

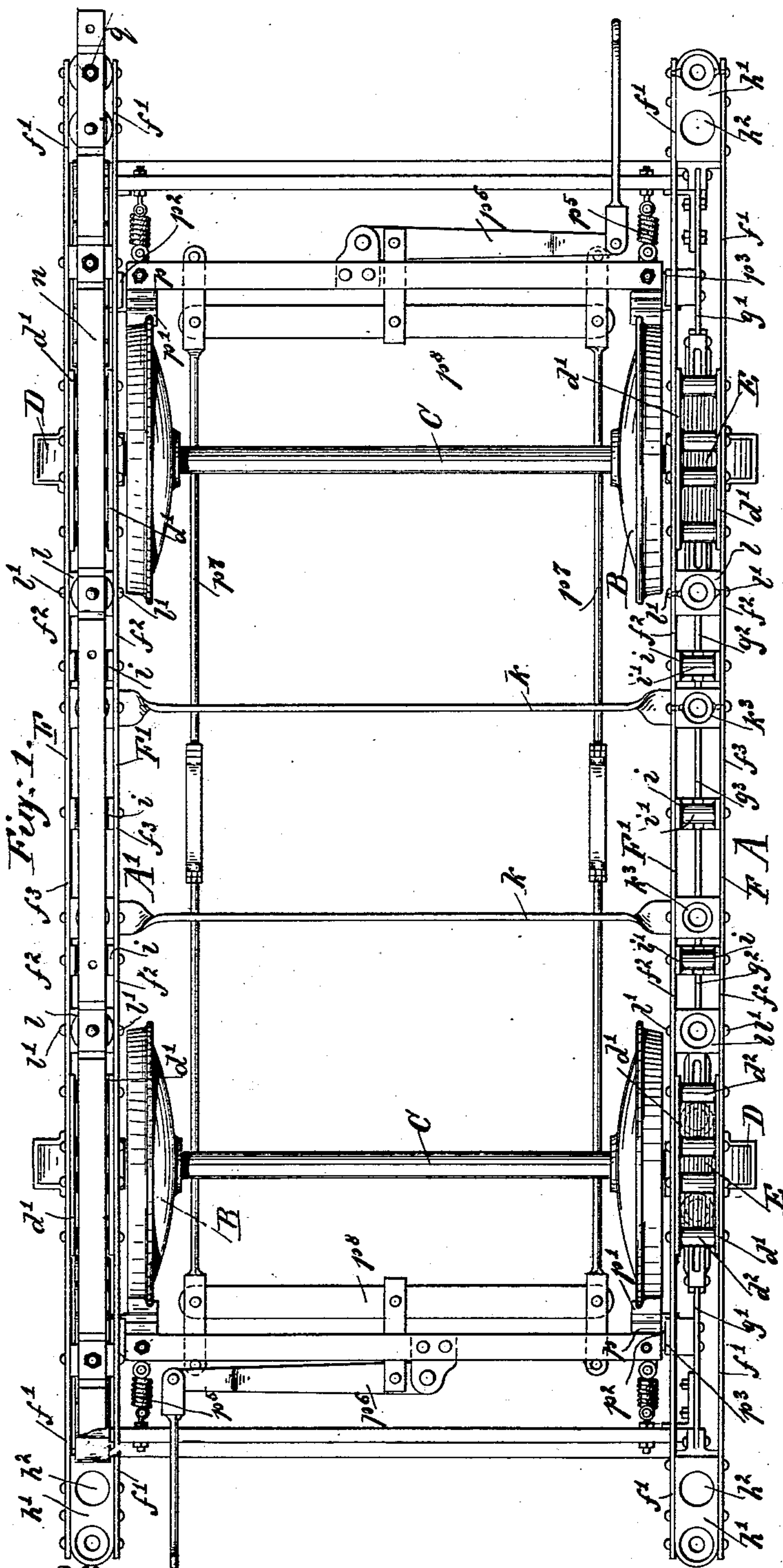
(No Model.)

2 Sheets—Sheet 1.

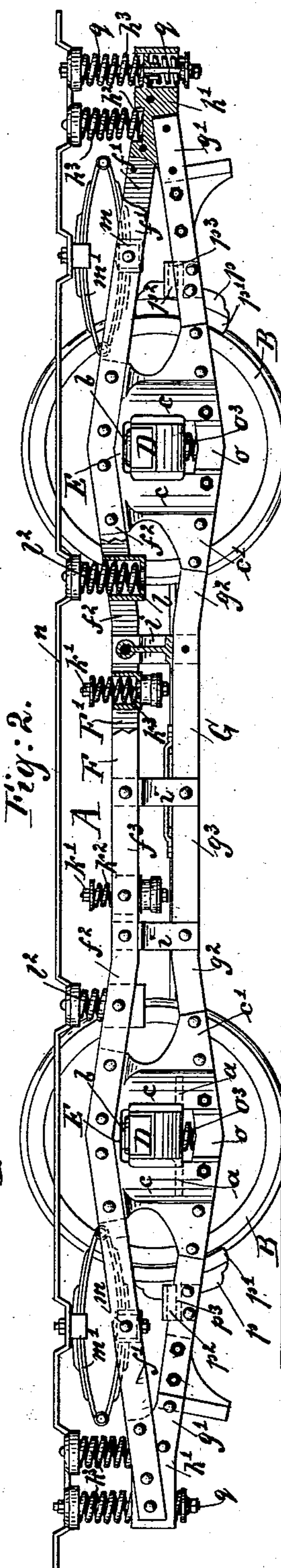
G. W. LACY.  
CAR TRUCK.

No. 563,187.

Patented June 30, 1896.



Witnesses  
D. P. Palumbo.  
Frank P. Wentworth.



George W. Lacy  
By his Attorney, Nathaniel L. Frothingham.

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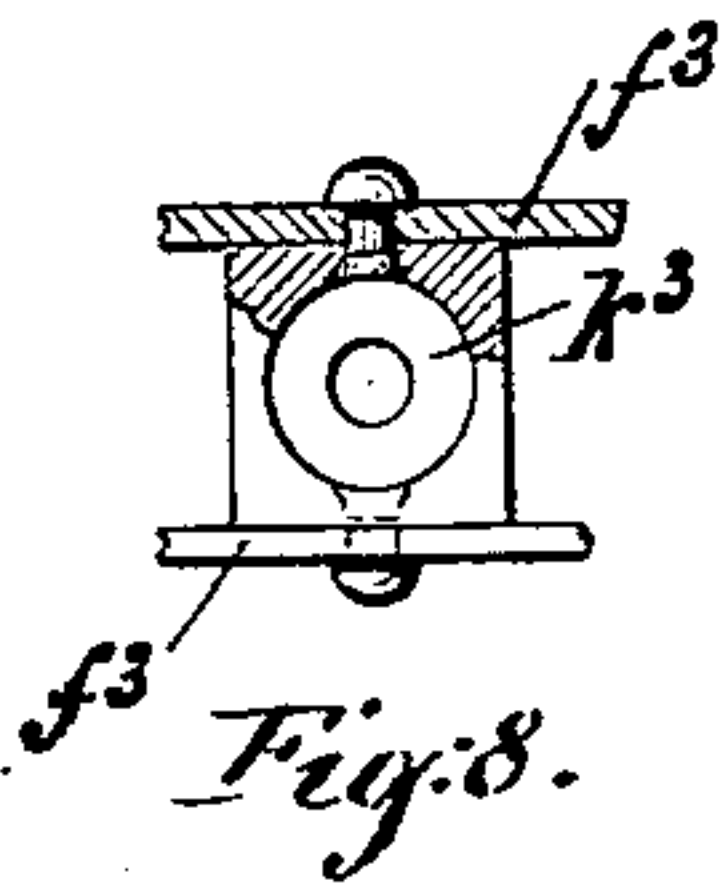


Fig. 8.

