

904,525.

F. M. FREDERICK.
OVERHEAD ELECTRIC RAILWAY.
APPLICATION FILED NOV. 4, 1907.

Patented Nov. 24, 1908.
2 SHEETS—SHEET 1.

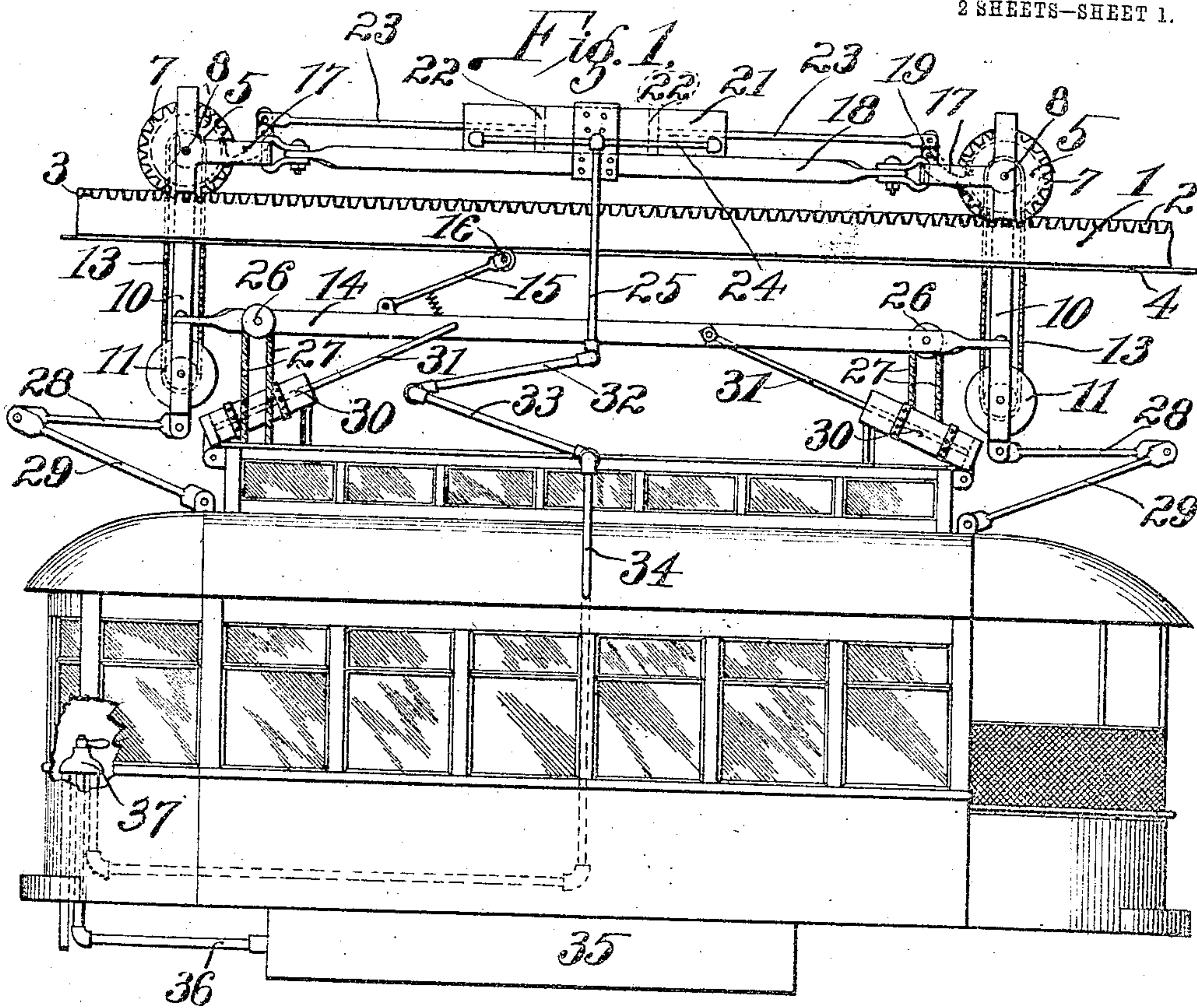
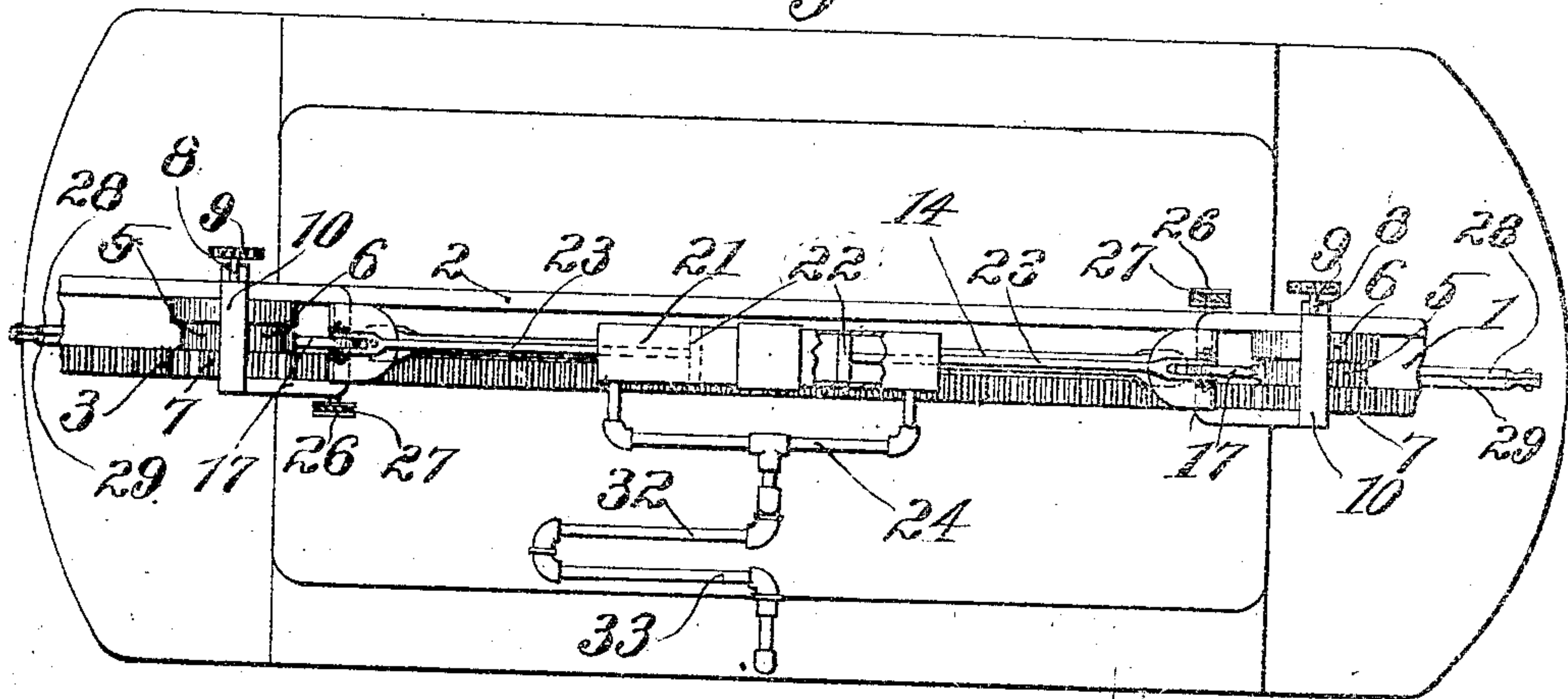


