(No Model.)

A. J. COOPER.

VEHICLE SPRING.

No. 351,581. Patented Oct. 26, 1886.

Fig. 1.

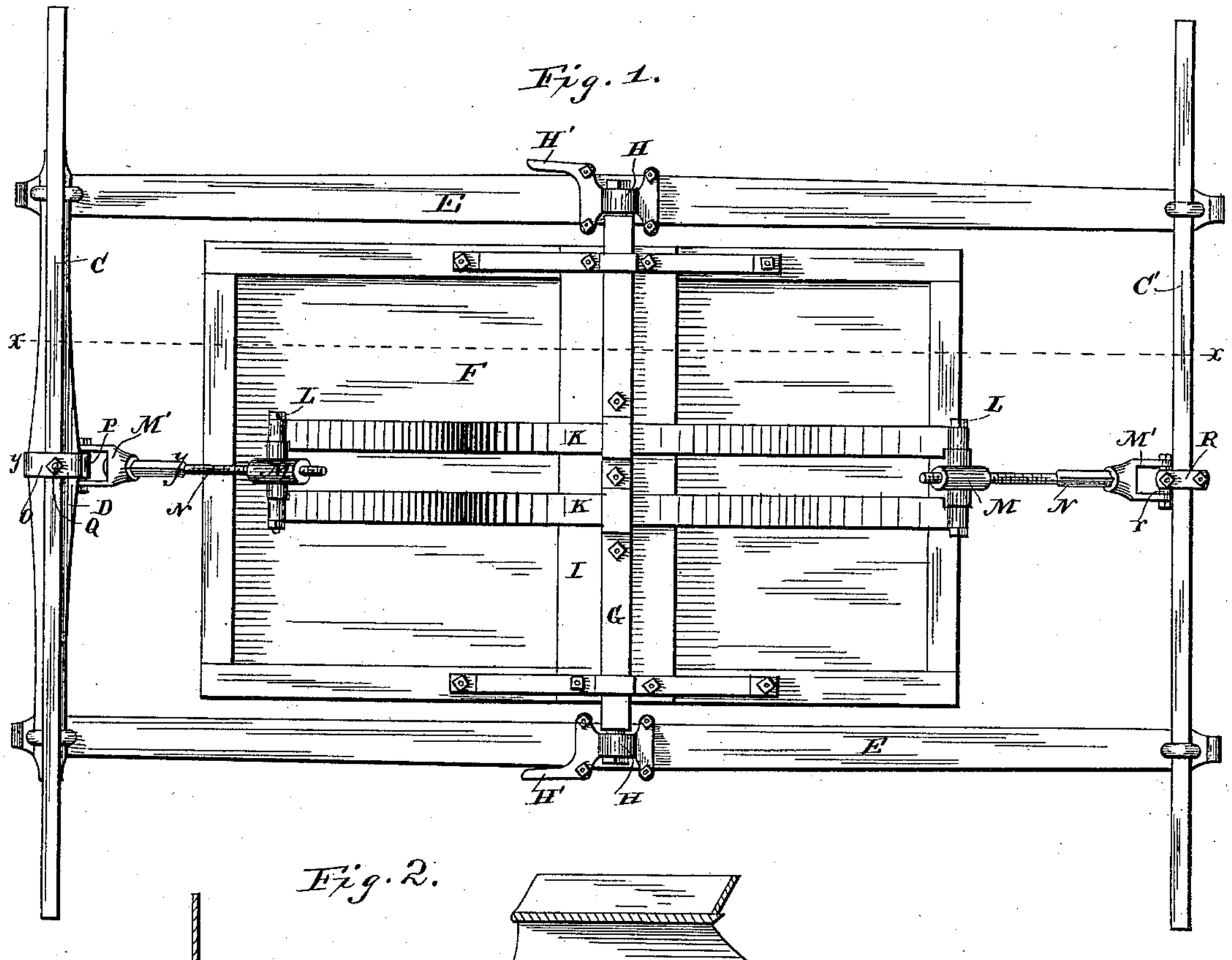


Fig. 2.

