2 Sheets—Sheet 1.

E. D. WELLER.

RUNNING-GEAR FOR VEHICLES.

No. 185,993. Patented Jan. 2, 1877.

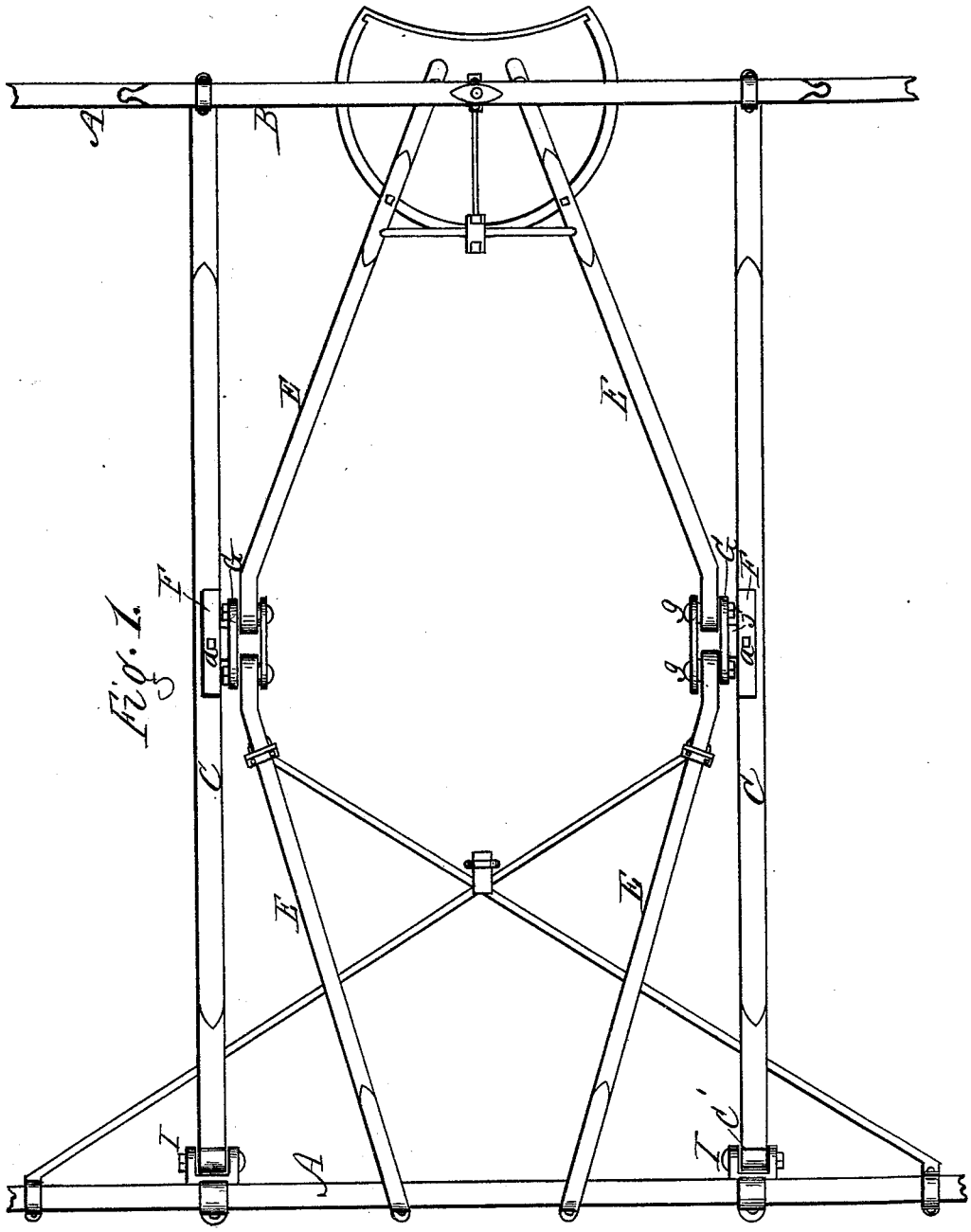

Fig. 1.

