(No Model.)

A. P. MASSEY.

CAR BRAKE.

No. 409,328. Patented Aug. 20, 1889.

Fig. 1.

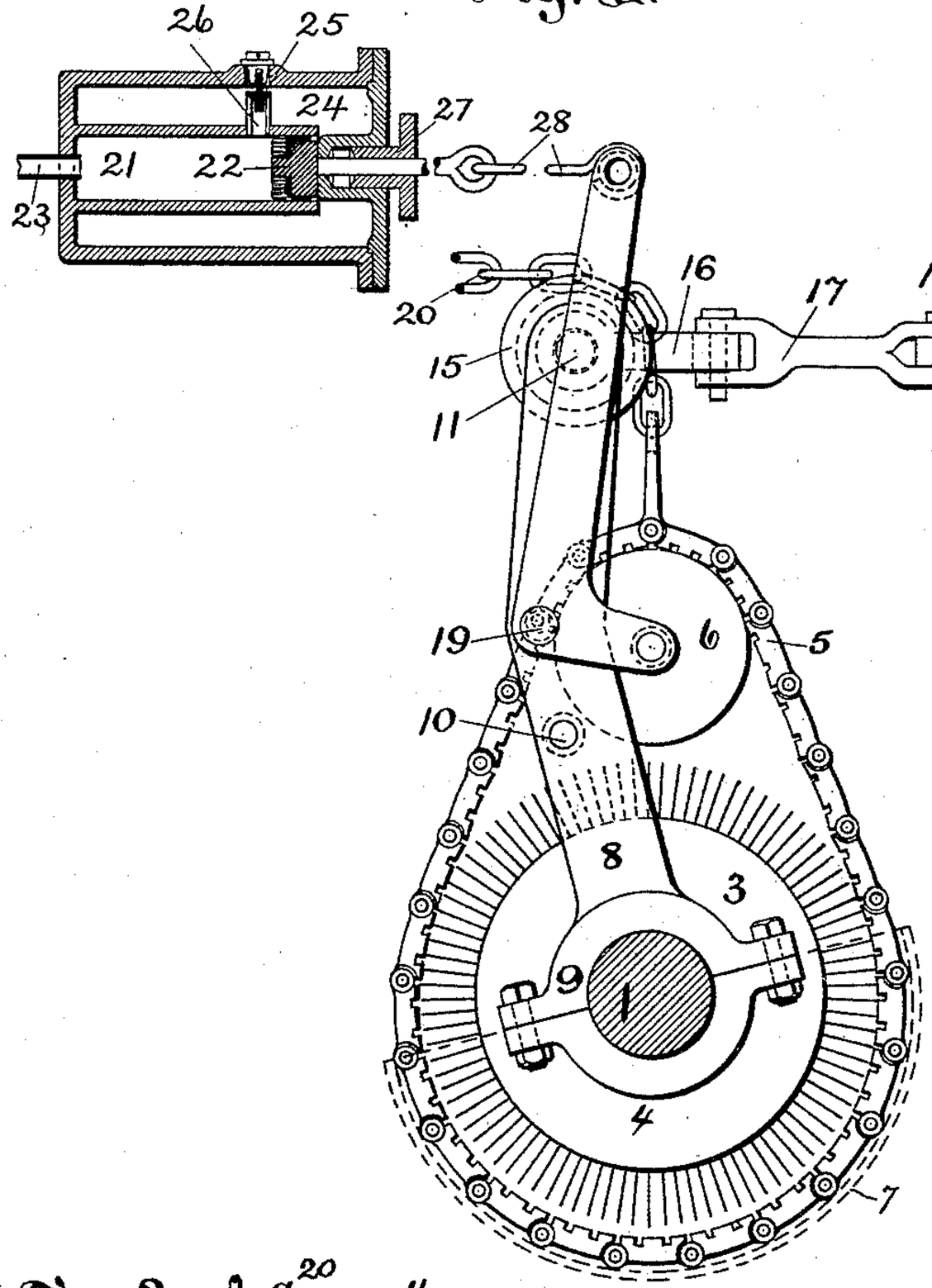


Fig. 2.

