

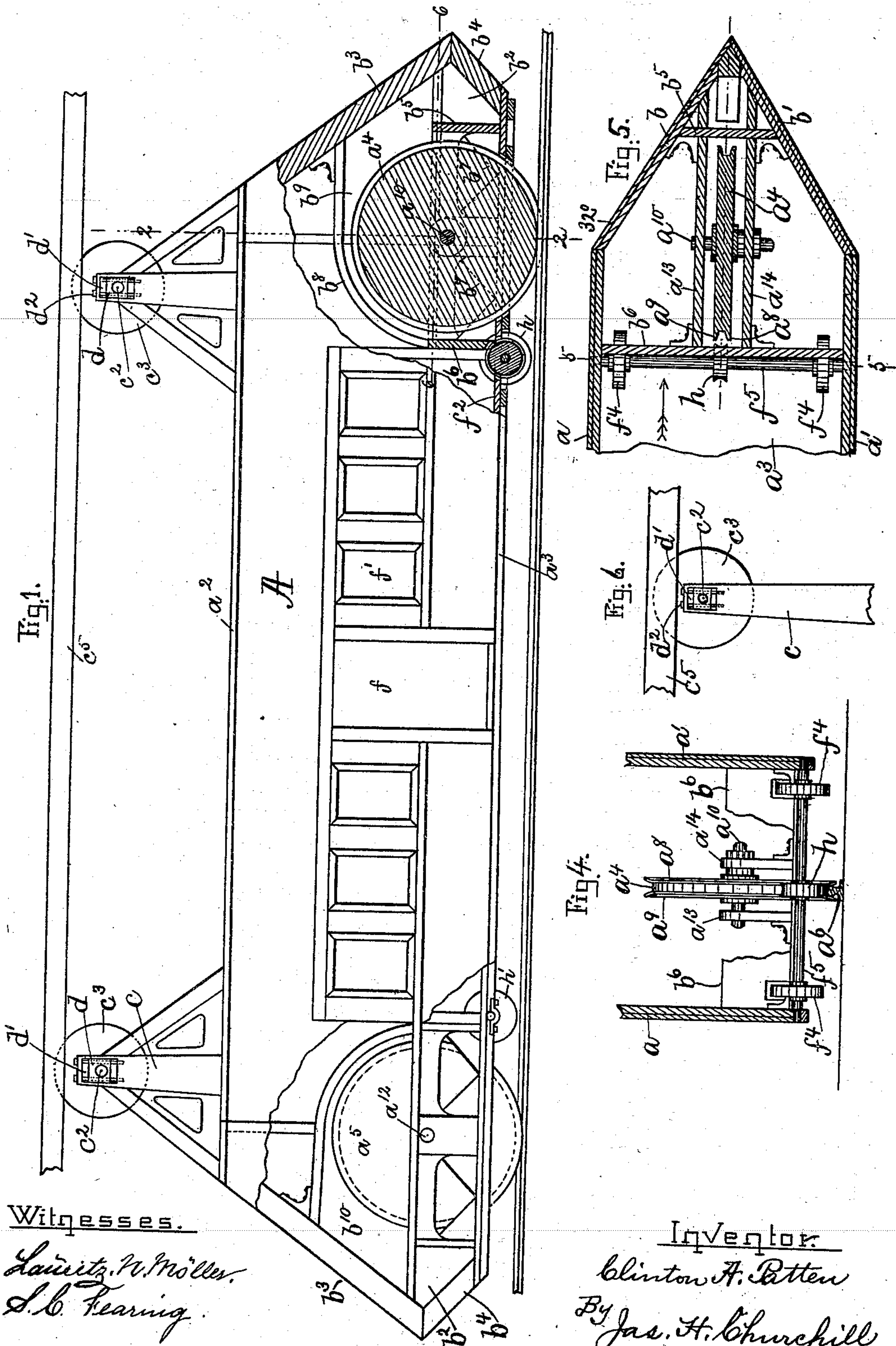
(No Model.)

2 Sheets—Sheet 1.

C. A. PATTEN.
CAR.

No. 503,707.