Witnesses.
Edwin Scott.
A. W. Sprague

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Eugene D. Weller,
per R. F. Osgood,
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2 Sheets—Sheet 2.

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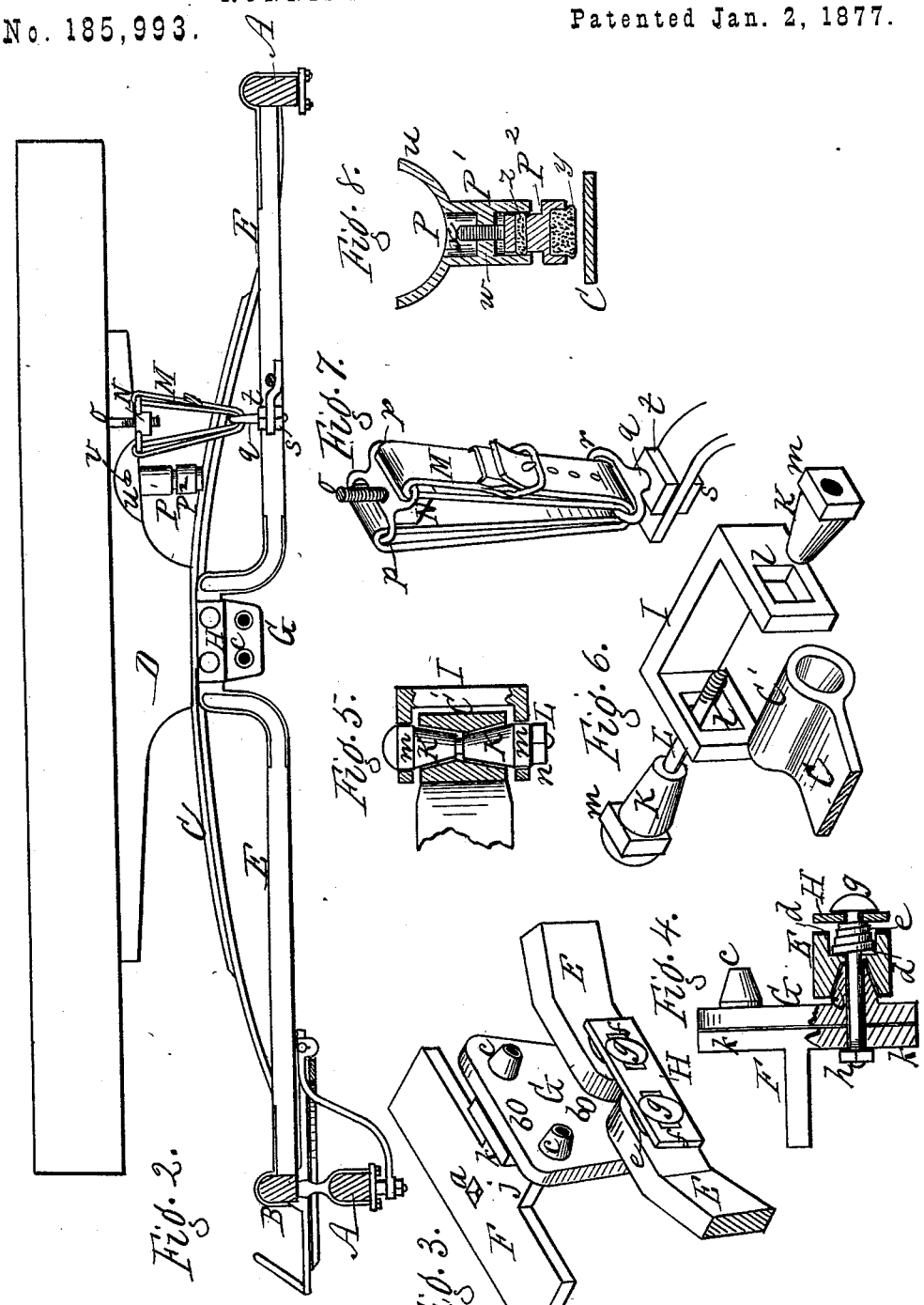

Fig. 2.