Fig. 2.



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Fig. 3.

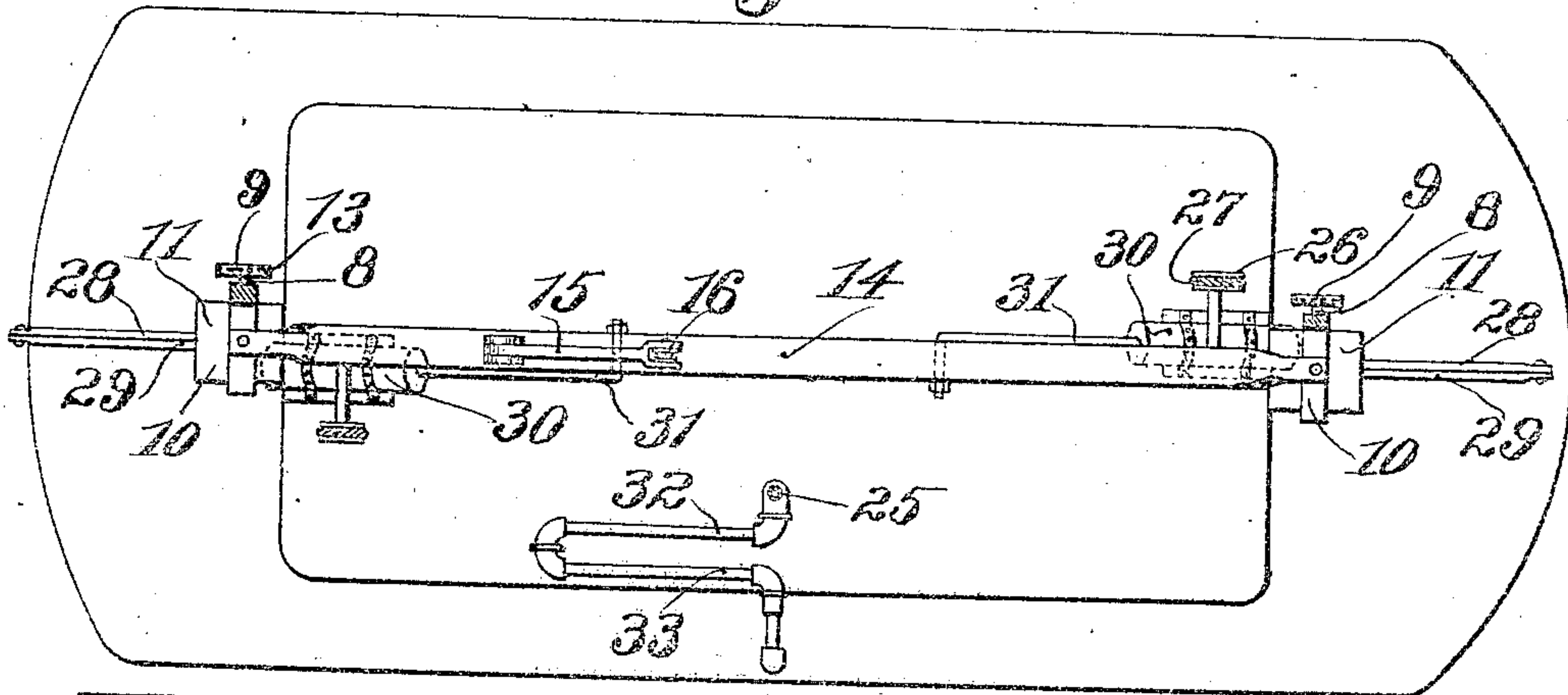


Fig. 4.

