

No. 713,960.

Patented Nov. 18, 1902.

C. W. CAWLEY, JR.

AIR BRAKE.

(Application filed Aug. 27, 1902.)

(No Model.)

2 Sheets—Sheet 1.

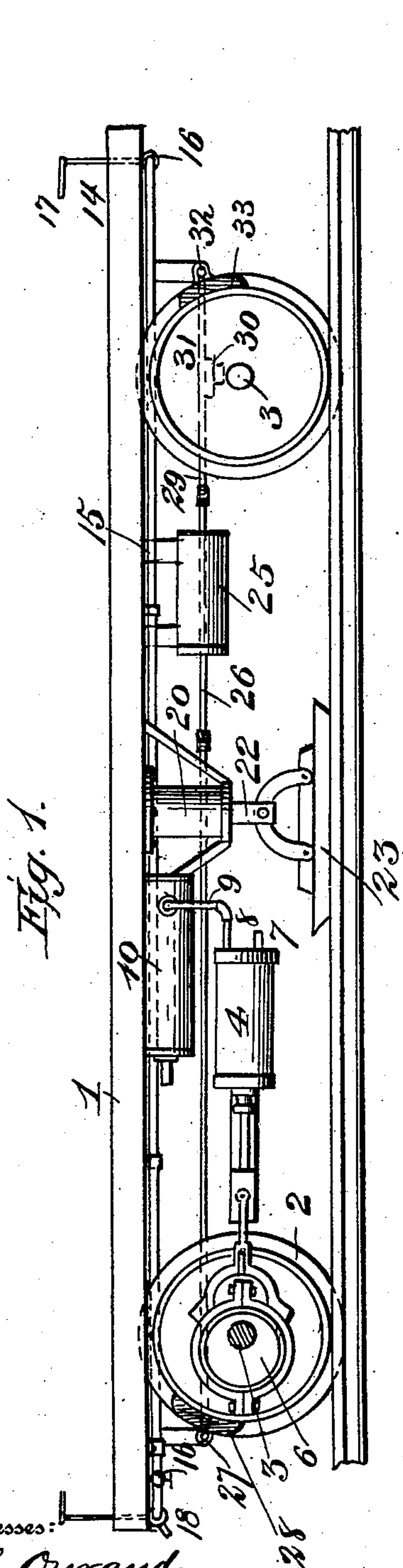
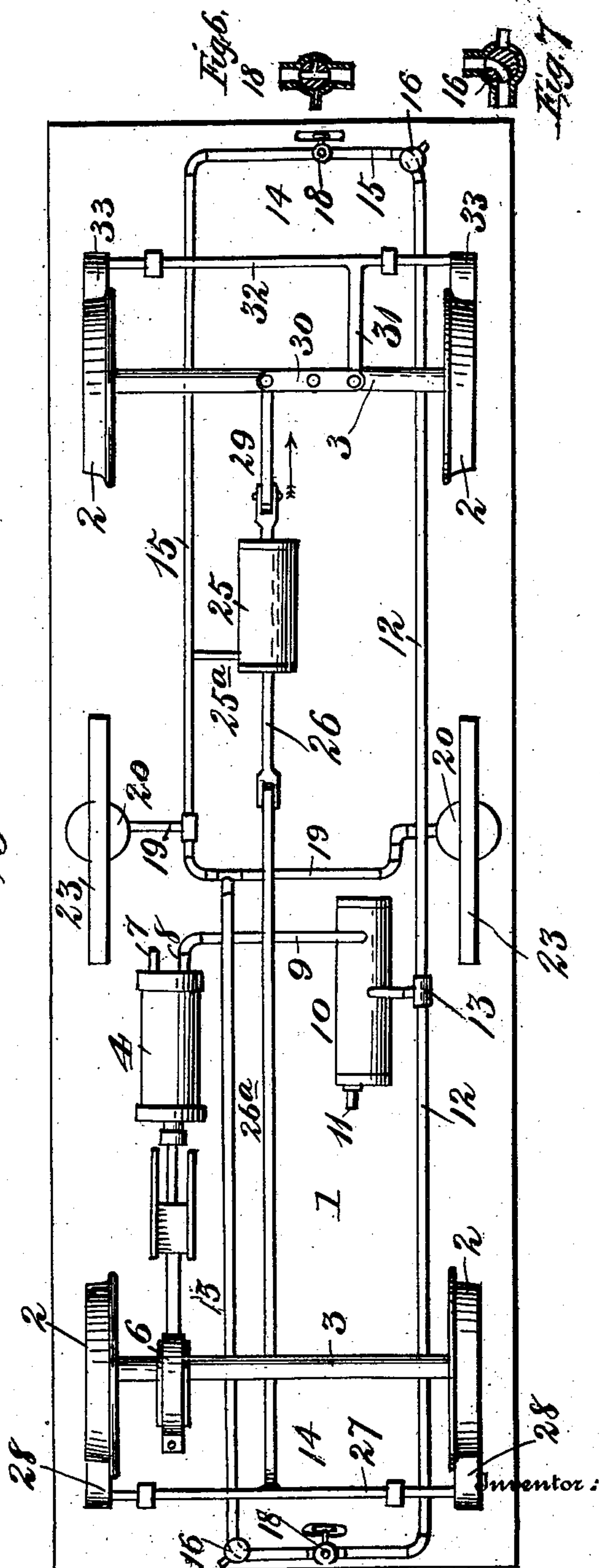