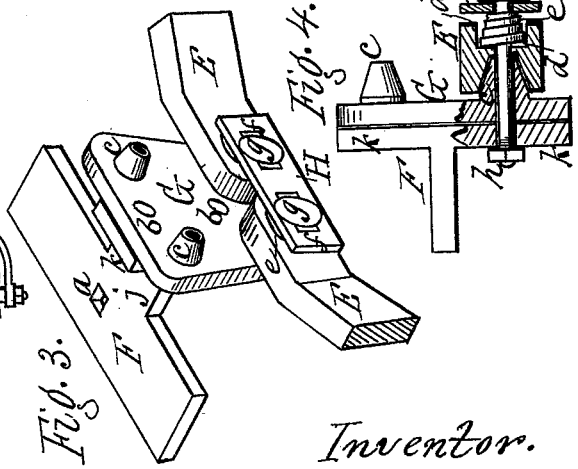

Fig. 3.

Fig. 8.

Fig. 7.

Fig. 5.

Fig. 6.

Fig. 4.

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UNITED STATES PATENT OFFICE.

EUGENE D. WELLER, OF LIMA, NEW YORK.

IMPROVEMENT IN RUNNING-GEARS FOR VEHICLES.

Specification forming part of Letters Patent No. **185,993**, dated January 2, 1877; application filed June 6, 1876.

To all whom it may concern:

Be it known that I, EUGENE D. WELLER, of Lima, in the county of Livingston and State of New York, have invented a certain new and useful Improvement in Running-Gear for Vehicles; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan of my improvement with the wagon-body and side bars removed from place. Fig. 2 is a vertical section of the same. Figs. 3, 4, 5, 6, 7, and 8 are detail views.

In general construction this invention is similar to that patented by me August 19, 1873, and is an improvement upon the same.

The invention consists in the construction and arrangement of the parts hereinafter described and specifically claimed.

In the drawings, A A represent the axles. B is the bolster. C C are the side springs, and D D are the side bars resting on top the springs, and supporting the wagon-body. E E are half-perches, made fast at rear and front, respectively, to the axle and bolster, and jointed in the center or intermediately to bearings made fast to the side springs. Four of these half-perches are used, two on each side, corresponding in position with the ordinary stiff reaches of a double-reach carriage. F F, Figs. 1, 3, and 4, are connecting-irons, attached centrally on top of the side springs by single bolts *a* passing through the springs. The width of these irons is, preferably, somewhat less than that of the springs, so that the wooden side bars will cover them on the outside. These irons have necks *j j*, with vertical faces *k k*, for the attachment of the plates. G G are the plates for the connection of the half-perches. These plates are formed separate and independent from the irons F F, but are attached fast to the latter by one or more rivets, *b b*, passing through both parts, Fig. 3, so as to stand at right angles to the said irons. By constructing these parts separate, the plates G G can be case-hardened, to furnish the desired hard wearing-surface for the perches, while the connecting-irons F F can be made soft, enabling them to be manufactured cheaply, and facilitating the fitting to the springs. The outer faces of the plates G G are formed with two or more sets of conical bearings, *c c*, upon which the ends of the half-perches are jointed. These sets lie one above another, two in a set, and the rows on each side of the plates are equidistant, or approximately so, from the point of attachment of the reaches with the axle and bolster. By this means the inner ends of the perches can be shifted from one set to another, higher or lower, as necessity may require, and without difficulty. The object of this vertical adjustment of the perches is to enable the perches to maintain a substantially horizontal position under different weights of load. The ends of the half-perches are bent upward at the center to meet their bearings. Their inner surfaces are bored out conical, to fit upon the bearings *c c*. Their outer surfaces are bored out to form enlarged sockets *d d*, Fig. 4, in which rest springs *e e*. These springs may be metal, rubber, or any other suitable material; but coiled metallic springs that will compress together endwise within themselves are preferable. Outside the springs rest follower-plates H H, in which are cut longitudinal square slots *f f*. Through these slots pass headed bolts *g g*, made square-shanked to fit in the slots, and extending through the ends of the perches, and also through the hollow bearings *c c*. On their inner ends are screwed nuts *h h*, at the back of the plates F. By turning up the nuts the follower-plates will be pressed in against the springs, and the latter will press the ends of the perches closely upon the conical bearings, thereby always keeping the parts tight, and preventing rattling. The inner or base ends of the bearings are preferably turned off square, so that as the perches wear in upon them no shoulders will be formed. These bearings take all, or nearly all, the strain of the perches, the bolts *g g* serving simply to bind the parts together. The longitudinal slots *f f* of the follower-plate are necessary to allow the adjustment of the reaches from one set of bearings to another, as the distance of said bearings apart varies as they go up or down. The square slots also prevent the bolts from turning.

