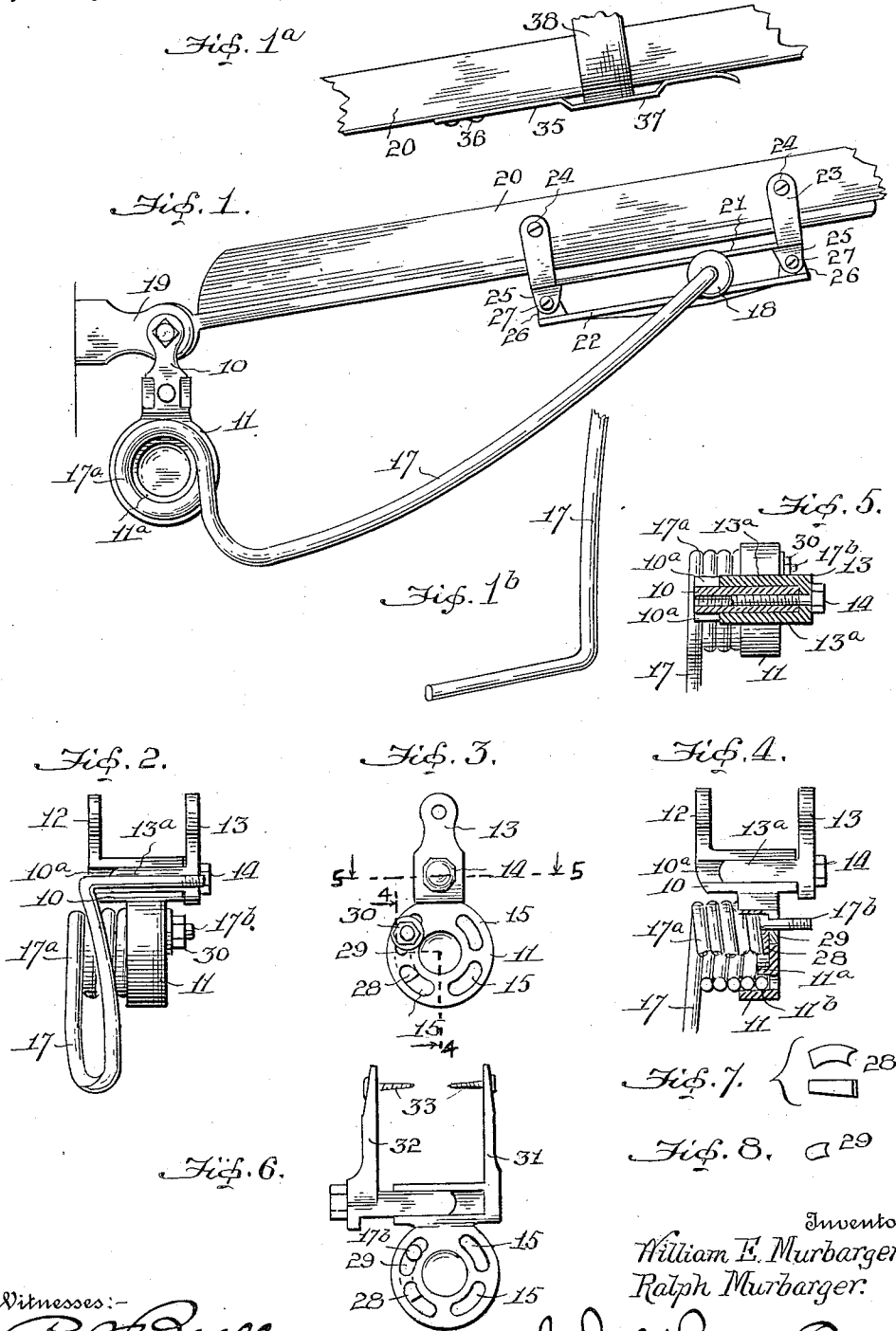


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DRAFT REDUCING DEVICE FOR VEHICLES.
APPLICATION FILED JUNE 12, 1911.

1,053,059.

Patented Feb. 11, 1913.



Witnesses:-

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UNITED STATES PATENT OFFICE.

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DRAFT-REDUCING DEVICE FOR VEHICLES.

1,053,059.

Specification of Letters Patent.

Patented Feb. 11, 1913.

Application filed June 12, 1911. Serial No. 632,746.

To all whom it may concern:

Be it known that we, WILLIAM E. MURBARGER and RALPH MURBARGER, citizens of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a Draft-Reducing Device for Vehicles, of which the following is a specification.

This invention is an attachment for vehicles, and relates more especially to a device for attachment to the running gear and shafts of a vehicle for the purpose of reducing the draft.

The primary object of our present invention is to provide a vehicle with tension springs of peculiar construction, in connection with devices for supporting the same in connection with the vehicle, so that the outer ends of the springs act as supports or lifting means for the shafts.

