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A. L. & D. McGREGOR.

EVENER FOR VEHICLES.

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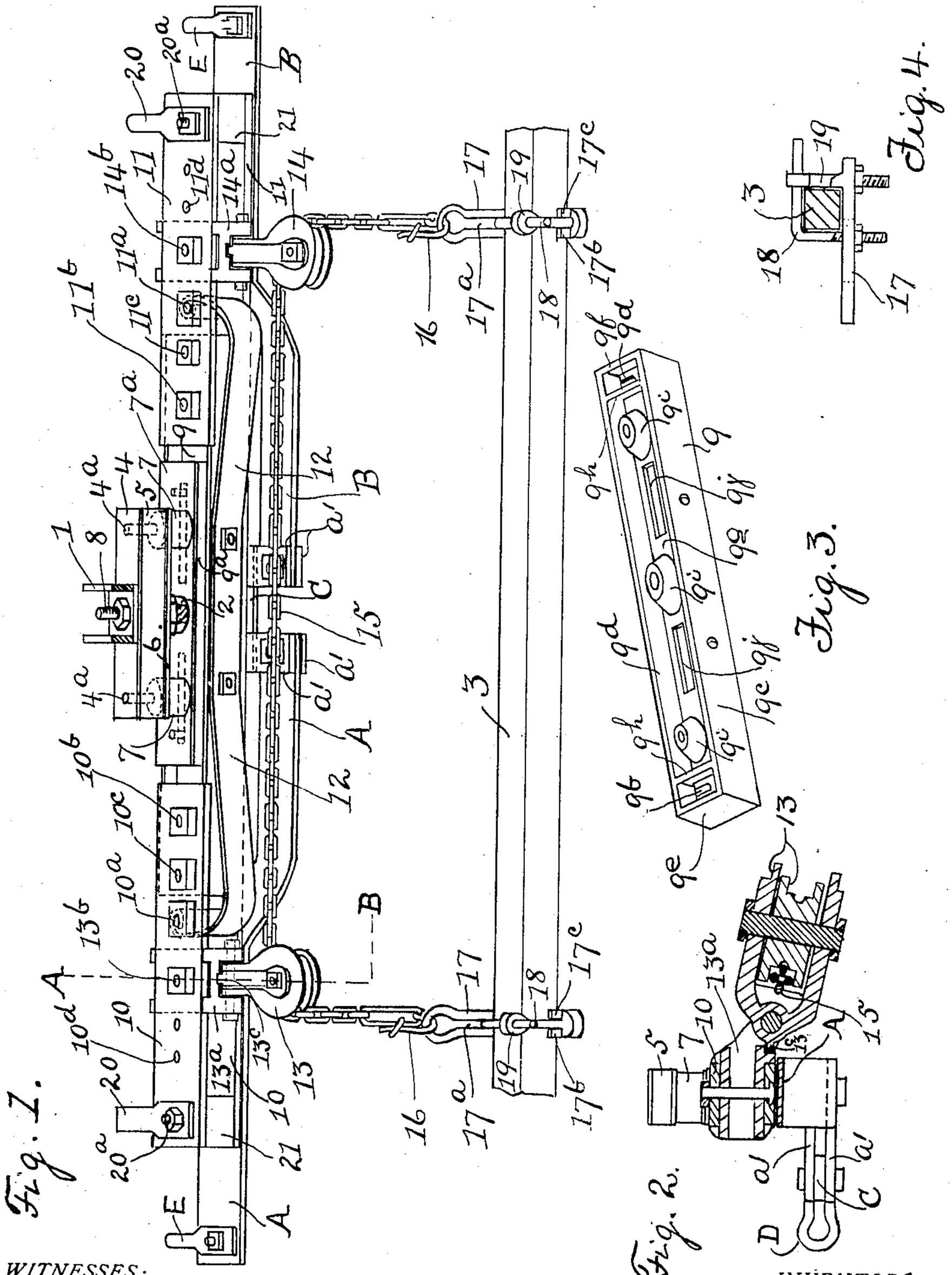

Fig. 1.

