

(No Model.)

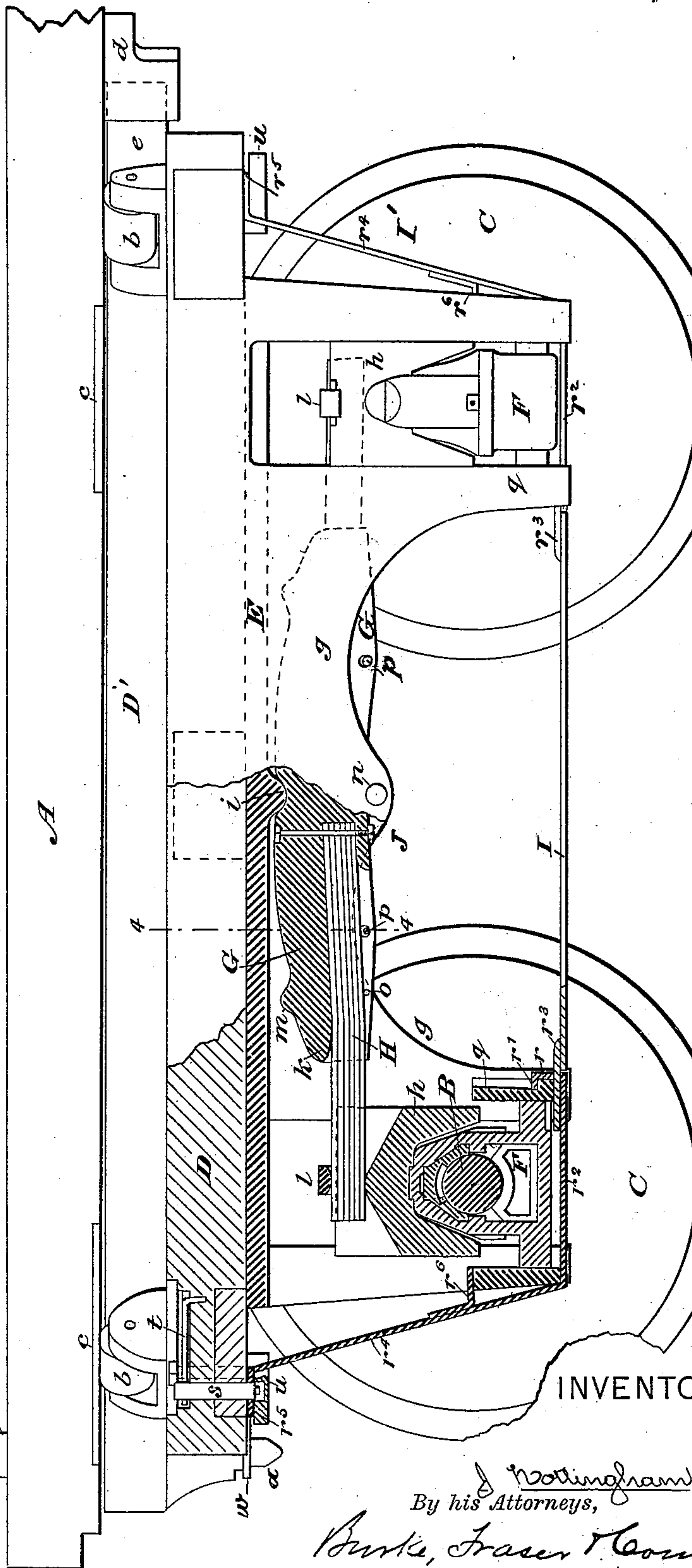
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J. N. SMITH.  
CAR TRUCK.

No. 253,439.

Patented Feb. 7, 1882.

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WITNESSES:

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INVENTOR:

By his Attorneys, J. Nottingham Smith

Burke, Fraser & Cornett

(No Model.)

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Fig. 5.

