

**No. 628,890.**

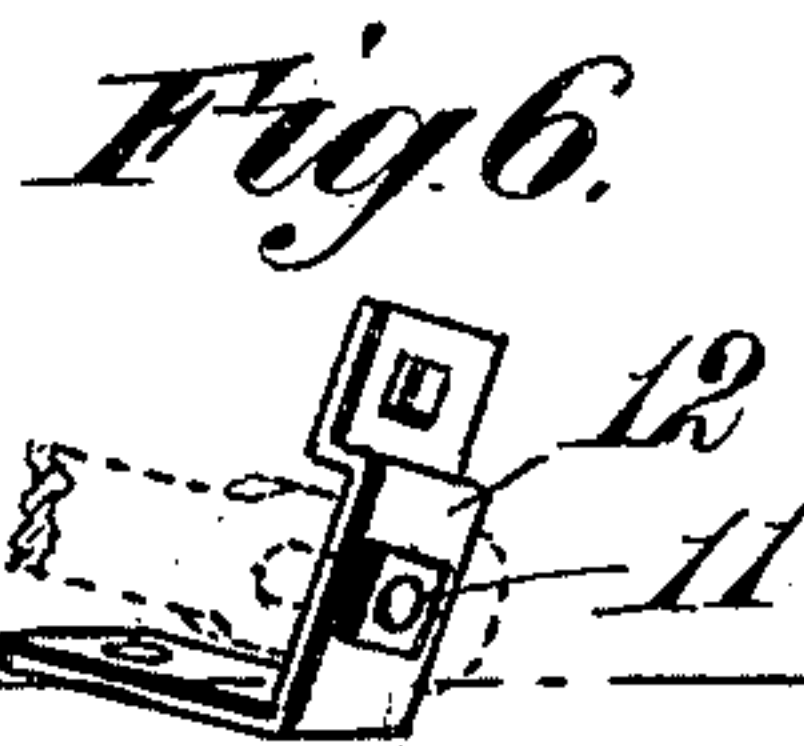
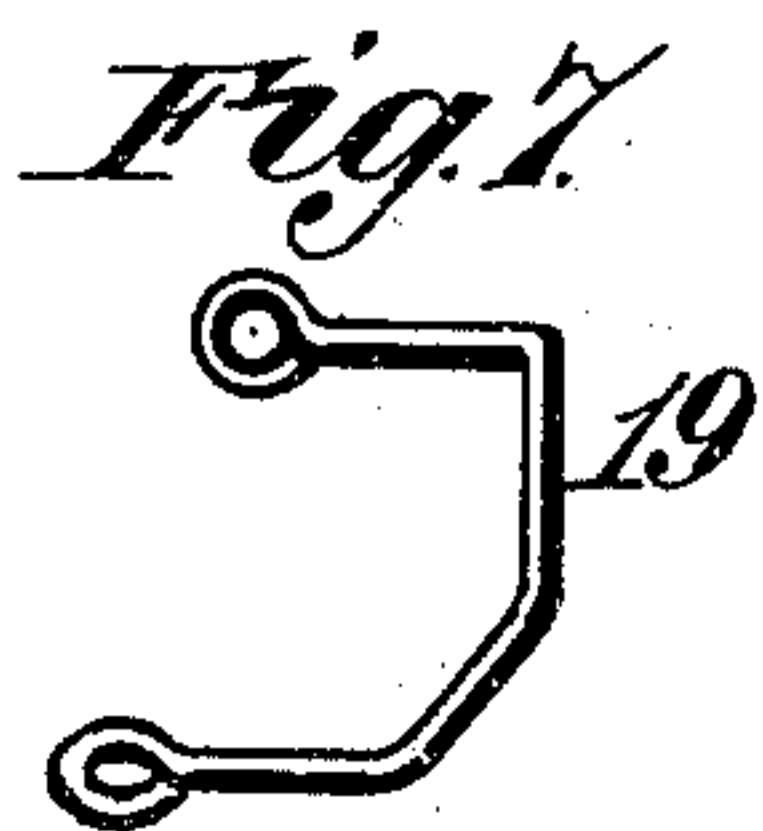