Our present invention consists more especially in the construction and arrangement of parts constituting the draft reducing device; all as hereinafter fully described and more specifically set forth in the appended claims.

In the accompanying drawings: Figure 1 is a side elevation, showing the application of our fulcrum-spring. Fig. 1^a is a side elevation of the forward end of the shaft, showing the application of an attachment used in connection with the harness-loop. Fig. 1^b is an end view of fulcrum-spring, showing the two angles. Fig. 2 is a front elevation of the clip employed for supporting the spring from an ordinary thill-coupling or jack clip. Fig. 3 is a side elevation of said clip. Fig. 4 is a sectional view, on the line 4—4 of Fig. 3. Fig. 5 is a sectional view, on the line 5—5 of Fig. 3. Fig. 6 is a view showing a modification of the clip. Figs. 7 and 8 are views of details, hereinafter referred to.

Like numerals of reference indicate like parts in all the figures of the drawings.

In carrying out our invention, we employ in the first place a fulcrum spring coiled upon itself at its inner end, and having its bent end provided with two angles one down and one out. This is imperative, for the roller being so far from the coil has quite a carrying force, and if this end had just a square bend, minus the angles the roller would not roll flat on its carriage but

would incline to either run in or out of 55 carriage.

In carrying out our invention we employ a supporting-clip for the fulcrum-spring hereinafter described, said clip comprising two parts, one of the parts, as 10, having a depending socket 11, an upwardly-projecting jaw 12, and grooves 10^a in the opposite sides of the intermediate portion thereof. The other part of the clip consists of a sliding-jaw 13, having members 13^a, 13^b, at its lower end which engage in the grooves 10^a for connecting the parts together; the sliding-jaw being adjustable to clamp the parts in place by means of a screw 14, passed through the lower portion of the sliding-jaw and threaded into an opening in the body portion of the part 10, as shown in Fig. 5.

The depending socket 11 of the supporting-clip is provided with an internal flange 11^a, forming in connection with the rim of the socket an annular seat 11^b, for the coiled end of the fulcrum-spring, the end wall of the socket at the bottom of the seat having slots 15 through which the end of the spring may pass. In the present instance the fulcrum-spring is formed of heavy spring-wire, one end of which is bent into a number of coils, 17^a, from which the terminal 17^b projects at right angles, while the other end portion of the spring extends forwardly from the coils to provide a resilient fulcrum-arm and the terminal is bent at an angle (see Fig. 2) to receive a roller 18, having flanged ends. This fulcrum-spring is supported from the clip, to which it is secured in the particular manner hereinafter described, and for the purpose of connecting the forward end of the spring to the shaft 20, we provide a guide or carriage comprising upper and lower rails 21 and 22, respectively, between which the flanged roller 18 plays; the upper rail 21 having ears 23 at its ends for attachment to the shaft by screws 24, and depending short ears 25 with which similar short ears 26 on the lower rail 22 are connected by screws 27, for spacing the rails the required distance apart. For the purpose of firmly and securely connecting the coiled end of the spring to the supporting-clip, said coiled end is placed in socket 11 and seat 11^b, with the terminal 17^b of the spring projecting

through one of the slots 15, several slots being provided for the purpose of adjustment of the spring, as will be obvious. Beyond the terminal 17^b, and between the adjacent coil and bottom of the seat in the socket is placed a wedge-shaped block or dog 28, and to prevent the terminal portion 17^b of the spring from working in the slot a filling piece 29 is placed in said slot. These parts can be made of different lengths, to afford facilities for the adjustment of spring to the different angles of shafts, and also to increase their tension when the springs become too weak to carry the shafts, these parts being held in place and the coiled end of the spring securely clamped in the socket by means of a washer and nut 30, said nut being threaded on the projecting terminal 17^b of the spring. It will be noted that the wedge-shaped block or dog 28 not only serves to make a secure connection between the coiled end of the spring and the socket but also holds the coiled end of the fulcrum-spring firmly in such position that the forwardly-projecting portion or arm thereof will be properly disposed with respect to the shaft. The forwardly-projecting portion or arm of the fulcrum-spring is bent from the coils inwardly and then outwardly (see Fig. 2), so that the bent terminal upon which the flanged roller 18 bears will be at an obtuse angle. This particular shape given to the forwardly-projecting portion or arm of the spring is important, inasmuch as it not only reduces the strain on the supporting-clip but provides for a proper action of the spring in performing its present function, inasmuch as forcing the shaft downward will tend to deflect the end of the spring and roller into a plane parallel with the underface of the shaft and at right angles therewith, and guard against such action tending to cause binding by undue friction between the parts, or a tendency to separate.

