

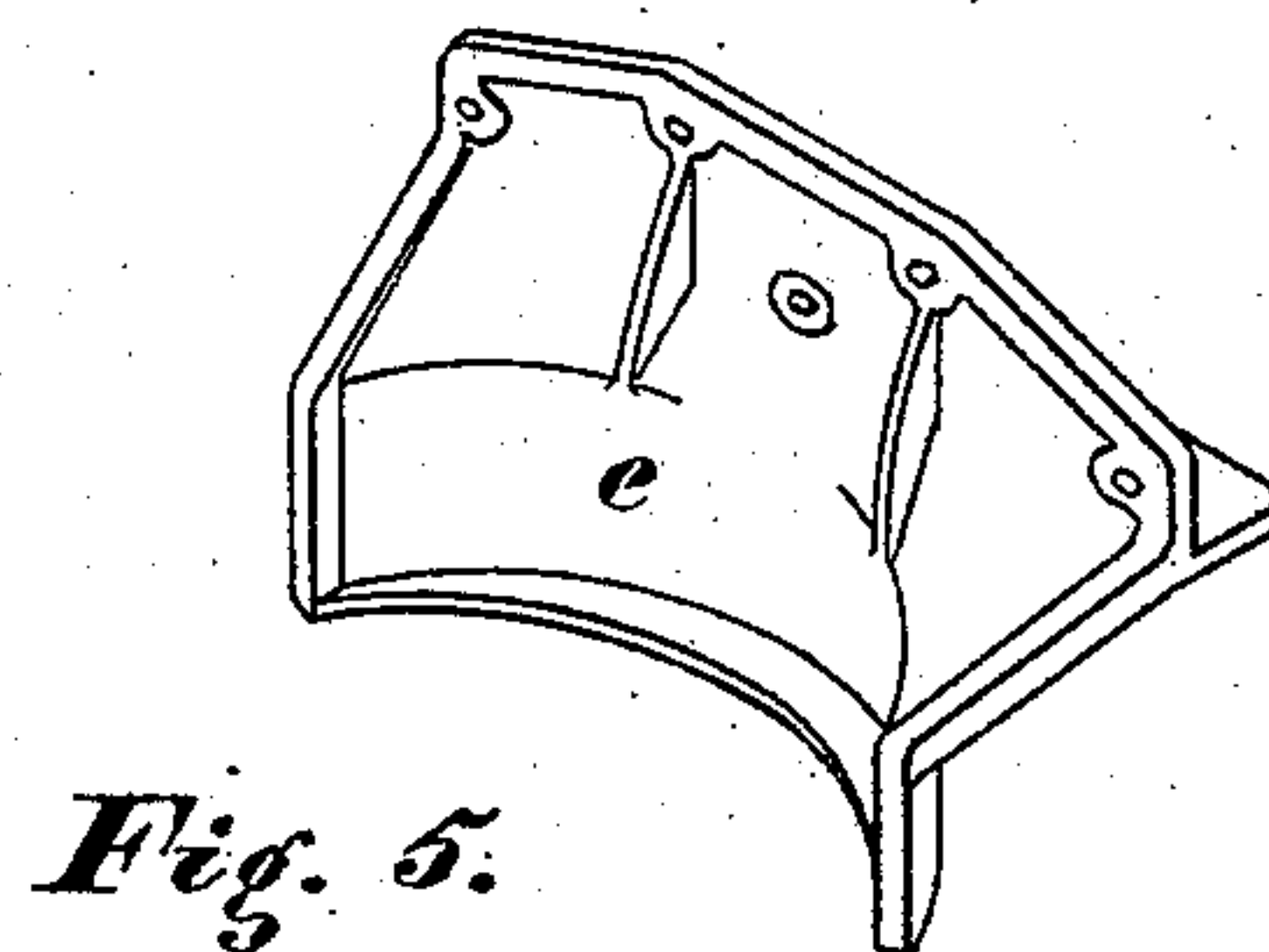