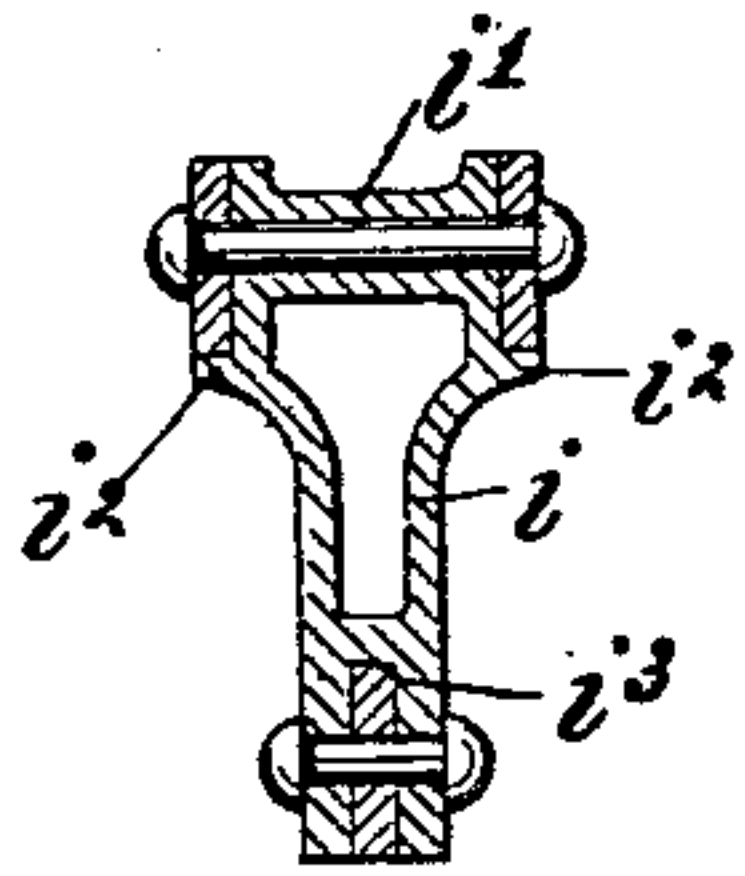


Fig. 7.

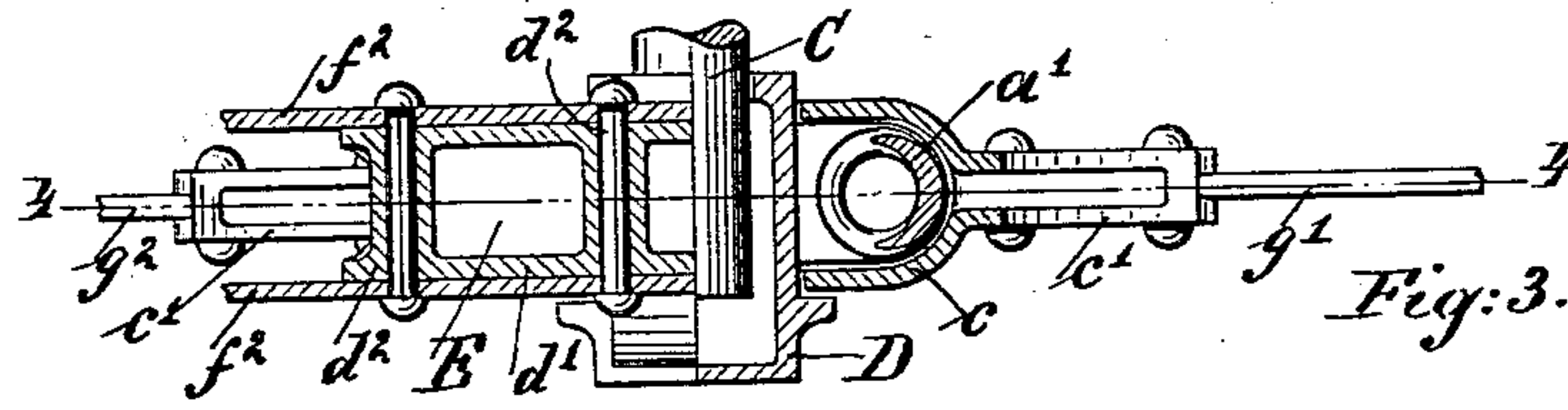


Fig. 3.