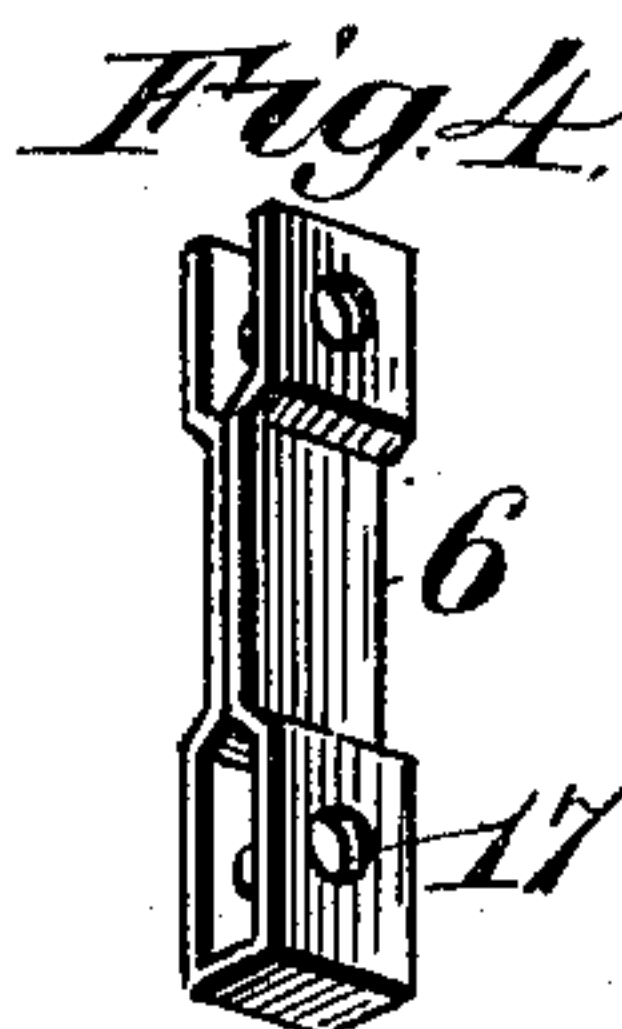
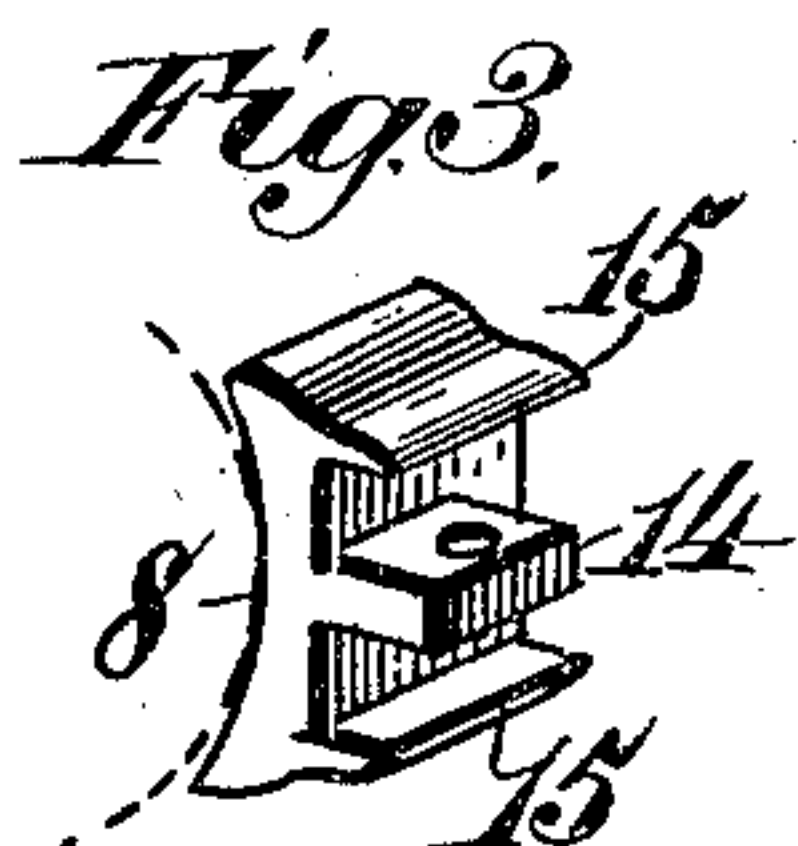