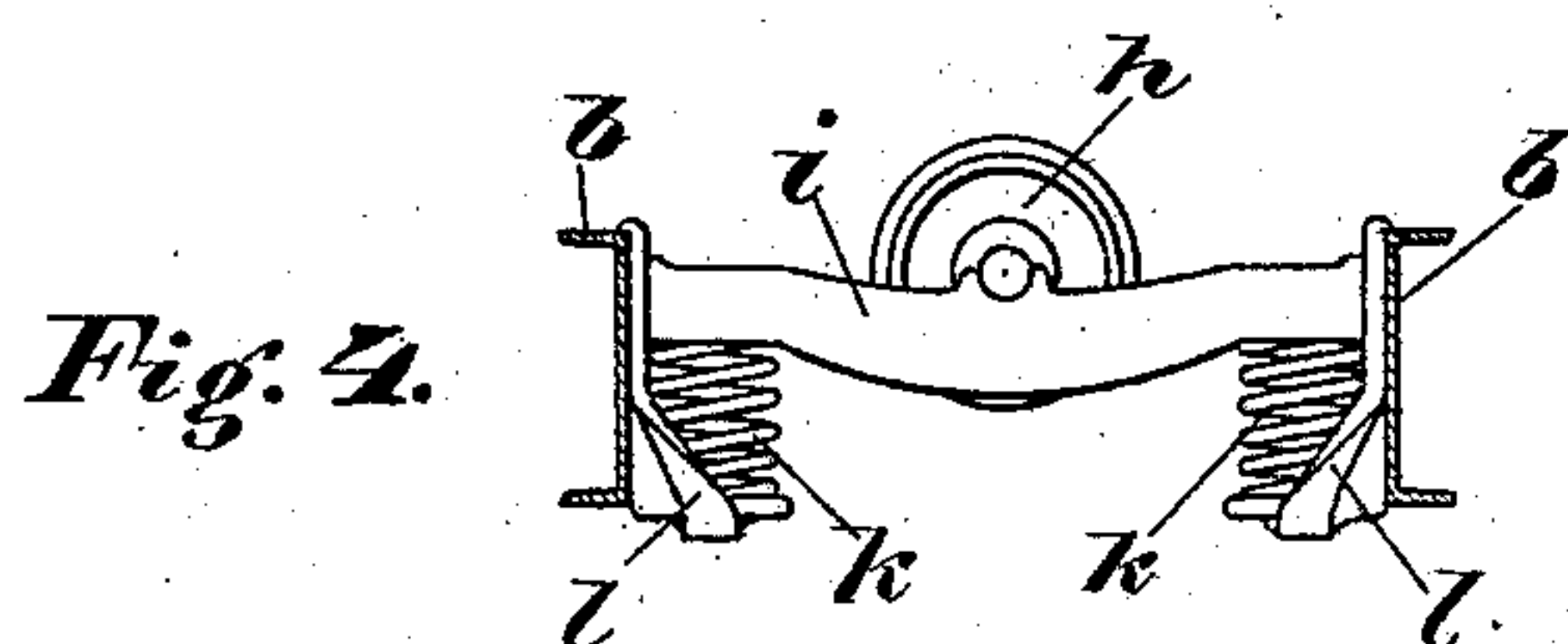
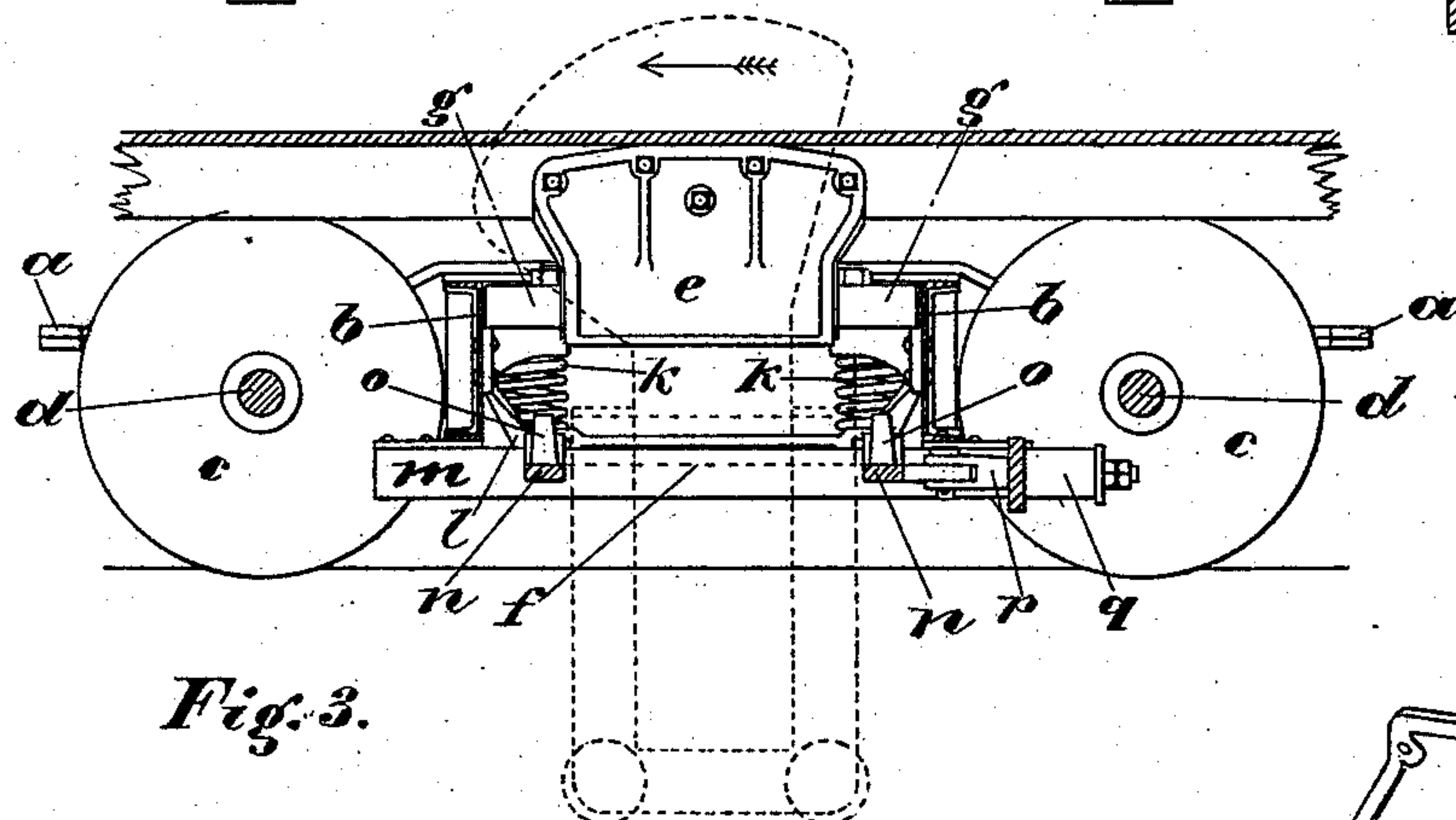