Fig. 2.



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Fig. 3.

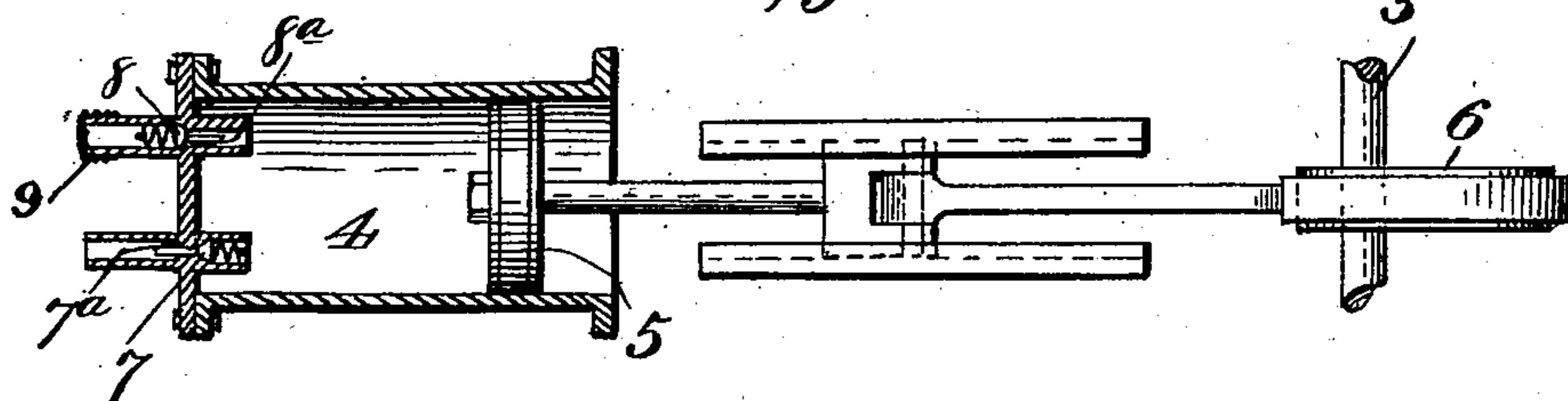


Fig. 5.

