, of Williamsport, Lycoming county, in the State of Pennsylvania, have invented certain new and useful Improvements relating to Whiffletrees and Eveners, of which the following is a specification:

My improvement is more especially intended for the eveners of heavy wagons; but it may be used with light carriages, and even for whiffletrees.

I will describe the device as applied to an evener. There are two parts, hinged together at the center, and equipped with a spring, which renders the construction flexible or yielding. I employ a half-elliptic spring, standing in front of the hinge, and bearing against the properly-faced front edge of each part. I provide a slotted strap on the upper side, and the same on the under side in rear of the hinge, which prevents the evener from yielding too far. My improvement produces an evener with an important combination of qualities.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is a plan view of my improved whiffletree; and Fig. 2 is the same with the device partly strained, as in use, and slightly favoring the backward animal. Fig. 3 is a front view of the whiffletree.

Similar letters of reference indicate like parts in the figures.

A^1 A^2 are tapering pieces of hard wood, adapted to abut together fairly at their larger ends, and to constitute an evener of substantially the usual form and qualities, except as shall further appear. The ends are equipped with any ordinary provisions for attaching the horses to the whiffletrees.

The front face of each of the parts A^1 A^2 is formed with a metal plate, a^1 a^2, which, near each end, is bent forward or flanged at the top and bottom, to form a guide sufficiently heavy. The half-elliptical spring D performs the important function of affording the principal transverse strength of the device, and by its yielding makes the action gentle on the horses, however rough may be the road over which the load is pulled. The straps a^1 a^2 are united to form a strong hinged joint, B. I have shown the center-pin of this joint B as extended downward to form a means of joining it to the cross-bar. (Not represented.)

C is a strap, which takes hold of the center-pin of the hinge B above and below the parts A^1 A^2. It forms, by means of the gib E, a strong support for the center of the elliptic spring D. The parts C D E may be joined by riveting or otherwise. The ends of the spring D bear against the fronts of the respective parts A^1 A^2, and are maintained reliably in position by the flanges on the front plates, a^1 a^2. The wood of the parts A B is sufficiently secured to the hinge at the center by through-bolts or long rivets.

G G are slotted straps, mounted respectively on the upper and lower faces of the parts A^1 A^2. They are pivoted on the part A^1 by a through-bolt or rivet, g^1. Near the other end of each strap G is a longitudinal slot, g, in which is received an extended end of another through-bolt or rivet, g^2.

So long as the evener is subjected to little or no strain it performs in all respects like an ordinary evener; but when the strain exceeds the tension of the spring D, the parts A^1 A^2 turn more or less on the hinge B' at the center in front, and, thus conditioned, the device yields to each movement of the team, or to each variation in the resistance. The tension of the spring D becomes, of course, greater as it is more and more deflected. In all ordinary conditions the spring will yield with each variation in the force; but when the force is either momentarily or permanently very great, and overcomes the tension of the spring D so far as to take up all the motion allowed by the slots g^1 in the straps G, the latter bear on the through-bolt g^2, and the straps G become strong ties, to prevent the evener from being any more bent. Thus conditioned, the evener serves again as an ordinary rigid evener; but in the bent condition it performs the ordinary function of a bent evener to introduce a change in the leverage, and thus to favor the animal which is most in the rear.

The fact that the strap C extends considerably forward of the hinge B, and that the spring D is bent as shown, allows a considerable flexure of the evener before the spring

becomes straight, and still more before it becomes bent in the opposite direction. The friction of the leaves of the half-elliptic springs and the considerable friction of the ends of the springs on the front plates, a^1 a^2, is of advantage in determining the elastic action. It is analogous to the effect of friction in elliptic bearing-springs in carriages. It yields to all irregularities and softens concussion, but without engendering a perpetual vibration, which would be annoying. It makes what may be called a "dead elasticity."

The straps G prevent the springs D from being overstrained under any conditions. They are favorably situated for receiving any excess of force.

Modifications may be made. The hinge B may be formed independently, or it may be formed in one with the plates a^1 a^2. Still further, the plates a^1 a^2 may be extended angularly across the body of the parts A^1 A^2, and even caused to take hold more or less on the back faces of the respective wood parts. Instead of slotting only one end of each plate G, both ends may be slotted and allowed to play loosely on their bolts or holdfasts g^1 g^2. A single slot may be made to extend the whole distance; or, instead of plates, a sufficient link, analogous to the link of a chain, may be employed. The gib E may be dispensed with, and the spring allowed to bear directly against the inner face of its inclosing-strap. Any ordinary or suitable means may be employed by indenting the leaves of the spring into each other, or otherwise, to hold them reliably in their proper relations to each other to allow the required motion.

Whiffletrees of the same character, or ordinary whiffletrees, may be attached in any suitable manner.

My invention relieves the jar on the shoulders of the horses, and also on the wagon. It interposes an efficient stop to prevent the spring being overstrained, while leaving the evener free to turn and perform all its functions other than yielding. All the parts are readily accessible for inspection and repairs.

The stop-ties G may be dispensed with, or the function may be partially supplied by other means, as by an extension of the gib E, so as to form a rigid bearing to bear against the front face of the spring D, when it is in danger of being too much deflected.

I claim as my invention—

1. The improved whiffletree described, having the parts A^1 A^2 connected by the flexible hinge B, in combination with the strap C and extended spring D, arranged for joint operation as and for the purposes herein specified.

2. The stop-ties G, in combination with the hinged parts A^1 A^2, and extended front spring, D, as herein specified.

3. The compound whiffletree described, having the two parts A^1 A^2, hinge B, strap C, half-elliptic spring D, gib E, and stop-ties G, with their holding means g^1 g^2, combined and arranged as and for the purposes herein specified.

In testimony whereof I have hereunto set my hand this 5th day of November, 1878, in the presence of two subscribing witnesses.

CALVIN D. MARSH.

Witnesses:
PHILIP MILLER,
WILLIAM MCCOY.