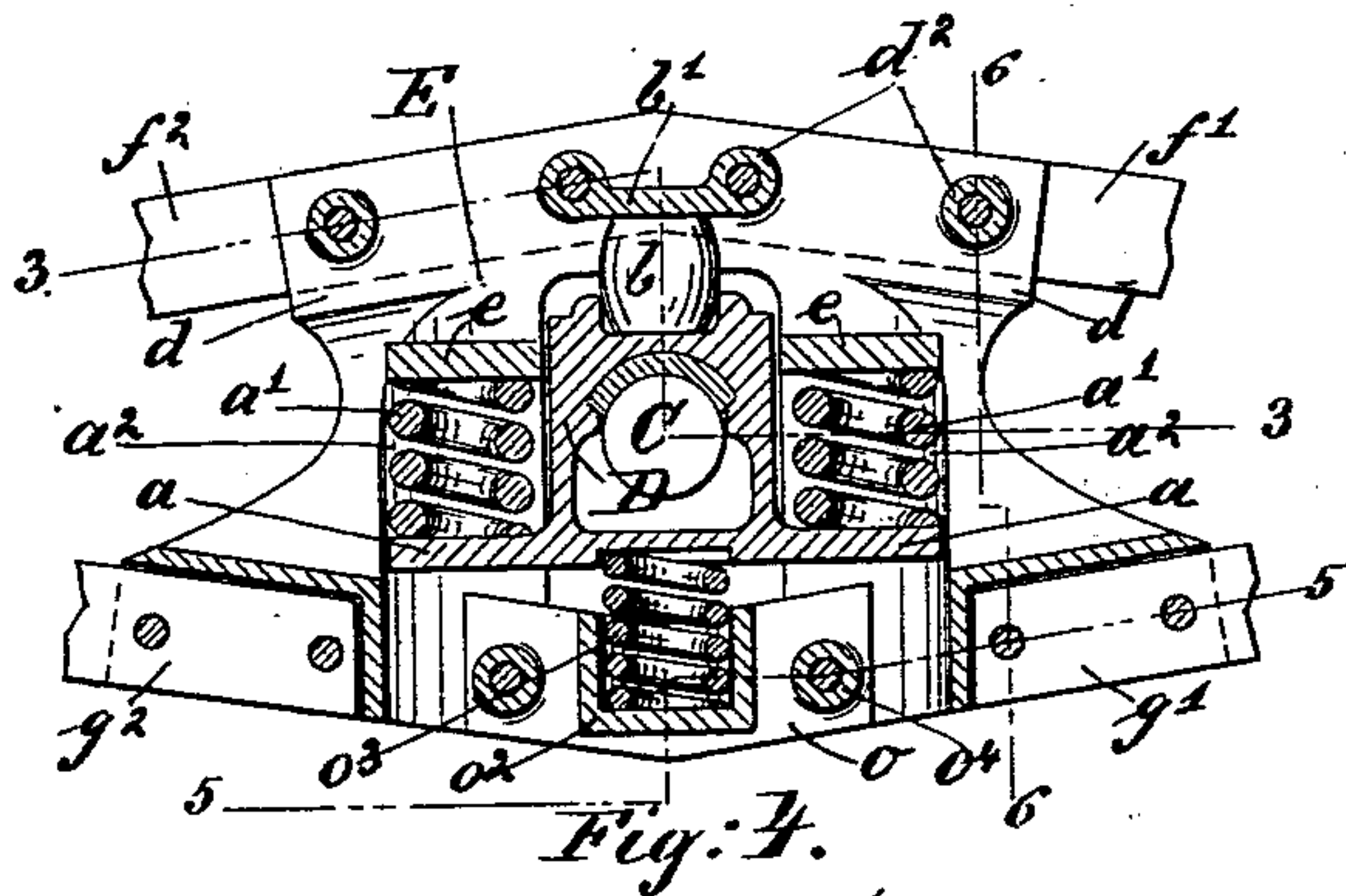


Fig. 4.

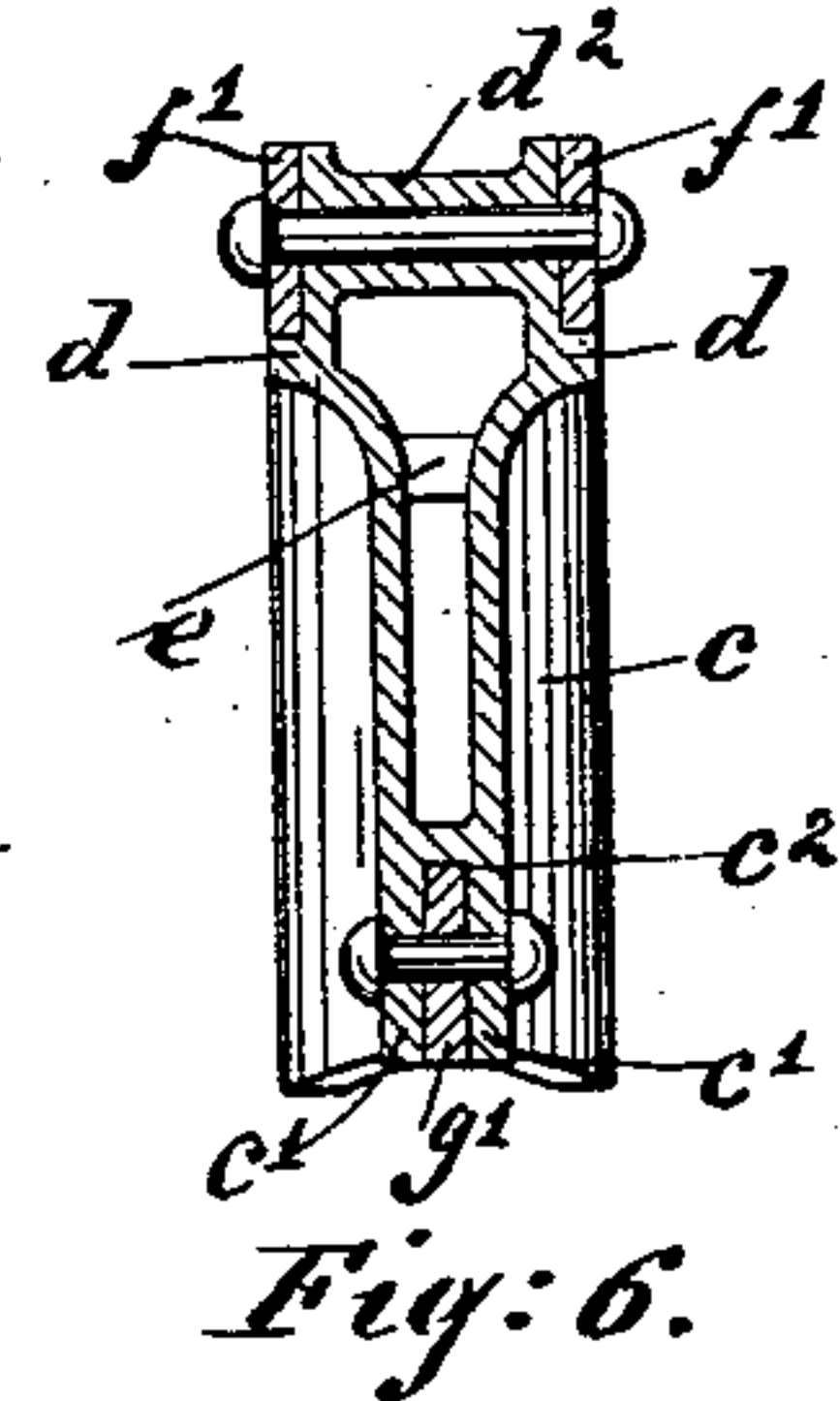


Fig. 6.

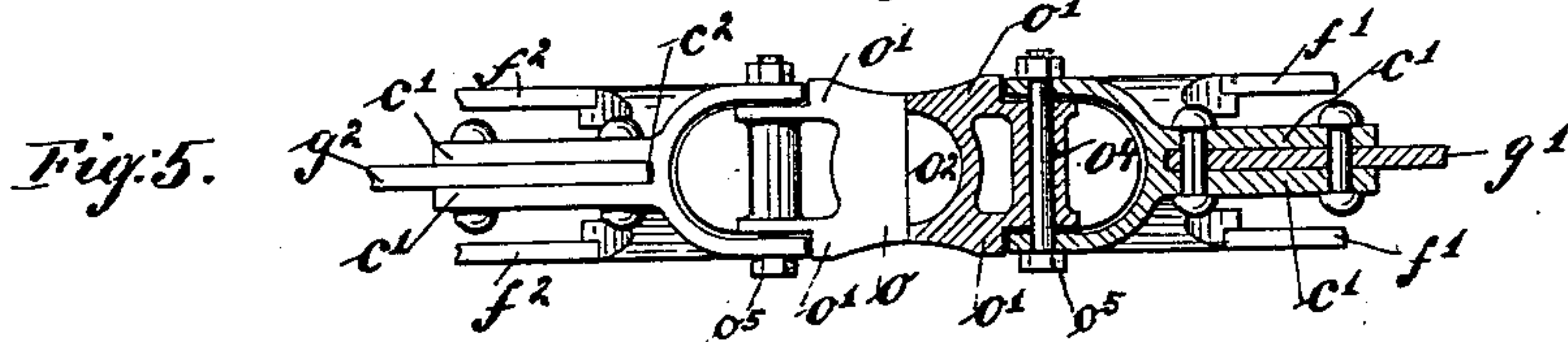


Fig. 5.