Patented Aug. 22, 1893.



Witnesses.

Lauritz W. Möller.
S. C. Fearing.

Inventor.

Clinton A. Patten
By Jas. H. Churchill
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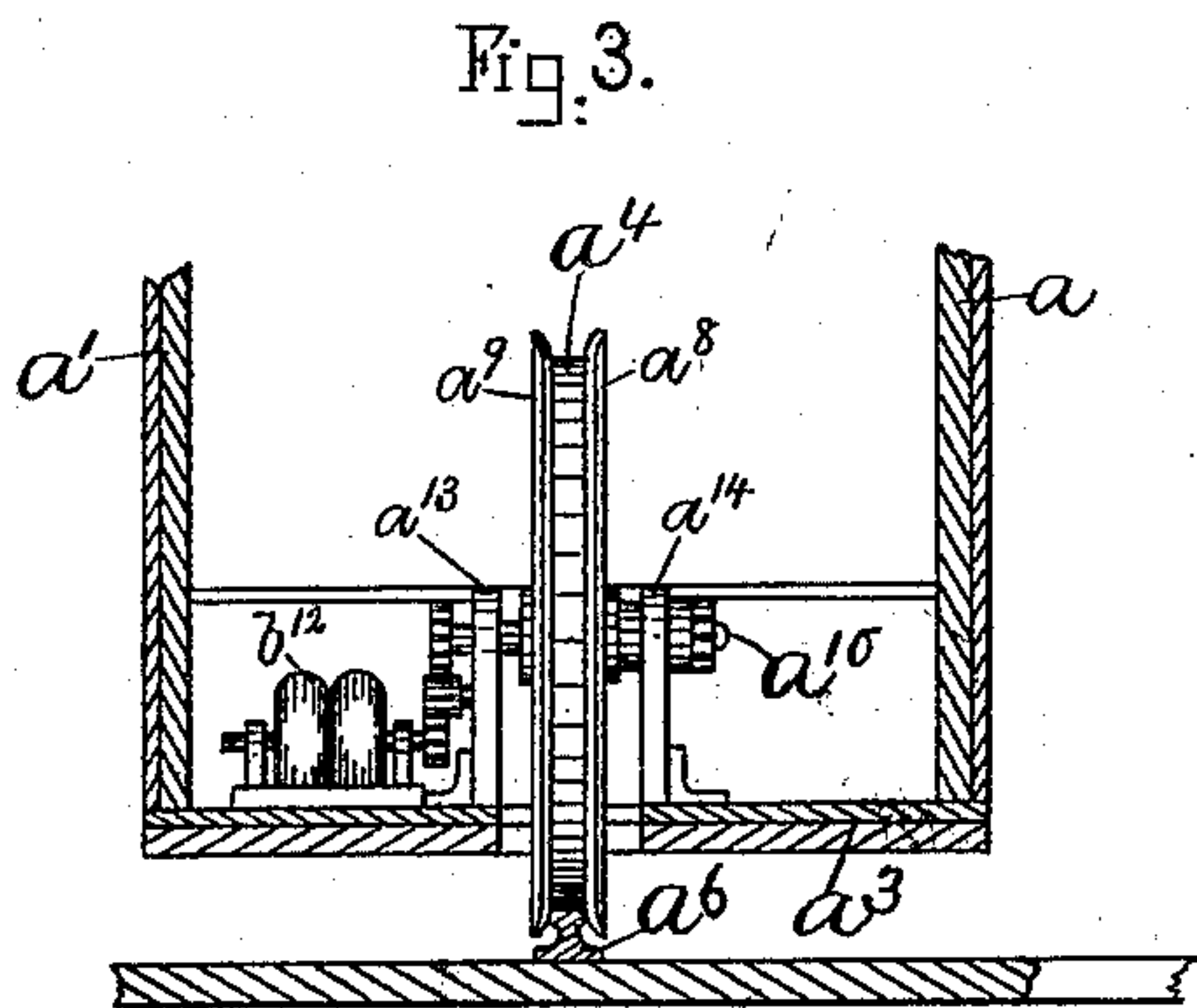