Fig. 4.

Fig. 3.

Fig. 2.

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EVENER FOR VEHICLES.

No. 872,006. Specification of Letters Patent. Patented Nov. 26, 1907.

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To all whom it may concern:

Be it known that we, ALLAN L. McGREGOR and DUNCAN McGREGOR, citizens of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Eveners for Vehicles; and we do hereby 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.

Our invention relates to draft equalizers or eveners for vehicles and has for its object the improvement of such a device, principally for the purpose of making provision whereby the evener may be adjusted for use with vehicles of various proportions and dimensions.

It consists of the constructions, combinations and arrangements of parts hereinafter described and claimed.

In the drawings, Figure 1, is a perspective view of said invention, including portions of the front running gear of a vehicle with which it is adapted to coöperate. Fig. 2, is a vertical transverse view of a portion of said evener, on the line A—B of Fig. 1. Fig. 3, is a perspective view of the bottom of the central bar of said evener. Fig. 4 is a side elevation of the adjustable axle clip, showing said axle in transverse section.

Our invention is applicable to the improvement of the invention for which letters Patent No. 796,598, of the United States, for evener for vehicles, was issued to Allan L. McGregor and assignees, on August 8, 1905.

In the herewith accompanying drawings, the forward gear of the vehicle includes the hounds 1; a brace 2 extending downward and forward from the hounds, and the axle 3.

Pivotally suspended from said hounds by the draw-bolt 8, is our evener, comprising the wear plate 4; the space block 5; the plate 6; the space blocks or spools 7; the plate 7^a; the central bar 9; the filler block 9^a; the opposite end members 10 and 11; the spring 12, secured intermediate of its ends to said central block, and secured at one end to the end member 10 by the bolt 10^a, and at its opposite end to the end member 11, by the bolt 11^a; the pulley 13 pivotally secured to the adjustable block or clip 13^a which is secured to the member 10 by the bolt 13^b; the pulley 14 pivotally secured to the adjustable block or clip 14^a, which is secured to the member 11 by the bolt 14^b; the flexible means (cable or chain) 15, which is engaged intermediate of its ends by the pulleys 13 and 14 and is connected at its ends to said axle preferably through the medium of the cam levers or hooks 16 and adjustable clips comprising the bars 17, slotted as at 17^a, preferably provided with abutment lugs 17^b and 17^c, the angular bolt 18 and the eye bolt 19. Said evener is also provided with end clips 20 to which whiffle trees (not shown) may, if desired, be attached, by any suitable means. Spacing blocks 21 are preferably inserted between the upper and lower plates of the end members 10 and 11.

The end member 10 is pivotally secured to the central bar by a bolt 10^b, and the end member 11 is pivotally secured to the central bar by a bolt 11^b. The member 10 is further secured to the central member by a stop bolt 10^c extending through a slot 9^b in said central member. The member 11 is further secured to the central bar by a bolt 11^c extending through a slot 9^d formed in said central member. It is obvious, however, that, within the scope of certain of our claims, the pulleys may be supported in any mechanically obvious way by the axle and that the ends of the flexible means 15 may be secured to the end members 10 and 11, this being merely a reversal of the position of the parts without material change of result or function.

The end pieces 10 and 11 are provided with a series of apertures 10^d and 11^d respectively, either of which apertures 10^d is adapted to receive the bolt 13^b, and either of which apertures 11^d is adapted to receive the bolt 14^b, and the blocks or clips 13^a and 14^a are made slidable or adjustable in or upon their respective supporting members.

The device so far described is adaptable for use with a two horse team. In the event that it is desired to hitch three horses abreast to the vehicle, an auxiliary or secondary equalizer or evener is included in the combination, such auxiliary equalizer comprising the bar A pivoted to the end of the member 10, preferably by a clip bolt 20^a; the bar B pivoted to the end of the member 11 by a clip bolt 20^a; the bar C connected at one end

to the inner end of the bar A by one or more pivoted straps a^1, and connected at its opposite end to the inner end of the bar B by one or more pivoted straps a^1. A hitching clip D for the center horse is secured to the center of said bar C. Hitching clips E are secured to the outer ends of the bars A and B for hitching the outer horses; that is to say that the whiffle trees (not shown) for the several horses may be connected with these hitching clips.

