

(No Model.)

2 Sheets—Sheet 1.

E. CLIFF.
CAR TRUCK.

No. 553,104.

Patented Jan. 14, 1896.

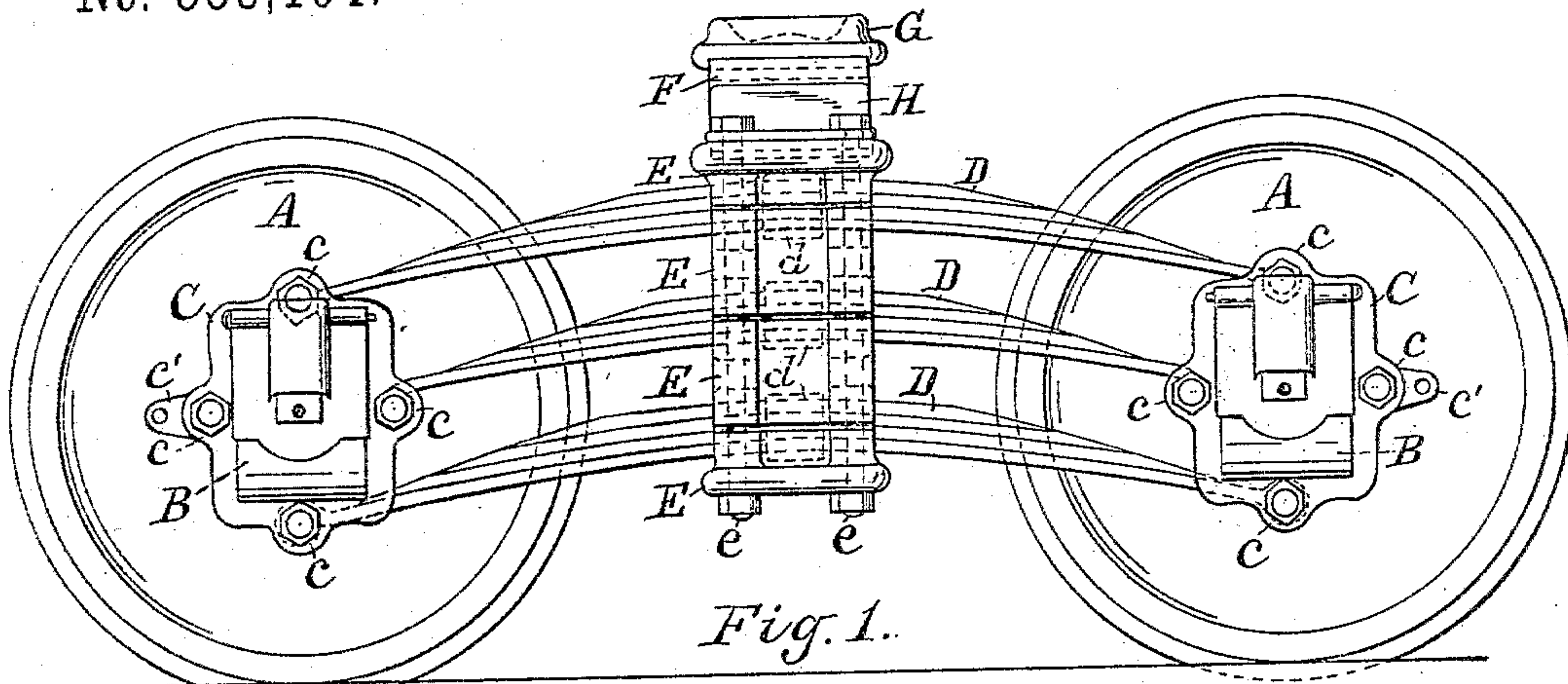


Fig. 1.