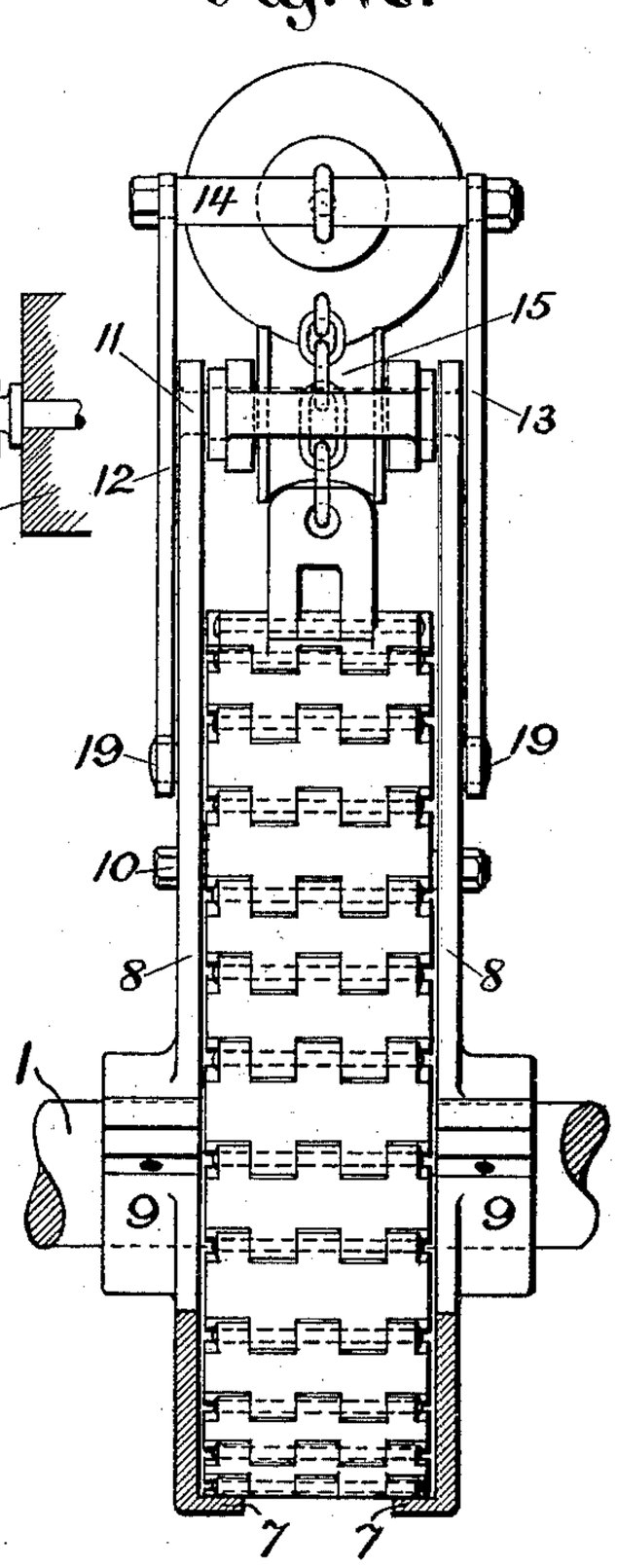
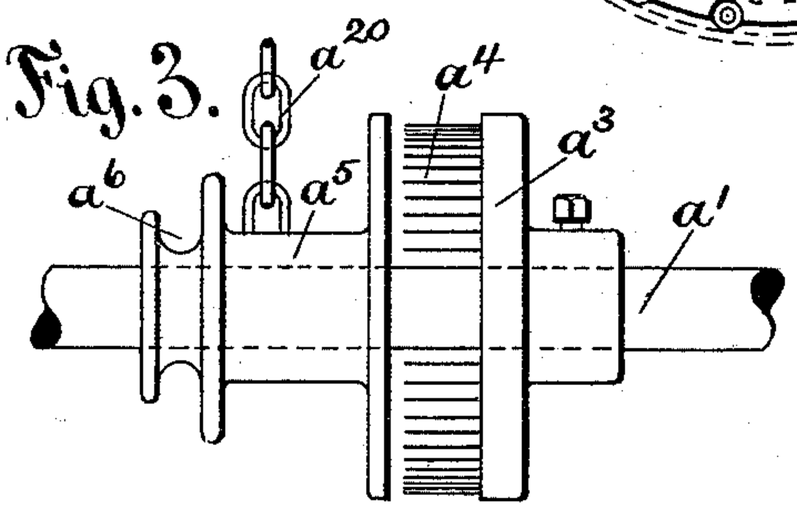


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALBERT P. MASSEY, OF WATERTOWN, NEW YORK.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 409,328, dated August 20, 1889.

Application filed April 1, 1889. Serial No. 305,528. (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 Car-Brakes, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention consists in utilizing the momentum of a moving car to provide the force necessary for applying the brakes while the amount of pressure applied to the brake-blocks is under the control of the engineer.

Figure I is a view of the apparatus as applied to a car with a portion of one side removed, also a sectional view of the cylinder. Fig. II is a front view of the same. Fig. III is a modification of friction-wheel and chain-barrel.

The foundation brake-rigging may be of any of the approved methods, as this device is designed to connect with any pull-rod that is used in ordinary brakes.

In the drawings, 1 is the axle, and 2 the bolster, of any car-truck,

3 is a wheel having its periphery formed of fine spring-wires 4, like a brush. This wheel is rigidly attached to the axle 1 and revolves with it.