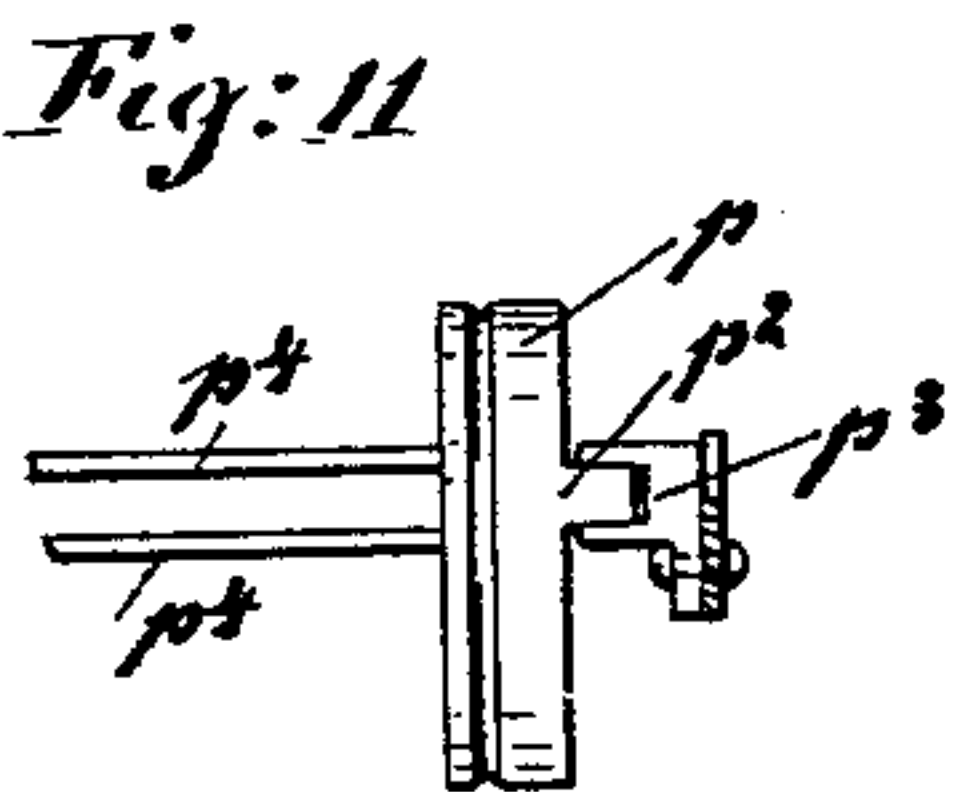


Fig. 11.

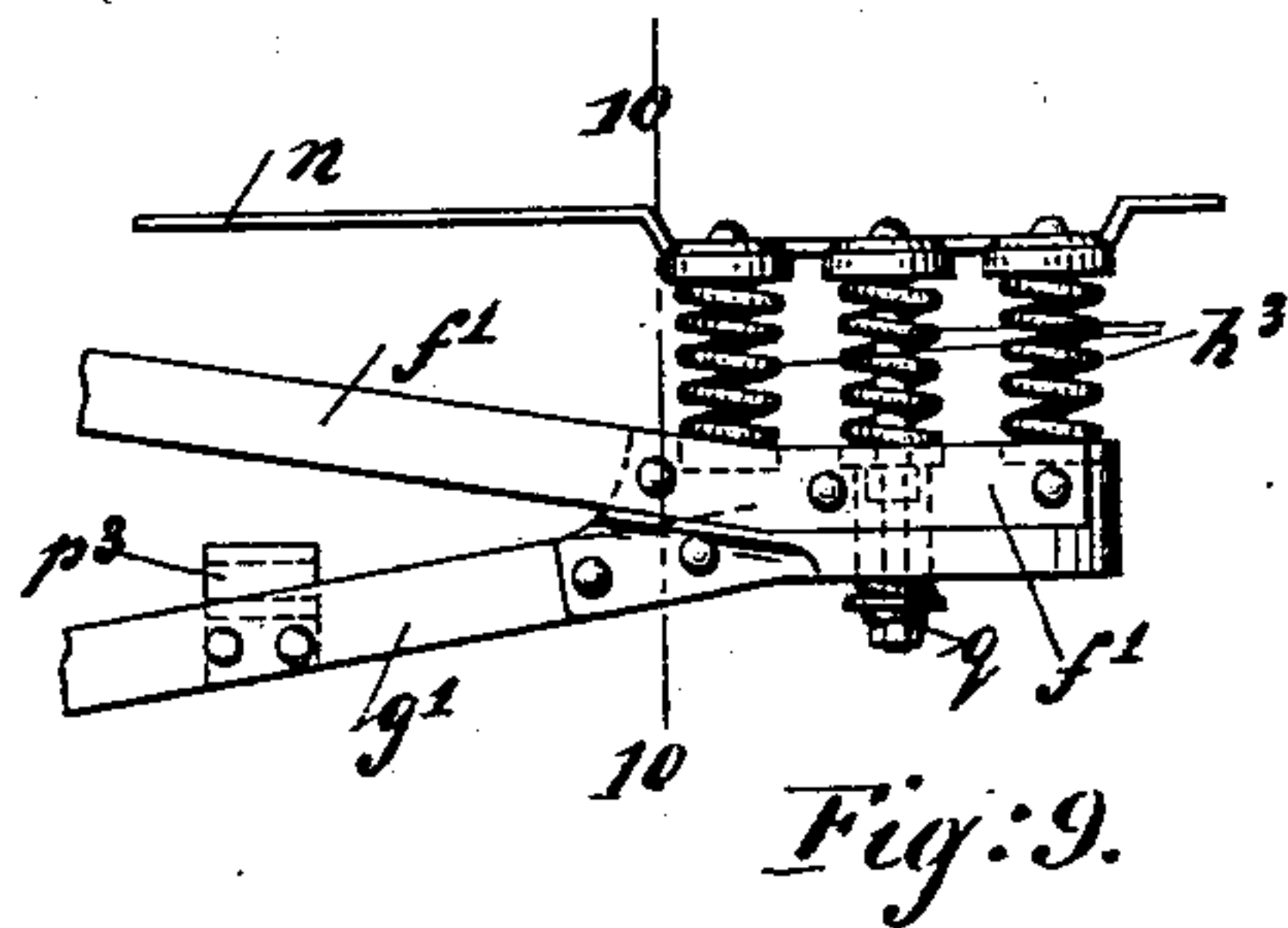


Fig. 9.