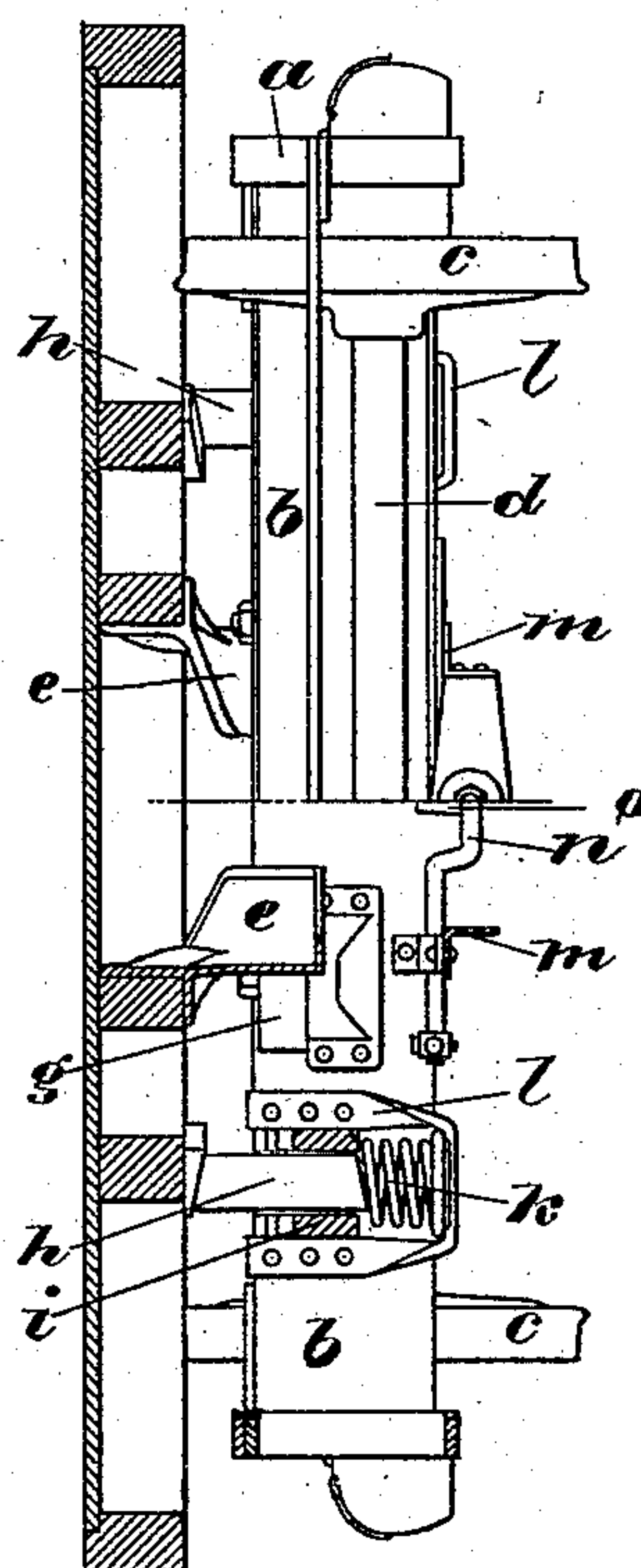