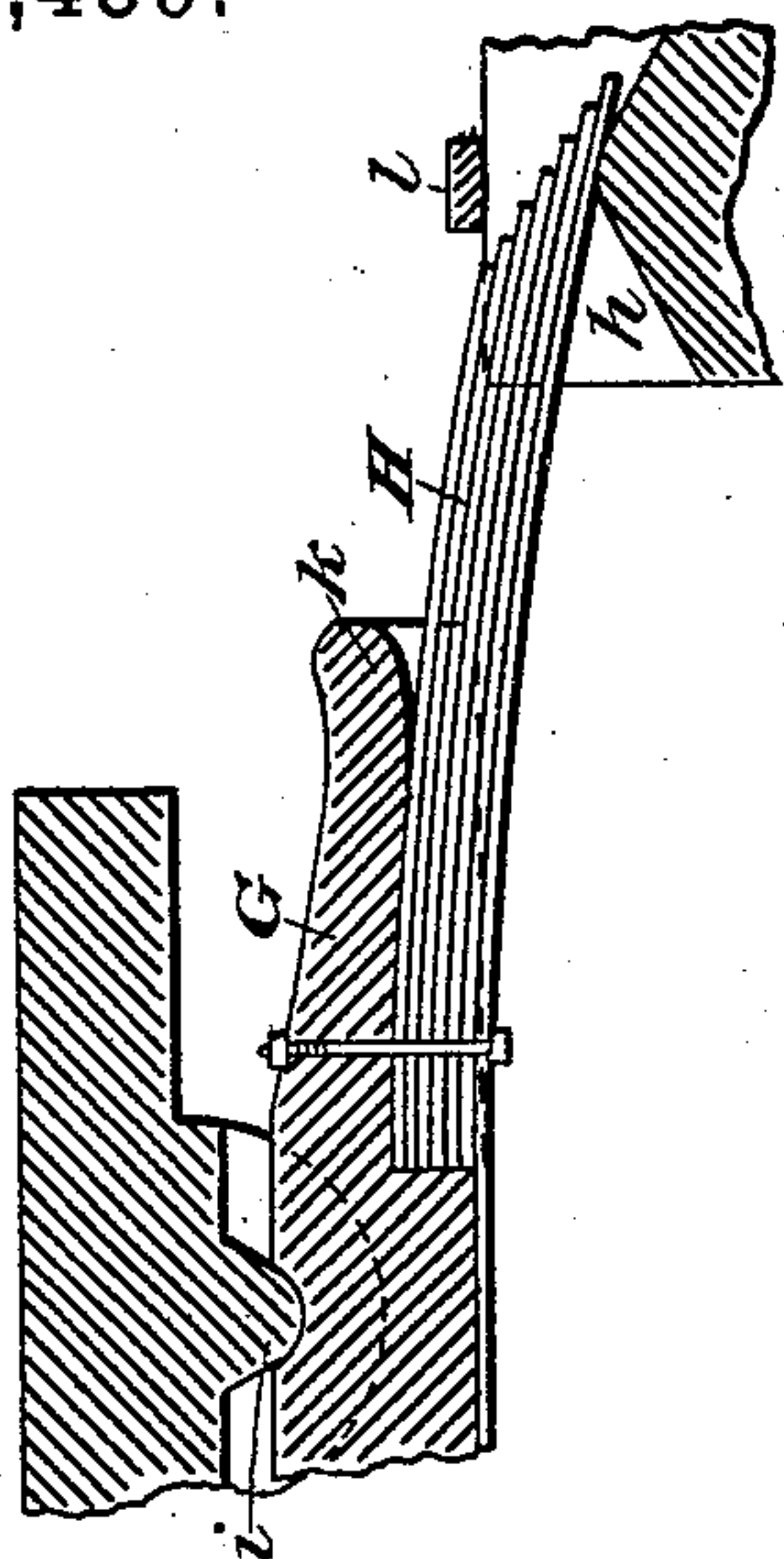


Fig. 4.