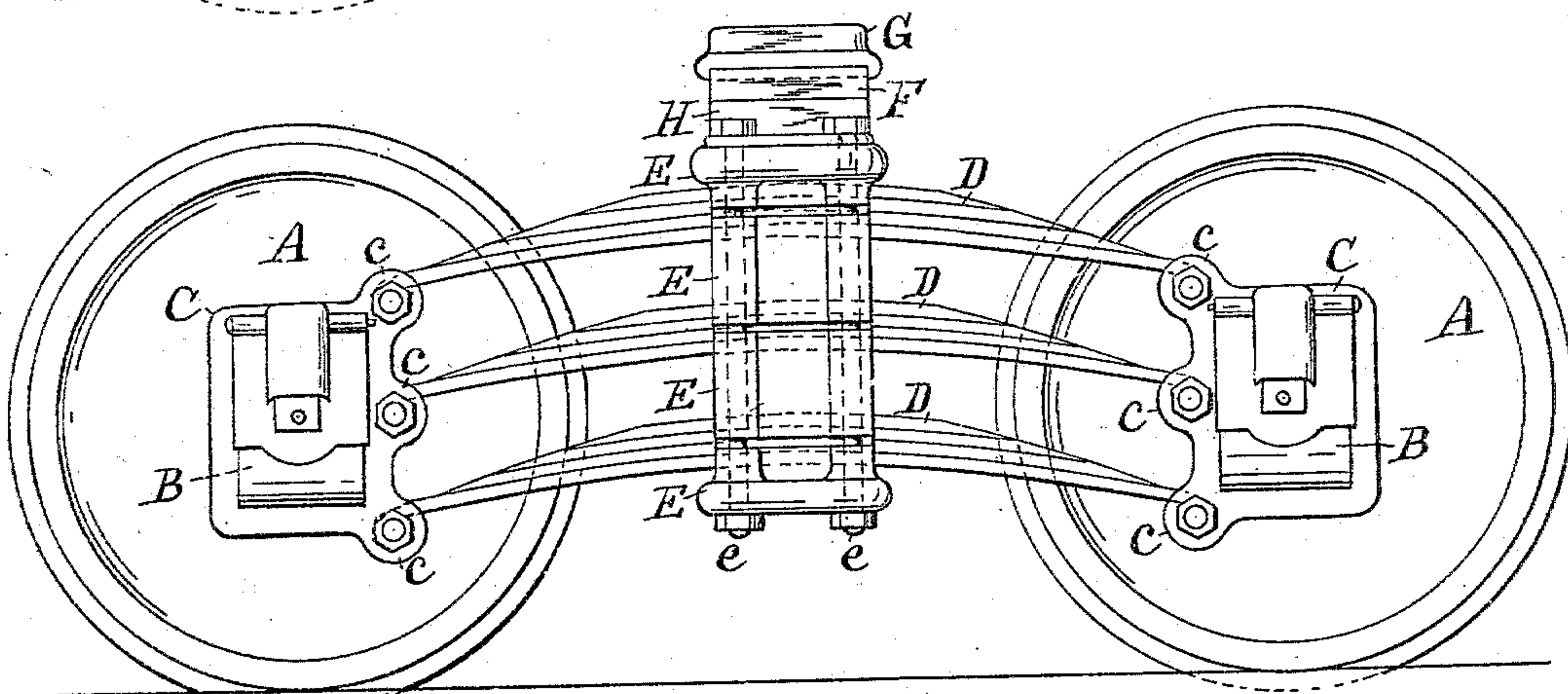


Fig. 2.

Witnesses.

Mark W. Dewey
R. S. Dewey.

Inventor.

Edward Cliff.
By C. H. Duell
his Attorney.