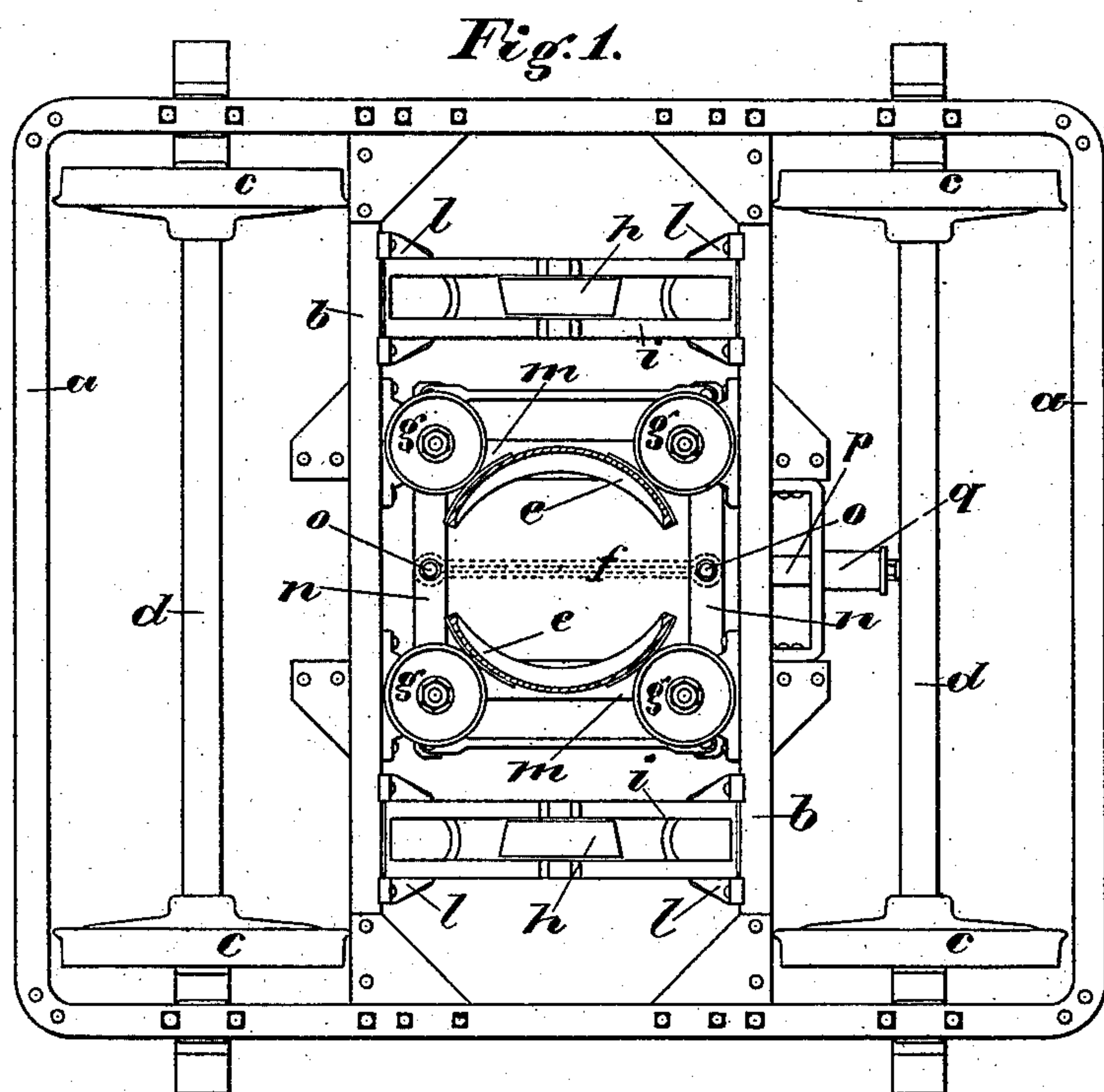
(No Model.)