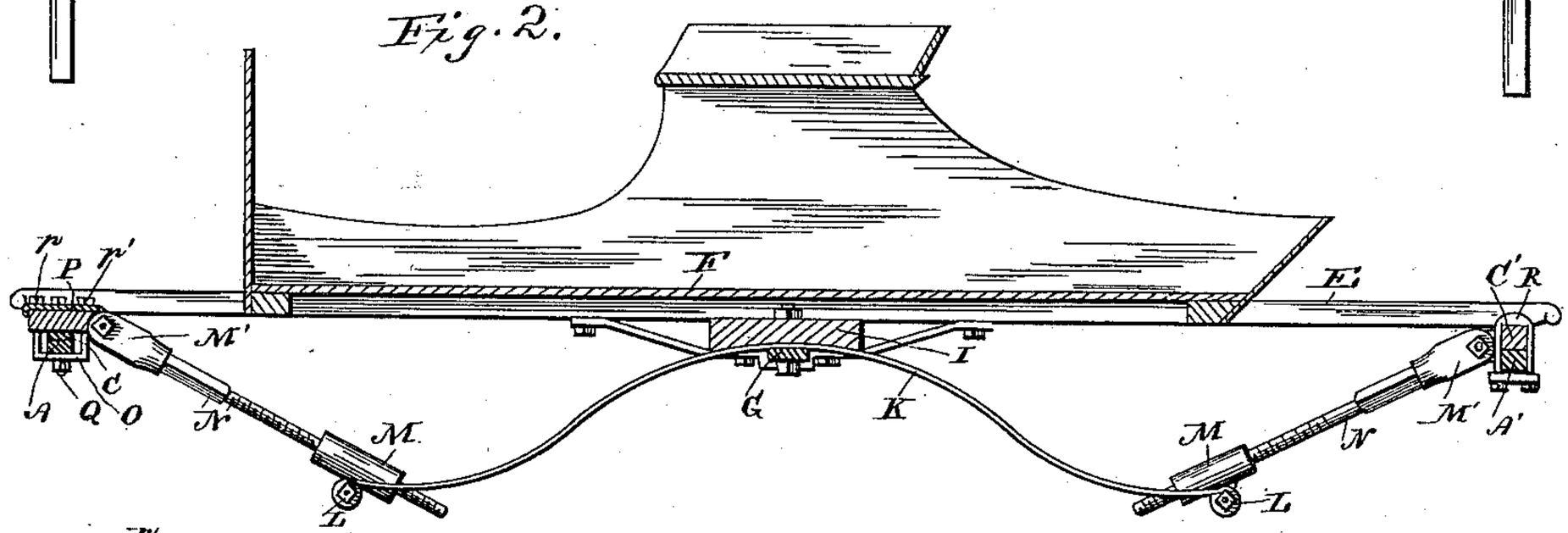


Fig. 3.

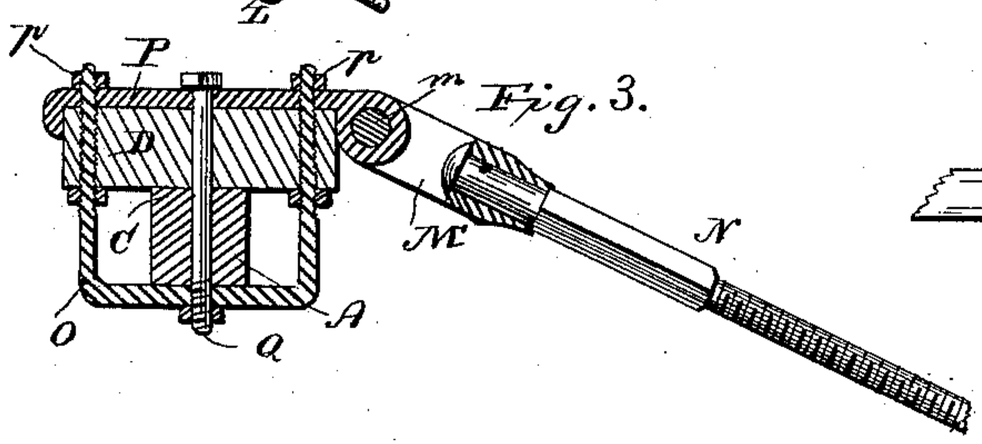
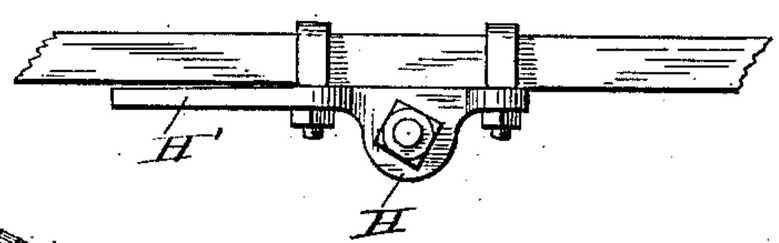


Fig. 4.



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UNITED STATES PATENT OFFICE.

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VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 351,581, dated October 26, 1886

Application filed September 4, 1886. Serial No. 212,726. (No model.)

To all whom it may concern:

Be it known that I, ALFRED J. COOPER, of Duryea, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Vehicle-Springs; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My invention relates particularly to that style of carriages known as "side-bar" carriages; and it consists in certain novel improvements in the construction of the springs that are applied thereto, whereby the vehicle is caused to ride more evenly and comfortably, and whereby the springs are rendered capable of being adjusted so as to conform to the amount and location of the weight carried, all as will be hereinafter more fully described, and pointed out in the claims at the end of this specification.