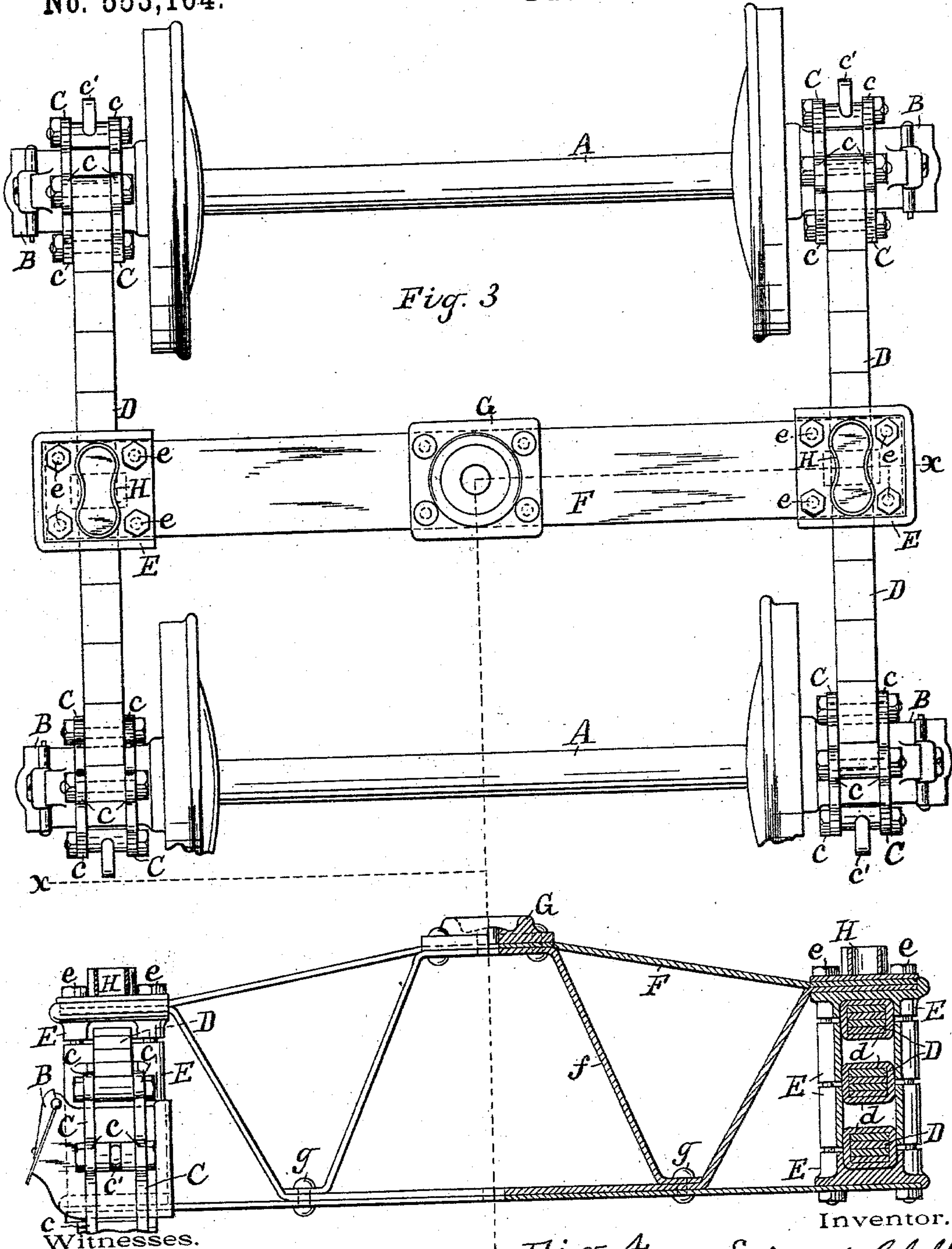
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2 Sheets—Sheet 2.

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Witnesses.
Mark W. Dewey
R. L. Dewey.

Fig. 4.
Inventor.
Edward Cliff
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his Attorney.

UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 553,104, dated January 14, 1896.