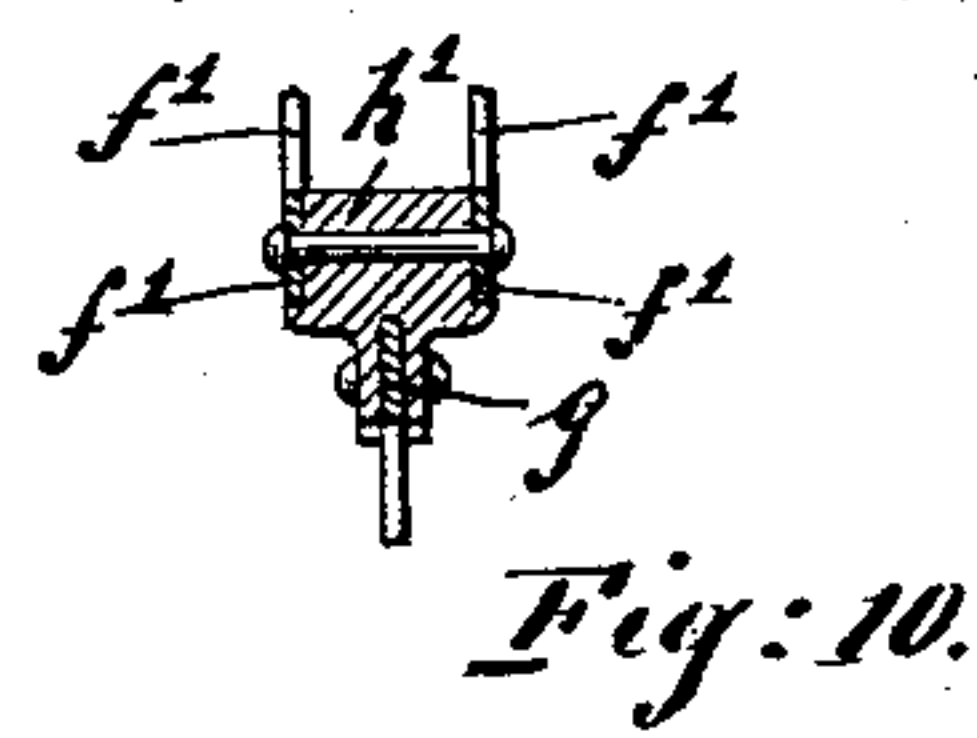


Fig. 10.

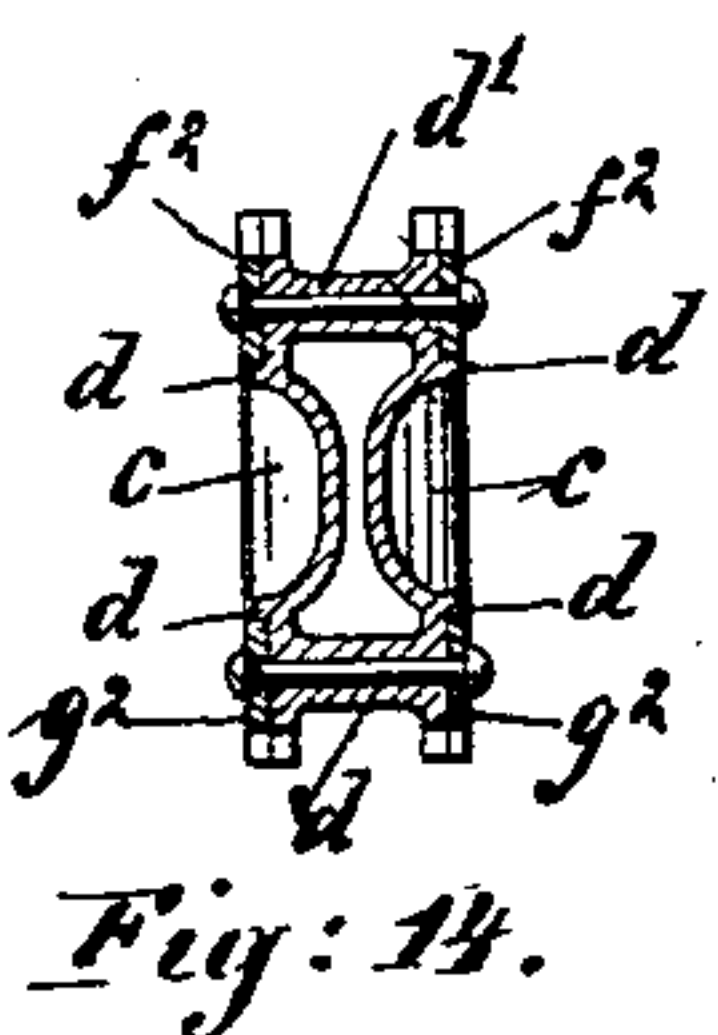


Fig. 14.

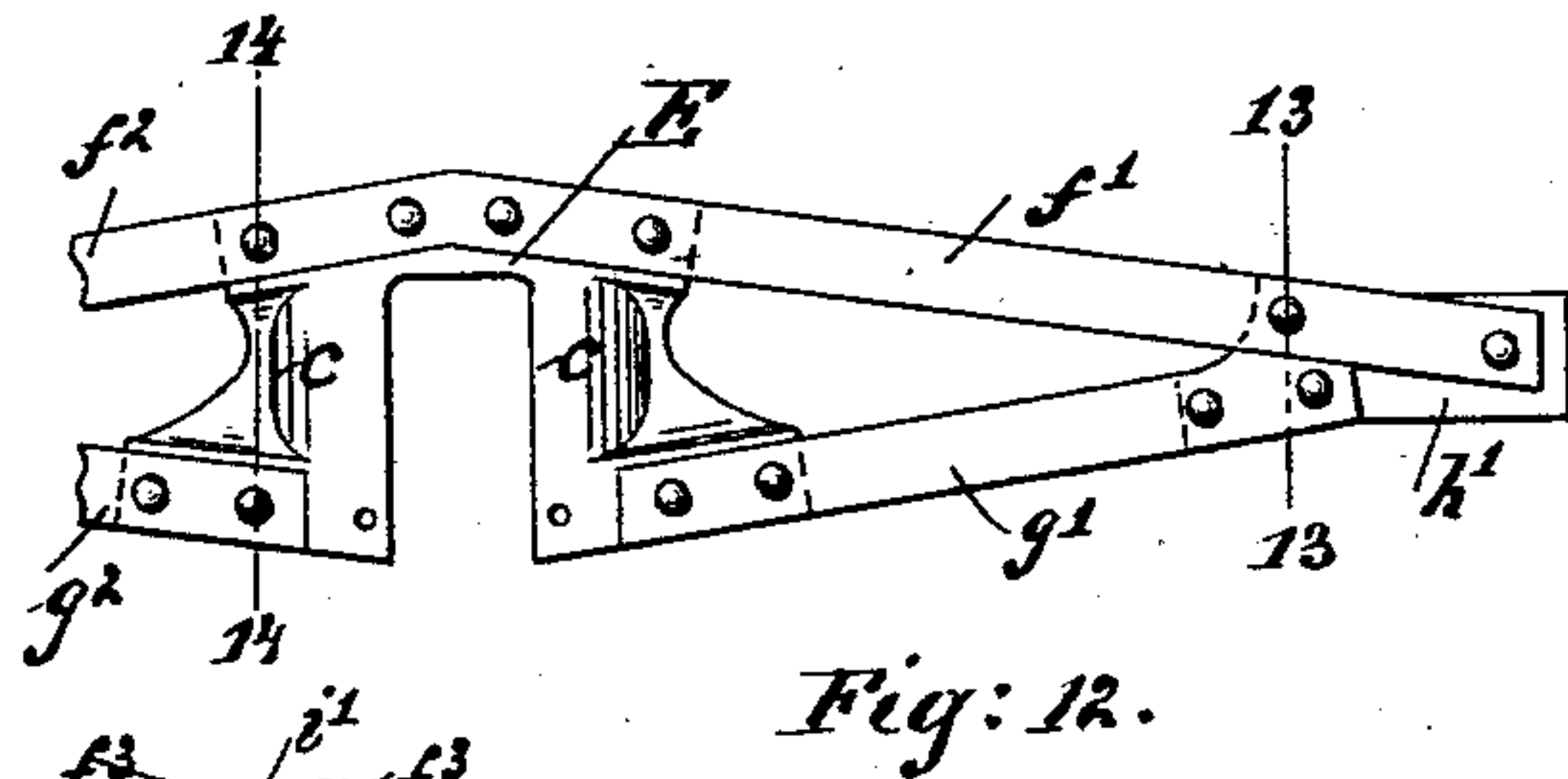


Fig. 12.