5 is an endless chain, composed of flat links, which nearly surrounds the wheel 3 4, but is supported when at rest by the roller 6, which is also a tightener for the purpose of bringing the chain in contact with the brush-wheel 3 4. The lower portion of the chain 5 is supported by the flanges 7 when at rest. On each side of brush-wheel 3 4 are plates 8 8, which have bearings 9 9, in which the axle 1 is free to turn. These plates are joined together by studs 10 and 11 to form a frame for carrying the swinging frame 12 13 14, which carries tightener 6. The frame also carries pulley 15. This frame is kept in position by links 16, 17, and 18, which attach it to bolster 2. The swinging frame 12 13 14 swings on studs 19, so that by moving the cross-bar 14 to the left the tightener 6 will be raised and bring the chain 5 in contact with the brush-wheel 3 4. The chain 20 is to be connected with the pull-rod of any kind of brake-rigging.

For actuating the apparatus by compressed air, the swinging frame is connected to a piston 22, which fits cylinder 21. The piston is exposed on one side to the air-pressure in the train-pipe through connection 23 and on the other side to the pressure in the reservoir 24. A check-valve 25 is interposed between cylinder 21 and reservoir 24, so arranged that air may pass from 21 to 24, but cannot return.

27 is a gland to keep the piston-rod tight.

The port 26, leading to check-valve 25, is located near the end of the cylinder, for a purpose hereinafter described.

28 is a chain connecting the piston-rod and the swing-frame 12 13 14.

In Fig. III, a' is the car-axle; a^3, a hub keyed to axle; a^4, a brush made of wires attached to hub a^3. a^5 is a chain-barrel for winding up chain a^{20}. It is loose on axle a', and is to be actuated by a fork in groove a^6.

The operation is as follows: The brush-wheel 3 4, being attached rigidly to axle 1, revolves with it whenever the car is in motion. The balance of the apparatus remains stationary as long as the chain 5 is slack and does not touch the brush, If by some tension on the chain 28 the tightener 6 is raised, it will bring the flat chain 5 in contact with brush-wheel 3 4. This will cause the chain 5 to revolve with the brush-wheel until the resistance is greater than the friction between the brush and the chain. Whichever way it revolves it will produce a tension on the chain 20, and this tension will be in proportion to the tension on the chain 28, which holds the flat chain 5 in contact with the brush 4. If the tension on the chain 28 is released, the flat chain 5 will drop away from the brush 4, and the tension on chain 20 will be released. To place this apparatus under the control of the engineer, and also to render it automatic in case of rupture of the train, the chain 28 is attached to the piston 22, and the usual air-pressure, which it is customary to carry in automatic compressed-air brakes, is maintained in the train-pipe, and thence, through connection 23, in cylinder 21. This pressure also passes through check-valve 25 to reservoir 24. The piston 22 is, therefore in equilibrium. If the pressure in the train-pipe is reduced, the equilibrium will be destroyed, and the unequal pressure on the piston 22 will produce a ten-

sion on chain 28 proportioned to the difference in the two pressures. As there are no valves between the cylinder 21 and the train-pipe, the engineer can vary the pressure in the cylinder 21 at will, and thus increase or decrease the tension on chain 28 at will, thereby varying the tension on chain 20 and applying the brakes to a greater or less degree, as desired. If the train were ruptured, the pressure in cylinder 21 would be speedily reduced to that of the atmosphere, and the pressure in the reservoir would move the piston with full power and cause the brakes to be applied with great force. To release the brakes, the engineer restores the pressure in the train-pipe. This forces the piston 22 back toward reservoir 24 and releases the tension on chain 28. The port 26 is placed at the extreme end of the travel of the piston, in order that the greater pressure in the train-pipe may cause the piston to travel its full stroke before any air can get to the reservoir, and thus insure a quick release. It is also a safeguard against a leaky check-valve, as the piston passes the port to apply the brakes, and both sides of the valve are then in the same chamber. No claim for this last feature is made here, as it has been made the subject of an application for a patent filed under another Division, Serial No. 311,789.

An ordinary friction-wheel would accomplish the same purpose to some extent as is reached by using the brush-wheel, and so would friction-cones, but such appliances produce great heat if held in contact for a length of time. In this device both sides of the flat chain and all sides of the wires of the brush are exposed to the atmosphere, which carries away the heat as fast as generated. They may therefore be kept in contact indefinitely without unduly heating. This enables the brakes to be held on with moderate pressure in going down long mountain grades.

Though I have given special description of a flat chain surrounding a brush-wheel, it is obvious that the same purpose might be attained, though not in so convenient a manner, by a sliding chain-barrel on the car-axle in connection with a brush-wheel keyed to the axle, and a fork to throw the same in contact, as shown in Fig. 3. This would also dispose of excessive heat in the same way.

What I claim as new is—

1. In a car-brake, a friction-wheel or disk one surface of which is composed of a large number of wires, in combination with a car-axle for the purpose set forth.

2. In a car-brake, the friction-wheel 3 4, endless chain 5, and tightener 6, combined with a swinging frame for actuating the tightener, supported on a frame having bearings on the axle, substantially as set forth.

3. In a car-brake, a friction-wheel, one surface of which is composed of a large number of wires, an endless chain surrounding said wheel, a tightener, a swinging frame, and a piston and cylinder arranged substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 30th day of March, A. D. 1889.

ALBERT P. MASSEY.

Witnesses:
H. W. BOYER,
H. H. HOWSON.