I I are shackles, clipped or otherwise at-

tached fast to the axle at the rear and the bolster in front, and serving to receive the ends of the side springs. The jaws of these shackles are provided with square mortises or slots *l l*, Fig. 6. In these mortises rest the square heads *m m* of the hollow conical sides K K. The square slots in the shackle and square heads of the slides prevent the bolt and slides from turning by the action of the spring. These slides are of such length that when inserted on opposite sides in the mortises, their conical points nearly meet in the center of the shackle and spring.

C′ is the solid eye formed on each end of the side springs. The eyes are countersunk or bored conical on each side to receive the ends of the conical slides K K. When fitted in place the parts are secured by a headed bolt, L, which passes through from end to end, and has a nut, *n*, screwed upon its end. The slide K, which rests upon the headed end of the bolt, is preferably made tight-fitting by brazing or otherwise, so that in withdrawing the bolt the slide will be withdrawn adhering to it, as shown in Fig. 6. This is desirable in order to enable the other slide to be driven out from its socket. These sliding pieces enable the bolt and nut to recover any slackness that may occur by wear, and strengthen the bolt in its support of the spring. The slides, being formed separate from the other parts, can be case-hardened, thereby resisting wear to the greatest degree.

In forming the eye of the spring the steel plate is first wrapped around a center rod of iron and then welded, forming a solid end. The center iron is then bored straight through to form the passage for the bolt, and is afterward countersunk on both sides to receive the conical slides. This construction is clearly shown in Fig. 5. This furnishes a solid central eye to the spring bored and fitted to receive the slides, which could not well be done in solid steel. The same combination shown in the shackle may be applied in thill-couplings, the thill-eye taking the place of the spring-eye before described.

M is a check-strap, connecting the bottom of the wagon-body with cross-braces attached to the gearing, such as are shown and described in my patent before referred to. The upper attachment consists of a nut, N, which rests upon a screw, *o*, depending from the wagon-body, said screw being located more or less remote from the center of the spring, in order to obtain the proper effect of the check-strap in the space between the wagon-body and the gearing—usually at a point vertical to the intersection of the cross-braces. The said nut has double eyes *p p*, as shown. The lower attachment consists simply of a swiveled bolt, *q*, having a single eye, *r*. This eyebolt has a fixed head, *s*, on the under side of its bearing with the braces or gearing, and a nut, *t*, above, by which the eyebolt may be turned to any position, and then tightened in place. The strap is passed through the eyes of the upper and lower attachments, as shown in Fig. 7, and buckled at such length as to let the nut N above just catch on the screw *o*. The nut N may then be turned upward on the screw till the springs are drawn down heavily. The design is to prevent rebound of the spring or upward throw, which would otherwise occur on rough roads.