Fig. 13.

Witnesses  
S. P. Palmieri  
Frank P. Weston

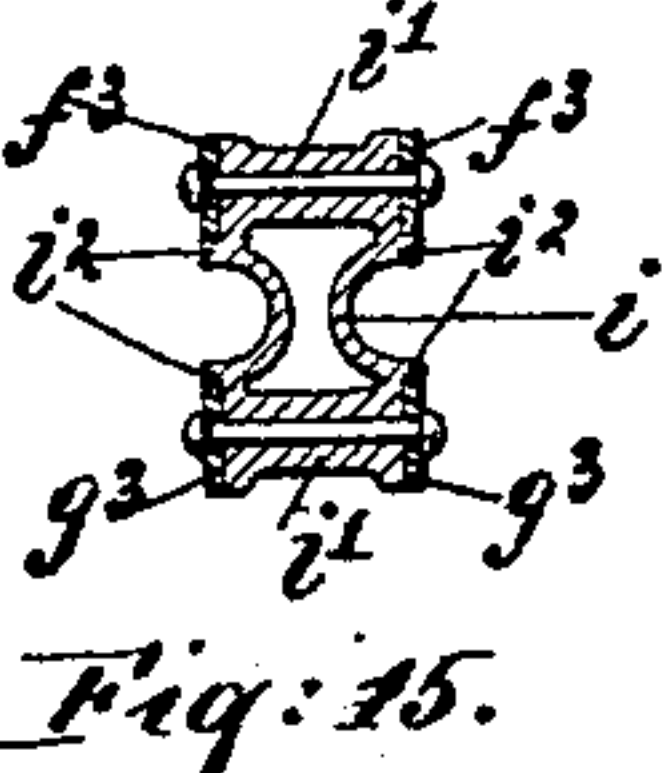


Fig. 15.

Inventor  
George W. Lacy  
By his Attorney  
Nathaniel L. Frothingham.



# UNITED STATES PATENT OFFICE.

GEORGE W. LACY, OF KINGSTON, NEW YORK.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 563,187, dated June 30, 1896.

Application filed March 6, 1896. Serial No. 582,017. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. LACY, a citizen of the United States, residing at Kingston, in the county of Ulster and State of New York, have invented certain new and useful Improvements in Car-Trucks, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to that class of trucks especially designed for use on cars which are driven by their own motors.

The principal object of the invention is to provide a car-truck the side frame of which between the pedestals may be easily lengthened or shortened without the necessity of changing the shape or angles of the pedestal-casting when it is desired to increase or diminish the length of the wheel-base line, thereby doing away with the trouble and expense of keeping different shaped and angled pedestals on hand to fit the side frames of trucks which have a different length of wheel-base line.

A further object of my invention is to provide a car-truck the side frames of which shall be as strong as possible and yet be comparatively light in weight and have the greatest powers of enduring both lateral and vertical strains, and to provide a car-truck with springs between the axle-box and the pedestals, and with springs between the side frames and bolster-plates, so that the oscillation of the car-body when the car is in motion will be reduced to a minimum.

The invention consists of the novel features of construction hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings, Figure 1 is a plan view of a car-truck embodying my preferred form of invention with the bolster-plate and load-bearing springs supporting said plate removed from one side of the truck. Fig. 2 is a side elevation of said truck, partly in section and partly broken away. Fig. 3 is a section of the pedestal on the line 3 3 of Fig. 4. Fig. 4 is a central vertical section of the pedestal and axle-box. Fig. 5 is a horizontal section of the same on the line 5 5 of Fig. 4. Fig. 6 is a vertical section of the same on the line 6 6 of Fig. 4. Fig. 7 is a central vertical section of the tie-piece or tie-

plate. Fig. 8 is a top view of the spring-seats, partly in section. Fig. 9 is a modified form of the outer ends of the bar members and springs. Fig. 10 is a section of the same on the line 10 10 of Fig. 9. Fig. 11 is a front view of the guide and support for the brake-head. Fig. 12 is a modified form of one truss portion when the lower-bar member is double. Fig. 13 is a section of the same on line 13 13 of Fig. 12. Fig. 14 is a section on the line 14 14 of Fig. 12. Fig. 15 is a central vertical section of the tie-plate when the lower-bar member is double.

Like letters refer to like parts throughout the several views.

In the drawings, A denotes one of the side frames of the truck, and A' the other side frame on the opposite side of the truck. Each of these side frames is a duplicate of the other, their corresponding parts being similar in form, construction, and arrangement. A description of the side frame on one side of the truck will therefore be sufficient.

B B are the wheels, C C the axles, D D the axle-boxes, and E E the pedestals holding the axle-boxes in position.

a a denote lugs on the axle-boxes, which form seats for the load-bearing springs a' a'.

e e denote bridges made integral with the pedestals, forming seats for the upper portion of the springs a' a', which are adapted to fit into the chambers a<sup>2</sup> a<sup>2</sup> in the pedestals, which are supported mainly by these springs.

b is a buffer, made of rubber or other suitable material, located between the top of the axle-box and the bridge b', made integral with the pedestal.

The pedestals E E are made preferably in the form of a yoke and of malleable iron cast in one piece, provided with cylindrically-shaped webs c c, gradually tapering at the forward and rear ends and terminating at their lower forward and rear ends in horns or projections c' c', thereby forming jaws c<sup>2</sup> c<sup>2</sup>.

d d denote ribs or shoulders on the pedestals, d' d' flanges, and d<sup>2</sup> d<sup>2</sup> rivet-receiving sleeves, all preferably made integral with said pedestal to prevent the rattling of parts when the car is in motion. These pedestals are adapted to slide down over the axle-boxes to keep them in position, the chambers a<sup>2</sup> a<sup>2</sup> fitting over the load-bearing springs a' a'. The



distance from the outer side of the pedestal to the inner side is about five inches.

When the lower-bar member of the side frame is composed of double bars, as shown in the modification shown in Figs. 12, 13, 14, and 15 of the drawings, the lower part of the yoke of the pedestal is provided with shoulders  $d$   $d$ , flanges  $d'$   $d'$ , and rivet-receiving sleeves  $d^2$   $d^2$  similar to those of the upper portion of the pedestal and the horns or projections  $c'$   $c'$  are dispensed with.