S. A. BEMIS.

CAR TRUCK.

No. 372,293.

Patented Nov. 1, 1887.



WITNESSES:

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CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 372,293, dated November 1, 1887.

Application filed August 11, 1887. Serial No. 246,660. (No model.)

To all whom it may concern:

Be it known that I, SUMNER A. BEMIS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Cable-Car Trucks, of which the following is a specification.

This invention relates to cable-car trucks, the object being to provide an improved truck for cars of this class, together with improved means for pivoting the same under the car and for supporting the weight of the car on the truck, whereby the friction resulting from running around curves is greatly reduced, and an improved easy bearing for the car is obtained.

Cars designed to be run by means of a cable and grip usually have attached to the trucks or running-gear a frame which holds the "grip" in such a position that when the car is running the grip is dependent through a continuous slot in the roadway, which allows it to grasp the cable as it is drawn along in a conduit or small tunnel with which the slot in the roadway communicates throughout its length. It will be readily understood that as the slot is of limited dimensions it becomes of great importance that the frame and the dependent grip shall be held under the car and running-gear in such a manner as to be enabled to maintain their central position with regard to the slot whatever may be the swaying or side motion of the car itself, and this whether the car may be running upon a straight track or "tangent" or upon a curve. When a car is mounted upon what is known as a "rigid" wheel-base—say, upon four wheels fixed more or less directly to the frame of the car, and with the frame and grip fixed at the center of the rectangle formed by the four wheels—it will be seen that the frame and grip will be held in a central position when the car is running upon a tangent, but that in passing along a curve, while the grip will be held in a position that is tangential to the curve, a deflection from the center must be provided for, which is equivalent to the version of an arc, the radius of which is that of the curve and the chord of which is the length of the wheel-base. The exigencies of cable-car traffic, however, demand the use of longer cars than it has been found practicable to run upon

a rigid wheel-base, and, accordingly, cable cars are now constructed to run upon two four-wheel trucks—one at either end of the car—and it is necessary that these trucks should be constructed to pivot freely upon or about a center. This pivotal point or center has usually taken the form of a center-pin, and the necessity for the use of the center-pin has made it impossible to place the grip in the center of the rectangle formed by the four wheels of the truck to which the grip is attached. In passing around curves under these circumstances the grip is no longer held in a position that is tangential to the curve at the center of the truck, but, following the curve of the slot a short distance in advance or in the rear of the center of the truck, will be deflected at an angle to the right or left of the direction in which the four wheels of the truck are running; and, as the grip follows the line of curve outside the center of one truck, while the body of the car follows the line of a chord connecting the centers of the two trucks, it will be seen that a considerable space for deflection or side motion of the grip must be provided for in the floor of the car and an increased wheel-base in the truck will be required to accommodate the grip and frame.

Now, this invention is designed to enable a four-wheel truck to turn freely about its center and yet provide the means of fixing the grip, also, in the same center, with the advantages that, first, the wheel-base of the truck can be reduced to a minimum, which enables it to pass around curves of short radius with great facility; second, the grip is held at the center of the rectangle formed by the four wheels of the truck, thus being in the best possible position from a mechanical point of view, as it maintains the grip in a position tangential to the line of track in rounding curves, and is thus least hurtful to the cable, the grip, and the grip-frame; third, the short wheel-base of the truck further reduces the side motion of the grip to a minimum; fourth, the deflection of the grip in relation to the body of the car is reduced to a minimum; fifth, the loss of power by friction from all causes enumerated is reduced to a minimum.