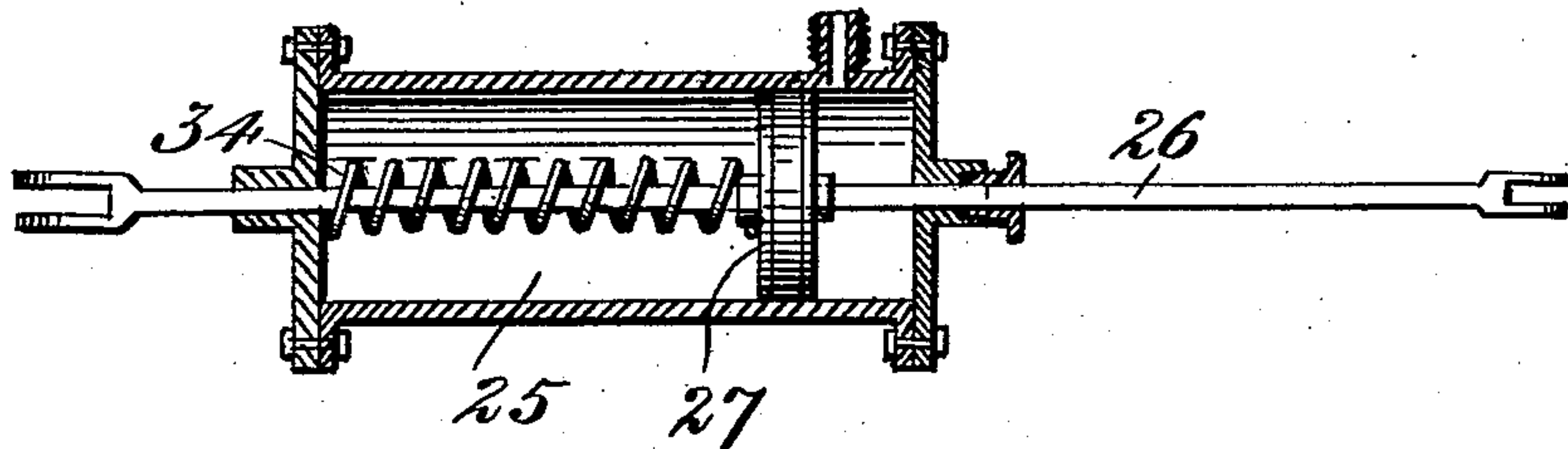
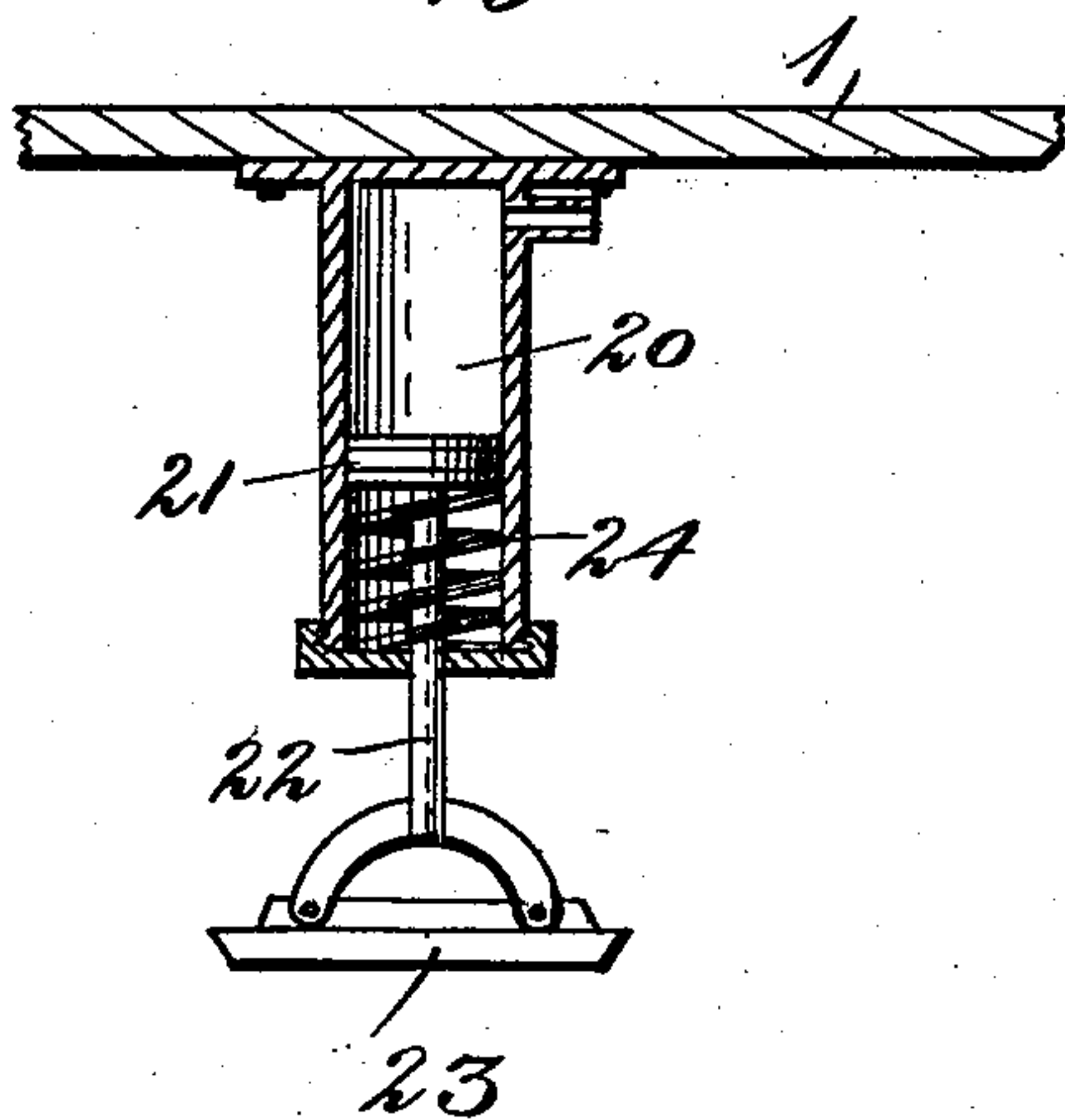