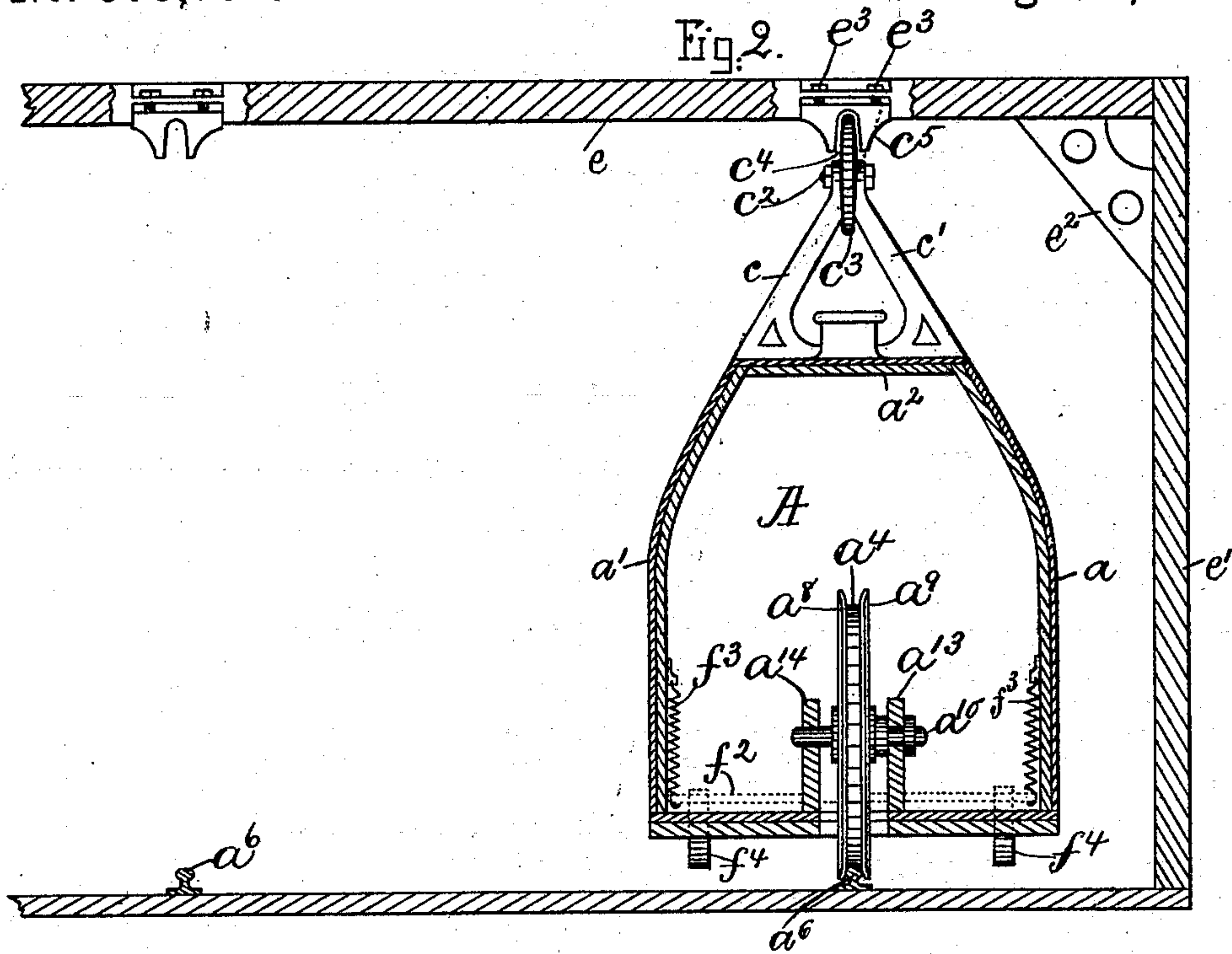
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Lauretta W. Möller
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Inventor.

Clinton H. Patten
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Att'y.