The side frame in my preferred form of invention is composed of the upper-bar members  $F$  and  $F'$ , identical in form, construction, and arrangement, and the lower-bar member  $G$ , in connection with the pedestals  $E$   $E$  and the tie-pieces or tie-plates hereinafter described. The upper-bar members have two obtuse-angled portions united by a central bar portion. The lower-bar members are similar in configuration, the lower member having its angles inverted and opposite the angles of the upper member, whence it results that the entire side frame is symmetrical in figure, not only longitudinally, but bilaterally, the extreme ends forming acute angles of equal slope, or isosceles triangles, taken in connection with the inclosed pedestals. This form insures great strength, as well as the capacity for being made of any required length without modification of design. These upper and lower-bar members are secured by means of bolts at their outer ends to the castings  $h'$   $h'$ , provided with spring-seats  $h^2$   $h^2$  to accommodate and support the springs  $h^3$   $h^3$ .

For convenience of description the upper-bar members may be subdivided into the parts  $f'$   $f'$   $f^2$   $f^2$   $f^3$   $f^3$  and the lower-bar members into the parts  $g'$   $g'$   $g^2$   $g^2$   $g^3$   $g^3$ .

When double-bar members are employed in either the upper or the lower members of the side frame, the bars are made preferably of flat steel about three inches wide and one-half an inch in thickness, the said steel plates being preferably vertically disposed as to greatest width. The above dimensions are however only approximate and may be varied according to the weight of the load to be carried and the service in which the truck is to be employed. The parts  $f'$   $f^2$  are connected with the flanges on the pedestal and form an obtuse angle with each other. The parts  $g'$   $g^2$  are connected with the lower portion of the pedestal and likewise form an obtuse angle in relation to each other. The outer ends  $f'$   $f'$   $g'$   $g'$  are extended, so as to form an acute angle near their outer ends. The central-bar members  $f^3$   $f^3$   $g^3$   $g^3$  connect, respectively, the upper-bar members  $f^2$   $f^2$  and the lower-bar members  $g^2$   $g^2$ . These central-bar members  $f^3$  and  $g^3$  are a short distance apart from each other and, as shown in the drawings, substantially parallel with each other. I do not, however, hereby intend to limit the invention to a side frame wherein the central members are substantially parallel, as it is obvious that as long as they are a short distance apart and

do not intersect or cross each other the spirit of my invention will not be departed from.

$i$   $i$  denote the tie-plates connecting the upper and lower-bar members, located between the upper and lower-bar members, so as to prevent the bars from bending sidewise or vertically. Each of these tie-plates consists, preferably, of a single casting provided with rivet-receiving sleeves  $i'$   $i'$ , made integral with it, and with ledges or shoulders  $i^2$   $i^2$  at its upper part, upon which the bar members rest, and terminating at its lower part into a jaw  $i^3$ , in which the lower-bar member is secured. When, however, the lower-bar member is composed of double-bar members, the lower portion of this tie-plate is constructed similar to the upper portion, as shown in Fig. 15.

$k$   $k$  denote the motor hanger-bars having their ends attached to the vertically-movable spring-bolt  $k'$ , which has its upper end attached to the spring  $k^2$ , seated in the cup-shaped casting  $k^3$ , secured between the upper-bar members by means of rivets, the inner ends of which are countersunk, so as not to interfere with the working of the spring  $k^2$ . These castings  $k^3$  serve also as tie-plates to bind the upper-bar members together.

$l$   $l$  are cup-shaped castings secured between the upper-bar members by means of rivets  $l'$   $l'$ , the heads on the inner ends of which are countersunk, so as not to interfere with the working of the springs  $l^2$   $l^2$ , which are seated in said castings. These castings also serve as tie-pieces to bind the upper members together.

$m$   $m$  denote castings secured between the upper-bar members and serve not only as seats for the elliptical springs  $m'$   $m'$ , but as tie devices between the upper-bar members.

$n$  denotes the bolster-plate upon which the car-body rests and is designed to be secured. The bolster-plate is supported by and rigidly secured to the various springs heretofore described, located between it and the side frame of the truck.

$o$  is a stay or compression piece or "repair-piece," adapted to fit into the recess between the lower ends of the pedestal-yoke. This repair-piece is provided with lugs or shoulders  $o'$   $o'$ , which brace against the sides of the pedestal ends and prevent the lower portions of the pedestal-yoke from being bent together.  $o^2$  denotes a cup-shaped chamber in said stay-piece which serves as a seat for the spring  $o^3$ , located between the stay-piece and the axle-box. These stay-pieces make the lower-bar member or members of the side frame practically continuous and unbroken, and are removably secured by means of bolts  $o^5$   $o^5$ , passing through the rivet-receiving sleeves  $o^4$   $o^4$  and the lower part of the pedestal-yoke. The stay-piece may therefore be easily removed, so as to permit the axles and wheels and axle-boxes to be taken out of the side frame whenever that may be desirable.

$p$  denotes the brake-head, and  $p'$  the brake-



shoe. The brake-head is provided with an arm or projection  $p^2$ , which is adapted to slide forward and backward as the brake is put on or off in the guide  $p^3$ , secured to the lower-bar member or members.

$p^4$   $p^4$  denote the brake-beams connecting the brake-heads on each pair of wheels, and  $p^5$  springs attached to a cross-bar for keeping the brake-shoe normally out of contact with the wheels.

$p^6$  denotes a lever, and  $p^7$   $p^7$   $p^8$   $p^8$  connections between the brake-head and power-transmitter for actuating the brake.

The various parts of the side frame are secured to each other and with their connecting parts by means of rivets driven and headed, preferably when red-hot, where it is not otherwise specified, to insure greater strength and to prevent the parts from becoming loose and rattling.

In Fig. 9 a modification of construction is shown at the outer ends of the side frame, which consists of an extension of the upper-bar members to accommodate another spring between the side frame and the bolster-plate, so that the frame may be lengthened to accommodate itself to the car-bodies of open cars.

$q$  is a spring-bolt for the purpose of counteracting the upward tension of the springs  $h^3$   $h^3$  and at the same time relieve the other springs from the push and thrust of the car-frame when the car is set in motion.

What I claim as my invention, and desire to have protected by Letters Patent, is—

1. In a car-truck, a side frame comprising two similar symmetrical truss portions, connected by an intermediate device formed of adjacent bars, one member of each truss and of the intermediate connection being double, with a pedestal secured between the members of each truss portion, substantially as specified.

2. In a car-truck, a side frame comprising two similar symmetrical truss portions composed of double members, connected by an intermediate device formed of adjacent double bars, with a pedestal secured between the members of each truss portion, substantially as specified.

3. In a car-truck, a side frame comprising two similar symmetrical truss portions, the upper member of which is double, connected by intermediate adjacent bars joined to the inner ends of each of the truss members, the upper bar being double, the two bars being tied at intervals, and pedestals secured between the members of the truss portions respectively, substantially as specified.

4. In a car-truck, a side frame comprising two truss portions composed of similar obtuse-angled upper and lower members respectively, connected by intermediate horizontal adjacent bar members, the lower angles of the truss portions being inverted, in combination with pedestals secured between the angles of each truss portion, substantially as specified.

5. In a car-truck, a side frame comprising two truss portions composed of similar obtuse-angled upper and lower members respectively, connected by intermediate horizontal adjacent bar members, one continuous member throughout the frame being composed of double bars, the lower angles of the truss portions being inverted, in combination with pedestals secured between the angles of each truss portion, substantially as specified.