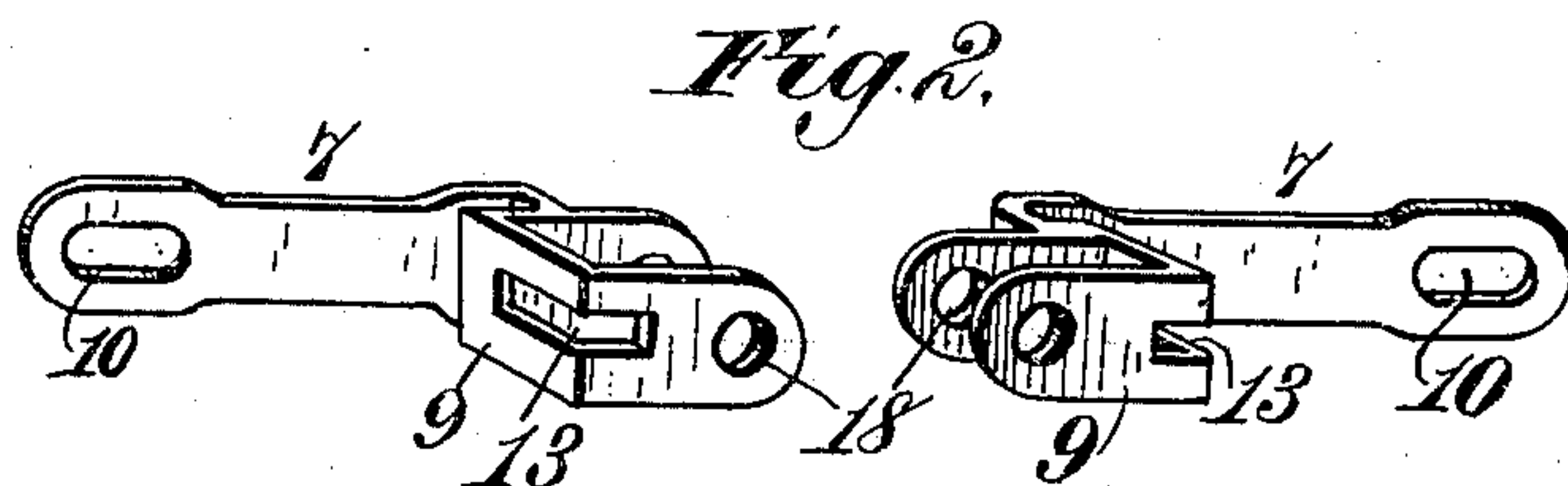
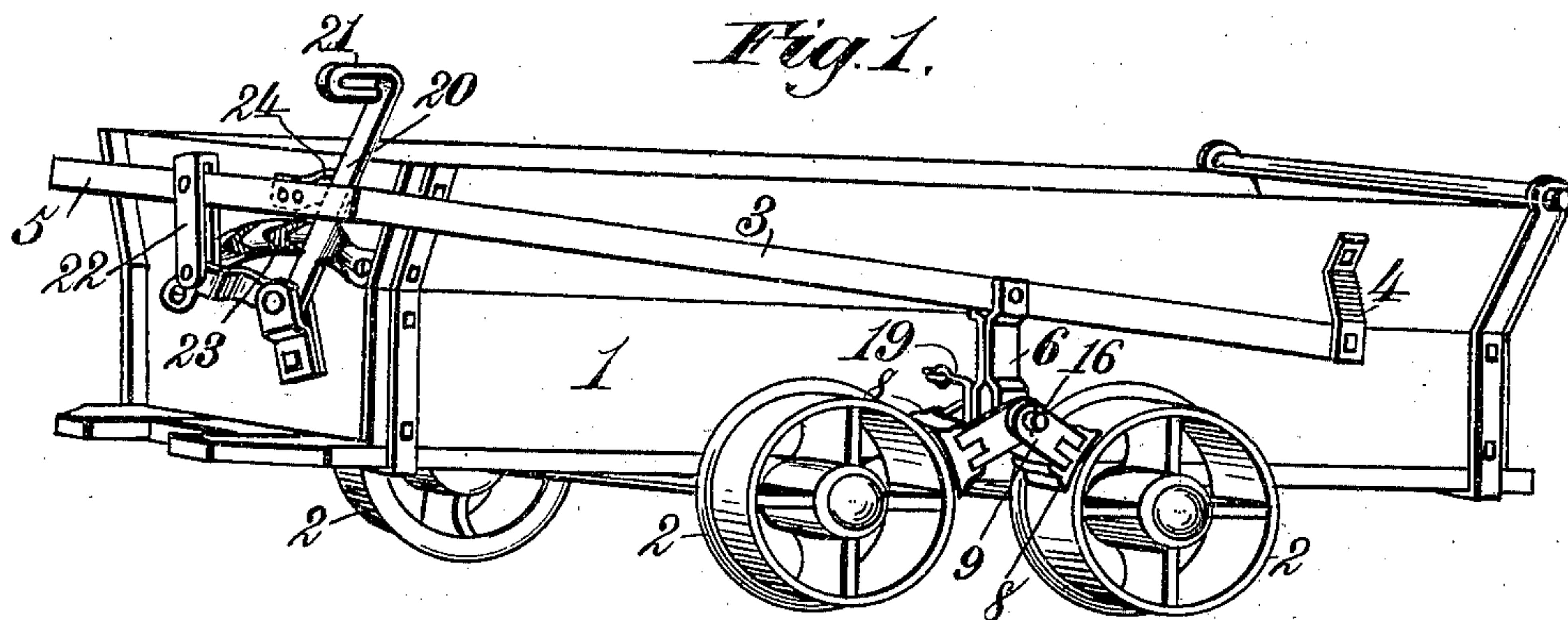
**Patented July 11, 1899.**