UNITED STATES PATENT OFFICE.

CLINTON A. PATTEN, OF SOMERVILLE, MASSACHUSETTS.

CAR.

SPECIFICATION forming part of Letters Patent No. 503,707, dated August 22, 1893.

Application filed February 6, 1892. Serial No. 420,546. (No model.)

To all whom it may concern:

Be it known that I, CLINTON A. PATTEN, residing in Somerville, county of Middlesex, and State of Massachusetts, have invented an Improvement in Surface-Railway Systems, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to a novel construction of car especially designed and adapted for use on surface railways of that class, in which the car travels upon a single line or track, and is guided by an auxiliary guide supported above the car.

15 One feature of my present invention consists in a novel construction of car-body, as will be described, whereby the resistance to the travel of the car by air pressure, is reduced to a minimum, and a higher rate of speed obtained with a minimum expenditure of power.

20 Another feature of my invention further consists in a novel construction of car-body whereby the load-line is brought nearer the rail. The railway car referred to is especially adapted to be propelled by electricity, and when so propelled, the electric motors may be supported within the car above the car-floor, and be thereby kept free from dust, dirt, &c., thereby obviating wear and tear upon the motors and enabling them to be used more economically.

25 Other features of my invention will be pointed out in the claims at the end of this specification.

30 Figure 1 is a side elevation of a surface railway car embodying my invention, the car-body being partially broken out at its opposite ends; Fig. 2, a vertical transverse section of Fig. 1 on the line 2—2, looking toward the left, the wheel being shown in elevation; Fig. 3, a sectional detail to be referred to; Fig. 4, a sectional detail to be referred to, the section being taken on line 4—4, Fig. 5, looking in the direction of arrow thereon; Fig. 5, a sectional plan view to be referred to, the section being taken on the line 5—5, Fig. 1, and Fig. 6, a detail to be referred to.

35 40 45 50 The car-body A composed of sides $a a'$, top a^2 , and bottom a^3 , may be made of wood, iron or steel or other desired material. The car-

body A is supported upon two substantially large wheels $a^4 a^5$, located at the opposite ends of the car and running upon a single rail a^6 , 55 fastened to suitable sleepers or supports laid in or upon the surface of the road-bed. The rail a^6 is made substantially high, which in practice will preferably be about five and one half inches, and the wheels $a^4 a^5$, preferably about six feet in diameter, are each provided with two substantially large flanges $a^8 a^9$ preferably about three and one-half inches in depth. The flanges $a^8 a^9$ are well 60 dishd or beveled, so that when running upon a straight line, the said flanges do not come in contact with the rail a^6 , thereby avoiding wear upon the flanges and reducing the friction between the wheel and rail. The wheels $a^4 a^5$ are mounted upon shafts or arbors a^{10} , 65 a^{12} , each having bearings in side bars or frames $a^{13} a^{14}$ located at opposite ends of the car within the same. The car-body, preferably at both ends, is made substantially pointed or bow-shaped as shown in Figs. 1 to 6, 70 the sides $a a'$ of the car-body being provided with inclined extensions $b b'$ (see Fig. 6) preferably brought to a point and secured together in any well known manner, the said side extensions preferably being inclined at 75 about an angle of thirty-two degrees from the sides of the car, substantially opposite or in line with the centers of the wheels $a^4 a^5$. The inclined side pieces $b b'$ extend down to a plane passing horizontally through substantially the centers of the wheels $a^5 a^4$, and the lower side pieces of the ends, are inclined backward from the side extensions $b b'$ at 80 about an angle of forty-five degrees, and are secured to the bottom a^3 of the car, only one of said lower side pieces b^2 being shown in Fig. 1. 85 90 95 100