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES W. CAWLEY, JR., OF HOMESTEAD, PENNSYLVANIA.

AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 713,960, dated November 18, 1902.

Application filed August 27, 1902. Serial No. 121,242. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. CAWLEY, Jr., a citizen of the United States, residing at Homestead, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Air-Brakes, of which the following is a specification.

My invention relates to air-brakes for street-cars; and the object of the same is to construct a device of this character by means of which brakes can be simultaneously applied to the wheels and to the track by means of air stored by power obtained from one of the axles of the car.

The simple and novel construction employed by me in carrying out my invention is fully described in this specification and claimed, and illustrated in the accompanying drawings, forming a part thereof, in which—

Figure 1 is a side elevation of a car with my brake system attached thereto. Fig. 2 is a bottom plan of the same. Fig. 3 is a detail of the air-pump and eccentric connections with the car-axle. Fig. 4 is a detail of one of the track-brakes with its cylinder. Fig. 5 is a detail of the cylinder for operating the wheel-brakes. Fig. 6 is a detail of the release-valve. Fig. 7 is a detail of the application-valve.

Like numerals of reference designate like parts in the different views of the drawings.

The numeral 1 designates a car mounted on four wheels 2, carried by axles 3. A pumping-cylinder 4 is rigidly secured to the car 1 and has a piston 5, mounted thereon and connected to an eccentric 6, keyed on one of the axles 3. Spring-pressed valves 7 and 8 are mounted in apertures 7^a and 8^a in the rear head of the cylinder 4. The valve 7 controls the intake of air, while the valve 8 controls the outflow of the same.

A pipe 9 is connected at one end to the aperture 8^a and at its opposite end to an air-storage tank 10, also attached to the bed of the car 1. A pop safety-valve 11 is seated in an aperture in the tank 10 to serve to blow off the excess of air above the safety-pressure.

A pipe 12 is connected by a T 13 to the tank 10. The pipes 12 extend both ways from the T 13 to the motorman's platform 14, whence they connect to pipes 15, which extend back to the center of the car. Valves 16 are lo-

cated at the junction of the pipes 12 and 15 and are provided with levers 17 in position to be operated by the motorman to admit air into the pipes 15. Valves 18 are located in the pipes 15 and positioned to be operated by the motorman to release air from the pipes 15 to permit it to escape into the atmosphere.