**L. L. LOGAN.**

**CAR BRAKE.**

(Application filed Nov. 19, 1898.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

LAVALETTE L. LOGAN, OF SCRANTON, PENNSYLVANIA.

## CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 628,890, dated July 11, 1899.

Application filed November 19, 1898. Serial No. 696,929. (No model.)

*To all whom it may concern:*

Be it known that I, LAVALETTE L. LOGAN, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented new and useful Improvements in Car-Brakes, of which the following is a specification.

My invention relates to car-brakes, and is adapted more especially for use on mine-cars and similar vehicles; and it consists in the features of construction and novel combinations of parts in a brake, as hereinafter described and claimed.

In the annexed drawings, illustrating the invention, Figure 1 is a view of a mine-car provided with my improved brake. Fig. 2 is a view of a pair of toggle-levers or arms to carry the brake-shoes. Fig. 3 shows a brake-shoe detached. Fig. 4 is a view of a link or pendant that connects the toggle-levers or brake-arms with a main operating-lever. Fig. 5 is a pin for pivotally connecting the brake-arms or toggle-levers and their supporting-link. Fig. 6 is a view of a guard and fulcrum for the slotted end of a brake-arm or toggle-lever. Fig. 7 is a view of a guard or guide for the brake-levers.

Referring to the drawings, the numeral 1 designates a mine-car mounted on a truck of four wheels 2 and arranged for the application of brakes between the forward and rear wheels on each side of the car.

At each side of the car there is a main brake-operating lever 3, Fig. 1, having one end fulcrumed to a bracket 4, secured to the side of the car near or toward its forward end. The levers 3 on opposite sides of the car are connected at their rear ends by a cross-bar 5, that is extended across the hind part of the car. Each lever 3 has pivoted thereto at a point above and between the car-wheels a depending link 6, Figs. 1 and 4, the lower end of which is constructed for the pivotal attachment of two toggle-levers or brake-arms 7, to which the brake-shoes 8 are rigidly, but detachably, secured. These toggle-levers or brake-arms 7 are preferably bifurcated at the ends which are pivoted to the link 6, and one side of each bifurcation is offset from the main portion of said arm or lever to form a broad shoulder 9, Fig. 2, for attachment and