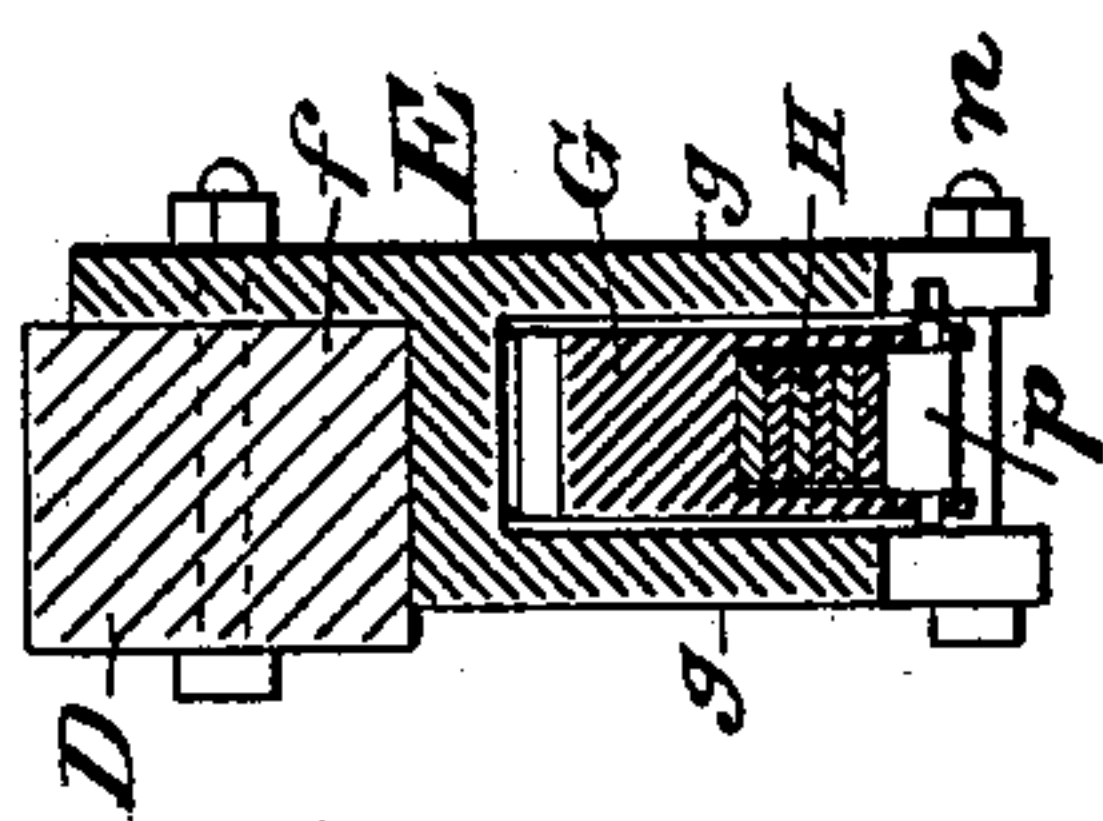
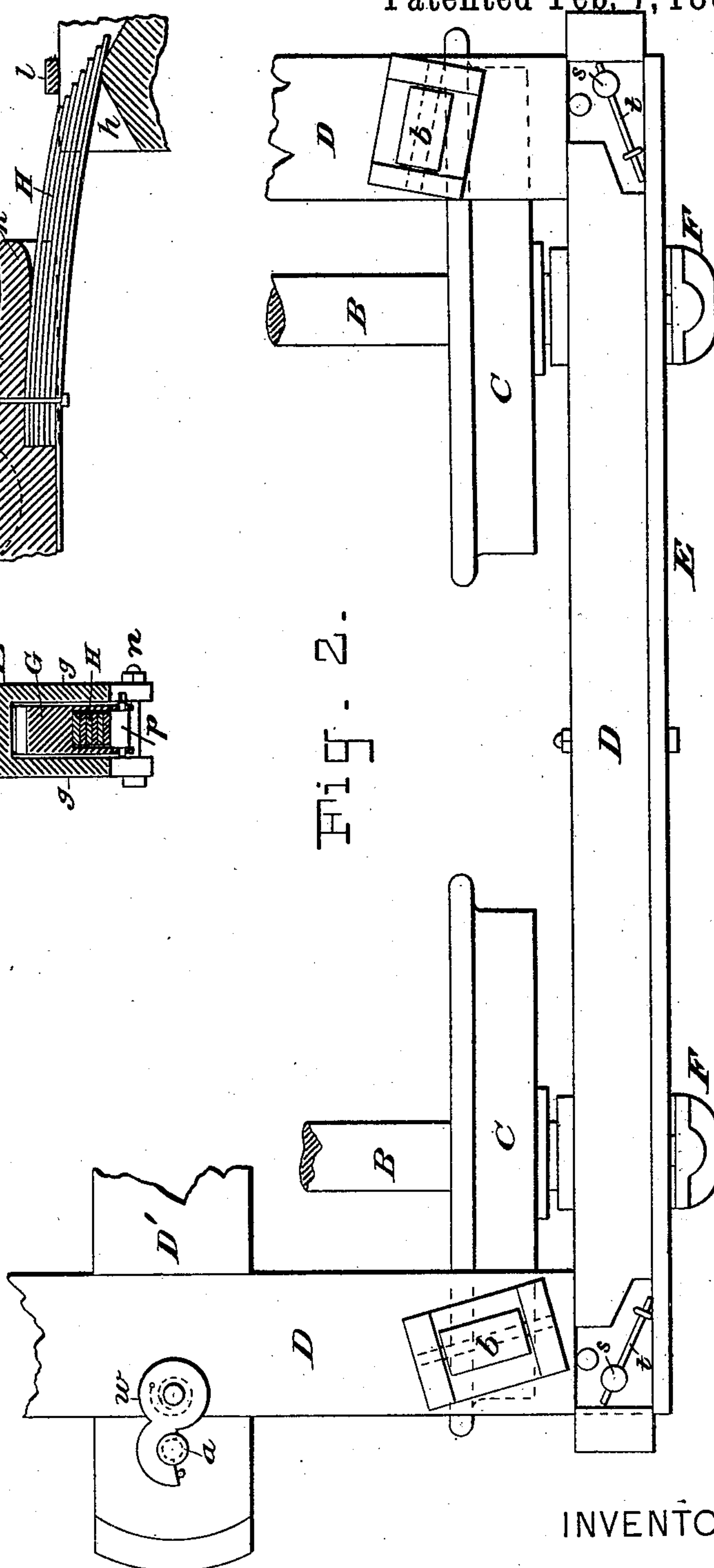


