(No Model.)

A. P. MASSEY.

FLUID PRESSURE CAR BRAKE.

No. 415,214. Patented Nov. 19, 1889.

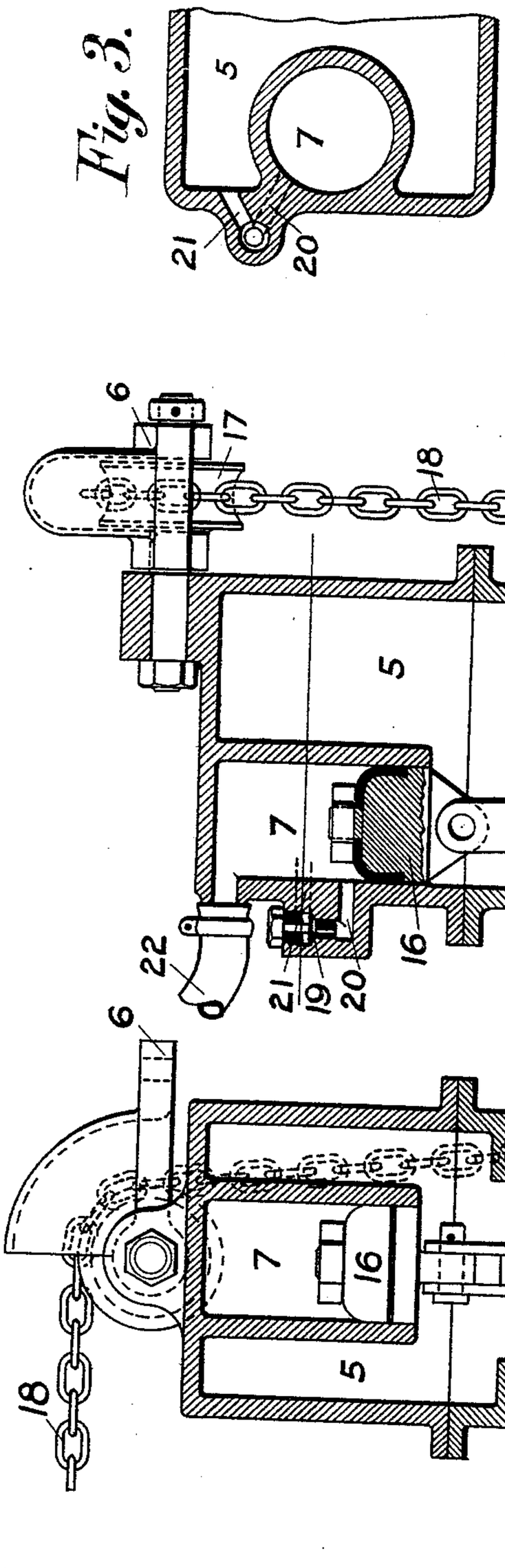

Fig. 3.

Fig. 2.

Fig. 1.

WITNESSES:

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ALBERT P. MASSEY, OF WATERTOWN, NEW YORK.

FLUID-PRESSURE CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 415,214, dated November 19, 1889.

Application filed August 5, 1889. Serial No. 319,825. (No model.)

To all whom it may concern:

Be it known that I, ALBERT P. MASSEY, a citizen of the United States, residing in the city of Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Fluid-Pressure Car-Brakes, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to car-brakes in which the power is derived from the axle, but the mechanism is controlled by fluid-pressure.

Figure 1 is a view transverse to the car-axle, partly in section. Fig. 2 is a sectional view parallel to the axle. Fig. 3 is a sectional view through the valve.

In the drawings, 1 is a car-axle. 2 is a disk with a case-hardened face clamped to said axle. 3 is a collar, also clamped to said axle. 4 is a sleeve turning freely on said axle and kept in position by the disk 2 and collar 3. This sleeve has an arm 5 extending upward from it and connected by link 6 and suitable connections to the bolster of the car-truck. The arm 5 is hollow, for a purpose hereinafter mentioned.

8 is a grooved pulley for winding a chain. It is free to turn or slide on sleeve 4, and has one face filled with wires 9, like a brush.

10 10 are levers having a bearing against pulley 8, whereby the brush 9 on the pulley may be pressed into contact with the disk 2.

13 is a shaft with an eccentric-pin 12 12 on each end. 15 is an arm on said shaft connected by links 14 with piston 16, which moves in cylinder 7.

22 is a hose connecting cylinder 7 with an ordinary train-pipe on the body of the car. This pipe is connected in the usual manner to the engineer's valve on the locomotive.

19 is a check-valve in a passage between cylinder 7 and reservoir 5. It allows air to pass from the cylinder to the reservoir, but prevents its return.

20 is a port from the bottom of valve 19 to the cylinder, and 21 is a port from the top of said valve to the reservoir.

18 is a chain connecting pulley 8 with any ordinary system of foundation-brakes.

17 is an idle pulley to change the direction of chain 18.

The operation is as follows: When the car is moving, the disk 2 revolves with the axle; but the pulley 8 rests on sleeve 4, and there is no tension on chain 18. If the brush 9 is pressed in contact with disk 2, the disk will cause the pulley to revolve until the resistance on chain 18 is as great as the friction between brush and disk. This contact and pressure are obtained by means of levers 10, which are actuated by the piston 16 through arm 15, shaft 13, and eccentric-pins 12 12, any varying pressure upon piston 16 being reproduced by means of the levers between the brush 9 and disk 2.

The action of the friction pulley and disk I have made the subject of another application, Serial No. 319,826, filed with this.

I will now give a more particular description of the action of the fluid-pressure apparatus. In order to have brakes apply automatically when a train of cars is broken into two or more sections, it is customary to maintain a considerable pressure of air in the train-pipe and use valves adjusted to apply the brakes whenever the pressure in the train-pipe is reduced or destroyed. This device is designed to act in the same way. Hose 22 connects cylinder 7 directly with the engineer's valve on the locomotive without any intervening valve. The pressure therefore in cylinder 7 will always be that of the train-pipe. Piston 16 is exposed on one side to the pressure in cylinder 7 and on the other side to the pressure in reservoir 5; but the check-valve 19 allows air to pass freely from cylinder 7 to reservoir 5. Therefore the pressure on both sides of piston 16 will be equal when the train-pipe is charged. If now the pressure in the train-pipe be reduced, check-valve 19 will close and the piston will be pressed upward with a force equal to the excess of pressure in reservoir 5 over that in cylinder 7. This, if the axle were in motion, would cause the pulley to wind up chain 18 with a force proportioned to the difference in pressures on opposite sides of piston 16. The engineer can therefore vary the tension on chain 18 by varying the air-pressure in the train-pipe. If the pressure in the train-pipe were restored, the piston 16 would again be in equilibrium and there would be no friction between disk and brush. Therefore the chain 18 would be released.

The reservoir 5 and cylinder 7 are located on the car-axle, in order to avoid the lost motion and varying pressure that would occur from the oscillations of the truck if they were located on the body of the car. The flexible hose admits of such oscillation without varying the pressure.

What I claim, therefore, and desire to secure by Letters Patent, is—

1. In a fluid-pressure brake, a reservoir and cylinder attached to a sleeve on a car-axle, a friction-pulley, a piston and suitable connections for piston to actuate said pulley, and a friction-disk, in combination with a car-axle, substantially as set forth.

2. In a fluid-pressure brake, the piston 16, links 14, arm 15, shaft 13, and levers 10, in combination with a friction pulley and disk, and a car-axle, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 2d day of August, A. D. 1889.

ALBERT P. MASSEY.

Witnesses:
H. W. BOYER,
MICHAEL J. MORKIN.