Application filed October 26, 1895. Serial No. 566,959. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CLIFF, of Newark, in the county of Essex, in the State of New Jersey, have invented new and useful Improvements in Car-Trucks, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to car-trucks for passenger-cars, as coaches and electric cars; and the object is to provide a truck that will be simple, durable, and easy-riding and that will allow the wheels and axles to move relatively to each other.

To this end my invention consists in the combination, with the wheels and axles and the axle-boxes, of frames on the boxes, a plurality of semielliptic springs on each side of the truck and arranged one above the other and connecting the frames together, and a bolster secured at its ends to and extending between the springs; and my invention consists in certain other combinations of parts hereinafter described, and specifically set forth in the claims.

In the drawings hereto annexed and forming a part of this specification, Figure 1 is a side elevation of my improved car-truck. Fig. 2 is a modification of the same. Fig. 3 is a top plan view of the truck shown in Fig. 1; and Fig. 4 is a side elevation, partly in section, of the bolster, taken on line *x x* of Fig. 3.

Referring specifically to the drawings, *A A* are the axles and wheels as commonly employed, *B B* are the axle-boxes, and *C C* are the pedestals or frames inclosing the boxes. In some cases these frames may be made integral with the boxes.

The frames *C C* are each made double and are provided with ears *c c*, &c. In Fig. 1 the ears are formed or cast on the frames, one in the center of each side thereof. The ears on the outer side of the frame serve to hold the links *c' c'* for the chains (not shown) usually connected to the car-body, but said ears also allow the frames to be reversed or interchanged, which might bring these ears on the inside. The parts of each double frame *C* are separated sufficiently to admit the ends of the semielliptic springs *D D D* extending between and connecting the frames on each side of the truck together. The ends of the

springs are formed with eyes, and the ears on the frames are perforated to receive bolts which secure the springs to the frames. The central spring *D*, extending between the inner sides of the frames, is somewhat shorter than the upper and lower ones. In Fig. 2 the springs *D D D* are of equal length, for the ears on the frames *C C* are all formed on the inner sides.

The springs used are the upper parts of full elliptic springs, and they are arranged substantially equal distances apart one above the other.

It will be obvious that although three of these springs are shown on each side of the truck two would be sufficient to sustain the load if made heavy, and two would hold the frames with their boxes in an upright position. Three springs on a side, however, are preferred, for the reason, among others, that should one of the springs break the load would be sustained by the remaining two. If two springs only are employed on a side, any one of the springs may be dispensed with, but preferably the middle one.

The springs are provided at their centers with bands *d d* as usual, which are held between blocks of cast metal *E E*, &c., clamped together by long vertical bolts *e e e e*, two on each side of the springs. These bolts also pass through the bars of the bolster connecting the springs together.

The bolster or cross-beam *F* of the truck is formed of three bars, the ends of two being connected to the springs above the same and the other being connected to the springs below the same.

The upper bar is slightly arched or raised in its center above its end portions, the lower bar extending between the lower sides of the springs is straight and horizontal, while the third or central bar is bent to lie with its center in contact with the lower bar and with its ends in contact with the ends of the upper or arch bar.

In the center of the bolster between the bars is a separator formed of an angular bar *f*, having its center in contact with the lower side of the arch-bar, below the center plate *G*, and secured thereto by rivets. The end portions of the bar *f* extend downward and outward toward the sides of the truck and are

provided with horizontal feet which abut against the angles formed in the central bar, and are secured thereto and also to the lower straight bar by rivets *g g*. All of the bars 5 are perforated in their centers to receive the king-bolt. (Not shown.)

It will be observed that the bolster may be formed in this way without castings and with strips of wrought-iron or steel. Side bearings 10 H of any suitable and well-known form may be secured above the ends of the bolster, as indicated in the drawings.

I do not wish to be limited to the number of springs D shown on a side, as I may use a 15 greater or less number. The springs may be different distances apart and some may be heavier than others without departing from my invention.