6. In a car-truck, a side frame comprising two similar symmetrical truss portions composed of continuous upper and lower members, having an angular expansion in the centers respectively, connected by adjacent horizontal bar members, one continuous member throughout the truss and bar being double, in combination with a pedestal secured in each expanded truss portion between the upper and lower members respectively, substantially as specified.

7. In a car-truck, a side frame comprising two truss portions composed of similar angular upper and lower members respectively, the lower angles being inverted, connected by intermediate horizontal adjacent bars, tied together at intervals by suitable stays, in combination with pedestals located one in each truss portion, in the widest part thereof, substantially as specified.

8. In a car-truck, a side frame comprising two truss portions composed of similar angular upper and lower members respectively, one of which is double, the lower angles being inverted, connected by intermediate horizontal adjacent bars, one of which is double, tied together at intervals by suitable stays, in combination with pedestals located one in each truss portion, in the widest part thereof, substantially as specified.

9. In a car-truck, a side frame comprising two truss portions composed of similar obtuse-angled continuous upper and lower members respectively, the lower angles being inverted, joined by intermediate horizontal adjacent bar members, tied together at intervals, in combination with pedestals secured to the top and bottom members of the truss portion respectively at the widest part thereof, the outer extremities of the said upper and lower members being firmly secured together at an acute angle to each other at each end, forming with the said pedestals, triangles of isosceles form, substantially as specified.

10. In a car-truck, a side frame comprising a double-bar upper member having two obtuse-angled portions connected by a horizontal depressed portion, and single-bar lower member having two inverted obtuse-angled portions symmetrical with the angular portions of the upper member, connected by a horizontal elevated portion, tied at intervals to the upper horizontal portion, the said upper and lower members firmly secured together at their outer extremities in an acute angle of equal sides at each end forming extended side frames, in combination with ped-



estals secured between the said upper and lower members at their points of greatest divergence, forming bases of isosceles triangles with the extended acute-angled portions  
5 aforesaid, substantially as specified.

11. In a car-truck, a side frame comprising two similar symmetrical truss portions, connected by an intermediate device formed of adjacent bars, in combination with pedestals  
10 secured one in each truss portion at the widest part thereof, each pedestal being provided with a cylindrical web, and axle-box, and a spring located upon said axle-box, inclosed by said web, and sustaining the said pedestal,  
15 substantially as specified.

12. In a car-truck, a side frame comprising two similar symmetrical truss portions, connected by an intermediate device formed of adjacent bars, in combination with a pedestal  
20 secured in the expanded portion of each truss, each having flanges  $d'$   $d'$ , jaws  $c^2$   $c^2$ , and a spring connection between the side of the axle-box and the top of the said pedestal, substantially as specified.

25 13. In a car-truck, a side frame comprising two similar symmetrical obtuse-angled truss portions connected by adjacent bar portions, in combination with a pedestal secured in each truss portion, an axle-box in each, a  
30 stay or compression piece provided with a spring-seat, and a spring between each stay-piece and axle-box, substantially as specified.

14. In a car-truck, a side frame comprising two similar symmetrical obtuse-angled truss  
35 portions connected by adjacent horizontal bar portions, in combination with a pedestal secured in each truss portion, an axle-box in each, a spring connection between the sides of the axle-boxes and the tops of the pedestals  
40 respectively, and buffers located between the pedestals and the tops of the respective axle-boxes, substantially as specified.

15. In a car-truck, a side frame comprising two similar symmetrical obtuse-angled truss  
45 portions connected by adjacent horizontal bar portions suitably tied together, the upper and lower bar members of the said truss portions meeting in an acute angle of equal sides at their outer ends, and there secured to  
50 blocks or castings having spring-seats, springs located thereon, and a bolster-plate supported on the said springs, substantially as specified.

16. In a car-truck, a side frame comprising two similar symmetrical obtuse-angled truss  
55 portions connected by adjacent horizontal bar portions suitably tied together, the upper and lower bar members of the said truss portions being formed of similar flat structural material vertically disposed as to greatest  
60 width meeting in an acute angle of equal sides at their outer ends, and there secured to blocks or castings having spring-seats, springs located thereon, a bolster-plate supported on the said springs, and intermediate  
65 springs as  $m'$   $l^2$  interposed between the side-frame upper-bar member and the said bolster-plate, substantially as specified.

17. In a car-truck, a side frame comprising two similar symmetrical angular truss portions connected by adjacent horizontal bar  
70 portions, suitably tied together, the upper and lower members of the said truss portions being formed of similar flat structural material vertically disposed as to greatest width, in combination with a yoke-formed pedestal  
75 secured in each truss portion and provided with a bridge  $b'$  made integral with the said pedestal, an axle-box within each yoke, and a buffer interposed between each axle-box and the corresponding bridge substantially as  
80 specified.

18. In a car-truck, a side frame comprising two similar symmetrical angular truss portions connected by adjacent horizontal bar  
85 portions, in combination with a yoke-formed pedestal secured in each truss portion, each having a bridge  $b'$  formed integral with the pedestal, an axle-box within each yoke, a buffer between each box and the corresponding  
90 bridge, stay or compression pieces  $o$  having vertical shoulders  $o'$   $o'$ , spring-cup  $o^2$ , and horizontal sleeves  $o^4$ , with bolt connections  $o^5$ , all substantially as specified.

19. In a car-truck, a side frame comprising two truss portions composed of similar obtuse-  
95 angled upper and lower members respectively, the angles of the lower members being inverted, the said truss portions being connected at their inner extremities by intermediate horizontal adjacent bar mem-  
100 bers, the latter being united together at suitable intervals by tie devices  $i$ , having rivet-receiving sleeves  $i'$ , made integral with the ties, and shoulders  $i^2$   $i^2$ , all substantially as  
105 specified.

20. In a car-truck, a side frame comprising two truss portions composed of similar obtuse-  
angled upper and lower members respectively, the angles of the lower members being inverted, the said truss portions being  
110 connected at their inner extremities by intermediate horizontal adjacent bar members, the latter being united together at intervals by tie devices  $i$ , having rivet-receiving  
115 sleeves  $i'$ , made integral with the ties, shoulders  $i^2$   $i^2$ , and jaws  $i^3$ , all substantially as specified.

21. In a car-truck, a side frame in combination with a cup-shaped spring-seat serving as a tie device, secured to the bar members  
120 of said frame by means of rivets, the heads of which on the inside of said seat are countersunk, substantially as described.

22. In a car-truck, a side frame in combination with a cup-shaped spring-seat serving  
125 as a tie device secured to the bar members of said side frame by means of rivets, the heads of which on the inside of said seat are countersunk and a motor hanger-bar  $k$  and spring-bolt  $k'$ , substantially as described.  
130

23. In a car-truck, a side frame comprising two truss portions composed of upper and lower bar members, the upper-bar members being extended at their outer ends beyond



the point where they meet the lower-bar members and secured to a block or casting, to form an extended side frame, suitable tie devices between said upper and lower bar  
5 members, a bolster-plate and spring connections between said side frame and bolster-plate, substantially as described.

In witness whereof I have hereto affixed my signature, this 5th day of March, 1896, in the presence of two witnesses.

GEORGE W. LACY.

Witnesses:

N. L. FROTHINGHAM,  
F. T. WENTWORTH.