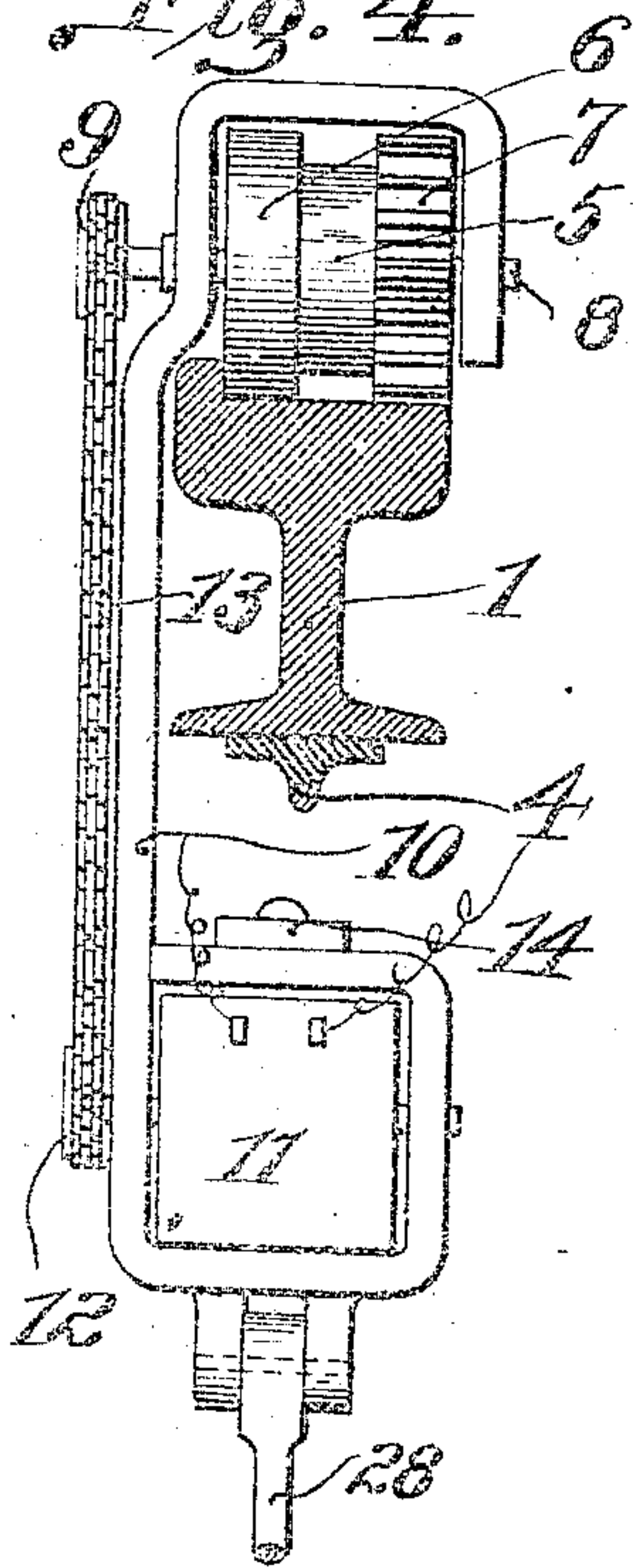
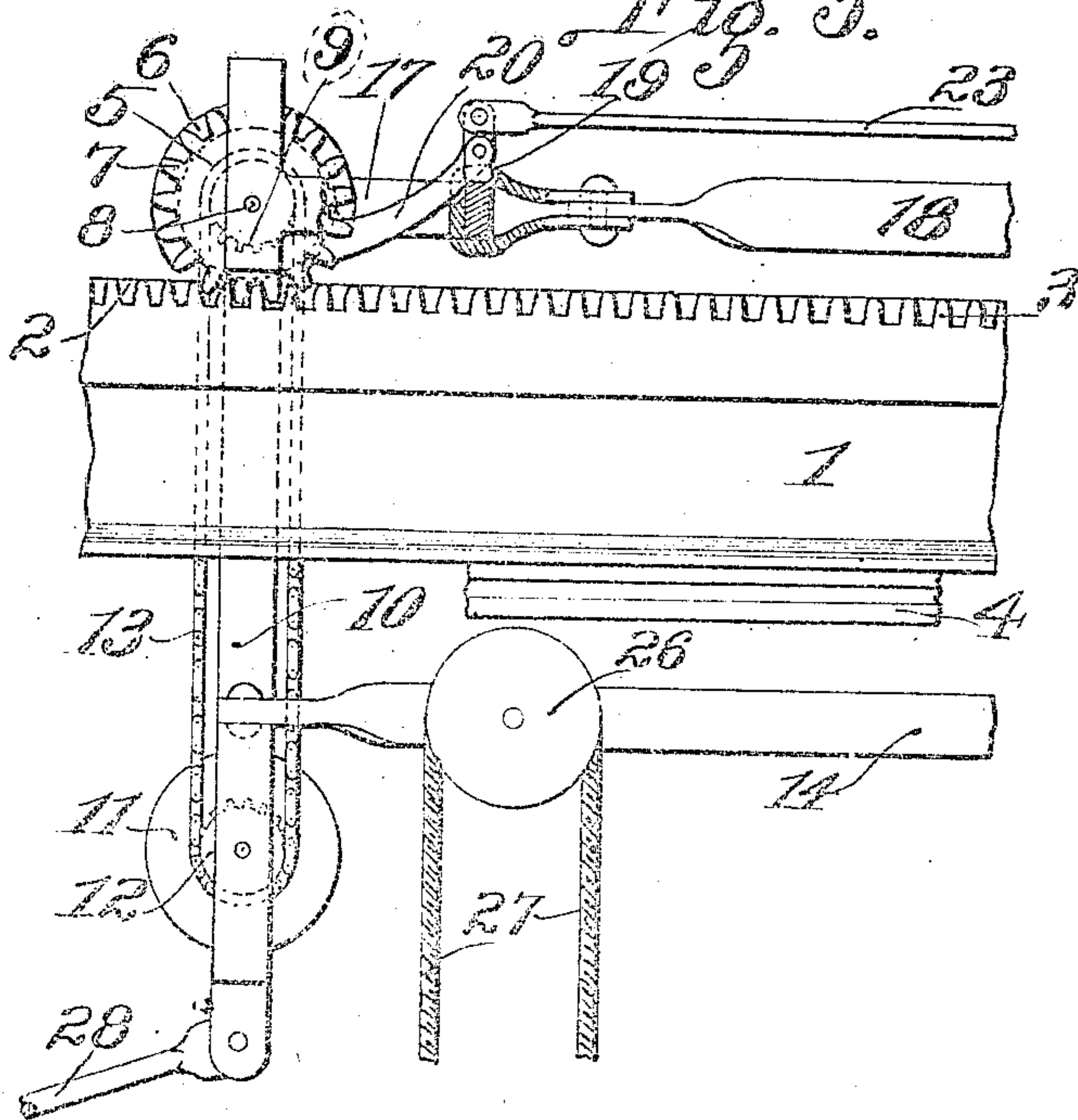