Fig. 2.



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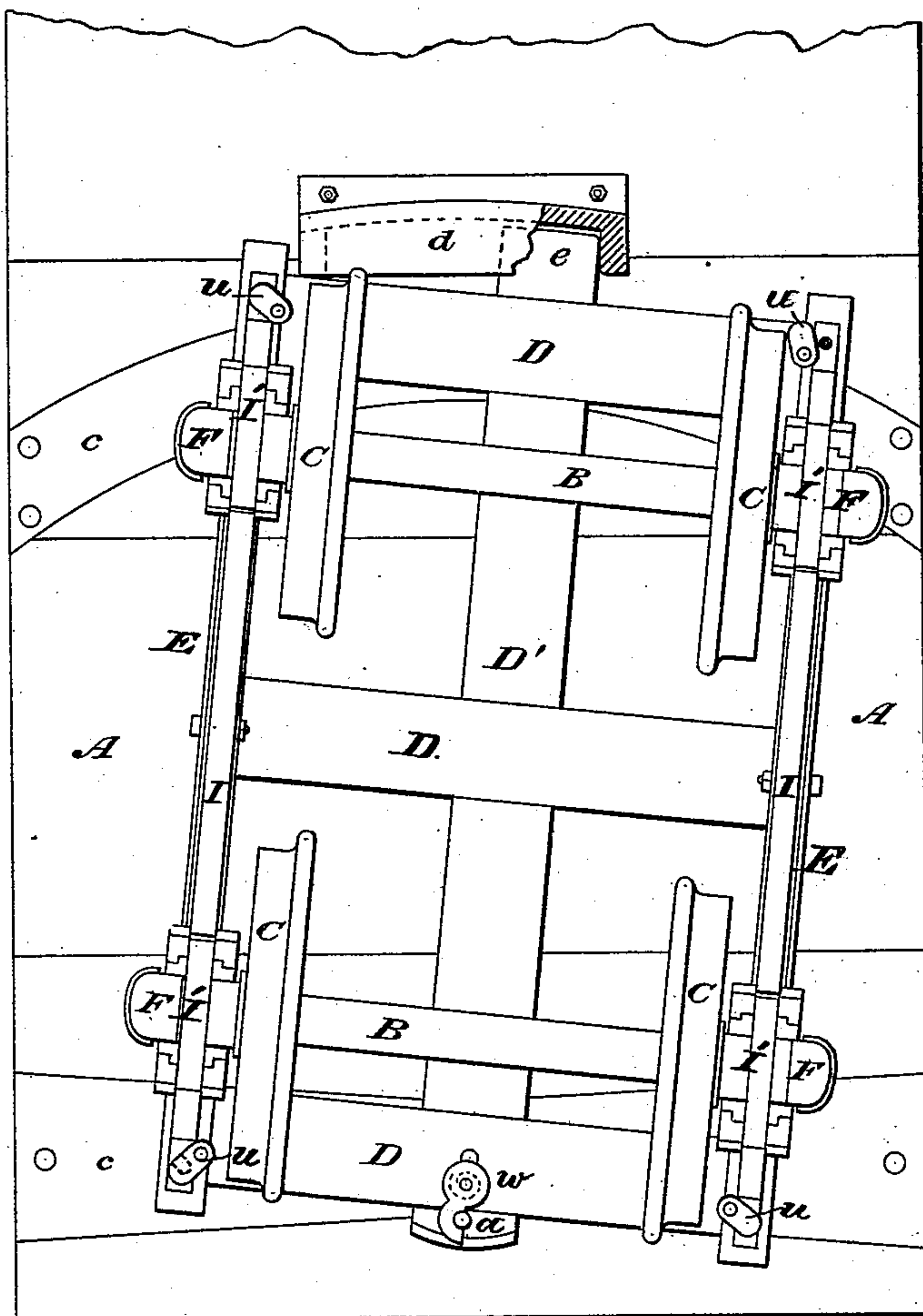
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Fig. 3.



