

(No Model.)

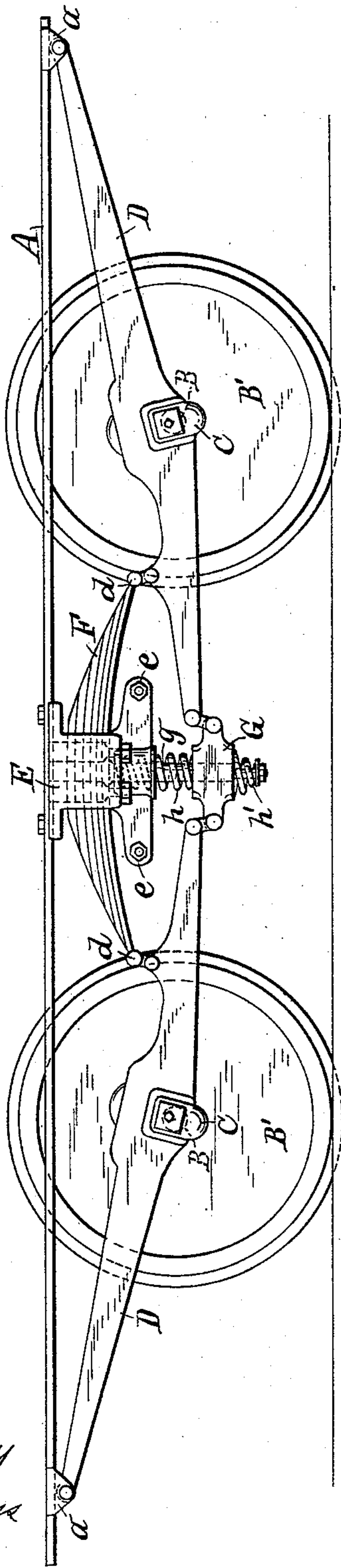
2 Sheets—Sheet 1.

E. CLIFF.
CAR TRUCK.

No. 539,935.

Patented May 28, 1895.

Fig. 1.



Witnesses:

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H. M. Seamans

Inventor.

Edward Cliff
By C. H. Duell
his Attorney.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