In the accompanying drawings, which form part of this specification, and in which the

same letters indicate the same or like parts, Figure 1 is a plan of a cable-car truck, showing a portion of the body center-bearing, which is attached to the car. Fig. 2 is a half transverse section and half end elevation of the truck and shows the floor-framing of the car. Fig. 3 is a longitudinal section of the truck and a part of the floor-framing of the car. Fig. 4 is a view of portions of Figs. 1, 2, and 3; and Fig. 5 is an isometrical perspective view of the body center-bearing; also a portion of Figs. 1, 2, and 3.

a is the truck-frame; *b b*, the transoms; *c c c*, the wheels; *d d*, the axles; *e e*, the body center-bearing, which is fixed to the floor-frame of the car. This center-bearing is shown in two parts, being divided at front and rear in order to afford space for *f*, the grip.

g g g g are the center-bearing friction-wheels. *h h* are the side-bearing friction-wheels; *i i*, the side-bearing bolster-frames; *k k k k*, the bolster-springs; *l l l l*, the bolster-spring bearings; *m m*, the grip-frame; *n n*, the grip-frame cross-bearings; *o o*, the grip-frame pins; *p*, the grip-frame draft-pin; *q*, the grip-frame draft-spring.

The truck-frame *a* is carried in the usual manner upon the wheels and axles, and in its turn supports the transoms *b b* and the grip-frame *m m*, all of which are strongly secured together. The grip-frame cross-bearings *n n*, with the grip-frame pins *o o*, rest upon the grip-frame *m m* and are held by suitable guides. The grip *f* (shown in dotted outline in Fig. 1) is held in the center of the rectangle formed by the four car-wheels upon the grip-frame pins *o o*, and when it grasps the moving cable it is drawn forward, (in the direction shown by the arrow,) the forward motion being communicated to the truck through the grip-frame draft-pin *p* and the grip-frame draft-spring *q*.

The car is carried upon the side-bearing friction-wheels *h h*, which rest upon suitable journals in the side-bearing bolster-frames *i i*, the whole being balanced upon the bolster-springs *k k k k* and the bolster-spring bearings *l l l l*, which are attached to the transoms *b b*.

The central position of the car upon the truck is maintained by the pressure of the center-bearing friction-wheels *g g g g* against the outer cylindrical surface of the body center-bearing *e e*.

The primary and most convenient form that has been adopted for the body center-bearing *e e* is that of a hollow cylinder, the outer surface of which affords the conditions necessary to permit the free motion or rotation of the truck

around a pivotal point or center. The inside of the cylinder affords a clear space for the grip, which (with its frame, although fixed to and necessarily following the motion of the truck) must be operated from the car itself, through the floor-framing of which it projects upward without, however, being in any way attached thereto. This primary cylindrical form of body center-bearing may be modified to meet the varying conditions of construction. It can be in one or more pieces, and can be provided with lugs, plates, or flanges for the purpose of bolting or otherwise fixing it to the car, and the one or more pieces of which it is composed may be so contrived as to carry the weight of the car, either in combination with or independently of the friction-wheels or other contrivances which may constitute the side bearings.

The position of the body center-bearing *e e* and that of the center-bearing friction-wheels *g g g g* may be transposed—that is to say, the center-bearing friction-wheels might be fixed to the car-body and the hollow cylindrical center-bearing might be fixed to the truck.

The side-bearing friction-wheels *h h* may be varied in number or shape. Their journals may be supported in any convenient manner, or the support of journals may be entirely dispensed with and balls, rollers, or wheels employed, which will roll only upon their outer surfaces.

What I claim, and desire to secure by Letters Patent, is—

1. A car-truck having a grip-frame supported on the frame of the truck substantially in the center of the rectangle formed by the four wheels of the truck, combined with a car having a cylindrically-shaped center-bearing for said truck rigidly secured under the car in a pending position, having openings in its sides opposite the axles, whose lower end enters said grip-frame, and several friction-wheels supported to rotate in a horizontal plane on said grip-frame opposite the sides of said center-bearing, substantially as set forth.

2. The combination, in a car-truck, of the cross-transoms *b*, secured to the truck-frame, the spring-bearings *l*, secured opposite each other on said transoms, the bolster-springs *k*, resting on said bearings, and the bolster-frame *i*, having a roller, *h*, hung thereon and having its ends supported on said springs, substantially as set forth.

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