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANCIS M. FREDERICK, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-EIGHTH TO FRANCIS T. MOORMANN, ONE-EIGHTH TO CHARLES H. POTH, ONE-EIGHTH TO THOMAS B. POTH, AND ONE-EIGHTH TO FRANK J. VOLLMER, OF ST. LOUIS, MISSOURI.

OVERHEAD ELECTRIC RAILWAY.

No. 904,525.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed November 4, 1907. Serial No. 400,726.

To all whom it may concern:

Be it known that I, FRANCIS M. FREDERICK, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Overhead Electric Railways, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an overhead electric railway, my object being to arrange a single overhead track on suitable supports, and to suspend cars from said track, and to provide means whereby the cars are moved and operated beneath the rail.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevation of a car and a portion of the rail of the improved overhead railway; Fig. 2 is a plan view of the parts seen in Fig. 1; Fig. 3 is a plan view of one of the cars of my improved railway; Fig. 4 is an enlarged section taken through the overhead rail, and showing one of the hangers which supports the motor utilized for driving the railway car; Fig. 5 is an elevation of the parts seen in Fig. 4.

Referring by numerals to the accompanying drawings:—1 designates the overhead rail of my improved railway, which is supported in any suitable manner a convenient distance above the ground, said rail being similar to an ordinary T-rail, but considerably heavier, and provided on one side of its top with a flange 2, and on the opposite side with rack teeth 3. Arranged on the under side of this rail, and insulated therefrom in any suitable manner, is a conductor 4, which carries the electric current utilized in propelling the cars of the railway.