Pipes 19 are connected at one end to the pipes 15 and at their other ends to brake-cylinders 20, mounted perpendicular to the bed of the car 1. Pistons 21 are fitted in the cylinders 20 and are connected to piston-rods 22, which extend downwardly and carry brake-shoes 23 on their lower ends, which shoes are located to be brought into engagement with the rails of the track. Springs 24, which bear on the under sides of the pistons 21, serve to hold the shoes 23 normally out of contact with the track and also, as buffers, to limit the downward movement of the pistons 21.

A cylinder 25 is secured to the bed of the car 1, is set longitudinally thereof, and is connected to the pipe 15 by a pipe 25^a. A piston-rod 26, carrying a piston 27, passes through both heads of the cylinder 25. The rod 26 is coupled at one end to a connecting-rod 26^a, which is attached to a brake-beam 27, carrying two brake-shoes 28, set to engage two of the wheels 2, and at the other end to a connecting-rod 29, which is connected to one arm of a lever 30, the other arm of which is connected to a rod 31, which is connected to a brake-beam 32, carrying two brake-shoes 33, positioned to engage two of the car-wheels 2. A spring 34 is mounted within the cylinder 25 and bears on the piston 27 to hold the shoes 28 and 32 normally out of contact with the wheels 2. The operation of my brake can now be described.

When the car 1 is in motion, the piston 5 in the pumping-cylinder 4 will be operated through the medium of the eccentric 6 and axle 3. At every forward movement of the piston 5 air will enter the cylinder 4 through the valve 7, which air will pass out through the valve on the reverse movement of the piston and flow into the tank 10 via the pipe 9. In this manner the charging of the tank 10 will continue, unless some is drawn off, until the pressure therein reaches that at which the safety-valve 11 blows off. When it is desired to apply the brakes, the motor-

man opens the valve 16, which is located beneath the platform 14 on which he is standing, and admits air from the pipe 12 into the pipe 15. The air so admitted will flow through
 5 the pipes 15 and 25^a into the cylinder 25, thereby operating the piston-rod 26 to operate the wheel-brakes 28 and 32, and through the pipes 15 and 19 into the cylinders 20 to operate the track-brakes 23. When the
 10 brakes are no longer needed, the valve 16 is closed and the neighboring valve 18 opened to release the brakes by releasing the air in the pipe 15 and the brake-cylinders. It will be seen that my system gives the maximum
 15 braking power, as both wheel and track brakes are provided.

I do not wish to be limited as to details of construction, as these may be modified in many particulars without departing from the
 20 spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an air-brake system for street-cars,
 25 the combination of a brake-cylinder provided with air connections, a piston mounted in said cylinder, a spring bearing on said piston, a piston-rod passing through both heads of said cylinder, a brake-beam bearing two
 30 shoes set to engage two of the wheels of the car, a connecting-rod connected to said brake-beam and to one end of said piston-rod, a lever connected to the other end of said piston-

rod, a brake-beam bearing brake-shoes, and a connecting-rod connecting said lever and
 35 said last-mentioned brake-beam, substantially as described.

2. In an air-brake system for street-cars, the combination of a brake-cylinder provided with air connections, a piston mounted in
 40 said cylinder, a piston-rod passing through both heads of said cylinder, a brake-beam bearing brake-shoes, a connecting-rod connected to said brake-beam and to one end of said piston-rod, a lever connected to the other
 45 end of said piston-rod, a brake-beam bearing shoes, and a connecting-rod connecting said lever and said last-mentioned brake-beam, substantially as described.

3. In an air-brake system for street-cars,
 50 the combination of a brake-cylinder provided with air connections, a piston mounted in said cylinder, a spring bearing on said piston, a piston-rod passing through both heads of said cylinder, two brake-beams, and means
 55 for connecting said brake-beams to opposite ends of said piston-rod, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit-
 60 nesses.

CHARLES W. CAWLEY, JR.

Witnesses:

JAMES F. O'BRIEN,
 JAMES CAWLEY.