support of a brake-shoe. The other end of each lever or arm 7 is preferably provided with an elongated slot 10, the ends of which are concaved or rounded to correspond with the peripheral curvature of a fulcrum-pin 11, that is supported by a guard 12, Fig. 6, secured to the side of the car near the axle. By this means the outer ends of the toggle-levers or arms 7 are supported eccentrically to the wheel-axles. The width of the elongated slots 10 is just enough to permit them to slip over the pins 11, and the length of each slot should be such as will allow just enough endwise-shifting movement of the levers 7 as will compensate for wear of the brake-shoes 8 and provide a clearance between the shoes and the treads of the wheels when the brakes are released and also to prevent injury to the shoulders of such brake arms or levers from which the shoes may have been detached. Obviously the outer ends of the levers or arms 7 may be otherwise shiftably supported from suitable devices fixed to the side of the car, so as to permit a limited amount of endwise motion of the brake-arms or toggle-levers 7 in case it is not desired to use slotted ends on the brake-arms or toggle-levers.

In another application, Serial No. 694,122, I have shown a car-brake comprising radial arms or levers pivotally suspended between the forward and rear car-wheels and having their outer ends slotted and supported from the wheel-axles in radial relation therewith; but it will be observed that by the present construction the fulcrum-pins 11 afford means for supporting the outer ends of the brake-arms or toggle-levers 7 independent of the wheel-axles.

In order to facilitate the taking off and replacing of brake-shoes, the shouldered portion 9 of each arm or lever 7 is preferably formed with an open-ended slot 13, Fig. 2, to readily receive a lug 14, Fig. 3, that is provided on the attaching side of the brake-shoe. The shoe 8 may be detachably, but rigidly, secured by passing a pin through this lug 14 or by any suitable fastening. The attaching side of each brake-shoe 8 is preferably provided with flanges 15, Fig. 3, to fit over the shouldered portion of the lever 7 at top and



bottom, so as to effectually prevent any tendency to turning or twisting of the brake-shoe and hold it secure and rigid.

The brake-shoes may be made from wood or iron or other material. If a brake-shoe of wood is employed, it may be fastened to the shoulder 9 of the lever 7 by means of nails or other fastenings passed through a suitable number of holes provided for that purpose in the shouldered portion of the brake-arm.

As shown in Fig. 3, the braking-surface of the shoe 8 is preferably constructed on the arc of a larger circle than the tread of the wheel, so that when the brake is first applied any stress upon the pin holding the shoe in place which may be due to inaccuracy of placing the pin 11 will be obviated.

The depending link 6 and the brake-arms or toggle-levers 7 are pivotally connected by means of a pin 16, Figs. 1 and 5, about which the said levers can turn. The said link and levers are provided, respectively, with holes 17 and 18, through which the pin 16 is passed. The guard or guide 19, Figs. 1 and 7, is placed between the bifurcations of a toggle-lever or brake-arm and pivotally attached to the side and bottom of the car, so as to enable the guide 19 to have some lateral motion and prevent the brake arms or levers 7 from rubbing against the sides of the wheels 2. Thus a resistance is provided against any forces tending to turn or twist the brake-arms or toggle-levers about a line joining the central points of the supports of said arms at their slotted ends.

The pivotal joints formed by the brake-arms or toggle-levers 7 with their supporting-links 6 on each side of the car should be made sufficiently wide to properly resist the lateral stresses to which said arms or levers may be subjected and to afford a stable support against any torsional stress.

The main brake-levers 3 are operated through a bell-crank lever 20, that is fulcrumed to one end of the car and provided with an operating-handle 21, Fig. 1, the short arm of said bell-crank lever being connected, through a link 22, with the cross-bar 5 of the levers 3, through which the brakes are actuated. A ratchet 23 is arranged in position to be engaged by the bell-crank lever for the purpose of holding said lever in place when the brakes are on or applied to the wheels, and on the cross-bar 5 there may be arranged a catch 24 to engage and hold said lever when the brakes are off.