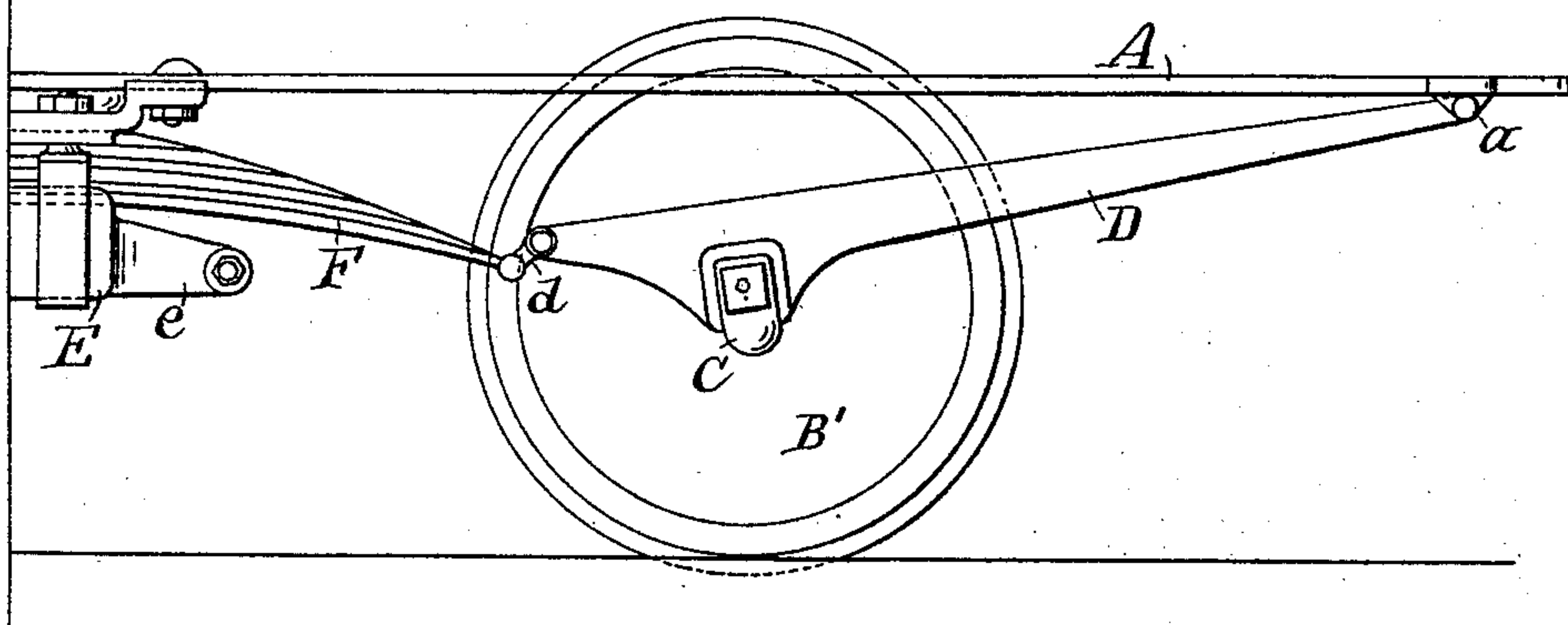


Fig. 3.

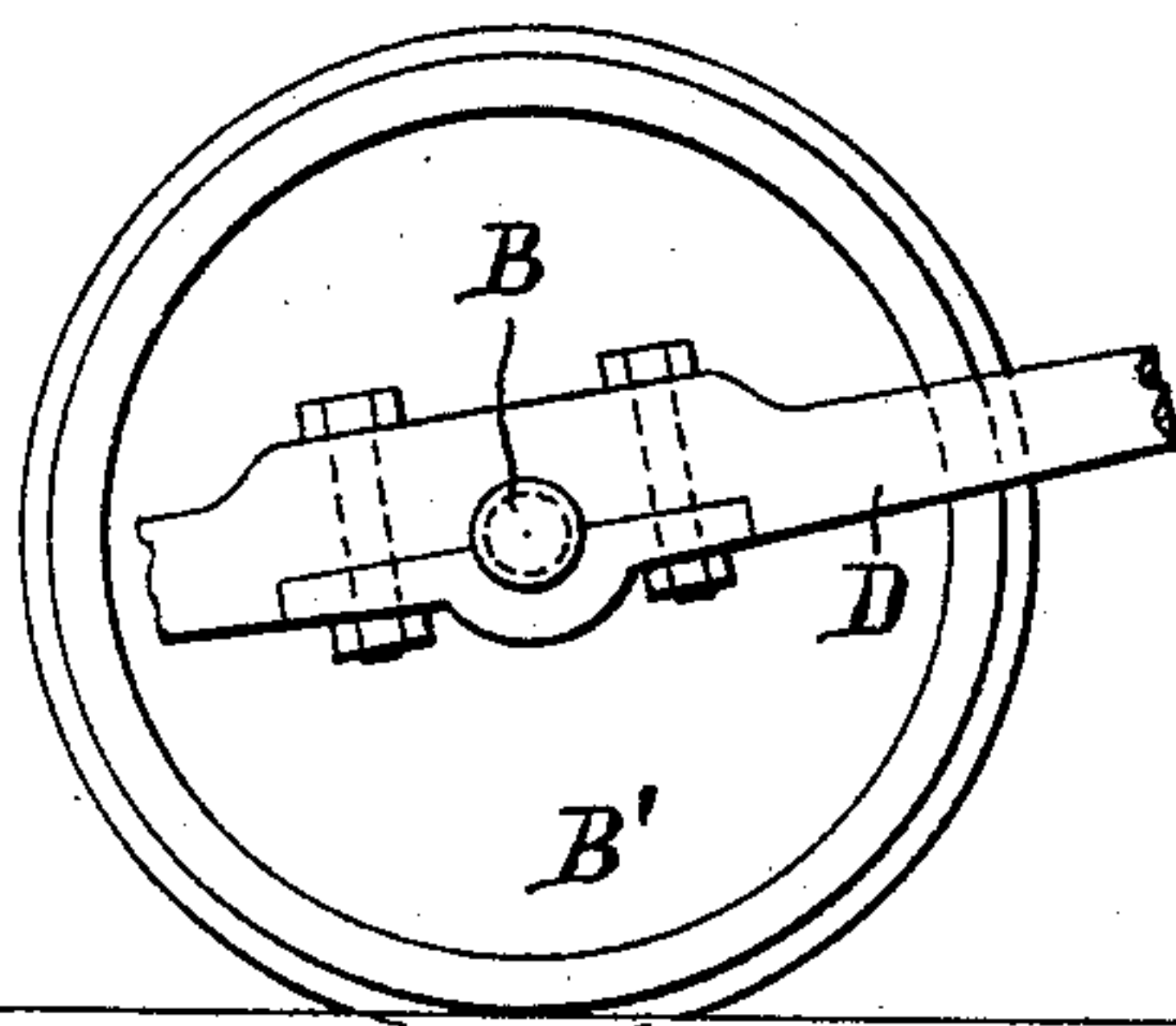
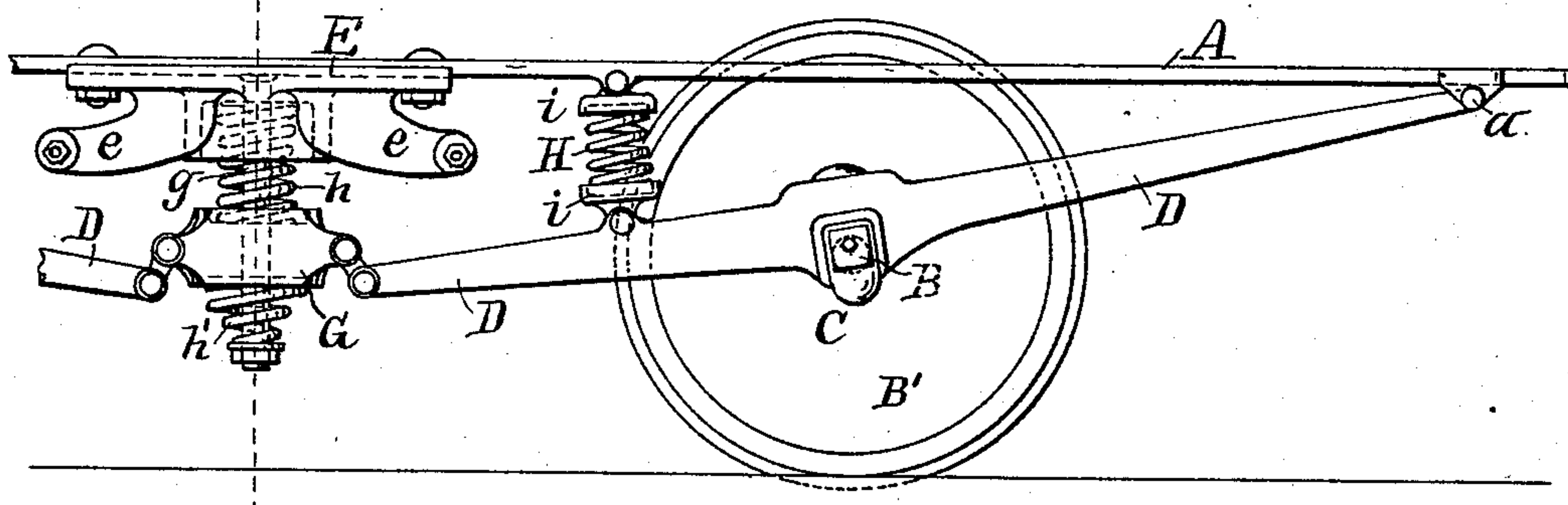