Arranged to travel on top of the rail 1 is a pair of wheels 5, on one edge of each of which is formed a tread 6, which travels on the rail immediately adjacent the flange 2, and on the opposite edge of the wheel is formed a series of gear teeth which form a pinion 7, and which engages with the rack teeth 3. Fixed in the centers of the wheels 5 are shafts 8, and mounted on one end of

each shaft is a sprocket wheel 9. Journaled on the shafts 8 are hangers 10, which extend a suitable distance below the rail 1, and arranged for operation in the lower ends of said hangers are electric motors 11. Fixed on the ends of the motor shafts are sprocket wheels 12, and connecting the corresponding pairs of sprocket wheels 9 and 12 are the sprocket chains 13. Rigidly fixed to the lower portions of the hangers 10 are the ends of a longitudinally disposed bar 14; and arranged for operation thereon is a trolley pole 15, provided at its upper end with the usual trolley wheel 16, which rides against the conductor 4. Rigidly fixed to the upper ends of the hangers 10 are horizontally disposed brackets 17, and fixed to and connecting said brackets is a longitudinally disposed bar 18. Formed on or fixed to each bracket 17 is a pair of ears 19, and fulcrumed between these pairs of ears 19 are levers 20, the lower ends of which are adapted to act as brakes and bear upon the surfaces of the wheels 5 between the treads 6 and gear wheels 7. Fixed to the center of the bar 18 is a brake cylinder 21, and operating therein is a pair of pistons 22, the piston rods 23 of which extend through the ends of the cylinder, and being pivotally connected to the upper ends of the levers 20. Fluid pressure is delivered to the ends of the cylinder 21 by means of branch pipes 24 leading from a single supply pipe 25.

Located on the bar 14, adjacent its ends, are pulleys 26, around which pass cables 27, which support a car 28. The cables 27 are manipulated so as to raise and lower the car by certain mechanism made the subject matter of another specification filed by me, of even date, Serial No. 400,727.

Pivotally connected to the lower ends of the hangers 10 are rods 28, to the lower ends of which are hinged the upper ends of rods 29, the lower ends of said latter rods being pivotally connected to the top of the car body adjacent its ends; and these rods, which are cylindrically connected to the motors 11, provide means for conveying the current to the controller located on the car platform.

The means whereby the car is prevented from swinging laterally during transit and while being raised and lowered comprises the cylinders 30 hinged to the top of the car body in such a manner as to swing vertically,

in which cylinders are arranged for operation pistons provided with piston rods 31, the upper ends of which latter are connected to the bar 14 in such a manner as to swing
5 vertically relative thereto.

Connected to the lower end of the pipe 25 by a hinged joint is a pipe 32, and connected to the lower end of said pipe 32 by a hinged joint is a second pipe 33, the lower end of
10 which is connected by a hinged joint to a pipe 34, which leads downward through the side of the car and is extended to an ordinary brake controlling valve 37 located in the cab, or on the platform of the car.

35 designates a suitable storage tank for fluid pressure, and leading therefrom to the brake valve 37 is a pipe 36, which arrangement provides for the delivery of fluid pressure to the ends of the cylinder 21 when it
20 is desired to set the brakes, which operation is accomplished by a proper manipulation of the brake valve.

When my improved railway is in operation, the car is elevated to the position as
25 seen in Fig. 1, and the electric current from the conductor 4 passes in the usual manner through the trolley 15, and from thence the current travels through suitable conductors to a controller located in the cab, or on the
30 front end of the car, and from thence the current is delivered through suitable conductors and the rods 28 and 29 to the motor 11. When these motors are in operation, the rotary motion of the shaft is transmitted to
35 the shafts 8 by means of the sprocket chains 13, and the wheels 5 are rotated. As said wheels rotate, the gear wheels or pinions 7 mesh with the rack 3; and, as a result of this engagement, the wheels will be driven forward
40 ward over the rail 1 in the manner desired.

To set the brakes, the engineer or motor-man operates the brake valve 37 to permit fluid pressure from the tank 35 to pass into the pipe 34, and said fluid pressure passes
45 through the pipes 33, 32, 25, and 24 into the ends of the cylinder 21; and as the pistons 22 in said cylinder are forced toward one another, the lower ends of the levers 20 will be elevated and brought into frictional engagement with the surfaces of the wheels 5;
50 and, as a result, said wheels are prevented from further rotation.