In the application of the device to a vehicle the supporting-clip for the fulcrum-spring may be attached directly to the ordinary thrill-coupling or jack-clip, as 19, in which instance the jaws 12 and 13 of the supporting-clip are disposed against opposite sides of the ears of the thrill-coupling, and are secured thereto by the same bolt which connects the thrill-eye to said coupling, and when applied the clamping-bolt of the supporting-clip serves to reinforce the connection for the thrill, as will be obvious.

In some instances it may be necessary to attach the supporting-clip to the front axle or a bar of the running-gear, and for this purpose the form of clip shown in Fig. 6 would be provided, in which the jaws 31 and 32 are disposed on a line with the socket 11, instead of at an angle thereto. In this modification, also, the jaws are extended

and apertured to receive wood-screws 33, which are threaded into the wooden part of the axle or bar for more securely holding the device in place.

It will be understood, of course, that in the application of the invention each shaft of the vehicle is provided with a fulcrum-spring and devices for supporting the same in connection with the running-gear and shaft.

In operation, the spring being supported from the axle or other part of the running-gear of the vehicle and engaging the shaft between the thill coupling and point of attachment to the harness will act as a supporting or lifting device for the shaft, to relieve the draft-animal in drawing the vehicle. The device will serve also to support the shafts in an upright position when the vehicle is not in use, but, as heretofore stated, is primarily intended to relieve the draft animal, and therefore the arm of the spring is extended forwardly some distance so as to give the proper leverage, and the carriage or guide-rails for the fulcrum-roller insures an easy operation, as well as provides for conveniently disconnecting the spring by simply removing one of the screws 27 and swinging the lower guide-rail 22 down to disengage the roller.

Inasmuch as during the operation of the fulcrum-spring there is a tendency for the shaft to vibrate up and down we overcome this vibration by providing the underside of the forward end of the shaft with a flat spring 35, secured at one end by screws 36, and having an outwardly bent or loop portion 37 to engage the harness loop 38 and hold the shaft thereto, so that there will not be any play of the shaft in said harness-loop.

Having thus described our invention, we claim:

1. A shaft supporting device for vehicles comprising a supporting clip attached to the running gear of the vehicle and having a vertical base plate formed with a series of slots, a supporting-spring formed with a coil having a horizontal shank adapted to extend through one of said slots and with an arm extending forward and adapted to support the shaft, a filling piece inserted between the side of said shank and the adjacent end of the slot in which it is inserted, and means for securing said spring and also securing said filler piece in position in said slot, substantially as set forth.

2. A shaft supporting device for vehicles comprising a supporting clip having two annular flanges a distance apart and formed with a series of slots to admit the end or shank of a spring, a filling piece to be inserted between one side of said shank and the adjacent end of the slots containing it, means for holding said filling piece in posi-

tion, a supporting spring formed with a coil which coil is mounted in the space between said annular flanges with its end bent at right angles and extending through one of said slots, said clip being provided with two jaws, one mounted to slide in a recess upon the other, and a threaded clamping bolt for operating said sliding jaw for attaching said clip to the vehicle, substantially as set forth.

3. A shaft supporting device for vehicles comprising a coiled spring suitably supported on the running gear of the vehicle and having an arm extending forward and arranged at its outer end to support the shaft, said outer end being bent at a double angle in relation to the forwardly extending portion of said spring, one angle being inward under the shaft and substantially in line with the longitudinal center of the coil and the other outward to outside the line of the shaft with the extreme end bent inward across the under side of the shaft to furnish a support therefor, said bent portion being formed to extend at an obtuse angle to the body of the spring, substantially as set forth.

4. A shaft supporting device for vehicles comprising a supporting clip for attachment to the running gear of the vehicle, a spring provided with a coil mounted in said clip and having an end extending at right angles through an aperture in said clip, a wedge shaped support mounted between the side of the coil and the clip adjacent to said aperture for providing a level and firm support for said spring whereby its arm is supported to carry the shaft with an even strain upon the securing devices, and means at the outer end of said spring for supporting the shaft, substantially as set forth.

5. A shaft supporting device for vehicles comprising a supporting clip attached to the running gear of the vehicle, a spring mounted in said clip and extending forward with its outer end bent at an angle to the body thereof, a roller mounted on said angle, and a carriage mounted on the shaft providing a guide for said roller and also arranged to cover the nuts or bolts for securing the shaft iron to the shaft, substantially as set forth.

6. A shaft supporting device for vehicles comprising a coiled spring suitably supported on the running gear of the vehicle and having a forwardly extending arm with its extreme outer end bent inward across the line of the shaft to form a supporting part for said shaft, said supporting part being bent at a double angle in relation to said forwardly extending arm, one angle of said inwardly bent supporting part extending outward at an obtuse angle from said forwardly extending arm, and the other angle extending downward, whereby the forcing of the shaft downward upon said supporting part will tend to deflect said part into a plane parallel with the under surface of the shaft and at right angles therewith and guard against binding between the parts and the forcing of said supporting end outward from under said shaft, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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Witnesses:

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