Referring to the accompanying drawings, Figure 1 is a bottom plan view of a side-bar carriage, showing my improvements applied thereto. Fig. 2 is a longitudinal sectional view taken on the line *x x*, Fig. 1; Fig. 3, a sectional view on the line *y y*, Fig. 1. Fig. 4 is a detail view of the combined bearing block or bracket and wear-plate.

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

A A′ represent the front and rear axles, respectively, of the vehicle; C C′, the axle-caps; D, the head-block, and E E the side bars, connected at their front ends to the head-block and at their rear ends to the axle cap C′, in the usual manner.

F is the bottom of the body of the vehicle, mounted centrally upon a transverse iron, G, which has its bearings in two blocks or brackets, H H, secured to the side bars at or about their middles, as shown in Fig. 1. These blocks or brackets are held in place by being either bolted or clipped to the side bars, and each is formed with an arm or extension, H′, which serves as a wear-plate for the front wheels, as will be readily understood.

Between the iron G and the body F is preferably interposed a block, I, of hard wood, and between the said wooden block and the iron are confined the middle portions of two flexible steel springs, K K, as shown. The ends of these springs are connected to cross-bolts L L, that pass through transverse openings in metal coupling-blocks M M, and the coupling-blocks are threaded longitudinally to receive the threaded shanks of metal bars or bolts N, that are in turn united by a swivel-connection to the head-block and rear axle-cap, respectively.

The swivel-connection between the front bar or bolt, N, and the head-bolt is preferably formed by providing a yoke, M′, in which the end of said bar or bolt can freely turn, and hinging said yoke by a hinge or pivot, *m*, to lugs on a plate, P, on top of the head-block, and securing said plate firmly by a clip, O, and by nuts *p p′*, and by a king-bolt, Q, passing down through the plate, head-block, front axle, and clip, as shown.

The swivel-connection between the rear bar or bolt and the rear axle-cap differs from the one just described merely in that the yoke is hinged or pivoted to ears or bearings *r*, formed upon a clip, R, as seen in Figs. 1 and 2, instead of to a top plate, as at the front of the carriage.

It will be observed that the body of the carriage is hung to or suspended from the side bars at but one point—*i. e.*, at or near their middle—and that consequently the springiness or flexibility of such side bars is in no sense impaired, as would be the case if connection were made at two or more points, as usual; furthermore, that by centrally pivoting the body and additionally supporting it upon the springs K K, and enabling the tension of said springs to be regulated by means of the swiveled adjustable screw-bolts N, the body is given an independence of movement which it would not have if required to follow the movements of the side bars alone, and the resistance of the springs is enabled to be adjusted to the load carried.

The adjustable character of the springs is very important. For instance, if the carriage or buggy is intended to carry but two persons, the springs are given a tension calculated to give the easiest and smoothest running with that amount of load, and if then it is desired to adapt it to the carrying of but one person

or four persons, the tension of the springs is diminished or increased correspondingly, the adjustment in each case being effected by screwing the rods or bolts N N out or in the coupling-blocks M M, which operation can be readily accomplished by the application of an ordinary wrench to the said rods or bolts, which are squared for that purpose.

As the two adjustable bolts are entirely independent of each other, either may be screwed in or out, so as to increase or decrease the tension of the springs at either front or rear to compensate for uneven loading of the body.

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

1. The combination, with the side bars, of the body pivoted thereto, the springs secured to the body, the coupling-blocks to which the ends of the springs are connected, and the bars or bolts, adjustable in said coupling-blocks and swiveled to their supports, substantially as described.

2. The combination, with the side bars, of the body, the iron secured to said body, extending transversely across it near the center thereof, on which the body is pivoted, the springs secured at or near the center of the body, and also to the head-block and rear axle, and the metal bearing-blocks secured at or near the middles of the side bars, and constituting bearings for said iron, substantially as described.

3. The combination, with the side bars, of the body pivoted at or near its middle to the side bars, the metal springs secured to the body, the coupling-blocks and the transverse bolts for securing the ends of the springs thereto, the adjustable screw-bolts, and the pivoted yokes to which they are swiveled, all substantially as described.

4. The combination, with the head-block and the front axle, of the plate on top of the head-block, the clip inclosing the axle and passing through the head-block, the nuts applied to said clip, and the king-bolt passing through top plate, head-block, axle, and clip, substantially as described.

5. The combination, with the head-block and front axles, of the flanged plate on top of the head-block, having the ears for the attachment of the pivoted yoke of the spring-adjusting devices, the clip embracing the axle and passing through the head-block and top plate, the nuts on said clip, and the king-bolt, substantially as described.

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