As represented in Fig. 6, the extensions $b b'$ are substantially >-shaped, and the said extensions have secured to them a >-shaped top b^3 and bottom b^4 . The >-shaped top-piece b^3 is made longer than the >-shaped bottom-piece b^4 , and the pressure of the air upon the larger area of the top-piece b^3 serves to press the car-body down, and thereby assists in keeping the same upon the rail a^6 , when the car is traveling at a high speed. The bow-shaped or substantially pointed end of the car-body, formed by the inclined side

extensions $b\ b'$ tends to cut the air vertically as the car travels, and thereby diminishes the resistance to the movement of the car by the air pressure, and as a result, a higher speed with a minimum expenditure of power may be obtained. The side supports $a^{13}\ a^{14}$, in which the wheels $a^4\ a^5$ are mounted, are firmly secured at their ends, as herein shown, to cross-bars $b^5\ b^6$, the said side supports being preferably strengthened by suitable braces b^7 . The wheels $a^4\ a^5$ may and preferably will be concealed by means of a top-piece or cover b^8 , which may be made removable, and which is represented in Fig. 1 as secured to the inclined top b^8 and extended back over the wheel to the cross-bar b^6 , to which the said cover may be fastened in any suitable manner. The covers b^8 and the sides, ends, and bottom of the car-body form chambers $b^9\ b^{10}$, at the opposite ends of the car within the same, in which are located one or more electric or other motors b^{12} (see Fig. 3) for propelling the cars, and in which they are protected from dust, dirt, &c.

In practice I may prefer to employ two motors b^{12} within each of the chambers $b^9\ b^{10}$, located between the side supports $a^{13}\ a^{14}$ and the sides of the car-body, only one of which is shown in Fig. 3, the said motors being connected to the wheel shaft or axle a^{10} by suitable gearing such as now commonly employed.

The car-body has secured to its top a^2 near its opposite ends, two sets of inclined arms $c\ c'$, extended upward from the sides of the top a^2 to near the longitudinal center of the car-body. Each set of arms $c\ c'$ forms bearings for a shaft or arbor c^2 on which is mounted a flangeless wheel c^3 preferably about four feet in diameter, and made convex on its outer surfaces. The convex flangeless wheels c^3 extend into a dome-shaped or convex groove or slot c^4 in the under side of a girder c^5 , preferably of steel or other material of sufficient strength to resist the pressure upon its sides by the flangeless wheels c^3 . The girder c^5 is preferably located about fifteen feet above the rail a^6 , and is made of such proportions, preferably about twelve inches in depth and six inches in width at the bottom, to prevent the car leaving the track, if the road-bed should settle to the amount of ten inches. The wheels c^3 are mounted upon the arms $c\ c'$ so as to leave a space between the periphery of the wheel and the top of the dome-shaped groove c^4 , preferably about one and one-half inches. The flanges $a^8\ a^9$ of the wheels $a^4\ a^5$ being about three and three-fourths inches in depth, and the distance from the top of the flangeless wheel c^3 to the top of the groove c^4 being one and one-half inches, it will be seen that the car, when running at high speed, might rise or lift two and one-fourth inches without leaving the rail. When the car is running on a straight line at high speed, the flangeless wheels c^3 do not touch the girder and merely act to guide

the car on curves, and in case of irregularity in the alignment of the rails a . The flangeless wheels c^3 have their shafts or arbors preferably mounted in adjustable boxes d , located in slots or openings d' in the arms $c\ c'$, the said boxes being made adjustable by screws d^2 inserted through the top of the arms $c\ c'$, as shown in Fig. 6. By means of the adjustable screws d^2 , the flangeless wheel c^3 may be raised to maintain the gage or distance between the contact surface of the large wheels $a^4\ a^5$ and the top of the convex wheel c^3 .

The girder c^5 is made in sections of any suitable or desired length, and the said sections are secured to cross trees or bars e , extended from posts or uprights e' located at the side of the road-bed, the said cross-bars being strengthened in any usual or well known manner, as by braces e^2 (see Fig. 2). The girder sections may be secured to the cross-bars e by suitable adjustable screws or bolts e^3 , by means of which the girder may be raised or lowered, to maintain between the said girder and the rail a^6 , the same relative distance or gage throughout the length of the road.

The car, in practice, will be provided with seats, not shown, but which will preferably extend across the car, and will preferably be of such length as to leave a passage-way at both sides of the car, the latter being provided with a door-way f in each side, and with the ordinary windows f' .