Fig. 4.

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UNITED STATES PATENT OFFICE.

EDWARD CLIFF, OF NEWARK, NEW JERSEY.

CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 539,935, dated May 28, 1895.

Application filed December 31, 1894. Serial No. 533,424. (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
5 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 certain improvements in car-trucks, particularly electric car-trucks, and the object is to provide such trucks with means whereby both ends of the body, or the frame on which the body is supported, will operate synchronously so that when a
15 load or downward pressure is applied to one end of the frame the opposite end shall become depressed correspondingly, and, further, that the longitudinal rocking of the body when the truck is moving upon an uneven or irregular track may be obviated.

To this end my invention consists in the combination with the frame and the axles and wheels, of a spring on each side of the frame between the wheels, and levers connected to
25 said springs and extending therefrom to the ends of the frame and pivoted thereto, and fulcrumed intermediate of their length on the said axles; and my invention consists in certain other combinations of parts hereinafter described and specifically set forth in the claims.

In the drawings accompanying this specification and forming a part hereof, Figure 1 is a side elevation of my improved car-truck.
35 Fig. 2 is a modification showing the semielliptic spring connected with one of the levers in a different way. Fig. 3 shows the lever connected with coil-springs, and Fig. 4 shows one of the levers fulcrumed directly upon the axle.