An overhead railway of my improved construction can be used wherever desired, although it is particularly adapted for use in
55 the streets of cities which are normally crowded with vehicles and pedestrians, as by providing means for causing the cars to travel overhead, the surfaces of the streets
60 are free from tracks and the cars operating thereon.

The overhead cars can be operated at much greater speed than cars on the surface of the ground, as the danger of accidents is entirely
65 eliminated; and as there are only two wheels

utilized upon the track, the noise and vibration incident to the travel of a car is greatly reduced.

I claim:—

1. An overhead electric railway, comprising an elevated track rail, a truck arranged for operation on the rail, hangers depending from the truck, motors arranged for operation in the hangers and arranged to drive the wheels of said hangers, and a car suspended
70 from the hangers.

2. An overhead electric railway, comprising an elevated track rail, a truck arranged for operation on the rail, motors arranged for operation in the truck and arranged to
80 drive the wheels of said truck, a car suspended from the truck, and means whereby the car is prevented from swinging laterally relatively to the hangers while in operation.

3. The herein described overhead electric
85 railway, comprising an elevated track rail in the top of one side of which is formed a continuous series of rack teeth, a pair of wheels arranged for operation on the tread portion of the rail, teeth formed on said
90 wheels which engage with the rack teeth, hangers carried by the wheels, and a car suspended from the hangers.

4. The herein described overhead electric railway, comprising an elevated track rail
95 in the top of one side of which is formed a continuous series of rack teeth, a pair of wheels arranged for operation on the tread portion of the rail, teeth formed on said wheels which engage with the rack teeth,
100 hangers carried by the wheels, motors carried by the hangers, driving connections from the motors to the wheels, and a car suspended from the hangers.

5. The herein described overhead electric
105 railway, comprising an elevated track rail in which is formed a continuous series of rack teeth, a pair of wheels arranged for operation on the rail, teeth formed on said wheels which engage with the rack teeth, hangers
110 carried by the wheels, motors carried by the hangers, driving connections from the motors to the wheels, a car suspended from the hangers, and connections between the car and the hangers for preventing the car
115 from swinging laterally while in operation.

6. The herein described overhead electric railway, comprising an elevated track rail in which is formed a continuous series of rack teeth, a pair of wheels arranged for operation
120 on the rail, teeth formed on said wheels which engage with the rack teeth, brakes arranged to engage the peripheries of the wheels, means whereby said brakes are operated, hangers carried by the wheels, and a
125 car suspended from the hangers.

7. The herein described overhead electric railway, comprising an elevated track rail in which is formed a continuous series of rack teeth, a pair of wheels arranged for operation
130

tion on the rail, teeth formed on said wheels which engage with the rack teeth, brakes arranged to engage the peripheries of the wheels, means whereby said brakes are operated, hangers carried by the wheels, motors carried by the hangers, driving connections from the motors to the wheels, a car suspended from the hangers, and connections between the car and the hangers for preventing the car from swinging laterally while in operation.

8. In an overhead electric railway, an elevated track rail, the ball of which is provided with a tread surface, and there being a series of rack teeth formed integral with the top of the ball of the rail and to one side of the tread surface thereof.

9. In an overhead electric railway, an elevated track rail, the ball of which is provided with a tread surface, there being a series of rack teeth formed integral with the top of the ball of the rail and to one side of the tread surface thereof, and a vertically disposed flange formed integral with the ball of the rail on the side opposite from the rack teeth.

10. In an overhead electric railway, an elevated track rail, the ball of which is provided with a tread surface, there being a series of rack teeth formed integral with the top of the ball of the rail and to one side of the tread surface thereof, and a trolley wire arranged beneath and insulated from the track rail.

11. An overhead electric railway, comprising an elevated track rail, a truck arranged for operation on the rail, hangers depending from the truck, motors carried by said hangers and arranged to drive the wheels of the truck, a car suspended from the truck and adapted to be moved vertically relative said truck, and telescoping connections between the truck and the top of the car for preventing the car from swinging laterally relatively to the hangers while in operation.

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

FRANCIS M. FREDERICK.

Witnesses:

M. P. SMITH,
E. E. LONGAN.