The center piece 9 of the primary evener preferably embodies side walls 9^c and 9^d, end walls 9^e and 9^b, a central web or floor 9^g, stiffening ribs 9^h, and perforated shoulders 9^i. The web is slotted as at 9^j at each side of the central shoulder for the passage of the plate bolt 4^a, which in different vehicles may be at various distances apart from each other. Since the bar 9 is preferably metallic, these slots obviate the necessity of boring holes at special distances apart for the passage of such bolts 4^a. The web is also slotted as at 9^b and 9^d, said slots extending transversely of the center bar of the latter said slots being to permit the passage of the bolts 10^c and 11^c and to permit said bolts to move a short distance back or forward according as said end pieces are swung backward or forward on their fixed pivots 10^b or 11^b as the case may be. In case the flexible means 15, or the pulleys break, the bolts 10^c and 11^c will engage the front wall of the center bar, and the vehicle will still be able to proceed with its load to its destination. Of course it will be obvious that if desired circular apertures might be formed in said web in place of the slots 9^b and 9^d and transversely extending slots might be formed in the bars 10 and 11 for the passage of the bolts 10^c and 11^c without materially changing the operation of the device and within the scope of my claims, but I prefer to make the slots in the web of the center bar instead of in the bars 10 and 11 as we think that the required strength of parts can be more easily obtained or preserved by thus locating them.

Other minor modifications or transpositions of parts within the scope of our claims may be made.

The pulley block 13 is preferably provided with a finger 13^c adapted to engage the clip or adjustable block 13^a to prevent the drop of the block 13 from its proper angle. The pulley block 14 is provided with a similar finger for a similar purpose with respect to the block 14 as that served by the finger 13^c for the block 13.

The plate 7^a may in any case, if desired, be omitted.

Whether or not the spools 7 and the block 5 or either of them and the plate 6 may be omitted, depends on how far it is desirable to drop the center bar 9 below the hounds in a specific vehicle. In some vehicles the proportions or dimensions are such as to make it advisable to suspend the center bar 9 a considerable distance below the hounds, and in others it is advisable to have it relatively higher. In some cases therefore the block 5 and the spools 7 and the plate 6 may be omitted and in some cases the block 5 and the plate 6 or the spools 7 and the plate 6 may be omitted. When the spools are omitted, the lower end of the brace 2 will be extended under the bar 9.

The object of the evener as a whole is (*a*) to reduce the tendency of side lashing of the horses by the pole when one forward wheel strikes an obstruction; (*b*) to reduce lost motion caused by pull on the springs which support the forward end of the vehicle box; (*c*) to reduce the draft by lowering the same so as to pull in a more direct line from the axle; (*d*) to equalize the load between the horses. These objects were also sought to be attained by the invention described in said Letters Patent No. 796,598, but no provision was made in such former patent for adjustability of a single evener to vehicles of widely variant dimensions or proportions, nor for several of the specific minor details of construction herein described. In the former said patent it was said: "In operation the said cable is normally a trifle slack, so that there will be no draft upon it when the vehicle is on a level road and is empty or contains only a very slight load." We have discovered however that it is preferable to have the cable always taut, and we therefore prefer to draw the end pieces 10 and 11 slightly backward against the tension of the spring 12 and to shorten the flexible means 15 sufficiently to normally hold them there.