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# UNITED STATES PATENT OFFICE.

JOSEPH N. SMITH, OF NEW YORK, N. Y.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 253,439, dated February 7, 1882.

Application filed November 1, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH NOTTINGHAM SMITH, a citizen of the United States, residing in the city, county, and State of New York, have invented certain Improvements in Car-Trucks, of which the following is a specification.

This invention relates to a method of constructing the trucks of railway-cars, and in mounting the body of the car on the same.

In the truck hereinafter described the truck-frame is pivoted at its end to the end of the car-body, and swings or plays under the bottom of the car on interposed rollers, the wheels being all on one side of the pivot-point. The springs at each side are mounted in rocking beams or eveners in such a manner that the weight thrown upon one axle-journal is shared by the other journal upon that side.

In the drawings, which serve to illustrate the invention, Figure 1 is a side elevation of the truck, partly in section at the left to better illustrate the construction. Fig. 2 is a fragmentary plan of the truck with the car-body removed. Fig. 3 is a plan of the under side of the truck drawn to a smaller scale. Fig. 4 is a cross-section of the housing, everner, and spring on the line 4 4 in Fig. 1. Fig. 5 is a view showing a slightly modified construction of the everner and spring.

Let A represent the platform or body of a car; B, the car-axles, and C the wheels thereon.

D represents the truck-frame, which is connected to the car-body by means of a vertically-arranged pin, *a*. This pin, it will be observed, is arranged to pass through the end of the truck-frame in the median line of the car, and at the end of the latter. The car-body does not rest directly upon the truck, but upon rollers *b b*, mounted on the frame of the truck, and, if desired, metal tracks or ways *c c* may be fixed on the bottom of the car-body for the rollers to bear and travel upon. The end of the axial beam D' of the truck projects beyond the inner end of the truck-frame and plays between fixed stops on the car-body to limit the swing of the truck. These stops may be formed by bolting a housing, *d*, onto the bottom of the car in a position to house the end *e* of the beam, the ends of the housing

serving as stops, as shown in Fig. 3. The truck on the other end of the car (not shown) is constructed and mounted in the same manner as that just described, the free or swinging ends of the two trucks being nearest the center of the car.

The axle-boxes, the everner, and the springs are mounted in a housing, E, which may be of cast-iron, wrought-iron, or steel. This housing, which includes the pedestals, is formed with a socket or recess, *f*, to receive the side beam of the truck-frame, to which it should be firmly bolted, and with cheeks or side plates, *g g*, which are recessed to form pedestals to receive the axle-boxes F F and their saddles *h h*. The saddles and boxes are adapted to play up and down in their pedestals, the former being grooved to fit the margin of the pedestal-recesses, whereby their movements are guided.

G is the everner or rocking beam, which is preferably made from cast-steel. This everner has a ball-and-socket bearing at *i* in the housing E, and has sockets or recesses to receive the ends of the springs H. These springs are laminated, and are prevented from escaping out of their sockets by means of bolts *j*. The roof of the socket in which the spring is fixed is slightly inclined, (see Fig. 1,) and relieved or rounded off at its outer end, as shown at *k*. The outer ends of the springs rest upon the convex tops of the saddles *h*, and are prevented from lifting off their seats by clips *l*.