To obtain ease and comfort for the passengers, the car is provided with an auxiliary yielding or spring-supported floor f^2 , extended the length of the car between the cross-bars b^6 , the said auxiliary floor being herein shown as suspended by spiral springs f^3 (see Fig. 2), having one end secured to the floor f^2 and the other end fastened to the car-body.

By mounting the shafts or arbors on the wheels $a^4\ a^5$ in the side supports $a^{13}\ a^{14}$ within the car, I am enabled to bring the load-line near the rail a^6 and thus obtain a well ballasted and steadier car, and if desired, the car-body may be provided with auxiliary wheels f^4 mounted on shafts f^5 located at opposite ends of the car, and designed, in practice, to support the car-body and prevent it striking the ground in case the wheels $a^4\ a^5$ leave the rail a^6 . The wheels f^4 are normally out of contact with the ground and are made much smaller than the wheels $a^4\ a^5$.

To secure additional safety, the car-body is provided with safety-wheels $h\ h'$, which may be mounted on the shafts f^5 or on separate shafts, the said wheels, in practice, being located behind and in line with the wheels $a^4\ a^5$, and above and out of contact with the rail, the wheels $h\ h'$ being preferably about two inches above the said rail. The safety-wheels $h\ h'$ are provided with flanges, preferably of ordinary depth, usually about three fourths of an inch, and are designed to drop down upon the rail a^6 in

case of accident to the wheels $a^4 a^5$, as for instance, if the wheels $a^4 a^5$ should become broken.

I claim—

5 1. The hereindescribed car for surface rail-ways, consisting of a car body pointed or bow-shaped at one or both ends, flanged wheels $a^4 a^5$ having bearings within the car-body, and auxiliary flangeless guide wheels supported
10 above the car-body in a substantially vertical plane, substantially as described.

2. The hereindescribed car for surface rail-ways, consisting of a car-body mounted on wheels $a^4 a^5$ located substantially in the lon-
15 gitudinal center of the car-body near its opposite ends, supports within the car-body forming bearings for the said wheels, an auxiliary floor within the car-body and yielding supports for the said auxiliary floor, substan-
20 tially as described.

3. The hereindescribed car for surface rail-ways, consisting of a car-body provided with pointed or bow-shaped ends, and with cham-
bers $b^9 b^{10}$ within the said car-body, wheels a^4
25 a^5 provided with flanges $a^8 a^9$ and mounted in bearings within the chambers $b^9 b^{10}$, a motor located in one or both of said chambers and connected to the said wheels to rotate the
30 same, guide-wheels mounted in a substantially vertical plane in supports erected from the top of the car-body, substantially as described.

4. The hereindescribed car-body, consist-
ing of the top a^2 , bottom a^3 and sides provided
35 with the inclined extensions $b b'$ forming a

substantially vertical air cutting end the inclined top b^3 and bottom b^4 , whereby resistance to travel by air pressure is diminished, substantially as described.

5. The hereindescribed car for surface rail- 40 ways, consisting of a car-body mounted on wheels $a^4 a^5$, and provided with auxiliary safety-wheels $h h'$ located substantially in line with the wheels $a^4 a^5$ and normally inoperative, substantially as described. 45

6. The hereindescribed car for surface rail-ways, consisting of a car-body mounted on wheels $a^4 a^5$ located substantially in the longi-
tudinal center of the car-body near its op-
posite ends, wheels $h h'$ carried by the car 50 substantially in line with the wheels $a^4 a^5$, and auxiliary wheels f^4 located near the sides of the car-body, substantially as described.

7. The hereindescribed car for surface rail-ways, consisting of a car-body mounted on 55 wheels $a^4 a^5$ located substantially in the longitudinal center of the car-body near its opposite ends, bearings for said wheels located above the car-floor, and an auxiliary floor yieldingly supported from within the car- 60 body from above the auxiliary floor, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLINTON A. PATTEN.

Witnesses:

JAS. H. CHURCHILL,
SADIE C. FEARING.