In operation, the frictional resistance of the vehicle is reduced by lowering the incline of the line of pull from the collars of the horses backward to the axle. The equalization of the load between the horses is effected by causing the lagging horse to pull on the chain 15, which assumes such a course, when one end of the equalizer is advanced as to maintain a considerable share of the load on the lagging horse. Lost motion through the body supporting springs is obviated by causing the pull to be transmitted to the axle through the chain and not in any part through the supporting springs (not shown). The tendency to side lashing of the pole is reduced by reason of the fact that when one forward wheel strikes an obstacle thus being checked and tending to permit the axle to pivot on an axis in prolongation of the axis of the king bolt (not shown) and thus through the medium of the hounds and intermediate rigid parts swing the pole violently against the shoulder of the horse, such pivotal tendency is in large measure overcome by the ac-

tion of the chain acting as a yielding tie between the axle near its checked end and the nearest end of the evener which in turn is checked from violent swinging by the horse hitched to it.

What we claim is,

1. In an evener for vehicles, the combination of hounds, a central bar suspended beneath the hounds by a draw bolt, spacing means between said hounds and said central bar, an end member pivoted to one end of said central bar, an end member pivoted to the opposite end of said central bar, means engaging said central member and said end members for restricting the pivotal movement of said end members, a pulley block support adjustably mounted on one of said end members, a pulley block pivotally secured thereto, pulley block support adjustably mounted on the other of said end members, a pulley block pivotally secured thereto, an adjustable clip adjustably secured to the axle of said running gear, a second clip secured to said axle, flexible means engaging said pulleys intermediate of its ends and embodying a cam lever, said cam lever engaging one of said clips, said flexible means engaging at its opposite end the other of said clips, a spring secured intermediate of its ends to said central bar and at one end to one of said end members and at its opposite end to the other of said end members, and hitching clips secured to the free ends of said end members.

2. In an evener for vehicles, the combination with the hounds of the vehicle of a central bar suspended therefrom by a draw bolt, spacing means between said central bar and said hounds, end members pivotally mounted on the opposite ends of said central bar, means engaging said end members and said central bar for limiting the pivotal movement of said end members, a spring secured intermediate of its ends to said central bar and secured at its ends to said end members, and flexible means connecting said end members and the axle of the forward running gear of said vehicle.

3. In an evener for vehicles, the combination with the hounds of said vehicle, of a central bar suspended therefrom, end members pivotally secured to said central bar, means engaging the central bar and said end members for limiting the pivotal movement of said end members, a spring secured intermediate of its ends to said central member and at its ends to said end members, and flexible means connecting said end members to the axle of the forward running gear of said vehicle.

4. In an evener for vehicles, the combination of hounds, a primary evener including a primary central bar suspended therefrom, primary end members pivotally secured to the ends of said primary central bar, means engaging said primary end members and said primary central bar for limiting the pivotal movement of said primary end members; a secondary evener, comprising secondary end bars pivotally secured intermediate of their ends to the outer ends of said primary end members, a secondary central bar, straps pivotally secured to the inner ends of the secondary end bars and to the ends of said secondary central bar, a hitching clip secured to said secondary central bar intermediate of its ends, hitching clips secured to the free or outer ends of said secondary bars and means embodying a flexible element for connecting said primary end members with the forward axle of said vehicle.

5. In an evener for vehicles, the combination with the forward axle of a vehicle and with a flexible element forming part of the evener, of an adjustable clip adapted to inclose a portion of the axle and comprising a slotted bar extending across said axle, an L-shaped bolt extending at one end through said bar and extending at the other end across said axle parallel with said slotted bar, and an eye bolt extending at one end through said bar and adapted to receive into its eye the said other end of said L-shaped bolt.

6. In an evener for vehicles, the combination of a central bar, end members pivotally secured to said central bar, a flexible element, adjustable means secured to said end members and adapted to engage said flexible means, and adjustable means adapted to be secured to the forward axle of the vehicle and adapted to engage said flexible means.

7. In an evener for vehicles, the combination of a central bar having slots formed therethrough extending along its longitudinal axis, and a wear plate mounted on said central bar and secured thereto by bolts extending through said slots.

In testimony whereof we hereunto affix our signatures, in presence of two witnesses.

ALLAN L. McGREGOR.
DUNCAN McGREGOR.

Witnesses:
JAMES T. WATSON,
C. T. CRANDALL.