At *m* on the top of the everner is a swell or projection which strikes the top of the housing and limits the extent of motion of the everner.

It will be understood that there are two housings, E, and two eveners, G, for each track, one on each side of the car, and that there are two springs, H, mounted in each everner, although only one is shown in Fig. 1, the other being hidden by exterior parts. One-half of the everner is also shown in dotted lines; but as both ends of it are alike its construction will be readily understood.

To prevent the everner from falling out when the boxings are removed, as well as to give additional strength to the housing, the two plates *g g* are preferably connected by means of a tie-bolt, *n*. A bolt or pin, *o*, is also placed under the spring H for the same purpose.

When the car is heavily loaded it may be



desirable to give the spring more stiffness. To accomplish this a cam or eccentrically-mounted shaft,  $p$ , provided with bearings in the recess in the evener, is arranged under the spring at the point where it tends to curve downward under a heavy load, (see Figs. 1 and 4,) and this cam is arranged to be turned by means of a wrench, so as to cause it to press the spring firmly against the roof the recess. By this means the spring is virtually shortened and made stiffer. Other means, as the insertion of wedges, may also be employed for this purpose.

The stirrup-straps which embrace the housing E have some novel features which will now be described. These, as ordinarily constructed, are bolted to the truck-frame, and to remove one of car-axles, with its boxes, it is necessary to remove the entire stirrup-strap, which leaves the other axle and boxes of the truck free to escape from the housings. In the construction hereinafter described each stirrup-strap is made in two parts, and no bolts and nuts are employed in attaching it.

I is a stretcher, which extends between the ties  $q$  of the pedestals formed at the housing E. This stretcher has shoulders  $r$ , which abut against said ties, and lips or flanges  $r'$ , which take over shoulders on the same, as clearly shown in Fig. 1.

I' is an angular strap, the horizontal portion  $r^2$  of which takes under the pedestal, crossing the recess in which the axle-box plays, and lying in a recess in the bottom of said pedestal. On the end of this portion is a pin,  $r^3$ , which is arranged to pass through a hole in the shoulder  $r$  of the stretcher I. Another portion,  $r^4$ , of the strap I' extends obliquely up to the under side of the truck-frame, where its extremity  $r^5$  is bent over to fit under the said frame and perforated to receive a spring-bolt,  $s$ . This bolt is normally pressed down, so as to protrude through the strap, by means of a spring,  $t$ , on the truck-frame, which is arranged to press elastically on its upper end. To prevent the bolt from dropping out the spring may be arranged to pass into or through the bolt, and thus uphold it as well as press it down. To keep the strap firmly in place on the bolt a button,  $u$ , is arranged to be turned over said strap and the end of the bolt, and it is found convenient to utilize as a button the head of a bolt employed to secure the timbers of the truck-frame together. It is also found desirable to permit the button to take over a shoulder on the lower end of the bolt  $s$ , and not to pass over the extreme end of the same. To further strengthen and brace the strap a bracket-flange,  $r^6$ , is affixed to it, and this bracket is arranged to rest upon a shoulder of the pedestal, as shown in Fig. 1.

Only one of the straps, I', of the stirrup-strap has been described, as both are precisely alike.

To remove the strap, the bolts  $s$  are pressed back and the strap I' removed by drawing the pins  $r^3$  from their sockets. The stretchers

may be allowed to remain. The truck-frame may now be lifted off the wheels, as the axle-boxes are free to slide out of their recesses in the housing. As before stated, the stirrup-straps I' on opposite sides of the truck may be removed, and one axle freed while the other is retained in place. When the truck is raised or jacked up the weight of the wheel, axle, and axle-box rests upon the horizontal part  $r^2$  of the strap, and this weight is sustained by the pin  $r^3$  and bracket-flange  $r^6$ .

To keep the pin  $a$  in place a spring-dog,  $w$ , is mounted on the truck-frame and arranged to normally and elastically engage a groove in said pin, as best shown in Figs. 2 and 3.

In Fig. 1 the spring H is shown as composed of short lamina of equal length, but they may be made of different lengths, as shown in Fig. 4; and one or all of them may be made to run through, as in the case of the lower lamina in said figure, thus making the two springs on one side in whole or in part of one piece. This is not necessary, however, and is more expensive than the construction first described. In this construction, also, the pin or bolt  $o$  is omitted as unnecessary.