Referring specifically to the drawings, A represents the frame upon which the body of the car rests, or what is usually termed the upper or movable frame of a car truck. B, B, indicate the axles. B', B' are the wheels rigidly
45 mounted upon the axles as usual to turn therewith, and C, C are axle-boxes mounted on the ends of the axles for the latter to turn in. The axle-boxes are preferably rigidly secured to the levers, D, D and may be integral therewith. In the center, on each side of, and suspended below the truck frame is a hanger, E,

supporting one or more springs which are connected to the inner ends of the levers, D, D. The said levers, D, D extend from these central springs, longitudinally of the truck frame, 55 or toward the opposite ends thereof and are there pivoted to lugs, a, a.

Referring to Fig. 1 of the drawings, F is the upper half of a semi-elliptic spring supported at its center by the hanger E. The
60 ends of this spring are connected by links, d, to the levers, D, D, midway between their inner ends and the axle-boxes. The inner ends of each set of levers, D, D, are linked to a block, G, which is adapted to move vertically 65 upon a bolt, g, held rigidly in the hanger E. The block, G, is held between coiled springs, h, h', on the bolt, g, which springs aid the elliptic spring F, in supporting the levers, D, D. e, e are extensions on the hanger, E, to
70 the ends of which the cross-bars of the truck are connected.

The construction shown in Fig. 2 differs from that shown in Fig. 1, in that the inner ends of the levers, D, D, are short and are
75 connected at their ends to the ends of the semi-elliptic spring by links, the coiled springs being dispensed with.

Fig. 3 shows a construction without a semi-elliptic spring, only the coiled springs shown 80 in Fig. 1 being used in the center. There are, however, shown with this construction, coil springs, H, between the levers, D, and the frame, A, above, midway between the axle boxes and the inner ends of the levers. The
85 sockets, i, i, for the spring, H, are pivoted to the lever and frame respectively. The inner ends of the levers, D, D extend slightly below the block, G, in this case instead of above it as shown in Fig. 1 of the drawings. 90

Fig. 4 shows one of the levers, D, fulcrumed directly on the axle, B, which dispenses with the usual form of axle-box shown in the other figures. Instead of connecting the axle-boxes rigidly to the levers, D, D, said levers may be
95 saddled on said boxes, which shall permit the frame being removed from the axles and wheels without removing any bolts; or, the axle-boxes themselves may be so formed and held that the levers, D, D, may turn on them 100 if desired.

Having described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. In a car-truck, the combination with the frame and the axles and wheels, of a hanger secured rigidly to the frame, on each side, in the center, the upper half of an elliptic spring supported at its center by each hanger, levers connected to the ends of said springs by links and extending therefrom in opposite directions to the ends of the frame where they are connected, said levers being fulcrumed intermediate of their length on said axles, bolts extending downward from the hangers, blocks yieldingly supported on said bolts, and links connecting the blocks with the inner ends of the levers, as and for the purpose set forth.

2. In a car-truck, the combination with the frame and the axles and wheels, of a hanger secured rigidly to the frame, on each side, in the center, the upper half of an elliptic spring supported at its center by each hanger, levers connected to the ends of said springs by links and extending therefrom in opposite directions to the ends of the frame where they are connected, said levers being fulcrumed intermediate of their length on said axles, bolts extending downward from the hangers, blocks movable vertically upon said bolts, coil-springs on said bolts above and below the blocks, and links connecting the blocks with

the inner ends of the levers as and for the purpose described.

3. In a car-truck, the combination with the frame and the axles and wheels, of a hanger secured rigidly to the frame on each side and in the center, extensions, *e, e* on each hanger, a spring supported by each hanger, and levers connected to said springs and extending therefrom in opposite directions to the ends of the frame and pivoted thereto, said levers being fulcrumed intermediate of their length on the said axles, substantially as described and shown.

4. In a truck for car bodies, the axles and wheels, two sets of levers arranged longitudinally under opposite sides of the body and connected at their outer ends to the truck frame and having their inner ends connected together by a block, a spring on each side and below the center of the frame and connected at opposite ends to the levers, and axle-boxes for the axles to turn in connected to the said levers intermediate of their length, substantially as described and shown.

In testimony whereof I have hereunto signed my name.

EDWARD CLIFF. [L. s.]

Witnesses:

MARK W. DEWEY,
H. M. SEAMANS.