When the brakes are let off or released, the extreme ends of the slots 10 are held closely against the fulcrum-pins 11, and this prevents the brake-shoes from striking against the treads of the wheels while the car is in motion and keeps the parts of the brake rigidly in place. When the brake is applied, the other or inside ends of the slots 10 in such levers 7 as may have no brake-shoes attached (or where the shoes are worn down to their limit) will come against the pins 11, and thus

serve as stops to prevent wear on the shoe-attaching parts of the brake arms or levers and at the same time will force the braking application of such shoes as may be in position for use. Thus one or more brake-shoes can be effectively operated without injury to those arms or levers 7 that may be without shoes. In general the more the shoes are worn the more nearly horizontal will be the position assumed by the arms or levers 7 and the greater will be the mechanical advantages of the brake.

Although the brake-arms or toggle-levers 7 are shown as suspended above the plane of the car-axles it will be understood that they may be arranged at a lower point or below the plane of the axles, and they may be supported by any suitable means that will permit a ready operation or control of the brakes.

Obviously the brake mechanism can be provided on but one side of the car, if preferred, any suitable lock being arranged to hold the operating-lever in the position to which it may have been adjusted.

What I claim as my invention is—

1. In a car-brake, the combination of a pair of toggle-levers or pivotally-connected brake-arms suspended through their jointed ends between the forward and rear car-wheels and having their outer ends shiftably supported eccentrically to the wheel-axles and brake-surfaces carried by said toggle-levers intermediate the ends of said levers, and operating mechanism for said toggle-levers, substantially as described.

2. In a car-brake, the combination of a pair of toggle-levers or brake-arms pivotally suspended between the forward and rear car-wheels, means for shiftably supporting the outer ends of said toggle-levers or brake-arms from the car and eccentrically to the wheel-axles, brake-shoes carried by said arms or levers intermediate the ends of said levers, and operating mechanism, substantially as described.

3. In a car-brake, the combination of main brake-operating levers fulcrumed at opposite sides of the car and connected with each other, links suspended from said main levers, jointed brake-arms or toggle-levers pivotally suspended through their jointed ends from said links between the car-wheels, means for shiftably supporting the outer ends of said toggle-levers or brake-arms eccentrically to the wheel-axles, brake-shoes carried by said arms or toggle-levers intermediate the ends of said levers, and means for preventing torsional stress of said arms or pressing of the same against the car-wheels, substantially as described.

4. In a car-brake, the combination of brake-arms or toggle-levers provided with laterally-widened and pivotally-connected ends suspended between the forward and rear car-wheels and having their outer ends shiftably supported eccentrically to the wheel-axles, said arms or levers being provided with brake-



surfaces intermediate their ends, and mechanism for operating said arms or levers, substantially as described.

5 In a car-brake, the combination of a pair of toggle-levers or pivotally-connected brake-arms suspended at their jointed ends between the forward and rear car-wheels and having their outer ends slotted, fulcrum-pins on which the said slotted ends of said levers or  
10 brake-arms are supported, brake-shoes carried by said toggle-levers intermediate the ends of said levers, and operating mechanism for said toggle-levers or brake-arms, substantially as described.

15 6. In a car-brake, the combination of main brake-operating levers fulcrumed at opposite sides of the car and connected with each other, links suspended from said main levers, jointed brake-arms or toggle-levers pivotally  
20 suspended from said links between the car-wheels and having their outer ends slotted, fulcrum-pins on which the said slotted ends of said brake-arms or toggle-levers are sup-

ported, brake-shoes carried by said arms or toggle-levers, and means for preventing torsional stress of said brake-arms or pressing  
25 of the same against the car-wheels, substantially as described.

7. In a car-brake, the combination of brake-arms or toggle-levers provided with laterally-  
30 widened and pivotally-connected ends suspended between the forward and rear car-wheels and having their outer ends slotted, fulcrum-pins for the said slotted ends of said brake-arms or toggle-levers, brake-surfaces  
35 carried by said arms or toggle-levers intermediate the ends of said levers, and mechanism for operating said arms or levers, substantially as described.

In testimony whereof I have hereunto set  
40 my hand in presence of two subscribing witnesses.

LAVALETTE L. LOGAN.

Witnesses:

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