I am aware that check-straps are common to break the rebound of the carriage-body; but they are usually attached to the axle as a fixed point, and in line with the center of the spring, in which case the shock at the reaction is sharp and sudden.

My invention consists in combining the check-strap (on one side of the cross-center of the springs) with the wagon-body, and with the gearing which is connected with the side springs, so as to ride up and down with them. In such case both end attachments of the strap have simultaneous motion, in the same direction, up and down with the vibrations of the side springs. The check-strap serves simply as an attachment between said parts, by which the wagon-body may be bound down to the gearing under any desired degree of tension. When under vibration the wagon-body simply moves up and down with the side springs without much slackening of the strap.

P P are adjustable bearings to the side bars, and resting between the side bars and the springs. The attachment is made by a curved saddle-clip, *u*, which embraces the bottom of the side bar, and is secured by screws *v v*. The body of the bearing consists of a cylinder, P^1, having a web, *w*, Fig. 8, through which passes a screw-stem, *x*, of the follower P^2. This follower has at its bottom a rubber pad, *y*, which strikes upon the spring to prevent shock, noise, or wear. By adjusting the follower up or down it is adapted to the different distances between the side bar and the spring, either in different carriages or under different weights in the same carriage. *z* is a rubber packing inserted in the sides of the follower, which rests within the cylindrical shaft of the bearing. By this device the bearing can be extended on the spring at any point of depression desired.

I do not claim, broadly, a shackle-coupling having sliding cones entering countersunk holes in the eye, and secured by a bolt; neither do I claim, broadly, a check-strap.

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

1. The irons F and plates G, formed separately and connected by rivets *b b*, the said plates being provided with bearings for the connecting of the ends of the half-perches, as shown and described, and for the purpose specified.

2. The plates G, constructed with the series of outstanding case-hardened bearings *c c*, arranged in sets one above another, to allow adjustment of the half-perches higher or lower thereon, those on each side being concentric, or approximately so, with the axle and bol-

ster, as shown and described, and for the purpose specified.

3. The combination, with the bearings *c* and half-perches E, fitting thereon, of the springs *e*, resting in sockets of the perches, the slotted follower-plates H, resting against the springs, and the bolts *g*, securing the parts together, as and for the purpose specified.

4. The combination, with the shackle I, provided with the inclosed slots *l l*, of the hollow case-hardened slides K K, constructed with cones which fit in the countersunk sockets of the spring-eye, and with square solid heads *m*, which rest and have a free movement in the slots *l l*, the whole secured by the bolt L and nut *n*, as shown and described, and for the purpose specified.

5. The solid spring-eye C′, formed by bending the thin end of the steel around a solid iron center piece and welding it in place, then boring and countersinking the iron center to receive the bolt and cones, as shown and described, and for the purpose specified.

6. In a side-spring carriage, the combination, with the carriage-body, and with the running-gear connected with the side springs, of the check-strap M, attached at the upper end to the body, and at the lower end to the running-gear, and at a point more or less remote from the cross-center of the springs, whereby said check-strap serves as a stay between parts that have simultaneous vibrations in the same direction, as shown and described, and for the purpose specified.

7. The check-strap consisting of the strap M, swiveled eyebolt *q*, and double-eyed nut N, capable of adjustment up and down upon the screw *o* without twisting the strap, as and for the purpose specified.

8. The adjustable bearing, consisting of the fixed shank P^1, attached to the side bar, and the follower P^2, moving up and down within the shank, as herein shown and described, and for the purpose specified.

9. The combination, with the side bar D and spring C, of the adjustable bearing P, constructed with a packing at the bottom, for the purpose of extending the bearing of the side bar upon the spring at any desired degree of depression, as herein described.

10. The combination, with the adjustable bearing P, of the packings *y z*, one attached at the lower end of the adjusting portion to break the shock upon the spring, and the other attached in its side, resting within the hollow shank of the bearing, as and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

E. D. WELLER.

Witnesses:
R. F. OSGOOD,
EDWIN SCOTT.