It will be obvious that aside from being 20 easy-riding this truck is capable of adapting itself to curves and uneven tracks without danger of injury to its parts.

Having described my invention, what I claim as new, and desire to secure by Letters 25 Patent, is—

1. In a car-truck, the combination with the wheels and axles, and the axle-boxes, a plurality of semi-elliptic springs on each side of the truck arranged one above the other and 30 connecting the axle-boxes together, and a bolster secured at its ends to and extending between the springs, substantially as set forth.

2. In a car-truck, the combination with the wheels and axles, and the axle-boxes, of 35 frames on the boxes, a plurality of semi-elliptic springs on each side of the truck, and arranged one above the other, and connecting the said frames together, and a bolster secured at its ends to and extending between the 40 springs, substantially as described and shown.

3. In a car-truck, the combination with the wheels and axles, and the axle-boxes, a plurality of semi-elliptic springs differing in 45 length on each side of the truck, and connecting the axle-boxes together, and a bolster secured at its ends to and extending between the springs, substantially as described and shown.

4. In a car-truck, the combination with the 50 wheels and axles, and the axle-boxes, frames on the boxes, a plurality of semi-elliptic springs on each side of the truck, arranged one above the other and connecting the said frames together, blocks lying on opposite 55 sides of and between the centers of the springs, bolts clamping the blocks and springs together, and a bolster secured at its ends to and extending between the springs, substantially as described and shown.

5. In a car-truck, the combination with the 60 wheels and axles, and the axle-boxes, frames on the boxes, a plurality of semi-elliptic springs on each side of the truck, arranged one above the other and connecting the said 65 frames together, bands on the centers of the springs, blocks lying on opposite sides of and

between the bands, bolts extending vertically through the blocks on each side of the springs, and a bolster extending between the said 70 blocks on each side of the truck and secured in place by the same bolts, as set forth.

6. In a car-truck, the combination with the wheels and axles, and the axle-boxes, double 75 frames on the boxes, ears in the center of each side of the frames, a pair of semi-elliptic springs extending between the ears on the upper and lower sides of the frames, a shorter semi-elliptic spring, on each side of the truck, 80 extending between the ears on the inner sides of the frames, clamps securing the springs together and separated at their centers, and a bolster secured at its ends to and extending between the clamps, substantially as described and shown.

7. In a car-truck, the combination with the 85 wheels and axles, and the axle-boxes, a plurality of semi-elliptic springs on each side of the truck arranged one above the other and connecting the axle-boxes together, and a bolster secured at its ends to and extending be- 90 tween the springs, said bolster being formed of an upper arch-bar, a lower straight bar, a central angular bar having its central portion lying on the upper side of the lower bar and extending with its end portions upward and 95 lying on the lower sides of the end portions of the arch-bar, and a fourth bar lying with its central portion on the lower side of the center of the arch bar and with its ends bent to lie on the upper side of the said central 100 bar, its ends reaching to the angles of the central bar, said bars being riveted together, as set forth.

8. In a car-truck, the combination with the 105 wheels and axles, and the axle-boxes, frames on the boxes, a plurality of semi-elliptic springs on each side of the truck, arranged one above the other and connecting the said frames together, blocks lying on opposite sides of and between the centers of the springs, bolts 110 clamping the blocks and springs together, and a bolster secured at its ends to and extending between the springs, said bolster being formed of an upper arch-bar, a lower straight bar, a central angular bar having its central portion 115 lying on the upper side of the lower bar and extending with its end portions upward and lying on the lower side of the end portions of the arch-bar, and a fourth bar lying with its central portion on the lower side of the cen- 120 ter of the arch bar and with its ends bent to lie on the upper side of the said central bar, its ends reaching to the angles of the central bar, said bars being riveted together, as set forth. 125

In testimony whereof I have hereunto signed my name.

EDWARD CLIFF. [L. S.]

Witnesses:

E. L. TODD,

W. H. GRAHAM.