Other readily-detachable means of securing the ends of the stirrup-straps to the truck may be employed in lieu of that shown—as, for instance, a gravity-pin may be employed in lieu of a spring-bolt, and a spring-dog in lieu of the button  $u$ . The rollers  $b$  might also be dispensed with, as they are only employed to lessen the friction.

The housing might be formed simply of the two plates  $g g$ , and the truck be arranged to rest directly upon the evener; as shown, a plate of the housing is interposed. The evener might have a ball,  $i$ , to fit into a socket in the housing or truck-frame instead of the reverse arrangement shown. So far as the evener is concerned the housing may be considered a part of the truck-frame.

The axle-boxes and their saddles form no novel features in this application. The points of novelty therein are reserved for another application.

In lieu of the housing  $d$  other forms of stops may be employed to limit the swing of the truck—as, for example, separate adjustable blocks fixed to the car-body.

I am aware that it has been proposed to pivot the rear truck of a car at its front edge, so as to set all of the wheels back of the pivot-point, and that it has been proposed to insert friction-wheels between said truck and the bottom of the car; and I am also aware that it has been proposed to make the car-body to slide on the truck, so as to shift the pivot-point when the car is to be run with the other end foremost. I am not aware, however, that both trucks of a car have been pivoted at their ends to the end of the car so that their free or swinging ends will be adjacent and nearest the center of the car. By this means I maintain the pivot-points of the trucks at equal distances from the coupling-points, so that when the coupled



cars turn curves the adjacent draw-bars of the cars will have the same lateral swing. In the case of coupled cars, wherein the rear truck of one car is pivoted in front and distant from the coupling-point, and the forward truck of the next car behind is pivoted in front and near the coupling-point, the lateral swing of the car-bodies will be so unequal in turning curves that the coupling must break or the car be thrown from the track.

I am also aware that the springs on one side of a car-truck have been dependently connected, whereby the pressure is distributed; but I am not aware of a combined evenner and spring constructed as herein shown having ever been employed. In my construction the springs rest upon convex faces on the saddles, and these rest on balls or convex projections on the axle-box housings, whereby the box is allowed free play under the spring.

Having thus described my invention, I claim—

1. A car provided with two trucks, one under each end of the car-body, and each truck pivoted at its end to the end of the car-body, and having its free end arranged to swing under the body of the car, whereby, whichever end of the car be foremost, the wheels of the front truck will be behind the pivot-point and the wheels of the back truck in front of the pivot-point, substantially as set forth.

2. The evenner provided with sockets to receive the springs, substantially as set forth.

3. The evenner provided with sockets to receive the springs, and provided with a socket at the center to receive a ball on the housing or truck-frame, all constructed substantially as set forth.

4. The combination, with the housing and pedestals, of the socketed evenner, the springs secured in sockets in the same, the axle-boxes, and the saddles of the said boxes, having convex tops to receive the springs, all constructed and arranged substantially as set forth.

5. The combination, with the housing and pedestals, of the socketed evenner mounted in the housing, the laminated springs secured in sockets in the evenner, the axle-boxes, the saddles, removable from said boxes and provided with convex tops for the springs to rest on, and the clips which secure the springs to the saddles, all constructed and arranged substantially as set forth.

6. The combination, with the truck-frame, of the housings provided with side plates, and recesses or pedestals for the axle-boxes, the evenner G, springs H secured thereto, the axle-boxes, and their saddles, all arranged substantially as set forth.

7. The evenner provided with sockets to receive the springs, and with cams *p*, substantially as set forth.

8. The evenner provided with sockets to receive the springs, with cams *p*, and with pins or bolts *o*, all arranged substantially as and for the purposes set forth.

9. The stirrup-strap consisting of the stretcher I, provided with a lip, *r'*, and a hole to receive the pin on the strap I', and the said strap provided with a pin, *r*<sup>3</sup>, all arranged substantially as set forth.

10. The combination of the elastically-actuated bolt *s*, the button *u*, the strap I', provided with pin *r*<sup>3</sup> and bracket *r*<sup>6</sup>, and the stretcher I, provided with a lip, *r'*, and a hole to receive the pin *r*<sup>3</sup>, all constructed and arranged substantially as and for the purposes set forth.

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

J. NOTTINGHAM SMITH.

Witnesses:

HENRY CONNETT,  
ARTHUR C. FRASER.